Maternal Characteristics
and the Development of Children who Failed to Thrive

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abstract

The long-term prognosis for infants who fail to thrive is relatively little understood, although early growth faltering has been associated with limitations in subsequent development. Definition of failure to thrive as a feeding disorder implies a need to consider maternal characteristics associated with the syndrome, but research has been limited by theoretical and methodological difficulties. The present investigation explores the long-term correlates of infant growth retardation for the mother and child. Skuse, Wolke and Reilly (1992) studied 47 growth retarded infants and their pairwise matched controls; the author carried out an interview study with this sample when the children were six years old.

The thesis questions whether the occurrence of growth faltering was related to child development at six years, and examines links between mother and child functioning. Maternal characteristics associated with having a child who failed to thrive are investigated by exploring case-control differences in mothers' current psychosocial functioning, caregiving cognitions, and childhood care experiences. Finally, the study considers whether mother or child characteristics at age six distinguish any subgroup of previously growth retarded children, in terms of the timing or physical outcome of growth faltering.

Case group children were physically smaller than comparisons; they showed some limitations in cognitive functioning, but no social-cognitive deficits. Mothers' characteristics correlated with all aspects of child development, but infant growth faltering was not related to maternal functioning at six years. Mothers whose children failed to thrive early in the first year were better at dealing with child eating problems, and reported lower levels of depression at 15 months than those whose children experienced later growth faltering; maternal problem solving also discriminated between case group children who were smaller or larger for age. The retrospective design precludes inference about the causal nature of observed relationships, but the present study offers valuable insights regarding maternal characteristics associated with the development of children who failed to thrive.
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# Chapter One

**Maternal Characteristics and Failure to Thrive**

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maternal characteristics 
and failure to thrive

“there is nothing simple or straightforward about mothering”.
Schaffer (1977, p 7)

1.1 aims of thesis
This dissertation explores associations between the development of children who failed to thrive in infancy and social and psychological characteristics of the primary caregiver. When no organic cause can be identified, infant growth retardation has traditionally been ascribed to “maternal deprivation syndrome” (e.g., Patton and Gardner, 1962), as a form of caregiving failure, but this assumption is questionable, given the methodological constraints of previous research (e.g., Drotar, 1990), and emerging evidence that non-organic growth failure is related to a variety of aetiological factors (see Mayes and Volkmar, 1993), including child characteristics such as feeding skills disorder (e.g., Ramsay, Gisel and Boutry, 1993). In addition, the long term prognosis for children who fail to thrive is relatively little understood (Kristiansson and Fälström, 1987), although several authors have highlighted the adverse effects of early malnutrition for child development (e.g., Skuse, Pickles, Wolke, and Reilly, 1994).

This dissertation attempts to overcome some of the methodological limitations of previous research, in order to examine maternal characteristics associated with a history of failure to thrive and with the developmental consequences of non-organic failure to thrive. The thesis reports the findings of a follow-up study of a sample of six year old children who failed to thrive during the first 15 months of life, and their matched comparisons who grew normally in infancy. By examining mother and child characteristics at the age of six, the present investigation offers a descriptive account of the long term correlates of early non-organic growth retardation, with regard to the following general objectives:

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1 For simplicity, the term “mother” is used throughout the text to refer to the primary caregiver, unless specified otherwise.
• To compare the developmental functioning of previously growth retarded and thriving children, and to explore links between mother and child functioning at six years.
• To identify maternal characteristics associated with a history of infant growth faltering through case-control comparisons.
• To consider whether mother or child characteristics at age six can distinguish a subgroup of previously growth retarded children.

First, the argument that infant growth retardation is associated with long term developmental disadvantage will be explored through comparisons of children who failed to thrive with those who grew normally during infancy. Examination of relationships between current maternal characteristics and child functioning should serve to illuminate the development of children who may be at risk because of earlier growth retardation. An accurate description of mother and child functioning is necessary to identify characteristics that indicate differential patterns of development among children who have failed to thrive.

Failure to thrive has traditionally been ascribed to maltreatment (e.g., Taitz and King, 1988), although more recently it has been recognised that the causes of growth failure may be diverse (Mayes and Volkmar, 1993), and the syndrome has been redefined as a disorder of feeding (DSM-IV, American Psychiatric Association, 1996). Feeding is an interactive process, which forms the basis of the first relationship between infant and mother (Stern, 1977), and so the DSM-IV re-conceptualisation still indicates consideration of the primary caregiver. Accordingly, there is a need to include the mother in the present follow-up study of children who failed to thrive, in order to identify current maternal characteristics associated with a history of non-organic infant growth retardation.

The research reported in this dissertation describes current functioning among mothers whose children have previously failed to thrive. The retrospective design precludes evaluation of explanatory models of failure to thrive; moreover, maternal characteristics associated with growth faltering cannot be identified through case-control comparisons,
because children who failed to thrive in infancy may be growing normally at the time of follow up. Some measures of mother or child functioning reported here might reflect stable attributes or experiences that preceded growth faltering, but others could be an outcome of failure to thrive, or could describe unrelated characteristics that emerged between the initial and follow-up investigations.

With regard to these concerns, the research reported here does not seek to develop or evaluate a causal model for failure to thrive. However, current definitions of the syndrome include the mother, by virtue of her role in the feeding relationship, and so a descriptive study of the long term correlates of infant growth faltering should consider mother and child functioning. It should be informative to identify those maternal characteristics associated with having parented a child who failed to thrive, through comparisons of mothers of children who failed to thrive with those whose children grew normally in infancy: this comprises the second general aim of the thesis.

Children who have failed to thrive may not comprise a uniform group (e.g., Woolston, 1985), and this variation may be reflected in their characteristics at the time of growth faltering, or in differential patterns of development subsequent to growth retardation. The design of the present study does not permit speculation about the aetiology of diverse characteristics among children who failed to thrive; factors that differentiated between subgroups when the children were experiencing growth faltering may no longer be present at the time of follow-up. Nevertheless, the stability of classifications based on within group variation in infancy can be evaluated by considering whether any indices of current functioning distinguish previously defined subgroups. Moreover, it should prove valuable to examine indicators of differential development among children who failed to thrive.

With reference to these arguments, the dissertation's final objective is to consider whether it is possible to distinguish a subgroup of previously growth retarded children on the basis of mother or child characteristics at the age of six.
Before these issues can be explored, the current state of knowledge in the failure to thrive literature must be assessed. In light of the dissertation’s concern with identifying maternal characteristics associated with a history of failure to thrive, this introductory chapter will review a body of research concerned with mothers whose children have failed to thrive. It has traditionally been argued that non-organic growth faltering reflects inadequate caregiving (e.g., Taitz and King, 1988), but before evidence for that assumption can be evaluated, it is important to consider the way in which failure to thrive is defined. Accordingly, the present chapter will begin with an overview of definitional issues, before going on to examine studies of maternal characteristics associated with infant growth retardation, in order to identify pertinent areas for research in the present study. Investigations of mothers of children with non-organic growth faltering have generally focused on assessment of caregiving behaviour and maternal psychological and social functioning, and so this introductory chapter will review that literature.

Studies of caregiving have increasingly moved beyond observation of maternal behaviour, to try and account for factors that could influence the mother’s actions. For example, mothers’ current social and psychological functioning and maternal history of childhood care are associated with quality of parenting (e.g., Belsky, 1984; Hillson and Kuiper, 1994), and parental cognitions have also been linked with caregiving behaviour (e.g., Bugental, 1993; Miller, 1995). With regard to that literature, this introductory chapter will evaluate the extent to which investigations of maternal characteristics associated with failure to thrive have been informed by theoretical and methodological developments in the parenting literature, by reviewing studies of parenting behaviour, psychosocial functioning, caregiving cognitions, and childhood care experiences among mothers of growth retarded children.

Consideration of maternal characteristics associated with infant growth retardation could potentially lead to a failure to account for child effects; the literature may be criticised for

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2 Portions of this review were included in Boddy and Skuse (1994); see Appendix One.
focusing on parental characteristics in isolation, without acknowledging the infant’s contribution to the interaction or the processes by which a parent responds to her child. The present thesis is concerned with mothers whose children failed to thrive, and so it may be similarly flawed. Studies of child characteristics associated with the syndrome will not be extensively reviewed in this introduction; such a review is arguably beyond the scope of this dissertation, and might restrict a comprehensive examination of the literature on maternal functioning. Despite that justification, it is important to recognise that several investigators have highlighted child characteristics associated with failure to thrive, and so this introductory chapter will include a short discussion of that literature.

In summary, with respect to the objectives of the dissertation, this introduction is specifically concerned with aspects of the failure to thrive literature that relate to maternal functioning, and so cannot offer a comprehensive review of research on infant growth retardation. Along with consideration of definitional issues, an assessment of investigations of maternal behaviour and social and psychological characteristics is necessary to evaluate the common conceptualisation of failure to thrive as a form of maltreatment, and identify pertinent areas of interest for the present study. Nevertheless, this focus inevitably offers a partial understanding of the current state of knowledge in the failure to thrive literature, and the following review must take account of that restriction.

1.2 the definition of failure to thrive

Non-organic failure to thrive (FTT) is the diagnostic classification assigned to an infant who fails to achieve a satisfactory rate of growth (commonly, weight below the third percentile according to population norms), where no organic cause can be identified. The inadequacy of this definition has been recognised; the term defines a symptom rather than a disorder. Skuse (1985, p 174) commented that it does not fulfil the criteria for a satisfactory medical diagnosis, but is “merely an arbitrary description of a pattern of growth”. Wilcox, Nieburg and Miller (1989) noted further problems, such as lack of consistency in anthropometric criteria and cut-off points. Mayes and Volkmar’s (1993) discussion of the nosology of failure to thrive also highlighted the variability of definitions;
this is reflected in their observation that the reported incidence of the syndrome varied from 1.3 to 20.9%.

Lachenmeyer and Davidovicz (1987) raised further questions about definition, noting that the distinction between organic and non-organic failure to thrive is not as clear as many researchers assume. Their contention is supported by Goldson (1989) and Mathisen, Skuse, Wolke and Reilly (1989), who described neurological abnormalities in, for example, oral-motor or gastro-intestinal functioning among infants who had been diagnosed as failing to thrive without organic cause. In addition, Ramsay, Gisel, and Boutry (1993) reported that their sample of infants with non-organic growth failure showed feeding difficulties similar to those found in studies of children with cerebral palsy.

Without prospective research, it is impossible to determine whether characteristics such as “feeding skills disorder” (Ramsay et al.) are a cause or consequence of early malnutrition, but these authors clearly highlight the difficulty in distinguishing between organic and non-organic influences on child growth.

The definition of non-organic failure to thrive has clear implications for understanding mother and child characteristics associated with the syndrome. Even though diagnosis of failure to thrive is based on infant growth trajectories, its aetiology has often been ascribed to inadequate caregiving; the role of maternal characteristics in definition will be considered below. Chapter Three will include a fuller discussion of definitional issues, prior to consideration of the development of children who failed to thrive. Specifically, it will be argued that understanding has been limited by a lack of consensus among clinicians and researchers concerning the degree of growth faltering regarded as indicative of failure to thrive; this inconsistency is exacerbated by different approaches to the measurement of physical stature. In addition, Chapter Three will explore the acceptability of defining a syndrome on the basis of failure to find an adequate organic explanation for infant growth faltering, with reference to the argument that non-organic failure to thrive has diverse causes.
1.3 maternal characteristics

Diagnosis of failure to thrive - whether organic or non-organic - is based on the description of a pattern of growth, but the syndrome has often been described as a form of child abuse or neglect (e.g., Taitz and King, 1988). Traditionally, the child’s growth failure has been attributed to inadequate parenting, in the form of a “maternal deprivation syndrome” (Patton and Gardner, 1962; Fischhoff, Whitten and Pettit, 1971). This notion was derived from research by Spitz and others (e.g., Spitz, 1945, 1946), which was concerned with the impact of separation from the mother early in life.

Spitz studied institutionalised infants, and concluded that prolonged mother-child separation tended to result in psychogenic disorders, notably “anaclitic depression” and “hospitalism”. The symptoms of anaclitic depression bear a great deal of similarity to the diagnostic criteria for non-organic failure to thrive (including delayed physical growth and psychosocial development), leading researchers such as Patton and Gardner (1962) to the conclusion that infants who fail to grow experience a similar lack of mothering to institutionalised infants. Although the mothers of these infants were physically present, psychopathology was thought to have prevented them from caring adequately for their children, so the children became depressed and exhibited the symptoms of hospitalism. Despite the widespread acceptance of this perspective, there were important problems with the research on which it was based (see Pinneau, 1955), which raise questions about the validity of a link between maternal separation and physical development.

Early research into maternal deprivation syndrome was based on the premise that children who fail to thrive receive adequate calories, and that poor growth is a direct consequence of emotional deprivation. Whitten, Pettit and Fischhoff (1969) questioned this assumption, in a study of hospital referred children, whose failure to thrive was thought to derive from inadequate parenting. The majority of these children gained weight when they had an adequate caloric intake, even without stimulation from a caregiver. It has since been widely argued that all failure to thrive has an organic aetiology, malnourishment (Woolston, 1985; Skuse, 1993), but it is still often assumed that this stems from “an antagonistic or chaotic
emotional life of the parents and because of problems of interaction between mother and child” (Hanks, Hobbs, Seymour and Stratton, 1988, p 101), and from maternal psychopathologies such as narcissistic personality disorder (Chatoor, Dickson, Schaeffer and Egan, 1985) and substance abuse (Polan, Kaplan, Kessler, Schindeldecker, Newmark, Stern, et al., 1991).

Despite a common emphasis on the role of parenting, non-organic failure to thrive is usually identified when an adequate organic explanation cannot be found for the child’s growth failure; it is “a diagnosis of exclusion” (Mayes and Volkmar, 1993, p 22). Recent reviews have repeatedly drawn attention to the inconsonance among investigators in defining the syndrome (Skuse, 1985; Wilcox et al., 1989; Mayes and Volkmar, 1993), and, for the majority of infants, a definition in terms of the absence of organic aetiology lends little to understanding (Lachenmeyer and Davidovicz, 1987); Skuse, Wolke and Reilly (1992) reported that organic factors were responsible for failure to thrive in just 5% of the growth retarded infants they studied. If research and intervention are to proceed usefully, a clear positive definition is necessary. The DSM-IV (American Psychiatric Association, 1996) classification of failure to thrive as a feeding disorder enables a focus on malnourishment, directing investigators to become more specific in identifying and describing each of the multiple contributing factors leading to a child’s inadequate caloric intake (Lieberman and Birch, 1985; Drotar, 1991; Mayes and Volkmar, 1993).

Recognition of the multifarious aetiologies of failure to thrive has lessened the burden of responsibility that was traditionally placed on the mother. Nevertheless, if failure to thrive is a feeding disorder, there is a need to recognise the interactive nature of feeding, and so to consider the primary caregiver, who feeds the child; intervention tends to focus on this individual. That attention may also be justified in light of consistent evidence from mainstream psychology, demonstrating the mother’s role in the development and behaviour of the child (e.g., Cassidy, 1986; Russell and Russell, 1989; Lock, Service, Brito and Chandler, 1989). An effort to attend to other factors should not diminish the importance of studying parenting; on the contrary, such research is necessary to provide a
methodologically adequate evaluation of the traditional notion of “maternal deprivation syndrome” derived from early investigations.

1.3.a parental behaviour

Social development in infancy depends on the interaction between parent and child; the feeding interaction is of critical importance in establishing their relationship (Stern, 1977). The feeding interaction in failure to thrive appears to be unsuccessful, because the child does not achieve an adequate nutritional intake. Drotar (1991) suggested that maladaptive feeding interactions arise because dysfunctional relationship patterns lead to such problems as inconsistency in feeding and conflict at mealtimes, implying that observations of interaction would foster an understanding of the nature of problems within the parent-child relationship.

Early studies (e.g., Patton and Gardner, 1962; Evans, Reinhart, and Succop, 1972; Fischhoff et al., 1971) often drew conclusions about maternal behaviour associated with failure to thrive, but they contained serious methodological problems, and so it is not possible to accept their findings with any confidence. Lachenmeyer and Davidovich (1987) commented that an “overwhelming number” of theorists adopt a psychoanalytic perspective; the methodology of many researchers also follows the psychoanalytic tradition, with an emphasis on case studies and impressionistic analyses that precludes any firm conclusions. For example, Fischhoff and his colleagues carried out unstructured and apparently highly subjective observations of 13 mother-infant dyads; one mother is criticised for wearing “an excessive amount of makeup”. Shapiro, Fraiberg, and Adelson (1976, p 461) argued that “it is the mother who is the key” in failure to thrive, on the basis of the clinical evaluation of a single family.

A number of observational studies (e.g., Chatoor et al., 1985; Chatoor, Egan, Getson, Menvieille, and O’Donnell, 1987; Schmitt and Mauro, 1989) have attempted to identify aetiological subgroups of infant growth retardation, but this research is constrained by methodological flaws. For example, Chatoor et al. and Schmitt and Mauro based their
observations on clinically referred samples, which may be untypical, given evidence that
most cases of infant growth retardation are not identified or referred (Skuse et al., 1992).
In addition, Chatoor and her colleagues’ causal model of failure to thrive was comprised of
subgroups such as “infantile anorexia nervosa”. It may be unwise to draw a parallel
between food refusal in infancy and in later life; the criteria used to make a diagnosis of
anorexia nervosa, such as distortions of body image, which are necessary in DSM-IV
(American Psychiatric Association, 1996) and ICD-10 (World Health Organisation, 1990),
could not be applied to infants.

Other researchers have used improved methodology, while maintaining a psychoanalytic
perspective, to argue that distortions in the mother-child interaction can be understood in
terms of attachment (Bowlby, 1969). Gordon & Jameson (1979) carried out a controlled
study of mother-infant attachment, reporting that 6/12 failure to thrive and 2/12 comparison
infants were insecurely attached. These numbers are too small to allow statistical
significance, and since half the infants who failed to thrive were not insecurely attached, the
results provide very limited evidence that distorted mother-infant attachment is associated
with growth retardation. Drotar and his colleagues (Drotar, Malone, Devost, Brickell,
Mantz-Clumpner, Negray, et al., 1985; Finlon, Drotar, Satola, Pallotta, Wyatt, and El-
Amin, 1985) also studied attachment in infants who were failing to grow; they found
roughly equal proportions of securely and insecurely attached infants, and reported no
differences in maternal behaviour between the securely attached and avoidant groups.
While this implies that growth failure is not synonymous with attachment disturbance,
these findings are limited because no comparison group was studied.

Pollitt, Eichler, and Chan (1975) attempted to address the methodological flaws of previous
research, in a controlled outpatient study of 38 families with a child who was not thriving.
Structured observations in the home indicated that mothers whose children were failing to
thrive showed less physical and verbal interaction with their children than controls. Casey,
Bradley, and Wortham (1984), and Drotar, Eckerle, Satola, Pallotta, and Wyatt (1990) also
carried out standardised home observations; they described a number of differences in
maternal behaviour between cases and matched controls, including lower ratings of sensitivity, emotional expression, responsiveness, acceptance and co-operation.

Observations in both studies were made blind to experimental hypotheses and group status, allowing greater confidence in the results, but reliance on hospital referred samples again limits generalisability. Heptinstall, Puckering, Skuse, Start et al. (1987) carried out one of the few studies using a community sample; standardised home observations of mealtimes were made blind to case/control status, using a time sampling technique which coded the occurrence of food-related behaviours in the parent and the child. A number of differences in parenting behaviour were observed; case mothers were rated as more indifferent or anxious than mothers of thriving children, they showed more negative affect, and they were less likely to give instructions, communicate or socialise at mealtimes.

Through improvements in methodology and objective assessment procedures, recent research has provided some insight into parenting characteristics associated with failure to thrive; this understanding would be enhanced by further community based research. Moreover, the majority of research has been carried out subsequent to the identification of poor growth, and so it precludes the drawing of any causal inferences. Pollitt, Gilmore, and Valcarcel (1978) addressed that issue in a prospective study, which considered whether mother and infant behaviour during feeding would predict infant growth during the first month of life. They carried out standardised ratings of maternal and infant behaviour during a feeding interaction when the child was 20-36 hours old, and noted that children whose mothers switched to a non-feeding activity during the feed (e.g., cleaning the infant) gained less weight. This observation has valuable implications, and points to the need for prospective longitudinal research to inform about the role of parental behaviour in the aetiology of failure to thrive.

In conclusion, methodologically rigorous research shows some evidence of an association between parental behaviour and non-organic failure to thrive, but it may be argued that a focus on caregiving behaviour is insufficient. According to Goodnow (1988), studies that solely address parental behaviour treat the caregiver as an unthinking creature; in doing so,
such research serves a descriptive, rather than an explanatory function, because it fails to account for factors that might influence the mother’s actions. Several studies have aimed to address this criticism, by examining the psychological characteristics of mothers whose children do not thrive.

1.3.b maternal psychological characteristics

1.3.b.i psychosocial functioning

Roberts and Maddux (1982) and Drotar (1991) reviewed the literature concerned with family influences in failure to thrive, and proposed a psychosocial conceptualisation; both reviews commented on the neglect of family factors consequent to a traditional emphasis on the mother. Drotar suggested that family influences should form a theoretical framework for research, based on Belsky’s model of parenting (e.g., 1984; Belsky and Vondra, 1989) in which multiple psychosocial risk factors make a parent more vulnerable to experiencing difficulty. Gordon and Vazquez (1985) reported that an increase in the incidence of failure to thrive corresponded with increased unemployment in an industrial town, and Lachenmeyer and Davidovich (1987) pointed to a variety of risk factors, including psychosocial stressors and child characteristics such as minor congenital anomalies, which may be linked with growth failure. An examination of the literature is necessary to determine the extent to which psychosocial stressors are associated with failure to thrive, and to consider the evidence for an aetiological model.

1.3.b.i.a socio-economic factors and social support

Traditionally, failure to thrive research has paid little attention to the role of psychosocial factors; studies that did consider psychosocial stress are fraught with methodological problems such as lack of comparisons, objectivity, or information about the reliability and validity of the classifications they made (e.g., Fischhoff et al., 1971; Evans et al., 1972; Shapiro et al., 1976; Jacobs and Kent, 1977; Chattoor et al., 1985), so it is difficult to draw any conclusions from their observations. More recently, research has considered specific psychosocial stressors that are known to be associated with parenting difficulties.
and developmental problems - for example, parental conflict (Hetherington, 1979), adverse physical environment (Quinton, 1988), and social support (Oakley, 1988).

Dubowitz, Zuckerman, Bithoney, and Newberger (1989) looked at psychosocial stress in families of growth retarded and physically abused children. The groups shared many characteristics, but families of infants who were failing to thrive reported fewer psychosocial stressors; they lived in larger homes, and were more likely to report having enough social support. Without a comparison group of families who do not have parenting problems one cannot determine whether these psychosocial stressors characterise “pediatric social illness”, as the authors suggested, or whether they simply describe low socio-economic status.

Newberger and his colleagues (Kotelchuk and Newberger, 1983; Newberger, Hampton, Marx, and White, 1986) provided some evidence that families of children who are failing to thrive tend to be isolated. They reported that mothers of growth retarded infants saw their relatives less often, and liked their neighbourhood less than mothers of thriving children. In addition, parental arguments in case families were more likely to result in violence from their partner. The authors noted that these associations do not imply a causal relationship; they studied a referred sample, and mothers may have become isolated because they felt that the “failure” in the child’s failure to thrive was their own. In concordance with Newberger et al., Drotar and Eckerle (1989) conducted a controlled study of families of hospital referred infants who were failing to thrive. These families reported more problematic relationships than controls, although there were no intergroup differences in conflict and expression of anger. These results are limited by substantial sample attrition among cases (45%) and comparisons (43%); there were no demographic differences between those who did and did not complete the study, but the sample offers a highly selective picture of failure to thrive.

By contrast, several controlled studies have reported little association between failure to thrive and psychosocial stress. Drotar et al. (1990) found no differences between families
of hospital referred growth retarded infants and thriving comparisons, in observer ratings
of potentially stressful factors such as numbers present and noise levels. Mitchell, Gorrell,
and Greenberg (1980) used a community sample and Casey et al. (1984) studied hospital
referred infants; neither reported intergroup variation in maternal reports of stressful life
events. Pollitt et al. (1975) observed no case-comparison differences in marital status or
adaptation, and Singer, Song, Hill, and Jaffe (1990) found no intergroup differences in
overall stress, although mothers of growth retarded infants described their child as more
stressful than controls. Singer et al. attempted to address methodological problems in
earlier research by using a standardised psychometric test, the Parenting Stress Index, but
their conclusions should be interpreted with caution because they studied a highly selective
referred sample; a number of mothers were excluded because they were intellectually
impaired, unstable, or psychotic.

Altemeier, O’Connor, Sherrod, and Vietze (1985) considered the aetiology of failure to
thrive with a prospective study in a primary care setting, and noted significant relationships
between subsequent failure to thrive and a number of psychosocial stressors, including
mother’s and father’s life stress. For example, mothers whose children subsequently failed
to thrive had experienced more parental arguments and separations, and their partners were
more likely to have been arrested. Altemeier et al. provided convincing evidence of the role
of psychosocial stress in failure to thrive, but their results should be viewed with regard to
the small sample size; only 15 children in this study were classed as failing to thrive
without organic cause. More importantly, the analysis used by Altemeier and colleagues’
appears to have been inappropriate, because it is based on Pearson product moment
correlations between maternal responses and the dichotomous variable of presence or
absence of non-organic failure to thrive.

In summary, the degree of inconsistency in the literature gives cause for concern. One
would expect psychosocial stressors such as relationship conflicts and isolation to be
exacerbated by the onset and identification of failure to thrive, particularly when the child is
hospitalised as a consequence of his nutritional status. Inconsistency may result because,
while growth failure is influenced by psychosocial stress, it is not necessarily caused by it (Woolston, 1985).

The experience of stress is emotional and highly personal. Cox (1978) noted that this subjectivity leads to methodological problems in the assessment of stress, and that misidentification and misnaming of the stressful experience frequently occur. An individual’s experience of stress depends on her perception of her ability to cope with environmental demands; her perception is in turn determined by a number of individual characteristics, such as age, social learning, and personality. Oakley’s (1988) observations lend support to this model; she noted that psychosocial welfare is related to the mother’s perception of her ability to make use of available social support, and Brewin, MacCarthy and Furnham (1989) emphasised the importance of considering an individual’s “hopes and fears” concerning potential sources of support. Future research might achieve a more useful picture of the role of psychosocial stress in failure to thrive by considering the parent’s perceptions of her environment and her child.

1.3.b.1.b maternal mental health
Numerous investigators have discussed the role of maternal psychological functioning in failure to thrive, with an emphasis on diagnostic classifications and maternal psychopathology. The notion of maternal psychopathology has been prominent in traditional theorising about the syndrome; researchers have described maternal characteristics such as severe depression (Evans et al., 1972), character disorder and chronic anxiety (Fischhoff et al., 1971), substance abuse and psychotic stress reactions (Jacobs and Kent, 1977), narcissism (Ayoub and Milner, 1985) and adjustment disorders (Chatoor et al., 1985). Schmitt and Mauro (1989, p 241) typify the lack of methodological rigour that characterises these studies in their suggestion that, “the bizarre nature of the [child’s] diet will help to disclose a psychotic mother”; perhaps it is not surprising that these dramatic descriptions are almost entirely derived from clinical impression, and that more stringent research has found little evidence of maternal pathology. Ayoub and Milner (1985) found no correspondence between their clinical observations and the scores of
mothers on the Child Abuse Potential Inventory, the only validated instrument that they used.

Singer et al. (1990) carried out one of the few studies utilising a psychometrically validated instrument, the Beck Depression Inventory, to assess maternal psychological wellbeing; the scores of mothers whose children were failing to thrive fell within the normal range for this test. Skuse et al. (1992) examined mothers’ mental state in a controlled whole population survey using another well known instrument, the General Health Questionnaire (Goldberg and Hillier, 1979); no intergroup differences were found, although levels of depression were high among both cases and controls. A number of other investigators have questioned the assumption of psychiatric disturbance by carrying out controlled studies (Pollitt et al., 1975; Kotelchuk and Newberger, 1983; Benoit, Zeanah, and Barton, 1989); their assessments of maternal psychiatric history and current mental health revealed no evidence of maternal psychopathology.

1.3.b.ii maternal cognitions

The lack of evidence of maternal psychiatric disturbance has led to a shift in emphasis away from a pathological model, with greater attention being paid to the way that the mother thinks about her child. Pollitt et al. (1978) observed that synchronisation of feeding depends on the mother correctly perceiving and responding to her infant’s signals, suggesting that mothers’ perceptions and responses would provide a worthwhile area of study when there are problems with the feeding interaction. Despite this implication, the majority of research has focused on mothers’ attitudes and beliefs.

Fenton, Bhat, Davies, and West (1989) raised the issue of cultural beliefs, and Pugliese, Weyman-Daum, Moses, and Lifshitz (1987) asserted that parental health beliefs, such as a fear of obesity and a desire for a healthy diet, are related to failure to thrive in infancy. These investigators raised interesting fields of study, but their contentions were based on clinical experience, so they provide no indication of the importance of these beliefs among parents of thriving children. Casey et al. (1984) carried out one of the few controlled
studies of parental attitudes; they reported several intergroup differences in maternal behaviour but found no evidence of corresponding attitudinal differences. Altemeier et al. (1985) reported that mothers' philosophy about parenting did not correlate with subsequent failure to grow, lending further weight to the conclusion that methodologically stringent studies report few, if any, differences in the psychological characteristics of mothers of growth retarded and thriving children, and implying that there is no relationship between maternal thinking and failure to thrive.

The lack of correspondence between professed attitudes and observed behaviour has long been a source of debate in the field of social psychology (La Piere, 1934; Kutner, Wilkins, and Yarrow, 1952; Wicker, 1969). It has been suggested that the whole concept of attitude should be rejected, but it is perhaps more appropriate to look for problems with experiments which do not demonstrate consistency between attitudes and behaviour, rather than to question the assumption of consistency. A variety of factors influence an individual’s ability to act in a certain way; for example, social pressures (Asch, 1955; Campbell, 1963), time, money (Ajzen and Madden, 1986), and personality (Miller and Grush, 1986). Studies attempting to link a general attitude to a specific behaviour neglect the abundance of intervening variables in the attitude-behaviour relationship; global attitude measures such as “Contentment with Child” (Casey et al., 1984) fail to account for the intricacy of the parent-child relationship, and so cannot be expected to succeed.

Parental ideas “constitute the real environment where children live and grow” (Emiliani and Molinari, 1988, p 20); examination of the cognitive processes underlying parental behaviour can extend understanding of the ideas and beliefs which guide the behaviour of parents whose children fail to thrive. Behavioural differences have been observed between mothers of thriving and growth retarded children, but researchers have yet to explain why parents respond in this way. Skuse, Reilly, and Wolke (1994) found that case and comparison infants were equally likely to sleep through feeds, but infants who failed to thrive were less likely to be woken to be fed. This research indicates the importance of the maternal response to the child: why did the mothers studied by Skuse et al. decide not to
wake their babies? A focus on patterns of maternal thinking associated with the response might prove more useful than a description of isolated characteristics of parent or child.

Recent research by Sturm and Drotar (1991) has drawn attention to the potential value of studying parental cognitions. Sturm and Drotar considered maternal attributions about aetiology, and found that while 47% of mothers ascribed their child’s growth failure to “general physical problems”, only 6% thought that their physician had come to this conclusion; this discrepancy is likely to lead to difficulties with intervention, such as lack of co-operation. Sturm and Drotar reported a number of methodological problems, but their work indicates the capacity of attributional research to inform about maternal thinking in failure to thrive.

In summary, it must be concluded that the literature offers little information about parental thinking associated with failure to thrive. Many investigators have sought to make global classifications, and there have been few attempts to apply theories of social cognition. Research suggests that mothers whose children fail to grow differ from mothers of thriving children in aspects of parenting behaviour such as communication and sensitivity, but there has yet to be an adequate exploration of the patterns of thinking that might guide parental actions. By examining specific processes, such as attributions about or strategies for dealing with difficult child behaviour, the study of parental social cognitions could account for the child’s role in the interaction, rather than viewing him or her as the object of parental beliefs. Existing studies of parental thinking indicate that there is little relationship between parents’ behaviour and their expressed attitudes and beliefs, so future researchers might find it more useful to consider the cognitive mechanisms which might guide a mother’s responses to her child and environment.

1.3.b.iii maternal childhood experiences
Psychoanalytic theory, on which much failure to thrive research has been based, places great emphasis on the role of early adverse experiences in the aetiology of problems in adulthood, and it has generally been thought that maltreated children are likely to become
abusive parents, although more recently, researchers have questioned this assumption (e.g., Kaufman and Zigler, 1987; Simons, Whitbeck, Conger, and Chyi-In, 1991).

Attention has been paid to adverse early experiences in mothers of infants who fail to thrive, with rather mixed results. Early research (e.g., Fischhoff et al., 1971; Evans et al., 1972; Shapiro et al., 1976) related growth failure to the mother’s experience of loss or lack of nurture in childhood, or to “ghosts” in the nursery (Shapiro et al.); these are the ghosts of unresolved conflicts in the mother’s childhood. These studies are generally based on clinical impressions, making it difficult to generalise any conclusions about the role of parental history. Nonetheless, more stringent research has also implied a link between mothers’ early experiences and infant failure to thrive. For example, Pollitt et al. (1975) reported that mothers of hospital referred infants who were failing to thrive had more stressful recollections of childhood than mothers of thriving controls, and Altemeier et al. (1985) observed that negative maternal recollections of childhood - such as feeling unloved as a child, reporting an unhappy childhood, and the frequency of beating by a carer - were related to infant growth failure.

An association between adverse maternal experience and infant failure to thrive has not been consistently observed; Newberger et al. (1986) reported that recollections of childhood did not discriminate between mothers of growth retarded infants and controls. Very little information was provided about the content and validity of their interview, so it might be argued that the assessment failed to measure adverse experiences adequately. However, identical interviews distinguished between mothers of abused children and mothers of non-abused controls, implying that the measure had discriminant validity, and that the lack of differentiation between mothers of growth retarded and thriving infants was genuine.

Dubowitz et al. (1989) compared recollections of childhood among mothers whose children were failing to thrive or had been abused. No group differences were apparent, but there was no control group of mothers without parenting difficulties, so one cannot say whether
the results mean that both groups have had unhappy childhoods or that they have both had happy childhoods. Few mothers reported negative feelings; they may have been reluctant to express their emotions, given the circumstances of the interview (during the child's hospitalisation following abuse or failure to thrive). The mothers' reported lack of negative feelings might also reflect their idealisation of childhood (Main and Goldwyn, 1984), so the interview may have failed to assess their actual experiences.

Benoit et al. (1989) reported inconsistent results in their controlled study of childhood attachment experiences among mothers whose infants were failing to grow. Mothers in the failure to thrive group had less secure representations of attachment than comparisons, according to independent ratings of their responses to a structured interview (The Adult Attachment Interview; George, Kaplan, and Main, 1985), but no case-control differences were found in ratings of childhood on a self-report questionnaire (the Mother-Father-Peer scale; Epstein, 1983, cited in Benoit et al., 1989). The authors concluded that this discrepancy occurred because the interview measure produced a more valid measure of adult attachment; equally, the two instruments may measure different constructs. The Adult Attachment Interview asks specific questions about childhood experiences, which are rated independently; the Mother-Father-Peer scale requires that the respondent makes her own judgements. These judgements may be idealised, and are likely to be subject to a higher degree of distortion than memories of actual events in childhood (Brewin, Andrews, and Gotlib, 1993).

In summary, the literature suggests a link between mothers' recall of adverse early experiences and infant failure to thrive, but this association is clearly not inevitable. Rutter (1989, p 321) argued that "intergenerational discontinuities are at least as striking as continuities"; an understanding of the mechanisms underlying the intergenerational cycle of parenting difficulties requires consideration of why adverse early experiences lead to problems for some parents but not for others. Negative childhood experiences create vulnerability for a variety of problems, such as psychiatric disorder (Andrews, Brown, and Creasey, 1990), and child rearing difficulties (e.g., Dowdney, Skuse, Rutter, Quinton, and
Mainstream psychological research has suggested that the intergenerational transmission of maladaptive caregiving may occur through social learning of inappropriate behaviour (e.g., Feshbach, 1974; Hertzberger, 1983) or through distorted representations of early attachment experiences (e.g., Bowlby, 1969; Main and Goldwyn, 1984); equally, early maltreatment may give rise to psychosocial disadvantage that creates vulnerability for caregiving difficulties (see for example, Rutter, 1989). Models of the determinants of parenting, such as Belsky’s (1984) ecological framework, have indicated that links between a mother’s care experiences and her child’s functioning will be mediated by her current circumstances and cognitions about events in caregiving; this understanding might usefully be applied to studies of children who have failed to thrive.

1.4 **the application of theories from mainstream psychology**

1.4.a **the study of parenting**

The failure to thrive literature has generally made limited use of wider developments in psychology, and consequently it is probable that theoretical development has been impeded in a number of ways. For example, the need for care when using questionnaire measures has been noted in a variety of research settings within mainstream psychology (e.g., Ortony, Clore, and Collins, 1988; Hewstone, 1989; Holden and Edwards, 1989; Brewin et al., 1993); it is apparent from the literature that this body of opinion has had little effect on failure to thrive research.

The study of parental attitudes provides another example of the lack of reference to mainstream psychology in failure to thrive research. Theorists in social psychology have been questioning the utility of studying attitudes for over 20 years, pointing to the complexity of the attitude-behaviour relationship (see Chaiken and Stangor, 1987). With reference to studies of caregiving, Sameroff and Feil (1985) observed that attitudes are only the tip of the iceberg of parental cognition, and Holden and Edwards’ (1989) review of research into parental attitudes highlighted their failure as a means of studying social cognition. Advances in the field of social cognition (see Fiske and Taylor, 1992, for an
overview) have led to an increased understanding of cognitive processes such as attributions and problem solving strategies that have significance for social behaviour and psychological wellbeing (e.g., Brewin, 1985; Rubin and Krasnor, 1986; Stratton, Heard, Hanks, Munton, Brewin, and Davidson, 1986; Hewstone, 1989; Mills and Rubin, 1990). These developments have influenced the study of caregiving; for example, Miller’s (1995) review of research on parental attributions emphasised the potential of this approach, while pointing to a need for more naturalistic study.

Mills and Rubin (1990) proposed an information processing model of parenting, which suggested that parents’ beliefs about child behavior guide their responses in the parent-child interaction. They studied mothers and fathers, and found support for their model: the more negative a parent’s emotional reaction to a hypothetical behaviour problem, the more likely she was to suggest a high power strategy, such as punishment, coercion, or threats, for dealing with the problem. A number of other investigators have made use of developments in social cognition, in their application of attribution theory to work on family dysfunction (e.g., Stratton et al., 1986; Stratton and Swaffer, 1988; Bugental, Mantyla, and Lewis, 1989; Bugental, 1993; Miller, 1995). For example, Bugental and colleagues proposed a transactional model of physical abuse which emphasised the moderating role of parental attributions in the mother-child interaction; they found that “threat-oriented” caregivers were more likely to view children as difficult and to respond to child behaviour with power assertive disciplinary strategies.

Mothers of growth retarded children have been described as less communicative (Heptinstall et al., 1987), accepting (Casey et al., 1984), and co-operative (Drotar et al., 1990) than mothers of thriving controls. To understand how these patterns of caregiving relate to infant nutrition and growth, researchers must consider the influences that determine the parent’s responses in the interaction. Pollitt et al. (1978) reported poorer growth in infants whose mothers switched to a non-feeding activity during the feed, and Skuse et al. (1994) observed that mothers of growth retarded infants were less likely to wake their children for feeds; such behaviour is likely to disrupt a child’s nutritional
intake, but an understanding of why malnourishment occurs depends on the reasons for the mother’s behaviour.

Psychosocial stressors and childhood adversity may increase vulnerability to childrearing problems; however, this association is neither inevitable nor direct. Theoretical models of the aetiology of child maltreatment (e.g., Ammerman, 1990; Hillson and Kuiper, 1994) have highlighted the network of influences that may give rise to caregiving difficulties. Parenting problems have been associated with psychosocial disadvantage; for example, Ammerman (1990) observed that socio-economic disadvantage and lack of support are likely to exacerbate parental stress, and increase the risk of neglect or maltreatment. In addition, maladaptive social information processing about events in child care has been linked with physically abusive behaviour (see, for example, Bugental, 1993, or Milner, 1993), although, to date, there have been relatively few attempts to apply these models in research on other forms of caregiving difficulty. Finally, it is widely held that individuals who were maltreated in childhood are at increased risk of parenting problems (Belsky, Youngblade and Pensky, 1989; Kaufman and Zigler, 1989), through links with parental cognitions or psychosocial disadvantage (see Rutter, 1989). Models of the determinants of parenting, such as Belsky’s (1984) ecological framework or Hillson and Kuiper’s (1994) analysis of stress and coping, have taken account of these potential influences; application of such a framework should enhance understanding of maternal characteristics associated with failure to thrive.

There have been relatively few attempts to apply an integrated model of caregiving to the study of non-organic failure to thrive; researchers have generally focused on specific risk factors, and, as discussed above, studies have been hampered by methodological flaws. Altemeier and colleagues’ (Vietze, O’Connor, Hopkins, Sandler et al., 1982; Altemeier et al., 1985) community-based research is exceptional, in addressing factors including psychosocial functioning and mothers’ childhood care, but the authors may have overestimated parenting difficulties associated with failure to thrive, because their sample had been identified as “high risk”. Accordingly, it may be concluded that an integrated
examination of potential influences on parenting is necessary to address problems found in previous research and evaluate the contention that non-organic growth retardation stems from inadequate caregiving. Such an examination depends on prospective study, and is beyond the scope of the research presented here.

This dissertation explores the current characteristics of mothers and their six year old children who failed to thrive in infancy: as stated previously, findings are descriptive of the sample at the time of data collection, and cannot contribute to an explanatory model of the syndrome. Characteristics observed among participants during the follow-up study may not have been present at the time of infant growth faltering, since data collection was carried out several years after the children were identified as failing to thrive. That argument has particular relevance for the study of maternal characteristics associated with non-organic growth faltering; some of the factors highlighted by previous researchers will reflect constant attributes or experiences that preceded growth faltering, but others could describe unstable stressors that may no longer be present when the child is six.

Measures of maternal experience of childhood maltreatment are based on accounts of events that clearly preceded the child's growth retardation; if retrospective reports are reliable (see Chapters Two and Six for a discussion of this issue), these accounts should remain stable, no matter when data are collected. By contrast, variables such as those describing maternal perceptions of social support or child behaviour are unstable because they refer to the mother's current experiences, which change as time passes and the child develops. Maternal functioning when the child is six will also be shaped by previous events, such as changes in living conditions and family structure, or experiences surrounding infant growth faltering; for example, Newberger and colleagues (1986) argued that social isolation may be a consequence of failure to thrive.

Data collected at age six cannot be applied retrospectively to describe the functioning of mothers in the present sample when infant growth was faltering. Nevertheless, the identification of any aspects of maternal functioning at six years that are associated with
having parented a growth retarded infant should enhance understanding of the long-term correlates of failure to thrive. In addition, variation in the characteristics of children who failed to thrive may be reflected in differential patterns of development subsequent to growth faltering, and these relationships are likely to be moderated by maternal characteristics. The design of the present study does not permit speculation about the aetiology of diverse characteristics among children who failed to thrive, but it should still prove useful to consider whether a subgroup of previously growth retarded children can be distinguished on the basis of mother or child characteristics at the age of six.

The present study is descriptive, and does not seek to evaluate the traditional "maternal deprivation" model of failure to thrive, but the review presented above has uncovered little methodologically adequate evidence that non-organic growth faltering can be ascribed to inadequate caregiving. In addition, a model of non-organic growth retardation as a form of maternal maltreatment is theoretically flawed by a failure to account for potential child effects and wider family influences.

1.4.b child characteristics

Holt and Mackintosh in 1933 (cited in Skuse, 1985, p 174) were among the first to contend that child-related factors may be responsible for non-organic failure to thrive, in terms of a "congenital weakness of constitution". Since then, there has been comparatively little attention to child characteristics associated with the syndrome; Wolke, Skuse and Mathisen (1990, p 249) commented that previous research has generally "ignored or cursorily recorded infant behavior and parent-infant joint behavior". Such neglect is surprising, in light of the emerging re-conceptualisation of failure to thrive as a disorder of feeding (see Mayes and Volkmar, 1993, and DMS-IV, American Psychiatric Association, 1996). Studies of infant feeding clearly demonstrate that the relationship between child and carer is transactional, requiring that both partners make an active contribution to the interaction (Skuse, 1994), and so successful feeding depends in part on the infant's ability to elicit an adaptive response to his or her needs, by clearly signalling cues of hunger and satiety (Harris and Booth, 1992).
Pollitt et al. (1978) conducted a prospective study of mother and infant feeding and weight gain during the first month of life, and reported that infants who opened their eyes less often and refused the nipple more frequently gained less weight. Pollitt and colleagues observed the feeding interaction when infants were between 20 and 36 hours old, and so it seems unlikely that infant behaviour reflected a learned response to previous feeding experiences. The children studied by Pollitt and colleagues did not fail to thrive, but Skuse (1994) commented that feeding difficulties may arise if infants with neurological abnormalities emit feeding cues that are more difficult for the caregiver to interpret; infant temperamental characteristics such as fussiness might also contribute to a maladaptive style of feeding interaction.

Non-organic growth retardation has been associated with child characteristics. For example, Goldson, Milla and Bentovim (1985) ascribed non-organic failure to thrive to mixed organic and non-organic causes, including “difficult” child temperaments. In addition, Ramsay and her colleagues (1993) conducted an observational study of infants who were failing to thrive, and highlighted a variety of problems, such as appetite disturbance and difficult feeding behaviour. These studies are limited because they did not include thriving comparisons - Goldson and colleagues based their observations on clinically referred cases, and Ramsay et al. compared children with organic and non-organic failure to thrive - making it difficult to determine whether the child characteristics they reported are specific to failure to thrive.

By contrast, a number of researchers have compared growth retarded and thriving children, in observational studies of infant-mother interaction. Mathisen et al. (1989) found evidence of oral motor problems, such as aversion to touch around the mouth, among infants who were failing to thrive, and non-organic growth faltering has also been linked to infant emotional expression. Polan, Leon, Kaplan, Kessler et al. (1991) reported that infants who were failing to thrive showed less positive affect and more negative affect than comparisons during feeding, and Abramson’s (1991) analysis of infant facial expressions
indicated that growth retarded children used significantly more negative expressions than thriving controls. In addition, the play observations conducted by Wolke et al. (1990) revealed that non-organic growth faltering was associated with higher levels of infant irritability and low levels of responsivity; for example, infants who failed to thrive were described as more difficult and unhappy and less attentive than pairwise matched comparisons.

These findings are consistent with the argument that child characteristics contribute to non-organic growth faltering, but the studies outlined above were carried out subsequent to identification of infant growth failure, and so observed child characteristics may be a cause or consequence of malnourishment. Grantham-McGregor, Stewart, and Powell (1991) found that infant malnutrition was associated with characteristics such as apathy and inactivity, and Polan et al. noted that the behaviour of infants who failed to thrive was explained by the degree of acute and chronic malnourishment. In addition, fussy or faddy eating could reflect early feeding of a very bland and limited diet (Skuse, 1994), implying a need to account for previous feeding experiences.

The role of child characteristics in failure to thrive can only be determined through prospective research, which precedes the onset of growth faltering; as noted previously, this approach is beyond the scope of the present descriptive study. Nevertheless, child characteristics such as irritability or lack of clarity in feeding cues could exacerbate or perpetuate feeding difficulties, regardless of their part in aetiology. Attempts to study mother or child functioning associated with failure to thrive must recognise the transactional nature of the parent-child relationship.

1.4.c family characteristics

While the failure to thrive literature has made some attempt to account for the child's role in the parent-child relationship, it is subject to criticism for neglecting an observation commonplace in the literature on both parenting and child development: both parent and
child function within a wider family system, and the mother does not constitute the sole influence on child development.

1.4.c.i the role of the father

Research in developmental psychology has highlighted the role of fathers in child development. Although, in Western society, fathers are rarely the primary caregivers (e.g., Russell and Russell, 1987), they still play an important part in the family, and appear to have a distinct role in parenting. Relative to mothers, paternal behaviour tends to be more directive, unpredictable and interfering (Power, 1985), and children respond differently to each parent; for example, the four year old boys studied by Power, McGrath, Hughes and Manire (1994) were more likely to comply with fathers’ directions than mothers. In addition, Greenberger, O’Neil and Nagel (1994) found that fathers who reported unsatisfactory work experiences tended to advocate harsh disciplinary practices with their children, suggesting a need to consider the implications of psychosocial stress for both parents, in contrast to the traditional emphasis on the mother.

Studies such as these clearly indicate the value of studying fathering; the father’s role continues to warrant attention even when he is living separately from the mother and child (Healy, Malley and Stewart, 1990). Nevertheless, very few investigations have examined the father’s role in infant feeding, and such neglect may be justified because fathers are less involved in day-to-day caregiving tasks (e.g., Beail, 1985; Russell and Russell, 1987). That argument is undermined by researchers such as Littman, Medendorp and Goldfarb (1994), who demonstrated the importance of paternal influences on maternal feeding practices. Littman and colleagues studied decisions about breastfeeding in a large sample of postpartum mothers, and reported that the only significant predictors of maternal intention to breastfeed were the father’s level of education and his approval of breastfeeding. When fathers strongly approved of breastfeeding, 98.1% of mothers intended to breastfeed the child, compared with less than 30% when the father expressed indifference.
In line with the feeding literature, there has been little attention to paternal characteristics associated with failure to thrive; most research has focused the father’s role as a source of stress or support for the mother (e.g., Newberger et al., 1986). Drotar and Sturm (1988) suggested that fathers constitute an important influence on failure to thrive, through their participation in parenting and relationship with the child’s mother, but their observations are based on referred case studies. Controlled research is necessary before any conclusions may be drawn about the father’s role in infant growth faltering.

The research reported in this dissertation is concerned with maternal characteristics and the development of children who failed to thrive, and an examination of links between fathering and infant growth failure is probably not feasible, given practical constraints on data collection (see Chapter Two for a discussion of these issues). Moreover, the retrospective design of the study precludes any understanding of the father’s role in the aetiology of growth failure; this concern can only be addressed through future prospective research. Nevertheless, the findings of the present study will be limited by lack of attention to paternal characteristics, in terms of their potential influence on mother and child functioning.

1.4.c.ii the role of siblings

An emphasis on studying parenting neglects the observation that families usually have several members (e.g., White and Woollett, 1992). Most children have siblings, and sibling relationships are linked to child development (e.g., Slomkowski and Dunn, 1992) and to parent-child relationships (e.g., Kendrick and Dunn, 1980). Again, a paucity of research has examined links between sibling relationships and early feeding or failure to thrive, but consideration of the developmental literature on siblings implies the utility of such a perspective.

If early growth retardation is associated with subsequent limitations in child cognitive functioning, as has been suggested (e.g., by Skuse et al., 1994), this pattern of risk might be mediated by the quality of sibling interactions. Youngblade and Dunn (1995) linked
children’s quality of play with siblings to performance on a test of false belief, and Slomkowski and Dunn (1992) found that the strategies children used in sibling conflict correlated with their emotional perspective taking skills. In addition, Stormshak, Bellanti, and Bierman (1996) studied a group of “behaviorally disruptive” children, and noted that children who had involved relationships with their siblings were more attentive in a classroom environment. These findings imply that the developmental functioning of children who fail to thrive would be illuminated by consideration of their sibling relationships.

Sibling relationships also warrant attention with regard to their influence on the parent-child relationship: there is considerable evidence of differential treatment of siblings by parents. For example, McHale, Crouter, McGuire and Updegraff (1995) noted a number of links between family structure and parenting of siblings. Parents were generally more affectionate towards younger siblings, and boys with older sisters received most parental discipline. Such differential treatment could plausibly carry over into feeding interactions, and so have significance for the study of failure to thrive.

Remarkably few investigations have considered sibling influences in families of growth retarded children; in an exceptional study, Fosson and Wilson (1987) commented that sibling rivalry was associated with inadequate feeding interactions among mothers and infants who failed to thrive. Fosson and Wilson did not include a control group of infants who were growing normally, and so it is unclear whether sibling rivalry is linked to feeding interactions with thriving children. However, Feiring and Lewis (1987) studied mealtimes among families of thriving children, and found that the nature of verbal interaction between siblings was related to mealtime structure. Meals in larger families were noisier and less orderly than those in smaller families; this finding may have particular relevance for failure to thrive research, given the contention that families of growth retarded children may be more chaotic (e.g., Hanks et al., 1988).
These observations imply the utility of exploring sibling relationships within families of previously growth retarded children; this issue seems specially apposite given the present study’s concern with correlates of child development. Nonetheless, it is argued that an adequate examination of the role of siblings cannot be achieved within the limitations of the research reported here (see Chapter Two). Specifically, this dissertation reports on a whole population survey of children who failed to thrive, and family structures within the sample are probably diverse. Such heterogeneity precludes analysis of sibling influences on mother or child functioning, because findings could be confounded by variability in factors such as family size or birth order. Nevertheless, as discussed above, siblings constitute a significant influence on child development and family functioning, and so by neglecting this area, the present study may offer an incomplete understanding of children who failed to thrive.

1.5 conclusion

In 1967, Bullard, Glaser, Heagarty, and Pivchik pointed to the difficulty that exists in establishing the precise role of the parent in failure to thrive; understanding has progressed remarkably little since then. The literature is characterised by inconsistency, and it is very difficult to be confident of the part played by maternal characteristics such as psychosocial functioning, caregiving cognitions, or childhood experiences. Current research suggests an association between parenting behaviour and infant growth retardation, but there has yet to be an adequate prospective study of the influences that guide mother and child behaviour in the interaction. This dissertation does not offer such a study: the research reported here aims to explore the long term correlates of infant growth faltering for the mother and child, by describing maternal characteristics associated with a history of failure to thrive and with the developmental consequences of non-organic failure to thrive. Such a focus is arguably justifiable, given the caveat that it does not offer a comprehensive account of potential influences on mother or child functioning.

A descriptive analysis of maternal characteristics can be applied to examine how mothers whose children failed to thrive interpret and respond to child behaviour, and to increase
understanding of their subjective experience of past and present psychosocial stressors; this approach may be used to address the three general objectives of the present study.

First, early malnourishment has previously been associated with developmental problems (e.g., Skuse et al., 1992), and so an accurate description of mother and child functioning is necessary to identify characteristics that indicate differential patterns of development among children who fail to thrive. A second issue concerns the current conceptualisation of failure to thrive as a feeding disorder (DSM-IV, American Psychiatric Association, 1996), indicating a need to consider the mother, by virtue of her role in the feeding relationship. It should prove useful to consider current maternal functioning, through comparisons of mothers whose children failed to thrive with those who grew normally in the first 15 months of life. Finally, children who have failed to thrive may not comprise a homogeneous group (Woolston, 1985), and so analyses should serve to indicate whether it is possible to distinguish a subgroup of previously growth retarded children on the basis of mother or child characteristics at the age of six.

The present follow-up investigation of children who failed to thrive will only be useful if research addresses the methodological deficiencies of earlier investigations; as mentioned previously, the literature has been subject to criticism because of difficulties in sampling and design. The present study seeks to overcome the methodological constraints of previous research, and to examine links between current maternal functioning and the development of children who failed to thrive in infancy. Accordingly, the dissertation will adopt the following structure.

Chapter Two will outline the design of the investigation that forms the basis of this thesis, with reference to methodological issues pertinent to research in the field of failure to thrive. Subsequently, Chapter Three will explore the long term implications of early growth retardation, by comparing the current functioning of the present sample of children who failed to thrive or grew normally in infancy, in terms of their physical and psychological development. The dissertation will then go on to examine the extent to which maternal characteristics at six years are related to the occurrence, timing, and developmental
consequences of failure to thrive, by addressing areas of maternal functioning highlighted by the caregiving literature (e.g., Belsky, 1984; Mills and Rubin, 1990; Miller, 1995)

First, Chapter Four will explore the current psychological and social functioning of mothers of previously growth retarded and thriving children, in terms of maternal mental health, social support, and socio-economic circumstances. Chapter Five will then examine maternal social cognitions about events in caregiving; specifically, this section will address the mothers' understanding of, and strategies for dealing with problem child behaviour. The third area to be examined concerns the mothers' childhood experiences; Chapter Six will explore the extent and nature of adverse family care experienced by mothers whose children failed to thrive or grew normally in infancy. Chapter Seven aims to integrate information about each aspect of maternal functioning, to determine whether these influences inter-relate, and are associated with child functioning. Finally, Chapter Eight will critically evaluate the findings presented in this thesis, with reference to implications for research and intervention with failure to thrive.
chapter two
methodological issues

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Chapter One highlighted several theoretical inadequacies in the failure to thrive literature, including lack of reference to current perspectives in caregiving research. Chapter Two will consider the methodological problems of previous research; these difficulties have limited any conclusions that could be drawn from the literature about the psychological characteristics of mothers whose infants fail to thrive, and so they have implications for the design and method of the present follow-up study of mothers and their previously growth retarded children. Accordingly, this chapter will also include a general discussion of the methodological approach of the research reported here, with specific reference to sampling and the style of measurement. The present study has sought to address a range of problems encountered in previous investigations, but it is nonetheless subject to a number of constraints, and so finally this chapter will consider ethical concerns, potential methodological difficulties, and statistical issues.

2.1.1 Sampling
Theoretical progress concerning non-organic failure to thrive has been restricted by persistent sampling problems, despite a move towards controlled studies (Drotar, 1990). Research has been considerably constrained by definitional inconsistency, which limits the
comparability of results of different studies; these concerns are discussed in more detail in Chapter Three. Notably, there is disparity among researchers regarding the severity and duration of growth faltering that is defined as failure to thrive, and this variation is aggravated by diverse approaches to the measurement and analysis of anthropometric data.

Sampling problems have also been exacerbated because investigators still tend to study hospital referred cases, although research using hospitalised infants is prone to a number of confounding variables. Foremost, it is doubtful that referred cases are representative of infants who fail to thrive. Skuse, Wolke, and Reilly (1992) provided evidence of the need for community based research from a whole population survey; only 28% of children identified as growth retarded had been referred to a paediatrician about their developmental delay, implying that children who are referred are not typical of those who fail to thrive. In addition, Mitchell, Gorrell, and Greenberg (1980) noted considerable differences between failure to thrive in hospital referred cases and in the primary care setting, indicating that findings based on hospitalised samples cannot be generalised to a wider setting.

The use of hospital samples fails to consider the impact of referral and intervention on the family. Clinical intervention tends to emphasise the role of non-medical factors, and this emphasis probably contradicts the parents’ understanding of the syndrome; Sturm and Drotar (1991) found that mothers were most likely to attribute their child’s growth failure to medical problems, so they were probably unhappy with non-medical intervention. In addition, a non-medical approach may be seen as threatening by parents because it implies their failure to care for their child (Kotelchuk and Newberger, 1983; Miguel and Burton, 1990). Problems of sample attrition have affected a number of investigations (e.g., Drotar and Eckerle, 1989; Sturm and Drotar, 1991); these difficulties might occur because the assessment procedure is threatening or invasive in some way.

Studies of referred samples have often been additionally constrained by inadequate use of comparisons. For example, Dubowitz, Zuckerman, Bithoney and Newberger (1989) compared growth retarded and physically abused children, but failed to consider families
who were not experiencing problems, and Ramsay, Gisel and Boutry (1993) studied feeding skills among children with organic and non-organic growth retardation, but did not include observations of thriving children. Findings of other researchers (e.g., Ayoub and Milner, 1985; Drotar, Malone, Devost, Brickell et al., 1985) are considerably limited by the omission of any sort of control group. Unless growth retarded and thriving children are studied, it is impossible to determine whether findings are characteristic of failure to thrive, or whether they describe some more general trait. Furthermore, several studies that have included thriving comparisons are subject to potential bias because the investigators were not blind to case-control status (e.g., Pollitt, Eichler and Chan, 1975; Gorman, Leifer, and Grossman, 1993); this situation may not be surprising if research is carried out by the clinicians responsible for intervention.

In conclusion, studies of hospital samples may have some value in informing clinicians about the cases they are likely to see, but until improvements are made in identification and referral, hospital based research cannot provide a representative picture of failure to thrive, and so can only make a limited contribution to theoretical development. To understand the long term correlates of failure to thrive, there is a need for community-based research that samples an unreferred population of previously growth retarded children and includes a comparison group of children who thrived in infancy.

2.1.ii methods of assessment

2.1.ii.a questionnaire and interview methods

Dowdney, Skuse, Heptinstall, Puckering and Zur-Szpiro (1987) drew attention to the variability of assessment measures in the failure to thrive literature, which may explain the diversity of research findings. The extensive use of questionnaires has probably further impeded theoretical development. Reviews of the literature (e.g., Lachenmeyer and Davidovicz, 1987; Drotar, 1991) have concluded that theory and research must account for the complexity of the syndrome; this requirement has been acknowledged in behavioural studies, which have adopted increasingly detailed empirical assessments, with, for example, the use of structured schemes for coding specific aspects of mother and infant interaction.
behaviour (e.g., Heptinstall, Puckering, Skuse, Start, Zur-Szpiro, and Dowdney, 1987; Mathisen, Skuse, Wolke and Reilly, 1989; Drotar, Eckerle, Satola, Pallotta, and Wyatt, 1990; Wolke, Skuse, and Mathisen, 1990). Less stringent requirements have been accorded to the study of parental psychological characteristics, which continues to rely on questionnaires and global assessments.

Several studies reported problems of “retardation” or variable literacy among mothers whose children do not thrive (e.g., Jacobs and Kent, 1977; Singer, Song, Hill, and Jaffe, 1990); these individuals will experience difficulty with paper and pencil measures. Singer et al. (1990) excluded an unspecified number of mothers from their sample because they were “intellectually unable”, “mentally impaired”, or “psychotic”, and so, presumably, they were unable to respond to the questionnaire measures used in the study. The occurrence of these characteristics in mothers of children who are not thriving surely warrants consideration; their exclusion creates biased sampling and offers an inadequate picture of maternal characteristics associated with failure to thrive. Many studies report a low level of formal maternal education; questionnaire measures may be threatening to individuals who have limited verbal skills or who have had little experience of written tests. These concerns seem particularly apposite since earlier research with the mothers who took part in the present study found that they had diverse cognitive abilities (see Skuse, Wolke, Reilly, and Chan, 1995).

Questionnaire methods may also be criticised because they generally demand that the parent thinks in fairly abstract terms - such as rating her degree of “contentment with child” (Casey, Bradley, and Wortham, 1984). Most people do not customarily think in abstract global terms, so maternal responses may be an artifact of the test, because the mother generates a series of transient beliefs in response to the items in the questionnaire (see Stratton, Heard, Hanks, Munton, Brewin, and Davidson, 1986). Holden and Edwards (1989) conducted a wide ranging review of studies of parental attitudes, which argued for a reappraisal of questionnaire methods. They also conducted an interview study of mothers’ interpretations of a parental attitude questionnaire, and observed “an alarming amount of
error” (p 46), stemming from a range of problems, including vague wording, a mismatch between questions and experience, lack of situational specificity, and difficulties with the Likert rating scale. Holden and Edwards concluded that the standard questionnaire format can never adequately assess parental thinking, and suggested that investigations of maternal social cognition should be based on realistic stimuli reflecting commonly occurring child-rearing situations or problems.

That contention corresponds with Andrews and Brown's (1993) observations about the efficacy of interview and questionnaire measures in a large (N = 146) sample of women from an inner-city population similar to that used in the present study. They found that an interview measure provided a more sensitive predictor of respondents’ psychological functioning, relative to more global questionnaire assessments, and concluded that interview methods are more likely to reflect real-life situations, because they are less limited by abstract and generic descriptions. In addition, Brewin, Andrews and Gotlib’s (1993) discussion of retrospective measures of childhood experience suggested that criticisms of the reliability of retrospective recall may be overcome by use of semi-structured interview techniques, and investigator-based rating. Global judgements, of the kind required by questionnaire methods such as the Parental Bonding Instrument (Parker, Tupling and Brown, 1979), may be more subject to distortion, and the authors noted that interview methods “seem to be most suited for research assessments of specific childhood experiences” (p 93).

Interviewing may also improve sample co-operation and response rates. Cartwright’s (1988) comparison of the efficacy of interview and postal questionnaire methods in a study of maternity services reported a 92% response rate for interviewing, compared with 75% using questionnaires. This suggests that interviewing may be advantageous for the present research, given the concerns about sample attrition noted above. It may be concluded that semi-structured interviewing offers a useful approach for studying caregiving cognitions, psychosocial functioning and childhood care experiences among mothers in the present study. Nonetheless, it cannot be assumed that interview methods are inevitably reliable or
valid, since the information provided may be prone to bias or socially desirable responding (see e.g., Cannel and Kahn, 1968).

Interviews may be subject to bias stemming from a number of sources; Andrews (1991) noted that information may not be reported if it has been forgotten, or is considered too insignificant to be reported. The perceived threat of material for the respondent may also hinder recall and reporting, or information may be lost simply because the respondent did not know about an event. There is evidence of these difficulties from interview studies in a variety of settings. For example, Fairburn and Beglin (1994) compared interview and questionnaire assessments of disordered eating in a sample of young women and observed that the interview method was less successful in assessing complex symptoms such as concerns about body shape. In addition, Martin, Anderson, Romans, Mullen et al. (1993) carried out a large scale survey of retrospective accounts of childhood sexual abuse (CSA), and found higher rates of disclosure of abuse within the family using a postal questionnaire method, compared with interviewing.

Together, these observations imply that reports of personally threatening experiences such as abuse or disordered eating may be limited by an interview method, but it is noteworthy that Martin and colleagues discussed a number of women who initially did not report CSA, but went on to give accounts of abuse in response to detailed descriptive questions during interview. This finding supports the contention that the efficacy of interviewing may depend on the nature of questioning. Andrews commented that non-judgmental wording of questions should increase the accuracy and fullness of participants' responses, since it is less likely to cause embarrassment or threaten self-image, and Brewin et al. highlighted the importance of phrasing questions to elicit accounts of specific experiences (which are less subject to distortion than more global measures); these descriptions can then form the basis of independent investigator ratings that avoid the potential biases of participant based judgements. With care to address these requirements, it seems probable that an interview based approach can offer valid and reliable assessment of maternal functioning in the present study.
2.1.a.ii.b  the research setting

The environment in which families are studied also influences the reliability and validity of research findings, and hospital based assessments may provide an inadequate picture of family relationships. Skuse (1985) observes that mother-infant dyads are seldom “their usual selves” when interacting in the clinic; in addition, a clinical assessment of failure to thrive precludes consideration of the family context of the syndrome (Drotar, 1991) and of situation specific stressors that influence child rearing (Roberts and Maddux, 1982). Studies of parent-child interaction in a clinical setting will offer a less representative picture of family life than research carried out in the home.

An additional, pragmatic advantage for home-based research is based on the argument that visiting families at home may ensure greater co-operation, because participation requires less time and effort from respondents than a clinic-based study, in which the family has to travel to the researcher. Home-based assessment may therefore provide a valuable means of addressing the problems of sample attrition that have constrained several previous studies of failure to thrive; for example, almost 50% of Drotar and Eckerle’s (1989) sample did not complete their study. Home-based assessment may help to overcome this problem, by making fewer demands on the families who take part.

2.1.a.ii.c  methods of assessment: conclusions

In summary, an interview approach seems likely to provide the most useful information about maternal functioning, since it addresses potential variability in mothers’ cognitive skills, and enables more reliable retrospective measurements of maternal experience. By interviewing in the family home, researchers should also achieve higher levels of co-operation, and a fuller understanding of the context of the mother-child relationship.
2.2 the method of the present study

2.2.a sample

The research reported in this thesis utilised an existing sample of 47 children who failed to thrive without identifiable organic cause in infancy and their pairwise matched controls who grew normally in infancy (a detailed account of sample characteristics is given in Chapter Three). These groups were identified by a whole population survey of an inner-city population, and were originally studied when the children were 15 months old (see e.g., Skuse et al., 1992, 1995). The author visited these families when the children were about six years of age.

Use of this sample accounted for a key aim of the present investigation: by studying a group of six year old children who had failed to thrive in infancy, it was possible to examine the developmental correlates of early growth retardation. In addition, several difficulties noted in previous research were addressed. First, the existence of a pairwise matched control group, drawn from the same population as the case group, provided a sample of comparisons who thrived in infancy. In addition, because the sample was unrefereed, the failure to thrive group children had not received any intervention because of their growth retardation\(^1\); as discussed previously, intervention may have confounding effects on assessments of mother or child functioning. Finally, the format of existing records ensured that the author was blind to case-control status throughout the assessment period.

2.2.b assessment of maternal functioning

2.2.b.i the mother's interview

With regard to the methodological concerns discussed above, the present research used a semi-structured interview method to investigate maternal psychological characteristics; all interviews were carried out during visits to the families at home.

\(^1\) For ethical reasons, relevant health professionals were informed of case group children's failure to thrive at the time of the 15 month assessment, but no intervention was undertaken by the research team (Skuse, personal communication).
The present study was carried out as part of a larger investigation (The South London Growth and Development Study) and so the mother's interview included questions that did not form part of the research reported here. The average duration of each interview was three hours (this varied from two to six hours, depending on the participants' responses); material included in this dissertation comprised approximately two-thirds of the mother's interview. The portions of the interview included in this thesis concerned the aspects of maternal functioning indicated in Chapter One; a detailed account of the measures used is given in the chapters that refer specifically to each area of maternal functioning.

2.2.b.i.a psychosocial functioning
As detailed in Chapter Four, the semi-structured interview included questions concerning family socio-economic status (see Osborn, 1987), and a questionnaire index of maternal social support (Pascoe, Ialongo, Horn, Reinhart, and Perradatto, 1988) was adapted for use in a structured interview format. In addition, an existing semi-structured interview assessment was used to enquire about mothers' symptoms of disordered eating (PSE 10/SCAN; Wing, Babor, Brugha, Burke et al., 1990). The only exception to interview-based measurement of maternal psychosocial functioning was inclusion of the Beck Depression Inventory (Beck, 1978). This was used in preference to an interview method because of time constraints on data collection, but to account for potential variation in literacy, mothers were asked whether they would prefer to complete the questionnaire by self-report, or to have the questions verbally presented by the author.

Investigator-based ratings of maternal disordered eating were based on transcripts of tape-recorded responses to the interview questions; all other indices of psychosocial functioning were scored on the interview schedule.

2.2.b.i.b cognitions about caregiving
Maternal cognitions about events in caregiving were explored using verbally presented vignettes of child behaviour problems; these were followed by semi-structured questions to enable investigator rating of maternal attributions and strategies for dealing with problem
child behaviour, based on transcripts of the tape-recorded interview. This approach to studying maternal thinking is examined in more depth in Chapter Five.

2.2.b.i.c childhood experiences
An existing semi-structured interview (see for example, Andrews and Brown, 1993; Bifulco, Brown and Harris, 1994) was included to allow investigator ratings of retrospective accounts of childhood maltreatment, using transcripts of the tape-recorded interview. See Chapter Six for a more detailed discussion of this measure.

2.2.b.ii the pilot study
Prior to commencing data collection, the author interviewed a group of mothers (N = 15), selected from the same population survey as the main sample, whose children failed to thrive for three months or less during the first year of life. A number of changes to the interview were made as a result of piloting. Notably, the original version included a semi-structured interview assessment of maternal experience of threatening life events, as part of the assessment of maternal psychosocial functioning. Semi-structured questions, taken from Brown and Harris (1978), asked about the 12 life events identified by Brugha, Bebbington, Tennant, and Hurry (1985) as having “moderate or marked long term threat” for respondents from an inner-city sample similar to that used in the present study. Very few mothers in the pilot study reported any of these life events, and so it was decided that inclusion of this measure was not justified, given concerns about the duration of the interview.

The phrasing of some interview questions was adapted to improve clarity, in light of maternal responses during piloting. For example, minor changes were made to the vignettes used to study maternal cognitions. One story, concerned with child eating problems, initially described a child who refused “to eat or drink anything”; this account was re-phrased to describe a child who was refusing to eat (drinking behaviour was not mentioned), since the initial version achieved minimal variation in maternal responses (almost all the pilot group mothers said they would seek professional help if their child
refused all food and drink). No other substantive alterations were made to the interview as a result of piloting.

2.2.b.iii procedure
Following the 15 month assessment, the administrator of the original research team (Jennifer Smith) maintained contact with the families who took part in the study, by sending Christmas cards to the children every year. Before the research reported here began, the project supervisor (DS) wrote to the families to ask if they would be willing to take part in a follow-up to the initial study. Subsequently, the author approached the families to arrange a suitable time for the mother’s interview. As stated previously, all families were visited at home. Standardised instructions were read to the mother (see Appendix 2.a), including an assurance of confidentiality that applied to all information provided, and they were asked if they had any questions, and if they would consent to the interview being tape-recorded. If they agreed, the entire interview was recorded; otherwise the author took notes.

With reference to Robson’s (1993) comments on interview structure, general opening questions gradually built throughout the interview towards more sensitive issues, before finishing with less threatening topics and the opportunity for questions. The interview opened with questions about social demography, and moved on to topics not addressed by this thesis (such as the home environment). Mothers were then asked about their eating patterns, and the middle section of the interview was concerned with cognitions about events in caregiving. Subsequently, the interview addressed maternal experience of social support, and additional aspects of socio-economic status, before going on to explore mothers’ experiences of adverse childhood care. Maternal depression was then measured by self-report, and mothers were given an opportunity for questions and discussion of any issues raised during the interview. Finally, mother and child structured play was video-recorded (this material is not included in the dissertation) and the children were awarded a certificate for taking part in the study. Mothers were given a final opportunity for questions, and were asked to consent to a school-based assessment of the child by the
author. It was stated that data collected during the school visit would be confidential, and that feedback would be available for the mothers, but would not be provided for the school. Mothers and children were thanked for their participation in the study.

2.2.c assessment of child functioning

2.2.c.i the school visit

This study aimed to employ an assessment of child functioning that would offer a comprehensive picture of developmental outcome, while reflecting practical demands such as time constraints. Guidelines for tests of children’s psychological functioning (e.g., McCarthy, 1972; see also Culbertson and Gyrke, 1990) have emphasised the importance of testing in a standardised environment that is free from interruptions. Such surroundings could not be ensured if children were tested at home, and so developmental assessments were conducted at the child’s school, whenever possible; this approach has an additional advantage in minimising the time commitment demanded of each mother.

The children’s cognitive and social-cognitive abilities were measured by the author using standardised direct assessments. Given the prediction that case and comparison mothers might differ in their understanding of difficult child behaviour (see Chapter Five), it was decided that maternal ratings of child functioning may be inappropriate for the present study; mothers’ caregiving cognitions will influence their judgements of child social or cognitive functioning. Additionally, it has been argued that teacher ratings could be subject to possible bias. For example, Vitaro, Tremblay and Gagnon (1995) observed that ratings of aggressive and hyperactive child behaviours were influenced by characteristics of the child’s past and current teachers. Moreover, Drotar, Stein and Perrin (1995) questioned the utility of the most widely used teacher rating method of assessing child behaviour, the Child Behavior Checklist (see Achenbach and Edelbrock, 1981), commenting that it provided a limited and potentially misleading assessment of child social competence. In light of these considerations, it was reasoned that direct evaluation of child cognitive and

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2 One case group child was not attending school during the assessment period, and so, on this occasion, the evaluation of child functioning was carried out at home.
social cognitive skills, using existing standardised methods (see McCarthy, 1972, and Rubin, 1988), would provide the most useful developmental measurements. The school assessment took approximately 1.5 hours; all data collected during the school visit is presented in this thesis, and as stated previously, the author was blind to case-control status during data collection and scoring of all measures.

Finally, data on child physical development were provided by school nurse records of children’s height and weight for age at six years. Chapter Three contains a more detailed account of measures of child physical and psychological functioning.

2.2.c.ii the pilot study

The developmental functioning of a group of children who failed to thrive for three months or less in infancy, and whose mothers who took part in the pilot study, was evaluated prior to data collection with the main sample of children. Two additional children from this population, whose mothers declined to be interviewed for the pilot study, were assessed, so in total the measures of child functioning were piloted with a sample of 17 six year old children.

McCarthy (1972) highlighted the need for examiners to be confident, familiar with the test battery, and experienced in working with young children, in order to ensure that the child is co-operative and at ease, and to enable the examiner to discern variations in performance. With regard to these requirements, piloting the child measures was primarily aimed at familiarising the author with the test materials, and gaining experience in working with children from the sample population. Because the tests used for child assessment were standardised and well-established, it was not generally necessary to refine or develop these measures as a result of piloting. Nonetheless, the test of social cognitive skill was Canadian, and so the names of some children described in the stories contained in this test were adapted, to ensure they were familiar to British children.

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3 For example, the name Kristen was changed to Christine, and Joe was used instead of Josh.
2.2.c.iii procedure

The author arranged visits to the children at school at the convenience of the head teacher and class teachers concerned; mothers were notified by phone or letter of the time and date of the school visit. In line with guidelines for the tests of cognitive abilities (McCarthy, 1972), mothers were not invited to be present for the child assessment. One control group mother attended the school visit at her child’s request, and the mother of the child assessed at home was in the test room, but engaged in other activities, according to McCarthy’s guidelines.

When the author arrived at the school she re-introduced herself to the child, who was taken out of the classroom to a quiet room. The tests were described as “games and stories” and introduced to the children using standardised instructions. First, children completed the tests of cognitive functioning, according to the standard testing instructions (McCarthy, 1972)\(^4\). Visits were timed so that completion of the cognitive ability scales would coincide with the school “playtime”, affording an opportunity for the child to rest before continuing with the assessments. A small number of children asked to stay and continue with the games, instead of having a break, and this was permitted. Following the rest period, children were presented with the tests of social-cognitive skill, again using standard test instructions (Appendix 3.b.i). Finally, they were asked if they had any questions, congratulated for working so hard, and thanked for their help, before returning to the classroom.

2.3 ethical issues

Three ethical issues demanded particular consideration in the present study. First, there was a need to consider the potential implications of asking respondents to discuss traumatic personal experiences, such as the experience of adverse childhood care. In addition, the fact that the author had no clinical role in intervening with the families may be advantageous from a theoretical perspective, but this situation could create difficulties if families seek

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\(^4\) Please refer to McCarthy (1972) for details of the test procedure, instructions and scoring of the McCarthy Scales. An example of a completed score sheet for the McCarthy Scales is presented in Appendix 3.a.
intervention of some kind from the researcher. A third related issue concerns confidentiality; while this was assured for all families, it might be questioned if a child was found to be at risk.

2.3.a sensitive information

An interview method is appropriate for assessing sensitive issues, because it allows a relationship to develop between the questioner and respondent (Robson, 1993). Nevertheless, the ethics of including interview questions about maternal psychological functioning and adverse childhood care must be considered, since it would clearly be inappropriate to encourage a participant to talk about harrowing experiences, and then move on to the next part of the interview, without having any procedure for dealing with potentially traumatic disclosures. This concern is particularly apposite given the apparent efficacy of the interview in eliciting accounts of maternal experience; for example, during piloting and data collection for the main study, several mothers described experiences of childhood abuse for the first time.

Concerns about the potential effects of discussing traumatic experiences were addressed in several ways. Foremost, the interview was designed to ensure that mothers were placed under no pressure to answer sensitive questions. A semi-structured framework ensures flexibility in questioning and responses, and care was taken to ensure that mothers felt they had a choice about answering, through use of phrases such as “Would you mind if I asked you a few questions about …?” (see, for example, Appendix 2.d.i). In addition, as stated previously, the interview was structured so that, for example, the researcher first raised questions about mothers’ eating patterns after almost one hour of more general questions, and maternal care experiences were explored after approximately 1.5 hours, during which time there was the opportunity for a rapport to develop. This approach might improve the quality of information, by making mothers more likely to feel they could describe difficult issues, but it should also be easier for participants to feel they can decline to respond when they are more relaxed with the interviewer.
2.3.b intervention

Questioning about past or present maternal stressors raised an additional area of potential difficulty if mothers requested help or advice regarding the problems they described. The author does not possess any clinical qualifications, and her role as researcher additionally precluded any intervention. Accordingly, a pool of information about a range of support groups was compiled, and this information was offered to mothers if they requested assistance relating to any area covered by the interview, or if they described a history of adverse childhood care. In addition, the open-ended format of interview questions let mothers talk at length if they wished to do so; while this did not constitute intervention, several mothers commented informally that they had enjoyed the opportunity to discuss their concerns.

Assistance was given to three families, who requested that the author write to the local housing authority in support of applications for re-housing (because of severe damp in one case, and because of overcrowding in the homes of the other two families). It was agreed, through discussion with one of the dissertation supervisors (DS), that this involvement was justified ethically, in terms of the families’ health and wellbeing; moreover, it was unlikely to have any effect on the quality of data collected for the present study.

2.3.c confidentiality

Schools made occasional requests for information about child functioning, but staff were informed that this material was not available, and the ethical requirement for confidentiality was maintained in all cases except three. Two children performed very poorly on all developmental tests; for example, they scored below the minimum on most indices of cognitive functioning. Both children were in mainstream education, and a non-specific indication of their difficulties was given to their class teachers. In addition, on one occasion the author witnessed physical abuse towards a case group child’s sibling during the visit to the family at home. Records indicated that the family had previously been assigned a social worker, and so the author contacted her and expressed general concerns about the family. In these instances, it was agreed through discussion with one of the
dissertation supervisors (DS) that a breach of confidentiality was warranted in the interests of the children's wellbeing; detailed information was not provided so that confidentiality could be protected as much as possible.

2.4 methodological limitations
As discussed in the introduction to this chapter, the present study aimed to address some of the difficulties of previous research on failure to thrive, by improving sampling and measurement techniques. Regardless of these developments, the research reported here is subject to a number of potential methodological constraints, which demand consideration before the presentation of findings in subsequent chapters.

2.4.a the retrospective design
The review of the literature in Chapter One concluded that relatively little is known about the mother’s role in the aetiology of non-organic growth retardation. Data collection for the present study was carried out several years after the children had been identified as failing to thrive, and so the present thesis is not concerned with developing or evaluating a causal model of failure to thrive. Instead, the research reported here is descriptive; it seeks to identify the long term correlates of non-organic infant growth faltering, so it depends on studying a sample of children who have previously failed to thrive. The definition of failure to thrive as a disorder of mother-infant feeding (American Psychiatric Association, 1996) implies that this objective depends on consideration of current mother and child functioning.

Retrospective research may be subject to criticism because it relies on the respondents’ accounts of previous events, and so the reliability and validity of information cannot easily be established. This caveat has particular relevance for evaluation of mother’s childhood experiences, given evidence that memories of adverse care may be subject to distortion or idealisation (e.g., Main, Kaplan, and Cassidy, 1985), but it is pertinent with regard to all indices that rely on recall of past events, such as measures of social support and disordered eating. According to Brewin, Andrews and Gotlib (1993), the unreliability of retrospective
reports has generally been exaggerated, and, as noted above, a semi-structured interview, using independent investigator ratings of respondents' accounts of specific experiences, can overcome potential sources of unreliability.

The validity of retrospective reports may be established by comparing the respondent's account with information from other sources - for example, researchers have compared childhood reports by siblings (e.g., McCrae and Costa, 1988), or checked accounts of abuse against agency records (Robins, Schoenberg, Holmes, Ratcliff, Benham, and Works, 1985). While these methods have some utility, they are intensive in terms of time and cost, and may in themselves be unreliable. Mothers vary in their disciplinary practices and attention to siblings (McGuire, Dunn and Plomin, 1995), and this differential treatment is further evidenced by the phenomenon of scapegoating in abusive families (e.g., Dare, 1993): siblings may have quite different experiences of childhood care. In addition, many researchers have questioned the reliability of agency records of child abuse; for example, Ards and Harrell (1993) cited a number of factors that influence the likelihood of maltreatment being recorded, including the child's age and the nature of the abuse.

Criticisms of retrospective reports can only be fully overcome by prospective research, but a semi-structured interview approach, and use of independent investigator-based rating, should provide reasonably reliable accounts of maternal experience, while being efficient in terms of time and cost within the framework of the present study.

2.4.b matched pair comparisons

Use of pairwise matching addresses the problems of inadequate or inappropriate comparisons that have limited findings of previous studies, but arguably it may undermine observations of intergroup differences if cases and comparisons are matched on variables that could influence mother or child functioning. Schlesselman (1982) commented that matching cases and controls on a variable, or set of variables, ensures that participants cannot be distinguished on that basis. That issue has been noted in previous controlled studies of failure to thrive, because the majority of families studied come from socio-economically deprived backgrounds, and so control groups are often matched for socio-
economic status when they are selected: comparison families are also likely to experience many of the psychosocial stressors that have been thought to be associated with failure to thrive. Control group children did not fail to thrive, but socio-economic disadvantage may create risk in other ways (Rutter, 1989) that are not addressed by the researcher; these children may manifest other problems, such as poor socio-emotional or behavioural adjustment. The lack of group differences reported by a number of investigators (e.g., Casey et al., 1984; Singer et al., 1990) may reflect a common degree of psychosocial stress among case and control group families, as a consequence of their socio-economic circumstances.

Comparison families in the present study were selected by matching on a range of variables, including area of residence (see Chapter Three), and at the time of the fifteen month assessment, cases and controls were of similar socio-economic status (see Skuse et al., 1992). Accordingly, the present study may be less likely to detect intergroup variation in psychosocial functioning, because pairwise matching has created similar levels of social disadvantage among cases and controls. That caveat warrants attention, but by contrast, it may be argued that such matching is necessary nonetheless, to ensure comparability across groups. Studies of child development have been criticised for applying middle-class Western standards (e.g., Morss, 1990), and, arguably, if the present research did not account for social demography by pairwise matching, then intergroup differences might arise simply because cases are less middle-class than controls. In addition, pairwise matching should help to illuminate those characteristics of psychosocial functioning that are associated specifically with a history of failure to thrive, rather than other developmental problems, in a uniformly disadvantaged sample.

2.4.c  reliability
Structured questionnaire methods have been criticised for offering insensitive indices of maternal characteristics, and they may have poor validity if global questions are unrelated to real-life experiences. By contrast, a more qualitative semi-structured interview approach is
also subject to criticism, with regard to the reliability of questioning and ratings of participants’ responses.

The reliability of interview based research is arguably compromised because flexibility implies a lack of standardisation in the presentation of questions that may influence responses (Robson, 1993). The semi-structured format of interviews in the present study attempted to overcome this difficulty to some extent, by determining the order and content of questions in advance (see Appendices 2.b, 2.c, and 2.d) but some variation was inevitable, to enable effective interviewing: an interview is a kind of conversation, and so it is essential that the interviewer recognises and accounts for the respondent’s cues. Moreover, as discussed previously, the greater reliability of questionnaire methods may serve little purpose if maternal responses are artifactual.

Interview methods are also limited by the potential unreliability of investigator-based ratings. Independent ratings may overcome sources of bias in participant judgements (Brewin et al., 1993), but their value depends on the accuracy and reliability of investigators’ decisions. In the present study, ratings of maternal functioning were made from transcripts of tape-recorded interviews, and reliability was established through training (where available) followed by independent rating of transcripts by the author and a second person, both of whom were blind to case-control status (reliability levels are reported in relevant chapters). For most indices, inter-rater agreement was less than 100%, although it was generally satisfactorily high; nonetheless, the findings of the present study must be viewed with regard to the reliability of investigator ratings.

2.4.d practical constraints

The methodology of the present study is partly limited by the pragmatic concerns of “real world research” (Robson, 1993). The three hour home visit, and one and a half hour school assessment demanded a substantial commitment on the part of each family, and the need to use this time as efficiently as possible occasionally guided methodological decisions. For example, as discussed previously, an interview assessment of mothers’
depression would be advantageous, with regard to addressing criticisms of questionnaire measures (e.g., Andrews and Brown, 1993), but limited time for evaluation of maternal psychological functioning precluded interviewing about maternal depression and eating disorders. Given the classification of failure to thrive as a feeding disorder (see DSM-IV, American Psychiatric Association, 1996), maternal eating patterns were considered to have greater relevance for the present thesis, and so mothers’ eating was assessed by interview, but maternal depression was measured by self-report questionnaire. This decision may have limited understanding of mothers’ depressed mood.

Most importantly, it must be recognised that the study offers an incomplete picture of family functioning associated with failure to thrive. The characteristics of other family members have not been explored, and, as discussed in Chapter One, fathers and siblings are known to play a significant role in mother-child relationships and child development. The results may also be influenced by contextual factors such as maternal mood at the time of interview. In addition, because each mother was interviewed only once, the quality of data depends on the mothers’ accounts; as stated above, it was not possible to check for consistency or to validate reports by using other sources of information. It is important to view findings with regard to these limitations, but equally, it may be argued that they are common to any inquiry of this kind, and probably could not be overcome. Broadening the scope of data collection would place even greater demands on each family, and increase the risk that the research could become tiring or boring for participants, and so the quality of information would decline (see, e.g., Robson, 1993); this argument has particular relevance for assessments of young children (see McCarthy, 1972).

2.5 statistical issues

The methodological concerns outlined in Section 2.4 have several implications for analyses of the data collected in the present study, and these issues must be considered prior to any presentation of findings in subsequent chapters. Foremost, it is argued that, because the study is exploratory, a conservative approach to data analysis is appropriate. In addition,
analysis may be restricted by non-parametric data; the matched pairs design could also complicate the process of data analysis (Schlesselman, 1982).

2.5.a a conservative approach to analyses

Given methodological restrictions such as the retrospective design, it is important to remember that the study is exploratory, in seeking to describe current characteristics of mothers and their children who failed to thrive in infancy, and so a conservative approach to analysis is appropriate. Such a framework may reduce the likelihood of detecting statistically significant effects, but, arguably, this caution is warranted. Robson (1993) notes a number of problems with overemphasis of significance testing, and warned of the danger of buying statistical significance “at the expense of real life triviality” (p 351): effects detected by use of less power efficient methods may be more robust than findings based on inappropriately powerful analyses. The design of the present study necessitates a large number of statistical analyses (see Chapters Three to Seven), and so the likelihood of detecting statistically significant effects by chance is increased; in applied or exploratory research it is particularly important to ensure that findings are practically and statistically significant (e.g., Barlow, Hayes, and Nelson, 1984; Kerlinger, 1986).

An example of this approach to analysis is provided by use of Yates’ Correction for Continuity in Chi-Square comparisons based on 2 x 2 tables; in addition, Fisher’s Exact Test was used when expected cell frequencies were less than five. This method may be criticised, because as Armitage and Berry (1994) observed, these tests may be overly conservative: a result significant at 5% will be found in less than 5% of hypothetical repeated random samples from a population in which the null hypothesis is true. Accordingly, it should be noted that the Chi-Square analyses presented in this thesis offer a cautious estimate of intergroup differences, but given the concerns outlined above, it is argued that such prudence is justifiable.
2.5.b analyses of non-parametric data

As detailed in subsequent chapters, the data collected in the present study were predominantly non-parametric; for example, scores on a number of indices of mother and child functioning were not normally distributed, and several measures were based on qualitative ratings on ordinal scales. With regard to these constraints, non-parametric analyses were conducted whenever possible, but in some situations, parametric analyses were necessary in order to test experimental predictions. For example, identification of factors associated with the development of growth retarded and thriving children relied on multiple regression, which assumes that data are parametric. It was decided that parametric analyses were justified in such cases, providing that key test issues such as normality of residuals and the ratio of cases to indicator variables were not confounded (see Tabachnik and Fidell, 1996, for a detailed discussion of test issues); nevertheless findings of parametric analyses must be interpreted with caution, given the increased likelihood of a Type I error.

2.5.c matched pairs analyses

"In the analysis of a matched study, it seems that one is forever trying to decide whether the pairing should be retained in any particular instance".

(Schlesselman, 1982, p 123)

To avoid reduced power efficiency, matched pairs analyses were used wherever possible, but for a variety of reasons, it was necessary to ignore pairwise matching for certain aspects of data analysis. First, Chi-Square analyses for independent groups were used to examine case-control differences in categorical variables. This course was taken because McNemar's Test is designed to examine change over time in a single sample (Siegel, 1956) and so its use with matched pairs may over-estimate the extent of intergroup similarity, and increase the likelihood of a Type I error. Matching of cases and controls was also ignored for logistic regression analysis, conducted to test the classification of failure to thrive history from maternal characteristics at follow-up (see Chapter Seven), because no
equivalent test for matched pairs was available (see Tabachnik and Fidell, 1996). Logistic regression is advantageous because it makes relatively few assumptions about indicator variables, in comparison with techniques such as discriminant function analysis; a more conservative approach is warranted with non-parametric data, and in light of the exploratory nature of the research.

It may be concluded that independent groups analyses are justifiable in this context, but regardless of these arguments, the power of analyses is significantly reduced when pairwise matching is ignored; for example, Schlesselman suggested that a matched design may yield up to a 40% reduction in unexplained variance. Accordingly, the probability that comparisons will identify intergroup variation is diminished, and this must be recognised in interpreting the results of independent groups analyses presented in this dissertation.

2.6 conclusions

With regard to the issues discussed in this chapter, it should be noted that the present research is descriptive and exploratory: the retrospective design precludes any aetiological conclusions. Nevertheless, by investigating a community based unreferred sample of previously growth retarded children, and their comparisons who thrived in infancy, and applying research techniques developed in other studies of psychological functioning, the present study has the potential to offer valuable insights regarding the long term correlates of failure to thrive for the mothers and children in this sample.

Methodological problems have limited the findings reported in the failure to thrive literature. Notably, many studies have made inadequate use of comparison groups, and so it is impossible to determine whether their observations are characteristic of failure to thrive. Clinically based research with referred samples does not account for the potential effects of intervention, and it may offer a biased understanding, since the majority of cases of infant growth retardation are not identified and referred (Skuse et al., 1992). In addition, objectivity may be hampered if researchers are responsible for intervention. Research in the home may provide a better indication of the family context of the
syndrome, and should address problems of sample attrition by reducing the demands placed on participants.

Methodological inadequacies have been exacerbated by the inconsonance of approaches to studying parental psychological characteristics, and understanding has probably been additionally limited by reliance on global questionnaires that offer insensitive measurement of maternal thinking, and are potentially confounded by variation in respondents' cognitive skills. Any attempt to apply developments in the caregiving literature that were described in Chapter One will benefit from the implementation of research methods that address these difficulties. Notably, it has been argued that semi-structured interviewing offers a flexible approach, which avoids artifactual responding by making reference to real-life situations, and can overcome potential sources of bias through independent rating of responses.

With regard to these concerns, the present study aimed to describe maternal social and psychological functioning and child physical and psychological development in a community sample drawn from a whole population survey; mothers and their six year old children who failed to thrive without organic cause in infancy were compared with pairwise matched controls. Families were visited at home, and maternal functioning was examined using a semi-structured interview (with one questionnaire measure) that explored mothers' psychosocial characteristics, cognitions about events in caregiving, and experience of adverse childhood care. Standardised developmental assessments were used to examine children's cognitive and social cognitive skills; these measures were carried out in schools to ensure an optimal test environment. In addition, school nurse records of children's height and weight for age provided data on child physical development.

The research reported in this dissertation has addressed several limitations in the literature, but it is potentially constrained by a number of practical, methodological and statistical issues. The study is retrospective in design, and does not seek to address the aetiology of non-organic infant growth faltering: subsequent chapters describe current functioning among mothers and their children, who have previously failed to thrive. In addition,
although pairwise matching of cases and comparisons addresses the problem of inadequate controls in previous research, matching may have given rise to a disadvantaged control group, and so obscure evidence of intergroup variation. It is argued that this risk is justified, to ensure that the groups are comparable. Finally, the greater sensitivity of a semi-structured interview measure may be confounded because qualitative approaches are likely to be less reliable that questionnaire methods, both in terms of the presentation of questions and rating of responses. Steps were taken to address these concerns, by standardising the order of questions, and testing agreement between two independent raters (where appropriate).

The present study may also have been limited by factors associated with research “in the real world”. Steps were taken to address possible ethical problems arising from questioning about sensitive or threatening issues, and from concerns about confidentiality and requests for intervention or assistance. Practical considerations, including the need to limit the time and commitment demanded of participants, occasionally restricted methodological decisions, and it is important to recognise the potential influence of factors beyond the scope of the present research.

Consideration of results presented in future chapters must take account of several statistical issues that arose in the present study. It was argued that a conservative approach to analysis should be adopted, because the research is exploratory. In addition, data for several indices were ordinal and not normally distributed, so non-parametric analyses were used when possible. Parametric techniques such as multiple regression were used in instances where there was no appropriate non-parametric means of testing predictions. Although steps were taken to try and ensure that test assumptions were not confounded, it is important to recognise that this course increases the probability that analyses will falsely support experimental hypotheses. By contrast, on certain occasions it was necessary to use independent groups analyses for comparisons of pairwise matched cases and controls, reducing the likelihood that intergroup variation will be detected; this procedure was considered justifiable when no equivalent matched pairs analysis was available.
The research reported in this thesis may offer a less extreme picture of the long term correlates of failure to thrive than has previously been offered in the literature. The referred samples that form the basis of earlier studies may have been identified because the families show overt signs of dysfunction, which correspond with clinicians’ understanding of the causes of non-organic growth failure (Sturm and Drotar, 1991); cases may be less likely to be identified if they do not conform to a traditional “maternal deprivation” model. In addition, a conservative approach to statistical analyses, while justifiable, may further reduce the likelihood of detecting intergroup variation in mother or child functioning. It is argued that this caution is warranted, with regard to the methodological and statistical constraints outlined above: the present study is exploratory in nature, and so cannot provide a definitive account of the long term correlates of non-organic failure to thrive. Nevertheless, the design and method employed should ensure a sensitive and reliable description of the maternal characteristics associated with a history of failure to thrive, and with the developmental consequences of failure to thrive, offering greater potential for generalisability, in terms of research and intervention, than questionnaire research with selective referred samples.
# Chapter Three

## Child Characteristics

### 3.1 Introduction

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3.1 introduction

“Growth is a product of the continuous and complex interaction of heredity and environment. ... Some interactions are more critical and dramatic.”

(Tanner, 1989, p 119)

This chapter will focus on the sample of children who took part in the present study, with the aim of describing their physical and psychological development at six years of age. The broad objectives of the chapter are as follows:

• to consider the implications of early failure to thrive for later physical stature
• to examine any relationships between early growth faltering and later social cognitive and cognitive abilities.

In order to achieve these objectives, it is necessary to address issues associated with the study of infant growth failure, and to account for sample characteristics when the children were first seen, by the original research team, at 15 months of age.

3.1.a definitions of failure to thrive

Two primary issues arise when considering definitions of infant growth failure. First, a consensus is necessary among clinicians and researchers concerning the degree of growth failure regarded as indicative of failure to thrive. Second, the basis of diagnosis on the sole criterion of physical growth demands consideration.

3.1.a.i criteria for defining growth failure

As noted in Chapter One, there is considerable variation in the literature regarding the severity and duration of growth failure defined as failure to thrive. The implications of diverse definitions for understanding the nature and incidence of the syndrome have been consistently highlighted in reviews as a cause for concern (e.g., Skuse, 1985).

Commonly, the third centile is used as a criterion for growth failure, but it has been argued
that this definition is too strict because it excludes infants with severe growth faltering who
do not fall below this centile band (e.g., Mayes and Volkmar, 1993).

Lack of consensus about other aspects of the diagnostic procedure further impairs
consistency. There is variation in the use of measurements of height or weight to establish
growth patterns, and in the analysis of anthropometric data. Many researchers continue to
use the Tanner-Whitehouse (e.g., 1975) norms (e.g., Dowdney et al., 1987), which
formed the basis for diagnosis of growth failure in the present sample at 15 months. These
norms are based on random sampling of approximately 2000 children from London
schools during the 1960s (see Tanner, 1989). Tanner’s (1989) discussion implies an
emphasis on the study of height; he argues that “weight has come to have quite a
disproportionate importance in the minds of many people” (p. 197). Nonetheless, it is
much easier to achieve an accurate measurement of weight than of height, particularly in the
first two years, when height measurements are based on supine length, which differs from
standing height (Tanner, 1989). Charts offering an index of weight for height are also
subject to difficulties in interpretation, since centile distributions are influenced substantially
by age.

In addition to considerations about the type of measure used, the advantages of longitudinal
or cross-sectional measurements must be addressed. A child’s growth velocity is likely to
be more important than his or her exact position on a centile chart, and Drewitt (1994,
personal communication) argues that the analysis of growth curves offers more useful
information than reliance on centile charts. Wright and colleagues’ (1994) Thrive Index
offers another longitudinal approach, which points to a potential difficulty with reliance on
centile charts. This index, calculated from the difference between a child’s predicted and
actual growth, indicated that 41% of children in their sample with subnormal weight gain
were above the third centile for weight at six weeks. Longitudinal study of physical
development is not always practically feasible, but it must be remembered that any single
measurement of height or weight offers limited information about a child’s growth, since it
does not account for variation in growth with time.
Analysis of growth is also obscured by controversy regarding the need to control for the genetic influence of parental stature (see Tanner, 1989). The influence of parental stature is likely to be important in considering growth disorders; a small child of small parents is less likely to be seen as a cause for concern than a child of similar stature with large parents.

The stature of each parent contributes equally to the child’s height, and so it is important that average parental height is used in analysis, to ensure that neither parent is given undue emphasis in calculating the influence of parental stature (Tanner, 1989). The need to account for mid-parent height can give rise to difficulties in studies of children who may not live in two-parent families. In such cases, maternal estimates of father’s height might be used to provide an index of parental stature, but it would be difficult to gauge the reliability of these judgements. Given that “garbage in, garbage out” is the auxologist’s motto” (Tanner, 1989, p178), the utility of an estimated index of parental stature may be questioned.

3.1.a.i criteria for defining failure to thrive

The central aim of this thesis is to illuminate the long term correlates of infant growth faltering, by examining mother and child functioning at six years; the need to consider the mother stems from current definitions of non-organic failure to thrive. The children studied in the present research were classified according to traditional diagnostic procedure, in that non-organic failure to thrive is diagnosed if no medical explanation can be found to account for a pattern of poor growth.

The literature reviewed in Chapter One indicates a tradition of ascribing non-organic growth retardation to some kind of failure on the part of the parent, as a form of abuse or neglect. Overall there is little empirical evidence for such an attribution; such support as there is comes almost exclusively from studies of clinical samples. Although the results of these studies are obscured by methodological flaws, they do indicate a distinction between referred and non-referred families. Presumably, certain factors make families more distinctive, and so more likely to be identified by community health workers. Such an assumption is hardly surprising, and implies an observation highlighted in reviews (e.g.,
Woolston, 1983; Mayes and Volkmar, 1993) but overlooked by a global definition based on growth: not all cases of failure to thrive are alike.

A diagnosis based on the single symptom of growth neglects the likelihood that growth failure may arise from a variety of causes. The present descriptive study of children who have failed to thrive does not address aetiology; future research might usefully consider causal issues by studying variation of characteristics within a sample of infants who fail to thrive, in addition to any comparison with thriving children, aimed at identifying variables universally associated with growth failure.

With reference to the present research, it may be argued that an examination of definitions necessitates consideration of the implications of failure to thrive for child development. If the disorders that present as failure to thrive are indeed diverse, it is unlikely that the syndrome will have a uniform outcome, unless early physical growth is the primary determinant of later development. Accordingly, understanding the consequences of infant growth failure also depends on analysis of within group variation.

3.2 the 1986 cohort
3.2.a the sample population

The investigation was designed as a prospective epidemiological study, based on a whole population survey of all 1986 live births in a geographically delimited, racially heterogeneous inner-city area (population 140,000). The district is quite severely disadvantaged and fairly uniform, with regard to the inhabitants’ socio-economic status. Growth of cohort infants was monitored from birth, and the children were originally studied between 12 and 16 months of age. Forty seven infants, who failed to thrive without identifiable organic cause, were compared with a pairwise matched control group.

---

1 All details about definition of the sample population, and findings at 15 months, are taken from Skuse, Wolke, and Reilly (1992), and Skuse, Reilly, and Wolke (1994).

80
3.2.b the cohort at 15 months

Skuse et al. (1994) cite research (e.g., Frank, 1985) indicating that there may be a critical period of development in early infancy during which the cerebellum may be particularly vulnerable to the effects of malnutrition. Evidence from a number of studies of infant growth failure has implied a link between early failure to thrive and impairments in cognitive performance (e.g., Leonard et al., 1966; Dowdney et al., 1992). The cognitive abilities of the sample at 12 to 16 months were examined using the Bayley Scales of Mental Development (Bayley, 1969). Skuse et al. (1992) report small but statistically significant differences between the groups in their scores on the Mental Development Index ($p < 0.007$) and Psychomotor Development Index ($p < 0.004$). Skuse et al. (1994) also considered cognitive development at 15 months in terms of growth trajectories, and found that children whose growth faltered within six months of birth showed greater difficulties in both mental ($p \leq 0.001$) and psychomotor development ($p \leq 0.01$) than those whose growth faltering began later. Analysis of variance indicated that even when potentially confounding psychosocial variables were take into account, growth trajectory predicted cognitive and psychomotor functioning, implying that,

"the first six postnatal months do constitute a sensitive period for growth and mental development."

(Skuse et al., 1994, p 540)

3.3 the cohort at six years:
long term correlates of failure to thrive

3.3.a aims

Assessments of child characteristics at the time of the follow-up study were carried out with two-fold aims. First, the study was concerned with evidence for continuity in characteristics observed during the initial study, notably, the cognitive impairments apparent at 15 months. In addition, a definition of non-organic failure to thrive should account for long term correlates of the syndrome, and so might be clarified through consideration of two potentially opposing hypotheses:
If growth faltering in infancy has a critical adverse effect on child development, impairments in physical and mental development could be predicted for the failure to thrive group as a whole.

Alternatively, child developmental functioning may correspond to factors other than early physical growth. If infants who fail to thrive form a diverse group, it might be predicted that these infants will show no single pattern of developmental outcome at six years of age.

### 3.3.b Physical Development at Six Years

There is some evidence that growth failure in infancy has a long term impact on physical development; methodological difficulties such as sampling problems make it difficult to draw clear conclusions. However, Skuse and colleagues (e.g., 1992) report on a whole population survey of four-year-olds born in 1980, in which children who had failed to thrive in infancy were found to be proportionately small (weight for height), according to Tanner and Whitehouse (1984) norms. In addition, Mayes and Volkmar (1993) comment that severe, sustained growth failure during the first year is likely to affect physical growth. Failure to thrive in the present sample was defined by relatively strict criteria (growth below the third centile for at least three months), implying that children with a history of infant growth faltering might show restricted physical development at six years, according to the following hypotheses:

- Children with a history of failure to thrive would be smaller than comparison children at six years, with reference to height for age, weight for age, or height for weight for age.
- Children who showed “early” failure to thrive (severe growth faltering in the first six months) would show greater impairments in physical development than children classed as “late” failure to thrive (growth faltering primarily in the second six months of the first year).
“recovery” of physical stature

Environmental growth failure in childhood, or psychosocial short stature, is usually defined for clinical and research purposes as height and/or weight below the third population centile (e.g., Mayes and Volkmar, 1993). Psychosocial short stature is a rare condition (Skuse et al., 1994), and so growth failure in infancy may have implications for later physical development such that children who have failed to thrive are small for age, but grow above the third centile. Should this growth pattern be apparent, children may only be a few centimetres shorter than same age peers, while below average in terms of population norms. If moderate growth failure is apparent, it may be useful to distinguish between the following groups:

- children with a history of failure to thrive, whose height and weight for age are substantially below average
- children with a history of failure to thrive, whose height and weight are relatively close to age related norms.

Such a distinction would allow recognition that failure to thrive may be associated with long term limitations in physical development, yet would allow that a minority of children who have failed to thrive may fulfil more stringent definitions of growth failure. Tanner (1989) observes that many children who are severely malnourished in infancy go on to catch up with comparisons in terms of somatic and psychological development, and he cites Richardson’s (1975) observation that failure to recover is generally associated with more disadvantaged social, physical and biological environments. A distinction between children with a history of growth failure who have and have not “caught up” in their physical development is likely to offer a useful criterion for considering factors influencing outcome at follow-up, and so it was decided that the present study should utilise this differentiation.

3.3.c cognitive development

Widespread concern has been noted regarding the implications of nutrition in early life for brain growth and so for potential cognitive development, since severe growth faltering may impede neurological development. As seen in Section 3.3, there were case-control
differences in performance on indices of mental and psychomotor development when the children in the present sample were assessed in infancy. In addition, within the case group, early growth faltering was associated with greater cognitive impairment than was later failure to thrive.

There is clearly a need to consider links between physical development and cognitive abilities in the present sample at six years, giving rise to several hypotheses:

- Children who have failed to thrive in infancy will perform more poorly on indices of cognitive ability than children with no history of growth failure.
- Children classed as "early failure to thrive" (growth faltering primarily in the first six months of life) will show greater cognitive impairments than children classed as "late failure to thrive" (growth faltering primarily in the second six months of the first year).
- Limited catch-up following early growth failure is likely to be associated with disadvantage, which in itself may limit cognitive development (e.g., Tarnowski and Rohrbeck, 1993). Accordingly, it is hypothesised that children who are smaller at follow-up will show greater impairments in cognitive ability than children classed as "larger" (height or weight for age at or above the 20th centile).

3.3. d social cognition

Failure to thrive has been said to be related to parental maltreatment and deficits in cognitive development, and so the syndrome might be expected to be associated with difficulties in social adjustment that are seen in other groups of children with cognitive impairment or experience of abuse (e.g., Pianta et al., 1989).

Dodge (1986) commented on the variety of definitions of social competence adopted in intervention and research. Such definitions are reflected in the diversity of methods adopted for the study of child competence, from scales where child behaviour, competence or popularity are rated by others, including parents, teachers or peers (e.g., Achenbach and Edelbrock, 1981; see, e.g., Williams and Gilmour, 1994, for a review of sociometric
approaches), to methods in which social skills are examined directly by observing or interviewing the child (e.g., Rubin and Krasnor, 1986).

Rubin and Rose-Krasnor (1992) suggested that a social problem solving approach, based on an information processing model of child social competence, is likely to capture the functional properties of social behaviour. The assessment of children’s social problem solving skills typically involves presenting the child with a series of hypothetical social dilemmas and requesting that he or she think about potential solutions to these problems.

Rubin and Rose-Krasnor outline several advantages of such a procedure. The experimenter can consider responses to dilemmas which may not occur during the course of naturalistic observation. In addition, specific dilemmas are unlikely to arise with consistency during naturalistic observations of children within a large sample; presentation of hypothetical problems allows comparison of responses to a single dilemma. Finally, interview assessment is almost invariably less time-consuming than observation, although observational methods ensure consideration of a child’s “real-life” goals and strategies, and so may have greater construct validity in assessing social competence.

Hypothetical measures of social problem solving may not offer information about children’s responses to naturally occurring dilemmas, but there is considerable evidence of an association between social problem solving skills and other measures of social competence in children. For example, hypothetical tests of social problem solving skills distinguish between aggressive, isolated and popular boys (e.g., Richard and Dodge, 1982; Rabiner, Lenhart, and Lochman, 1990), and Downey and Walker (1989) reported an association between social problem solving and adjustment. In addition, Pettit, Dodge, and Brown (1988) concluded that social problem solving patterns in four to six year old children served to mediate between early family experiences and peer and teacher ratings of child competence.
The research described above implies the validity of tests of social problem solving for assessing social competence, suggesting that it may be useful to examine social problem solving skills among children with a history of failure to thrive. Direct assessment of child competence was thought to be necessary for the present study because hypotheses explored in forthcoming chapters consider the possibility that case and comparison mothers might differ in their understanding of difficult child behaviour; mothers’ caregiving cognitions will influence their judgements of child social or cognitive functioning. Consequently, any assessment of child competence that relied on maternal ratings of child behaviour was likely to be inappropriate; given time constraints on data collection, an observational approach was also deemed unsuitable. For these reasons, it was decided that children’s hypothetical problem solving skills should be assessed to provide an index of child social competence, giving rise to the following hypotheses:

- Children who failed to thrive in infancy will perform more poorly on indices of hypothetical social problem solving ability than children who thrived as infants.
- The cognitive impairment in infancy of children classed as “early failure to thrive” will be associated with their hypothetical social problem solving skills at six years, such that these children will show greater difficulties with social problem solving than children classed as “late failure to thrive”.
- Failure to thrive children who are smaller at six years will perform less well on tests of social problem solving skill than children classed as “larger”.
3.4 method

3.4.a growth failure in the 1986 cohort

Classification of failure to thrive in the present study was made by the original research team (David Skuse, Dieter Wolke and Sheena Reilly). A relatively strict definition of growth failure aimed to preclude any ambiguity regarding classification of failure to thrive, and so the following definitional criteria were adopted (Skuse, Reilly, and Wolke, 1994):

- Growth trajectories were computed from weight data recorded at clinic visits and expressed as Z scores.
- Weight for age of the study infants (by about twelve months) was at or below the third population centile (Tanner and Whitehouse, 1972, cited in Skuse et al.).
- Growth below the third centile had been sustained for three months or more.

A number of additional criteria were met, to account for factors which potentially influence infant growth. First, only infants born at full term (38 - 41 completed weeks gestation) were included, since prematurity is known to influence post-natal growth (e.g., Ounsted, Moar, and Scott, 1982). Severe intra-uterine growth retardation can also have implications for post-natal physical development (e.g., Ounsted et al.) and so infants were excluded from the study if birth weight was below the third population centile on charts standardised for gestation, gender, ordinal position, maternal height, and mid-pregnancy weight (Tanner and Thomson, 1970). Finally, only singleton infants were included in the study, since an “overcrowded uterus” is likely to influence growth velocity in the pre- and post-natal period (Tanner, 1989).

3.4.b the sample

In total, 2608 children were born within a geographically delimited inner-city area of London during 1986. Ninety-eight children were not included in the study because the group practice responsible for their clinic records declined to participate in the research, so 2510 children were available for study. Of these, 2004 families were still living in the district when their infants were 12 months of age; 4.2% of the study population were untraceable, with no records or contact with their clinic (Skuse et al., 1994).
Following exclusion of multiple birth, premature, and low birth weight infants, clinic records of growth were available for 1589 infants. In total, 52 infants met the criteria for growth failure between birth and 12 months of age. Three cases of organic failure to thrive were identified. Accordingly, 49 children (3.09%) within this study population were classified as failing to thrive without organic cause; examination of the remaining children during the initial assessment revealed no cases where a physical disorder might account for growth failure. Two families with a child in the non-organic failure to thrive group refused to participate in the study, and so in all 47 children comprised the non-organic failure to thrive, or "case" group, and were seen, by the original research team, between 12 and 16 months of age.

Skuse et al. (1992) report that, at the time of the initial study, only nine children (19.1%) in the case group had been referred to a hospital as a result of their growth failure. The growth failure of these infants was found to be indistinguishable from that of other case infants, in terms of severity and duration.

3.4.b.i the control group
A comparison group of 47 infants from the same birth cohort was pairwise matched for birthweight, gender, ordinal position, age at assessment, ethnic group, and socio-economic status, according to area of residence (often by street or block of flats). Subsequently, the research team compared the socio-economic status of cases and controls using a composite index (Osborn, 1987); no group differences were found on individual variables, or in overall socio-economic status.

3.4.b.ii the sample at six years: the main study
Contact was maintained with 92.5% (N = 87) of the 94 families seen at 15 months; two families refused to continue with the research and the remainder were untraceable, or had moved overseas. In addition, three families (two case and one control) were excluded from the study at six years because the children had been found to have organic problems which might affect nutrition or growth (two children had neurological problems; one child had a
history of kidney dysfunction). Of the remaining 84 families, only partial data was available for some analyses: some mothers preferred not to respond to certain parts of the interview, and one mother did not want her child to take part in a school assessment. In addition, non-English speaking mothers did not complete parts of the interview (e.g., attributions for child behaviour) because translation might lead to lack of reliability in the presentation and analysis of language-dependent measures. Given these restrictions, numbers are indicated for each analysis separately.

3.4.c measures
3.4.c.i anthropometry

Height and weight are recorded routinely by school nurses when children are about six years of age; these data were made available for the present study. The use of measurements made by school nurses has been criticised (Majrowski, et al., 1994), and is potentially flawed in the context of the present study, because these data were obtained from records, and so the accuracy and reliability of the measurement procedure could not be monitored.

Majrowski et al. suggest that auxologist measurements offer greatest accuracy; such data were not available for the present study, and it was decided that the use of anthropometric data gathered by school nurses was advantageous. The author lacks relevant experience of physical measurement, and so training to ensure reliability and validity was likely to be expensive and time-consuming. Even with training, the author may not have achieved levels of skill arising from the nurses’ extensive experience. In addition, adoption of an existing data set was considered to be efficient with regard to financial and temporal constraints on data collection. Finally, it was of vital importance that the author be unaware of the case/control status of the children, when making qualitative judgements for measures such as ratings of social problem solving skill in mothers and children. If hypothesised group differences in physical development are apparent, the author might make judgements, based on her measurement of height at follow-up, which could undermine lack of knowledge about which children had failed to thrive. Consequently, it was decided that,
with regard to anthropometric data and the study as a whole, requirements of validity and reliability would be best served by using height and weight data gathered by school nurses.

Data were available on maternal height, from the assessment at 15 months, but information about fathers’ heights was limited, because fathers were absent from several families, and could not be measured. For the present study it was decided that any control for the influence of parental height could be a source of unreliability. In addition, no differences were apparent in the height of case and control mothers at 15 months (Skuse et al., 1992), and so parental height was considered to be an improbable source of inter-group variation in children’s anthropometric status at six years. Consequently, the subsequent analyses of children’s physical development at six years do not include any control for parental stature.

The cross-sectional anthropometric data available at follow-up preclude calculation of growth trajectories, and so a definition of “recovery” cannot be made for children in the failure to thrive group. Accordingly, a cross-sectional criterion was established to distinguish between those failure to thrive group children of limited physical stature, and those who are close to average for age at six years. It was decided that the 20th centile (as defined by Tanner and Whitehouse norms, e.g., 1984) should be used as a cut-off point, such that a failure to thrive group child would be defined as “small” for future analyses if he or she was below the 20th centile for height and weight at follow-up.

Choice of the 20th centile for height and weight offers an arbitrary criterion for defining children as “small”, but can be justified because children who fulfil this definition are clearly shorter and thinner than average for age. These differences may be relatively small in terms of kilograms or centimetres, but will arguably offer a useful basis for distinction. At six and a half years of age, a child who is below the 20th centile for height will be more than six centimetres smaller than a child at the 50th centile; a child below the 20th centile for weight will be more than three kilograms below average weight for her age. Although such a child would appear to be small, he or she would not fulfil customary criteria for defining growth retardation or short stature (see Section 3.4b). Use of the 20th centile for height
and weight as a criterion for classifying physical stature at follow-up facilitates consideration of a distinct sub-sample within the failure to thrive group: children who may not fulfil diagnostic criteria for short stature, but who are proportionately small for age.

3.4.c.ii cognitive development

The original research team (e.g., Dowdney et al., 1992; Skuse et al., 1992) conducted a whole population survey of four year olds born in 1980 who had failed to thrive in infancy. Dowdney and colleagues found that children who had failed to thrive in infancy showed significantly poorer cognitive performance than control children, when tested using the McCarthy Scales of Children's Abilities (McCarthy, 1972). To offer potential for comparison between the 1980 and the 1986 cohort, it was decided that the McCarthy Scales should be used to test the cognitive performance of children in the present sample at six years. Administration and scoring of the McCarthy Scales were carried out according to the published manual (McCarthy, 1972); an example of a coded score sheet is provided in Appendix 3.a.

3.4.c.iii social problem solving

Social competence among the children at six years was assessed using a technique frequently adopted in previous studies of children’s social problem solving skills (e.g., Rubin and Krasnor, 1986; Pettit et al., 1988; Rabiner et al., 1990), whereby children are presented with hypothetical vignettes describing problems in peer relationships. Each child was given Rubin’s (1988) revised version of the Social Problem Solving Test (SPST-R) (Appendix 3.b), which derives from Spivack and Shure’s (1974) Preschool Interpersonal Problem Solving Test, and offers data on quantitative and qualitative aspects of problem solving skill. The Social Problem Solving Test has been widely used (e.g., Pettit et al., 1988; see also Rubin and Krasnor, 1986, for a review of research) and there is good evidence for its validity and reliability as a measure of social competence.

In the SPST-R, each child is presented individually with a series of problem situations, accompanied by pictures, relating to object acquisition or friendship formation. The child
is asked to suggest what each story’s character might do to achieve the story’s goal, then presented with an obstacle (“If that didn’t work what could Nina do?”) and finally asked what he or she would do in the problem situation. The central character in each story is of the same age and gender as the child being tested. The SPST-R provides indices of the flexibility and relevance of the child’s suggested strategies, in addition, the categories of strategy (see Table 3.1) suggested can be analysed.

<table>
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<td>conversation openers</td>
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### 3.4.d procedure

#### 3.4.d.1 anthropometry

Routinely collected height and weight data had been noted in school records; the author requested this information from the schools attended by the study children, and the school nurses extracted information from the children’s files. This information was solicited, with consent from parents and schools, subsequent to all assessments of the families by the author.
3.4.d.ii  **cognitive development**

The tests comprising the McCarthy Scales of Children’s Ability were carried out, with the consent of the primary carer, during assessment of the child at school (see Chapter Two for details of procedure).

3.4.d.iii  **social problem solving**

The Social Problem Solving Test - Revised was carried out after testing with the McCarthy Scales during the school assessment (see Chapter Two for procedural details).
3.5 results

3.5.a reliability: the social problem solving test-revised

Reliability data for the test of child social cognition, the Social Problem Solving Test (Revised Version) (SPST-R), were calculated for the category type of suggested solution (Table 3.1), flexibility of response and relevance of solutions generated. Identifying characteristics were removed from the children’s responses before rating by the author (blind to case-control status) and a second rater (DS), who was aware of experimental hypotheses. Reliability data are summarised in Table 3.2.

<table>
<thead>
<tr>
<th>variable</th>
<th>percentage agreement</th>
<th>kappa</th>
</tr>
</thead>
<tbody>
<tr>
<td>object acquisition dilemma category</td>
<td>75.00</td>
<td>0.693</td>
</tr>
<tr>
<td>friendship dilemma category</td>
<td>79.80</td>
<td>0.759</td>
</tr>
<tr>
<td>flexibility</td>
<td>78.20</td>
<td>0.709</td>
</tr>
<tr>
<td>relevance</td>
<td>94.30</td>
<td>0.827</td>
</tr>
</tbody>
</table>

3.5.b sample characteristics at six years

3.5.b.i a history of failure to thrive

Prior to consideration of child stature, analyses were carried out to determine whether case and comparison children differed in terms of general sample characteristics at six years. Control group children were pairwise matched to cases on variables including gender, ordinal position and ethnic group (see Section 3.4.b.i); the groups did not differ in age (FTT group mean = 5.93 years, s.d. = 0.73; control group mean = 5.77 years, s.d. = 0.66; t = 1.47, with 31 df, ns) or family size (FTT group mean number in family = 4.41, s.d. = 1.28; control group mean number in family = 4.32, s.d. = 1.81; t = 0.31, with 36 df, ns) at the time of the follow-up assessment. Comparisons of case and control group socio-economic status at six years will be presented in Chapter Four.

3.5.b.ii early and late growth failure

General sample characteristics of children who failed to thrive early and later in the first year of life were examined (see Table 3.3). Chi-Square tests revealed no evidence that
timing of infant growth faltering was related to child gender ($\chi^2 = 0.00$, df = 1, ns) or ordinal position$^1$ ($\chi^2 = 0.611$, df = 1, ns). Moreover, a t-test for independent samples showed that early FTT group children did not live in larger families at six years (mean number in family = 4.60, s.d. = 1.23) than children who failed to thrive later in the first year (mean number in family = 4.24, s.d. = 1.41; $t = -0.87$, with 39 df, ns). The groups did not differ in child’s age in years at time of the follow-up assessment (early FTT mean = 5.98 years, s.d. = 0.831; late FTT mean = 5.88, s.d. = 0.622; $t = -0.42$, with 36 df, ns).

With regard to ethnicity, small cell sizes prevented Chi-Square analysis with more than one degree of freedom, and so the following broad categories were formed for the purposes of intergroup comparison: white UK; Afro-Caribbean; other. A non-significant trend suggested that children of Afro-Caribbean origin were less likely to have failed to thrive in the first six months of life ($\chi^2 = 5.23$, df = 2, $p < 0.07$, two-tailed).

**Table 3.3 Sample Characteristics:**

<table>
<thead>
<tr>
<th>Sample Characteristics</th>
<th>Early FTT Number (%)</th>
<th>Late FTT Number (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Child's Gender</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>11 (50.0)</td>
<td>12 (48.0)</td>
</tr>
<tr>
<td>Male</td>
<td>11 (50.0)</td>
<td>13 (52.0)</td>
</tr>
<tr>
<td><strong>Ordinal Position</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>8 (36.4)</td>
<td>13 (52.0)</td>
</tr>
<tr>
<td>2-3</td>
<td>12 (54.5)</td>
<td>11 (44.0)</td>
</tr>
<tr>
<td>4-5</td>
<td>1 (4.5)</td>
<td>1 (4.0)</td>
</tr>
<tr>
<td>≥6</td>
<td>1 (4.5)</td>
<td>0 (0)</td>
</tr>
<tr>
<td><strong>Ethnicity</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White UK</td>
<td>14 (63.6)</td>
<td>11 (44.0)</td>
</tr>
<tr>
<td>Indian / Asian</td>
<td>3 (13.6)</td>
<td>3 (12.0)</td>
</tr>
<tr>
<td>Chinese / Asian</td>
<td>0 (0)</td>
<td>2 (8.0)</td>
</tr>
<tr>
<td>Afro-Caribbean</td>
<td>1 (4.5)</td>
<td>7 (28.0)</td>
</tr>
<tr>
<td>Other</td>
<td>4 (18.2)</td>
<td>2 (8.0)</td>
</tr>
</tbody>
</table>

$^1$ Cell frequencies for ordinal position were too small to enable Chi-square analysis with more than one degree of freedom, and so first-born and later-born categories were formed for the purposes of a 2x2 analysis.
3.5.c  anthropometry at six years
3.5.c.i  a history of failure to thrive

Height and weight data for all children at follow-up were converted to centiles and standard deviation scores according to Tanner and Whitehouse (1984) norms. Data on height for age and weight for age are summarised in Table 3.4. The prediction that long term physical development would be inhibited by infant growth faltering was examined using paired sample t-tests, based on z scores. Comparisons revealed that children who have failed to thrive tended to be shorter for age (t = -3.79, with 31 df, p < 0.001, one-tailed) and lighter for age (t = 5.65, with 31 df, p < 0.001, one-tailed), relative to comparisons at six years.

<table>
<thead>
<tr>
<th></th>
<th>FTT (N=38)</th>
<th>control group (N=39)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>height (cm)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>mean (s.d)</td>
<td>110.2 (6.31)</td>
<td>115.1 (5.71)</td>
</tr>
<tr>
<td>range</td>
<td>96.0 - 125.0</td>
<td>105.0 - 133.0</td>
</tr>
<tr>
<td>centile</td>
<td></td>
<td></td>
</tr>
<tr>
<td>mean (s.d)</td>
<td>25.5 (28.6)</td>
<td>58.2 (27.9)</td>
</tr>
<tr>
<td>range</td>
<td>0.00 - 98.5</td>
<td>3.69 - 98.07</td>
</tr>
<tr>
<td><strong>height z score</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>mean (s.d)</td>
<td>-0.912 (1.25)</td>
<td>0.273 (0.922)</td>
</tr>
<tr>
<td>range</td>
<td>-4.62 - 2.17</td>
<td>-1.79 - 2.07</td>
</tr>
<tr>
<td><strong>weight (kg)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>mean (s.d)</td>
<td>17.8 (2.58)</td>
<td>21.9 (4.51)</td>
</tr>
<tr>
<td>range</td>
<td>11.5 - 26.0</td>
<td>15.9 - 38.0</td>
</tr>
<tr>
<td>centile</td>
<td></td>
<td></td>
</tr>
<tr>
<td>mean (s.d)</td>
<td>23.2 (20.8)</td>
<td>64.4 (29.9)</td>
</tr>
<tr>
<td>range</td>
<td>0.00 - 88.6</td>
<td>2.82 - 99.8</td>
</tr>
<tr>
<td><strong>weight z score</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>mean (s.d)</td>
<td>-0.973 (0.921)</td>
<td>0.681 (1.44)</td>
</tr>
<tr>
<td>range</td>
<td>-4.16 - 1.20</td>
<td>-1.91 - 5.62</td>
</tr>
</tbody>
</table>

3.5.c.ii  early and late growth failure

Independent sample t-tests, based on height and weight z scores, were used to compare the physical stature of children who failed to thrive primarily during the first six months with those whose growth trajectories indicated later failure to thrive. No differences were found between these groups in their height for age (t = 0.69, with 36 df, p ≤ 0.50, two-tailed) or
weight for age \( t = 0.93 \), with 36df, \( p \leq 0.40 \), two-tailed) at six years (see Table 3.5).

### Table 3.5  Physical Stature at Six Years:

<table>
<thead>
<tr>
<th></th>
<th>Early FTT (N=21)</th>
<th>Late FTT (N=17)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Height</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean (s.d)</td>
<td>22.2 (24.3)</td>
<td>29.5 (33.3)</td>
</tr>
<tr>
<td>Centile range</td>
<td>0.00 - 96.1</td>
<td>0.100 - 98.5</td>
</tr>
<tr>
<td>Height z score</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean (s.d)</td>
<td>-1.03 (1.19)</td>
<td>-0.755 (1.33)</td>
</tr>
<tr>
<td>Score range</td>
<td>-4.61 - 1.77</td>
<td>-3.08 - 2.17</td>
</tr>
<tr>
<td><strong>Weight</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean (s.d)</td>
<td>20.7 (19.1)</td>
<td>26.0 (23.0)</td>
</tr>
<tr>
<td>Centile range</td>
<td>0.00 - 57.9</td>
<td>1.30 - 88.5</td>
</tr>
<tr>
<td>Weight z score</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean (s.d)</td>
<td>-1.09 (0.969)</td>
<td>-0.819 (0.863)</td>
</tr>
<tr>
<td>Score range</td>
<td>-4.15 - 0.201</td>
<td>-2.22 - 1.20</td>
</tr>
</tbody>
</table>

3.5.c.iii  Small and Larger Failure to Thrive Group Children

The distribution of centile bands within the failure to thrive group (Table 3.4, and Figures 3.1 and 3.2) indicated that a number of children who failed to thrive in infancy were at or above the 50th centile for height or weight at six years. Accordingly, a distinction was made between those children who were above the 20th centile, in terms of height or weight for age, and those who were below the 20th centile for height and weight at six years (Figure 3.3). Seventeen failure to thrive group children were below the 20th centile for height and weight; only two control group children met this criterion. Only four children in the failure to thrive group fulfilled the criterion for severe growth failure, of height for age below the third centile. Anthropometric data describing the “small” and “larger” FTT groups are summarised in Table 3.6.
figure 3.1 distribution of height for age centile: failure to thrive group

figure 3.2 distribution of weight for age centile: failure to thrive group

figure 3.3 “small” and “larger” for age children at follow-up: failure to thrive and control group
Table 3.6: Physical stature at six years: small (N = 17) and larger failure to thrive group (N = 21) children

<table>
<thead>
<tr>
<th></th>
<th>small FTT</th>
<th>larger FTT</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Height</strong></td>
<td>mean (s.d)</td>
<td>8.64 (5.73)</td>
</tr>
<tr>
<td><strong>Centile</strong></td>
<td>range</td>
<td>0.00 - 17.4</td>
</tr>
<tr>
<td><strong>Height z score</strong></td>
<td>mean (s.d)</td>
<td>-1.65 (0.931)</td>
</tr>
<tr>
<td><strong>Weight</strong></td>
<td>mean (s.d)</td>
<td>6.94 (4.48)</td>
</tr>
<tr>
<td><strong>Centile</strong></td>
<td>range</td>
<td>0.00 - 14.04</td>
</tr>
<tr>
<td><strong>Weight z score</strong></td>
<td>mean (s.d)</td>
<td>-1.68 (0.728)</td>
</tr>
<tr>
<td><strong>Score</strong></td>
<td>range</td>
<td>-0.415 - 1.07</td>
</tr>
</tbody>
</table>

Analyses were carried out to determine whether general sample characteristics distinguished between small and larger for age case group children (see Table 3.7). Chi-Square analysis revealed no evidence that stature at six years was related to ordinal position\(^2\) (\(\chi^2 = 0.00\), df = 1, ns); cell sizes were too small to permit Chi-Square analysis of intergroup variation in ethnicity. Male children who failed to thrive in infancy were more likely to be small for age at six years (\(\chi^2 = 5.07\), df = 1, p < 0.03, two-tailed), and an independent samples t-test indicated that larger case group children were living in smaller families (mean number in family = 4.05, s.d. = 1.12) than smaller children (mean number in family = 5.13, s.d. = 1.31; t = 2.70, with 35 df, p < 0.02, two-tailed). The groups did not differ in child’s age in years at time of the follow-up assessment (small FTT mean = 6.01 years, s.d. = 0.75; large FTT mean = 5.88, s.d. = 0.74; t = 0.54, with 36 df, ns).

\(^2\) The small cell sizes of initial categorisations of ordinal position precluded Chi-square analyses with more than two degrees of freedom, and so comparison was based on a distinction between first and later born children.
Table 3.7 Sample characteristics:
smaller (N=17) and larger (N=21) failure to thrive group children

<table>
<thead>
<tr>
<th></th>
<th>small FTT number (%)</th>
<th>large FTT number (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Child's gender</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>female</td>
<td>5 (29.4)</td>
<td>15 (71.4)</td>
</tr>
<tr>
<td>male</td>
<td>12 (70.6)</td>
<td>6 (28.6)</td>
</tr>
<tr>
<td><strong>Ordinal position</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>8 (47.1)</td>
<td>11 (52.4)</td>
</tr>
<tr>
<td>2-3</td>
<td>7 (41.1)</td>
<td>9 (42.9)</td>
</tr>
<tr>
<td>4-5</td>
<td>2 (11.8)</td>
<td>0 (0)</td>
</tr>
<tr>
<td>≥6</td>
<td>0 (0)</td>
<td>1 (4.7)</td>
</tr>
<tr>
<td><strong>Ethnicity</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>white UK</td>
<td>10 (58.8)</td>
<td>12 (57.1)</td>
</tr>
<tr>
<td>Indian/Asian</td>
<td>3 (17.6)</td>
<td>2 (9.5)</td>
</tr>
<tr>
<td>Chinese/Asian</td>
<td>0 (0)</td>
<td>0 (0)</td>
</tr>
<tr>
<td>Afro-Caribbean</td>
<td>2 (11.8)</td>
<td>3 (14.3)</td>
</tr>
<tr>
<td>Other</td>
<td>2 (11.8)</td>
<td>4 (19.0)</td>
</tr>
</tbody>
</table>

3.5.d Child cognitive functioning

Frequency distributions for scores on the McCarthy Scales of Children’s Abilities indicated that data for some subscales were not normally distributed, as in the case of the quantitative subscale for comparisons (see Figure 3.4 and Table 3.8). Since these subscales are used in the calculation of an overall General Cognitive Index (GCI) for each child, it was decided that non-parametric analyses should be used to minimise the risk of a Type I error.
3.5.d.i  a history of failure to thrive

Wilcoxon matched pairs tests were used for all case-control comparisons of cognitive performance at six years, with complete data on 38 pairs; results are summarised in Table 3.8. There was a non-significant tendency for children who had failed to thrive to have lower GCI scores than comparison children. The clearest distinction between the groups lay in their performance on the memory and quantitative subscales, where thriving children’s scores were significantly higher than those of cases.

<table>
<thead>
<tr>
<th>Table 3.8  cognitive abilities at six years: failure to thrive (N = 42) and control group (N = 41) children</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td>---------------------------------</td>
</tr>
<tr>
<td>GCI</td>
</tr>
<tr>
<td>range</td>
</tr>
<tr>
<td>memory</td>
</tr>
<tr>
<td>range</td>
</tr>
<tr>
<td>verbal</td>
</tr>
<tr>
<td>range</td>
</tr>
<tr>
<td>quantitative</td>
</tr>
<tr>
<td>range</td>
</tr>
<tr>
<td>perceptual</td>
</tr>
<tr>
<td>range</td>
</tr>
</tbody>
</table>

*p ≤ 0.10   **p ≤ 0.05   ***p ≤ 0.01  one-tailed

3.5.d.ii  early and late growth failure

Mann-Whitney tests for independent samples revealed no significant evidence of differences in the cognitive functioning of children who failed to thrive earlier or later in the first year of life (Table 3.9), although a non-significant one-tailed trend implied that children who experienced early growth retardation performed more poorly on the perceptual subscale of the McCarthy Scales.
Table 3.9: Cognitive abilities at six years:
early (N = 21) and late (N = 21) failure to thrive group children

<table>
<thead>
<tr>
<th></th>
<th>Early FTT</th>
<th>Late FTT</th>
<th>Mann-Whitney z</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>GCI</strong></td>
<td></td>
<td></td>
<td>-0.189</td>
</tr>
<tr>
<td>Mean (s.d)</td>
<td>99.2 (20.1)</td>
<td>100.4 (10.5)</td>
<td></td>
</tr>
<tr>
<td>Range</td>
<td>50.0 - 141.0</td>
<td>74.0 - 118.0</td>
<td></td>
</tr>
<tr>
<td><strong>Memory</strong></td>
<td></td>
<td></td>
<td>-0.113</td>
</tr>
<tr>
<td>Mean (s.d)</td>
<td>47.2 (11.4)</td>
<td>48.0 (7.5)</td>
<td></td>
</tr>
<tr>
<td>Range</td>
<td>22.0 - 65.0</td>
<td>22.0 - 58.0</td>
<td></td>
</tr>
<tr>
<td><strong>Verbal</strong></td>
<td></td>
<td></td>
<td>-0.327</td>
</tr>
<tr>
<td>Mean (s.d)</td>
<td>48.1 (12.5)</td>
<td>49.4 (9.2)</td>
<td></td>
</tr>
<tr>
<td>Range</td>
<td>22.0 - 67.0</td>
<td>26.0 - 64.0</td>
<td></td>
</tr>
<tr>
<td><strong>Quantitative</strong></td>
<td></td>
<td></td>
<td>-1.20</td>
</tr>
<tr>
<td>Mean (s.d)</td>
<td>49.0 (11.4)</td>
<td>46.0 (6.6)</td>
<td></td>
</tr>
<tr>
<td>Range</td>
<td>22.0 - 69.0</td>
<td>34.0 - 60.0</td>
<td></td>
</tr>
<tr>
<td><strong>Perceptual</strong></td>
<td></td>
<td></td>
<td>-1.32*</td>
</tr>
<tr>
<td>Mean (s.d)</td>
<td>50.1 (12.1)</td>
<td>53.8 (6.0)</td>
<td></td>
</tr>
<tr>
<td>Range</td>
<td>22.0 - 78.0</td>
<td>42.0 - 62.0</td>
<td></td>
</tr>
</tbody>
</table>

*p ≤ 0.10 one-tailed

3.5.d.iii Small and larger failure to thrive group children
The cognitive performance of FTT group children who were below the 20th centile for height and weight at six years was compared with the performance of larger children in the failure to thrive group. Results of two-tailed comparisons demonstrated no differences between the groups (Table 3.10).
Table 3.10: Cognitive Abilities at Six Years:

<table>
<thead>
<tr>
<th></th>
<th>Small FTT</th>
<th>Larger FTT</th>
<th>Mann-Whitney z</th>
</tr>
</thead>
<tbody>
<tr>
<td>GCI</td>
<td>mean (s.d)</td>
<td>97.6 (13.8)</td>
<td>101.1 (18.4)</td>
</tr>
<tr>
<td></td>
<td>range</td>
<td>73.0 - 120.0</td>
<td>50.0 - 141.0</td>
</tr>
<tr>
<td>memory</td>
<td>mean (s.d)</td>
<td>47.4 (10.8)</td>
<td>47.0 (9.3)</td>
</tr>
<tr>
<td></td>
<td>range</td>
<td>22.0 - 65.0</td>
<td>22.0 - 59.0</td>
</tr>
<tr>
<td>verbal</td>
<td>mean (s.d)</td>
<td>46.4 (10.9)</td>
<td>50.2 (11.3)</td>
</tr>
<tr>
<td></td>
<td>range</td>
<td>26.0 - 66.0</td>
<td>22.0 - 67.0</td>
</tr>
<tr>
<td>quantitative</td>
<td>mean (s.d)</td>
<td>46.7 (6.9)</td>
<td>48.7 (11.1)</td>
</tr>
<tr>
<td></td>
<td>range</td>
<td>38.0 - 64.0</td>
<td>22.0 - 69.0</td>
</tr>
<tr>
<td>perceptual</td>
<td>mean (s.d)</td>
<td>53.2 (7.1)</td>
<td>50.9 (11.5)</td>
</tr>
<tr>
<td></td>
<td>range</td>
<td>42.0 - 69.0</td>
<td>22.0 - 78.0</td>
</tr>
</tbody>
</table>

3.5.e Child Social Cognition

Data derived from the SPST-R were based on qualitative judgements, and did not appear to be normally distributed (see Figure 3.5), so non-parametric tests were applied for all analyses of child social problem solving skill.

Figure 3.5: Relevance of Child Problem Solving: Failure to Thrive Group
3.5.e.i a history of failure to thrive

Wilcoxon matched pairs tests were used for all case-control comparisons of child social problem solving at six years, with complete data on 35 pairs. Results of one-tailed comparisons (summarised in Table 3.11) revealed no significant differences in the social cognitive skills of previously growth retarded and thriving children.

<table>
<thead>
<tr>
<th>Table 3.11</th>
<th>Social problem solving: failure to thrive (N = 41) and control group (N = 39) children</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>All dilemmas</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Relevance</strong></td>
<td></td>
</tr>
<tr>
<td>Mean (s.d)</td>
<td>20.6 (3.3)</td>
</tr>
<tr>
<td>Range</td>
<td>9.0 - 24.0</td>
</tr>
<tr>
<td><strong>Flexibility</strong></td>
<td></td>
</tr>
<tr>
<td>Mean (s.d)</td>
<td>13.4 (4.9)</td>
</tr>
<tr>
<td>Range</td>
<td>1.0 - 24.0</td>
</tr>
<tr>
<td><strong>Number of categories</strong></td>
<td></td>
</tr>
<tr>
<td>Mean (s.d)</td>
<td>8.5 (2.5)</td>
</tr>
<tr>
<td>Range</td>
<td>2.0 - 14.0</td>
</tr>
<tr>
<td><strong>Object acquisition</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Relevance</strong></td>
<td></td>
</tr>
<tr>
<td>Mean (s.d)</td>
<td>13.1 (2.2)</td>
</tr>
<tr>
<td>Range</td>
<td>6.0 - 15.0</td>
</tr>
<tr>
<td><strong>Flexibility</strong></td>
<td></td>
</tr>
<tr>
<td>Mean (s.d)</td>
<td>9.0 (3.4)</td>
</tr>
<tr>
<td>Range</td>
<td>1.0 - 15.0</td>
</tr>
<tr>
<td><strong>Number of categories</strong></td>
<td></td>
</tr>
<tr>
<td>Mean (s.d)</td>
<td>5.4 (1.8)</td>
</tr>
<tr>
<td>Range</td>
<td>2.0 - 11.0</td>
</tr>
<tr>
<td><strong>Friendship formation</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Relevance</strong></td>
<td></td>
</tr>
<tr>
<td>Mean (s.d)</td>
<td>7.4 (2.0)</td>
</tr>
<tr>
<td>Range</td>
<td>0.0 - 9.0</td>
</tr>
<tr>
<td><strong>Flexibility</strong></td>
<td></td>
</tr>
<tr>
<td>Mean (s.d)</td>
<td>4.3 (2.8)</td>
</tr>
<tr>
<td>Range</td>
<td>0.0 - 9.0</td>
</tr>
<tr>
<td><strong>Number of categories</strong></td>
<td></td>
</tr>
<tr>
<td>Mean (s.d)</td>
<td>3.0 (1.3)</td>
</tr>
<tr>
<td>Range</td>
<td>0.0 - 6.0</td>
</tr>
</tbody>
</table>
3.5.e.ii early and late growth failure

Social problem solving skills among children who experienced early growth faltering were compared with those of children who failed to thrive later in the first year of life. Mann-Whitney tests for independent groups found no significant evidence of intergroup variation in social cognitive functioning (Table 3.12).

| Table 3.12 social problem solving: early (N = 20) and late (N = 21) failure to thrive group children |
|---------------------------------|----------------|----------------|----------------|
|                                 | early FTT      | late FTT       | Mann-Whitney z |
| **All dilemmas**                |                |                |                |
| relevance                       | mean (s.d.)    |                |                |
|                                 | 20.1 (3.7)     | 21.1 (2.8)     | 0.898          |
|                                 | range          | 9.0 - 24.0     | 15.0 - 24.0    |
| flexibility                     | mean (s.d.)    |                |                |
|                                 | 12.9 (5.1)     | 13.9 (4.7)     | -0.432         |
|                                 | range          | 1.0 - 20.0     | 4.0 - 24.0     |
| number of categories            | mean (s.d.)    |                |                |
|                                 | 8.6 (2.7)      | 8.4 (2.5)      | 0.461          |
|                                 | range          | 2.0 - 14.0     | 4.0 - 14.0     |

**Object acquisition**

|                                 | mean (s.d.)    |                |                |
|                                 | 12.9 (2.2)     | 13.4 (2.2)     | -1.26           |
|                                 | range          | 6.0 - 15.0     | 7.0 - 15.0     |
| flexibility                     | mean (s.d.)    |                |                |
|                                 | 8.7 (3.7)      | 9.3 (3.1)      | -0.432         |
|                                 | range          | 1.0 - 15.0     | 3.0 - 15.0     |
| number of categories            | mean (s.d.)    |                |                |
|                                 | 5.6 (1.8)      | 5.2 (1.9)      | -0.827         |
|                                 | range          | 2.0 - 9.0      | 3.0 - 11.0     |

**Friendship formation**

|                                 | mean (s.d.)    |                |                |
|                                 | 7.2 (2.3)      | 7.7 (1.7)      | -0.524         |
|                                 | range          | 0.0 - 9.0      | 3.0 - 9.0      |
| flexibility                     | mean (s.d.)    |                |                |
|                                 | 4.1 (2.9)      | 4.5 (2.7)      | -0.262         |
|                                 | range          | 0.0 - 9.0      | 0.0 - 9.0      |
| number of categories            | mean (s.d.)    |                |                |
|                                 | 3.0 (1.2)      | 3.1 (1.3)      | 0.094          |
|                                 | range          | 0.0 - 5.0      | 1.0 - 6.0      |
3.5.e.iii small and larger failure to thrive group children

The social problem solving skills of failure to thrive group children who were classed as smaller or larger for age at six years were compared using Mann-Whitney tests for independent samples. The groups did not differ in the number of different categories of strategy they suggested, but smaller children offered less flexible and relevant strategies, as shown in Table 3.13.

<table>
<thead>
<tr>
<th>Table 3.13 Social problem solving: small (N = 20) and larger (N = 21) failure to thrive group children</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>all dilemmas</strong></td>
</tr>
<tr>
<td>relevance</td>
</tr>
<tr>
<td>mean (s.d)</td>
</tr>
<tr>
<td>range</td>
</tr>
<tr>
<td>flexibility</td>
</tr>
<tr>
<td>mean (s.d)</td>
</tr>
<tr>
<td>range</td>
</tr>
<tr>
<td>number of categories</td>
</tr>
<tr>
<td>mean (s.d)</td>
</tr>
<tr>
<td>range</td>
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</table>

**Table 3.13 Social problem solving: small (N = 20) and larger (N = 21) failure to thrive group children**

<table>
<thead>
<tr>
<th></th>
<th>small FTT</th>
<th>larger FTT</th>
<th>Mann-Whitney z</th>
</tr>
</thead>
<tbody>
<tr>
<td>relevance</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>mean (s.d)</td>
<td>11.8 (2.5)</td>
<td>14.0 (1.5)</td>
<td>-3.44</td>
</tr>
<tr>
<td>range</td>
<td>6.0 - 15.0</td>
<td>9.0 - 15.0</td>
<td></td>
</tr>
<tr>
<td>flexibility</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>mean (s.d)</td>
<td>8.0 (3.6)</td>
<td>9.7 (3.3)</td>
<td>-1.52</td>
</tr>
<tr>
<td>range</td>
<td>3.0 - 15.0</td>
<td>1.0 - 15.0</td>
<td></td>
</tr>
<tr>
<td>number of categories</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>mean (s.d)</td>
<td>5.4 (2.2)</td>
<td>5.5 (1.7)</td>
<td>0.619</td>
</tr>
<tr>
<td>range</td>
<td>3.0 - 11.0</td>
<td>2.0 - 9.0</td>
<td></td>
</tr>
</tbody>
</table>

**Table 3.13 Social problem solving: small (N = 20) and larger (N = 21) failure to thrive group children**

<table>
<thead>
<tr>
<th></th>
<th>small FTT</th>
<th>larger FTT</th>
<th>Mann-Whitney z</th>
</tr>
</thead>
<tbody>
<tr>
<td>relevance</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>mean (s.d)</td>
<td>7.2 (1.6)</td>
<td>7.6 (2.3)</td>
<td>-1.50</td>
</tr>
<tr>
<td>range</td>
<td>4.0 - 9.0</td>
<td>0.0 - 9.0</td>
<td></td>
</tr>
<tr>
<td>flexibility</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>mean (s.d)</td>
<td>3.2 (2.3)</td>
<td>5.1 (2.9)</td>
<td>-1.89</td>
</tr>
<tr>
<td>range</td>
<td>0.0 - 7.0</td>
<td>0.0 - 9.0</td>
<td></td>
</tr>
<tr>
<td>number of categories</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>mean (s.d)</td>
<td>3.2 (1.0)</td>
<td>2.8 (1.3)</td>
<td>-0.883</td>
</tr>
<tr>
<td>range</td>
<td>1.0 - 5.0</td>
<td>0.0 - 5.0</td>
<td></td>
</tr>
</tbody>
</table>

*p ≤ 0.10  **p ≤ 0.05  ***p ≤ 0.01  ****p ≤ 0.005  *****p ≤ 0.001  two-tailed
As noted in Section 3.5.b.iii, smaller case group children were more likely to be male and
to live in a larger family; accordingly, forced entry regression was conducted to determine
whether these characteristics accounted for intergroup variation in the relevance and
flexibility of child social problem solving. Family size accounted for almost 16% of the
overall relevance of case children’s problem solving ($R^2 = 0.180$; adjusted $R^2 = 0.156$; $F$
$= 7.47; \beta = -0.424; p \leq 0.01$); inclusion of size for age and gender did not significantly
improve the regression equation. By contrast, size for age at six years was the only
significant indicator of variance in the relevance of problem solving that related to object
acquisition ($R^2 = 0.227$; adjusted $R^2 = 0.205$; $F = 10.30; \beta = 0.477; p \leq 0.003$), and in
the flexibility of friendship strategies ($R^2 = 0.113$; adjusted $R^2 = 0.087$; $F = 4.34; \beta =$
$0.336; p \leq 0.05$).
3.6 discussion

By studying the long-term development of children who had failed to thrive, two opposing hypotheses can be considered (see Section 3.4.a). First, if growth faltering in infancy has a critical effect on development, then impairments in physical stature, cognitive abilities and social-cognitive functioning could be predicted for the failure to thrive group as a whole. There was limited evidence for any universal pattern of physical or psychological developmental deficit among children in the present study who failed to thrive in infancy, and so the analyses described in this chapter do not offer strong support for this first hypothesis. The variation that was seen within the failure to thrive group in physical, cognitive, and social development is consistent with the second hypothesis described in Section 3.4.a: it was suggested that, if infants who fail to thrive without organic cause comprise a diverse group, then the developmental sequelae of growth retardation may also be varied, and so children with a history of non-organic failure to thrive will show no single pattern of developmental outcome at six years of age. The analyses presented in the present chapter do not address the causes of variation among children who have failed to thrive: the aetiology of growth failure is not likely to be the only determinant of developmental outcome at six years.

The results presented in previous sections permit only a preliminary exploration of the long term correlates of failure to thrive. Nonetheless, the range of outcomes observed in the failure to thrive group, and the lack of clear distinction between case and control group children at six years, suggest that definition of failure to thrive in terms of infant growth alone offers an inadequate indicator of the developmental implications of the syndrome. By considering the children’s performance on specific developmental indices, an indication of other potential explanatory factors may emerge.
3.6.a child physical development

3.6.a.i a history of failure to thrive

Figures 3.1 and 3.2 demonstrated some variability in the physical development of the failure to thrive group children at six years. Overall, children who had failed to thrive were smaller (in terms of height and weight for age) than controls, but a substantial minority of children in the failure to thrive group were at or above the 50th population centile. A number of complementary explanations arise, with the potential to account for this variation. For example, if infant growth failure occurs for a variety of reasons, such as parental maltreatment (e.g., Leonard et al., 1966), or infant oral-motor dysfunction (Mathisen et al., 1989), then these different causes may well be associated with different physical outcomes. Equally, events between assessments at 15 months and six years may have altered a child’s pattern of growth: the occurrence of such mediating factors is likely to be influenced by aetiology.

Data at six years cannot be applied retrospectively, and so it is not possible to determine the causes of growth failure in infancy, nor can mediating variables, operating between the initial assessment and the follow-up, be identified. Nonetheless, consideration of factors associated with child stature at six years should highlight potential indicators of variation within the failure to thrive group.

3.6.a.ii early and late growth failure

Contrary to predictions, there was no evidence of intergroup variation in physical stature between children who failed to thrive earlier or later in the first year of life; observed variation in the physical development of case group children cannot be explained in terms of the timing of infant growth faltering. Alternatively, stature at six years may be determined by environmental influences on development (see, e.g., Elwood et al., 1987; Colombo et al., 1992); this possibility should be illuminated by examining links between mother and child functioning and the current physical stature of children who have failed to thrive.
3.6.b cognitive development
3.6.b.i a history of failure to thrive

Children in the failure to thrive group showed deficits in cognitive ability when compared with control group children at 15 months, and there was still some indication of anticipated differences in cognitive performance at six years, although intergroup distinction was less pronounced than at 15 months. Case and control group children differed in terms of their performance on quantitative and memory subscales, in accordance with the hypothesis (e.g., Frank, 1985; Rose, 1994; Skuse et al., 1994) that early growth faltering has a critical adverse effect on brain development. However, there was no significant intergroup variation on any other index of cognitive functioning; it is not clear why such a specific pattern of difficulty should emerge among children who failed to thrive.

Slater (1995) and others have commented that correlations between IQ in infancy and in middle childhood are often low, and it may be argued that correspondence between performance on tests at 15 months and six years would not be expected, given the nature of the test materials. Bornstein and Sigman (1986) argue that tests of infant cognitive ability are primarily concerned with simple motor and sensory abilities; as such they bear little conceptual relation to tests of cognitive development in childhood. Consequently, it might be argued that the continued impact of malnutrition on cognitive development has been obscured because the test materials used in the present research assess different abilities to those studied at 15 months. If this is the case, the quantitative and memory subscales may identify cognitive impairment in the failure to thrive group because they are the only subscales to offer items that are comparable to assessments at 15 months. This explanation assumes an association between early growth failure and numerical and memory ability; analyses of links between cognitive functioning and the timing and physical outcome of growth failure should illuminate that contention.

The relationship between IQ performance in infancy and childhood is not likely to be direct. In addition to the role of endogenous characteristics, one needs to account for the changing nature of environmental influences as the child develops (Slater, 1995).
Bryant (1995) highlights the role of cultural influences in the development of mathematical knowledge; he cites a range of research that leaves,

"no doubt at all about the need to consider the situation in which people acquire mathematical knowledge and then use it."

(p 27)

This argument necessitates consideration of associations between social and environmental factors and cognitive performance at six years; these relationships will be explored in future chapters. Any association between early growth and cognitive ability in childhood is likely to be mediated by influences such as parental education, or the provision of a stimulating home environment, which may vary, both quantitatively and qualitatively, over time. In addition to these concerns, an explanation of the relationship between infant nutrition and later IQ must address questions surrounding the methodological assumptions of cognitive testing.

Garcia (1972, cited in Richardson, 1991) commented that the ability to handle “school type items” in tests of cognitive performance declines after leaving school; equally, skill in coping with these items is likely to increase when a child starts school. It may be argued that familiarity with “school type” test materials may account for improvements in performance between 15 months and six years. The experience of starting school could also underlie the differences between the results of the present study, and those of Dowdney et al. (1992) who found poorer cognitive performance among children who had failed to thrive when they were four years old (and so still pre-school). Finally, links between early nutrition and cognitive development must be examined in light of criticisms (e.g., Richardson, 1991) of the construct validity of tests of intellectual ability. Richardson (p. 96) argues that rather than offering a measure of a trait, as is often assumed, tests of intellectual ability simply rank a participant’s response in relation to others,

"... on a scale of items reflecting what? No one is very sure ...".

Traditionally, intelligence tests aim to assess abilities that are distinct from participants' knowledge. Criticisms of the cultural specificity of intelligence testing (see Doise, 1986)
question the validity of this distinction and imply that such an objective may be unrealistic. It may be argued that intelligence reflects the child’s ability to function in a social context, and so other forms of knowledge must be considered. Consequently, an understanding of links between child growth and cognition or information processing could be more usefully achieved by adopting a broader perspective on children’s abilities: the context of intellectual performance might be better understood through consideration of parenting processes associated with cognitive performance at six years; examination of social cognition also widens our comprehension of children’s abilities.

### 3.6.b.ii early and late growth failure

There was no evidence that timing of failure to thrive was related to the cognitive functioning of previously growth retarded children when they were six years old. This result is surprising, given evidence of cognitive deficits among early FTT group children at 15 months. As noted above, lack of correspondence between findings at 15 months and six years may have arisen because tests of infant cognition examine different skills than assessments of childhood cognitive development (Bornstein and Sigman, 1986). Equally, events between infancy and six years may have influenced children’s development, and these in turn could be related to the causes of infant growth failure.

### 3.6.b.iii small and larger failure to thrive group children

A distinction was made between case group children who remained small for age at six years (below the 20th centile for height and weight) and those who were larger at the time of the follow-up assessment, to determine whether different physical outcomes following growth failure were related to variation in psychological functioning. Smaller and larger case group children did not differ in their performance on tests of cognitive functioning, implying that early malnourishment during a sensitive period of brain development did not result in psychological impairment for children in the present study. Nevertheless, case-control differences in memory and numerical abilities cannot be overlooked; the implications of these findings may be better understood through consideration of links
between child social cognition and the occurrence, timing, and physical consequences of early growth faltering.

3.6.c social competence

3.6.c.i a history of failure to thrive

The results gave no indication of differences in social cognitive ability based on growth in infancy; the performance of cases and controls on indices of social problem solving was remarkably similar. Arguably, this result further undermines the contention that early growth failure limits psychological development, but alternatively, variation within the failure to thrive group may have obscured evidence of intergroup distinction. If infants who fail to thrive form a diverse group (e.g., Mayes and Volkmar, 1993), child social cognition following growth faltering might also be varied. Accordingly, some growth retarded children may show psychological deficits, whereas others do not. This contention may be questioned, since child cognitive skills did not vary in terms of the timing or physical consequences of growth faltering, but before it can be rejected, it is necessary to examine evidence of case group variation in child social cognition.

3.6.c.ii early and late growth failure

In line with assessments of child cognitive functioning, there was no indication the social problem solving skills of children who failed to thrive differed according to the timing of infant growth faltering. The findings of the present study do not provide evidence for a critical period for cerebellar development during the first six months of life (Skuse et al., 1994); early growth retardation was not associated with physical or psychological impairment among children in the present sample. With regard to research on environmental influences on child development (see Gordon, 1989; Kail, 1990; Schaffer, 1992; Bryant, 1995), a fuller understanding of links between early growth faltering and child functioning may be achieved through consideration of maternal social and psychological characteristics in future chapters.
3.6.c.iii small and larger failure to thrive group children

In contrast to the findings discussed above, a clear link was apparent within the failure to thrive group between physical stature and social cognition, in that children who were below the 20th centile (height and weight for age) offered less flexible and relevant strategies for dealing with dilemmas concerning object acquisition and friendship formation (see Table 3.11). A number of possible explanations could account for this pattern of variation.

First, it may be that “small” children have deficits in information processing as a result of growth impairment from which they have not recovered; there is evidence (e.g., Rose, 1994) that even mild or moderate infant malnutrition can disrupt information processing abilities. It is not clear why these deficits should be specific to social information processing, and not apparent in other indices of cognitive functioning.

A second explanation is that “small” children experience difficulties in peer relationships resulting from their appearance, because they are physically smaller (see for example, Tanner, 1989), and so isolation has contributed to deficits in social problem solving skill. However, only four children in the “small” group fulfil a standard criterion for severe growth failure (height for age below the third centile); the remainder are likely to be only a few centimetres smaller than same age peers, and so, although they are in the bottom 20% of the population in terms of height and weight for age, these children may not be markedly smaller than same age peers.

Third, it could be argued that the social problem solving skills apparent among children above the 20th centile for height or weight at six years are responsible for their physical recovery from early growth failure. The abilities of this group to offer relevant and flexible solutions to social dilemmas might increase their chances of gaining adequate nutrition during difficult feeding interactions. However, such a hypothesis is speculative: no data are available on children’s problem solving skills relating to feeding dilemmas, and the
nature of changes in nutrition between 15 months and six years cannot be assumed on the basis of a single anthropometric measurement.

Fourth, the pattern of response seen among “small” failure to thrive group children may be associated with the experience of deprivation or maltreatment; Pianta et al. (1989) describe a range of deficits in social competence among children who have experienced abuse or neglect. Forthcoming chapters will explore associations between child social competence and maternal social and psychological characteristics, and so it will be possible to determine whether small stature and limited social-cognitive abilities among children who failed to thrive correspond to maternal report of psychosocial risk factors, such as lack of social support or adverse childhood care, which are known to create vulnerability for parenting difficulty (see, for example, Belsky, 1989).

Finally, it may be argued that some other factor or group of factors is responsible for the poorer social cognitive performance of children below the 20th centile and for the small stature of these children following early growth faltering. Analysis of maternal characteristics has the potential to indicate part of the context in which child development occurs.

3.7 conclusions: the development of children who failed to thrive

The results presented in this chapter raise questions about the current criteria for defining failure to thrive: analyses of child characteristics at six years indicate few overall differences between children with a history of growth failure and controls, implying that infant growth offers an inadequate criterion for understanding the long term implications of non-organic failure to thrive.

Children who failed to thrive in infancy were smaller (height for age) than controls, as predicted, but variation within the failure to thrive group indicated that a minority of children were below the third centile, and a number were above average height for age.
There were no differences in physical development at six years according to early or late growth faltering in the failure to thrive group. Growth failure in infancy does not appear to be consistently associated with poor physical outcome.

Further variation was apparent in the cognitive outcome of the failure to thrive group children at six years. Children who had failed to thrive performed more poorly than controls on test items relating to quantitative and memory skills, lending support to the hypothesis that a critical period of growth determines intellectual ability, but this link was not supported by the lack of distinction between children who experienced early growth faltering and those who failed to thrive later in the first year. In addition, there were no differences in the performance of those who were above and below the 20th centile, in terms of height and weight at six years. The diversity of cognitive performance in the failure to thrive group implies that hypothesised links between early growth failure and brain development need to account for other factors which may influence cognitive functioning.

There was no distinction between case and control children, with regard to their social-cognitive skills, nor did social competence differentiate between children who had a history of early or late growth failure. Children in the failure to thrive group who were smaller for age at six years offered less flexible and relevant solutions to dilemmas concerning peer relationships. The nature of any link between anthropometric status and social competence demands further consideration, and so links between maternal characteristics and this pattern of response will be examined in forthcoming chapters.

Failure to thrive in infancy was not clearly associated with developmental deficits at six years; no evidence was found of an inevitable link between early growth failure and physical or psychological impairments. Infant growth failure alone did not appear to account for long term developmental functioning, and so potential mediating variables must be examined in order to achieve a more sensitive and appropriate description of the developmental sequelae of failure to thrive. A diagnosis which does not predict long term
outcome has limited value in a clinical or research setting. If failure to thrive is redefined as a disorder of feeding (Mayes and Volkmar, 1993) then the role of the primary carer demands consideration; maternal characteristics are likely to contribute to the development of children who have failed to thrive. In addition, consideration of a wider range of variables from assessments carried out in infancy should offer a fuller description of development at six years than can be achieved by a focus on the predictive power of indices of infant growth. Forthcoming chapters will explore possible associations between family characteristics at 15 months and measures of functioning at six years.

The data presented in this chapter offer a preliminary account of child characteristics associated with early non-organic failure to thrive. Correlates of the patterns of variation that have emerged will be explored in future chapters, in terms of maternal characteristics, with twofold aims:

• to identify any characteristics of the mother universally associated with infant growth failure
• to develop the observations arising from analyses presented above, by examining the extent to which maternal characteristics are related to within group variation in the developmental outcome of children who have failed to thrive.
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mothers' psychological and social functioning

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mothers’ psychological and social functioning

4.1 introduction

This chapter begins the dissertation’s exploration of maternal characteristics associated with a history of failure to thrive. The literature provides inconsistent evidence of psychosocial stress among mothers whose children have failed to thrive; given this inconsistency, the present chapter aims to explore the psychological and social functioning of mothers of previously growth retarded and thriving children in the present sample. Moreover, consideration of mothers’ current social and psychological functioning should reveal characteristics associated with the development of children who failed to thrive when they are six years.

4.1.a psychosocial characteristics and parenting

“parenting reflects the psychosocial functioning of the mother and father”

(Rutter, 1989, p 318)

4.1.a.i mental health: depression

Findings from epidemiological studies of maternal mental health imply a need to consider psychological functioning among mothers in the present sample. Bebbington, Hurry, Tennant, Sturt and Wing (1981) examined the epidemiology of mental disorders in an inner-city sample very similar to that used in the present study; they found that 23.4% of women with children under 15 years of age reached case criteria for mental illness. Bebbington et al. do not specify the mental disorders identified in their research, but other studies have indicated the prevalence of depressive syndromes among mothers. For example, Ballard, Davis, Cullen, Mohan, and Dean (1994) reported that 25.7% of their community sample of mothers were significantly depressed six months after the birth of a child, and it has been suggested that approximately 8% of mothers are depressed at any given time (Weissman, Leaf, and Bruce, 1987). Research linking maternal mental health to parenting and child development has generally focused on depression; given the findings presented above, that interest appears to be justified.
Kendall, Hollon, Beck, Hammen, and Ingram (1987) noted some ambiguity in use of the term depression, and distinguished between consideration of depression as a symptom (such as sadness), syndrome (as a cluster of symptoms), or nosologic disorder (an aetiologically distinct entity). That distinction has implications for research; many studies rely on psychometric assessments such as the Beck Depression Inventory (Beck, 1978), which measure depressive symptomatology, but do not offer a nosologic screening device (Kendall et al.). Identification of depressive symptoms is of interest for studies of parenting or child development, since disturbances of affect or behaviour among depressed parents may carry over to caregiving interactions (Cummings and Davies, 1994).

A substantial body of research has considered the implications of maternal depression for parenting and child development (for reviews see Downey and Coyne, 1990; Puckering, 1989; Cummings and Davies, 1994); Radke-Yarrow and her colleagues suggested that, 

“The depressed mother is the primary environment of the young child”

(Radke-Yarrow, Cummings, Kuczynski, and Chapman 1985, p 884).

There is considerable evidence that depressed mothers can be less sensitive and responsive to their children; for example, Pannacione and Wahler (1986), in a small exploratory study, found that maternal depression was a significant predictor of judgements of child behaviour, and coercive responses in the mother-child interaction. Murray (1988, cited in Puckering, 1989) found that depressed mothers were less child-centred than controls in interactions with their three month old infants, and Stein, Gath, Bucher, Bond, Day, and Cooper (1991) noted long-term communication difficulties associated with maternal depression in the first year. Most research has focused on maternal depression during infancy; nevertheless, depressive symptoms are likely to have similar implications for mothering of older children.

Depressive caregiving patterns are also known to be associated with problems of child development. Cummings and Davies (1994) suggested that children of depressed parents are two to five times more likely to develop behaviour disturbances, relative to controls,
and Richman, Stevenson, and Graham's (1982) longitudinal study indicated that 75% of eight year olds with reading difficulties had mothers who had been depressed when the children were three years old; this association was independent of social factors and early developmental difficulties. Cogill, Caplan, Alexandra, Robson, and Kumar (1986) also found evidence of developmental deficits in children of depressed mothers, in that maternal depression during the first year predicted child cognitive impairments at four years, although maternal depression at four years was not linked to child cognitive functioning.

Despite evidence of links between maternal depression and child functioning, the relationship between these factors is neither inevitable nor direct (Downey and Coyne, 1990); several studies have highlighted variables that mediate between maternal depression and child outcome. For example, Cogill and colleagues observed that links between maternal depression and child cognitive functioning were moderated by variables including marital conflict, paternal psychiatric history and socio-economic status. In addition, Fergusson, Horwood and Lynskey’s (1995) community study of depression in mothers and adolescents suggested that maternal depression was associated with “social and contextual factors” including marital discord and social disadvantage, which independently predicted adolescent depression. Goodman, Brogan, Lynch and Fielding (1993) studied social emotional competence in five to ten year old children of depressed mothers; they found that paternal psychiatric history and parental divorce were more important predictors of child social skills than maternal depression, and commented (p 528) that,

“individual differences in children’s responses to maternal depression may depend on ... more general family adversity”.

Downey and Coyne (1990, p 72) concluded that researchers have a “social responsibility” to account for contextual factors; associations between maternal depression and child development must be considered with reference to concurrent psychosocial stressors, such as socio-economic status and social support. Findings of epidemiological studies suggest that a significant minority of mothers in the present sample may experience depressive symptoms; according to the literature outlined above, maternal depression has probable
negative associations with child development. With regard to this research, the present study aims to examine maternal depression with reference to other aspects of mothers’ social and psychological wellbeing.

4.1.a.ii mental health: eating disorders

Consideration of any relationship between maternal eating disorder and child development seems particularly apposite in a study of failure to thrive, since it is often assumed that parental beliefs about infant nutrition have an aetiological role in non-organic growth retardation. Lobo, Barnard and Coombs (1992) highlighted cult diets, vegetarian diets, and lack of understanding of infant dietary needs as causes of failure to thrive, and Pugliese, Weyman-Daum, Moses, and Lifshitz (1987) linked infant growth failure to parental fear of obesity. These contentions are not based on empirical research, but disordered eating might plausibly be related to a mother’s beliefs about feeding her child, since eating disorders are associated with symptoms including excessive concern about body shape and weight (see, for example, DSM-III-R, American Psychiatric Association, 1987).

To date, there has been limited consideration of maternal eating disorders and young children’s feeding or growth, although there is evidence of links in eating restraint reported by mothers and daughters by middle childhood (e.g., Hill, Weaver, and Blundell, 1990). Stein, Woolley, Cooper and Fairburn (1994) provided a notable exception to the absence of research on early childhood, in a study of primiparous mothers and their infants. They reported that mothers who had experienced significant eating disorder during the first postnatal year tended to be more intrusive during mealtimes and play; in addition, interactions showed more conflict and had a more negative emotional tone, relative to controls. Particularly relevant for the present study, infants of eating disordered mothers tended to be lighter than controls, although this difference was non-significant. Stein et al.’s results are limited by a relatively small sample (N < 30 in each group), and the authors highlighted a need for further research to clarify the nature of within group variation. Nonetheless, their findings indicate the utility of considering maternal eating disorders, and
are clearly pertinent for studies of parenting characteristics and the developmental consequences of infant growth failure.

The epidemiology of eating disorders warrants consideration: most research on eating disorders has utilised clinical or undergraduate samples, and so findings may not be easily generalised to the present study (see Hoek, 1993, for a review of epidemiological studies). Moreover, studies have probably underestimated prevalence, because of the shame and secrecy that commonly surround eating disorders (Beglin and Fairburn, 1992). It has been suggested that approximately 1% of adolescent girls experience anorexia, and Bushnell, Wells, Hornblow, Oakley-Browne and Joyce (1990) found that 2.6% of 18-44 year old women in a community sample reported current or previous bulimia.

Subcultural diversity influences epidemiology; bulimia and anorexia are more prevalent among female college populations, relative to other groups such as working women (Yates, 1989). The prevalence of nosologic disorders among mothers from a relatively deprived population is probably substantially lower than is typically seen in studies of female college students. The nature of eating disorders has additional implications for the present study. DSM-III-R criteria for anorexia nervosa include amenorrhea; associated reductions in fertility suggest that anorexia will be less prevalent among mothers. In light of these observations, assessment of eating disorders may be deemed to have limited relevance in the present sample. Nevertheless, the arguments presented above, advocating exploration of maternal eating patterns associated with the child’s history of failure to thrive also warrant consideration.

It may be useful to consider symptoms of disordered eating, in addition to classification of nosologic disorders. Sub-clinical disordered eating is relatively common among young adult women (e.g., Button and Whitehouse, 1981; Bushnell et al.), and it has been suggested that anorexia and bulimia occur on a continuum (e.g., Garner, Olmsted, and Garfinkel, 1983); Bushnell and colleagues reported recurrent binge eating in 20% of 18-44 year old women, whereas only 1% currently fulfilled DSM-III criteria for bulimia. To
account for these findings, the present study will assess the prevalence of anorexia and bulimia in the present sample; the extent of disordered symptomatology will also be explored.

Subcultural variation in epidemiology highlights a need to consider disordered eating with regard to contextual factors. Depressive syndromes are prevalent in people with anorexia or bulimia nervosa (Cooper and Fairburn, 1986; Garfinkel, Garner, and Goldbloom, 1987); 40-80% of eating disordered patients meet criteria for a lifetime history of depression (Yates, 1989). In addition, depression and loss of social skills are said to act as perpetuating factors for anorexia and bulimia (Garfinkel et al.). These observations imply that psychosocial factors such as depression, socio-economic status and social isolation may mediate any links between current maternal eating patterns and child development, and so the present chapter will examine disordered eating with reference to other indices of mothers' psychological and social functioning.

4.1.a.iii social support

According to Belsky (1984), contextual sources of stress and support comprise one of three key influences on parental functioning; he argued that social support acts as a buffer against stressors by providing emotional support (such as love or acceptance), instrumental assistance (including help with routine tasks), and by providing a shared system of beliefs or expectations that support the mother's role. A range of research indicates that the availability of significant others and the support received from them “exert a beneficial impact on parent-child relations” (Belsky, p 88).

Most studies of maternal social support have assessed white middle-class married mothers of infants or toddlers (see Andresen and Telleen, 1992). Nevertheless, a number of investigators have explored the function of support networks for families under stress; Seifer, Sameroff, Baldwin, and Baldwin’s (1992) longitudinal research found that maternal social support was a significant statistical predictor of improvement in cognitive abilities among high risk children. Ball and Pianta (1993) also found links between maternal
support and child cognition in a large scale community study; the number of supportive relationships mothers described was significantly related to maternal behaviour towards children with lower cognitive skills. Moreover, Quinton and Rutter and Liddle’s longitudinal research (e.g., 1984) illustrated the importance of satisfying marital relationships as a buffer against social stress, in their high-risk sample of women raised in institutions.

Supportive social networks may buffer against stressors, but equally, lack of social support can make parenting more difficult, and increase risk of caregiving problems. Crittenden (1985) compared social networks and quality of child care in mother-child dyads that had been classified as “adequate” or “maltreating”, and found that mothers who showed adequate parenting had far more supportive and satisfying social relationships than maltreating or neglectful mothers. Non-maltreating mothers were older, with higher levels of education, and were more likely to be married; they “were more self sufficient and actually less in need of social support” (p 1310).

Crittenden also noted that neglecting or maltreating mothers were more likely to offend potential sources of help; social isolation may be a cause or consequence of other difficulties. Situations that threaten self-esteem are inversely related to amount and quality of support received (Dunkel-Schetter, Folkman, and Lazarus, 1987); that observation corresponds with Newberger and colleagues’ contention that mothers of growth retarded children may become isolated if they feel that the “failure” in their child’s failure to thrive is their own (Newberger, Hampton, Marx, and White, 1986). White and Woollett (1992, p 15) observe that “Motherhood is a powerful part of women’s identity”, and so a mother’s perception that she has failed to parent adequately is likely to pose a significant threat to self-esteem.

Social support forms part of the context of caregiving, and as such it must be considered with regard to other influences on maternal functioning. Support may act as a buffer that protects against stressors such as socio-economic disadvantage, and psychosocial problems
may be associated with lower levels of support. According to Pannacione and Wahler (1986), depression acts as an index of the quality of a mother’s interactions with her social network, and Brewin, McCarthy and Furnham (1989) reported that depressive symptoms were negatively correlated with satisfaction with support. Yates (1989) linked anorexia and bulimia to social insecurity and social discomfort respectively, implying that these disorders might also be associated with limited social networks. The present study will examine social support among mothers of previously growth retarded and thriving children; there is a need to consider support with regard to other psychosocial characteristics.

4.1.a.iv socio-economic status

Understanding of contextual correlates of parental characteristics or child development depends on consideration of socio-economic factors, but there has been some inconsistency in the literature’s assessment of social demography. Osborn and Morris (1979, p 40) noted that widespread reliance on measurement of paternal occupation has given rise to a “general impoverishment of the sociological concept of social class”, and more recently, investigators have moved away from this perspective towards a broader conceptualisation of social demography. Some have advocated an emphasis on family income (e.g., Duncan et al., 1994; Entwisle and Astone, 1994), but this approach may be criticised because of difficulty in obtaining reliable and valid information (see Hauser, 1994). Composite indices of social functioning are arguably more robust and offer a broader understanding of the array of socio-economic variables that influence family functioning (e.g., Osborn, 1987; Hauser, 1994).

Demographic influences may have particular relevance in the present study, given established links between socio-economic status and child physical development. Tanner’s (1989) review noted cross-cultural evidence that children from upper social groupings are larger and grow at a faster rate, and chronic socio-economic disadvantage is also likely to impede physical recovery from early malnutrition (see Colombo, de la Parra, and López, 1992). In addition, demographic risk is known to have a long term negative impact on social and cognitive development (e.g., Erickson, Egeland, and Pianta, 1989; Raz and
Bryant, 1990), and low socio-economic status has been used as one criterion for defining a family as “at risk” (e.g., Seifer et al., 1992). Raz and Bryant’s longitudinal study of a U.K. sample found lesser phonological awareness, and associated reading difficulties among socially disadvantaged children, relative to middle-class comparisons; this variation could not be explained in terms of child IQ. The authors discussed a number of possible explanations for their findings, including the role of school experiences. Demographic disadvantage may have direct implications for children in terms of educational resources, but it is likely to create additional risks through the detrimental psychological effects of poverty on parents (Duncan, Brooks-Gunn, and Klebanov, 1994).

Tanner (1989) suggested that a complex interaction between heredity and environment influences child growth and development; within this field of influence, associations can be expected between maternal psychosocial functioning and socio-economic disadvantage, which may in turn be linked to developmental difficulties for the child. Morisset, Barnard, Greenberg, Booth, and Spieker (1990) supported an interactional model of social disadvantage; within their high risk sample, the impact of demographic status on cognitive and linguistic abilities of pre-school children was mediated by the quality of early mother-child interaction. In addition, Ball and Pianta (1993) showed a strong positive correlation between maternal socio-economic status (SES) and size of social networks; they concluded that social support was an important statistical predictor of maternal competence among low SES families. In light of the literature described above, the socio-economic status of families in the present sample at 15 months and six years will be explored with regard to other indices of current maternal social and psychological functioning and child development.

4.1.b maternal psychosocial functioning and failure to thrive

Exploration of maternal psychosocial functioning should illuminate correlates of the developmental consequences of infant growth faltering. Given the literature’s emphasis on mothers whose children fail to thrive (see Chapter One) it should be useful to consider whether any social or psychological characteristics distinguish mothers of previously
growth retarded children from comparisons at six years. Moreover, limitations in child developmental functioning subsequent to failure to thrive might also be associated with maternal social or psychological stressors. This thesis describes current functioning among mothers whose children have failed to thrive, and the design of the present study precludes identification of the causal nature of links between maternal psychosocial functioning and child characteristics. Maternal social and psychological functioning at six years could reflect stable characteristics that preceded infant growth faltering; alternatively, current psychosocial wellbeing might partly reflect the experience of parenting a child who fails to thrive, in conjunction with other influences, such as family structure, that could vary over time. Nonetheless, models of psychosocial influences on parenting (e.g., Belsky, 1984; Belsky and Vondra, 1989; Seifer et al., 1992) imply that consideration of maternal depression, eating patterns, social support and socio-economic status should offer a valuable description of current maternal experiences in the present sample, regardless of any links between mother and child functioning. With regard to this literature, the following issues will be explored:

physical development

a history of failure to thrive
No differences were found at 15 months in self-reports of depression by case and control mothers, and so no intergroup differences in levels of depression were predicted at six years. Current definitions of failure to thrive include the mother, by virtue of her role in the feeding relationship. Accordingly, it should be informative to identify maternal social and psychological characteristics associated with having parented a child who failed to thrive, through comparisons of mothers whose children experienced infant growth faltering with those whose children grew normally in infancy.

early and late failure to thrive
There was evidence within the failure to thrive group that depression at 15 months distinguished between mothers whose children failed to thrive “early” or “late” in the first year; in accordance with this finding, it was predicted that mothers of “late” growth
faltering children would show higher levels of depression than those whose children failed to thrive early in the first year. Moreover, it should be useful to consider whether timing of infant growth retardation is associated with other maternal social or psychological characteristics at six years, by comparing patterns of maternal eating, social support, and socio-economic status reported by mothers of children classed as “early” and “late” failure to thrive.

**long term physical development**
Psychological and social stressors may have negative associations with child development, and so links between maternal psychosocial functioning and child stature at six years were examined. Specifically, mothers of “small” failure to thrive group children were expected to report higher levels of depression and disordered eating, less social support, and lower socio-economic status, relative to mothers of larger failure to thrive group children.

**psychological development**
With regard to the literature discussed above, it was anticipated that maternal reports of psychosocial stress would be negatively associated with child social and cognitive functioning at six years, and that these relationships would be apparent among case and control group families.

**maternal cognitive functioning at 15 months**
In addition to the psychosocial indices outlined above, data were available on maternal depression and IQ from assessments when the children were 15 months old. Accordingly, relationships between depression at 15 months, IQ and child functioning at six years were explored.
4.2 measures

4.2.a maternal depression

Data were available on maternal depression at 15 months from the depression subscale of the General Health Questionnaire (GHQ; Goldberg and Hillier, 1979). The Beck Depression Inventory, or BDI, (Beck, 1978; Beck and Steer, 1987) was used to assess maternal depression at six years. The BDI is widely used, with well-established reliability and validity (see Beck and Steer, 1987), and offers a sensitive measure of depressive symptomatology. Nevertheless, as Kendall and colleagues observed, this instrument does not enable diagnosis of depressive disorders. Use of the BDI may be criticised, given evidence that clinical interviews offer more sensitive diagnoses of depression, relative to self-report questionnaires (e.g., Downey and Coyne, 1990). With regard to that observation, and Kendall and colleagues’ caveats, the present study did not use the BDI to identify nosologic disorders; levels of depressive symptoms on the BDI were treated as a continuous variable, and no attempt was made to diagnose maternal depression.

Arguably, a diagnostic measure of depression is of interest, but levels of maternal depression at the 15 month assessment were within normal parameters (on the General Health Questionnaire, Goldberg and Hillier, 1979), suggesting that a minority of failure to thrive or control group mothers would fulfil criteria for caseness. Given that contention, and in light of time constraints on the home interview (see Chapter Two), the BDI was deemed an appropriate index of depressive symptoms among mothers in the present sample, in preference to a more detailed interview assessment of nosologic disorders. The BDI was administered and scored according to the published manual (Beck and Steer, 1987).

4.2.b maternal eating disorders

The 10th edition of the Present State Examination (PSE 10 / SCAN; Wing et al., 1990) contains a section pertaining to eating disorders; this was used to examine maternal eating in the present study. This semi-structured interview has previously been used in an inner-London community study of mothers (Andrews, Valentine and Valentine, 1995) in
conjunction with other measures used in the present study (Chapter Six), and so was considered suitable for use with the present sample. Maternal body mass index (BMI: weight in kg / height in metres\(^2\)) was also recorded, and the interview enables classification of caseness for anorexia nervosa and bulimia nervosa according to DSM-III and DSM-III-R criteria. In addition, an overall score was calculated for the number of eating disordered symptoms reported by the mother. For details of the semi-structured interview, refer to Appendix 2.b.i.a; the scoring system employed is described in Appendix 2.b.i.b, and an example of a transcribed account of maternal eating is given in Appendix 2.b.i.c.

### 4.2.c maternal social support

An assessment of maternal support networks was provided by verbal administration of the Maternal Social Support Index (MSSI) (Pascoe, Ialongo, Horn, Reinhart, and Perradatto, 1988). The MSSI was selected because it is relatively short (21 items), with established reliability and predictive validity, and is specifically concerned with practical and emotional support for parenting; for example, it includes items referring to child care issues, in addition to questions about the mother’s social relationships.

The scoring method used in the MSSI is subject to criticism, because it proposes that an unhappy or very unhappy relationship with a partner (scoring 2/1) is preferable to having no boyfriend or spouse (scoring 0); similar scoring patterns are used to rate relationships with friends or relatives. This premise is curious, given an extensive body of research that emphasises the emotional content of social relationships (e.g., Parry and Shapiro, 1986), and indicates that quality of support can be more important than quantity (e.g., Oakley, 1988): it cannot be assumed that a mother in an unsatisfactory relationship with her partner will have more marital support than a single mother. That contention has particular relevance in light of evidence that a satisfying marital relationship is a “potent protective factor” against risk (Rutter, 1985, p 604). Accordingly, a new scoring scheme was developed that rates very unhappy relationships as equivalent (in terms of provision of support) to absence of a given relationship. Mothers’ rating of satisfaction with a partner was examined in addition to the overall MSSI score; this rating was taken from the MSSI.
In addition, current cohabitation status was recorded, as was change in cohabitation status between 15 months and six years. Details of the interview format and the original scoring system of the MSSI can be found in Appendix 2.b.iii.a; the revised version is summarised in Appendix 2.b.iii.b.

4.2.d socio-economic status

The Osborn Social Index (Osborn, 1987) was used to assess socio-economic status, since data were collected using this method during the 15 month assessment. Information gathered by structured interview (see Appendix 2.b.ii.a) provided a composite index of family socio-economic status, based on weighted values assigned to the following variables (the coding scheme is detailed in Appendix 2.b.ii.b):

- father’s occupational status (Office of Population Censuses and Surveys, 1980)
- highest educational qualification of either parent
- housing tenure
- type of accommodation
- person : room ratio
- car ownership
- phone ownership

4.2.e cognitive functioning

As stated previously, data on maternal IQ were collected using the Revised version of the Wechsler Adult Intelligence Scales (WAIS-R; Wechsler, 1974) during the 15 month assessment of families. These were made available for the present study.

4.3 procedure

Questions about eating patterns, social support and socio-economic status were asked during interviews at home with the primary carer (see Chapter Two for details of procedure). Mothers were asked to complete BDI after the interview was completed. To address potential variation in literacy, mothers were given a choice of completing the questionnaire themselves, or of having it administered verbally by the interviewer (JB). If the mother did not speak English, the BDI was verbally administered by a translator.
4.4 results

4.4.a maternal psychosocial functioning: response rates

Data on maternal psychological and social functioning were not collected from all 87 families visited during the six year assessment (see Table 4.1 for details). Depression data were not available for two case and two control mothers; these women asked to complete the BDI and return it by post, owing to time constraints at the end of the interview, but did not return the questionnaires, despite subsequent reminders. One case group mother did not complete the Maternal Social Support Index because she was living separately from her child, and so questions regarding support with child care were not applicable.1

<table>
<thead>
<tr>
<th>response category</th>
<th>failure to thrive</th>
<th>control group</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>number (%)</td>
<td>number (%)</td>
</tr>
<tr>
<td>depression (BDI)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>full data</td>
<td>39 (83.0)</td>
<td>38 (80.9)</td>
</tr>
<tr>
<td>no data: not completed</td>
<td>2 (4.3)</td>
<td>2 (4.3)</td>
</tr>
<tr>
<td>no data: refusal</td>
<td>1 (2.1)</td>
<td>0</td>
</tr>
<tr>
<td>maternai eating patterns</td>
<td></td>
<td></td>
</tr>
<tr>
<td>full data</td>
<td>42 (89.4)</td>
<td>40 (85.1)</td>
</tr>
<tr>
<td>social support (MSSI)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>full data</td>
<td>41 (87.2)</td>
<td>40 (85.1)</td>
</tr>
<tr>
<td>no data: not applicable</td>
<td>1 (2.1)</td>
<td>0</td>
</tr>
<tr>
<td>socio-economic status (Osborn Social Index)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>full socio-economic data</td>
<td>42 (89.4)</td>
<td>40 (85.1)</td>
</tr>
<tr>
<td>no psychosocial data</td>
<td></td>
<td></td>
</tr>
<tr>
<td>no data: full maternal refusal</td>
<td>1 (2.1)</td>
<td>4 (8.5)</td>
</tr>
<tr>
<td>no data: child organic disease</td>
<td>2 (4.3)</td>
<td>1 (2.1)</td>
</tr>
<tr>
<td>no data: family untraceable</td>
<td>2 (4.3)</td>
<td>2 (4.3)</td>
</tr>
</tbody>
</table>

Analyses of Maternal Social Support Index data were also carried out with data from the original scoring procedure; there was no evidence of intergroup variation, and MSSI scores did not predict child physical or psychological functioning among cases or controls.
4.4.b maternal psychosocial functioning and child physical development

4.4.b.i growth at fifteen months

4.4.b.i.a a history of failure to thrive

Data on maternal body mass index and IQ conformed to requirements for parametric analyses, but non-parametric tests were used for intergroup comparisons of other psychosocial variables because data were not normally distributed (see for example Figures 4.1 and 4.2).

Summary data and results of comparisons are presented in Tables 4.2 to 4.4. No case or control mothers were currently anorectic, although one failure to thrive group mother (2.1%) reported a history of anorexia during adolescence (according to DSM-III and DSM-III-R criteria). Two mothers in the failure to thrive group (4.3%) were classified as
currently bulimic, according to DSM-III; no control group mothers were currently bulimic, but one (2.1%) gave an account of previous bulimia.

Comparisons of current cohabitation and change in cohabitation using Chi-Square Tests revealed no differences between cases and controls (Table 4.2). For analysis of change in cohabitation, no distinction was made between separation following previous cohabitation and formation of a new cohabitation; these groups were combined for statistical purposes, since cell frequencies were too small to enable Chi-Square analysis with more than one degree of freedom. One woman in the case group was no longer cohabiting with a previous partner (2.4%), compared with five control group mothers (12.5%). In addition, five case group mothers (11.9%) and two control group mothers (5.0%) were cohabiting at six years, and had been single at 15 months.

Chi-Square was used, although groups were matched, because McNemar’s Test is designed to examine change over time in a single sample (Siegel, 1956) (see Chapter Two for a discussion of related issues). This approach increases the probability of a Type II error, but repetition of analyses using McNemar’s revealed no intergroup variation.

<table>
<thead>
<tr>
<th>Table 4.2</th>
<th>Cohabitation among FTT (N = 42) and control group (N = 40) mothers: Chi-Square tests with Yates Correction for Continuity</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Failure to thrive</td>
</tr>
<tr>
<td>current cohabitation</td>
<td>% (n)</td>
</tr>
<tr>
<td>yes</td>
<td>85.7 (36)</td>
</tr>
<tr>
<td>no</td>
<td>14.3 (6)</td>
</tr>
<tr>
<td>change in cohabitation</td>
<td>% (n)</td>
</tr>
<tr>
<td>no change</td>
<td>85.7 (36)</td>
</tr>
<tr>
<td>change</td>
<td>14.3 (6)</td>
</tr>
</tbody>
</table>
Change in overall socio-economic status between initial and follow-up assessment was considered by means of Wilcoxon tests for matched pairs, comparing overall Social Index between 15 months and six years for cases and controls separately. A trend implied improvements in the socio-economic status of case families ($z = -1.76; \ p \leq 0.08$, two-tailed), and the overall Social Index of control families had increased ($z = -4.19; \ p \leq 0.001$, two-tailed). Further analysis revealed significantly greater improvement in socio-economic status among comparisons than in the case group (Table 4.4).

**Table 4.3** Body Mass Index and IQ scores among failure to thrive and control group mothers: matched pairs t-tests

<table>
<thead>
<tr>
<th></th>
<th>FTT group</th>
<th>control group</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td>body mass index mean (s.d.)</td>
<td>24.44 (4.90)</td>
<td>23.83 (4.01)</td>
<td>0.61</td>
</tr>
<tr>
<td>range</td>
<td>15.86 - 35.64</td>
<td>18.07 - 35.08</td>
<td>(34)</td>
</tr>
<tr>
<td>WAIS-R (IQ) mean (s.d.)</td>
<td>83.45 (17.11)</td>
<td>86.38 (16.17)</td>
<td>-1.02</td>
</tr>
<tr>
<td>range</td>
<td>56.0 - 138.0</td>
<td>45.0 - 127.0</td>
<td>(47)</td>
</tr>
<tr>
<td>Table 4.4</td>
<td>Psychosocial functioning among failure to thrive and control group mothers: Wilcoxon matched pairs tests</td>
<td></td>
<td></td>
</tr>
<tr>
<td>------------</td>
<td>--------------------------------------------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Failure to thrive</td>
<td>Control group</td>
<td>Wilcoxon z (pairs)</td>
</tr>
<tr>
<td>GHQ depression at 15 months</td>
<td>1.83 (2.22)</td>
<td>1.51 (2.94)</td>
<td>-1.20</td>
</tr>
<tr>
<td>Beck depression inventory</td>
<td>7.46 (8.18)</td>
<td>7.45 (7.83)</td>
<td>-0.706</td>
</tr>
<tr>
<td>Eating disordered symptoms</td>
<td>6.36 (4.64)</td>
<td>5.30 (4.35)</td>
<td>-1.13</td>
</tr>
<tr>
<td>Social support index (revised)</td>
<td>21.20 (5.72)</td>
<td>20.50 (4.98)</td>
<td>-0.045</td>
</tr>
<tr>
<td>Marital support</td>
<td>2.69 (1.46)</td>
<td>2.30 (1.49)</td>
<td>-1.08</td>
</tr>
<tr>
<td>Osborn social index</td>
<td>45.05 (8.36)</td>
<td>46.62 (8.44)</td>
<td>-1.18</td>
</tr>
<tr>
<td>Occupation</td>
<td>-0.262 (2.09)</td>
<td>0.425 (2.05)</td>
<td>-1.37*</td>
</tr>
<tr>
<td>Education</td>
<td>0.064 (1.94)</td>
<td>0.065 (2.00)</td>
<td>-0.072</td>
</tr>
<tr>
<td>Housing tenure accommodation type</td>
<td>-1.58 (2.01)</td>
<td>-1.32 (2.20)</td>
<td>-0.834</td>
</tr>
<tr>
<td>Person: room ratio</td>
<td>1.11 (0.422)</td>
<td>1.10 (0.545)</td>
<td>-0.027</td>
</tr>
<tr>
<td>Osborn change (15mth-5yr)</td>
<td>1.88 (5.50)</td>
<td>4.62 (5.62)</td>
<td>-2.96****</td>
</tr>
</tbody>
</table>

*p < 0.10  **p < 0.05  ***p < 0.01  ****p < 0.005  two-tailed
early and late growth failure

Comparisons of mothers of children who failed to thrive early or late during the first year of life revealed almost no intergroup variation in psychosocial functioning at six years (Tables 4.5 - 4.7). Again, due to small numbers, change in cohabitation between 15 months and six years was treated as a single category for Chi-Square analysis (Table 4.5). One late FTT group mother (4.5%) was no longer cohabiting with her previous partner; there were no mothers of children with early growth retardation in this category. Two mothers whose children failed to thrive late (9.09%) and three mothers of children with early growth failure (15.0%) were cohabiting and had been single at 15 months. There was a trend for mothers of early failure to thrive children to have better housing tenure (Table 4.7), but this finding warrants caution, given the number of comparisons performed.

There was no other evidence of intergroup variation at six years.

Table 4.5 cohabitation among early (N = 20) and late (N = 22) failure to thrive group mothers: Fisher's Exact Tests

<table>
<thead>
<tr>
<th>Current Cohabitation</th>
<th>Early FTT % (n)</th>
<th>Late FTT % (n)</th>
<th>$\chi^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>90.0 (18)</td>
<td>81.8 (18)</td>
<td>0.099</td>
</tr>
<tr>
<td>No</td>
<td>10.0 (2)</td>
<td>18.2 (4)</td>
<td></td>
</tr>
</tbody>
</table>

Table 4.6 Body Mass Index and IQ scores among early and late failure to thrive group mothers: t-tests for independent samples

<table>
<thead>
<tr>
<th></th>
<th>Early FTT</th>
<th>Late FTT</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td>Body Mass Index</td>
<td>20</td>
<td>22</td>
<td>-0.15</td>
</tr>
<tr>
<td>N 24.12 (5.05)</td>
<td>23.88 (4.78)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>WAIS-R (IQ)</td>
<td>22</td>
<td>25</td>
<td>-2.50**</td>
</tr>
<tr>
<td>89.91 (19.60)</td>
<td>77.76 (12.37)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 4.7 Psychosocial functioning among early and late failure to thrive group mothers: Mann-Whitney tests for independent samples

<table>
<thead>
<tr>
<th></th>
<th>Early FTT</th>
<th>Late FTT</th>
<th>Mann-Whitney</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>Mean (s.d.)</td>
<td>N</td>
</tr>
<tr>
<td>Depression 15mths</td>
<td>22</td>
<td>0.86 (1.24)</td>
<td>25</td>
</tr>
<tr>
<td>Depression at 6 yrs</td>
<td>19</td>
<td>7.05 (6.87)</td>
<td>20</td>
</tr>
<tr>
<td>Eating symptoms</td>
<td>20</td>
<td>6.60 (4.61)</td>
<td>22</td>
</tr>
<tr>
<td>Social support</td>
<td>20</td>
<td>22.25 (5.74)</td>
<td>21</td>
</tr>
<tr>
<td>Marital support</td>
<td>20</td>
<td>2.85 (1.31)</td>
<td>22</td>
</tr>
<tr>
<td>Osborn social index</td>
<td>20</td>
<td>46.95 (10.07)</td>
<td>22</td>
</tr>
<tr>
<td>Occupation</td>
<td>20</td>
<td>0.00 (2.22)</td>
<td>22</td>
</tr>
<tr>
<td>Education</td>
<td>22</td>
<td>0.318 (2.38)</td>
<td>25</td>
</tr>
<tr>
<td>Housing tenure</td>
<td>21</td>
<td>-1.09 (2.17)</td>
<td>22</td>
</tr>
<tr>
<td>Accommodation type</td>
<td>21</td>
<td>-2.52 (2.25)</td>
<td>22</td>
</tr>
<tr>
<td>Person: Room ratio</td>
<td>20</td>
<td>1.12 (0.459)</td>
<td>21</td>
</tr>
<tr>
<td>Osborn change</td>
<td>20</td>
<td>1.95 (4.29)</td>
<td>22</td>
</tr>
</tbody>
</table>

*p ≤ 0.10  ** p ≤ 0.05  *** p ≤ 0.01  two-tailed

4.4.b.ii Physical stature at six years

4.4.b.ii.a Small and larger failure to thrive group children

Indices of psychosocial functioning were compared for mothers of previously growth retarded children who were classed as "small" or "larger" for age at fifteen months (Tables 4.8 - 4.10). Change in cohabitation was again treated as a dichotomous category for Chi-Square analysis, because of small cell numbers (see Table 4.8). Among mothers of small for age failure to thrive group children, three (18.7%) were currently cohabiting and had been single at fifteen months; none (0%) were no longer cohabiting if they had been previously. One mother of a larger growth retarded child was no longer cohabiting, and had been at 15 months; two mothers in this group were cohabiting and were single at fifteen months. There was a trend for less improvement in socio-economic status between 15 months and six years for mothers of small failure to thrive children, relative to mothers of larger children (see Table 4.10), and in contrast to predictions, mothers of larger failure to thrive group children reported significantly less satisfaction in their relationship with their partner. No other intergroup variation was found on indices of maternal
psychological and social functioning at the time of the follow-up study.

Since smaller case group children were more likely to be male and to live in a larger family at age six (see Chapter Three), forced entry regression was carried out to consider whether these sample characteristics could account for intergroup variation in maternal satisfaction with marital support. Child physical stature at six years was the only significant indicator of mothers’ satisfaction with a partner ($R^2 = 0.181$; adjusted $R^2 = 0.158$; $F = 7.74$; $\beta = -0.426$; $p \leq 0.01$).

### Table 4.8

<table>
<thead>
<tr>
<th></th>
<th>small FTT % (n)</th>
<th>large FTT % (n)</th>
<th>$\chi^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>current cohabitation</td>
<td>yes 93.8 (15)</td>
<td>81.0 (17)</td>
<td>0.413</td>
</tr>
<tr>
<td></td>
<td>no 6.2 (1)</td>
<td>19.0 (4)</td>
<td></td>
</tr>
<tr>
<td>change in cohabitation</td>
<td>no change 81.3 (13)</td>
<td>85.7 (18)</td>
<td>0.00</td>
</tr>
<tr>
<td></td>
<td>change 18.7 (3)</td>
<td>14.3 (3)</td>
<td></td>
</tr>
</tbody>
</table>

### Table 4.9

<table>
<thead>
<tr>
<th></th>
<th>small FTT mean (s.d.)</th>
<th>large FTT mean (s.d.)</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td>body mass index</td>
<td>16 22.94 (5.46)</td>
<td>21 24.96 (4.63)</td>
<td>-1.21</td>
</tr>
<tr>
<td>WAIS-R (IQ)</td>
<td>17 81.29 (13.83)</td>
<td>21 87.57 (20.40)</td>
<td>-1.13</td>
</tr>
</tbody>
</table>
4.4.b.ii.b  maternal psychosocial functioning and child physical stature:

Spearman's Rank Correlations

In order to determine which aspects of maternal psychosocial functioning best indicated child stature at six years, correlational analyses were conducted to identify variables for inclusion in regression analyses. Results, summarised in Table 4.11, showed some evidence of links between psychological or social functioning and child physical development. Within the case group, parental occupation was strongly positively associated with height for age, and satisfaction with marital support was significantly negatively correlated with height and weight for age; there were no other significant correlations with child stature. Height for age of control group children was also negatively associated with marital satisfaction. Weight for age of comparison children was positively correlated with maternal body mass index, and there were significant negative correlations with family accommodation type and the height and weight for age of thriving children. There were no links between maternal depression or IQ and physical stature among cases or controls.
**Table 4.11** Spearman’s rank correlations of maternal psychosocial functioning and child physical stature: failure to thrive and control group mothers

<table>
<thead>
<tr>
<th><strong>psychosocial functioning</strong></th>
<th>depression at 15 months</th>
<th>depression at 6 years</th>
<th>body mass index</th>
<th>eating symptoms</th>
<th>social support</th>
<th>marital support</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>physical stature</strong></td>
<td>case</td>
<td>control</td>
<td>case</td>
<td>control</td>
<td>case</td>
<td>control</td>
</tr>
<tr>
<td>FTT: N = 35 Control: N = 33</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>height for age centile</td>
<td>0.062</td>
<td>0.087</td>
<td>0.154</td>
<td>0.104</td>
<td>0.115</td>
<td>0.164</td>
</tr>
<tr>
<td>weight for age centile</td>
<td>0.048</td>
<td>0.041</td>
<td>0.052</td>
<td>0.145</td>
<td>0.232</td>
<td>0.416</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>psychosocial functioning</strong></th>
<th>Osborn social index</th>
<th>change in social index</th>
<th>occupation</th>
<th>education</th>
<th>housing tenure</th>
<th>accomm. type</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>physical stature</strong></td>
<td>case</td>
<td>control</td>
<td>case</td>
<td>control</td>
<td>case</td>
<td>control</td>
</tr>
<tr>
<td>FTT: N = 35 Control: N = 33</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>height for age centile</td>
<td>0.125</td>
<td>-0.220</td>
<td>0.232</td>
<td>-0.019</td>
<td>0.479</td>
<td>***</td>
</tr>
<tr>
<td>weight for age centile</td>
<td>-0.156</td>
<td>-0.333</td>
<td>0.230</td>
<td>0.071</td>
<td>0.092</td>
<td>0.251</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>psychosocial functioning</strong></th>
<th>person ratio</th>
<th>WAIS-R (IQ) at 15 months</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>physical stature</strong></td>
<td>case</td>
<td>control</td>
</tr>
<tr>
<td>FTT: N = 35 Control: N = 33</td>
<td></td>
<td></td>
</tr>
<tr>
<td>height for age centile</td>
<td>-0.225</td>
<td>-0.283</td>
</tr>
<tr>
<td>weight for age centile</td>
<td>-0.030</td>
<td>-0.269</td>
</tr>
</tbody>
</table>

*p ≤ 0.10  **p ≤ 0.05  ***p ≤ 0.01  two-tailed

**4.4.b.ii.c** maternal psychosocial functioning and child physical stature: regression analyses

Variables that approached significance in correlations with child height for age and weight for age were entered into regression equations. Height and weight z scores were used as dependent variables, since these were more normally distributed than centile data. Within the failure to thrive group, parental occupational status was the only significant indicator of child's height for age at six years; accommodation type indicated the height for age of control group children. Inclusion of marital support did not significantly improve the power of these equations (see Table 4.12). In contrast, satisfaction with marital support accounted for a highly significant portion of the variance in weight for age of growth retarded children ($R^2 = 0.213$; adjusted $R^2 =$
0.191; \( F = 9.48 \); \( \beta = -0.462; \) \( p \leq 0.004 \). Maternal body mass index \( (R^2 = 0.174; \) adjusted \( R^2 = 0.150; \) \( F = 7.18 \); \( \beta = 0.418; \) \( p \leq 0.01 \) acted with accommodation type \( (\text{change in } R^2 = 0.143; \) \( F = 7.66; \) \( p \leq 0.005 \); \( \beta = -0.420, \) \( p \leq 0.01 \) to indicate 27.57\% of the variance in control group children's weight for age at six years.

**Table 4.12** regression of maternal psychosocial functioning on height for age z score: failure to thrive \( (N = 35) \) and control group \( (N = 33) \)

<table>
<thead>
<tr>
<th>variable</th>
<th>change in ( R^2 )</th>
<th>adjusted ( R^2 )</th>
<th>( F )</th>
<th>( \beta )</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>failure to thrive group</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>occupation</td>
<td>0.180</td>
<td>0.157</td>
<td>7.70***</td>
<td>0.425***</td>
</tr>
<tr>
<td>marital support</td>
<td>0.053</td>
<td>0.188</td>
<td>5.17***</td>
<td>-0.231</td>
</tr>
<tr>
<td><strong>control group</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>accommodation type</td>
<td>0.193</td>
<td>0.170</td>
<td>8.36***</td>
<td>-0.439***</td>
</tr>
<tr>
<td>marital support</td>
<td>0.048</td>
<td>0.197</td>
<td>5.40***</td>
<td>-0.241</td>
</tr>
</tbody>
</table>

\* \( p \leq 0.10 \), \** \( p \leq 0.05 \), \*** \( p \leq 0.01 \)

### 4.4.c maternal psychosocial functioning and child psychological development

#### 4.4.c.i maternal psychosocial functioning and child cognitive development: Spearman's Rank Correlations

Correlational analyses (Table 4.13) were conducted in order to identify those aspects of maternal psychological and social functioning that best indicated child cognitive abilities at six years. Within the failure to thrive group, there was some evidence linking maternal psychosocial functioning to child cognition. Maternal report of eating disordered symptoms was positively correlated with case group children's overall cognitive functioning and verbal ability. Overall socio-economic status was strongly positively correlated with all indices of child cognition, except perceptual ability, and there was some evidence that maternal education was positively related to child performance. Case group mothers' reports of depression and overall social support were not related to child cognitive skill, although there was a negative correlation between maternal satisfaction with marital support and child GCI. Among cases, maternal IQ was positively correlated with all aspects of child cognition except perceptual functioning; mothers' IQ was associated with all indices of thriving children's cognition.
Overall social support was not associated with child cognition in the comparison group, although maternal ratings of marital support were significantly positively related to children’s general cognitive ability, verbal ability and quantitative skill. There were no links between child cognition and maternal depression or disordered eating. Overall socio-economic status and maternal education were positively correlated with all indices of child performance, and child cognitive skills were related to parental occupation and housing tenure.

<table>
<thead>
<tr>
<th>Table 4.13</th>
<th>Spearman’s rank correlations of maternal psychosocial functioning and child cognitive development: failure to thrive and control group mothers</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Psychosocial functioning</strong></td>
<td><strong>Cognitive ability</strong></td>
</tr>
<tr>
<td><strong>Depression at 15 months</strong></td>
<td>0.076</td>
</tr>
<tr>
<td><strong>Depression at 6 years</strong></td>
<td>-0.169</td>
</tr>
<tr>
<td><strong>Body Mass Index</strong></td>
<td>-0.076</td>
</tr>
<tr>
<td><strong>Eating Symptoms</strong></td>
<td>-0.006</td>
</tr>
<tr>
<td><strong>Social Symptoms</strong></td>
<td>0.040</td>
</tr>
</tbody>
</table>

| **Psychosocial functioning (Osborn Social Index)** | **Cognitive ability** | **Case** | **Control** | **Case** | **Control** | **Case** | **Control** | **Case** | **Control** | **Case** | **Control** |
| **Change in Social Index** | 0.384 | 0.473 | -0.165 | 0.049 | 0.236 | 0.322 | 0.290 | 0.717 | 0.157 | 0.361 | 0.127 | 0.238 |
| **Occupation** | 0.384 | 0.402 | -0.198 | 0.065 | 0.095 | 0.223 | 0.222 | 0.549 | 0.178 | 0.279 | 0.214 | 0.247 |
| **Education** | 0.471 | 0.417 | -0.003 | 0.132 | 0.192 | 0.260 | 0.309 | 0.671 | 0.245 | 0.229 | 0.274 | 0.264 |
| **Housing Tenure** | 0.331 | 0.550 | -0.187 | 0.069 | 0.239 | 0.281 | 0.293 | 0.576 | 0.159 | 0.519 | 0.018 | 0.224 |
| **Accomm. Type** | 0.013 | 0.296 | -0.228 | -0.103 | 0.034 | 0.241 | 0.118 | 0.578 | -0.201 | 0.302 | -0.046 | 0.109 |
### 4.4.c.ii maternal psychosocial functioning and child cognitive development: regression analyses

#### 4.4.c.ii.a general cognitive ability

According to the regression analyses summarised in Table 4.14, the general cognitive ability of thriving children and children who have failed to thrive was partly indicated by maternal psychological and social functioning. Maternal IQ and socio-economic status accounted for 16.5% of the variance in case group GCI, although inclusion of socio-economic status did not significantly improve the power of this equation. Almost 50% of the variance in general cognitive skill of thriving children was accounted for by maternal education.

#### Table 4.14 regression of maternal psychosocial functioning on general cognitive index: FTT (N = 41) and control group (N = 39)

<table>
<thead>
<tr>
<th>variable</th>
<th>change in $R^2$</th>
<th>adjusted $R^2$</th>
<th>$F$</th>
<th>$\beta$</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>failure to thrive group</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WAIS-R at 15 months</td>
<td>0.149</td>
<td>0.127</td>
<td>6.81***</td>
<td>0.385***</td>
</tr>
<tr>
<td>Osborn social index</td>
<td>0.058</td>
<td>0.165</td>
<td>4.94***</td>
<td>0.275*</td>
</tr>
<tr>
<td>Eating disordered symptoms</td>
<td>0.026</td>
<td>0.170</td>
<td>3.73**</td>
<td>0.179</td>
</tr>
<tr>
<td>Marital support</td>
<td>0.030</td>
<td>0.180</td>
<td>3.20**</td>
<td>-0.189</td>
</tr>
<tr>
<td><strong>control group</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maternal education</td>
<td>0.467</td>
<td>0.452</td>
<td>32.42****</td>
<td>0.683*****</td>
</tr>
<tr>
<td>Marital support</td>
<td>0.022</td>
<td>0.460</td>
<td>17.21****</td>
<td>0.164</td>
</tr>
</tbody>
</table>
4.4.c.ii.b memory performance

Child memory performance for cases and controls was accounted for by the same aspects of maternal functioning that indicated general cognitive index (see Table 4.15 for details).

| Table 4.15 regression of maternal psychosocial functioning on memory performance: failure to thrive (N = 41) and control group (N = 39) |
|---|---|---|---|---|
| variable | change in $R^2$ | adjusted $R^2$ | F  | $\beta$ |
| **failure to thrive group** | | | | |
| WAIS-R at 15 months | 0.147 | 0.125 | 6.73*** | 0.384*** |
| Osborn social index | 0.059 | 0.165 | 4.94*** | 0.278* |
| **control group** | | | | |
| maternal education | 0.260 | 0.241 | 13.70***** | 0.510***** |

*p < 0.10  **p < 0.05  ***p < 0.01  ****p < 0.005  *****p < 0.001

4.4.c.ii.c verbal performance

Child verbal ability in the failure to thrive group was indicated by mothers' IQ, social index, and report of eating disordered symptoms (Table 4.16); once again, maternal education was the sole significant indicator of verbal ability among thriving children.

| Table 4.16 regression of maternal psychosocial functioning on verbal performance: failure to thrive (N = 41) and control group (N = 39) |
|---|---|---|---|---|
| variable | change in $R^2$ | adjusted $R^2$ | F  | $\beta$ |
| **failure to thrive group** | | | | |
| WAIS-R at 15 months | 0.164 | 0.143 | 7.66*** | 0.405*** |
| Osborn social index | 0.080 | 0.205 | 6.15**** | 0.328** |
| eating disordered symptoms | 0.071 | 0.260 | 5.70**** | 0.297** |
| **control group** | | | | |
| maternal education | 0.383 | 0.366 | 22.97***** | 0.619***** |
| marital support | 0.008 | 0.357 | 11.57***** | 0.101 |

*p < 0.10  **p < 0.05  ***p < 0.01  ****p < 0.005  *****p < 0.001

4.4.c.ii.d quantitative performance

Quantitative skill among growth retarded children was indicated by maternal IQ (Table 4.17). Mothers' education was the sole significant indicator of numerical skill among comparisons, although inclusion of marital support tended to improve the power of this equation.
### Table 4.17: Regression of Maternal Psychosocial Functioning on Quantitative Performance: Failure to Thrive (N = 39) and Control Group (N = 36)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Change in $R^2$</th>
<th>Adjusted $R^2$</th>
<th>F</th>
<th>β</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Failure to Thrive Group</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WAIS-R at 15 months</td>
<td>0.118</td>
<td>0.095</td>
<td>5.21**</td>
<td>0.343**</td>
</tr>
<tr>
<td>Osborn social index</td>
<td>0.045</td>
<td>0.119</td>
<td>3.70**</td>
<td>0.242</td>
</tr>
<tr>
<td><strong>Control Group</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maternal education</td>
<td>0.311</td>
<td>0.292</td>
<td>16.69*****</td>
<td>0.558****</td>
</tr>
<tr>
<td>Marital support</td>
<td>0.059</td>
<td>0.335</td>
<td>10.57*****</td>
<td>0.270*</td>
</tr>
</tbody>
</table>

* $p < 0.10$  ** $p < 0.05$  *** $p < 0.01$  **** $p < 0.005$  ***** $p < 0.001$

#### 4.4.c.ii.e Perceptual Performance

Perceptual abilities of children who had failed to thrive were not accounted for by maternal social or psychological functioning. As with other indices of child cognition, control group perceptual performance was indicated by maternal education ($R^2 = 0.368$; adjusted $R^2 = 0.352$; $F = 22.73$; $β = 0.607$; $p < 0.001$).

#### 4.4.c.iii Maternal Psychosocial Functioning and Child Social Cognition:

**Spearman’s Rank Correlations**

Correlational analyses were conducted in order to determine those aspects of maternal social and psychological functioning that best indicated child social cognition at six years (see Table 4.18). Maternal depression and overall reports of social support were not related to the social cognitive skills of case or control group children. Satisfaction with marital support was negatively associated with problem solving flexibility among case group children, and a non-significant positive correlation linked this variable to problem solving relevance in the control group. Among families where the child had failed to thrive, overall socio-economic status and maternal report of disordered eating were positively associated with child problem solving relevance and flexibility, although links with flexibility were non-significant. Higher levels of crowding in the home (person : room ratio) were associated with poorer problem solving, in terms of relevance and flexibility.
Within the control group, there was no significant indication that maternal eating was related to child social cognition. There was a significant negative correlation between family housing tenure and number of suggested problem solving categories, and in line with case group findings, overall socio-economic status was strongly positively correlated with social problem solving relevance; this association is likely to reflect observed relationships between relevance and variables that comprise the social index, notably maternal education (which was also related to problem solving flexibility). Mothers' IQ was also associated with relevance, although no links were found with other aspects of child problem solving.

**Table 4.18** Spearman’s rank correlations of maternal psychosocial functioning and child social cognition: failure to thrive and control group mothers

<table>
<thead>
<tr>
<th>Social Problem Solving</th>
<th>Depression at 15 months</th>
<th>Depression at 6 years</th>
<th>Body Mass Index</th>
<th>Eating Symptoms</th>
<th>Social Support</th>
<th>Marital Support</th>
</tr>
</thead>
<tbody>
<tr>
<td>Case Control</td>
<td>Case Control</td>
<td>Case Control</td>
<td>Case Control</td>
<td>Case Control</td>
<td>Case Control</td>
<td>Case Control</td>
</tr>
<tr>
<td>FTT: N = 39</td>
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<td></td>
<td></td>
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</tr>
<tr>
<td>SPS categories</td>
<td>0.139</td>
<td>-0.078</td>
<td>0.164</td>
<td>-0.125</td>
<td>0.219</td>
<td>0.165</td>
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<tr>
<td></td>
<td>-0.078</td>
<td>-0.125</td>
<td>0.219</td>
<td>0.165</td>
<td>0.052</td>
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<tr>
<td></td>
<td>0.074</td>
<td>-0.228</td>
<td>-0.181</td>
<td>-0.170</td>
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</tr>
<tr>
<td>SPS flexibility</td>
<td>0.092</td>
<td>-0.376</td>
<td>0.245</td>
<td>-0.232</td>
<td>0.284</td>
<td>0.066</td>
</tr>
<tr>
<td></td>
<td>-0.376</td>
<td>-0.232</td>
<td>0.284</td>
<td>0.066</td>
<td>0.275</td>
<td>-0.109</td>
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<td></td>
<td></td>
<td></td>
<td>-0.309</td>
<td>0.260</td>
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<tr>
<td>SPS relevance</td>
<td>0.106</td>
<td>-0.248</td>
<td>0.262</td>
<td>-0.266</td>
<td>0.167</td>
<td>-0.103</td>
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<tr>
<td></td>
<td>-0.248</td>
<td>-0.266</td>
<td>0.167</td>
<td>-0.103</td>
<td>0.387</td>
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<td>0.072</td>
<td>0.155</td>
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<td></td>
<td>-0.179</td>
<td>0.282</td>
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</table>

<table>
<thead>
<tr>
<th>Social Problem Solving</th>
<th>Osborne Social Index</th>
<th>Change in Social Index</th>
<th>Occupation</th>
<th>Education</th>
<th>Housing Tenure</th>
<th>Accommodation Type</th>
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<tbody>
<tr>
<td>Case Control</td>
<td>Case Control</td>
<td>Case Control</td>
<td>Case Control</td>
<td>Case Control</td>
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<tr>
<td>FTT: N = 39</td>
<td>Control: N = 34</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>SPS categories</td>
<td>0.273</td>
<td>-0.241</td>
<td>-0.056</td>
<td>-0.248</td>
<td>-0.003</td>
<td>-0.189</td>
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<td>-0.241</td>
<td>-0.056</td>
<td>-0.248</td>
<td>-0.003</td>
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<td></td>
<td></td>
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<td>-0.427</td>
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<td>0.152</td>
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</tr>
<tr>
<td>SPS flexibility</td>
<td>0.293</td>
<td>0.230</td>
<td>0.194</td>
<td>-0.216</td>
<td>0.149</td>
<td>0.020</td>
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<tr>
<td></td>
<td>0.230</td>
<td>0.194</td>
<td>-0.216</td>
<td>0.149</td>
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<tr>
<td>SPS relevance</td>
<td>0.408</td>
<td>0.502</td>
<td>0.299</td>
<td>0.067</td>
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<td></td>
<td>0.502</td>
<td>0.299</td>
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<td>0.266</td>
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<td>0.359</td>
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<td></td>
<td>0.244</td>
</tr>
</tbody>
</table>
4.4.c.iv maternal psychosocial functioning and child social cognition:
regression analyses

4.4.c.iv.a problem solving categories

The number of problem solving categories suggested by children who have failed to thrive was partly indicated by family housing tenure ($R^2 = 0.136$; adjusted $R^2 = 0.114$; $F = 6.14$; $\beta = 0.369$; $p \leq 0.02$). Variance in number of problem solving categories suggested by thriving children was also indicated by housing tenure ($R^2 = 0.154$; adjusted $R^2 = 0.130$; $F = 6.37$; $\beta = -0.392$; $p \leq 0.02$), but it should be noted that in this case the variables were negatively associated, in contrast to predictions.

4.4.c.iv.b problem solving flexibility

Social problem solving flexibility of previously growth retarded children was partially accounted for by levels of crowding, although this was non-significant ($R^2 = 0.074$; adjusted $R^2 = 0.050$; $F = 3.06$; $\beta = -0.273$; $p \leq 0.10$). Maternal report of marital support did not improve the power of this equation (change in $R^2 = 0.052$; adjusted $R^2 = 0.079$; $F = 2.68$, $p \leq 0.10$; $\beta = -0.228$, $p \leq 0.15$). By contrast, maternal education ($R^2 = 0.108$; adjusted $R^2 = 0.0842$; $F = 4.49$; $\beta = 0.329$; $p \leq 0.05$) and depression at 15 months (change in $R^2 = 0.089$; adjusted $R^2 = 0.152$; $F = 4.41$, $p \leq 0.05$; $\beta = -0.298$, $p \leq 0.05$) indicated a significant portion of variance in flexibility among thriving children.
4.4.c.iv.c problem solving relevance

Almost 16% of the variance in relevance of problem solving strategies offered by failure to thrive group children was accounted for by socio-economic status ($R^2 = 0.181$; adjusted $R^2 = 0.159$; $F = 8.38$; $\beta = 0.425$; $p \leq 0.006$). Maternal education was the sole indicator of problem solving relevance among thriving children ($R^2 = 0.260$; adjusted $R^2 = 0.240$; $F = 13.03$; $\beta = 0.510$; $p \leq 0.001$).
4.5 discussion

The present thesis set out to describe current functioning in a sample of mothers and their six year old children who failed to thrive in infancy; with regard to that general objective, this chapter explores associations between maternal social and psychological functioning and the development of previously growth retarded children. Maternal psychological wellbeing and socio-economic status offer some indication of the wider social context of child development, and the analyses clearly indicate links between mothers' psychological and social functioning and the development of growth retarded and thriving children. This thesis aims to identify maternal characteristics associated with a history of failure to thrive, and with differential patterns of development among children who experienced infant growth faltering and so the current psychosocial functioning of mothers of growth retarded children and controls was compared; it was also suggested that current maternal psychosocial characteristics would be associated with the physical or psychological development of case and control group children at six years. Indices of maternal psychological and social functioning were clearly related to child development at six years, but there was little evidence of differences in current psychosocial functioning between mothers whose children have failed to thrive and mothers of thriving comparisons.

4.5.a maternal psychosocial functioning and child physical development

4.5.a.i a history of failure to thrive

maternal depression

Results of intergroup comparisons gave no indication that a history of failure to thrive was associated with maternal psychological dysfunction at the time of the six year follow-up. In line with the fifteen month assessment of mothers using the General Health Questionnaire (see Skuse, Wolke, and Reilly, 1992), no case-control differences in current depression were found. A minority of mothers in the case and control groups had scores reflecting significant depression, according to the Beck Depression Inventory (BDI) (see Figures 4.1 and 4.2); rates of depression were comparable with Weissman et al.'s (1987) finding that 8% of mothers in their American community sample were depressed.
The lack of intergroup differentiation is also borne out by other research. In accordance with the present study, Singer, Song, Hill, and Jaffe (1990) found that mothers of children who were failing to thrive scored within the normal range on the Beck Depression Inventory, challenging the traditional clinical assumption (e.g., Evans et al., 1972) of infant growth retardation arising from maternal psychiatric disorder. It may be concluded that depression was not characteristic of the present community sample of mothers whose children failed to thrive in infancy.

**maternal eating disorder**

Very few mothers of failure to thrive or control group children reported a current or previous eating disorder according to DSM-III or DSM-III-R criteria, and there were no intergroup differences in maternal body mass index (which was within normal parameters for both groups) or number of reported symptoms of disordered eating. Arguably, these results could reflect social desirability, since disordered eating is often accompanied by guilt and secrecy (e.g., Abraham and Beaumont, 1982), but that contention is not supported by the extent of within group variation in descriptions of eating patterns. A number of case and control mothers described disordered eating patterns, but did not fulfil diagnostic criteria for anorexia or bulimia nervosa. For example, one mother of a case group child described distorted body image, but did not report other characteristics of anorexia:

"Other people have said to me ‘obsession’ - somebody said to me once, if there’s such a thing as an anorexic eye then I probably had it. You know, I look in the mirror and I see myself ‘that wide’ and I’m not".

Another case group mother provides an example of infrequent bingeing, which did not fulfil other criteria for a diagnosis of bulimia:

"Like if I’m making dinner, if it’s something that I really like I might have two or three portions within one evening. If it’s bread that I fancy I’ll have several slices of bread until it’s coming out of my mouth or something like that, I feel really uncomfortable".
Accounts such as these imply that the interview was relatively successful in eliciting honest descriptions of maternal eating patterns, and this conclusion is supported by the observation that the occurrence of eating disorders in the present sample was similar, or slightly higher than reported in other studies. For example, Bushnell, Wells, Hornblow, Oakley-Browne and Joyce (1990) reported bulimia in 2.6% of a large population sample; in the present study, when cases and controls are considered together, 3.6% reported previous or current bulimia.

Nevertheless, the prevalence of disordered eating is often underestimated (Beglin and Fairburn, 1992), and so the present study has probably failed to detect disordered eating among some mothers. In Beglin and Fairburn’s sample of women who chose not to participate in a study of eating disorders, over 38% had a recorded history of problems with eating or weight; application of these results to the present sample indicates the likelihood that a number of women may not have revealed disordered eating. However, data on maternal body mass index did not reveal intergroup differences, and so case and control group mothers probably did not differ in their disclosure of eating patterns.

Clinical investigations (e.g., Pugliese, Weyman-Daum, Moses and Lifshitz, 1987) have implicated parental beliefs about diet and obesity in the aetiology of failure to thrive; the present study has not evaluated this contention, but it is noteworthy that mothers whose children have a history of failure to thrive were no more likely to report past or present disordered eating than comparison mothers. Since so few mothers reported nosologic disorders, links between mothers’ clinical eating disorders and child development cannot be determined. Disordered eating may have relevance in a small proportion of cases, but in the community sample seen in the present study, maternal eating patterns were not associated with a history of infant failure to thrive.

**social support**

Newberger, Hampton, Marx and White (1986) suggested that parents of growth retarded children may become isolated because they see a child’s poor growth as evidence of their social support
own failure. There was no evidence of this at follow-up in the present sample: levels of current social support described by cases and controls were very similar. It may be that mothers of case group children experienced isolation at the time of infant growth faltering, but that this had resolved by the time of the six year interview. Equally, it should be noted that the literature on psychosocial stress in failure to thrive is inconsistent, and prone to methodological problems (see Chapter One), and most studies have considered stressors such as levels of crowding or noise in the home (e.g., Drotar, Eckerle, Satola, Pallotta, and Wyatt, 1990) rather than support networks.

Accordingly, it is difficult to determine whether the results of the present study conform to the findings of previous investigations, although Newberger et al. (1986) found some evidence of less adequate support networks among mothers of growth retarded children. Failure to thrive group mothers in the present study may not have become isolated because a minority of children were identified as growth retarded (28%; see Skuse et al., 1992), and so mothers might be less likely to experience the sense of failure described by Newberger et al. in a referred sample. However, it is possible that intergroup differences were not detected because the Maternal Social Support Index (MSSI) failed to assess mothers' social networks adequately.

The MSSI was selected for the present study primarily because it specifically addressed support in parenting, but its use is subject to some criticism. As an American instrument, some items may not have been appropriate for a British sample, although these were adapted where possible. Furthermore, Alloway and Bebbington (1987) noted that crisis social support is more important than routine support in moderating psychosocial stress, and Brown, Andrews, Harris, Adler and Bridge (1986) highlighted the importance of crisis support in protecting against depression. The MSSI primarily focuses on help with day-to-day tasks such as grocery shopping or putting the children to bed (five questions out of 21 address crises including child illness or car problems), and may therefore be less likely to

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2 For example, Item 20D asked mothers how often they attended social groups such as “bowling” or “scouting groups”; “visiting friends” or “going to bingo” were used as alternative examples for the present sample.
have direct links with maternal stress. As stated previously, the MSSI has established reliability and validity in an American sample (Pascoe et al., 1988); future research might usefully consider the validity of the instrument in a U.K. population. Nevertheless, given existing data on the utility of the MSSI, it must be concluded that failure to thrive in infancy was not associated with limited social networks among mothers in the present sample when their children were six years old.

Rather than assuming that maternal social support was not measured accurately in the present study, similar reports of support among cases and controls might reflect effective pairwise matching. Assessments of psychosocial functioning at fifteen months, on indices including depression and socio-economic status, did not distinguish mothers of growth retarded and comparison children. At six years the groups did not differ in terms of current cohabitation or change in cohabitation; neither group was more likely to report separation or a new relationship. Accordingly, it may be concluded that similar accounts of support among cases and controls reflect comparable experiences, rather than poor validity of the MSSI; analyses of current socio-economic status (see below) will illustrate the extent of similarities between cases and controls in current maternal psychosocial functioning. Moreover, consideration of links between maternal reports of support and other indices of mother and child functioning at six years (see below and Chapter Seven) should indicate the utility of the MSSI in the present sample.

socio-economic status

As stated previously, case and comparison families were matched at 15 months on a range of criteria including area of residence, and were found at that time to be of comparable socio-economic status. Analyses at six years also revealed very similar patterns of social demography among cases and controls, although among families of children who failed to thrive there was a tendency for the main wage earner to have a lower occupational classification, relative to controls. The socio-economic status of both groups of participants had improved over time, but there was significantly less improvement in the socio-economic status of families of growth retarded children. This finding is exceptional,
in that, in line with findings at fifteen months, other indices of socio-economic functioning were very similar for cases and controls.

Observed limitations in improvement of socio-economic status among failure to thrive group families could reflect chronic disadvantage, and so be seen as concordant with traditional models of psychosocial risk for failure to thrive (e.g., Altemeier et al., 1985; Lachenmeyer and Davidovicz, 1987; Drotar and Eckerle, 1989). Alternatively, lack of improvement in socio-economic status, might be viewed as an outcome of infant growth retardation, given Newberger and colleagues' (1986) observation that families of failure to thrive children may become isolated. These explanations should be accepted with caution, because variation on a single index of psychosocial functioning might be spurious, given the number of analyses performed. Moreover, although the groups were of similar socio-economic status, small non-significant differences in social demography at fifteen months and six years may have been exaggerated by analysis of change.

Links between socio-economic functioning and growth retardation are also likely to be illuminated by examination of variation within the failure to thrive group. As argued previously, a sample of children who fail to thrive is likely to be heterogeneous, and maternal characteristics at six years could vary in accordance with the aetiology of infant growth retardation, and with influences operating between the initial and follow-up assessments, so limited overall change in social demography might reflect diversity within the case group. Examination of patterns of social demography within the failure to thrive group has the potential to illustrate the correlates of limited improvement in socio-economic status, by considering variations in demography associated with the timing or long term developmental outcome of infant growth retardation.

4.5.4.1 early and late growth failure

The contention that maternal psychosocial functioning might be associated with variation in the timing of infant growth failure was not supported by analyses. There was no intergroup variation on any index of psychological or social functioning for mothers of
children classed as “early” or “late” failure to thrive; this result is noteworthy because during the 15 month assessment mothers of late failure to thrive children were significantly more depressed than mothers of children who experienced early growth retardation. Different depression scales were used at 15 months and six years, and so it was not possible to examine change in levels of depression across time, or to determine whether late FTT group mothers have recovered from previous depression.

Both groups of mothers were within normal parameters (see Kendall, Hollon, Beck, Hammen, and Ingram, 1987) on the BDI at six years, and the lack of other intergroup differences implies that current psychosocial functioning is not related to the timing of previous infant growth failure. Analyses to be presented in future chapters will indicate whether the timing of growth retardation is linked to maternal characteristics other than psychosocial functioning at six years. The fifteen month assessment revealed significantly lower IQ performance among late failure to thrive group mothers; analyses presented in Chapter Seven should determine how this variation relates to other indices of maternal functioning.

4.5.a.iii long term physical development
small and larger failure to thrive group children
Comparisons of mothers whose growth retarded children were small or larger for age at six years provided inconsistent evidence of links between psychosocial characteristics and physical development subsequent to growth retardation. Child stature was not related to maternal psychological disturbance; levels of depression and disordered eating were very similar for mothers of small and larger children. Moreover, the groups did not differ in reported levels of support or cohabitation status, although mothers of smaller growth retarded children reported significantly more satisfaction with a partner. The link between marital support and child stature was contrary to predictions, implying that maternal psychosocial stress is associated with better long term physical outcome for children who have failed to thrive; that conclusion warrants some caution, since the rating of marital
support was based on a single item in the MSSI. Regression analyses of links with indices of child physical and psychological development should determine whether high levels of marital satisfaction are universally associated with limited child development in the present sample.

There was no evidence of differentiation between mothers of smaller and larger children in terms of current social demography, but there was a trend for more socio-economic improvement in families of larger failure to thrive group children; summary data in Table 4.10 indicated negligible improvement in families of small children (x = 0.0625). That result is consistent with the contention that long term growth failure creates a threat to families’ socio-economic functioning, but, arguably, it may be spurious, given the number of analyses performed, and the causal nature of the association cannot be determined. Identification of factors associated with child physical development should serve to illuminate this issue, by demonstrating whether improvement in social demography is a significant indicator of stature at six years.

**Factors indicating physical stature**

The physical development of case and control children at six years was not related to maternal psychological functioning, in terms of depression or disordered eating; these results are consistent with the intergroup comparisons described above. It is interesting to note that maternal body mass index (BMI) accounted for almost 20% of the variance in weight for age of thriving children, but this variable was not associated with stature of growth retarded children. Tanner (1989) commented that the importance of genetic factors in determining stature depends on the extent to which environmental factors intervene; genetic links between mother and child stature in the failure to thrive group may have been obscured by the children’s early growth failure.

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3 "How happy are you in the way that your boyfriend or husband lets you know what he feels or thinks?"
The environmental context of child physical development is also illustrated by the strong relationships between psychosocial functioning and child stature in the case group. The classification of main wage earner’s occupational status (OPCS) indicated almost 16% of the variance in height of children who had failed to thrive, and maternal report of satisfaction with her partner accounted for nearly 20% of the variance in weight of growth retarded children at six years. Links between OPCS classification and height conformed to predictions, but by contrast, analyses showed that mothers of lighter children were happier with their partner’s support. In line with this finding, case group children’s height for age was negatively associated with reports of marital support, although that variable was not a significant indicator of children’s height. Analyses of links with child psychological functioning will indicate whether satisfying marital relationships are uniformly associated with limited child development in the failure to thrive group; even if this is the case, it is important to recognise that the results do not describe a causal relationship.

Links between marital support and child stature may reflect within group variation in the aetiology of failure to thrive, such that different causes for failure to thrive give rise to variation in long term physical outcome and maternal psychosocial functioning. Satisfying marital relationships may protect against caregiving stressors but have little impact on stature of growth retarded children in a subgroup where growth faltering arises from minimal organic dysfunction. Minimal organic causes for growth failure, such as minor neurological dysfunction (see, for example, Goldson, 1989), are likely to be continuously present as the child grows older; accordingly, when children fail to thrive because of biological abnormalities, growth retardation may also persist over time. If failure to thrive is associated with chronic psychosocial disadvantage (e.g., Altemeier et al., 1985), maternal stressors such as marital dissatisfaction may be higher at the time of the six year follow-up, but children may be able to “catch up” in terms of physical stature by self-feeding and eating outside the home as they grow older.

That account is consistent with observed links between marital support and child stature, but it must remain within the realms of speculation, since data are not available on minimal
organic dysfunction within the present sample, or on the chronicity of maternal
dissatisfaction with support. Nevertheless, it implies that marital satisfaction would not be
associated with limited psychological development in the failure to thrive group, since the
relationships postulated above are specific to physical stature; analyses discussed below
will address this contention.

Socio-economic factors were also associated with the physical development of control
group children; family accommodation type indicated a significant portion of the variance
in height and weight for age of thriving children. A range of other research has highlighted
the impact of socio-economic status on physical stature (see Tanner, 1989), and case group
findings are consistent with this literature, but contrary to predictions, lower rating of
accommodation type was related to better physical stature among thriving children. This
finding is surprising, and suggests that in the present sample, socio-economic hardship
indicated limited physical development specifically among children already at risk through
early growth retardation.

4.5.b  maternal psychosocial functioning and child
psychological development

4.5.b.i  factors indicating child cognitive functioning
Predicted links between mothers’ psychological and social functioning and child cognition
were partially upheld; these relationships differed between cases and controls. For
example, maternal IQ and education were related to the cognitive performance of growth
retarded and thriving children, but patterns of association varied across the groups.
Maternal education was highly significantly correlated with all indices of child cognition in
the control group, but links between these variables were weak or just significant among
case group families. In addition, the perceptual functioning of thriving children was
positively associated with maternal education and IQ, whereas perceptual abilities of
previously growth retarded children were not related to any index of maternal psychosocial
functioning.
Differing patterns of association between cases and controls could be explained in terms of the relationship between mother and child. Mother-child communication fosters child cognitive development (e.g., Schaffer, 1992) and so might mediate between maternal intellectual skills and child functioning: the abilities of case and control group mothers might be differentially related to child cognitive development because of the ways in which they communicate with their children. Examination of that argument through direct observation of mother-child interaction is beyond the scope of this thesis. Within the present study, analyses to be presented in Chapter Five should indicate whether maternal caregiving cognitions are associated with observed links between maternal IQ and child development; theorists such as Bugental (e.g., 1992) have highlighted the importance of maternal cognitions as moderators of affective communication between parent and child.

In accordance with previous research (e.g., Duncan et al., 1994), socio-economic disadvantage was associated with limited cognitive development for case and control children. Among growth retarded children, 16.5% of the variance in current cognitive functioning was indicated by a combined effect of maternal IQ and socio-economic status, and these variables also accounted for variance in children's memory and verbal skill. It is interesting to note that maternal report of disordered eating accounted for a significant portion of the variance in child verbal ability; contrary to expectations, these variables were positively correlated, such that higher levels of disordered eating indicated better verbal skill. That result corresponds with the literature's observation that educated women are at greater risk of eating disorders (e.g., Garfinkel et al., 1987; Yates, 1989), suggesting that disturbances of maternal eating may not operate in the same way as other psychosocial risk factors. Maternal education or IQ may have positive associations with child cognition and increase the likelihood of disordered eating.

Within the control group, maternal education was the only significant independent indicator of child performance, although a non-significant trend suggested that marital support was positive related to child quantitative skill. Maternal education accounted for a substantial proportion of the variance in every index of child cognition, accounting for almost 50% of
the variance in comparison children's GCI scores. Again, these relationships are likely to be associated with other aspects of current maternal functioning, including cognitions about parenting and early care experiences; these issues will be explored in forthcoming chapters. With regard to discussions about genetic and environmental links in intelligence across generations (see for example, Richardson, 1991), it is interesting to note that, in the present sample of thriving children, education was a stronger indicator of child cognitive skill than maternal IQ; these findings correspond to other research (e.g., Duncan et al., 1994) demonstrating beneficial effects of maternal schooling on child functioning.

Finally, it should be noted that links between child cognition and maternal satisfaction with marital support did not conform to analyses of factors indicating the physical development of growth retarded children. There was a negative correlation ($r = -0.3$) between marital support and case group children's general cognitive functioning, but this result was just significant, and, in contrast to the observation that satisfaction with marital support was strongly indicative of limited weight for age, marital support did not indicate case children's GCI scores. Within the comparison group, positive correlations between marital support and child cognition were consistent with previous research indicating the protective role of marital satisfaction (for example, see Rutter, 1989). Accordingly, it may be concluded that high levels of marital support were not related to poorer child cognition among cases and comparisons. Analyses of factors associated with child social cognition will demonstrate whether links between marital satisfaction and limited child development are specific to physical stature when a child has failed to grow.

4.5.b.ii factors indicating child social cognition

Regression analyses of psychosocial factors indicating child social-cognitive skill provided no evidence that mothers' satisfaction with marital support accounted for the problem solving skills of case or control group children. By contrast, results showed further evidence of limitations in child development corresponding to socio-economic disadvantage. Overall social index indicated almost 16% of the variance in relevance of strategies offered by children who had failed to thrive, and home ownership indicated the
number of categories of response suggested by these children.

Home ownership also indicated a significant proportion of the variance in problem solving categories among thriving controls, but curiously, a lower rating of housing tenure was correlated with poorer problem solving in the case group, and with better performance for controls. It is not clear why home ownership should correspond with limited problem solving skills among children who grew normally in infancy; a more consistent pattern of links with the functioning of thriving children was indicated by the power of maternal education for explaining problem solving relevance and flexibility. Relationships between maternal education and child social functioning are consistent with findings regarding child cognition; observed associations also correspond with results of other studies of thriving children (e.g., Duncan et al., 1994). In addition, levels of maternal depression at 15 months predicted a substantial portion of variance in the flexibility of comparison children’s problem solving skills at six years; this finding supports studies of the developmental implications for the child of early maternal depression (see Cummings and Davies, 1994, for a review). It is noteworthy that overall socio-economic disadvantage, rather than maternal IQ or education, was related to the performance of children who have failed to thrive; intergroup variation in factors indicating child functioning may be viewed in light of other research showing differences between high and low risk families in associations between psychosocial disadvantage and child development (e.g., Morisset et al., 1990).

4.6 conclusions: maternal psychosocial functioning and child development

Current maternal psychological disturbance and lack of support were not associated with a history of failure to thrive, or with long term developmental outcome subsequent to infant growth failure. Nevertheless, socio-economic disadvantage at six years and maternal IQ were clearly related to the development of children who had failed to thrive, and these relationships were different for cases and controls.
There was limited overall variation between mothers of previously growth retarded and thriving children, although case group mothers reported less improvement in socio-economic circumstances since the 15 month assessment. Community based sampling of previously growth retarded children is unusual, and the failure to thrive literature has predominantly relied on clinical samples. Referred families may be more distinctive (see Chapter One), and so the present sample probably offers a less extreme picture of the long term correlates of failure to thrive than would be derived from clinically based research. Limited improvement in socio-economic status could reflect isolation subsequent to early growth faltering (see Newberger et al., 1986), but it was argued that this source of intergroup variation should be interpreted with caution, since analysis of change may have exaggerated non-significant differences at 15 months and six years.

Despite limited differences based on intergroup comparisons, consideration of mothers’ current psychosocial vulnerability has offered valuable insights regarding the long term development of children who have failed to thrive. A range of socio-economic indices were related to the development of previously growth retarded children, although the causal nature of these relationships is unknown. In contrast, maternal mental health (in terms of depression and eating disorders) was minimally related to child outcome; these results may partly reflect the small numbers of depressed or eating disordered women in the present sample.

Socio-economic advantage was generally associated with better physical and psychological outcomes for failure to thrive group children; maternal education was the most important indicator of social and cognitive functioning among thriving children. Maternal IQ at 15 months was a significant correlate of current cognitive skills among six year old children who failed to thrive; it was argued that these associations may reflect genetic links, but equally, they could be mediated by maternal communication. Future analyses of maternal thinking about the child should illuminate correlates of mother and child cognitive abilities.
Mothers whose children experienced early growth faltering differed very little from comparisons, in terms of their current social or psychological characteristics, implying that a history of failure to thrive is not related to maternal functioning at six years. Nevertheless, maternal psychological and social characteristics were reliable indicators of variations in the development of previously growth retarded children, in line with the argument that maternal psychosocial functioning forms part of the context in which child development takes place. Forthcoming analyses of maternal cognitions about caregiving and early care experiences should additionally illuminate the long term correlates of infant growth faltering, and provide a fuller description of differential patterns of development among children who failed to thrive.
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maternal cognitions

5.1 introduction

"parental or adults’ ideas constitute the real environment where children live and grow"

Emiliani and Molinari (1988, p 20)

To date there has been little adequate consideration of parental thinking among mothers of children who have failed to thrive (see Chapter One); the present chapter aims to describe patterns of maternal cognitions associated with a history of infant failure to thrive, with regard to mothers’ explanations and strategies for dealing with problems in caregiving, and to identify relationships between maternal thinking and the physical and psychological development of previously growth retarded and thriving children. Factors such as socio-economic status are demonstrably linked to child physical and psychological development (see Chapter Four), but these correlates must be viewed within the context of the parent-child relationship; Sameroff and colleagues (e.g., Sameroff and Seifer, 1983; Sameroff and Feil, 1984) highlighted the importance of parental cognitions for mediating environmental influences on child development.

The present study does not seek to develop or evaluate aetiological models of failure to thrive; the causes of infant growth faltering cannot be identified by studying maternal thinking at six years. Instead, the thesis aims to describe current functioning in the present sample of mothers and their six year old children. The study of maternal cognitions about events in caregiving should address this general objective by determining whether:

• current maternal thinking about caregiving is associated with having parented a child who failed to thrive

• maternal cognitions about events in caregiving indicate differential patterns of physical and psychological development following infant growth retardation.
5.1.a  parental cognitions and child development

Piaget (e.g., 1953) prompted a framework for developmental research that indicates the importance of psychological constructs such as schemas in determining the child’s understanding of and responses to his or her world. Goodnow (1988) argued for recognition that these constructs also operate in parents, and suggested that

“To focus only on parents’ overt behaviors is to treat parents as unthinking creatures”.

(p 287)

Studies placing sole emphasis on behavioural analysis fail to acknowledge the role of these constructs for the parent; Parke (1978, cited in Goodnow, Knight and Cashmore, 1986) described a tendency for psychologists to treat the mother as if she were at the same level of cognitive development as the child.

Parental beliefs about child characteristics and behaviour might plausibly mediate responses in the parent-child interaction, and so be linked to child development, and there has been growing interest in research on parental thinking (Newberger and White, 1989). Early research had limited success in demonstrating links between parental thinking and parental behaviour or child functioning; Holden and Edwards’ (1989) review ascribed this difficulty to conceptual and methodological problems, in terms of a tendency to focus on measurement of parental attitudes. A wide body of research within social psychology has demonstrated that attitudes are only distantly related to behaviour (see for example, La Piere, 1934; Kutner, Wilkins and Yarrow, 1952; Wicker, 1969), and so it is not surprising that there are few direct links between parental attitudes and parent-child interaction. Holden and Edwards concluded that standard attitude questionnaires “can never adequately assess parental social cognition” (p 51), and advocated more detailed consideration of specific psychological constructs.

A range of research indicates the value of considering parental perceptions and cognitions in studies of parent and child behaviour and child development (see Goodnow, 1988). Skinner (1984) reported that maternal sensitivity and directiveness in interactions with pre-
school children were related to sensitivity of child rearing beliefs, and Nover, Shore, Timberlake and Greenspan (1984) found that mothers who did not perceive their infants’ behaviour accurately (when compared with objective ratings) were more intrusive and less responsive with their children. These studies are limited by their sampling of predominantly middle class two-parent families, but they provide a valuable indication of the role of cognitions in mediating maternal responses to child behaviour.

Several studies have demonstrated links between parent and child social cognition (e.g., Pettitt, Dodge and Brown, 1988; Hart, Ladd, and Burleson, 1990; Rubin and Mills, 1990). Pettit et al. (1988) observed that the social skills of 4-5 year old children were associated with maternal explanations for child behaviour and endorsement of aggression as a disciplinary strategy. Hart and colleagues (1990) found that maternal strategies for dealing with disciplinary problems were related to children’s social cognitive functioning, such that children whose mothers suggested power assertive (rather than reasoning oriented) strategies were less accepted by peers; these children also tended to expect that unfriendly-assertive methods would be successful in resolving peer conflicts.

Nevertheless, these associations have not been consistently reported; Kendall and Fischler (1984) found no relationship between child and parent social problem solving skills. There are a number of methodological explanations for this finding; the authors suggested it may reflect their use of a predominantly white middle class sample. Moreover, they do not give details of the problem solving dilemmas presented to parents, and specify only that they used the Means End Problem Solving procedure (Shure and Spivack, 1972, cited in Kendall and Fischler). Hypothetical problem solving dilemmas may have little relevance for issues that the parent encounters in child rearing, and consequently may be minimally related to actual parenting and child functioning. In addition, parental disciplinary strategies may have little bearing on children’s understanding of friendly and non-assertive ways of resolving interpersonal conflicts, and so indices of parental problem solving in a disciplinary context may not be related to child functioning in different situations (Hart et al., 1990). Without more detail of Kendall and Fischler’s procedure, it is impossible to
determine the extent to which their study addressed these concerns. As indicated above, more recent research suggests the utility of considering parental strategies for dealing with child behaviour, although the use of hypothetical dilemmas necessitates care to ensure that problems have relevance for respondents.

Decisions about disciplinary strategies in child care are likely to be influenced by explanations for child behaviour. Attribution theory has been central to the study of social interaction for many years (see for example, Heider, 1958), and more recently this knowledge has been applied to the study of parent-child relationships. Parents make inferences about such factors as children's moods, motives and intentions, and consider the child's understanding of the situation, and environmental supports and pressures; in evaluating these factors the parent makes a judgement about the child's responsibility for the event (Dix, Ruble and Zambarano, 1989). This analysis is known to be related to the parent's understanding of child development (e.g., Sameroff and Feil, 1985; Dix, Ruble, Grusec, and Nixon, 1986; Dix, 1993). Dix and Grusec (1985) discussed attribution processes in the parent-child relationship, and highlighted the need for parents to be sensitive to developmental factors; the child's actions are constrained by his immaturity, and so adult or self standards are inappropriate. There is also a need to consider parent-child intimacy in the attribution process, and the individual's tendency for self-serving bias may be extended to the child, so that, for example, success is ascribed to internal causes, and failure is attributed externally.

Dix and colleagues (1986) found clear evidence relating maternal disciplinary strategies to explanations for child behaviour; mothers who attributed high competence and responsibility to their children reported greater negative affect, and suggested more severe punishment. Mills and Rubin (1990) also found links between parental attributions and child rearing strategies in their study of mothers' and fathers' beliefs about child aggression and social withdrawal: mothers were less likely to suggest intervening with social withdrawal if they attributed problematic social behaviour to a trait in the child.
Miller (1988) examined the extent to which parental beliefs related to child development, and reported that, although the literature is relatively small, there are consistent links between parental beliefs and child social and cognitive development; these remain significant even when factors such as socio-economic status (SES) are controlled for. Sameroff and Seifer (1983) demonstrated that parental concepts of child development explained a small but significant proportion of variance in the intellectual performance of children at six years, after variables such as parental mental health and SES were partialled out. More recently, Melson, Ladd, and Hsu (1993) offered a clear example of the role of maternal cognitions in mediating environmental effects on child development, finding that links between size of maternal social networks and child cognitive functioning and peer acceptance were mediated by a range of maternal attributional variables.

The research outlined above implies the utility of studying parental cognitions, but, as indicated above, questionnaire assessments of hypothetical problems may be subject to criticism. Nonetheless, hypothetical scenarios arguably offer a valid basis for assessing parental beliefs. Cognitions may not directly predict behaviour (Mills and Rubin, 1990), but there are demonstrable links between beliefs and behaviour (e.g., Skinner, 1985), and it is clear that parental thinking is associated with child development. Moreover, the use of hypothetical problems may be justified in terms of methodology, since it ensures consistency across participants. With regard to the present study, a more important caveat may be the tendency of these investigations to rely on white middle class samples, thereby limiting generalisability. This concern has been addressed to some extent, in that an increasing number of researchers have applied social cognitive models with families who are experiencing difficulties.

5.1.b parental cognitions and child maltreatment

Sameroff and Seifer (1983) criticised biomedical models of maltreatment as reductionist, and Newberger and White (1989, p 305) argued that the study of parental thinking "has brought an important new cognitive dimension to this field". A wide body of research has developed, offering a valuable means of understanding and intervening with caregiving
problems; two key aspects of parental thinking will be considered, with regard to their relevance for the study of mothers of children who failed to thrive.

5.1.b.i parental problem solving

Gough (1993), in his discussion of child abuse interventions, commented that physical abuse is primarily a problem of interaction, whereby both parent and child would prefer to act in more positive ways. According to an interactional model, physically abusive parents tend to adopt unproductive strategies for dealing with problems they encounter; Frude (1991) suggested that abusive parents tend to have poorly developed skills of discipline management. According to a systemic analysis (Dallos and Procter, 1984), problems can arise when an individual responds to a difficulty by repeatedly attempting a solution, even when it is consistently failing; the failed strategy may lead to further difficulties and so a circular process is set up.

These accounts suggest that problems may arise if a parent uses a limited range of ineffective strategies for dealing with difficulties in child care. Grusec and Kuczynski (1980) commented that competent parents are generally flexible in disciplinary situations; the use of multiple strategies forms an important part of effective caregiving. Studies of hypothetical and actual problem solving in parenting offer clear evidence that maltreating mothers experience difficulty in dealing with problems they encounter in child care. For example, Oldershaw, Walters and Hall (1986) compared mother-child interactions in physically abusive and non-abusive dyads; they reported that physically abusive mothers were more likely to use power-assertive strategies such as threats and humiliation, but that (relative to controls) they were unlikely to use more positively oriented means of problem solving, such as reasoning or laughter. In addition, Trickett and Kuczynski (1986) asked physically abusive and control group mothers to keep diaries of disciplinary encounters, finding that abusive mothers were more likely to use punitive strategies. It is interesting to note that these mothers were also more likely to feel anger and irritation with the child, indicating a need to account for the mother’s interpretation of the situation.
These studies have limited generalisability because they focus exclusively on physical abuse, but Azar, Robinson, Hekimian and Twentyman (1984) showed similar patterns of hypothetical problem solving among abusive and neglecting mothers. In line with other research, maltreating mothers offered less elaborate means for dealing with problems and showed less variety in the strategies they suggested. Moreover, these mothers had more unrealistic expectations of their child’s knowledge and abilities, again indicating that problem solving may be mediated by maternal understanding of the child.

Reliance on small referred samples constrains these findings; Azar et al. and Oldershaw and colleagues each studied only ten mothers in each group. To date, the author is not aware of any attempt to examine problem solving skills among a large community sample of families who have experienced child care difficulties. In addition, there is no evidence linking maternal problem solving to parenting in failure to thrive, although the syndrome has commonly been characterised as a form of maltreatment (e.g., Taitz and King, 1988).

The present study does not evaluate traditional maltreatment models of growth faltering; the study of maternal thinking at six years cannot explain the causes of infant growth failure. Nevertheless, a description of the long term developmental functioning of children who failed to thrive should be informed by consideration of current maternal cognitions about events in caregiving. Definition of the syndrome as a disorder of feeding (DSM-IV, American Psychiatric Association, 1996) implies that it may be useful to consider maternal cognitions about difficult mealtime interactions, regardless of their aetiology. Olvera-Ezzell and colleagues (Olvera-Ezzell, Power, and Cousins, 1990; Cousins, Power, and Olvera-Ezzell, 1993) have studied parental strategies with regard to children’s eating habits in a large community sample of Mexican-American mothers.

Olvera-Ezzell et al. considered mealtime strategies used by obese mothers of 4-8 year olds. They did not include a control group, but showed clear links between observed strategies and child eating; for example, maternal use of threats and bribes was negatively correlated with child compliance, and positively related to the extent to which the child ignored the
mother. Cousins and colleagues found that mothers who believed that their child’s health status was outside their control used less adaptive mealtime strategies (they were more directive, and less likely to use reasoning). These studies do not relate directly to failure to thrive, but they imply the utility of considering maternal problem solving for understanding eating in the mother-child relationship; Cousins et al.’s findings suggest that maternal causal beliefs also warrant attention.

5.1.b.ii parental explanations for child behaviour

Steele and Pollack (1968, cited in Spinetta and Rigler, 1972) were among the first to apply an attributional model to the study of parental maltreatment, suggesting that abusive parents tend to personalise causes, and ascribe child behaviour to negative intent towards the parent; this pattern of attribution tends to underestimate the developmental constraints operating on child behaviour (Dix and Grusec, 1985). There is consistent evidence that maltreating mothers are more likely than controls to view their child’s behaviour as intentional and controllable (e.g., Larrance and Twentyman, 1983; Stratton and Swaffer, 1988) and that they feel that they have little control over caregiving issues (e.g., Bugental, Mantyla and Lewis, 1989; Bugental, Blue, and Cruzcosa, 1989). Bugental proposed a transactional model of parental attributions as moderators of emotional communication, which acknowledges the role of child effects.

Larrance and Twentyman’s (1983) research is consistent with a transactional model, indicating clear differences between abusive and comparison mothers’ interpretations of child behaviour. Abusive mothers’ attributions were in direct contrast to the protective “self serving” bias in explanations of child behaviour offered by comparison mothers; the authors concluded that,

“abusers' attributions about their children were similar to those made of a competitor or a disliked person rather than an intimate friend or family member”.

(p 455)
Larrance and Twentyman studied only ten abusive and ten comparison mothers, and so these conclusions warrant some caution. Findings are additionally constrained because researchers have predominantly utilised questionnaire methods to assess attributions; responses may be artifactual if questionnaire items do not have significance for the respondent (see Stratton, Heard, Hanks, Munton, Brewin, and Davidson, 1986).

Stratton and Swaffer’s (1988) study of abusive mothers addressed this concern by analysing attributions made spontaneously during interviews. Sample sizes were small (N = 8 in each group), but in accordance with earlier research, abusive mothers made more attributions to causes that were controllable and internal to the child, relative to controls. These observations are supported by Silvester’s (1989) in-depth study of spontaneous attributions in 18 families where physical and/or sexual abuse had occurred; in the most distressed parent-child relationships, mothers tended to attribute child behaviour to causes that were personal, controllable and global for the child.

Despite its limited sample size, Silvester’s research is unusual, because, as with studies of problem solving, attributional research has focused almost exclusively on parenting processes associated with child physical abuse; other forms of caregiving difficulty have received limited attention. Sturm and Drotar (1991) explored maternal perceptions of causes for failure to thrive, but the authors did not conform to generally accepted definitions of attribution and attributional dimensions, which describe the process whereby a specific phenomenon is ascribed to its origin (Hilton, 1990). In addition, Sturm and Drotar were concerned with maternal understanding of the aetiology of infant growth failure; there is an absence of research concerned with maternal explanations for events associated with child eating. Sturm and Drotar reported that mothers generally ascribed their child’s growth failure to medical problems, an uncontrollable factor. It would be useful to consider whether this pattern of understanding is apparent several years after growth faltering occurred, and if it is extended to maternal attributions about difficult feeding or other events in child rearing.
A broader understanding of patterns of attribution associated with family relationships may be achieved through consideration of a wider body of research on family dysfunction. Fincham and colleagues (e.g., Fincham and Grych, 1991; Fincham and Bradbury, 1992) have indicated the utility of attributions for understanding marital relationships; distressed relationships are associated with more global attributions for marital difficulties and child behaviour. Significantly, Fincham and his colleagues found that associations between relationship satisfaction and attributions were independent of levels of depression, suggesting that attributions did not simply reflect mood disturbance. In addition, Brewin and colleagues (1991) analysed attributions generated in interviews to study emotional relationships in families of schizophrenic patients; hostile and critical expressed emotion was associated with attributions to causes that were personal to and controllable by the patient. Brewin and colleagues found that relatives' attributions to personal controllable causes were associated with higher rates of relapse for the schizophrenic individual; in the present study, patterns of attribution associated with maladaptive family relationships might correlate with sub-optimal developmental outcomes for children who have failed to thrive.

5.1.c maternal cognitions and failure to thrive

Application of the above literature to failure to thrive research could be justified with reference to the widespread assumption that non-organic infant growth retardation reflects a form of parenting difficulty. Although this assumption is generally unquestioned, a paucity of research has considered parental cognitions associated with failure to thrive, and as noted above, evaluation of such a framework is beyond the scope of the research reported here. More importantly, in the present context, there has been a tendency to neglect theoretical developments in the caregiving literature, which demonstrate clear associations between child development and parental social cognitive processes such as attributions and problem-solving. This neglect is surprising: regardless of the aetiology of failure to thrive, consideration of maternal social cognitions will illuminate the long term correlates of infant growth faltering for the mother and the child.
Caregiving cognitions, such as power assertive problem solving or hostile attributions about child behaviour, could reflect stable patterns of maternal thinking that precede growth faltering; alternatively, they may correspond to the experience of having cared for an infant who was temperamentally difficult (Goldson et al., 1985), or has chronic feeding difficulties as a result of minimal oral-motor dysfunction (Mathisen et al., 1989). The present study may explore links between current maternal thinking and the child's history of failure to thrive, but the causal nature of any relationships remains speculative without prospective research. Within the context of the present study, it may be argued that - regardless of the influences underlying caregiving cognitions or child growth retardation - attention to current maternal thinking about child behaviour is justified. If non-organic failure to thrive is a disorder of feeding (Mayes and Volkmar, 1993; DSM-IV, 1996), maternal cognitions about unsuccessful mealtime interactions (whatever the cause) should provide useful insights regarding the experience of parenting a child who failed to grow.

**physical development**

**a history of failure to thrive**

The present investigation of the long term correlates of non-organic infant growth faltering for the mother and child should be informed by examining maternal cognitions about current events in caregiving. Specifically, comparisons of women whose children failed to thrive with those whose children grew normally in infancy will consider whether case and control group mothers differ in their current strategies for dealing with difficult child behaviour, or in their attributions about child behaviour problems.

**early and late failure to thrive**

As stated previously (see Chapter Three), children who failed to thrive may not comprise a uniform group, and so the present study aims to consider whether timing of growth retardation in infancy is associated with variation in mother or child characteristics at six years. With regard to this argument, patterns of attributions and problem solving strategies offered by mothers of children classed as “early” failure to thrive will be compared with those described by mothers whose children experienced “late” growth faltering.
long term physical development

The present study aims to identify correlates of differential patterns of development among children who experienced early growth faltering. With respect to the literature reviewed above, it is predicted that maternal thinking will be related to child physical stature at six years, such that maternal cognitions that have previously been associated with family relationship difficulties and with poorer child functioning will be linked to limitations in child physical development. Specifically, it is suggested that children will be smaller (in terms of height and weight for age at age six) if their mothers offer fewer effective low power strategies for dealing with problem child behaviour, and tend to attribute child behaviour problems to personal, controllable or uncontrollable, and global causes.

psychological development

The literature discussed in this chapter suggests that patterns of maternal cognition associated with family relationship difficulties are negatively associated with child social and cognitive functioning. In line with predicted links between mothers’ thinking and child physical development, it is suggested that maternal cognitions will correlate with child psychological abilities at six years, and that these associations will be evident among case and control group families.
5.2 measures

5.2.a problem solving strategies

Maternal strategies were examined using hypothetical dilemmas based on the Means End Problem Solving procedure (MEPS) developed by Platt and Spivack (1975), and on Mills and Rubin’s (1990) vignettes about child problems in peer relationships. Hypothetical vignettes were used because the study was in part concerned with child eating problems; failure to thrive and comparison group mothers may plausibly have had different experiences of child eating, and so use of hypothetical dilemmas ensured consistency across groups.

The MEPS procedure is based on an “open-middle format”, in which a problem and successful resolution are presented to the respondent, who is asked to “complete the story”, and describe the means by which the solution was achieved. This procedure has been widely used in studies of caregiving (e.g., Kendall and Fischler, 1984) and in clinical research (Evans, Williams, O’Loughlin, and Howells, 1992; see Nezu, Nezu, and Perri, 1989, for a discussion of the validity of the MEPS).

Mills and Rubin’s vignettes were deemed appropriate for the present study because they are derived from research with a large community sample of parents whose children were similar in age to those in the present sample. Additionally, their research clearly linked parental strategies for dealing with the problem vignettes to attributions for child behaviour. The open-ended approach of the MEPS procedure was thought to be preferable to Mills and Rubin’s questionnaire approach (see Chapter Two), and so vignettes were presented in the MEPS format.

Mills and Rubin’s vignettes describe incidents of peer-directed aggression and withdrawal; for the present study, vignettes about child eating problems were also included. Clinical examples of eating problems presented by six year old children (suggested by a consultant clinical psychiatrist (DS), specialising in early childhood eating disorders) formed the basis of these vignettes.
Mothers were presented with one practice and six test vignettes (see Appendix 2.c.i).

Responses to each vignette were coded in terms of the number of relevant and irrelevant solutions and the category of strategy suggested (see Table 5.1 and Appendix 2.c.ii), according to Mills and Rubin’s coding scheme.

Table 5.1
Coding scheme for maternal problem solving strategies

<table>
<thead>
<tr>
<th>High Power</th>
<th>Low Power</th>
</tr>
</thead>
<tbody>
<tr>
<td>forcing appropriate behaviour</td>
<td>seek explanation from child</td>
</tr>
<tr>
<td>punishment</td>
<td>read to child</td>
</tr>
<tr>
<td>threat of punishment</td>
<td>support child</td>
</tr>
<tr>
<td>moderate power</td>
<td>rescue</td>
</tr>
<tr>
<td>modelling</td>
<td>redirect situation</td>
</tr>
<tr>
<td>guidance / verbal instruction</td>
<td>seek solution from child</td>
</tr>
<tr>
<td>other oriented reasoning</td>
<td>information seeking</td>
</tr>
<tr>
<td>normative statements</td>
<td>consult other</td>
</tr>
<tr>
<td>request / suggestion</td>
<td>monitor</td>
</tr>
<tr>
<td>help child reach resolution</td>
<td>seek explanation from other</td>
</tr>
<tr>
<td>self oriented reasoning</td>
<td></td>
</tr>
<tr>
<td>matter-of-fact reasoning</td>
<td></td>
</tr>
<tr>
<td>emotional appeal</td>
<td></td>
</tr>
<tr>
<td>planful</td>
<td></td>
</tr>
<tr>
<td>provide opportunity</td>
<td></td>
</tr>
<tr>
<td>restructure play / eating arrangments</td>
<td></td>
</tr>
<tr>
<td>nurture / provide attention &amp; affection</td>
<td></td>
</tr>
</tbody>
</table>

5.2.b Attributions for child behaviour problems

With regard to criticisms of questionnaire methodologies (e.g., Stratton et al., 1986), maternal attributions were studied using a version of the Leeds Attributional Coding System (LACS) (Stratton, Munton, Hanks, Heard and Davidson, 1988). The LACS was considered advantageous for several reasons. First, it was designed in a family therapy setting, with high risk families or those experiencing caregiving difficulties. Second, the measure takes account of important theoretical developments in attribution (see Stratton et al. for a detailed discussion of these issues). In addition, although the LACS was designed
for analysis of spontaneously expressed attributions, it may also be used for coding of attributions that are prompted by open-ended questioning (Brewin, personal communication). In the context of the present study, this flexibility meant that links between maternal attributions and problem solving strategies could be explored by asking mothers why their child might show the behaviours described in the problem solving vignettes. This approach is potentially subject to criticism, because reliance on hypothetical causal explanations might reduce validity, but it ensures intergroup consistency, and enables comparisons based on maternal attributions about specific child care difficulties.

The LACS codes five attributional dimensions, as follows (definitions are taken from Brewin, 1988); see Appendix 2.c.iii for details of the coding scheme and examples of coded maternal attributions.

- internal/external
- personal/universal
- controllable/uncontrollable
- global/specific
- stable/unstable

5.3 procedure

Assessments of maternal cognitions were carried out during interviews at home with the primary carer (see Chapter Two for details). Mothers were presented with a practice story; if they failed to generate any solutions to the dilemma, the experimenter suggested possible strategies and then questioned the mother about alternatives. When the mother clearly understood the procedure, the experimenter continued with the vignettes. The order of presentation of peer and eating vignettes was randomised, and then kept constant for each interview. Each vignette was read to the mother, and she was asked to describe how resolution of the problem was reached. To elicit attributions for LACS coding, the mother was then asked why her child might show the behaviour described. This procedure was repeated for each vignette.
5.4 results

5.4.a reliability

5.4.a.i maternal problem solving strategies

Reliability data were calculated for the strategy type of suggested solution (see Table 5.1), and number of relevant and irrelevant solutions generated. Identifying characteristics were removed from a sample of 20 maternal responses before rating by the author (blind to case-control status) and a second rater (DS), who was aware of experimental hypotheses. Reliability data are summarised in Table 5.2.

<table>
<thead>
<tr>
<th>variable</th>
<th>percentage agreement</th>
<th>kappa</th>
</tr>
</thead>
<tbody>
<tr>
<td>number of relevant means</td>
<td>73.68</td>
<td>0.60</td>
</tr>
<tr>
<td>number of irrelevant means</td>
<td>93.75</td>
<td>0.48</td>
</tr>
<tr>
<td>type of strategy</td>
<td>80.00</td>
<td>0.74</td>
</tr>
<tr>
<td>category of strategy</td>
<td>75.00</td>
<td>0.73</td>
</tr>
</tbody>
</table>

5.4.a.ii Leeds attributional coding system (LACS)

The author was trained in a version of the LACS, prior to coding for reliability. A sample of 60 responses (with all identifying details removed) was coded independently by the author and a second rater (CB) who has extensive experience using the LACS (e.g., Stratton et al., 1986; Brewin et al., 1991); inter-rater agreement is summarised in Table 5.3.

<table>
<thead>
<tr>
<th>variable</th>
<th>percentage agreement</th>
<th>kappa</th>
</tr>
</thead>
<tbody>
<tr>
<td>internal / external</td>
<td>86.7</td>
<td>0.754</td>
</tr>
<tr>
<td>personal / universal</td>
<td>78.3</td>
<td>0.626</td>
</tr>
<tr>
<td>controllable/uncontrollable</td>
<td>73.3</td>
<td>0.611</td>
</tr>
<tr>
<td>global / specific</td>
<td>73.3</td>
<td>0.517</td>
</tr>
<tr>
<td>stable / unstable</td>
<td>81.7</td>
<td>0.616</td>
</tr>
</tbody>
</table>
5.4.b maternal cognitions: response rates

Data on maternal cognitions were not collected from all 87 families visited during the six year assessment; rates of case and control group response are summarised in Table 5.4. In addition, it was decided that non-parametric analyses were appropriate for analyses of maternal cognitions, since data were predominantly based on rater judgement, and were often not normally distributed (see for example Figures 5.1 and 5.2).

<table>
<thead>
<tr>
<th>response category</th>
<th>failure to thrive number (%)</th>
<th>control group number (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>full data on maternal cognitions</td>
<td>38 (80.9)</td>
<td>33 (70.2)</td>
</tr>
<tr>
<td>no data: full maternal refusal</td>
<td>1 (2.1)</td>
<td>4 (8.5)</td>
</tr>
<tr>
<td>no data: child organic disease</td>
<td>2 (4.3)</td>
<td>1 (2.1)</td>
</tr>
<tr>
<td>no data: family untraceable</td>
<td>2 (4.3)</td>
<td>2 (4.3)</td>
</tr>
<tr>
<td>no data: not English speaker</td>
<td>2 (4.3)</td>
<td>4 (8.5)</td>
</tr>
<tr>
<td>no MEPS or LACS data: tape failure</td>
<td>1 (2.1)</td>
<td>3 (6.4)</td>
</tr>
<tr>
<td>no MEPS or LACS data: refusal</td>
<td>1 (2.1)</td>
<td>0 (0.0)</td>
</tr>
</tbody>
</table>

Figure 5.1 distribution of percentage of personal, controllable and global attributions to child: failure to thrive group mothers
5.4.c maternal cognitions and child physical development

5.4.c.i growth at fifteen months

5.4.c.i.a a history of failure to thrive

maternal problem solving

The number of effective and ineffective problem solving strategies suggested by case and control group mothers were compared using Wilcoxon's Test for matched pairs; additionally, intergroup differences in the type of strategy suggested were explored (Table 5.5). There was little indication of intergroup variation; failure to thrive group mothers tended to offer more irrelevant strategies for dealing with peer group problems, but this result was non-significant and warrants caution, given the low frequency of irrelevant solutions in each group.

maternal attributions

The attributions made by case and control group mothers about their children were compared using Wilcoxon Tests for matched pairs. Summary data and results of comparisons (Table 5.6) indicate intergroup differences; mothers whose children failed to thrive were significantly more likely to make personal, controllable, global attributions about their child's behaviour, and a non-significant trend implied that they also made more personal, uncontrollable and global attributions.
### Table 5.5: Maternal Problem Solving: Failure to Thrive and Control Group Mothers

<table>
<thead>
<tr>
<th></th>
<th>FTT N = 39</th>
<th>Control N = 33</th>
<th>Wilcoxon z</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Number of Relevant Means</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Food means</td>
<td>mean (s.d.)</td>
<td>8.46 (3.49)</td>
<td>8.85 (2.79)</td>
</tr>
<tr>
<td></td>
<td>range</td>
<td>4.00 - 21.00</td>
<td>2.00 - 13.00</td>
</tr>
<tr>
<td><strong>Number of Relevant Peer Means</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>mean (s.d.)</td>
<td>4.26 (1.70)</td>
<td>4.27 (1.60)</td>
</tr>
<tr>
<td></td>
<td>range</td>
<td>1.00 - 11.00</td>
<td>1.00 - 8.00</td>
</tr>
<tr>
<td><strong>Number of Irrelevant Means</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>mean (s.d.)</td>
<td>0.21 (0.47)</td>
<td>0.059 (0.24)</td>
</tr>
<tr>
<td></td>
<td>range</td>
<td>0.00 - 2.00</td>
<td>0.00 - 1.00</td>
</tr>
<tr>
<td><strong>No. of Irrelevant Eating Means</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>mean (s.d.)</td>
<td>0.10 (0.31)</td>
<td>0.059 (0.24)</td>
</tr>
<tr>
<td></td>
<td>range</td>
<td>0.00 - 1.00</td>
<td>0.00 - 1.00</td>
</tr>
<tr>
<td><strong>No. of Irrelevant Peer Means</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>mean (s.d.)</td>
<td>0.10 (0.31)</td>
<td>0.00 (0.00)</td>
</tr>
<tr>
<td></td>
<td>range</td>
<td>0.00 - 1.00</td>
<td>0.00 - 0.00</td>
</tr>
<tr>
<td><strong>% of High Power Strategies</strong></td>
<td>mean (s.d.)</td>
<td>24.40 (25.13)</td>
<td>17.36 (13.56)</td>
</tr>
<tr>
<td></td>
<td>range</td>
<td>0.00 - 100.00</td>
<td>0.00 - 50.00</td>
</tr>
<tr>
<td><strong>% of Moderate Power Strategies</strong></td>
<td>mean (s.d.)</td>
<td>25.04 (16.91)</td>
<td>28.19 (15.59)</td>
</tr>
<tr>
<td></td>
<td>range</td>
<td>0.00 - 66.66</td>
<td>0.00 - 75.00</td>
</tr>
<tr>
<td><strong>% of Low Power Strategies</strong></td>
<td>mean (s.d.)</td>
<td>25.17 (16.44)</td>
<td>31.40 (16.45)</td>
</tr>
<tr>
<td></td>
<td>range</td>
<td>0.00 - 60.00</td>
<td>0.00 - 66.67</td>
</tr>
<tr>
<td><strong>% of Information Seeking Strategies</strong></td>
<td>mean (s.d.)</td>
<td>8.89 (9.62)</td>
<td>6.43 (9.65)</td>
</tr>
<tr>
<td></td>
<td>range</td>
<td>0.00 - 40.00</td>
<td>0.00 - 30.77</td>
</tr>
<tr>
<td><strong>% of Planning Strategies</strong></td>
<td>mean (s.d.)</td>
<td>15.42 (12.87)</td>
<td>16.37 (12.34)</td>
</tr>
<tr>
<td></td>
<td>range</td>
<td>0.00 - 50.00</td>
<td>0.00 - 46.15</td>
</tr>
</tbody>
</table>

* p ≤ 0.10 two-tailed
Table 5.6 Maternal attributions: failure to thrive and control group mothers

<table>
<thead>
<tr>
<th></th>
<th>FTT N = 39</th>
<th>Control N = 34</th>
<th>Wilcoxon z</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>total % personal</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Controllable global</td>
<td>mean (s.d.)</td>
<td>16.46 (16.57)</td>
<td>10.11 (13.99)</td>
</tr>
<tr>
<td></td>
<td>range</td>
<td>0.00 - 85.71</td>
<td>0.00 - 50.00</td>
</tr>
<tr>
<td><strong>total % personal</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Uncontrollable global</td>
<td>mean (s.d.)</td>
<td>7.97 (10.20)</td>
<td>4.70 (7.03)</td>
</tr>
<tr>
<td></td>
<td>range</td>
<td>0.00 - 33.33</td>
<td>0.00 - 16.67</td>
</tr>
<tr>
<td><strong>eating % personal</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Controllable global</td>
<td>mean (s.d.)</td>
<td>11.07 (19.01)</td>
<td>9.04 (16.51)</td>
</tr>
<tr>
<td></td>
<td>range</td>
<td>0.00 - 66.67</td>
<td>0.00 - 66.67</td>
</tr>
<tr>
<td><strong>eating % personal</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Uncontrollable global</td>
<td>mean (s.d.)</td>
<td>2.56 (11.81)</td>
<td>2.02 (11.61)</td>
</tr>
<tr>
<td></td>
<td>range</td>
<td>0.00 - 66.67</td>
<td>0.00 - 66.67</td>
</tr>
<tr>
<td><strong>peer % personal</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Controllable global</td>
<td>mean (s.d.)</td>
<td>19.83 (24.42)</td>
<td>13.54 (24.02)</td>
</tr>
<tr>
<td></td>
<td>range</td>
<td>0.00 - 100.00</td>
<td>0.00 - 100.00</td>
</tr>
<tr>
<td><strong>peer % personal</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Uncontrollable global</td>
<td>mean (s.d.)</td>
<td>13.97 (19.55)</td>
<td>11.29 (17.64)</td>
</tr>
<tr>
<td></td>
<td>range</td>
<td>0.00 - 66.67</td>
<td>0.00 - 66.67</td>
</tr>
</tbody>
</table>

*p ≤ 0.10  **p ≤ 0.05  ***p ≤ 0.01  ****p ≤ 0.005  *****p ≤ 0.002  two-tailed

5.4.c.i.b Early and late growth failure

Maternal problem solving

Hypothesised differences in maternal problem solving between children who failed to thrive early or late during the first year were examined using Mann-Whitney Tests for independent samples (Table 5.7). Mothers of children who failed to thrive later appeared to have more difficulty in generating effective strategies; they offered fewer relevant solutions for problems relating to child eating and more irrelevant strategies for dealing with peer-related problems. No differences were apparent in the type of strategies suggested by early and late FTT mothers.
### Table 5.7: Maternal Problem Solving

<table>
<thead>
<tr>
<th></th>
<th>Early FTT (N = 18)</th>
<th>Late FTT (N = 21)</th>
<th>Mann-Whitney Z</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of relevant means</td>
<td>Mean (s.d.)</td>
<td></td>
<td>-1.73*</td>
</tr>
<tr>
<td></td>
<td>Range</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No. of relevant food means</td>
<td>Mean (s.d.)</td>
<td></td>
<td>-1.95**</td>
</tr>
<tr>
<td></td>
<td>Range</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No. of relevant peer means</td>
<td>Mean (s.d.)</td>
<td></td>
<td>-1.22</td>
</tr>
<tr>
<td></td>
<td>Range</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of irrelevant means</td>
<td>Mean (s.d.)</td>
<td></td>
<td>-1.06</td>
</tr>
<tr>
<td></td>
<td>Range</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No. of irrelevant food means</td>
<td>Mean (s.d.)</td>
<td></td>
<td>-0.161</td>
</tr>
<tr>
<td></td>
<td>Range</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No. of irrelevant peer means</td>
<td>Mean (s.d.)</td>
<td></td>
<td>-1.93**</td>
</tr>
<tr>
<td></td>
<td>Range</td>
<td></td>
<td></td>
</tr>
<tr>
<td>% of high power strategies</td>
<td>Mean (s.d.)</td>
<td></td>
<td>-0.608</td>
</tr>
<tr>
<td></td>
<td>Range</td>
<td></td>
<td></td>
</tr>
<tr>
<td>% of moderate power strategies</td>
<td>Mean (s.d.)</td>
<td></td>
<td>-1.06</td>
</tr>
<tr>
<td></td>
<td>Range</td>
<td></td>
<td></td>
</tr>
<tr>
<td>% of low power strategies</td>
<td>Mean (s.d.)</td>
<td></td>
<td>-0.113</td>
</tr>
<tr>
<td></td>
<td>Range</td>
<td></td>
<td></td>
</tr>
<tr>
<td>% of information seeking strategies</td>
<td>Mean (s.d.)</td>
<td></td>
<td>-0.351</td>
</tr>
<tr>
<td></td>
<td>Range</td>
<td></td>
<td></td>
</tr>
<tr>
<td>% of planning strategies</td>
<td>Mean (s.d.)</td>
<td></td>
<td>-0.143</td>
</tr>
<tr>
<td></td>
<td>Range</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* p ≤ 0.10  ** p ≤ 0.05  two-tailed

### Maternal Attributions

Differences in the attributions made by mothers whose children failed to thrive early or late during the first year were explored using Mann-Whitney Tests for independent groups (Table 5.8). Mothers whose children failed to grow early in the first year were significantly more likely to attribute child eating problems to causes that were personal controllable and global for the child; no other differences were found.
### Table 5.8 Maternal Attributions: Early and Late Failure to Thrive Group Mothers

<table>
<thead>
<tr>
<th></th>
<th>Early FTT (N = 18)</th>
<th>Late FTT (N = 21)</th>
<th>Mann-Whitney Z</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total % Personal</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean (s.d.)</td>
<td>22.17 (20.58)</td>
<td>11.56 (10.36)</td>
<td>-1.82*</td>
</tr>
<tr>
<td>Controllable Global</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Range</td>
<td>0.00 - 85.71</td>
<td>0.00 - 33.33</td>
<td></td>
</tr>
<tr>
<td>Uncontrollable Global</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Range</td>
<td>0.00 - 33.33</td>
<td>0.00 - 33.33</td>
<td></td>
</tr>
<tr>
<td><strong>Eating % Personal</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean (s.d.)</td>
<td>18.52 (24.01)</td>
<td>4.66 (10.18)</td>
<td>-2.03**</td>
</tr>
<tr>
<td>Controllable Global</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Range</td>
<td>0.00 - 66.67</td>
<td>0.00 - 33.33</td>
<td></td>
</tr>
<tr>
<td>Uncontrollable Global</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Range</td>
<td>0.00 - 66.67</td>
<td>0.00 - 66.67</td>
<td>-0.319</td>
</tr>
<tr>
<td><strong>Peer % Personal</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean (s.d.)</td>
<td>22.59 (28.64)</td>
<td>17.46 (20.57)</td>
<td>-1.21</td>
</tr>
<tr>
<td>Controllable Global</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Range</td>
<td>0.00 - 100.00</td>
<td>0.00 - 66.67</td>
<td></td>
</tr>
<tr>
<td>Uncontrollable Global</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Range</td>
<td>0.00 - 66.67</td>
<td>0.00 - 50.00</td>
<td></td>
</tr>
</tbody>
</table>

* p ≤ 0.10  ** p ≤ 0.05  two-tailed

### 5.4.c.ii Physical Stature at Six Years

#### 5.4.c.ii.a Small and Larger Failure to Thrive Group Children

**Maternal Problem Solving**

Problem solving strategies suggested by mothers of children classed as “small” or “larger” for age at six years were compared, using Mann-Whitney Tests for independent samples (Table 5.9). There was limited evidence of intergroup differences, although mothers of smaller children offered significantly fewer strategies for dealing with child eating problems. Given evidence that smaller case group children lived in larger families and were more likely to be male, forced entry regression analysis was carried out to determine whether these sample characteristics could account for intergroup variation in problem solving. Small stature independently accounted for 9.85% of the variance in the number of strategies mothers suggested for dealing with mealtime problems ($R^2 = 0.126; F = 4.61; \beta = 0.355; p \leq 0.05$); a non-significant trend implied that inclusion of family size improved the power of this equation ($\text{change in } R^2 = 0.095; \text{adjusted } R^2 = 0.171; F = 4.40; p \leq 0.05; \beta = -0.337; p \leq 0.10$).
### Table 5.9 Maternal Problem Solving: Mothers of Small and Larger FTT Group Children

<table>
<thead>
<tr>
<th></th>
<th>Small FTT (N = 16)</th>
<th>Larger FTT (N = 18)</th>
<th>Mann-Whitney Z</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Number of Relevant Means</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean (s.d.)</td>
<td>7.75 (3.02)</td>
<td>9.72 (3.85)</td>
<td>-1.58</td>
</tr>
<tr>
<td>Range</td>
<td>4.00 - 13.00</td>
<td>6.00 - 21.00</td>
<td></td>
</tr>
<tr>
<td><strong>Food Means</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean (s.d.)</td>
<td>3.75 (1.39)</td>
<td>4.94 (1.80)</td>
<td>-1.94 **</td>
</tr>
<tr>
<td>Range</td>
<td>1.00 - 5.00</td>
<td>3.00 - 10.00</td>
<td></td>
</tr>
<tr>
<td><strong>No. of Relevant Peer Means</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean (s.d.)</td>
<td>4.00 (2.07)</td>
<td>1.48 (2.32)</td>
<td>-0.897</td>
</tr>
<tr>
<td>Range</td>
<td>1.00 - 8.00</td>
<td>2.00 - 11.00</td>
<td></td>
</tr>
<tr>
<td><strong>Number of Irrelevant Means</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean (s.d.)</td>
<td>0.19 (0.40)</td>
<td>0.11 (0.32)</td>
<td>-0.618</td>
</tr>
<tr>
<td>Range</td>
<td>0.00 - 1.00</td>
<td>0.00 - 1.00</td>
<td></td>
</tr>
<tr>
<td><strong>Food Means</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean (s.d.)</td>
<td>0.13 (0.34)</td>
<td>0.056 (0.24)</td>
<td>-0.702</td>
</tr>
<tr>
<td>Range</td>
<td>0.00 - 1.00</td>
<td>0.00 - 1.00</td>
<td></td>
</tr>
<tr>
<td><strong>No. of Irrelevant Peer Means</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean (s.d.)</td>
<td>0.063 (0.25)</td>
<td>0.056 (0.24)</td>
<td>-0.0846</td>
</tr>
<tr>
<td>Range</td>
<td>0.00 - 1.00</td>
<td>0.00 - 1.00</td>
<td></td>
</tr>
<tr>
<td><strong>% of High Power Strategies</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean (s.d.)</td>
<td>23.62 (20.53)</td>
<td>21.68 (27.12)</td>
<td>-0.0433</td>
</tr>
<tr>
<td>Range</td>
<td>0.00 - 60.00</td>
<td>0.00 - 100.00</td>
<td></td>
</tr>
<tr>
<td><strong>% of Moderate Power Strategies</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean (s.d.)</td>
<td>24.86 (15.87)</td>
<td>29.83 (16.68)</td>
<td>-0.900</td>
</tr>
<tr>
<td>Range</td>
<td>0.00 - 50.00</td>
<td>0.00 - 66.67</td>
<td></td>
</tr>
<tr>
<td><strong>% of Low Power Strategies</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean (s.d.)</td>
<td>26.79 (17.47)</td>
<td>23.22 (12.09)</td>
<td>-0.831</td>
</tr>
<tr>
<td>Range</td>
<td>0.00 - 53.84</td>
<td>0.00 - 38.46</td>
<td></td>
</tr>
<tr>
<td><strong>% of Information Seeking Strategies</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean (s.d.)</td>
<td>7.91 (11.54)</td>
<td>10.84 (8.30)</td>
<td>-0.26</td>
</tr>
<tr>
<td>Range</td>
<td>0.00 - 40.00</td>
<td>0.00 - 28.57</td>
<td></td>
</tr>
<tr>
<td><strong>% of Planning Strategies</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean (s.d.)</td>
<td>14.74 (12.43)</td>
<td>13.91 (9.59)</td>
<td>-0.192</td>
</tr>
<tr>
<td>Range</td>
<td>0.00 - 40.00</td>
<td>0.00 - 28.57</td>
<td></td>
</tr>
</tbody>
</table>

*p ≤ 0.10  **p ≤ 0.05  two-tailed

### Maternal Attributions

Mann-Whitney Tests identified no significant intergroup differences in the attributions made by mothers of small and larger failure to thrive group children (Table 5.10).
Table 5.10 Maternal attributions: Mothers of small and larger FTT group children

<table>
<thead>
<tr>
<th></th>
<th>Small FTT</th>
<th>Larger FTT</th>
<th>Mann-Whitney z</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total % personal</td>
<td>mean (s.d.)</td>
<td>14.07 (13.97)</td>
<td>17.17 (20.32)</td>
</tr>
<tr>
<td></td>
<td>range</td>
<td>0.00 - 42.86</td>
<td>0.00 - 85.71</td>
</tr>
<tr>
<td>Controllable global</td>
<td>mean (s.d.)</td>
<td>11.35 (12.70)</td>
<td>5.93 (7.90)</td>
</tr>
<tr>
<td></td>
<td>range</td>
<td>0.00 - 33.33</td>
<td>0.00 - 20.00</td>
</tr>
<tr>
<td>Uncontrollable global</td>
<td>mean (s.d.)</td>
<td>12.19 (21.14)</td>
<td>10.65 (19.35)</td>
</tr>
<tr>
<td></td>
<td>range</td>
<td>0.00 - 66.67</td>
<td>0.00 - 66.67</td>
</tr>
<tr>
<td>Eating % personal</td>
<td>mean (s.d.)</td>
<td>6.25 (18.13)</td>
<td>0.00 (0.00)</td>
</tr>
<tr>
<td></td>
<td>range</td>
<td>0.00 - 66.67</td>
<td>0.00 - 66.67</td>
</tr>
<tr>
<td>Controllable global</td>
<td>mean (s.d.)</td>
<td>15.63 (22.95)</td>
<td>20.28 (26.00)</td>
</tr>
<tr>
<td></td>
<td>range</td>
<td>0.00 - 66.67</td>
<td>0.00 - 100.00</td>
</tr>
<tr>
<td>Uncontrollable global</td>
<td>mean (s.d.)</td>
<td>16.67 (23.57)</td>
<td>12.69 (17.27)</td>
</tr>
<tr>
<td></td>
<td>range</td>
<td>0.00 - 66.67</td>
<td>0.00 - 50.00</td>
</tr>
</tbody>
</table>

5.4.c.ii.b Maternal cognitions and physical stature:

Spearman’s Rank Correlations

In order to determine which aspects of maternal cognitions best indicated child physical development at six years, correlational analyses were conducted to identify variables for inclusion in regression equations.

Maternal problem solving

There was limited evidence that maternal problem solving strategies were associated with physical development of case or control group children (Tables 5.11 - 5.12). Failure to thrive group mothers who offered more ineffective strategies had shorter children (height for age centile) at six years, and there was a non-significant trend for maternal use of information seeking strategies to be negatively correlated with height for age of control group children.
### Table 5.11 Spearman's rank correlations of maternal problem solving relevance and child physical stature: failure to thrive and control group mothers

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Case</td>
<td>Control</td>
<td>Case</td>
<td>Control</td>
<td>Case</td>
<td>Control</td>
<td>Case</td>
</tr>
<tr>
<td>Height for age centile</td>
<td>0.030</td>
<td>-0.141</td>
<td>0.138</td>
<td>-0.239</td>
<td>-0.080</td>
<td>-0.046</td>
</tr>
<tr>
<td>Weight for age centile</td>
<td>0.101</td>
<td>-0.000</td>
<td>0.121</td>
<td>-0.094</td>
<td>0.078</td>
<td>0.055</td>
</tr>
</tbody>
</table>

**FTT:** N = 34  **Control:** N = 31

### Table 5.12 Spearman's rank correlations of maternal problem solving strategies and child physical stature: failure to thrive and control group mothers

<table>
<thead>
<tr>
<th>Physical Stature</th>
<th>% High Power Strategies</th>
<th>% Moderate Power Strategies</th>
<th>% Low Power Strategies</th>
<th>% Information Seeking Strategies</th>
<th>% Planning Strategies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Case</td>
<td>Control</td>
<td>Case</td>
<td>Control</td>
<td>Case</td>
<td>Control</td>
</tr>
<tr>
<td>Height for age centile</td>
<td>-0.073</td>
<td>0.191</td>
<td>0.026</td>
<td>-0.046</td>
<td>-0.265</td>
</tr>
<tr>
<td>Weight for age centile</td>
<td>0.203</td>
<td>0.236</td>
<td>-0.047</td>
<td>-0.015</td>
<td>-0.231</td>
</tr>
</tbody>
</table>

* p < 0.10  ** p < 0.05  * * p < 0.05  two-tailed

### Maternal attributions

Personal, controllable and global attributions to child were positively associated with weight for age of control group children; in the failure to thrive group, personal, controllable, global attributions for peer problems were positively correlated with child height and weight for age (Table 5.13).

### Table 5.13 Spearman’s rank correlations of maternal attributions and child physical stature: failure to thrive and control group mothers

<table>
<thead>
<tr>
<th>Total attributions</th>
<th>% Personal Controllable Global</th>
<th>% Personal Uncontrollable Global</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical Stature</td>
<td>Case</td>
<td>Control</td>
</tr>
<tr>
<td>FTT: N = 34</td>
<td>Control: N = 31</td>
<td></td>
</tr>
<tr>
<td>Height for age centile</td>
<td>0.239</td>
<td>0.170</td>
</tr>
<tr>
<td>Weight for age centile</td>
<td>0.186</td>
<td>0.427</td>
</tr>
</tbody>
</table>

* p < 0.10  ** p < 0.05
Variables that approached significance in correlations with child height and weight for age were entered into regression equations. Height and weight z scores were used as dependent variables, since these were more normally distributed than centile data.

Regression analyses (Table 5.14) failed to support hypothesised links between maternal cognitions and child physical stature in the failure to thrive group. Attributions of peer relationship problems to causes that were personal, controllable, and global for the child indicated almost 30% of the variance in height for age z scores at six years, but case group mothers who made more personal, controllable global attributions had taller children.

Maternal use of low power problem solving strategies accounted for 7% of the variance in weight for age of failure to thrive group children (Table 5.15), although this did not reach significance; addition of maternal attributions for peer problems did not improve the power of this equation.
By contrast to findings within the failure to thrive group, maternal cognitions indicated only a moderate proportion of the variance in height of control group children. A non-significant trend implied that the percentage of information seeking strategies suggested by mothers accounted for almost 7% of the variance in height for age; no other indices of maternal cognitions improved this equation. Clearer links were found with weight for age of control group children, although these contradicted theoretical predictions. Specifically, mothers of heavier children made more personal controllable and global attributions to the child; no other indices of maternal cognitions reliably improved this equation.

**Table 5.14** Regression of maternal cognitions on height for age z score: failure to thrive (N = 34) and control group (N = 30)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Change in $R^2$</th>
<th>Adjusted $R^2$</th>
<th>$F$</th>
<th>$\beta$</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Failure to Thrive Group</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>% personal controllable global peer attributions</td>
<td>0.186</td>
<td>0.291</td>
<td>7.76****</td>
<td>0.447***</td>
</tr>
<tr>
<td><strong>Control Group</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>% of information seeking problem solving strategies</td>
<td>0.101</td>
<td>0.0689</td>
<td>3.15*</td>
<td>-0.318*</td>
</tr>
</tbody>
</table>

*p ≤ 0.10  ** p ≤ 0.05  ***p ≤ 0.01  ****p ≤ 0.005

**Table 5.15** Regression of maternal cognitions on weight for age z score: failure to thrive (N = 34) and control group (N = 30)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Change in $R^2$</th>
<th>Adjusted $R^2$</th>
<th>$F$</th>
<th>$\beta$</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Failure to Thrive Group</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>% low power problem solving strategies</td>
<td>0.100</td>
<td>0.0724</td>
<td>3.57*</td>
<td>-0.317*</td>
</tr>
<tr>
<td>% personal controllable global peer attributions</td>
<td>0.0362</td>
<td>0.0810</td>
<td>2.45*</td>
<td>0.193</td>
</tr>
<tr>
<td><strong>Control Group</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>% personal controllable global all attributions</td>
<td>0.156</td>
<td>0.126</td>
<td>5.19**</td>
<td>0.395**</td>
</tr>
</tbody>
</table>

*p ≤ 0.10  ** p ≤ 0.05
5.4.d maternal cognitions and child psychological functioning

5.4.d.i. maternal cognitions and child cognitive development:

Spearman’s Rank Correlations

In order to determine which aspects of maternal cognitions best indicated child cognitive functioning at six years, correlational analyses were conducted to identify variables for inclusion in regression equations.

maternal problem solving

As shown in Table 5.16 and 5.17, maternal problem solving was moderately related to child cognitive performance. Among cases, these links were largely specific to maternal suggestion of high power solutions for child behaviour problems; maternal use of high power strategies correlated with poorer performance on all indices of cognitive functioning except perceptual skill. In addition, non-significant trends indicated links between the number of effective solutions that mothers offered and child verbal and memory skills, and maternal use of low power strategies was related to quantitative skills. Maternal problem solving was not associated with child cognitive functioning in the control group; use of planning strategies was associated with perceptual performance, but this trend was non-significant, and should be viewed with caution, given the size of the correlation matrix.

**Table 5.16** Spearman’s rank correlations of maternal problem solving relevance and child cognitive ability: failure to thrive and control group mothers

<table>
<thead>
<tr>
<th>cognitive ability</th>
<th>case relevant means</th>
<th>case irrelevant means</th>
<th>control relevant means</th>
<th>control irrelevant means</th>
</tr>
</thead>
<tbody>
<tr>
<td>FT T: N = 38 Control: N = 34</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>cognitive index (GCI)</td>
<td>0.238</td>
<td>-0.001</td>
<td>0.200</td>
<td>0.057</td>
</tr>
<tr>
<td>memory</td>
<td>0.266</td>
<td>-0.166</td>
<td>0.212</td>
<td>0.088</td>
</tr>
<tr>
<td>verbal ability</td>
<td>0.279</td>
<td>-0.094</td>
<td>0.233</td>
<td>0.079</td>
</tr>
<tr>
<td>quantitative skill</td>
<td>0.221</td>
<td>0.091</td>
<td>0.254</td>
<td>0.064</td>
</tr>
<tr>
<td>perceptual skill</td>
<td>-0.120</td>
<td>-0.027</td>
<td>-0.119</td>
<td>0.064</td>
</tr>
</tbody>
</table>

*p ≤ 0.10
Table 5.17  Spearman's rank correlations of maternal problem solving strategies and child cognitive ability: failure to thrive and control group mothers

<table>
<thead>
<tr>
<th>problem solving</th>
<th>% high power strategies</th>
<th>% moderate power strategies</th>
<th>% low power strategies</th>
<th>% information seeking strategies</th>
<th>% planning strategies</th>
</tr>
</thead>
<tbody>
<tr>
<td>% cognitive ability</td>
<td>% information seeking strategies</td>
<td>% planning strategies</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>case</td>
<td>control</td>
<td>case</td>
<td>control</td>
<td>case</td>
<td>control</td>
</tr>
<tr>
<td>FTT: N = 38</td>
<td>Control: N = 34</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>cognitive index (GCI)</td>
<td>-0.311</td>
<td>*</td>
<td>0.102</td>
<td>0.131</td>
<td>0.069</td>
</tr>
<tr>
<td>memory</td>
<td>-0.396</td>
<td>***</td>
<td>0.087</td>
<td>0.130</td>
<td>0.170</td>
</tr>
<tr>
<td>verbal ability</td>
<td>-0.287</td>
<td>*</td>
<td>0.023</td>
<td>0.137</td>
<td>0.114</td>
</tr>
<tr>
<td>quantitative skill</td>
<td>-0.379</td>
<td>*</td>
<td>0.110</td>
<td>0.182</td>
<td>0.143</td>
</tr>
<tr>
<td>perceptual skill</td>
<td>0.126</td>
<td>*</td>
<td>0.218</td>
<td>-0.134</td>
<td>0.049</td>
</tr>
</tbody>
</table>

* p ≤ 0.10  ** p ≤ 0.05

Maternal attributions

Table 5.18 indicates differences in links between maternal attributions and child cognition among cases and controls. Within the failure to thrive group, maternal attribution of eating problems to causes that were personal, controllable and global to the child was negatively correlated with child verbal ability; among comparisons, all indices of child cognitive functioning were associated with maternal attribution of child peer problems to personal, uncontrollable and global causes for the child.

Table 5.18  Spearman's rank correlations of maternal attributions and child cognitive ability: failure to thrive and control group mothers

<table>
<thead>
<tr>
<th>total attributions</th>
<th>% personal controllable</th>
<th>% personal uncontrollable global</th>
</tr>
</thead>
<tbody>
<tr>
<td>% cognitive ability</td>
<td>% personal controllable</td>
<td>% personal uncontrollable global</td>
</tr>
<tr>
<td>case</td>
<td>control</td>
<td>case</td>
</tr>
<tr>
<td>FTT: N = 38</td>
<td>Control: N = 34</td>
<td></td>
</tr>
<tr>
<td>cognitive index (GCI)</td>
<td>-0.210</td>
<td>0.001</td>
</tr>
<tr>
<td>memory</td>
<td>-0.014</td>
<td>-0.033</td>
</tr>
<tr>
<td>verbal ability</td>
<td>-0.325</td>
<td>*</td>
</tr>
<tr>
<td>quantitative skill</td>
<td>0.058</td>
<td>*</td>
</tr>
<tr>
<td>perceptual skill</td>
<td>-0.174</td>
<td>*</td>
</tr>
</tbody>
</table>
5.4.d.ii maternal cognitions and child cognitive ability:
regression analyses

5.4.d.ii.a general cognitive ability

The regression analyses summarised in Table 5.19 show that maternal cognitions have little power for indicating variance in overall cognitive functioning (GCI) of children who have failed to thrive. In contrast, maternal attributions about control group children were significantly indicative of overall cognitive functioning.
5.4.d.ii.b memory performance

Within the failure to thrive group, maternal suggestion of high power problem solving strategies indicated a highly significant proportion of the variance in child memory ability at six years (Table 5.20). Maternal problem solving did not account for child memory in the control group, but maternal attributions indicated almost 20% of variance in memory performance of control group children.

5.4.d.ii.c verbal performance

In line with theoretical predictions, failure to thrive group mothers who used high power strategies and made more personal controllable global attributions to child about eating problems had children with poorer verbal skills. In addition, maternal attributions indicated verbal abilities of control group children according to theoretical predictions. Results are detailed in Table 5.21.
**Table 5.21** Regression of maternal cognitions on child verbal performance: failure to thrive (N = 38) and control group (N = 32)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Change in R²</th>
<th>Adjusted R²</th>
<th>F</th>
<th>β</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Failure to thrive group</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>% high power problem solving strategies</td>
<td>0.0835</td>
<td>0.0581</td>
<td>3.28*</td>
<td>-0.289*</td>
</tr>
<tr>
<td>% personal controllable global eating attributions</td>
<td>0.0765</td>
<td>0.112</td>
<td>3.33**</td>
<td>-0.283*</td>
</tr>
<tr>
<td><strong>Control group</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>% personal uncontrollable global peer attributions</td>
<td>0.0988</td>
<td>0.0687</td>
<td>3.29*</td>
<td>-0.314*</td>
</tr>
</tbody>
</table>

* p ≤ 0.10  ** p ≤ 0.05

### 5.4.d.ii.d Quantitative Performance

Among failure to thrive families, 10.4% of the variance in child quantitative skill was accounted for by mothers’ suggestion of low power problem solving strategies ($R^2 = 0.128$; $F = 5.28$; $β = 0.358$; $p < 0.05$). There was no evidence of links between maternal cognitions and numerical ability among control group children.

### 5.4.d.ii.e Perceptual Performance

Maternal cognitions were not related to the perceptual abilities of children who had failed to thrive. In contrast, variance in perceptual skills of control group children was indicated by the percentage of personal uncontrollable and global attributions mothers made to child ($R^2 = 0.190$; adjusted $R^2 = 0.164$; $F = 7.26$; $β = -0.436$; $p < 0.01$); addition of maternal use of planning strategies did not improve the power of the equation.
5.4.d.iii maternal cognitions and child social cognition:

Spearman's Rank Correlations

Correlational analyses were conducted in order to determine which aspects of maternal cognitions best indicated child social cognitive functioning at six years.

maternal problem solving

The number of categories of problem solving strategy suggested by children was related to aspects of maternal problem solving for cases and controls. Mothers’ suggested use of low power strategies was positively correlated with categories offered by failure to thrive group children, although there were no other relationships with maternal problem solving. Within the control group, the variety of categories was strongly negatively correlated with the number of relevant strategies mothers suggested for dealing with eating problems, contradicting hypothesised relationships.

In line with predictions, there were significant positive correlations between relevance of maternal solutions to eating problems and the flexibility and relevance of problem solving strategies offered by children who had failed to thrive. Maternal problem solving was not related to flexibility or relevance of control children’s problem solving strategies (see Tables 5.22-5.23).

<table>
<thead>
<tr>
<th>Table 5.22</th>
<th>Spearman’s rank correlations of maternal problem solving relevance and child social cognition: failure to thrive and control group mothers</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>child problem solving</td>
</tr>
<tr>
<td></td>
<td>no. relevant means</td>
</tr>
<tr>
<td></td>
<td>control</td>
</tr>
<tr>
<td>FTT: N = 36</td>
<td>Control: N = 32</td>
</tr>
<tr>
<td>no of categories</td>
<td>0.108</td>
</tr>
<tr>
<td>solution flexibility</td>
<td>0.249</td>
</tr>
<tr>
<td>solution relevance</td>
<td>0.283</td>
</tr>
</tbody>
</table>

*p ≤ 0.10  **p ≤ 0.05  ***p ≤ 0.01  ****p ≤ 0.005
table 5.23  Spearman's rank correlations of maternal problem solving strategies and child social cognition: failure to thrive and control group mothers

<table>
<thead>
<tr>
<th>problem solving</th>
<th>% high power strategies</th>
<th>% moderate power strategies</th>
<th>% low power strategies</th>
<th>% information seeking strategies</th>
<th>% planning strategies</th>
</tr>
</thead>
<tbody>
<tr>
<td>child problem solving case</td>
<td>control case</td>
<td>control case</td>
<td>control case</td>
<td>control case</td>
<td>control case</td>
</tr>
<tr>
<td>no of categories</td>
<td>-0.118</td>
<td>0.037</td>
<td>-0.256</td>
<td>0.137</td>
<td>0.381</td>
</tr>
<tr>
<td>solution flexibility</td>
<td>-0.233</td>
<td>0.156</td>
<td>-0.009</td>
<td>0.220</td>
<td>0.205</td>
</tr>
<tr>
<td>solution relevance</td>
<td>-0.158</td>
<td>0.005</td>
<td>-0.025</td>
<td>0.078</td>
<td>0.074</td>
</tr>
</tbody>
</table>

* p ≤ 0.10  ** p ≤ 0.05

maternal attributions

Maternal attributions about child behaviour problems were not related to the social problem solving skills of children who had failed to thrive. There was some indication that maternal attributions were related to child social cognition in the control group, but these associations were not significant (Table 5.24).

Table 5.24  Spearman's rank correlations of maternal attributions and child social cognition: failure to thrive and control group mothers

<table>
<thead>
<tr>
<th>total attributions</th>
<th>% personal controllable</th>
<th>% personal uncontrollable</th>
<th>global</th>
</tr>
</thead>
<tbody>
<tr>
<td>child problem solving case</td>
<td>control case</td>
<td>control case</td>
<td>control case</td>
</tr>
<tr>
<td>no of categories</td>
<td>-0.124</td>
<td>0.241</td>
<td>0.112</td>
</tr>
<tr>
<td>solution flexibility</td>
<td>0.142</td>
<td>0.060</td>
<td>-0.026</td>
</tr>
<tr>
<td>solution relevance</td>
<td>0.099</td>
<td>-0.207</td>
<td>0.074</td>
</tr>
</tbody>
</table>
**5.4.d.iv. maternat cognitions and child social cognition:**
**regression analyses**

**5.4.d.iv.a problem solving categories**

There was no indication that indices of maternal cognitions were associated with numbers of categories suggested by children who have failed to thrive, whereas relevance of comparison mothers' strategies for eating problems was a significant indicator of variety of child problem solving categories ($R^2 = 0.336;\ \text{adjusted } R^2 = 0.313;\ F = 14.69;\ \beta = -0.580;\ p \leq 0.001$).

**5.4.d.iv.b problem solving flexibility**

In contrast to the analysis of number of suggested categories, flexibility of problem solving skills in the failure to thrive group was indicated by the ability of mothers to generate relevant solutions to child eating problems ($R^2 = 0.160;\ \text{adjusted } R^2 = 0.136;\ F = 6.69;\ \beta$...
There was no evidence that maternal cognitions were linked to problem solving flexibility of control group children.

5.4.d.iv.c problem solving relevance

As with flexibility, problem solving relevance among failure to thrive group children was indicated by relevance of maternal strategies for eating problems ($R^2 = 0.156$; adjusted $R^2 = 0.132$; $F = 6.49$; $\beta = 0.396$; $p<0.01$). Maternal cognitions were not associated with social problem solving relevance of control group children.
5.5 discussion

The present chapter applied models of parental cognition derived from the caregiving literature in a community sample of mothers and six year old children who failed to thrive in infancy, and so addressed two separate issues. First, analyses aimed to identify maternal cognitions associated with a history of infant failure to thrive, and with the developmental consequences of early growth faltering for the child. Second, few U.K. researchers have sought to examine maternal cognitions in non-clinical research, and so the present findings are inevitably exploratory, and cannot be viewed as a definitive account of maternal thinking associated with a history of infant growth retardation. Nevertheless, the results offer potentially fruitful insights regarding current maternal cognitions and child functioning in a U.K. community sample.

5.5.a maternal cognitions and child physical development

5.5.a.i a history of failure to thrive

Results of intergroup comparisons indicated differences in the explanations of problem child behaviour offered by cases and controls. Specifically, mothers of previously growth retarded children were significantly more likely to attribute child behaviour problems to personal, controllable and global or personal, uncontrollable and global causes for the child. The attribution of problems to personal, controllable and global causes has previously been associated with family dysfunction (e.g., Fincham and Grych, 1991; Brewin et al., 1991), and Brewin and colleagues found that hostility towards the target of the attribution was associated with this kind of causal statement: future investigations might usefully consider relationships between attribution and expressed emotion in families where a child has failed to thrive.

These observations could be seen as consistent with the failure to thrive literature’s traditional conceptualisation of growth failure stemming from maladaptive caregiving, but the present study has not tested that interpretation; maternal thinking about the behaviour of a six year old child cannot explain the causes of infant growth faltering. Additionally, it is important to recognise that responses of failure to thrive and control group mothers were
very similar on a number of indices. For example, although there was a trend for failure to thrive group mothers to suggest more irrelevant problem solving strategies, there was no evidence that these mothers had more difficulty in generating effective solutions: there were no intergroup differences in the number of relevant problem solving strategies mothers described. In addition, ineffective responses were uncommon; the mean number of irrelevant solutions suggested by case group mothers for peer dilemmas was only 0.10 for three vignettes.

Within group variation also warrants consideration; failure to thrive group mothers may generally be more likely to show attributions associated with relationship difficulties, but many do not. For example, a significant minority of failure to thrive group mothers made very few personal controllable global attributions (see Figure 5.1); in contrast, attributions made by some mothers conformed almost exclusively to this pattern. Finally, it is important to remember that findings do not demonstrate a causal role for maternal attributions in non-organic failure to thrive; attributions made by mothers of growth retarded children could reflect the experience of parenting a child who fails to grow.

Observed patterns of maternal attribution are consistent with the contention that some children who fail to thrive are inherently difficult; Goldson, Milla and Bentovim (1985) ascribed the growth failure of a subgroup of clinically referred children to “mixed” organic and non-organic causes including temperamental and psychological difficulties in the child. The authors do not provide information about definition of these characteristics, but, arguably, interaction with a temperamentally difficult child could engender attributions of behaviour to personal, controllable global causes:

"it was probably taking one of its funny moods that it can take"

(a case group mother’s attribution for her child’s food refusal).

That account is plausible, and child effects are undeniably important; future observational research could examine links between maternal attributions and objective assessments of child characteristics. Nevertheless, as stated previously, personal controllable and global attributions have been associated with hostility and dysfunctional family relationships, and
so arguably these patterns of explanation may not be associated with adaptive caregiving, regardless of the inherent characteristics of the child.

5.5.a.ii. early and late growth failure

If failure to thrive does arise from diverse aetiologies, that variation might be related to timing of infant growth failure. The design of the present study does not permit speculation about the aetiology of diverse characteristics among children who failed to thrive, but it should be useful to consider whether any indices of current mother or child functioning distinguish previously defined subgroups. In support of this contention, analyses in Chapter Four indicated differences between mothers of children who experienced growth failure early and later during the first year, and the results of the present chapter indicate that the groups also differed in terms of their cognitions about child behaviour.

Mothers whose children failed to thrive later in the first year suggested fewer effective means for dealing with child eating problems and were more likely to offer irrelevant strategies for tackling peer relationship difficulties. In line with those observations, differences revealed at the time of the 15 month assessment suggested that late failure to thrive group mothers showed more characteristics that have been associated with risk of caregiving difficulty (see, e.g., Belsky and Vondra, 1989); they had significantly lower verbal and performance IQ and higher depression scores, relative to mothers whose children failed to thrive earlier in the first year.

Evans, Williams, O’Loughlin, and Howell’s (1992) findings with patients who had recently attempted suicide are comparable with the cognitions described in late failure to thrive group mothers; both samples produced offered fewer and less effective problem solving strategies. Nonetheless, it seems unlikely that maternal cognitions at six years were substantially influenced by levels of depression at 15 months, given the lack of intergroup differences on measures of psychosocial functioning, including depression, at six years (Chapter Four).
Poorer problem solving skills might reflect limited verbal ability in the late failure to thrive group, rather than poor caregiving skills; the Means End Procedure requires that mothers generate solutions for hypothetical problems, and mothers with poorer cognitive abilities may have more difficulty in articulating abstract ideas. That argument warrants consideration, and will be examined in more detail through analysis of links between maternal intelligence and problem solving and child development (Chapter Seven).

Nevertheless, few mothers appeared to have difficulty in generating solutions, as can be seen by the low frequency of irrelevant responses generated by early or late failure to thrive group mothers (Table 5.7). Moreover, the formal instructions for the MEPS did not appear to constrain maternal responses, and many mothers personalised their responses and discussed what they would do in the problem situation:

"I would solve the problem with (my child) by feeding her myself ... literally feed her myself, get the mealtime over and done with a lot quicker. That's one solution you could do."

The example above comes from a mother of a child with late growth retardation; maternal verbal IQ was below average (81), but she apparently had little difficulty in thinking of a high power solution for dealing with a child eating slowly.

Any evidence for links between IQ and problem solving ability are of additional interest with regard to criticisms of intelligence testing, as divorced from the reality of social-cognitive functioning (e.g., Richardson, 1991). If maternal cognitions are closely linked to formal measures of intelligence, the results may provide a useful indication of ways in which abstract cognitive abilities may relate to tasks in caregiving.

Limitations in problem solving among mothers whose children failed to thrive later in the first year should be considered with regard to the observation that mothers whose children failed to thrive early made almost four times as many personal controllable and global attributions to the child for eating problems. As noted above, this pattern of attribution has been associated with relationship difficulties, undermining the contention that late growth
retardation is associated with characteristics of risk for caregiving problems at 15 months and six years. More importantly, intergroup differences in maternal cognitions at six years do not provide evidence of the causes of failure to thrive, nor do they indicate factors that determined the timing of infant growth retardation; instead, maternal problem solving or attributions at follow-up could reflect the impact on the mother of child characteristics associated with the timing of failure to thrive in infancy.

A discussion of maternal cognitions risks placing unwarranted emphasis on the mother’s role in infant growth failure, and the child’s contribution to the relationship must be recognised; Bugental’s (e.g., 1993) research showed that maladaptive interpretations and responses are often prompted when the child gives an initial negative reaction to the adult. Personal controllable and global attributions could stem from the experience of raising a child who is failing to thrive. Whatever the causal relationship between maternal cognitions and failure to thrive, the analyses presented in this chapter cannot explain why certain patterns of maternal thinking are associated with early, rather than late, growth failure, and vice versa. Consideration of links between maternal cognitions and other family characteristics may have the potential to illuminate this issue.

5.5.a.iii. long term physical development
small and larger failure to thrive group children
It was argued that differential patterns of development among children who failed to thrive might be associated with variation in maternal characteristics at six years, such that maternal cognitions previously associated with relationship difficulties or problems of child development would be linked to limitations in the current physical stature of children in the present study. Results only partially supported that prediction: mothers of larger children were better at generating effective solutions for eating problems, but there were no other intergroup differences, implying that long term physical stature of previously growth retarded children is generally associated with factors other than maternal cognitions.
factors indicating physical stature

Regression analyses indicated that such a conclusion may be premature; almost 30% of variance in height for age of case children was indicated by maternal cognitions, but relationships did not conform to predicted patterns. Failure to thrive group mothers who made more attributions to personal controllable and global causes for peer related problems to the child had taller children, and children tended to be heavier when mothers used fewer low power problem solving strategies. These results should be interpreted with some caution; it is not clear why maternal explanations for child peer relationships should be related to physical stature, when attributions about eating problems were not. The contribution of maternal problem solving to variance in weight for age of case group children was non-significant, and may be seen as spurious, but maternal attributions were a highly significant indicator of height for age.

Once again, differing aetiological factors could explain both child growth and maternal attributions; if the course of failure to thrive is different then varied child care experiences among case group mothers may be reflected in their interpretations of child behaviour at six years. However, that account does not explain why patterns of attribution associated with relationship difficulties should be linked to better physical outcome among children who have failed to thrive. Even if maternal personal, controllable and global attributions to causes such as laziness are associated with hostility or maladaptive caregiving (e.g., Stratton and Swaffer, 1988; Brewin et al., 1991), they may not be associated with limitations in child stature at age six because, as the child grows older, the mother’s influence on child feeding diminishes. Children in the present sample were in their first year of primary school; by self-feeding or eating outside the home, those whose growth faltering was linked to caregiving may be able to recover stature, whereas children who fail to grow for different reasons may not. Accordingly, children whose mothers attribute problems to causes that are personal controllable and global to the child may “catch up” in physical development when they no longer rely on maternal feeding.

The data collected in the present study do not provide evidence for this interpretation,
which must remain within the realms of speculation without longitudinal analysis of
growth trajectories, maternal cognitions and child eating patterns. Nonetheless, if
personal, controllable and global attributions to the child were associated with caregiving
difficulty, these attributions might be associated with other developmental difficulties that
are more closely related to current patterns of communication within the home; analyses of
factors associated with child cognitive and social-cognitive functioning should illuminate
this argument (see below for a discussion of these data).

Relevant to the discussion of factors indicating stature among previously growth retarded
children is the observation that weight for age of control group children was positively
related to the proportion of personal, controllable and global attributions that mothers
offered. In general, factors indicating height and weight for age differed between cases
and controls, but similar processes apparently linked maternal explanations for child
behaviour to height of previously growth retarded children and weight of children who
thrived in infancy. Consideration of variables relating to child psychological development
is necessary to determine whether maternal attributions are linked to child cognition in the
same way for cases and controls. Nevertheless, it must be concluded that, while maternal
thinking was clearly related to child development, cognitions that have been associated
with relationship difficulties did not correspond to limited physical stature among thriving
or growth retarded children at six years.

5.5.b maternal cognitions and child psychological
development

5.5.b.i. factors indicating child cognitive functioning
There was clear evidence that maternal cognitions accounted for a significant proportion of
variance in child cognitive functioning; these relationships appeared to operate differently
for cases and controls. For example, over 10% of variance in the general cognitive
functioning (GCI) of control group children was indicated by maternal attributions, but
maternal cognitions did not reliably indicate the GCI of children who had failed to thrive,
implying that some other factor or group of factors corresponds with their overall
functioning. Further analyses may enable identification of these correlates within the context of other variables; findings presented in Chapter Four indicate that factors such as maternal IQ and socio-economic circumstances warrant attention.

In contrast to analyses of children's General Cognitive Index, performance on specific cognitive indices was closely related to maternal thinking, in line with predictions; these links were apparent among cases and controls. Maternal problem solving reliably accounted for variance in memory, numerical and verbal abilities of case group children, such that use of high power strategies was associated with more limited verbal and memory performance, and suggestion of low power solutions indicated better numerical abilities. Children who had failed to thrive also showed poorer verbal skills when mothers made more attributions of eating problems to personal controllable and global causes. These findings were consistent with the contention that cognitions associated with relationship difficulties (Grusec and Kuczynski, 1980; Brewin et al., 1991) might be related to limitations in the development of previously growth retarded children. Within the control group, maternal cognitions were similarly related to child cognitive functioning, although cases and controls differed in factors indicating child performance. Limitations in memory, verbal and perceptual ability were evident in control group children whose mothers attributed peer problems to personal uncontrollable and global causes. It appears that different aspects of maternal cognitions relate to child intellectual abilities, depending on whether or not a child has failed to thrive.

Maternal attributions to child were indicative of cognitive functioning in previously thriving and growth retarded children. Similarity across groups is consistent with the contention that comparable processes link maternal attributions and child development among cases and controls, but links between these factors were not uniform. Maternal attributions accounted for variance in a range of cognitive indices in the control group, but were specific to child verbal ability among case families. In addition, limited child ability was associated with maternal attributions to personal, controllable and global causes within the case group; by contrast, among controls, attributions to personal uncontrollable and global
causes accounted for variance in child cognition. Links between child language and attribution in the failure to thrive group were based on maternal explanations for eating problems, whereas child cognition in the control group was indicated by maternal attributions about peer problems, implying that mealtime communication has particular relevance for understanding language development in children who have failed to thrive.

Mealtime interactions in families where a child has failed to thrive may well be stressful, and Heptinstall and colleagues (1987) found that mothers of growth retarded children were less likely to communicate or socialise at mealtimes, relative to controls. These communication patterns are likely to have implications for child verbal ability; researchers such as Shatz (1982) and Lock, Service, Brito and Chandler (1989) highlighted the importance of maternal communication as a context for language development. Bugental’s research (e.g., Bugental et al., 1993) showed that high risk mothers tended to attribute negative events defensively, and arguably, a failure to thrive group mother who feels threatened in the feeding interaction might attribute eating problems to causes that are personal, controllable and global to the child. Bugental suggested that threat-oriented information processing was likely to lead to escalation of power-assertive strategies.

Arguably, that is an over-complicated explanation of case-control differences in factors indicating child cognition, and it cannot be assumed that social cognitive processes among mothers of growth retarded children will operate according to the mechanisms observed by Bugental in studies of physically abusive mothers. Further analyses are necessary to determine the extent to which maternal thinking is related to characteristics such as socio-economic circumstances or maternal IQ, which are correlated with child cognition. Moreover, within group variation could have obscured relationships between mother and child cognition in the failure to thrive group. Failure to thrive is defined on the basis of the symptom of growth, and so the syndrome may have diverse causes. The aetiology of growth faltering cannot be identified retrospectively, but it may have implications for mother and child characteristics at six years, and so comprise a source of variation within the case group.
5.5.b.ii. factors indicating child social cognition

Lawrence (1984) suggested that parental communication provides a context for links between child verbal competence and social behaviour, and there was clear evidence in the present study of relationships between maternal thinking and child social cognition. In the failure to thrive group, these associations corresponded to predictions; control group data offered a less consistent picture, providing further indication that different processes link mother and child cognition in case and control group families. For example, maternal thinking did not correspond to the variety of problem solving categories suggested by children who had failed to thrive, but comparison mothers' cognitions indicated over 30% of variance in child performance. In addition, relevance and flexibility of child problem solving was partially related to maternal thinking for cases but not for controls.

More detailed consideration of these analyses raises a number of issues regarding case-control differences in links between maternal cognitions and child social competence. Notably, the number of relevant strategies mothers suggested for dealing with eating problems was positively correlated with social competence of case group children; this variable was negatively related to the variety of problem solving strategies offered by control group children. In both groups correlations were highly significant, and so it seems unlikely that differentiation arose because of a spurious association between mother and child problem solving for cases or controls. Instead, intergroup differences may reflect some other characteristic that distinguishes previously growth retarded and control group children. Physical stature was also associated with the problem solving skills of failure to thrive group children, such that those who were smaller at six years offered less flexible and relevant strategies. The efficacy of maternal strategies for dealing with child eating problems is arguably of greater significance if the child is failing to grow, and it may not be surprising that the different experiences of case and control group mothers are reflected in different relationships between indices of maternal thinking and child development.

Relevant to this discussion is a methodological concern: responses to hypothetical measures of problem solving may be minimally related to actual parenting if the dilemma
does not have relevance for the respondent. Care was taken in developing vignettes of eating problems to ensure that dilemmas described feeding difficulties associated with early childhood. This caution may have resulted in intergroup variation, since failure to thrive group mothers might be expected to have more experience of such problems than controls. Case group responses could therefore be more directly linked to actual caregiving strategies, while answers in the control group may be artifactual, reflecting factors other than child care techniques. This explanation could account for the pattern of results presented above; if case group problem solving is linked to strategies used in mothering, then findings support the prediction that more relevant maternal problem solving is related to better child functioning. If problem solving in the control group is not related to child care, suggestion of greater numbers of strategies is not inevitably advantageous for the child.

Berg (1989, cited in Rubin and Rose-Krasnor, 1992) studied child problem solving and suggested that when a strategy failed more knowledgeable children might subtly alter an existing strategy, while less sophisticated children jumped to a new strategy type. Application of this model to adult problem solving would mean that less able mothers might suggest greater numbers of strategies. Links between number of strategies suggested and general ability may be more pronounced in the control group because mothers have less experience of child eating problems, and so their responses are based on more general knowledge. Analyses to be presented in Chapter Seven will address this possibility by exploring links between mothers’ cognitions and other family characteristics, including maternal psychosocial functioning and IQ.

Links between mother and child problem solving may also be obscured because the measure of child competence used in this study does not distinguish between internalising and externalising problems, such as child withdrawal or aggression. These problems are known to be differentially linked to parental problem solving; Rubin and Mills (1990) reported that mothers of aggressive children generally have a “laissez-faire” approach to dealing with child problems, and so suggest fewer strategies, relative to mothers of
withdrawn children. While this criticism is relevant, it is unlikely to account for intergroup variation, since there is no basis for supposing that aggression or social withdrawal would be more common among one group of families in the present study.

It is also important to note that maternal attributions were not significant indicators of social cognitive skills among case or control group children. This finding contrasts with previous research which has linked child functioning with mothers’ causal explanations (see Rubin and Rose-Krasnor), but as stated previously, few non-clinical studies in the United Kingdom have addressed these issues. Moreover, studies that have linked maternal attributions to child competence have often focused on the content of causal explanations, rather than considering attributional dimensions; for example, Mills and Rubin (1990) coded explanations in terms of factors such as traits, age-related factors, mood and habits. While this approach is informative, it may not be comparable with the attributional data generated in the present study.

Finally, it is noteworthy that maternal thinking apparently related to different aspects of child competence for cases and controls. Reasons for this variation are not apparent, but it suggests that child growth failure forms part of the context of links between mother and child cognition. As discussed in the introduction to this chapter, maternal attributions and problem solving have been associated with child social competence (e.g., Pettit, Dodge and Brown, 1988), and the results discussed above suggested that relevant maternal problem solving corresponded with more flexible and relevant social cognitive strategies among children who had failed to thrive.

The results presented above suggest clear links between mother and child social cognitive skills; intergroup differences imply the need to consider infant growth failure as a potential mediating variable, and further analyses are necessary to determine the extent to which mothers’ responses correspond to links between child stature and other aspects of maternal functioning.
5.6 conclusions: maternal cognitions and child development

Maternal cognitions were found to be significantly related to the physical and psychological development of children who have thrived and children who failed to grow. Patterns of attribution that have been linked with relationship difficulties were more common among mothers of growth retarded children, relative to controls. Nevertheless, variation within the failure to thrive group suggested that such cognitions did not characterise all case group mothers; diversity was evidenced by differences in the thinking of mothers of children who experienced early and later growth retardation. Moreover, findings are descriptive of the sample at six years; the causal nature of observed relationships can only be determined through future prospective research.

Mothers of children who failed to thrive later in the first year suggested fewer effective strategies for dealing with child eating problems; by contrast, early failure to thrive group mothers made more attributions to causes that were personal controllable and global for the child (for example, temperamental characteristics). In summary, maternal thinking at six years was clearly related to the timing of infant growth failure, but the nature of these associations is unknown. The data presented here do not provide evidence of cause-effect relations, and the potential role of child effects must be recognised.

Comparisons of mothers of small and larger failure to thrive group children and regression analyses of factors indicating child stature did not consistently support hypothesised links between maternal cognitions and child development. Mothers of larger case group children were better at suggesting relevant solutions for dealing with eating problems, but personal controllable and global attributions were associated with greater stature among case and control group children. This pattern of explanation has been associated with abusive caregiving and relationship difficulties, and so it is surprising that it should be linked to better physical development for children in the present study: further analyses of factors indicating child physical development should illuminate these findings.
Maternal cognitions accounted for a significant proportion of variance in the cognitive functioning of case and control group children. Links between maternal thinking and child cognition supported predictions, such that high power problem solving was related to poorer cognitive functioning among children who had failed to thrive. Moreover, in contrast to analyses of factors indicating physical stature, attributions to personal controllable and global causes were associated with poorer cognitive functioning in the failure to thrive group; personal uncontrollable attributions to child were related to limitations in cognitive performance among control group children.

Social cognitive skills among children who had failed to thrive were also partly indicated by maternal cognitions. In line with expectations, children whose mothers were better at solving eating problems offered more flexible and relevant social strategies. Further analyses are necessary to explore links between this association and child physical development, since child social competence was also associated with the stature of growth retarded children at six years (see Chapter Three). Maternal cognitions did not indicate social competence among control group children at six years. Intergroup variation might have arisen because failure to thrive and control group mothers' differing experience of eating problems could have influenced their responses to the MEPS vignettes.

In conclusion, intergroup comparisons and regression analyses pointed to clear differences between case and control group mothers' cognitions about their children. Attributions to causes such as temperament that are personal, controllable and global for the child were more common when the index child had failed to thrive; in both groups patterns of thinking previously associated with relationship difficulties or child problems tended to indicate limitations in child psychological development. A notable exception to these relationships was the strong positive association between frequency of personal controllable global attributions and child physical stature.

These results depend on further analyses of other relevant variables: maternal responses might be an artefact of other correlates of child functioning, such that, for example,
problem solving or attributions may correspond to verbal ability or depressed mood. Analyses presented in Chapter Seven will evaluate this assertion, but even if it is true, the study of maternal cognitions has demonstrable value. Simply knowing that a mother is depressed or less intelligent says little about how these characteristics influence her thinking about events in caregiving, whereas her attributions and problem solving strategies provide an indication of the cognitive processes that might guide her responses in the relationship.

Early failure to thrive has been said to create vulnerability for cognitive deficits, because of early brain malnutrition (e.g., Skuse et al., 1994). There was limited evidence of psychological impairments consequent to growth failure in the present sample (Chapter Three), suggesting that problems are not inevitable, but the results presented here demonstrate that cognitive functioning among children who failed to thrive was clearly related to maternal cognitions. Although the causal nature of these associations cannot be determined, the findings of the present study suggest that limited maternal problem solving skills and/or hostile patterns of attribution towards the child may indicate restricted psychological abilities among children who failed to thrive.

Variables such as socio-economic status and maternal intelligence were associated with failure to thrive and child development in the present sample (Chapter Four); these factors may be associated with maternal cognitions. Furthermore, current maternal social and psychological characteristics are likely to be related to the mother’s own early care experiences (Rutter, 1989): to achieve a full description of the long term correlates of infant growth faltering for the mother and child it is necessary to consider any factors which might correspond to current maternal cognitions and psychosocial functioning.
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mothers' early care experiences

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mothers’ early care experiences

6.1 introduction

Psychoanalytic and social learning models of development (e.g., Bowlby, 1973, 1980; Hertzberger, 1983) have drawn attention to the importance of early experience for adult personality and behaviour, and it is intuitively plausible that an individual’s current circumstances and beliefs about parenting will be related to her experience of being parented as a child. Chapter Six aims to consider associations between maternal care experiences in childhood and the occurrence and developmental implications of failure to thrive; in addition, links between maternal experience and the development of thriving children will be explored.

6.1.a implications of early experience: the intergenerational transmission of parenting

Van Ijzendoorn’s (1992) review of non-clinical studies of parenting across generations defined intergenerational transmission as (p 76-77),

“the process through which purposively or unintendedly an earlier generation psychologically influences parenting attitudes and behavior of the next generation”.

This definition implies a need to consider three generations: grandparents, parents and children. Van Ijzendoorn distinguishes between the transgenerational influences defined above, and other effects, such as grandparenting of children directly, or grandparents’ support of parents. Continuity of parenting may be stimulated by sharing of genes across generations and by similarities in social or physical circumstances (e.g., area of residence), whereas transmission by psychological mechanisms such as learning of parenting comprises a separate path of influence; Van Ijzendoorn noted that most studies do not distinguish between genetic, environmental and psychological transmission of parenting. Attempts to account for the processes of continuity and discontinuity in parenting have largely been confined to social learning approaches and psychoanalytic, or attachment theory explanations.
6.1.a.i social learning theories

Theorists such as Hertzberger (1983) and Feshbach (1973) were primarily concerned with
the transmission of physically abusive behaviour, and argued that children learn to be
aggressive by observing aggressive behaviour in the family and surrounding society. If a
child is continually exposed to family life where aggression is the norm then aggressive
response patterns will be reinforced. Parents are most likely to use abusive discipline
techniques if, as children, they developed the impression that such treatment was
appropriate in certain circumstances. This belief is influenced by cultural and societal
attitudes, and by the parent's compelling verbal communication in support of his or her
abusive actions towards the child, so the child develops "a parenting philosophy of sorts,
that justifies strict, physical discipline" (Simons, Whitbeck, Conger, and Chy-In, 1991, p
160).

Simons et al. carried out large scale community study of adolescents and their parents,
which sought to examine the intergenerational transmission of "harsh parenting" (defined
as yelling, spanking, slapping, shoving or hitting the child with an object) in terms of a
social learning model. They found weak links between parents’ experience of harsh
paternal discipline and beliefs in physical punishment, and observed that intergenerational
transmission of harsh parenting was, for male children, more closely linked to family
socio-economic status.

The authors reported associations between the parents’ experience of harsh maternal care
and their current disciplinary practices; these links could be seen as consistent with a social
learning explanation. However, there were no relationships between parental beliefs about
the use of physical discipline and reports of maternal care, as might be expected if a
philosophy about parenting had been modelled from experience. The study’s results are to
some extent consistent with a social learning explanation of the intergenerational
transmission of parenting practices, but it is important to note that the cross-sectional
questionnaire design does not address processes such as modelling, which are implied by
social learning theory. In addition, as Simons et al. acknowledged, the model of
intergenerational transmission they presented does not address likely mediating variables, such as support networks.

Social learning theory is limited by its focus on the transmission of physical aggression; Simons and colleagues’ definition of harsh parenting is typical, in being almost entirely based on physical aggression towards the child. This approach fails to account for the effects of other forms of maltreatment; in addition, social learning theory has difficulty explaining why a physically abused child might go on to have parenting problems that do not include physical abuse.

6.1.a.ii attachment theory

Bowlby (e.g., 1980) emphasised the importance of developing an internal working model of the attachment relationship, whereby the securely attached child sees the parent, or attachment figure(s) as available, responsive and helpful, and views herself as worthy and loveable. This model is derived from experience: Main, Kaplan, and Cassidy (1985) suggested that an infant whose attempts to gain proximity to the carer are successful will develop a different working model of relationships than would a child whose attempts to gain proximity are consistently blocked, or accepted unpredictably. The internal working model serves as a template for the child’s future relationships, and so the formation of an attachment relationship was seen as essential for adult mental well-being.

A range of evidence links recall of early attachment to subsequent parenting. Fonagy et al. (1991) found associations between mothers’ representations of attachment, measured prenatally, and subsequent attachment between infant and mother at one year. Ward and Carlson (1995) found further evidence of an intergenerational link in attachment quality. They interviewed pregnant adolescents about their experience of care, in order to rate the quality of attachment, and then observed these women with their children on several occasions during infancy. The authors report strong associations between their classification of maternal attachment and ratings of the security of infant-mother attachment, and conclude that secure attachment relationships may offer resilience against stressors.
such as poverty in their high risk sample.

Egeland, Jacobovitz, and Sroufe (1988) studied the role of attachment relationships in mediating the intergenerational cycle of poor care. Their research is based on Bowlby’s (1973) thesis that the experience of a poor attachment relationship with a primary carer can be overcome according to three pathways: the provision of an alternative emotionally supportive relationship during childhood; an ongoing therapeutic relationship with a professional at any period of life; the formation of a stable and satisfying relationship with a partner in adulthood. Egeland and colleagues studied child rearing practices among mothers who had experienced severe physical abuse during childhood, and found that those showing abuse discontinuity (no maltreatment of the index child) were more likely to report at least one of the protective relationships posited by Bowlby. Given caution regarding the small sample size, Egeland and colleagues’ research appears to provide some indication of the role of attachment in overcoming the experience of adverse care. Nonetheless, the study does not address the processes that may enable an abused individual to form protective relationships, and the results may simply illustrate the importance of support networks for vulnerable mothers.

6.1.b implications of early adversity

The failure to thrive literature has predominantly been concerned with transgenerational patterns of caregiving difficulty, with reference to traditional maternal deprivation models of failure to thrive (see Chapter One). The present thesis does not seek to evaluate such models, and so identification of specific paths of influence is arguably less relevant in the present context than a broader understanding of the sequelae of early adversity for mothers whose children failed to thrive in infancy. Furthermore, attempts to define the mechanisms of transgenerational patterns of parenting are constrained by difficulty in establishing cause-effect relations (Van Ijzendoorn, 1992): cycles of adversity may reflect long term social or psychological difficulties consequent to early maltreatment, rather than any model of beliefs derived from experience.
There is evidence that a range of long-term difficulties are associated with the experience of inadequate care in childhood, including psychiatric disturbance, delinquency, and psychosocial risks such as isolation (e.g., Quinton and Rutter, 1984; Dowdney et al., 1985). It is not surprising that childhood adversity is associated with adult difficulty, because links between poor care and problems of child development are well established (e.g., Augoustinos, 1987; Taitz and King, 1988). Moreover, a substantial body of research has demonstrated links between early maltreatment, social disadvantage (e.g., Dowdney et al., 1985), and subsequent adult psychopathology (see Brewin, Andrews and Gotlib, 1993).

In light of this evidence, it may be impossible to determine whether links between adverse early care and subsequent parenting difficulties arise through attachment or social learning mechanisms, because any association might reflect psychosocial disadvantage, arising from maltreatment, which makes parenting more difficult. Furthermore, evaluation of transmission mechanisms is beyond the scope of the present thesis. Links between early maternal experience and current psychological and social functioning will be explored in Chapter Seven, but only prospective research across generations can explore the contention that intergenerational patterns of caregiving are based on modelling of normative beliefs or on internal working models formed during early childhood.

6.1.c early adversity and parenting

Regardless of mechanisms of transmission, an intergenerational cycle of adversity is of interest for the present study because a range of research has reported that maltreated children may grow up to experience parenting difficulties. For example, Egeland and colleagues (1988) cite evidence from their research, indicating that 70% of women who had experienced long-term abuse maltreated their own children, or provided borderline care. Much maltreatment research has been carried out in the United States, but studies of samples from a similar population to that used in the present study have also identified intergenerational cycles of disadvantage. Quinton and Rutter (1984) found that mothers with children in care were three times more likely than a control group to have experienced
harsh parental discipline, including physical abuse. In addition, Dowdney and colleagues (1985) studied mothers who had grown up in institutions because their parents were failing to cope with child care. Forty percent of mothers who had been in care were classified as showing poor parenting, compared to 11% of comparison mothers.

Studies such as these imply continuity of parenting difficulties across generations, but it is important to recognise that such a cycle is not inevitable. For example, 60% of the ex-care mothers studied by Dowdney et al. showed good or intermediate parenting. Moreover, the experience of adverse care is not confined to mothers who are experiencing difficulties; Quinton and Rutter observed that 29% of women in their control group reported that their mothers had a history of psychiatric disturbance. Evidence of intergenerational continuity in adverse care must be viewed with regard for discontinuities in parenting practices (e.g., Egeland et al., 1988; Van Ijzendoorn, 1992).

Kaufman and Zigler (1989) addressed the notion of discontinuities in adverse care and considered estimates of how likely the intergenerational transmission of abusive behaviour might be. They observed that much of the literature is subject to methodological problems, including reliance on clinical records or case study materials. Understanding is also obscured because a lack of consensus exists about definitions of maltreatment; some studies focus only on physically abusive behaviour (e.g., Spinetta and Rigler, 1972), whereas others adopt broader criteria (e.g., Hunter and Kilstrom, 1979). Spinetta and Rigler argued that a specific focus on physical abuse is warranted because of “the difficulty of pinpointing what is emotional or psychological or social neglect and abuse” (p 296). Nevertheless, clarity of definition may well be achieved at the expense of understanding. Physical abuse is just one expression of parenting problems; more recently, it has been acknowledged that understanding the antecedents of child abuse depends on a broader consideration of serious parenting difficulties (Rutter, 1989). Inconsistencies in definition and methodology are reflected in reports of intergenerational transmission rates, which vary from 18% to 100%, although Kaufman and Zigler offer a best estimate based on their review of 30% ± 5%.
Variation in transmission rates across studies has also been ascribed to reliance on retrospective investigations. Retrospective studies of maternal experiences are open to question, because they rely on the respondents’ recall rather than objective evidence of childhood care; that criticism appears to be particularly relevant given attachment theorists’ contention that representations of adverse childhood experiences are subject to distortion (see Main and Goldwyn, 1985; Main, 1990). Nevertheless, such concern may be unwarranted: Brewin, Andrews and Gotlib (1993) reviewed a range of evidence indicating that personally significant emotional events are well remembered, and concluded that retrospective accounts of childhood tend to be more accurate than is often assumed (e.g., by Halverson, 1988, cited in Brewin et al.).

In addition, responses are likely to be informative, even if retrieval is not entirely accurate: this contention may be justified in terms of theories of social cognition. Studies of autobiographical memory have indicated that the representation of events in memory will “play a major role in determining the current self” (Conway, 1990, p 103), and there is evidence of the importance of memory in social judgement (e.g., Hastie and Park, 1986; see Fiske and Taylor, 1991, for an overview). Schemas consist of general expectations and knowledge of the world, based on learning and socialisation experiences (Augoustinos and Walker, 1995), and so maternal schemas about parenting are likely to be guided by representations of early experience in memory.

6.1.d maternal adversity and failure to thrive

The experience of maltreatment in childhood creates risk for subsequent parenting difficulties, although a cycle of inadequate care is clearly not inevitable. Early care experiences may have a direct link with current parenting, but equally, childhood maltreatment may be associated with psychosocial adversity, which in turn could make parenting a more stressful task (Hillson and Kuiper, 1994). Chapter Seven will explore links between mothers’ childhood experiences and their current social and psychological functioning, but the present chapter is concerned with evidence of links between early
maternal experience and child functioning, in terms of development at six years and the 
history and timing of failure to thrive.

Several studies have addressed the incidence of childhood maltreatment among mothers of 
children who fail to thrive, and, as discussed in Chapter One, there is some evidence that 
experience of adverse care, including antipathy and physical abuse, is more common 
among mothers of children who have failed to thrive than among controls (e.g., Altemeier 
et al., 1985; Benoit, Zeanah, and Barton, 1989). Benoit et al. reported that 96% of 
mothers whose children had failed to thrive had insecure attachment representations of 
childhood experience; the high proportion of adverse care experiences among these women 
may reflect the use of a high risk hospitalised sample, but the study’s conclusions warrant 
further investigation, and suggest the utility of considering early experiences among 
mothers whose children have failed to thrive. Accordingly, links between maternal 
experience and functioning of children in the present sample will be explored, as follows.

**physical development**

**a history of failure to thrive**

The role of maternal care experiences in infant failure to thrive can only be determined 
through prospective study that examines the mechanisms by which mothers’ childhood care 
is linked with early growth faltering. Nonetheless, if adult accounts of childhood care are 
accurate (see Brewin et al., 1993, for a discussion of this issue), retrospective study will 
illuminate maternal experience of stressors that precede growth faltering. Early adverse 
care has been associated with vulnerability for caregiving difficulties, and so it should be 
useful to consider the presence of this risk factor in the present sample of mothers whose 
children failed to thrive, and their comparisons.

**early and late failure to thrive**

Given that maternal accounts of adverse early experiences refer to events that preceded 
infant growth faltering, it should be useful to examine links between mothers’ childhood 
care and variation in the characteristics of children who failed to thrive. Accordingly, the
present chapter will consider whether maternal reports of early adversity are associated with the timing of infant growth faltering, through comparisons of mothers whose children failed to thrive early (in the first six months) with those whose children experienced later growth faltering (during the second six months of the first year).

**long term physical development**

Maternal experience of adverse childhood care has been associated with increased risk for caregiving difficulties and problems of child development (e.g., Belsky and Vondra, 1989; Hillson and Kuiper, 1994). In light of that research, it was anticipated that early maternal adversity would be negatively associated with physical development for thriving and growth retarded children at six years.

**psychological development**

With reference to the literature on transgenerational patterns of adversity, maternal report of early maltreatment was expected to be related to limitations in child social and cognitive functioning at six years; these links were anticipated among cases and controls.
6.2 method

Maternal experience of childhood care was assessed retrospectively, so it was important to ensure that the mothers’ accounts offered accurate data about adversity. Brewin et al. (1993) reviewed a substantial body of literature utilising retrospective reports of early experience. To improve reliability of recall, they advocated a focus on specific events, instead of reliance on global judgements. Interview methods may facilitate this focus by including probes for detail, which can help the respondent to distinguish between real and imagined events; questionnaire methods do not generally allow this flexibility. Questionnaires often rely on more global judgements, and measures such as the Parental Bonding Instrument (Parker, Tupling and Brown, 1979) have proven utility as general evaluative measures, but they are likely to have limited reliability and validity as indices of specific maltreatment experiences, as Brewin and colleagues observed.

Andrews, Brown, Harris, Bifulco and colleagues (e.g., Andrews and Brown, 1993; Bifulco, Brown and Harris, 1994) developed a retrospective semi-structured interview measure of childhood experience of care and abuse. The instrument was developed in the course of a large scale community study of mothers and daughters living in London, and so is based on a sample very similar to that studied in the present research. There is extensive evidence of the interview’s utility, and specifically of its reliability and validity, from Brown and colleagues’ research (e.g., Andrews, Brown and Creasey, 1990; Andrews and Brown, 1993; Brown and Harris, 1993; Bifulco et al., 1994; Andrews, Valentine and Valentine, 1995), and from studies of clinical and student samples (Kuyken and Brewin, 1994, 1995; Myers and Brewin, 1994).

This interview was deemed advantageous for the present study for several reasons. First, as stated, it was developed in a population similar to that of the present sample. In addition, the measure addresses a range of childhood care experiences (see Table 6.1), rather than simply focusing on parental abuse. The interview begins with general questions about family arrangements, and is structured to build gradually towards questions with greater potential threat (notably those concerning sexual abuse); arguably, this is the most effective
approach for dealing with sensitive issues (Robson, 1993).

### Table 6.1 Classification of Mothers' Early Adverse Care and Abuse

<table>
<thead>
<tr>
<th>Lack of Care</th>
<th>Evidence of high indifference and/or lax control. Indifference referred to lack of interest or involvement; both emotional and material neglect were considered. Control described levels of supervision and enforcement of rules and discipline.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Antipathy</td>
<td>The degree of dislike, criticism, hostility or coldness shown by primary carer(s) towards respondent.</td>
</tr>
<tr>
<td>Physical Abuse</td>
<td>The extent of violence experienced by the respondent; physical abuse included slapping on head or face, being kicked, bitten or hit with a fist or object, or any severe assault.</td>
</tr>
<tr>
<td>Sexual Abuse</td>
<td>Abuse was defined as any sexual contact before age 17, except willing contact with an unrelated child of a similar age.</td>
</tr>
<tr>
<td>Early Adverse Family Experiences</td>
<td>An overall index of the extent of lack of care, antipathy, and physical or sexual abuse reported by each respondent.</td>
</tr>
</tbody>
</table>

* From Andrews, Brown and Creasey (1990); Andrews and Brown (1993); and Andrews (personal communication)

Information about care experiences was rated as dichotomous (presence or absence of adverse experience) and as continuous (extent of adversity). Overall cumulative ratings of lack of care, antipathy, physical abuse, sexual abuse were calculated as indicated in Table 6.1. Severity of physical abuse was based on a cumulative score of degree of violence, degree of injury, and duration of abuse; the cumulative score for extent of sexual abuse comprised degree of sexual contact, frequency and duration of abuse. Finally, an overall index of early adverse family experience was generated as follows:

- **Dichotomous Rating (yes / no)**
  This index was based on report of lack of care, antipathy, physical abuse, or sexual abuse.

- **Cumulative Rating**
  This variable was derived by summing scores for the extent of lack of care, antipathy, sexual abuse, and physical abuse. For details of the semi-structured interview, coding system, and an example of a transcribed account of early childhood care please refer to Appendix 2.d.

### 6.3 Procedure

Questions about early care experiences were asked during interviews at home with the primary carer (see Chapter Two).
6.4 results

6.4.a maternal care experiences: reliability

The author was trained in coding maternal childhood experiences by an author of the childhood care interview (BA; see, e.g., Andrews et al., 1990; 1995), prior to coding for reliability. Reliability data were calculated by the author and a second rater (BA) for the indices of childhood care ratings shown in Table 6.2, based on a random subsample of 10 interviews. Both raters were blind to case-control status of the families, but aware of experimental hypotheses. All identifying details were removed from the transcripts of mothers' responses prior to rating; inter-rater agreement is summarised in Table 6.2.

<table>
<thead>
<tr>
<th>variable</th>
<th>percentage agreement</th>
<th>kappa</th>
</tr>
</thead>
<tbody>
<tr>
<td>degree of physical abuse</td>
<td>100.00</td>
<td>1.00</td>
</tr>
<tr>
<td>severity of physical injury</td>
<td>90.00</td>
<td>0.851</td>
</tr>
<tr>
<td>degree of sexual abuse</td>
<td>100.00</td>
<td>1.00</td>
</tr>
<tr>
<td>parental indifference</td>
<td>100.00</td>
<td>1.00</td>
</tr>
<tr>
<td>maternal indifference</td>
<td>100.00</td>
<td>1.00</td>
</tr>
<tr>
<td>paternal indifference</td>
<td>90.00</td>
<td>0.474</td>
</tr>
<tr>
<td>maternal antipathy</td>
<td>80.00</td>
<td>0.600</td>
</tr>
<tr>
<td>paternal antipathy</td>
<td>80.00</td>
<td>0.615</td>
</tr>
<tr>
<td>parental control</td>
<td>100.00</td>
<td>1.00</td>
</tr>
<tr>
<td>maternal control</td>
<td>90.00</td>
<td>0.756</td>
</tr>
<tr>
<td>paternal control</td>
<td>100.00</td>
<td>1.00</td>
</tr>
</tbody>
</table>

6.4.b maternal care experiences: response rates

Accounts of early care experiences were not elicited from all families visited during the six year assessment; response rates are detailed in Table 6.3. One case group mother was interviewed with her parents present, and so it was not possible to elicit full data about early experiences; one mother in the control group reported that she had been sexually abused in childhood, but she declined to answer further questions about her experience.

233
### Table 6.3 Maternal Care Experiences: Sample Response Rates

<table>
<thead>
<tr>
<th>Response Category</th>
<th>Failure to Thrive</th>
<th>Control Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full data on early care</td>
<td>41 (87.2)</td>
<td>40 (85.1)</td>
</tr>
<tr>
<td>No data: full maternal refusal</td>
<td>1 (2.1)</td>
<td>4 (8.5)</td>
</tr>
<tr>
<td>No data: child organic disease</td>
<td>2 (4.3)</td>
<td>1 (2.1)</td>
</tr>
<tr>
<td>No data: family untraceable</td>
<td>2 (4.3)</td>
<td>2 (4.3)</td>
</tr>
<tr>
<td>No data: partial refusal</td>
<td>1 (2.1)</td>
<td>0 (0.0)</td>
</tr>
<tr>
<td>Partial data: partial refusal</td>
<td>1 (2.1)</td>
<td>1 (2.1)</td>
</tr>
</tbody>
</table>

### 6.4.c Maternal Care Experiences and Child Physical Development

#### 6.4.c.i Growth at Fifteen Months

#### 6.4.c.i.a A History of Failure to Thrive

Chi-Square Tests with Yates’ correction for continuity offered no indication that adverse early experience was more common among mothers whose children failed to thrive (Table 6.4). Chi-Square was used, although groups were matched, because McNemar’s Test is designed to examine change within a single sample (Siegel, 1956) (see Chapter Two for a fuller discussion of related issues). This approach increases the probability of a Type II error, but repetition of analyses using McNemar’s revealed no intergroup differences.

### Table 6.4 Early Adverse Family Experience Among Failure to Thrive and Control Group Mothers: Chi-Square Tests

<table>
<thead>
<tr>
<th>Early Adversity</th>
<th>Failure to Thrive</th>
<th>Control Group</th>
<th>χ²</th>
</tr>
</thead>
<tbody>
<tr>
<td>%</td>
<td>62.5</td>
<td>55.0</td>
<td>0.206</td>
</tr>
<tr>
<td>(n)</td>
<td>(25 /40)</td>
<td>(22 /40)</td>
<td></td>
</tr>
<tr>
<td>Lack of Care</td>
<td>%</td>
<td></td>
<td>0.788</td>
</tr>
<tr>
<td>%</td>
<td>36.5</td>
<td>25.0</td>
<td></td>
</tr>
<tr>
<td>(n)</td>
<td>(15 /41)</td>
<td>(10 /40)</td>
<td></td>
</tr>
<tr>
<td>Parental Antipathy</td>
<td>%</td>
<td></td>
<td>0.072</td>
</tr>
<tr>
<td>%</td>
<td>20.0</td>
<td>25.0</td>
<td></td>
</tr>
<tr>
<td>(n)</td>
<td>(8 /40)</td>
<td>(10 /40)</td>
<td></td>
</tr>
<tr>
<td>Physical Abuse</td>
<td>%</td>
<td></td>
<td>1.51</td>
</tr>
<tr>
<td>%</td>
<td>56.0</td>
<td>40.0</td>
<td></td>
</tr>
<tr>
<td>(n)</td>
<td>(23 /41)</td>
<td>(16 /40)</td>
<td></td>
</tr>
<tr>
<td>Sexual Abuse</td>
<td>%</td>
<td></td>
<td>0.059</td>
</tr>
<tr>
<td>%</td>
<td>20.5</td>
<td>15.0</td>
<td></td>
</tr>
<tr>
<td>(n)</td>
<td>(8 /41)</td>
<td>(6 /40)</td>
<td></td>
</tr>
</tbody>
</table>

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The severity of adverse care described by cases and controls was also examined using Wilcoxon’s tests for matched pairs; no intergroup differences were found (Table 6.5).

**Table 6.5** Early adverse family experience among failure to thrive and control group mothers: Wilcoxon matched pairs tests

<table>
<thead>
<tr>
<th></th>
<th>FTT</th>
<th>control</th>
<th>Wilcoxon z</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Extent of early adversity</strong></td>
<td>mean (s.d.)</td>
<td>13.65 (9.30)</td>
<td>12.49 (9.65)</td>
</tr>
<tr>
<td></td>
<td>range</td>
<td>4.00 - 38.00</td>
<td>4.00 - 40.00</td>
</tr>
<tr>
<td><strong>Extent of lack of care</strong></td>
<td>mean (s.d.)</td>
<td>4.29 (1.72)</td>
<td>4.00 (1.58)</td>
</tr>
<tr>
<td></td>
<td>range</td>
<td>2.00 - 8.00</td>
<td>2.00 - 9.00</td>
</tr>
<tr>
<td><strong>Degree of parental antipathy</strong></td>
<td>mean (s.d.)</td>
<td>1.78 (1.17)</td>
<td>2.10 (1.69)</td>
</tr>
<tr>
<td></td>
<td>range</td>
<td>1.00 - 5.00</td>
<td>1.00 - 7.00</td>
</tr>
<tr>
<td><strong>Severity of physical abuse</strong></td>
<td>mean (s.d.)</td>
<td>5.02 (4.26)</td>
<td>4.13 (4.01)</td>
</tr>
<tr>
<td></td>
<td>range</td>
<td>0.00 - 12.00</td>
<td>0.00 - 12.00</td>
</tr>
<tr>
<td><strong>Severity of sexual abuse</strong></td>
<td>mean (s.d.)</td>
<td>2.37 (4.93)</td>
<td>2.33 (4.80)</td>
</tr>
<tr>
<td></td>
<td>range</td>
<td>0.00 - 18.00</td>
<td>0.00 - 17.00</td>
</tr>
</tbody>
</table>

6.4.c.i.b Early and late growth failure

Chi-Square Tests with Yates’ correction for continuity offered no significant indication that adverse early experience was related to the timing of failure to thrive (Table 6.6).

Comparisons of the extent of adversity reported by mothers in each group were carried out using Mann-Whitney Tests for independent samples; again, there was no evidence of intergroup variation (Table 6.7).

**Table 6.6** Early adverse family experience among early and late FTT group mothers: Chi-Square tests

<table>
<thead>
<tr>
<th></th>
<th>early FTT</th>
<th>late FTT</th>
<th>( \chi^2 )</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Early adversity</strong></td>
<td>36.84</td>
<td>38.09</td>
<td>0.00</td>
</tr>
<tr>
<td>(n) (7/19)</td>
<td>(8/21)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Lack of care</strong></td>
<td>30.00</td>
<td>42.85</td>
<td>0.281</td>
</tr>
<tr>
<td>(n) (6/20)</td>
<td>(9/21)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Parental antipathy†</strong></td>
<td>20.0</td>
<td>19.04</td>
<td>0.00</td>
</tr>
<tr>
<td>(n) (4/20)</td>
<td>(4/21)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Physical abuse</strong></td>
<td>52.6</td>
<td>59.09</td>
<td>0.010</td>
</tr>
<tr>
<td>(n) (10/19)</td>
<td>(13/22)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Sexual abuse†</strong></td>
<td>31.5</td>
<td>9.09</td>
<td>2.01</td>
</tr>
<tr>
<td>(n) (6/19)</td>
<td>(2/22)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

† Fisher’s Exact Test was used when the smallest expected cell value was less than 5.
table 6.7  early adverse family experience among early and late FTT group mothers: Mann-Whitney tests for independent samples

<table>
<thead>
<tr>
<th></th>
<th>early FTT</th>
<th>late FTT</th>
<th>Mann-Whitney</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>mean (s.d.)</td>
<td>N</td>
</tr>
<tr>
<td>extent of early adversity</td>
<td>19</td>
<td>15.16 (10.39)</td>
<td>21</td>
</tr>
<tr>
<td>range</td>
<td>4.00 - 34.00</td>
<td>range 4.00 - 38.00</td>
<td></td>
</tr>
<tr>
<td>extent of lack of care</td>
<td>20</td>
<td>4.55 (1.57)</td>
<td>21</td>
</tr>
<tr>
<td>range</td>
<td>3.00 - 8.00</td>
<td>range 2.00 - 8.00</td>
<td></td>
</tr>
<tr>
<td>parental antipathy</td>
<td>20</td>
<td>1.85 (1.35)</td>
<td>21</td>
</tr>
<tr>
<td>range</td>
<td>1.00 - 5.00</td>
<td>range 1.00 - 4.00</td>
<td></td>
</tr>
<tr>
<td>severity of physical abuse</td>
<td>19</td>
<td>5.11 (4.73)</td>
<td>22</td>
</tr>
<tr>
<td>range</td>
<td>0.00 - 12.00</td>
<td>range 0.00 - 11.00</td>
<td></td>
</tr>
<tr>
<td>severity of sexual abuse</td>
<td>19</td>
<td>3.58 (5.62)</td>
<td>22</td>
</tr>
<tr>
<td>range</td>
<td>0.00 - 14.00</td>
<td>range 0.00 - 18.00</td>
<td></td>
</tr>
</tbody>
</table>

6.4.c.ii  physical stature at six years

6.4.c.ii.a  mothers of small and larger failure to thrive group children

Within the failure to thrive group, adversity among mothers of children classed as “small” at six years (see Chapter Three) was compared with experiences of mothers of “larger” children. Chi-Square tests with Yates’ Correction indicated no statistically significant differences between the groups in the occurrence of adverse care (see Table 6.8).

<table>
<thead>
<tr>
<th></th>
<th>small FTT</th>
<th>larger FTT</th>
<th>χ²</th>
</tr>
</thead>
<tbody>
<tr>
<td>early adversity</td>
<td>50.00</td>
<td>78.94</td>
<td>2.07</td>
</tr>
<tr>
<td>(n) (8/16)</td>
<td>(15/19)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>lack of care</td>
<td>25.00</td>
<td>50.00</td>
<td>1.40</td>
</tr>
<tr>
<td>%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(n) (4/16)</td>
<td>(10/20)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>parental antipathy†</td>
<td>18.75</td>
<td>25.00</td>
<td>0.002</td>
</tr>
<tr>
<td>%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(n) (3/16)</td>
<td>(5/20)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>physical abuse</td>
<td>50.0</td>
<td>65.0</td>
<td>0.321</td>
</tr>
<tr>
<td>%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(n) (8/16)</td>
<td>(13/20)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>sexual abuse†</td>
<td>12.5</td>
<td>30.0</td>
<td>0.725</td>
</tr>
<tr>
<td>%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(n) (2/16)</td>
<td>(6/20)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

†  Fisher’s Exact Test was used when the smallest expected cell value was less than 5

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Subsequent to Chi-Square comparisons, Mann-Whitney tests were used to compare the severity of adverse family experiences reported by mothers of small and larger for age failure to thrive children (Table 6.9). Mothers of larger children described significantly higher levels of sexual abuse; this variation may reflect the higher frequency of sexual abuse among women in this group (see Table 6.8). Given evidence that smaller case group children lived in larger families and were more likely to be male, forced entry regression analysis was carried out to determine whether these characteristics were related to intergroup variation in maternal report of sexual abuse. Regression analysis showed that child stature, gender and family size did not indicate significant variance in the severity of sexual abuse reported by mothers in the present study ($R^2 = 0.075$; adjusted $R^2 = 0.011$; $F = 0.870$, ns); moreover, none of these variables made a significant independent contribution to the equation.

### Table 6.9 Early adverse family experience among mothers of small and larger FTT group children: Mann-Whitney tests for independent samples

<table>
<thead>
<tr>
<th></th>
<th>Small FTT</th>
<th>Larger FTT</th>
<th>Mann-Whitney</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Extent of early adversity</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>16</td>
<td>19</td>
<td>-1.55</td>
</tr>
<tr>
<td>mean (s.d.)</td>
<td>4.00 (25.00)</td>
<td>4.00 (38.00)</td>
<td></td>
</tr>
<tr>
<td>Extent of lack of care</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>16</td>
<td>20</td>
<td>-0.737</td>
</tr>
<tr>
<td>mean (s.d.)</td>
<td>2.00 (1.77)</td>
<td>2.00 (1.76)</td>
<td></td>
</tr>
<tr>
<td>Parental antipathy</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>16</td>
<td>20</td>
<td>-0.947</td>
</tr>
<tr>
<td>mean (s.d.)</td>
<td>1.00 (1.40)</td>
<td>2.00 (1.30)</td>
<td></td>
</tr>
<tr>
<td>Severity of physical abuse</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>16</td>
<td>20</td>
<td>-0.613</td>
</tr>
<tr>
<td>mean (s.d.)</td>
<td>0.00 (12.00)</td>
<td>0.00 (11.00)</td>
<td></td>
</tr>
<tr>
<td>Severity of sexual abuse</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>16</td>
<td>20</td>
<td>-2.05**</td>
</tr>
<tr>
<td>mean (s.d.)</td>
<td>0.00 (3.29)</td>
<td>0.00 (6.13)</td>
<td></td>
</tr>
</tbody>
</table>

* p<0.10  ** p<0.05  two-tailed
6.4.c.ii.b maternal care experiences and child physical stature:

Spearman’s Rank Correlations

Spearman’s Rank Correlations were used to identify aspects of maternal care experiences associated with child physical stature at six years, for inclusion in regression equations; results are summarised in Table 6.10. A non-significant trend implied that maternal report of adversity was positively correlated with the weight for age of case group children. In families of growth retarded and thriving children, there was a significant positive association between severity of maternal experience of sexual abuse and child height for age at six years. In addition, significant positive correlations linked maternal report of adversity and physical abuse to the height for age of thriving children. It should be noted that all these associations are contrary to predicted relationships.

<table>
<thead>
<tr>
<th>Table 6.10 Spearman’s rank correlations of maternal care experiences and child physical stature: failure to thrive and control group mothers</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>physical stature</strong></td>
</tr>
<tr>
<td>----------------------</td>
</tr>
<tr>
<td><strong>case</strong></td>
</tr>
<tr>
<td><strong>control</strong></td>
</tr>
<tr>
<td><strong>height for age centile</strong></td>
</tr>
<tr>
<td><strong>weight for age centile</strong></td>
</tr>
<tr>
<td><strong>height for age centile</strong></td>
</tr>
<tr>
<td><strong>weight for age centile</strong></td>
</tr>
</tbody>
</table>

*p < 0.10  **p < 0.05  ***p < 0.01  ****p < 0.005 (all two-tailed)

6.4.c.ii.c maternal care experiences and child physical stature:
regression analyses

Variables that approached significance in correlations with child physical stature were entered into regression equations. Height and weight z scores were used as dependent variables, since these were more normally distributed than centile data.

Maternal experience of sexual abuse did not indicate height for age of case group children ($R^2 = 0.052$; adjusted $R^2 = 0.025$; $F = 1.888$; $\beta = 0.229$; $p < 0.20$); in contrast, the weight for age of these children was related to the extent of early adversity reported by mothers ($R^2 = 0.109$; adjusted $R^2 = 0.082$; $F = 4.02$; $\beta = 0.330$; $p < 0.05$). Early
adversity also indicated child stature in the control group, in terms of height for age ($R^2 = 0.160$; adjusted $R^2 = 0.136$; $F = 6.49; \beta = 0.400; p < 0.02$), but there was no indication that maternal care experiences were related to the weight for age of thriving children.

6.4.d maternal care experiences and child psychological development

6.4.d.i maternal care experiences and child cognitive development:

Spearman’s Rank Correlations

Table 6.11 details associations between child cognitive ability and maternal reports of early adversity; correlational analyses were conducted to identify variables for inclusion in regression analyses. There was little indication that mothers’ early care experiences were related to the cognitive functioning of children who had failed to thrive; a non-significant trend linked child verbal abilities to maternal report of lack of care, but this finding should be accepted with caution, given the number of analyses performed. Among thriving children, maternal report of early adversity was positively correlated with general cognitive functioning and verbal ability, although only the latter association reached significance; a trend also linked severity of physical abuse to verbal ability. In addition, non-significant associations were found in the control group between GCI and perceptual performance and maternal report of sexual abuse; mothers’ experience of parental antipathy was also linked to child memory.

Table 6.11 Spearman’s rank correlations of maternal care experiences and child cognitive functioning: failure to thrive and control group mothers

<table>
<thead>
<tr>
<th>cognitive ability</th>
<th>extent of early adversity</th>
<th>extent of lack of care</th>
<th>degree of parental antipathy</th>
<th>severity of physical abuse</th>
<th>severity of sexual abuse</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>case</td>
<td>control</td>
<td>case</td>
<td>control</td>
<td>case</td>
</tr>
<tr>
<td>FTT N = 40 Control N = 39</td>
<td>0.293</td>
<td>0.222</td>
<td>0.170</td>
<td>-0.027</td>
<td>0.161</td>
</tr>
<tr>
<td>cognitive index (GCI)</td>
<td>0.253</td>
<td>0.222</td>
<td>0.170</td>
<td>-0.027</td>
<td>0.161</td>
</tr>
<tr>
<td>memory</td>
<td>0.194</td>
<td>0.222</td>
<td>0.170</td>
<td>-0.027</td>
<td>0.161</td>
</tr>
<tr>
<td>verbal</td>
<td>0.248</td>
<td>0.222</td>
<td>0.170</td>
<td>-0.027</td>
<td>0.161</td>
</tr>
<tr>
<td>quantitative</td>
<td>0.170</td>
<td>0.222</td>
<td>0.170</td>
<td>-0.027</td>
<td>0.161</td>
</tr>
<tr>
<td>perceptual</td>
<td>0.044</td>
<td>0.222</td>
<td>0.170</td>
<td>-0.027</td>
<td>0.161</td>
</tr>
</tbody>
</table>

*p ≤ 0.10 **p ≤ 0.05 (all two-tailed)
6.4.d.ii maternal care experiences and child cognitive functioning: regression analyses

6.4.d.ii.a general cognitive ability
Maternal care experiences were not related to the general cognitive functioning of children who had failed to thrive. Mothers’ report of adverse early family care indicated a small proportion of the variance in the general cognitive abilities of thriving children, although this did not reach significance ($R^2 = 0.092$; adjusted $R^2 = 0.067$; $F = 3.65$; $\beta = 0.304$; $p \leq 0.07$).

6.4.d.ii.b memory performance
Memory ability in the case group was not related to maternal history of adverse care.
Within the control group, mothers’ report of parental antipathy did not indicate memory functioning ($R^2 = 0.042$; adjusted $R^2 = 0.016$; $F = 1.61$; $\beta = 0.204$; $p \leq 0.25$).

6.4.d.ii.c verbal ability
Maternal experience of lack of care did not account for a significant proportion of the variance in verbal ability of growth retarded children ($R^2 = 0.062$; adjusted $R^2 = 0.038$; $F = 2.52$; $\beta = 0.250$; $p \leq 0.15$). Among control group families, the extent of physical abuse described by mothers was related to child verbal skill, although this was not significant ($R^2 = 0.088$; adjusted $R^2 = 0.063$; $F = 3.57$; $\beta = 0.297$; $p \leq 0.07$).

6.4.d.ii.d quantitative ability
There was no indication that maternal care experiences related to quantitative skills of failure to thrive or control group children.

6.4.d.ii.e perceptual performance
Maternal adversity was not associated with perceptual functioning among growth retarded children. In contrast, regression analysis in the control group identified a significant link between mothers’ experience of sexual abuse and child perceptual functioning ($R^2 = 0.113$; adjusted $R^2 = 0.088$; $F = 4.59$; $\beta = 0.336$; $p \leq 0.05$).

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6.4.d.iii maternal care experiences and child social cognition

6.4.d.iii.a maternal care experiences and child social-cognitive functioning:

Spearman's Rank Correlations

Correlational analyses (detailed in Table 6.12) were used to identify those aspects of mothers’ early family experiences associated with social cognition among growth retarded and thriving children at six years. Within both groups, there was little indication that children’s problem solving skills related to the extent of early maternal adversity. Non-significant trends linked severity of sexual abuse to problem solving flexibility in the case group, and maternal report of lack of care to number of problem solving categories in the control group; given the number of analyses performed these findings should be accepted with caution.

Table 6.12 Spearman's rank correlations of maternal care experiences and child social cognition: failure to thrive and control group mothers

<table>
<thead>
<tr>
<th>maternal early care</th>
<th>extent of early adversity</th>
<th>extent of lack of care</th>
<th>degree of parental antipathy</th>
<th>severity of physical abuse</th>
<th>severity of sexual abuse</th>
</tr>
</thead>
<tbody>
<tr>
<td>FTT: N = 39 Control: N = 37</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SPS categories</td>
<td>-0.074</td>
<td>0.083</td>
<td>-0.056</td>
<td>*</td>
<td>-0.283</td>
</tr>
<tr>
<td>SPS flexibility</td>
<td>0.254</td>
<td>-0.010</td>
<td>0.065</td>
<td>0.031</td>
<td>0.159</td>
</tr>
<tr>
<td>SPS relevance</td>
<td>0.072</td>
<td>0.209</td>
<td>-0.087</td>
<td>0.098</td>
<td>0.126</td>
</tr>
</tbody>
</table>

* p ≤ 0.10  ** p ≤ 0.05 (all two-tailed)

6.4.d.iii.b maternal care experiences and child social-cognitive functioning:

regression analyses

A non-significant trend indicated that the extent of sexual abuse reported by mothers explained 6% of the variance in flexibility of problem solving strategies suggested by children who had failed to thrive (R² = 0.088; adjusted R² = 0.063; F = 3.55; β = 0.296; p ≤ 0.07). Maternal report of lack of care did not account for a significant proportion of the variance in problem solving categories suggested by thriving children (R² = 0.035; adjusted R² = 0.008; F = 1.28; β = 0.187; p ≤ 0.30). No other indices of maternal adversity were related to social cognition among growth retarded or thriving children.

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6.5 discussion

Traditional maternal deprivation models of non-organic failure to thrive have suggested that mothers' adverse family care during childhood will be associated with infant growth failure, but, as discussed in Chapter One, such a contention is limited by the methodological constraints of previous research. Moreover, the present findings do not support this conceptualisation of non-organic growth failure, in that reports of maltreatment were not more common among mothers of previously growth retarded children, relative to controls. In addition, early maternal adversity was not related to limited development for previously growth retarded or thriving children. Before further discussion is possible, it is important to note that this study is exploratory in nature; numbers are relatively small, and the results do not offer a definitive description of mothers whose children failed to thrive. Prospective research is necessary to identify the causal mechanisms that underlie observed links between mothers' childhood experiences and current child functioning. Nevertheless, although limited in size, the analyses describe childhood care experiences in an unreferred sample of mothers of growth retarded children from an inner-city birth cohort, and so offer a broader description of links between maternal adversity and child growth failure than has been available from previous clinically based research.

6.5.a maternal care experiences and child physical development

6.5.a.1 a history of failure to thrive

Adverse family experiences were common among case and control mothers; 56% of failure to thrive group mothers and 40% of controls had experienced physical abuse in childhood, and over 50% of mothers in both groups reported some form of adverse childhood care (inadequate parenting and/or abuse). Rates of maltreatment in the present sample were somewhat higher than other studies using the early childhood adversity interview with women in the inner-city; for example, Andrews, Brown and Creasey (1990) reported early adverse care in 35% of their sample of daughters. Andrews, Valentine and Valentine (1995) reported a history of physical abuse in 27% of their sample of mothers, and noted sexual abuse in 15% of the daughters they studied, compared with rates of 9% in Bifulco,
Brown and Harris's (1994) sample, and 20.5% of failure to thrive group mothers in the present study.

The levels of adverse care reported in this chapter demonstrate the efficacy of the childhood interview in eliciting accounts of early family experiences, suggesting that the instrument is not prone to socially desirable responding. This contention is borne out by the comments of some mothers, who discussed incidents of maltreatment for the first time, such as a case group mother who disclosed sexual abuse by her step-brother:

"No, no one knows about that - this is the first time I've talked about it".

Nevertheless, it is not clear why levels of maltreatment were high in the present study, compared with previous research. Arguably, differing rates could reflect a cohort effect, since mothers in the present sample were of different ages than the daughters and mothers studied by Andrews and her colleagues, but this seems improbable since mothers described higher levels of adversity than older or younger women studied by Andrews and others.

Maternal history of maltreatment was not associated with a history of growth retardation for children in the present sample; there were no intergroup differences between failure to thrive group mothers and controls. That observation is inconsistent with some previous studies of failure to thrive, but it corresponds with the findings of other researchers. For example, Altemeier, O'Connor, Sherrod, and Vietze (1985) linked child failure to thrive to maternal report of adverse care experiences, including physical abuse, but Newberger, Hampton, Marx and White (1986) found no differences in the childhood maltreatment reported by mothers of failure to thrive and control group children. Varying findings are likely to reflect methodology (see Chapters One and Two); it is not surprising that the present unreferred community sample of families where a child has failed to thrive offers a less extreme picture of adversity than is evident in clinically based research. Altemeier and colleagues' investigation was unusual, in utilising a prospective community based design, but concerns about their approach to data analysis\(^1\) (see Chapter One) mean that their

\(^1\) Notably, the authors' use of Pearson's product moment correlations to examine links between
findings should be viewed with some caution.

Case and comparison mothers were closely matched on physical and social variables, and assessments at fifteen months and six years demonstrated similar psychosocial functioning among mothers in each group (see Chapter Four and Skuse, Wolke and Reilly, 1992). Psychosocial disadvantage in adulthood has been linked to the experience of early adversity (e.g., Dowdney et al., 1985; Brewin et al., 1993); arguably, similar levels of childhood maltreatment reported by case and comparison group mothers may have arisen because effective pairwise matching has created a disadvantaged control group. If this contention is valid, links should be apparent in both groups between early maternal adversity and psychosocial functioning at six years; analyses to be presented in Chapter Seven should illuminate the extent to which mothers’ current psychosocial characteristics associated with a history of failure to thrive or the developmental consequences of infant growth faltering are related to maternal reports of adverse early care. Evidence of relationships between maternal adversity and child development will be discussed shortly; first, it is necessary to address potential differentiation within the case group.

6.5.a.ii early and late growth failure

The analyses presented in this dissertation have highlighted variability within the case group, and supported the contention that not all cases of failure to thrive are alike, and it has been argued that maternal characteristics may distinguish between subgroups of children who have failed to thrive. Maternal experience of childhood adversity may be associated with diverse patterns of growth among children who have failed to thrive; accordingly, variation in maternal reports of early care was explored within the failure to thrive group.

There was no evidence of intergroup differentiation between mothers whose children failed to thrive early (during the first six months) or later (the second six months) in their maternal characteristics and the dichotomous variable of presence/absence of non-organic FTT is questionable.
accounts of childhood family care, and so it cannot be concluded that maternal experience of mistreatment was linked to timing of growth retardation in the present sample. Nevertheless, experience of adverse nurture may be related to other variables that differentiate between early and late growth retardation; for example, mothers of late failure to thrive group children were more depressed at fifteen months. There is considerable evidence (e.g., Andrews et al., 1990; 1995) that adverse early care is linked to psychological disturbances including depression, and so analyses of possible relationships between a history of adversity and maternal cognitions and psychosocial functioning may illuminate characteristics associated with variation in the timing of failure to thrive.

6.5.a.iii long term physical development

small and larger failure to thrive group children

Within group variation among mothers of failure to thrive group children was also predicted on the basis of child physical stature at six years; specifically, it was suggested that mothers’ experience of maltreatment would be associated with developmental disadvantage for the child, such that mothers would describe greater childhood adversity if their children were classified as small for age at six years. There was little indication of intergroup variation in adverse care experiences, although, contrary to predictions, mothers of larger children reported significantly higher levels of sexual abuse. This result should be interpreted with caution, since numbers were very small (only eight mothers in the failure to thrive group as a whole reported sexual abuse), and regression analysis showed that extent of sexual abuse was not reliably related to child stature. Moreover, there were no group differences on other indices of poor care; that observation undermines any conclusion of intergroup variation in care experience, given evidence that child sexual abuse tends to follow other problems such as physical abuse or lack of care (Bifulco, Brown and Adler, 1991).

These results do not support the conclusion that limited child development is associated with maternal maltreatment, although intergroup variation can be seen as consistent with the argument that different maternal characteristics are associated with different child outcomes.
following early growth retardation. Nevertheless, results presented in previous chapters do not indicate that mothers of larger failure to thrive group children are at greater risk of caregiving difficulties, in terms of their psychosocial functioning or cognitions about parenting, and observed differences in experience of abuse may be spurious. Correlational and regression analyses should provide a more detailed indication of links between maternal experience and child functioning.

**factors indicating physical stature**

Mothers’ reports of early family adversity related to the physical stature of case and control group children, accounting for small but significant proportions of variance. Extent of adverse care was related to the height for age of comparison children and to weight for age of children who had failed to thrive; two key aspects of this finding warrant comment, with reference to intergroup differences, and direction of associations.

First, it is interesting to note that mothers’ experiences relate differentially to height and weight across the groups. Links between maternal adversity and height in the case group may have been obscured because sustained growth failure in early life has, in itself, limited physical development (Mayes and Volkmar, 1993). As can be seen in Figure 3.1 (Chapter Three), the majority of failure to thrive group children were below the 30th centile (height for age) at six years, and so lack of within group variation may have created a “floor effect”, and obscured any links between maternal reports of family care and child height for age. Nevertheless, this explanation cannot account for the lack of association between maternal care and weight for age of thriving children.

A second issue that demands attention concerns the direction of relationships between maternal care experiences and child physical stature. Correlational analyses revealed positive associations between maternal adversity and child stature, contrary to predictions. For both cases and controls, positive correlations linked overall adversity to child stature, and, within the control group, children’s height for age was also positively linked to severity of maternal experience of physical and sexual abuse.
The notion that maternal experience of maltreatment has positive associations with child stature is surprising, and does not conform to models of risk that have been proposed elsewhere (see, e.g., Belsky and Vondra, 1989). Further analyses are necessary to evaluate these findings and consider potential explanations for the observed pattern of results. It is necessary to consider whether maternal adversity is also positively related to indices of psychological development; analyses discussed below address that possibility. In addition, it is important to remember that correlation does not indicate causality; associations between maternal experience and child development may be indirect (e.g., Rutter, 1989) and so positive correlations between adversity and child stature could reflect some other factor or group of influences. Integrative analyses to be presented in Chapter Seven will explore the relative associations of maternal experience, psychosocial functioning and maternal cognitions with child development at six years, and should offer a fuller understanding of links between child stature and mothers’ early care experiences.

6.5.b maternal care experiences and child psychological development

6.5.b.i factors indicating child cognitive functioning

Maternal care history was minimally related to cognitive skills among case or control group children. Regression analyses provided no evidence that cognitive abilities of children who had failed to thrive were related to mothers’ reports of early care, and there were no significant correlations between indices of adversity and child performance. Slightly stronger links between maternal care and child functioning were found in the control group; these conformed to analyses of child physical stature, in that extent of adversity was positively related to child performance.

Maternal report of sexual abuse was a significant indicator of thriving children’s perceptual functioning, but results of regression analyses generally failed to reach significance: trends linked overall adversity to general cognitive functioning, and severity of physical abuse to these children’s verbal skill. Again, relationships were contrary to predictions, suggesting
that in comparison families, maternal adversity was associated with better child
development. Nevertheless, these findings should be viewed with caution, given the
exploratory nature of the research, and in general, there was little evidence that maternal
history directly related to child cognition. Consideration of links between mothers’ reports
of early care and child social cognition lends additional support to that conclusion.

6.5.b.ii factors indicating child social cognition
Mothers’ history of adverse care was not significantly related to any aspect of the social
problem solving skills of case or control group children, although a non-significant trend
implied that severity of sexual abuse reported by mothers accounted for a small proportion
of the variance in flexibility of solutions offered by children who had failed to thrive.
Nonetheless, as discussed above, the small numbers reporting sexual abuse limit this
finding, implying that maternal history of maltreatment was not related to social cognition
among children in the present sample.

Failure to find significant links between mothers’ care experiences and child psychological
abilities might not be surprising, given evidence presented in previous chapters indicating
the power of variables such as maternal cognitions, IQ, and socio-economic factors for
indicating variance in child functioning. Writers such as Rutter (1989) have argued that
links between maternal experience and parenting are unlikely to be straightforward, and so
it is arguably more useful to explore associations between early family care and those
maternal characteristics that are demonstrably related to the development of growth retarded
and thriving children in the present sample.

6.6 conclusions: maternal adversity and child
development
Reports of maternal adversity were common, but there was no evidence that adverse care
experiences characterised mothers whose children failed to thrive or that history of
maltreatment was related to timing of infant growth failure. In contrast to predictions,
some positive associations were apparent between levels of maternal mistreatment and child
functioning at six years; notably, higher levels of adversity correlated with greater physical stature among growth retarded and thriving children. These results are surprising, but not improbable, since it has been argued that adverse childhood experiences may be associated with better parenting. For example, Belsky and Vondra (1989) cited research on fathering (e.g., Mendes, 1976), which indicated that poor care was associated with higher levels of paternal interest and involvement. An emphasis on intergenerational continuity in parenting implies simple modelling or social learning explanations; Belsky and Vondra argued that discontinuity may arise because a compensatory process is initiated, enabling parenting in a manner "expressly opposite" (p. 168) to that of the mistreating parent.

Adversity did not create risk for problems of child psychological development among cases or controls. Maternal care experiences did not relate to cognitive ability or social-cognitive functioning among case group children, and there was limited evidence of associations among these variables within the control group. Accounts of the intergenerational transmission of abuse (see Kaufman and Zigler, 1989) suggest that the experience of maltreatment is unlikely to benefit the development of child care skills, but the results described above suggest minimal relationships between maternal experience of maltreatment and child functioning. Moreover, although few significant relationships were found, observed associations consistently indicated that a history of adversity was not associated with developmental risk for the child. These results correspond with the contention that experience of childhood maltreatment in childhood is not inevitably linked to parenting difficulty; while the present study has not observed mothers’ caregiving, positive associations between adverse maternal care and child development may provide an indication of discontinuities in caregiving problems.

Ecological models of parenting (e.g., Gabarino, 1977; Belsky, 1984) suggest that psychological and social functioning may mediate the long term correlates of adverse care, implying that an advantageous child outcome is not implausible if a mother has a system of psychosocial buffers that have positive associations with parental functioning. Increasingly, researchers have sought to identify factors associated with resilience in
response to adversity (e.g. Rutter, 1985), noting “marked heterogeneity in outcome” (Rutter, 1989, p. 339) subsequent to early inadequate care. With regard to these arguments, the present study might usefully explore links between a history of abuse and those indices of maternal psychosocial functioning that were associated with child development at six years; analyses presented in Chapter Seven will examine these associations.

Discontinuity in caregiving difficulties is likely to be facilitated by a range of factors such as social support and economic security (see Kaufman and Zigler, 1989, for a review). For example, Egeland et al. (1988) reported that abused mothers who did not maltreat their children were more likely to report emotionally supportive relationships, and Rutter, Quinton, and Liddle (1983) highlighted the protective role of positive school experiences; this observation seems particularly relevant in light of observed links between maternal education and psychological functioning of comparison group children in the present study (see Chapter Four). Maternal cognitions about caregiving might also mediate the intergenerational transmission of adverse care, if maternal schemas about child care are influenced by childhood experiences; Van Ijzendoorn’s (1992) review highlighted psychological mechanisms involved in the intergenerational transmission of parenting.

The retrospective design of the present study means that the results presented here cannot be used to identify the causal mechanisms linking mother and child functioning, and so the above commentary remains within the realms of speculation. Nevertheless, previous chapters have shown clear links between child physical and psychological development and maternal characteristics including attributions about child behaviour, levels of education and socio-economic status, and consideration of these data with regard to mothers’ care experiences is likely to illuminate the patterns of association outlined in this chapter. Maternal adversity alone accounts for relatively little variance in child development at six years, and mothers’ history of mistreatment may be more clearly related to child functioning when analyses take account of current maternal functioning.
# Chapter Seven

## Maternal Characteristics and the Development of Children Who Failed to Thrive

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maternal characteristics and the development of children who failed to thrive

7.1 introduction

Studies of parenting have increasingly recognised the need to account for the range of factors that can influence the quality of caregiving (e.g., Belsky, 1984; Simons, Lorenz, Chyi-In, and Conger, 1993), and much of this work has been applied to, or derived from, investigations of the aetiology of child maltreatment (e.g., Ammerman, 1990; Hillson and Kuiper, 1994). Ecological frameworks, such as that proposed by Belsky, and stress and coping models of parenting (see Hillson and Kuiper) have highlighted the detrimental impact of psychosocial stressors for the parent, and researchers such as Bugental (1987) and Milner (1993) have drawn attention to the role of caregiver cognitions in mediating the relationship between parent and child. In addition, parents who were maltreated in childhood are known to be at increased risk of caregiving problems (see, e.g., Belsky, Youngblade and Pensky, 1989; Kaufman and Zigler, 1989), and so theorists have sought to account for developmental history in modelling the determinants of parenting (e.g., Belsky, 1984; Rutter, 1989).

Studies of failure to thrive have predominantly viewed parenting within a maternal deprivation model (see Chapter One), and there have been few attempts to apply wider developments in research on caregiving. The present retrospective study is not concerned with evaluating traditional models of non-organic growth faltering, but an understanding of the long term correlates of failure to thrive for the mother and child should be informed by reference to the parenting literature. This thesis seeks to describe current mother and child functioning in a sample of six year olds who failed to thrive in infancy, and so it aimed to explore links between maternal social and psychological functioning and the occurrence, timing, and developmental sequelae of infant growth retardation. The analyses presented in previous chapters provided some evidence that a history of failure to thrive was associated with maternal characteristics at six years, in that families of children who failed to thrive showed less improvement in socio-economic status, and mothers made more
attributions that have been associated with relationship difficulties, relative to controls. In addition, indices of early maternal care, psychosocial functioning and caregiving cognitions were significant indicators of variance in children's physical and psychological development at six years.

In contrast to those findings, there were no differences between cases and controls on indices of maternal functioning at six years including depression, disordered eating, and childhood adversity. Moreover, each chapter in this dissertation has explored separate aspects of maternal functioning, and associations between maternal characteristics have not yet been evaluated. The present chapter aims to address this issue, in order to identify links between those aspects of maternal functioning that indicate a history of growth faltering, or the timing and developmental consequences of failure to thrive.

7.1.a correlates of early adverse experience

The results presented in Chapter Six showed little indication of links between maternal experience of childhood maltreatment and a history of failure to thrive or current child development. This observation may not be surprising, since potential links between early adversity and current maternal functioning were not explored. Rutter (1989) observed that childhood adversity may have no direct links with parenting, and so it may be more useful to examine links between early family care and those aspects of maternal functioning that were demonstrably related to current child development. The experience of early adverse care could affect mothers' models of attachment relationships or learned beliefs about caregiving (see e.g., Main et al., 1985; Simons et al., 1991), and it has been associated with long term psychological disturbance, and social disadvantage (e.g., Dowdney et al., 1985). The present study does not address causal mechanisms, but it is plausible that child functioning could be linked with maternal psychosocial stress, or maladaptive maternal cognitions about caregiving, which in turn are related to the mother's experience of childhood maltreatment: a substantial literature links childhood adversity to difficulties in adult life.
Research consistently indicates that early adversity is associated with risk for developmental problems and adult psychopathology. For example, Taitz and King (1988) found that 34% of children seen clinically because of abuse or neglect show delayed social and cognitive development, including speech difficulties. This finding is limited by reliance on a clinical sample, and lack of a comparison group, but it is borne out by more rigorous research. A range of studies (e.g., Augoustinos, 1987; Lamphear, 1986; Erickson, Egeland and Pianta, 1989; Eckenrode, Laird, and Doris, 1993) have reported that physically abused, and physically or emotionally neglected children show cognitive deficits, including impairments in vocabulary and comprehension. Emotional neglect, physical and sexual abuse have also been associated with behavioural disturbance; teacher ratings collected by Erickson et al. (1989) indicated severe and varied problems, such as anxiety, inattentiveness, aggression and obsessive compulsive behaviour. Notably, Eckenrode and colleagues examined the academic and disciplinary records of 420 abused and neglected children and their matched comparisons, and found consistent evidence that maltreatment was associated with academic difficulties and behaviour problems.

If the difficulties observed by Eckenrode and others persist over time, mothers’ experience of childhood maltreatment may be associated with limited education or cognitive skill deficits, which in turn could have adverse implications for the development of their children. That contention cannot be evaluated by the present retrospective research, but it may warrant consideration, given the associations reported in Chapter Four between maternal intellectual abilities and the functioning of growth retarded and thriving children at six years.

Studies of maltreated adolescents and adults suggest that developmental disadvantage, associated with adversity in early childhood, tends to persist over time (see, e.g., Malinosky-Rummell and Hansen, 1993). According to Lewis, Mallouh and Webb (1989) the majority of juvenile offenders have been abused or neglected in childhood, although they estimate that only about 20% of abused children go on to become delinquent.
Childhood maltreatment is also associated with anxiety, depressive disorders, and alcoholism in adult life (e.g., Lewinsohn and Rosenbaum, 1987; Holmes and Robins, 1988; Brown and Harris, 1993).

This literature is subject to criticism, because there is a dearth of prospective longitudinal research, but retrospective studies have provided strong evidence of associations between early care and mental health, and as noted in Chapter Six, the unreliability of retrospective reports is often overestimated. Brewin, Andrews and Gotlib (1993, p 83) observed that empirical studies are “remarkably consistent” in reporting a history of adverse care among depressed and anxious adults. For example, childhood experience of physically abusive and/or inconsistent parental discipline was associated with alcoholism and depression in a community study of American adults (Holmes and Robins, 1988). In the United Kingdom, Brown and Harris (1993) conducted a large scale community study of women in inner London, and found strong links between the experience of anxiety and/or depression and reports of parental indifference, and physical or sexual abuse.

Palmer et al. (1990) provided further evidence of psychosocial risk associated with early adversity; a substantial minority (31.0%) of the anorectic and bulimic women they studied had experienced sexual abuse in childhood. This study may be criticised because it included no control group, and so failed to consider a history of abuse among non-eating disordered women. Nevertheless, Palmer and colleagues’ findings are supported by more rigorous community based research by Andrews, Valentine, and Valentine (1995). In an extension of the Brown and Harris study, Andrews et al. demonstrated that eating disorders and depression are linked to early physical or sexual abuse. The authors examined links between childhood maltreatment and depression or eating disorders, in a community sample of mothers and their adult daughters. Among mothers, childhood maltreatment was associated specifically with depression; daughters who had been abused were not likely to be depressed, but their maltreatment was strongly associated with bulimia. The incidence of bulimia among non-abused daughters was “low or non-existent”, offering a clear indication of the vulnerability created by early maltreatment.
7.1.a.ii adversity, social support and socio-economic factors

The adverse implications of poor care for social and cognitive development and mental health may be exacerbated, because there is consistent evidence that social disadvantage is more common among women who have been maltreated in childhood. Dowdney and colleagues' (1985) study of mothers who had grown up in institutions found that ex-care mothers, relative to comparisons, were more likely to be living in poor or overcrowded circumstances; these women also reported marital or relationship difficulties more frequently than control group mothers. Rutter's (1989) discussion of this research noted that, for both cases and controls, poor parenting was less common when social circumstances were adequate. Among institution reared women, quality of parenting was much better if the mother had a supportive spouse or if the spouse was free of serious psychosocial problems. Most research in this field has been retrospective, but Dowdney et al.'s observations are consistent with research by Wadsworth (1985), who carried out a prospective study following a cohort of almost 2000 women from childhood to adulthood, and found that delinquency and marital breakdown were more common among women who had experienced early family disruption.

7.1.a.iii childhood adversity and psychosocial functioning: conclusions

Research examining the psychosocial sequelae of childhood maltreatment implies a cycle of vulnerability for several reasons. First, psychological problems such as depression are likely to interfere with an individual’s ability to parent effectively (e.g., Mills et al., 1985; Andrews et al., 1990). Second, parenting takes place within a wider social network (Rutter, 1989), and lack of support and socio-economic hardship comprise additional sources of stress for the caregiver (e.g., Crittenden, 1985; Seifer et al., 1992). In addition to links between adversity and psychosocial disadvantage, parenting difficulties may show intergenerational continuity if maladaptive cognitions about events in parenting are modelled from experience, or stem from distorted attachment representations (see, for example, Van Ijzendoorn, 1992). The present study does not address these causal mechanisms, but, nevertheless, it should be useful to examine links between maternal experience of maltreatment and those maternal characteristics that have been associated with
child functioning in the present study (in terms of current development and the timing and occurrence of failure to thrive).

7.1.b adversity, psychosocial functioning and maternal cognitions

Interactions between factors that create vulnerability for parenting difficulty are probably complex, and variable as the child develops, and so it has been argued (e.g., Belsky, 1984; Hillson and Kuiper, 1994) that an integrated model of the determinants of parenting is required, in order to,

“move beyond description and toward a more thorough explanation of child maltreatment”.

(Hillson and Kuiper, p 266)

This contention is clearly valid, but, as discussed in Chapter One, there have been few methodologically adequate attempts to apply a model of parenting to the study of non-organic failure to thrive; researchers have generally focused on specific risk factors, such as depression or social isolation (see Chapter One). Such neglect is surprising, because an integrated examination of mother and child characteristics is necessary to go beyond the traditional assumption that growth faltering reflects maltreatment, in order to evaluate the current conceptualisation of failure to thrive as a disorder of feeding (American Psychiatric Association, 1996).

Altemeier and colleagues’ (1985) prospective community-based research explored a range of variables, including psychosocial functioning and mothers’ childhood care, in a community sample, and reported some evidence that failure to thrive was indicated by maternal risk factors. Nonetheless, the findings of this study should be viewed circumspectly, for two reasons highlighted previously. First, 15 children who were diagnosed as having non-organic failure to thrive were compared with 86 randomly selected thriving controls; this disparity in sample sizes may have influenced evidence of variation across groups. More importantly, the analysis used by Altemeier and colleagues’
appears to have been inappropriate, because it is based on Pearson product moment correlations between maternal responses and the dichotomous variable of presence or absence of non-organic failure to thrive.

Several criticisms of the failure to thrive literature have implications for attempts to adopt developments in the caregiving literature. It may not be possible to develop a universally applicable model of parenting, if non-organic growth retardation has diverse aetiologies (Woolston, 1985); this concern reflects the inadequacy of a definition based solely on the symptom of growth (e.g., Skuse, 1985). Before an explanatory model of parenting and growth failure can be developed, there is a need to consider whether a model of caregiving offers a useful description of mothers whose children fail to grow. This requirement depends on prospective study, to identify mother and child characteristics that precede growth faltering, and so it is beyond the scope of the present retrospective research. Nevertheless, understanding the utility of defining an infant as failing to thrive depends on identifying the long term correlates of the syndrome: put simply, does failure to thrive matter for the mother and child? In light of these arguments, findings of previous chapters will be examined, as follows, to identify relationships among maternal characteristics associated with:

- a history of failure to thrive
- the timing of infant growth faltering
- child physical and psychological development at six years.

**physical development**

**a history of failure to thrive**

Analyses will be carried out to determine the extent to which maternal characteristics discriminate between mothers of growth retarded and thriving children at six years. Data at six years cannot be applied retrospectively, and so evidence of intergroup variation cannot illuminate the role of caregiving in non-organic failure to thrive. Current maternal characteristics in the case group could correspond to stable factors that precede infant growth faltering, but equally, mothers' social and psychological functioning when the child
is six could reflect the experience of having parented an infant who failed to thrive. The feeding relationship is transactional, requiring that both child and carer make an active contribution to the interaction (Skuse, 1994), and so the chronic feeding difficulties that are said to be associated with infant failure to thrive (see Ramsay et al., 1993; DSM-IV, American Psychiatric Association, 1996) are likely to be stressful for mother and child.

**early and late failure to thrive**

Findings of previous chapters highlighted substantial variability among mothers of growth retarded children. Diversity associated with the timing and long term outcome of growth retardation implies that children who failed to thrive in infancy do not comprise a homogenous group, and it has been argued that growth retardation may stem from diverse aetiologies (see Chapter Three). The present chapter will examine the extent to which the timing of growth failure indicates maternal characteristics at 15 months and six years, by comparing mothers whose children failed to thrive early (in the first six months) with those whose children experienced later growth faltering (in the second half of the first year).

**long term physical development**

This dissertation aims to examine the long term developmental implications of infant growth retardation, and so the present chapter will explore relationships among maternal characteristics, to determine the extent to which maternal characteristics indicate variation in child physical stature subsequent to infant growth retardation.

**psychological development**

Finally, relationships among maternal characteristics will be explored to determine the extent to which these measures are associated with variance in the psychological development of growth retarded and thriving children at six years.
7.2 method

Analyses contained in this chapter are based on data derived from group classifications (Chapter Three) and from measures and procedures previously described (see Table 7.1 and relevant sections of preceding chapters).

### Table 7.1  assessment of mother and child characteristics

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<tr>
<td>physical stature</td>
<td>height and weight for age (centile and z score)</td>
</tr>
<tr>
<td>cognitive development</td>
<td>McCarthy Scales of Children’s Abilities 3</td>
</tr>
<tr>
<td>social cognition</td>
<td>Social Problem Solving Test - Revised</td>
</tr>
<tr>
<td><strong>maternal characteristics</strong></td>
<td></td>
</tr>
<tr>
<td>psychosocial functioning</td>
<td>IQ; depression (15 months &amp; 6 years); disordered eating; social support; socio-economic status 4</td>
</tr>
<tr>
<td>maternal cognitions</td>
<td>Means-End Problem Solving; Leeds Attributional Coding System 5</td>
</tr>
<tr>
<td>early care experiences</td>
<td>interview assessment of Childhood Experience of Care and Abuse 6</td>
</tr>
</tbody>
</table>
7.3 results

7.3.a response rates
As detailed in Chapters Three to Six, full data on mother and child characteristics were not collected from all 87 families visited during the six year assessment. Because the analyses presented in this chapter integrate data from all these chapters, numbers will reflect missing data on all independent variables. For example, analysis of factors associated with failure to thrive/control group status will be limited by missing information on socio-economic status and mother's early adversity (Chapters Four and Six), and numbers will be reduced additionally because mothers who did not speak English did not complete measures of maternal attributions (Chapter Five). Sample sizes will reflect the accumulation of missing data on the variables included in each analysis, and so the numbers included will be indicated separately for every analysis performed.

7.3.b maternal characteristics and child physical development

7.3.b.i growth at fifteen months
7.3.b.i.a a history of failure to thrive
Forced entry logistic regression analysis was performed to assess classification of failure to thrive/control group status from maternal characteristics defined in a model of risk. Logistic regression makes fewer assumptions about independent variables than more powerful techniques such as discriminant function analysis or structural equation modelling (see Tabachnik and Fidell, 1996), and so it was deemed appropriate for the present study because analyses are exploratory, and data for several indices of mother and child functioning were not normally distributed (see Chapter Two).

To reduce the number of independent variables, only those indices that had previously been found to differentiate between cases and controls were used in analysis. The index of early maternal adversity was also included, although this did not discriminate between the groups, because early maternal care has previously been associated with infant failure to thrive (see Chapters One and Six) and maternal social and psychological functioning (see Section 7.1.a). Accordingly, variables describing change in socio-economic status,
percentage of personal, controllable, global attributions, percentage of personal, uncontrollable, global attributions and early maternal adversity were entered into the regression equation. Of the original 94 participants, 24 (25.5%) were excluded from the analysis because of missing data.

Change in social index was the only measure to discriminate significantly between cases and controls; inclusion of maternal attributions and the index of early maternal adversity did not improve the equation, and so these variables were removed from the analysis. A model based on change in social index alone was statistically reliable (constant $-2 \log \text{likelihood} = 113.63$; model $-2 \log \text{likelihood} = 108.64$, model $\chi^2 = 4.98$, df = 1; $p \leq 0.05$), but it provided only moderate classification, with 67.5% of comparisons and 64.3% of cases correctly categorised, for an overall success rate of 65.85%. This model suggests that mothers whose children failed to thrive reported less improvement in socio-economic functioning than comparisons, but the odds ratio of 0.912 (Wald statistic = 4.50; $p \leq 0.05$) indicated that case group status was associated with marginal decrease in the likelihood of socio-economic improvement. Spearman’s Rank Correlations (Table 7.3) revealed no significant associations between maternal variables, although a non-significant trend implied that mothers who reported higher levels of childhood maltreatment made fewer personal, uncontrollable, global attributions.

### Table 7.2 Spearman’s Rank Correlations among maternal variables: failure to thrive and control group

<table>
<thead>
<tr>
<th></th>
<th>% personal controllable global (all attributions)</th>
<th>% personal uncontrollable global (all attributions)</th>
<th>change in social index</th>
</tr>
</thead>
<tbody>
<tr>
<td>mother’s early adversity</td>
<td>$-0.204^*$</td>
<td>$-0.052$</td>
<td>0.105</td>
</tr>
<tr>
<td></td>
<td>($N = 70$)</td>
<td>($N = 70$)</td>
<td>($N = 79$)</td>
</tr>
<tr>
<td>change in social index</td>
<td>$-0.050$</td>
<td>$-0.176$</td>
<td></td>
</tr>
<tr>
<td></td>
<td>($N = 73$)</td>
<td>($N = 73$)</td>
<td></td>
</tr>
<tr>
<td>% personal controllable</td>
<td>0.098</td>
<td></td>
<td></td>
</tr>
<tr>
<td>global (all attributions)</td>
<td>($N = 73$)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

$^* p \leq 0.10$  $^{**} p \leq 0.05$ two-tailed
7.3.b.i.b early and late growth failure

Forced entry logistic regression analysis was carried out to determine whether maternal characteristics could reliably discriminate between children who failed to grow early or later during the first year. Again, the index of early maternal adversity was included in these analyses, in addition to variables that distinguished between the failure to thrive subgroups in earlier analyses. Accordingly, the variables entered into the model were number of relevant strategies for dealing with child eating problems, percentage of personal, controllable, and global attributions to child for eating problems, maternal depression and IQ scores from 15 months, and mother’s childhood adversity. Of 47 possible cases, 10 (21.28%) were excluded because of missing data.

As shown in Table 7.3, the best statistical model for discriminating between early and later failure to thrive was provided by mothers’ problem solving and attributions, in conjunction with levels of maternal depression at 15 months; mothers’ IQ scores were removed from the equation because they did not reliably improve the equation, and were correlated with maternal attributions (Table 7.4), and maternal adversity was excluded because it did not make a significant contribution. Using these variables, the overall classification rate for group membership was 84.62% (33/39 cases). This model correctly categorised 90.48% (19/21) of cases of late growth failure, and 77.78% (14/18) of cases of early growth failure.

Wald statistics showed that maternal depression, problem solving and attributions each reliably discriminated between children whose growth faltering occurred in the first or second six months of life. Odds ratios indicated that the probability of a child having failed to thrive earlier was increased when mothers generated more solutions for dealing with child eating problems and reported lower levels of depression at 15 months. In contrast to these associations, early failure to thrive was also indicated when mothers made more personal, controllable and global attributions for child eating problems, but the odds ratio of 1.08 demonstrated minimal change in the timing of failure to thrive based on change in maternal attributions.
Table 7.3 Logistic analysis of maternal characteristics on early and late failure to thrive (N = 39)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Odds Ratio (Exp. B)</th>
<th>Wald Statistic</th>
<th>-2 Log Likelihood</th>
<th>Model χ²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td></td>
<td></td>
<td></td>
<td><strong>53.83</strong></td>
</tr>
<tr>
<td>Number of relevant eating problem strategies</td>
<td>1.72</td>
<td>3.58**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>% Personal controllable global eating attributions</td>
<td>1.08</td>
<td>5.45**</td>
<td>35.62</td>
<td>18.22****</td>
</tr>
<tr>
<td>GHQ (depression at 15 mths)</td>
<td>0.614</td>
<td>4.29**</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**p ≤ 0.05  ***p ≤ 0.01  ****p ≤ 0.005  *****p ≤ 0.001  ******p ≤ 0.0005

Table 7.4 Spearman’s Rank Correlations among maternal variables: early and late failure to thrive

<table>
<thead>
<tr>
<th></th>
<th>Mother’s early adversity (N = 37)</th>
<th>GHQ (maternal depression at 15 mths) (N = 39)</th>
<th>WAIS-R (maternal IQ) (N = 39)</th>
<th>% Personal controllable global (eating attributions) (N = 39)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of relevant eating problem strategies</td>
<td>0.180</td>
<td>-0.024</td>
<td>-0.018</td>
<td>0.116</td>
</tr>
<tr>
<td>% Personal controllable global (eating attributions)</td>
<td>0.055</td>
<td>-0.130</td>
<td>0.412**</td>
<td></td>
</tr>
<tr>
<td>WAIS-R (maternal IQ)</td>
<td>0.302*</td>
<td>-0.267*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GHQ (maternal depression at 15 mths)</td>
<td>-0.107</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*p ≤ 0.10  **p ≤ 0.05  ***p ≤ 0.01  two-tailed

7.3.b.ii Physical stature at six years

7.3.b.ii.a Small and larger failure to thrive group children

The extent to which maternal characteristics discriminated between growth retarded children who were small or larger for age at six years was examined using forced entry logistic regression. Variables that distinguished between small and larger children were included in the analysis, with one exception. Mothers of larger growth retarded children reported more severe sexual abuse than mothers of smaller children (see Table 6.9), but this result may reflect more frequent reporting of sexual abuse among mothers of larger children. In addition, very few FTT group mothers gave accounts of childhood sexual abuse, and so this variable is descriptive of a minority of mothers in the sample (those with no abuse scored zero). With regard to these concerns, the index of mother’s early adversity was
used instead of severity of maternal sexual abuse for logistic regression. Variables describing child gender, the number of relevant maternal strategies for dealing with child eating problems, mothers' satisfaction with marital support, family size at age six and maternal childhood adversity were included in the equation. Thirteen (27.66%) out of 47 possible cases were excluded because of missing data.

The index of early maternal adversity was removed from the equation because it correlated with marital satisfaction (see Table 7.6), and did not indicate whether case group children were small or larger for age; inclusion of child gender did not improve the equation, and so these variables were removed from the analysis. Maternal problem solving and family size at six years were significantly correlated, and so the regression analysis was repeated, removing each of these variables in turn. A model based on maternal problem solving and marital support alone provided statistically reliable discrimination between the groups, as shown in Table 7.5. The overall classification rate was 67.65% (23/34), with 75.00% (12/16) of small children and 61.11% (11/18) of larger children correctly categorised. Wald statistics indicated that maternal problem solving and satisfaction with marital support both reliably discriminated between groups. In line with hypotheses, the odds ratios demonstrated that a one unit increase in maternal strategies for dealing with child eating problems corresponded with a twofold increase in the likelihood that case group children would be larger for age, but in contrast, maternal satisfaction with marital support indicated smaller child stature at six years.

**Table 7.5 Logistic analysis of maternal characteristics on small/larger failure to thrive group children (N = 34)**

<table>
<thead>
<tr>
<th>variable</th>
<th>odds ratio (Exp. B)</th>
<th>Wald statistic</th>
<th>-2 log likelihood</th>
<th>model $\chi^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>constant</td>
<td></td>
<td></td>
<td>47.02</td>
<td></td>
</tr>
<tr>
<td>number of relevant eating problem strategies</td>
<td>2.03</td>
<td>4.17**</td>
<td>35.60</td>
<td>11.42</td>
</tr>
<tr>
<td>satisfaction with marital support</td>
<td>0.450</td>
<td>4.81**</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*p ≤ 0.10  **p ≤ 0.05   ***p ≤ 0.01   ****p ≤ 0.005
7.3.b.ii.b  maternal characteristics and child physical stature:
regression analyses

To examine the capacity of maternal characteristics for indicating child physical
development at six years, variables identified in previous chapters as significant indicators
of the height and weight for age of growth retarded and thriving children were entered into
multiple regression equations. In line with logistic regression analyses, the index of early
maternal adversity was included in all regression equations. Height and weight z scores
were used as dependent variables because these indices were more normally distributed
than centile data.

height for age

Variables describing maternal attributions, the occupational status of the main wage earner
and extent of maternal childhood maltreatment were included in forced entry regression
analysis on case group children’s height for age. The best statistical model was based on
maternal attributions alone; indices of occupational status and mother’s early adversity
were removed from the equation because they did not significantly improve the model.
Specifically, children who had failed to thrive were taller at six years when their mothers
attributed child peer-related problems to more personal, controllable and global causes ($R^2$
= 0.266; adjusted $R^2 = 0.244$; $F = 11.62$, $p \leq 0.005$; $\beta = 0.516$, $p \leq 0.005$).

Spearman’s Rank Order Correlations (Table 7.8) revealed a small correlation between
occupational status and maternal attributions, but this was just non-significant ($p \leq 0.07$).

<table>
<thead>
<tr>
<th>no. of relevant eating problem strategies</th>
<th>mother’s early adversity</th>
<th>family size at six years</th>
<th>satisfaction with marital support</th>
</tr>
</thead>
<tbody>
<tr>
<td>(N = 37)</td>
<td>0.180 **</td>
<td>-0.364**</td>
<td>-0.009</td>
</tr>
<tr>
<td>satisfaction with marital support</td>
<td>-0.445****</td>
<td>0.130</td>
<td></td>
</tr>
<tr>
<td>(N = 40)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>family size at six years</td>
<td>0.039</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(N = 39)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

** $p \leq 0.05$  *** $p \leq 0.01$  **** $p \leq 0.005$  two-tailed
Within the comparison group, accommodation type acted in conjunction with mother’s early adversity to indicate a highly significant portion of the variance in height for age of thriving children (Table 7.7). It should be noted that these associations were contrary to predictions, in that higher levels of childhood mistreatment, and poorer accommodation were indicative of greater physical stature. There was no evidence that these variables were associated (Spearman’s rho = 0.037, N = 39, p ≥ 0.80, two-tailed).

**Table 7.7** Regression of maternal characteristics on height for age z scores: control group (N = 33)

<table>
<thead>
<tr>
<th>variable</th>
<th>change in R²</th>
<th>adjusted R²</th>
<th>F</th>
<th>β</th>
</tr>
</thead>
<tbody>
<tr>
<td>accommodation type</td>
<td>0.199</td>
<td>0.175</td>
<td>8.43***</td>
<td>-0.446***</td>
</tr>
<tr>
<td>mother’s early adversity</td>
<td>0.165</td>
<td>0.325</td>
<td>9.43*****</td>
<td>0.406***</td>
</tr>
</tbody>
</table>

*p ≤ 0.10  ** p ≤ 0.05  *** p ≤ 0.01  **** p ≤ 0.005  ***** p ≤ 0.001

**Table 7.8** Spearman's Rank Correlations among maternal variables: failure to thrive group

<table>
<thead>
<tr>
<th>% personal controllable global (peer attributions)</th>
<th>mother’s early adversity</th>
<th>occupational status</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.071 (N = 37)</td>
<td>0.299* (N = 39)</td>
<td></td>
</tr>
<tr>
<td>occupational status</td>
<td>0.101 (N = 40)</td>
<td></td>
</tr>
</tbody>
</table>

*p ≤ 0.10  two-tailed

**Weight for age**

Forced entry regression was performed to evaluate the capacity of variables describing maternal satisfaction with marital support and mother’s early adversity to indicate the weight for age of children who had failed to thrive. These variables were strongly correlated (Spearman’s rho = -0.445, N = 40, p ≤ 0.005, two-tailed), and satisfaction with marital support alone provided the best indicator of child weight. This relationship was contrary to predictions, such that greater maternal marital satisfaction was associated with smaller weight for age among children who failed to thrive ($R^2 = 0.213$; adjusted $R^2 = 0.191$; $F = 9.48$, $p ≤ 0.005$; $β = -0.462$, $p ≤ 0.005$).
For control group children, indices of accommodation type, maternal report of early adversity, body mass index and attribution of child problems to personal, controllable, global causes to child were included in forced entry regression analysis on child weight for age. Maternal attributions were correlated with body mass index and accommodation type (although the latter association was non-significant; Table 7.9), and so regression analyses were repeated, removing each variable in turn, to determine which combination of variables indicated most variance in the weight of thriving children. Maternal body mass index and accommodation type together provided the best statistical model of weight for age among comparisons (adjusted $R^2 = 0.276$; see Chapter Four, Section 4.4.b.ii.b); thriving children were heavier when mothers had higher body mass indices, and families were rated as living in poorer accommodation.

### Table 7.9 Spearman's Rank Correlations among maternal variables:

<table>
<thead>
<tr>
<th></th>
<th>% personal controllable</th>
<th>accomm. type</th>
<th>mother's early adversity</th>
</tr>
</thead>
<tbody>
<tr>
<td>maternal body mass</td>
<td>0.410**</td>
<td>-0.296</td>
<td>-0.108</td>
</tr>
<tr>
<td>index</td>
<td>($N = 33$)</td>
<td>($N = 34$)</td>
<td>($N = 33$)</td>
</tr>
<tr>
<td>global (all attributions)</td>
<td>-0.054</td>
<td>0.037</td>
<td></td>
</tr>
<tr>
<td>($N = 37$)</td>
<td>($N = 39$)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>early adverse family</td>
<td>-0.031</td>
<td></td>
<td></td>
</tr>
<tr>
<td>experience</td>
<td>($N = 38$)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*p < 0.10 * *p < 0.05 two-tailed

### 7.3.c maternal characteristics and child psychological development

#### 7.3.c.i maternal characteristics and child cognitive development: regression analyses

Variables that were found to indicate child cognitive functioning in previous chapters were included in forced entry regression analyses, to determine which combination of maternal characteristics offered the best statistical model for indicating variance in measures of child cognition at six years. Once again, the index of early maternal adversity was included in all analyses. To reduce the complexity of this data set, details of regression analyses for child cognition *subscales* are only given if they contrast with analysis of factors associated with
children’s general cognitive functioning.

7.3.c.i.a general cognitive ability

Indices of socio-economic status, mother’s IQ, maternal use of high power problem solving strategies and maternal report of childhood maltreatment were entered into a regression equation to indicate GCI scores of previously growth retarded children. Overall socio-economic status was significantly correlated with problem solving and IQ (Table 7.10), and so regression analyses were repeated, removing each variable in turn, to determine the best indicators of child cognition.

<table>
<thead>
<tr>
<th>Table 7.10 Spearman’s Rank Correlations among maternal variables: failure to thrive group</th>
</tr>
</thead>
<tbody>
<tr>
<td>% high power problem solving strategies (N=37)</td>
</tr>
<tr>
<td>---------------------------------------------------------------</td>
</tr>
<tr>
<td>-0.337** (N=37)</td>
</tr>
<tr>
<td>---------------------------------------------------------------</td>
</tr>
<tr>
<td>WAIS-R (maternal IQ at 15 months) (N=40)</td>
</tr>
<tr>
<td>0.302* (N=40)</td>
</tr>
<tr>
<td>---------------------------------------------------------------</td>
</tr>
<tr>
<td>Osborn social index (N=40)</td>
</tr>
<tr>
<td>0.187 (N=40)</td>
</tr>
</tbody>
</table>

* p ≤ 0.10  ** p ≤ 0.05  two-tailed

The greatest proportion of variance in case group GCI scores was accounted for by mothers’ problem solving (change in $R^2 = 0.213$; adjusted $R^2 = 0.190$; $F = 9.22$, $p \leq 0.005$; $\beta = -0.462$, $p \leq 0.005$), in conjunction with maternal IQ (change in $R^2 = 0.041$; adjusted $R^2 = 0.209$; $F = 5.63$, $p \leq 0.01$; $\beta = 0.211$, ns) and mother’s early adversity (change in $R^2 = 0.003$; adjusted $R^2 = 0.188$; $F = 3.70$, $p \leq 0.05$; $\beta = -0.058$, ns). This finding is questionable, because there was a significant negative association between mothers’ problem solving and their accounts of adverse childhood care, and removal of the index of mother’s early adversity substantially reduced the power of the equation (adjusted $R^2 = 0.106$).
A scattergram of the association between mother's early adversity and high power problem solving (Figure 7.1) shows a non-linear relationship between these variables, and so an interaction effect for a subgroup of cases (for which the variables do not correlate) may have inflated the power of the equation. Given that mother's early adversity does not separately indicate variance in case group GCI (adjusted $R^2 = -0.004$), analyses were repeated, excluding this variable. The best statistical model for indicating case group children's general cognitive functioning was provided by mother's IQ alone ($R^2 = 0.173$; adjusted $R^2 = 0.152$; $F = 8.37, p \leq 0.01$; $\beta = 0.416, p \leq 0.01$); maternal problem solving was excluded because it did not significantly improve the equation. In line with expectations, growth retarded children showed better cognitive skills when their mothers had higher IQ scores.

Cognitive functioning of comparison children was clearly indicated by parental education and maternal attributions. Better cognitive skills among thriving children were indicated by higher levels of parental education, and fewer maternal attributions of child peer problems.
to personal, uncontrollable and global causes (Table 7.11). Report of mother’s early adversity was removed from the regression equation, because it was significantly correlated with parental education (Spearman’s rho = 0.312, N = 39, p ≤ 0.05, two-tailed) and maternal attributions (Spearman’s rho = -0.357, N = 32, p ≤ 0.05, two-tailed); attributions and levels of education were not related (Spearman’s rho = -0.097, N = 33, p ≥ 0.50, two-tailed).

<table>
<thead>
<tr>
<th>variable</th>
<th>change in R²</th>
<th>adjusted R²</th>
<th>F</th>
<th>β</th>
</tr>
</thead>
<tbody>
<tr>
<td>% personal uncontrollable global (peer attributions)</td>
<td>0.147</td>
<td>0.119</td>
<td>5.33**</td>
<td>-0.383**</td>
</tr>
<tr>
<td>parental education</td>
<td>0.469</td>
<td>0.590</td>
<td>24.01****</td>
<td>0.687*****</td>
</tr>
</tbody>
</table>

*p ≤ 0.10  ** p ≤ 0.05  ***p ≤ 0.01  **** p ≤ 0.005  *****p ≤ 0.001

7.3.c.i.b memory performance
Maternal high power problem solving and IQ provided the best statistical model for indicating case group children’s memory skills, accounting for 24.2% of the variance. Each variable made a statistically reliable contribution to the equation, and in line with analyses of GCI scores, high power problem solving and lower IQ were associated with limitations in child performance. Among comparisons, parental education acted with attribution of peer problems to personal, uncontrollable and global causes to account for 33.1% of the variance in memory functioning, in accordance with analyses of GCI scores.

7.3.c.i.c verbal performance
The most parsimonious model for indicating verbal skills among children who failed to thrive was provided by maternal IQ alone (adjusted R² = 0.169). In the control group, parental education was the only significant independent indicator of child verbal abilities (adjusted R² = 0.398).
7.3.c.i.d quantitative performance

Maternal use of low power problem solving was the only significant indicator of numerical skills among children who failed to thrive, although a non-significant trend implied that maternal IQ improved this equation. As shown in Table 7.12, case group children had poorer numerical skills when their mothers used fewer low power problem solving strategies. There were no significant associations among maternal variables. The quantitative skills of control group children were indicated by parental education alone ($R^2=0.316$), although a non-significant trend implied that inclusion of maternal social support improved this equation (see Table 4.17); these variables were significantly inter-related (Spearman’s rho = 0.456, $N = 40$, $p \leq 0.003$, two-tailed).

| table 7.12 regression of maternal characteristics on quantitative performance: failure to thrive group (N = 41) |
|---|---|---|---|---|
| variable | change in $R^2$ | adjusted $R^2$ | $F$ | $\beta$ |
| % low power maternal problem solving | 0.128 | 0.104 | 5.28** | 0.358** |
| WAIS-R (maternal IQ at 15 months) | 0.065 | 0.146 | 4.17** | 0.260* |

7.3.c.i.e perceptual performance

As reported in preceding chapters, maternal characteristics were not related to the perceptual skills of previously growth retarded children. In the comparison group, child performance was again best indicated by parental education and attributions of peer problems to personal, uncontrollable and global causes for the child ($R^2=0.518$).

7.3.c.ii maternal characteristics and child social cognition: regression analyses

Significant correlates of children’s social problem solving (identified in previous chapters) were included in forced entry regression analyses, to determine which combination of maternal characteristics offered the best statistical model for indicating variance in child social cognition at six years. Once again, the index of mother’s early adversity was included in all analyses.
### 7.3.c.ii.a Problem solving categories

Housing tenure was the only significant indicator of the variety of problem solving strategies suggested by children who failed to thrive. This variable alone accounted for 13.6% of the variance in child performance (see Chapter Four, Section 4.4.c.iii.a), such that better child performance was positively related to home ownership. Inclusion of maternal childhood adversity did not improve the power of this equation, and maternal adversity was not related to housing tenure (Spearman's rho = 0.165, N = 40, p > 0.30, two-tailed).

For the comparison group, variables describing housing tenure and number of suggested strategies for dealing with eating problems were entered into a regression equation, with the index of maternal childhood maltreatment. Maternal problem solving was correlated with housing tenure (see Table 7.13), and so analyses were repeated, with independent variables removed from the regression equation in turn, to determine the best statistical model. Maternal problem solving alone accounted for 31.3% of the variance in number of categories of problem solving strategy suggested by thriving children; as noted in Section 5.4.d.iv.a, this finding contrasted with predictions, suggesting that poorer maternal problem solving indicated better child functioning. Inclusion of the other variables did not significantly improve the power of this equation.

<table>
<thead>
<tr>
<th>Table 7.13</th>
<th>Spearman's Rank Correlations among maternal variables:</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>control group</strong></td>
<td></td>
</tr>
<tr>
<td>no. of strategies for eating problems</td>
<td>mother's early adversity</td>
</tr>
<tr>
<td>(N = 33)</td>
<td>housing tenure</td>
</tr>
<tr>
<td>housing tenure</td>
<td>0.146</td>
</tr>
<tr>
<td>***p ≤ 0.01</td>
<td>two-tailed</td>
</tr>
</tbody>
</table>

### 7.3.c.ii.b Problem solving flexibility

Problem solving flexibility among children who had failed to thrive was best indicated by variables describing levels of crowding (person : room ratio) and the number of strategies...
mothers suggested for dealing with eating problems; maternal report of early adverse care did not improve this equation (see Table 7.14). In line with predictions, case group children showed more flexible social cognitive skills when they lived in less crowded accommodation, and mothers were better at problem solving. Maternal problem solving was not related to crowding (Spearman’s rho = -0.183, N = 38, p ≥ 0.25, two-tailed) or mother’s early adversity (Spearman’s rho = 0.180, N = 39, p ≥ 0.25, two-tailed), and adversity and crowding were not associated (Spearman’s rho = -0.016, N = 39, p ≥ 0.90, two-tailed).

Indices of parental education, depression at 15 months, and extent of childhood adversity were used to indicate problem solving flexibility among thriving children. As shown in Table 7.14, mother’s depression at 15 months acted with parental education to indicate the flexibility of thriving children’s problem solving; in line with predictions, child performance was better when mothers had experienced lower levels of depression and were more highly educated. Mother’s early maltreatment was correlated with parental education in the control group, but maternal depression was not related to education (Spearman’s rho = -0.080, N = 46, p ≥ 0.50, two-tailed) or adversity (Spearman’s rho = 0.145, N = 39, p ≥ 0.30, two-tailed).

**Table 7.14** Regression of maternal characteristics on problem solving flexibility: failure to thrive (N = 39) and control group (N = 36)

<table>
<thead>
<tr>
<th>variable</th>
<th>change in $R^2$</th>
<th>adjusted $R^2$</th>
<th>$F$</th>
<th>$\beta$</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>failure to thrive group</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>number of suggested strategies for eating problems</td>
<td>0.160</td>
<td>0.136</td>
<td>6.69***</td>
<td>0.401***</td>
</tr>
<tr>
<td>person : room ratio</td>
<td>0.092</td>
<td>0.209</td>
<td>5.89***</td>
<td>-0.310**</td>
</tr>
<tr>
<td><strong>control group</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>parental education</td>
<td>0.108</td>
<td>0.084</td>
<td>4.49**</td>
<td>0.329**</td>
</tr>
<tr>
<td>maternal depression at 15 months (GHQ)</td>
<td>0.089</td>
<td>0.152</td>
<td>4.41**</td>
<td>-0.298**</td>
</tr>
</tbody>
</table>

*p ≤ 0.10  ** p ≤ 0.05  ***p ≤ 0.01  ****p ≤ 0.005  *****p ≤ 0.001
7.3.c.ii.c  problem solving relevance

The relevance of social problem solving by children who failed to thrive was indicated by socio-economic status and maternal problem solving; maternal report of early adversity did not improve this equation. Lower social-economic status, and more limited maternal strategies for dealing with child eating problems correlated with less relevant social cognitive skills among previously growth retarded children (see Table 7.15). Maternal problem solving was associated with socio-economic status (Spearman’s rho = 0.280, N = 39, p ≤ 0.10, two-tailed), but this was not significant, and the best statistical model was provided when both these variables were included in the regression equation. In the control group, parental education alone accounted for 24.0% of the variance in child functioning, providing the best statistical model of thriving children’s problem solving relevance (see Table 4.19).

<table>
<thead>
<tr>
<th>variable</th>
<th>change in R²</th>
<th>adjusted R²</th>
<th>F</th>
<th>β</th>
</tr>
</thead>
<tbody>
<tr>
<td>number of suggested strategies for eating problems</td>
<td>0.156</td>
<td>0.132</td>
<td>6.49**</td>
<td>0.396**</td>
</tr>
<tr>
<td>Osborn social index</td>
<td>0.103</td>
<td>0.216</td>
<td>5.96***</td>
<td>0.354**</td>
</tr>
</tbody>
</table>

*p ≤ 0.10  ** p ≤ 0.05  ***p ≤ 0.01  **** p ≤ 0.005
7.4 discussion

The research reported in this dissertation offers a descriptive account of the long term correlates of non-organic infant growth failure in a sample of mothers and their six year old children. Accordingly, this chapter examined mother and child functioning in the present sample, with regard to three specific aims:

- to identify maternal characteristics associated with having parented a six year old child who failed to thrive without organic cause in infancy
- to determine whether indices of maternal functioning distinguished any subgroup of previously growth retarded children
- to identify maternal characteristics that indicated differential patterns of development in the present sample of previously growth retarded and thriving children.

There was little evidence that maternal functioning at the time of follow-up varied between case and comparison group families, but results showed clear links between mothers’ characteristics at 15 months and six years and the timing of infant growth faltering and the development of previously growth retarded and thriving children in the present sample. The present study is exploratory, and the causal nature of links between mother and child functioning has not been addressed, but nevertheless, the findings presented here imply the utility of studying maternal characteristics for illuminating the long term consequences of non-organic failure to thrive.

7.4.a maternal characteristics and child physical development

7.4.a.i a history of failure to thrive

Logistic regression provided weak evidence that failure to thrive group mothers differed from comparisons at six years. Mothers of previously growth retarded children reported less improvement in socio-economic status, but this variable provided weak discrimination between cases and controls. Control group status was associated with minimal increase in the likelihood of socio-economic improvement; this observation is consistent with the suggestion that analyses of change in social index may have exaggerated small non-significant differences in socio-economic status at 15 months and six years, creating a
spurious impression of intergroup variation. It appears that change in socio-economic functioning has limited utility for discriminating between case and comparison families; the degree of overlap between the groups may not be surprising, for reasons that have been highlighted previously.

First, the present research was unusual in studying a non-referred community based sample. Families of referred children may be more distinctive because they conform more closely to traditional maltreatment models of failure to thrive (see Chapters One and Two), and so the present study probably offers a less extreme picture of the sequelae of growth retardation than would be derived from clinical research. Second, if non-organic growth faltering has diverse aetiologies (Woolston, 1985), mothers whose children have failed to thrive probably do not form a uniform group, and so variation within the case group could obscure any evidence of case-comparison differences.

Even if evidence of case-control variation in socio-economic change is accepted, it is important to note that results of earlier analyses have consistently shown the characteristics of case and control group mothers to be very similar. There was little indication of intergroup distinction on most of the facets of caregiver characteristics described in previous chapters (see Chapters Four, Five, and Six), and so it may be concluded that, in general, mothers whose children failed to thrive did not differ from mothers whose children grew normally in infancy.

Analyses presented in Chapter Five indicated that mothers of previously growth retarded children showed patterns of explanation associated with relationship dysfunction (e.g., Brewin et al., 1991), in that they made more attributions for child behaviour problems to personal, controllable or uncontrollable and global causes (e.g., "just being spiteful"). It is interesting to note that maternal attributions did not contribute to classification of group membership, despite clear evidence of intergroup differences; this may be understood with regard to the distribution of maternal responses. For example, there was considerable variation in the proportion of personal, controllable and global attributions made by case
group mothers, and a substantial minority made no such attributions (Table 5.6 and Figure 5.1). If these patterns of explanation are confined to a subgroup of mothers whose children failed to thrive, as argued in Chapter Five, it is not surprising that maternal attributions do not indicate a history of failure to thrive for the case group as a whole. The observation that a subgroup of case group mothers made attributions associated with relationship difficulties should be illuminated by identification of maternal characteristics related to the timing and developmental consequences of failure to thrive.

### 7.4.a.ii early and late growth failure

Maternal characteristics at 15 months and six years clearly distinguished between children who failed to thrive early or later within the first year. Mothers’ attributions and strategies for dealing with child eating problems acted in conjunction with levels of maternal depression at 15 months to indicate the timing of growth failure in the first year. Mothers whose children failed to thrive in the second six months of life were more depressed at fifteen months and had greater difficulty in generating solutions for dealing with children’s eating problems at six years. Moreover, current maternal problem solving skills were not related to mothers’ IQ, indicating that these variables describe two separate aspects of maternal functioning. These findings imply that later failure to thrive corresponded with maternal characteristics that have been linked to caregiving difficulty (see Azar et al., 1984; Cummings and Davies, 1994) but, in contrast, later growth retardation was associated with fewer personal, controllable and global attributions.

Given a substantial literature implying relationship difficulties associated with personal, controllable, and global attributions (e.g., Brewin et al., 1991; Fincham and Bradbury, 1992), it is surprising that this pattern of explanation should be more common among early failure to thrive group mothers, whose responses on other measures suggested lower risk of parenting problems. This result implies that personal, controllable and global attributions were not associated with other caregiver stressors in the present sample, but analyses of links between maternal attributions and child development are necessary before such a conclusion can be accepted. More importantly, the odds ratio (Exp. B = 1.08)
showed negligible increase in the likelihood that growth faltering would have occurred earlier in life when mothers made more personal, controllable, and global attributions, suggesting that maternal explanations were not an important indicator of intergroup distinction.

Finally, as discussed in Chapter Five, it should be noted that the analyses presented here do not provide evidence of causality. It may be argued that the patterns of attribution noted among mothers in the early FTT group stem from the experience of parenting a child who fails to thrive. If early growth retardation reflects temperamental characteristics in the child (e.g., Goldson et al., 1985), mothers might well attribute child eating difficulties to personal, controllable, global causes (e.g., “he’s trying to get attention”). That argument is plausible, but must remain speculative, since the present study did not include measures of temperament in the present sample of growth retarded or thriving children. Nevertheless, analyses in Chapter Three found no evidence of social skill deficits among children who failed to thrive earlier in the first year, as might be expected if this group had temperamental difficulties.

Despite the apparent incongruity of the attributional data, mothers whose children failed to thrive later in the first year appeared to be at greater risk of caregiving difficulty, in terms of their social problem solving at six years and psychosocial functioning at 15 months. This observation highlights a likely indicator of variation in the characteristics of children who have presented with the symptom of growth retardation, and highlights the potential of considering the timing of infant growth failure as a means of refining the definition of failure to thrive. Finally, if late failure to thrive is associated with maternal disadvantage, limitations in child development might be anticipated in this group at six years. Comparisons of children with early and late growth retardation (see Chapter Three) did not support that argument, but analyses of factors indicating child functioning should illustrate whether the characteristics of caregiving observed among mothers in the late FTT group were associated with the development of case or control group children at six years.
small and larger failure to thrive group children

Analysis of factors discriminating between growth retarded children who were small or larger for age at six years provided inconsistent evidence that these subgroups could be defined in terms of current maternal functioning. Mothers of larger children were significantly better at suggesting ways of dealing with child eating problems, but these women also reported less satisfaction with marital support; this factor has been associated with greater caregiving risk (e.g., Belsky et al., 1989). Moreover, the findings warrant caution, regardless of the direction of relationships between mother and child functioning, since almost 40% of the larger case group children were incorrectly classified by this model.

The observation that maternal characteristics provide a more effective classification of smaller than larger children may not be surprising, given the way in which these groups were defined. Case group children were classified as “small for age” if they were below the 20th centile in terms of height and weight for age at six years; the “larger” group consisted of all children who had failed to thrive and were above the 20th centile for height or weight for age. That categorisation is justifiable with reference to evidence that failure to recover stature following early growth retardation is associated with more disadvantaged social, physical and biological environments (e.g., Colombo, de la Parra, and López, 1992), but it meant that some “larger” children were below the 20th centile for height or weight, whereas others were growing at the 90th centile (see Table 3.4). Logistic regression may have provided weak classification of the larger FTT group children, because they comprised a heterogeneous group, relative to the uniformly “small” children. A fuller understanding of links between maternal characteristics and physical stature among children who failed to thrive may be achieved through analyses of factors indicating children’s height and weight z scores at six years.

In conclusion, it is important to acknowledge the efficacy of maternal variables as an indicator of limited child stature; for example, a decrease of one strategy in the number of
solutions mothers suggested for dealing with eating problems was associated with a two-fold increase in the likelihood that a previously growth retarded child would be small for age. The causal nature of this relationship can only be determined through future prospective research. Limited maternal skills for dealing with difficult mealtimes might limit child nutritional intake and so give rise to small stature at six years, but it could equally be argued that the range of mealtime strategies a mother sees as appropriate may become limited by the continued experience of caring for a child with inherent feeding difficulties. Given that caveat, the observation that mothers of smaller case group children had difficulty in solving child eating problems might fruitfully be applied in intervention; regardless of any attempt to define failure to thrive in terms of caregiving. The potential applications of these findings will be explored in more detail in Chapter Eight.

**Factors indicating physical stature**

Regression analyses indicated that maternal attribution of peer-related problems to personal, controllable and global causes (e.g., “he likes to show off”) was strongly indicative of better physical stature among case group children, in terms of height for age, and previously growth retarded children were significantly lighter for age when mothers reported greater satisfaction with marital support. As noted previously, personal, controllable, and global attributions have been associated with relationship difficulties (e.g., Brewin et al., 1991; Fincham and Bradbury, 1992), but the positive relationship between these patterns of maternal explanation and height for age of case group children suggests that these cognitions are associated with better developmental outcomes following failure to thrive. Analyses of factors indicating child psychological development are necessary to determine whether personal, controllable and global attributions are universally associated with better child functioning, or whether this relationship is specific to child physical stature.

In accordance with case group findings, analyses of comparison children’s physical stature demonstrated that indices of maternal disadvantage were linked to better child development. Control group mothers who experienced more severe childhood maltreatment had children
who were taller for age, and these children were taller and heavier when they lived in poorer accommodation. Maternal body mass index also indicated the weight for age of children who grew normally in infancy; as discussed in Chapter Four, it is interesting to note that this variable did not relate to stature among previously growth retarded children.

In summary, relationships between maternal characteristics and child physical development in the present sample appeared to operate in a manner opposite to that found in the literature linking mothers’ caregiving cognitions and socio-economic status to child psychological development (e.g., Pettitt et al., 1988; Duncan et al., 1994). It is not clear why this should be, but two points warrant attention. First, definition of failure to thrive describes a heterogeneous group (e.g., Woolston, 1985). Children whose failure to thrive is associated with caregiving difficulties may recover stature when they start eating outside the home, whereas more adaptive maternal functioning in cases of smaller children who failed to thrive might reflect an inherent biological or neurological cause for growth retardation (e.g., Goldson, 1989; Mathisen et al., 1989), which continues to disrupt child physical development over time. This argument remains speculative without prospective research, and more importantly, it does not account for observed links between caregiving stressors and better stature among control group children.

A second issue concerns the extrapolation of research examining caregiving and child psychological functioning to data on child physical development in the present study. A wide body of research has examined links between child growth and socio-economic risk factors (e.g., Elwood, Sweetnam, Gray, Davies, and Wood, 1987; Colombo, de la Parra, and López, 1992), and there is considerable evidence of links between caregiver characteristics and child psychological development (e.g., Seifer et al., 1992; Cummings and Davies, 1994; Duncan et al., 1994), but a dearth of research links maternal characteristics to child physical stature.

The determinants of physical and psychological development are probably very different. Influences on physical growth include genetics and nutrition, which is in turn affected by
factors including culture, season and family size (see Tanner, 1989, for an overview); the development of psychological functioning may be more directly influenced by social interaction and communication, notably with the primary caregiver (e.g., Shatz, 1982; Schaffer, 1992). Correlates of child development in the present sample may reflect that variation, such that associations between child stature and maternal characteristics arise from different mechanisms to those identified in studies of child psychological development.

These arguments may be explored in future prospective research, but regardless of the causal nature of links between mother and child functioning, consideration of maternal characteristics has provided a valuable indicator of differential physical development among children in the present sample; maternal variables accounted for substantial proportions of variance in the height and weight for age of growth retarded and thriving children. Contrary to theoretical predictions, better physical development was indicated by characteristics such as maternal report of childhood maltreatment and attributions that have been associated with relationship difficulties, and so analyses of child social and cognitive functioning are necessary, to determine whether similar relationships link mothers’ characteristics to physical and psychological development among children in the present sample.

**7.4.b maternal characteristics and child psychological development**

**7.4.b.i factors indicating child cognitive functioning**

In line with predictions, growth retarded children showed better general cognitive functioning if their mothers had higher IQs, and maternal problem solving indicated case group children’s memory and numerical skills, such that mothers’ use of highly power-assertive strategies was associated with limitations in child memory, and children had poorer numerical abilities when their mothers offered fewer low power solutions for child-care problems. Within the control group, parental education was the most important indicator of children’s cognitive functioning, although mothers’ attributions of child peer
problems to personal uncontrollable and global causes made a significant contribution to this statistical model. In contrast to analyses of child physical stature, all these findings are consistent with the literature on maternal functioning and child development, but several points warrant specific attention.

Maternal characteristics accounted for substantially less variance in the cognitive functioning of case group children, relative to controls. This distinction was most notable with regard to child perceptual performance, which was not related to maternal functioning in the case group; by contrast, maternal characteristics accounted for over 50% of the variance in thriving children's perceptual skills. Arguably, some variable, or group of variables, specific to the experience of early growth failure, may account for perceptual skill in the case group. That contention is consistent with Puckering, Pickles, Skuse, Heptinstall, Dowdney and Zur-Szpiro's (1995) observation that maternal characteristics could not explain differences in the cognitive functioning of the growth retarded children and comparisons that they studied. It was argued in Chapter Three that early brain malnutrition might give rise to cognitive deficits among children who fail to thrive, and other researchers have found evidence of this (e.g., Leonard et al., 1966; Puckering et al.). Nonetheless, there was no clear evidence of general cognitive or specific perceptual deficits among previously growth retarded children in the present study, as might be expected if psychological functioning was related to early growth failure.

Alternatively, the findings reported here may be explained in terms of variation within the failure to thrive group; if maternal characteristics correlate with cognitive abilities for some previously growth retarded children but not for others, links between mother and child functioning may have been obscured. At fifteen months children who failed to thrive early in the first year showed impairments in cognitive functioning, and this was explained in terms of early brain malnourishment (Skuse et al., 1994). Analyses at six years did not show differences between children who failed to thrive early or later in the first year, but arguably, given evidence of caregiving disadvantage in the late FTT group, this lack of distinction may have arisen if both groups experienced limitations in cognitive development
for different reasons.

Early growth retardation may adversely affect infant brain growth, and so limit cognitive functioning; children who failed to thrive later may experience cognitive deficits associated with maternal disadvantage. That contention has not been tested, and must remain within the realms of speculation without prospective research. Furthermore, in the present study, separate analyses of factors indicating child functioning in the early and late FTT group may be unreliable given the limited sample size, and number of independent variables, and it should be noted that later growth failure was not uniformly associated with indicators of caregiving risk.

Cases and comparisons also differed in the aspects of maternal functioning that correlated with child cognitive development. Foremost, as discussed in Chapter Four, parental education indicated thriving children’s performance, but this variable was not related to the cognitive skills of growth retarded children, which were associated with mothers’ IQ scores. In line with comparison group findings, Duncan et al. (1994) reported that parental education had positive associations with five year old children’s cognitive skills; it is noteworthy that this relationship was not significant among children in the present sample who may be at risk of psychological deficits following early growth faltering.

The observation that maternal problem solving indicated FTT group children’s memory and quantitative abilities also deserves consideration, since these were the only indices to discriminate between case and comparison children’s psychological functioning at six years. Maternal caregiving strategies appeared to have particular relevance for indicating the physical and psychological functioning of previously growth retarded children; while the causal nature of these associations has not been examined, the utility of considering mothers’ problem solving in intervention with failure to thrive will be explored in more detail in Chapter Eight.

In conclusion, findings contrasted with analyses of physical stature, in showing that
characteristics previously linked to caregiving risk were associated with limitations in the
cognitive functioning of children who failed to thrive or grew normally in infancy. A
causal analysis depends on future prospective research, but these observations are
consistent with the argument that different processes determine children’s physical and
psychological development. Consideration of factors indicating child social cognition will
provide an additional opportunity to explore this issue, but the results presented here
indicate a need for care in applying models of caregiving and child psychological
development to considerations of the physical stature of children who failed to thrive.

7.4.b.ii factors indicating child social cognition
Maternal characteristics were related to the social cognitive skills of case and control group
children in the present study, although the direction of relationships varied across different
indices of problem solving. Better housing tenure was indicative of greater variety in the
strategies that growth retarded children offered for dealing with social dilemmas, as shown
by number of categories of suggested solution, but this variable was the only significant
indicator of problem solving categories in the case group. Among comparisons, maternal
strategies for dealing with eating problems indicated more than 30% of the variance in
problem solving categories, but in contrast to predictions, there was a strong negative
correlation between these variables. It is not clear why social cognitive difficulties among
thriving children would be related to better maternal problem solving. As discussed in
Chapter Five, this finding may reflect a methodological issue, if maternal strategies for
dealing with problems derive from different experiences of child eating among cases and
controls.

Analyses of factors related to child problem solving categories were incongruous, in that
the relevance and flexibility of children’s strategies were clearly indicated by maternal
characteristics, in accordance with previous research (e.g., Hart et al., 1990). Failure to
thrive group children showed more inflexible problem solving when their mothers
suggested fewer ways of dealing with eating problems, and the family lived in more
crowded accommodation. Maternal strategies for dealing with child eating problems also
indicated the relevance of case group children's problem solving, acting in conjunction with socio-economic status to account for over 20% of the variance. These findings clearly demonstrate that adaptive maternal problem solving and socio-economic advantage are associated with better social-cognitive outcomes for children who failed to thrive.

Similar patterns of association were found among comparisons, although, as with child cognition, different variables indicated child functioning in each group. Parental education was an important variable in the control group, accounting for significant portions of the variance in the relevance and flexibility of thriving children's problem solving, in accordance with analyses of child cognitive abilities. Higher levels of maternal depression at 15 months were indicative of inflexible problem solving among comparison children at six years. This finding is consistent with research showing that early maternal depression may be associated with long term developmental disadvantage for the child; Cummings and Davies (1994, p 78) suggested that children of depressed parents may come to rely “exclusively and inflexibly on social withdrawal”.

The observation that social-cognitive flexibility and relevance were indicated by maternal characteristics that have been associated with risk of caregiving difficulties, while variety of categories was not, can be understood in terms of an argument highlighted by Rubin and Rose-Krasnor (1992). Suggestion of a wide variety of problem solving strategies may not reflect adaptive social functioning; Berg (1989, in Rubin and Rose-Krasnor) observed that children with limited social skills tend to switch from one strategy type to another if they encounter difficulties, instead of adapting an existing approach to meet the needs of a situation. Accordingly, qualitative examination of problem solving relevance and flexibility might provide a more reliable analysis of children's social adjustment than quantitative evaluation of number of suggested strategies. That contention is borne out by the observation that analyses of factors indicating the relevance and flexibility of children's social problem solving correspond to observations regarding child cognition. By contrast to findings relating to child physical stature, characteristics associated with risk of caregiving difficulties were clearly associated with poorer psychological functioning among
previously growth retarded and thriving children. These findings are consistent with other studies of risk (e.g., Seifer et al., 1992), and support the contention that different mechanisms link maternal functioning to child physical and psychological development.

7.5 conclusions
Analyses presented in this chapter provided little indication that the social and psychological characteristics of mothers in the present sample were related to their child’s experience of non-organic growth faltering in infancy. In contrast, the timing of failure to thrive in infancy was clearly linked to mothers’ functioning at 15 months and six years, and maternal characteristics accounted for significant portions of variance in the physical and psychological development of previously growth retarded and thriving children in the present sample.

Change in socio-economic status was the only variable to differentiate cases and controls, but this variable provided very little distinction between the groups. Weak discrimination may reflect community sampling, which probably offers a less extreme picture of the sequelae of failure to thrive than is found in studies of referred families. Furthermore, sample heterogeneity might obscure intergroup variation, and reflect diverse aetiologies for infant growth failure. The contention that children who fail to thrive form a heterogeneous group was borne out by the observation that mothers whose children experienced later growth faltering reported higher levels of depression at 15 months and less effective problem solving at six years, relative to mothers whose children failed to thrive in the first six months of life. The causal nature of these findings has not been addressed, but the observation that maternal characteristics at 15 months and six years correspond to the timing of growth failure in the first year has implications for future research and intervention with families of growth retarded children, which will be discussed in Chapter Eight.

Contrary to the literature on caregiving and child psychological development, limitations in child stature were generally associated with better maternal functioning, although mothers
of smaller children generated fewer solutions for child eating problems. Mothers of taller case group children made more personal, controllable and global attributions, and children with a history of growth faltering were heavier if their mothers reported less satisfaction with marital support. In addition, comparison children who lived in poorer accommodation were taller and heavier; maternal report of childhood maltreatment also indicated greater height for age in this group. Arguably, children whose small stature reflects maternal social or psychological disadvantage may be able to recover stature by self-feeding as they grow older, but this interpretation can only be evaluated through prospective research. Furthermore, this interpretation cannot explain why similar links between maternal characteristics and child stature would be apparent among comparisons who grew normally in infancy.

Alternatively, relationships between maternal characteristics and child physical stature may not correspond to the literature on child psychological development because different mechanisms link parenting with child physical and psychological functioning. Analyses of factors associated with child psychological development were consistent with that contention; characteristics previously linked with risk of caregiving difficulties consistently indicated limitations in cognitive and social-cognitive functioning among cases and controls. For example, maternal problem solving skills positively related to memory and numerical skills among previously growth retarded children. In addition, attribution to personal uncontrollable and global causes (e.g., "it's just her nature") indicated poorer cognitive performance on a range of indices among controls, and parental education was strongly associated with better performance on all indices of thriving children's psychological functioning except problem solving categories. That incongruous finding may be viewed with caution, since it is exceptional and arguably, the variety of suggested problem solving categories may not prove a reliable indicator of social cognitive skill (Rubin and Rose-Krasnor, 1992).

It is interesting to note that, by contrast with comparison group findings, child cognitive functioning in the failure to thrive group was primarily indicated by maternal IQ, rather than
parental education. Furthermore, maternal characteristics indicated less variance in case group children’s functioning, relative to controls. Cognitive skills among children who failed to thrive may be partly explained in terms of a critical period for brain growth (e.g., Frank, 1985): the effects of malnutrition may account for variance in psychological functioning that is unexplained by the present analyses, but this interpretation must remain speculative within the limits of the present study. Heterogeneity in the case group could also have obscured links between mother and child characteristics.

The results presented in this chapter imply the utility of studying maternal characteristics for understanding the sequelae of non-organic failure to thrive for the mother and child. There was little distinction between case and control group mothers at six years, suggesting that definition of non-organic failure to thrive in infancy does not provide a stable indication of maternal characteristics by the time children are six years old. That observation may not be surprising, given arguments that infants who fail to thrive comprise a heterogeneous group (e.g., Woolston, 1985). Moreover, indices such as maternal perceptions of social support or child behaviour are unlikely to be stable, because they refer to the mother’s current experiences, which change as time passes and the child develops. Nevertheless, the timing of infant growth failure was reliably associated with maternal characteristics at 15 months and six years, indicating a stable basis for exploring the sequelae of growth faltering; prospective research is necessary to determine the causal nature of links between maternal functioning and early or later growth faltering.

Variables previously associated with caregiving risk did not indicate limited child stature in the present sample, although they were clearly linked to psychological disadvantage among previously growth retarded and thriving children. Future research might usefully apply these findings in developing an explanatory model of caregiving and the developmental consequences of growth failure, in an attempt to identify causal mechanisms, and distinguish between the processes that link maternal characteristics to child physical and psychological development. The findings reported in this chapter offer a useful description of current maternal characteristics associated with a history of failure to thrive, suggesting
that maternal functioning provides a valuable indicator of variation in the timing and development sequelae of infant growth retardation. The implications of these observations for future research and intervention with failure to thrive will be examined in more depth in Chapter Eight.
chapter eight
conclusions

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8.1 introduction

The research reported in this dissertation sought to address theoretical and methodological limitations in the failure to thrive literature, in order to provide a descriptive account of maternal social and psychological characteristics associated with a history of non-organic growth faltering, and with the developmental sequelae of growth retardation. The present chapter will summarise the findings of this research, with reference to the aims of the thesis, before going on to account for issues that may limit any conclusions. Subsequently, possible directions for future research and intervention will be discussed, and the dissertation will conclude by considering potential implications for definition of the syndrome of failure to thrive.

Non-organic failure to thrive has traditionally been ascribed to inadequate parenting (e.g., Patton and Gardner, 1962; Lobo, Barnard, and Coombs, 1992), despite inconsistent evidence in the literature of maternal characteristics associated with the syndrome. The current definition of failure to thrive as a feeding disorder (DSM-IV, American Psychiatric Association, 1996) also indicates a need to consider the carer, because feeding is a transactional process (Skuse, 1994). Results of observational studies have suggested that mothers of growth retarded infants are less sensitive, communicative and responsive with their children than mothers of thriving controls (see Casey et al., 1984; Heptinstall et al., 1987), but studies of maternal social and psychological characteristics associated with failure to thrive have been constrained by theoretical and methodological inadequacies, including a lack of attention to the range of factors that can influence the quality of caregiving (e.g., Belsky, 1984; Simons, Lorenz, Chyi-In, and Conger, 1993).

Investigations of the aetiology of child maltreatment (e.g., Belsky, 1984; Ammerman, 1990; Hillson and Kuiper, 1994) have demonstrated that mothers' experience of current social or psychological disadvantage and maternal history of adverse childhood care can increase vulnerability for parenting difficulties, and maladaptive social information.
processing about events in child care has been linked with physically abusive caregiving (see Bugental, 1993; Milner, 1993). Models of the determinants of parenting, such as Hillson and Kuiper's (1994) analysis of stress and coping, or Bornstein, Haynes, Painter, Rahn et al.'s (1997) investigation of the determinants of maternal competence have taken account of these potential influences. Current research suggests an association between parenting behaviour and infant growth retardation, but there has yet to be an adequate prospective study of the influences that guide mother and child behaviour in the interaction. This dissertation does not offer such a study, but application of the caregiving literature should also enhance understanding of maternal characteristics associated with a history of failure to thrive and with the developmental consequences of the syndrome. Arguably, a descriptive analysis of the long-term correlates of growth faltering for the child and mother is necessary to evaluate the utility of defining a syndrome of failure to thrive.

In addition to these theoretical issues, several methodological difficulties undermine findings in the failure to thrive literature. First, sampling problems are widespread (see Drotar, 1990). Reliance on referred samples limits generalisability, because most cases of infant growth retardation are not identified (Skuse, Wolke, and Reilly, 1992), and inadequate use of comparisons makes it difficult to determine whether findings are characteristic of failure to thrive. Studies have also been restricted by clinic-based assessment: research in the home probably offers a better understanding of the context of the mother-child relationship, and it could address the problems of sample attrition encountered in previous investigations (e.g., Drotar and Eckerle, 1989). Finally, the methodology of the failure to thrive literature was criticised for reliance on global questionnaire based assessments of maternal functioning, which could be vulnerable to variable literacy and artifactual responding.

With regard to these concerns, the present study used a home-based semi-structured interview with an unreferred sample of mothers whose six year old children failed to thrive in infancy. Specifically, the study sought to determine whether child characteristics (in terms of the occurrence and timing of failure to thrive in infancy and subsequent physical
and psychological development) would be associated with current maternal psychological
and social functioning, cognitions about events in caregiving, and experience of childhood
care. Child social competence and cognitive abilities were examined using standardised
school-based assessments; physical stature was determined from school nurse records.

This dissertation explored current functioning among mothers and their six year old
children. Findings are descriptive of the sample at the time of data collection, and cannot
contribute to an explanatory model of failure to thrive. Some measures reported in
preceding chapters, such as retrospective accounts of maternal childhood care, refer to
stable events or experiences that preceded infant growth faltering, but others describe
factors that may vary over time. For example, maternal attributions for child behaviour are
likely to be sensitive to the developmental constraints operating on child behaviour (e.g.,
Dix, 1993), and so the nature of mothers' explanations at six years probably does not
correspond to their understanding of child behaviour in infancy. Maternal responses at the
time of follow-up will also be shaped by events, such as changes in living conditions or
family structure, that took place between 15 months and six years.

The research reported here aimed to describe the long term sequelae of non-organic failure
to thrive for the mother and child, with regard to three general objectives:

• First, the argument that failure to thrive is associated with developmental vulnerability
  was explored through comparisons of the physical and psychological development of
  previously growth retarded and thriving children at six years of age. Relationships
  between mother and child functioning were also examined, to determine whether
caregiver characteristics indicate differential patterns of child development following
  early growth retardation.

• The second area of interest was to consider the long term correlates of infant failure to
  thrive for the mother, and specifically, to determine whether maternal social and
  psychological functioning at six years was associated with having a child who failed to
  thrive in infancy, through comparisons of mothers of previously growth retarded
  children with mothers whose children thrived in infancy.
Finally, children who have failed to thrive may comprise a heterogeneous group (Woolston, 1985) and so analyses were carried out to determine whether it was possible to distinguish a subgroup of previously growth retarded children on the basis of mother or child characteristics at the age of six.

8.1. Child development and failure to thrive

8.1.a. Comparisons of previously growth retarded and thriving children

There is evidence that failure to thrive creates risk for cognitive impairments and long term limitations in physical stature (e.g., Kristiansson and Fällström, 1987; Skuse et al., 1994), and severe growth faltering or malnourishment in infancy may have a critical adverse effect on development (e.g., Frank, 1985; Rose, 1994). Accordingly, physical and psychological deficits might be expected among all children in the present sample who failed to thrive in infancy, because growth retardation during a critical period has limited their developmental potential. Nevertheless, environmental influences also play an important role in recovery from early malnutrition (see, e.g., Colombo, de la Parra and López, 1992). If infants who fail to thrive comprise a heterogeneous group (e.g., Woolston, 1985), environmental characteristics associated with the syndrome may also be varied; the developmental consequences of infant growth failure might reflect that diversity, such that children who failed to thrive would not show a uniform pattern of physical or psychological deficits at six years.

Failure to thrive was not universally associated with limited development among children in the present sample at six years of age. Previously growth retarded children were, on average, significantly smaller than comparisons, but a substantial minority was above the population average (50th centile) in terms of height and/or weight for age. The observation that children who failed to thrive performed more poorly than comparisons on tests of memory and quantitative functioning is consistent with the thesis that early growth faltering has a negative impact on brain development; however, it is not clear why difficulties should be specific to these indices of cognitive functioning. Moreover, any conclusion of developmental impairments among children who failed to thrive was undermined by lack of
evidence of case-control differences in social-cognitive skills.

8.1.a.ii  early and late growth failure

Apparent similarities in the developmental functioning of cases and comparisons in the present study may be partly understood in terms of within group variation; case-control differences will be obscured if some children who failed to thrive experience developmental problems, and others do not. Notably, if there is a critical period for cerebellar development, it probably occurs during the first six months of life (Skuse et al., 1994), children who failed to thrive early in the first year might be more likely to experience developmental impairments than those who experienced later growth retardation. Analyses of patterns of development within the failure to thrive group were carried out to examine this contention, but children with early growth failure had no more limitations in physical stature, cognitive abilities, or social-cognitive skills than children who failed to thrive later in the first year. Events between infancy and six years may have influenced children’s development, and these in turn could be related to the causes of infant growth failure.

8.1.a.iii  small and larger failure to thrive group children

A distinction was made between case group children who remained small for age at six years (below the 20th centile for height and weight) and those who were larger at the time of the follow-up assessment, to determine whether different physical outcomes following growth failure were related to variation in child psychological functioning. Smaller growth retarded children showed less flexible and relevant social problem solving skills, relative to larger children. This result could be explained in terms of cognitive deficits resulting from malnutrition that also limits physical stature, but it is not clear why these problems should be specific to social information processing: there were no differences in the cognitive skills of these groups. Moreover, the retrospective design of the present study does not permit causal inference. Small stature might be caused by poor problem solving skills, if these limit the child’s ability to achieve adequate nutrition during difficult mealtime interactions. Alternatively, both physical and psychological development may be determined by environmental factors, including characteristics of the primary caregiver and
other family members; for example, sibling relationships have been linked to mother-infant feeding (Fosson and Wilson, 1987) and to child social cognitive skills (e.g., Slomkowski and Dunn, 1992).

8.1.a.iv conclusions

The occurrence and timing of growth retardation did not clearly account for the development of children in the present sample, although failure to thrive was generally associated with limited physical stature, and there was evidence of impaired memory and numerical skills among previously growth retarded children. It was argued that analysis of the development of children in the present study must account for the role of wider influences on physical and psychological functioning (e.g., Colombo et al., 1992; Slater, 1995). With regard to these concerns, an adequate description of the developmental consequences of infant growth retardation depends on consideration of maternal characteristics associated with child physical and psychological functioning.

8.1.b maternal characteristics and child physical development

8.1.b.i a history of failure to thrive

The second aim of this dissertation was to determine whether maternal social and psychological characteristics at six years were associated with having a child who failed to thrive without organic cause in infancy, through comparisons of mothers of previously growth retarded children with mothers whose children thrived in infancy. The following caregiver characteristics have been highlighted as potential determinants of parenting (e.g., Belsky, 1984; Hillson and Kuiper, 1994) that are linked to child outcomes (e.g., Mills and Rubin, 1990; Duncan et al., 1994), and so they formed the focus of assessments of maternal functioning in the present study:

- mothers’ social and psychological functioning
- maternal cognitions about events in child care
- maternal experience of adverse childhood care or abuse.
mothers' psychological and social functioning

Psychosocial disadvantage has been described as a key source of stress in parenting (see, e.g., Belsky, 1984) and a range of evidence links maternal psychological disturbance, social isolation, and socio-economic disadvantage to the experience of caregiving problems. There was no evidence that current social disadvantage or mothers' past or present psychological disturbance was related to the child's history of failure to thrive in the present study. Case group mothers did not report higher levels of depression at 15 months or six years, and they did not differ in their accounts of current or previous disordered eating from women whose children grew normally in infancy. Moreover, mothers of previously growth retarded children reported similar levels of social support and socio-economic disadvantage, relative to comparisons, although case group mothers reported less improvement in socio-economic functioning between 15 months and six years.

Limited improvement in socio-economic status may be interpreted as an outcome of infant growth retardation, in light of Newberger and colleagues' (1986) contention that families may become isolated if they feel the “failure” in the child's failure to thrive is their own. Nonetheless, the present study's retrospective design cannot provide evidence for that assertion, and the observed lack of socio-economic improvement in the case group should be viewed with some caution. Given the number of analyses performed, a significant result may have arisen by chance, and analysis of change might have exaggerated small non-significant differences between the groups at 15 months and six years. In conclusion, it is striking that no other intergroup differences were found: similarities between cases and controls may be more noteworthy than variation on a single index of maternal functioning.

maternal cognitions

Chapter Five sought to determine whether a history of infant growth faltering was associated with any pattern of maternal cognitions at six years, in terms of mothers' understanding of and strategies for dealing with difficult child behaviour. Research has demonstrated the implications of parental cognitions for caregiving behaviour (e.g., Nover, Shore, Timberlake and Greenspan, 1984) and child functioning (e.g. Pettitt, Dodge and
Brown, 1988), and it is widely argued that caregiving difficulties can be understood with regard to maternal social information processing (e.g., Bugental, 1993; Milner, 1993). Nevertheless, the study of maternal cognitions must take account of the transactional nature of the parent-child relationship: observed patterns of maternal thinking may arise in response to caregiving experiences and child characteristics including developmental abilities (e.g., Dix and Grusec, 1985).

There was some indication that mothers whose children had failed to thrive differed from comparisons in their attributions and strategies for dealing with difficult child behaviour. Case group mothers were more likely to ascribe child behaviour problems to personal, global and controllable or uncontrollable causes for the child (e.g., "just being spiteful"; "it's her nature"); these patterns of attribution have been associated with hostility and relationship difficulties (e.g., Brewin et al., 1991). In addition, when children had a history of growth retardation, mothers were more likely to suggest ineffective strategies for dealing with peer-related problems. These findings suggest that a history of non-organic failure to thrive relates to less adaptive patterns of maternal thinking at six years, but they must be viewed circumspectly for several reasons.

Foremost, observed patterns of maternal thinking could be a cause or effect of infant growth retardation; as stated above, mothers’ attributions and caregiving strategies will be influenced by previous experiences with the child. Moreover, a substantial minority of failure to thrive mothers offered very few personal, controllable and global explanations, whereas attributions of other mothers conformed almost exclusively to this pattern. Overall case-control differences could reflect the high level of personal, controllable and global attributions made by the latter group. Finally, very few case group mothers offered irrelevant solutions to caregiving problems, and so, although intergroup differences on this index were significant, failure to thrive was not generally distinguished by maternal difficulty in generating effective strategies for dealing with child behaviour problems. These observations imply that some mothers whose children failed to thrive show patterns of thinking that have been associated with relationship difficulties, but these characteristics
did not universally describe caregiving cognitions in the case group.

**mothers’ early care experiences**

The experience of maltreatment during childhood creates risk for subsequent parenting difficulties, although a cycle of inadequate care is not inevitable (Kaufman and Zigler, 1989). There is inconsistent evidence that adverse childhood experiences, such as parental antipathy or physical abuse, are characteristic of mothers whose children have failed to thrive (see Chapter One), and so the present study examined childhood maltreatment reported by mothers in the present sample. There was no significant evidence that failure to thrive group mothers had experienced higher levels of adverse care than comparisons.

Experiences of childhood mistreatment were common among case and control group mothers, and rates of physical and sexual abuse were somewhat higher than have been reported in previous research with similar samples (see for example, Andrews, Brown and Creasey, 1990) so it cannot be concluded that intergroup differences were obscured by socially desirable responding. Again, variation within the failure to thrive group may have given rise to overall similarity across groups, if one subgroup of mothers whose children failed to grow reported a history of childhood maltreatment, whereas other case group mothers did not. Nonetheless, the findings of Chapter Six clearly demonstrated that a history of infant failure to thrive was not distinguished by maternal report of adverse early care.

**maternal characteristics and a history of failure to thrive**

In summary, intergroup comparisons provided little indication of case-control differences at six years, although mothers whose children failed to thrive showed relatively limited improvement in socio-economic functioning and made more attributions to personal, global and controllable or uncontrollable causes for difficult child behaviour. Chapter Seven examined the extent to which these indices of maternal characteristics at six years could distinguish reliably between comparison group mothers and mothers whose children have failed to thrive.
In line with earlier analyses, there was very little distinction between mothers of previously growth retarded and thriving children. Change in socio-economic functioning was the only variable to discriminate reliably between the groups, and this finding should be viewed with regard to the caveats outlined above. Moreover, change in socio-economic status provided very weak categorisation of case-control status; logistic regression showed a marginal increase in the likelihood of socio-economic improvement corresponding to comparison group status. Despite evidence of intergroup differences in Chapter Five, maternal attributions did not reliably discriminate between cases and controls; this finding may be understood with reference to variation in patterns of maternal thinking within the case group.

Accordingly, the results presented in this dissertation show that maternal characteristics at six years do not correspond to the child’s history of infant growth faltering. This observation may not be surprising, given several issues that have been raised previously. First, as argued in Chapter Two, more rigorous community sampling probably offers a less extreme picture of the sequelae of failure to thrive than is found in research with referred families. It is not clear why most cases of failure to thrive are not identified; Skuse et al. (1992) reported that referred and unreferred cases did not differ in the severity of their growth faltering. However, identified families are probably more distinctive in some way, and this might plausibly reflect characteristics that conform to traditional maltreatment models of failure to thrive.

Lack of differentiation between cases and controls may also be understood with reference to the argument that non-organic growth retardation stems from a variety of causes (e.g., Woolston, 1985). Diverse aetiologies are likely to be reflected by corresponding variation in maternal characteristics, and it is unlikely that a uniform description of the mothers whose children failed to thrive could be achieved. If growth faltering results from, for example, minimal neurological abnormalities (e.g., Mathisen, 1989), mothers may resemble comparisons more closely than they do cases where failure to thrive stems from parenting difficulties. The retrospective design of the present study precludes any causal
inferences, but evidence of within group variation at six years is consistent with the argument that children who have failed to thrive do not comprise a homogeneous group (e.g., Woolston, 1985; Mayes and Volkmar, 1993). Moreover, variation among children who failed to thrive is likely to have increased between 15 months and six years, as the children develop and environmental variables intervene.

8.1.b.ii early and late growth failure

The retrospective design of the present study does not permit speculation about the aetiology of diverse characteristics among children who failed to thrive, but the stability of classifications based on within group variation in infancy can be evaluated by considering whether any indices of current functioning distinguish previously defined subgroups. Variation in the characteristics of infants who fail to thrive might be reflected in the timing of growth faltering in infancy. With regard to those arguments, the present study considered whether caregiver characteristics at six years were associated with the timing of infant growth faltering, by comparing psychosocial functioning, caregiving cognitions, and reports of childhood care among mothers whose six year old children failed to thrive in the first six months of life and mothers whose children experienced growth faltering in the second half of the first year.

mothers' psychological and social functioning

Timing of infant growth failure was not related to mothers' reports of depression, disordered eating, social support or socio-economic functioning when their children were six years old. These findings are noteworthy because results of the 15 month assessment indicated that early growth retardation was associated with higher maternal IQ and lower levels of maternal depression. Different depression scales were used at 15 months and six years, and so it was not possible to explore change in depressed mood over time, or to determine whether mothers whose children failed to thrive later have recovered from previous depression. Nonetheless, levels of depression at six years were within normal parameters for both groups of mothers, and it must be concluded that the timing of growth retardation did not correspond to maternal psychosocial functioning at the time of the
follow-up.

**maternal cognitions**

Mothers' cognitions about events in caregiving were associated with the timing of infant growth failure. Mothers of children who experienced later growth retardation had more difficulty in generating effective strategies for dealing with child eating problems, but, by contrast, when children failed to thrive in the first six months of life, mothers made significantly more personal, controllable and global attributions (e.g., "he's lazy") for child eating problems.

These findings suggest a clear distinction between mothers of children who failed to thrive early and later during the first year, but they demand further consideration. The limited problem solving shown by mothers of late FTT group children, and the patterns of attribution reported by mothers whose children failed to thrive early have each been associated with family dysfunction (e.g., Azar et al., 1984; Fincham and Grych, 1991), suggesting inconsistent links between the timing of growth faltering and maternal cognitions at six years. These findings may be illuminated by analysis of maternal cognitions in conjunction with other factors correlated with the timing of infant growth faltering.

In addition to the considerations outlined above, it is important to note that the analyses do not indicate causality. Maternal cognitions at six years could reflect stable patterns of thinking that precede infant growth failure, but equally, mothers' attributions or problem solving could stem from the experience of parenting a child who fails to grow. For example, child temperament has been implicated as one possible cause of failure to thrive (e.g., Goldson, Milla, and Bentovim, 1985), and so early FTT group mothers' attribution of child behaviour problems to personal, controllable, global causes (such as the child's mood) might reflect the stresses of parenting a temperamentally difficult child. Nevertheless, as noted above, personal, controllable and global attributions have previously been associated with hostile and dysfunctional family relationships, and so these
patterns of cognition may have negative associations with child development, regardless of any inherent characteristics in the child.

**mothers’ early care experiences**

Mothers whose children failed to thrive earlier or later during the first year of life did not differ in their accounts of early adverse care, and so it may be concluded that maternal experience of childhood mistreatment was not related to the timing of growth faltering experienced by children in the present sample. Nonetheless, since adverse early care has been linked to maternal psychosocial wellbeing (see, e.g., Andrews, Valentine and Valentine, 1995) and to beliefs about caregiving (Simons, Whitbeck, Conger, and Chy-In, 1991), it was argued that mothers’ care experiences might be related to indices of maternal psychological functioning such as 15 month depression scores or problem solving strategies that in turn distinguished between early and late failure to thrive.

**maternal characteristics and the timing of infant growth failure**

Analyses in Chapter Seven examined the extent to which timing of infant growth failure could be defined in terms of caregiver characteristics at 15 months and six years. Maternal problem solving, attributions and 15 month depression scores acted together to provide a highly reliable model for discriminating between cases of earlier or later growth retardation. Mothers whose children failed to thrive in the first six months of life were less depressed at the time of the 15 month assessment, and they offered significantly more relevant strategies for dealing with child eating problems at six years. Relevance of maternal problem solving was not correlated with mothers’ IQ scores, as might have been anticipated. There was a marginal increase in the likelihood that growth faltering would have occurred earlier in life when mothers made more personal, controllable, and global attributions for child behaviour problems, suggesting that maternal explanations were not an important indicator of intergroup distinction.

Mothers whose children failed to thrive later in the first year appeared to be more vulnerable for caregiving difficulty, in terms of their current problem solving skills and previous
psychological functioning. These findings highlight a likely indicator of variation in the characteristics of children who present with the symptom of growth retardation, and draw attention to the potential of considering the timing of infant growth failure as a means of refining the definition of failure to thrive. Moreover, it is noteworthy that late growth retardation was specifically associated with maternal difficulty in generating ways of tackling child eating problems; this observation has potentially fruitful implications for intervention with failure to thrive, regardless of the causal nature of the relationship between these variables.

5.1.b.ii long term physical development
Regardless of links between maternal functioning and the occurrence or timing of infant growth failure, a wide body of research has implied that environmental disadvantage could have adverse implications for children’s physical development (see, e.g., Elwood, Sweetnam, Gray, Davies, and Wood, 1987; Tanner, 1989; Colombo et al., 1992). This concern may be particularly apposite in light of the argument (e.g., Skuse et al., 1994) that children who failed to thrive are at risk developmentally because of early malnutrition. Accordingly, the present study explored links between case and control group children’s physical development, and mothers’ psychological and social characteristics, caregiving cognitions, and reports of early adverse experience.

5.1.b.ii.a small and larger failure to thrive group children
Differential patterns of development following early growth faltering might be indicated by variation in maternal social and psychological characteristics, and so the present study compared mothers whose previously growth retarded children were below the 20th centile for height and weight for age at six years (classed as “small”) with mothers of “larger” failure to thrive group children, who were above the 20th centile for height or weight for age.
mothers’ psychological and social functioning
Analyses presented in Chapter Four did not support the conclusion that small stature following early growth failure was associated with current maternal social or psychological disadvantage. By contrast, mothers of smaller failure to thrive group children reported higher levels of satisfaction with marital support at six years, and there were no other significant differences between the groups. The finding that maternal report of marital dissatisfaction was related to better child physical development should be viewed with some caution, because it is based on a single question in the mothers’ interview. There is a need to account for other potential influences on child stature, to determine whether better physical development is consistently associated with caregiving stressors.

maternal cognitions
There was very little indication of differences in the caregiving cognitions of mothers whose previously growth retarded children were classed as smaller or larger for age at six years, although mothers who were better at dealing with child eating problems had larger children at six years. This result provides support for the argument that attention to maternal thinking about child feeding/eating may provide a useful focus for future research and intervention with failure to thrive, but more detailed consideration of links between maternal cognitions and child stature is necessary to illuminate that contention.

mothers’ early care experiences
Child stature at six years was not related to maternal report of adverse care experiences. Mothers of larger children reported more severe sexual abuse, suggesting that maternal disadvantage is associated with better child physical development; this finding corresponds with the observation that maternal report of marital satisfaction was linked to small stature, but caution is warranted for several reasons. First, given the number of analyses performed, the apparent intergroup difference in severity of maternal sexual abuse may be spurious. Moreover, only eight mothers in the failure to thrive group as a whole reported childhood sexual abuse, and most mothers scored zero ("no abuse") on the index of abuse severity, so it must be concluded that childhood experience of sexual abuse did not
characterise mothers of larger previously growth retarded children.

**maternal characteristics and small and larger failure to thrive group children**

Chapter Seven examined the utility of variables describing child gender, family size, maternal problem solving, marital satisfaction, and early adversity for providing a statistical model that discriminates between mothers of smaller and larger children who have failed to thrive. Mothers’ history of adversity, child gender and family size did not indicate whether failure to thrive group children were smaller or larger for age at six years, but maternal satisfaction with marital support acted in conjunction with relevance of mothers’ strategies for child eating problems to distinguish reliably between the groups. Mothers of larger children were significantly better at suggesting ways of dealing with difficult child eating, but these women also reported less satisfaction with marital support; this factor has been associated with greater caregiving risk (e.g., Belsky et al., 1989). Moreover, the findings warrant caution, regardless of the direction of relationships between mother and child functioning, since almost 40% of the larger growth retarded children in the sample were incorrectly classified by this model.

It was notable that the model provided better classification for small children than for larger children, and this differentiation might reflect the way in which these groups were delineated. Classification of small stature probably defined a more homogeneous group than categorisation of larger children; a fuller understanding of links between maternal functioning and child physical development could be achieved by considering analyses of factors relating to indices of children’s height and weight as continuous variables. It is not clear why mothers’ marital dissatisfaction should be associated with small stature among children who failed to thrive, but the observation that mothers of larger children are better at dealing with child eating might have useful implications for intervention.

**8.1.b.ii.b factors indicating physical stature**

Analyses of factors associated with children’s height and weight at six years were inconsistent with research linking caregiver characteristics to child psychological
development. Several indices of maternal functioning were not related to child stature, and, by contrast to predictions, better child physical development was indicated by a range of maternal characteristics that have previously been associated with increased risk of caregiving difficulties.

**Mothers' psychological and social functioning**

The physical development of growth retarded and thriving children in the present sample was not related to past or present maternal psychological functioning, in terms of depression or disordered eating. Environmental correlates of physical stature were illustrated by observed links between case group children's height for age and the occupation of the family's main wage earner. In line with predictions, children with a history of growth faltering were smaller when the main wage earner was of lower occupational status. Almost 20% of the variance in weight for age of growth retarded children was indicated by maternal report of current marital support, but by contrast to predictions, heavier children's mothers were less satisfied with their partner's support.

Observations in the comparison group were also inconsistent with theoretical predictions: control group children who lived in poorer accommodation were taller and heavier for age at six years. It is interesting to note that maternal body mass index indicated almost 20% of the variance in comparison children's weight for age, although this variable was unrelated to the physical stature of children with a history of growth faltering. Arguably, genetic links between mother and child stature in the failure to thrive group may have been obscured by factors associated with early growth failure.

**Maternal cognitions**

Analyses presented in Chapter Five suggested that child physical stature at six years was positively related to patterns of maternal thinking that have been linked with relationship difficulties and family dysfunction (e.g., Brewin et al., 1991). Specifically, children who failed to thrive were taller when their mothers attributed child peer problems to personal, controllable and global causes, and control group children were heavier for age if their
mothers made more attributions to personal, controllable and global causes. There were no significant links between maternal thinking and case group children’s weight for age or comparison group children’s height for age, but it is noteworthy that observed relationships consistently suggested that patterns of attribution that have been described as maladaptive indicated better physical development.

mothers’ early care experiences
In accordance with the findings of Chapters Four and Five, there was some evidence that mothers’ accounts of childhood maltreatment were related to better physical development among previously growth retarded and thriving children. Within the case group, indices of maternal childhood adversity did not account for any variance in growth retarded children’s height for age, but these children were significantly heavier when their mothers had experienced higher levels of adverse early care or abuse. Maternal reports of childhood mistreatment also indicated greater stature among thriving children, in terms of height for age, although there was no indication that comparison group mothers’ care experiences were related to child weight for age. These results contrast with evidence linking childhood maltreatment to subsequent caregiving disadvantage (see Kaufman and Zigler, 1989, for a review); mothers’ experiences of adverse early care were either unrelated to children’s stature, or indicative of better child physical development.

maternal characteristics and child physical development at six years
With reference to the findings presented above, analyses presented in Chapter Seven examined the extent to which variance in child physical development at six years was indicated by maternal social and psychological functioning. Maternal characteristics accounted for significant portions of the variance in case and control group children’s physical stature, but all reliable relationships were contrary to the literature linking caregiving stressors and child psychological development.

Within the failure to thrive group, children were shorter at six years when mothers made fewer attributions of peer-related problems to personal, controllable and global causes
(e.g., "one of its funny moods"), and higher levels of maternal marital satisfaction corresponded to lower child weight for age. Equally, in the comparison group, mothers who lived in poorer accommodation had children who were lighter and shorter for age at six years, and thriving children were shorter when their mothers reported higher levels of childhood mistreatment. In support of predictions, higher maternal body mass index (BMI) scores were associated with greater weight for age among thriving children.

With the exception of links between control group mothers’ BMI and child weight for age, these results imply that characteristics previously associated with caregiving risk have positive associations with child physical development. These variables indicated substantial and highly significant portions of the variance in child stature, and so it seems unlikely that observed correlations are spurious. Patterns of association in the failure to thrive group might be understood if mothers’ characteristics reflect the aetiology of infant growth retardation, such that better maternal functioning at six years is evident in cases where growth faltering stems from an inherent biological abnormality that persists over time, and so continues to restrict child physical development. By contrast, if failure to thrive is associated with caregiving difficulties, children may recover stature as they grow older and start to self-feed and eat outside the home, so maternal disadvantage could be associated with better stature at six years.

Without longitudinal prospective analysis, this explanation must remain speculative; more importantly, it does not account for observed associations between maternal disadvantage and greater child stature in the control group. In addition, before any conclusions can be drawn about the possible nature of links between mother and child functioning, analyses of factors indicating child psychological development should be examined, to determine whether maternal risk factors were universally associated with better developmental functioning for children in the present sample.
8.1.c maternal characteristics and child psychological development

Research has implied that the caregiver characteristics explored in this study, such as maternal psychological disturbance, limited social problem solving or hostile patterns of attribution can operate as risk factors, and have negative associations with child psychological development (see, e.g., Cummings and Davies, 1994; Duncan, Brooks-Gunn, and Klebanov, 1994). In line with these investigations, indices of maternal disadvantage were associated with limitations in the cognitive and social-cognitive functioning of growth retarded and thriving children in the present study. There was correspondence in maternal variables that indicated child cognitive and social-cognitive abilities, and so these aspects of child psychological development will be considered together.

mothers' psychological and social functioning

Maternal IQ was the most important indicator of cognitive functioning among children who had failed to thrive, accounting for significant portions of the variance in these children’s General Cognitive Index (GCI) scores and in memory, verbal and quantitative abilities. All these associations conformed to predictions, in that mother and child cognitive skills were positively correlated. There was also evidence that socio-economic advantage was related to better psychological functioning among children who had failed to thrive; overall socio-economic status accounted for significant proportions of the variance in case group children’s verbal skills and in the relevance of their problem solving strategies. Moreover, home ownership indicated greater variety in the problem solving strategies suggested by previously growth retarded children. Curiously, home ownership also explained variance in the number of problem solving categories suggested by comparison children, but, in the control group, higher rated housing tenure was predictive of poorer social-cognitive skills. These contradictory findings should be viewed in light of questions about the utility of variety of categories as an index of social competence (see Rubin and Rose-Krasnor, 1992).
By contrast to analyses in the case group, thriving children’s psychological abilities were not reliably indicated by maternal IQ. However, parental education was a highly significant correlate of control group children’s psychological functioning, accounting for substantial portions of variance in the relevance of their social problem solving, and in all indices of child cognitive performance. Education also indicated problem solving flexibility in the comparison group, in conjunction with levels of maternal depression at 15 months. These findings consistently supported theoretical predictions, such that higher levels of parental education and lower levels of maternal depression were associated with better child functioning.

maternal cognitions

Analyses of links between maternal cognitions and child psychological functioning at six years were generally consistent with predictions. Maternal attributions and problem solving did not indicate the general cognitive functioning of children who had failed to thrive, but performance on specific indices of cognitive and social-cognitive abilities was closely related to maternal thinking. For example, maternal use of high power problem solving strategies corresponded to limited child verbal and memory performance, and suggestion of low power solutions was associated with better memory and quantitative skills; poor verbal skills were also related to maternal attribution of eating problems to personal, controllable and global causes.

Associations between mother and child social problem solving in the failure to thrive group also supported predictions: maternal ability to generate relevant strategies for dealing with child eating problems indicated better social competence among previously growth retarded children, in terms of the relevance and flexibility of child problem solving skills. It is noteworthy that these associations were specific to maternal strategies for dealing with child eating problems, and that case children’s verbal skills were indicated by maternal attributions for child eating problems. Mothers of growth retarded children have been described as less likely to communicate and socialise at mealtimes, relative to thriving controls (Heptinstall et al., 1987); if these communication patterns are stable, they might
well have links with child development.

Comparison group analyses of children’s cognitive and social-cognitive abilities also supported predictions. Maternal attributions of peer-related problems to personal, uncontrollable and global causes accounted for a significant amount of variance in thriving children’s general cognitive functioning and memory, verbal and perceptual skills, such that fewer personal uncontrollable and global attributions were related to better child cognitive functioning. Mothers’ attributions and problem solving were not related to control group children’s numerical abilities, or to the relevance or flexibility of their social problem solving.

In contrast to predictions, thriving children suggested a smaller variety of social problem solving strategies when their mothers offered more relevant solutions for dealing with child eating problems. This incongruous finding should be viewed with caution, although it accounts for a highly significant portion of the variance in child performance, because it is exceptional, and the variety of problem solving categories may not be a reliable index of child social competence (Rubin and Rose-Krasnor, 1992). The findings presented in Chapter Five otherwise consistently showed that patterns of maternal thinking previously associated with relationship difficulties corresponded to limitations in child psychological functioning.

**mothers’ early care experiences**

Case and control group children’s psychological functioning was minimally related to mothers’ reports of early adverse care. A small proportion of the variance in thriving children’s perceptual skills was indicated by maternal experience of childhood sexual abuse; this contrasted with expectations, in suggesting that greater adversity was associated with better child cognitive skill. Nevertheless, this result may be spurious, given the number of analyses performed. The small number of control group mothers reporting child sexual abuse could also be a limiting factor, since most respondents scored zero (“no abuse”) on this index.
Links between maternal adversity and child functioning might not have been found because associations are indirect, and mediated by maternal psychosocial characteristics and cognitions about caregiving. This argument is plausible, given evidence that childhood maltreatment may influence beliefs about parenting (Simons et al., 1991), and create risk for psychosocial disadvantage (e.g., Andrews et al., 1995); however, the retrospective design of present study means that the causal nature of correlations among variables cannot be identified. Nevertheless, it should prove useful to consider relationships between mothers’ early care experiences and child development with reference to other indices of maternal functioning.

**maternal characteristics and child psychological development at six years**

Maternal characteristics accounted for significant variance in the cognitive and social-cognitive functioning of children in the present sample, but there were clear differences in the statistical models that indicated psychological development among case and control group children. The best statistical model for indicating the cognitive abilities of children who failed to thrive was provided by maternal IQ, which acted alone to account for significant variance in case children’s verbal performance and GCI scores. Maternal problem solving was also an important indicator of the psychological functioning of previously growth retarded children, acting with mothers’ IQ scores to account for significant variance in child memory and numerical abilities. Arguably, these findings warrant particular attention, since child memory and quantitative skill were the only indices on which case children showed limited psychological functioning, relative to comparisons at six years.

Maternal problem solving was also an important indicator of social cognitive skills among children with a history of growth faltering, in conjunction with indices of socio-economic functioning. The flexibility of case group children’s problem solving was related to levels of crowding in the home and relevance of maternal strategies for dealing with eating problems, and mothers’ eating problem strategies acted in conjunction with overall socio-economic status to account for variance in child problem solving relevance. All these
relationships followed predictions, such that characteristics that have been linked to risk for caregiving difficulties were associated with poorer child psychological functioning. In line with previous findings, these observations suggest that maternal problem solving deserves consideration in future research or intervention with failure to thrive.

Comparison group findings provided additional evidence that maternal psychosocial disadvantage was related to limited child psychological skills. Parental education and attributions of peer problems to personal, uncontrollable and global causes provided the best model for indicating variance in cognitive functioning among thriving children; for example, almost 60% of the variance in children’s GCI scores was indicated by these variables. The educational level of the parent also offered the most useful indicator of child social cognition in the control group; it was the sole indicator of children’s problem solving relevance, and acted in conjunction with 15 month maternal depression scores to account for significant variance in the flexibility of child problem solving. Again these relationships conformed to predictions; child performance was poorer when parents’ were less educated, and mothers made more personal, uncontrollable and global attributions, or reported higher levels of depression at 15 months.

In summary, the psychological functioning of six year old children in the present sample was partly indicated by past and present maternal social and psychological characteristics, in line with previous research. Nevertheless, several issues demand attention. It is noteworthy that child functioning was indicated by maternal IQ in the failure to thrive group, but by parental education among comparisons; parental education was not significantly correlated with the cognitive functioning of case group children (see Table 4.13). In addition, substantially more variance in child cognition was accounted for in the control group, relative to cases. Influences on growth retarded children’s cognition may be mediated by the effects of malnourishment during a critical period for brain growth (Frank, 1985), but equally, heterogeneous characteristics among children who failed to thrive may have obscured evidence of relationships between mother and child functioning.

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Finally, and perhaps most importantly, the results imply that different mechanisms linked maternal functioning to the physical and psychological development of children in the present study: indices that have previously been linked to risk for caregiving difficulties were generally associated with better physical stature, but with limitations in children’s cognitive skills and social competence. While the causal nature of these associations can only be identified through future prospective research, findings are consistent with the argument that theoretical links between caregiver characteristics and child psychological development may not be extrapolated to account for data on child physical development in the present study. Physical growth may be primarily determined by factors relating to genetics and nutrition (e.g., Tanner, 1989), whereas psychological development probably has more direct links with the child’s relationship with his/her caregivers (e.g., Schaffer, 1992). These arguments warrant attention, but they must remain speculative, because causality cannot be determined within the retrospective design of the present study.

8.2 limitations of the present study

The research reported in this dissertation has arguably overcome many of the methodological and theoretical constraints of previous investigations, and the findings outlined above offer a rich description of links between maternal characteristics and a history of failure to thrive, and the developmental consequences of the syndrome. Nevertheless, any conclusions must take account of the limitations of the present investigation, and several issues demand consideration here, in addition to the discussion presented in Chapter Two.

8.2.a retrospective design

The retrospective design of the present research precludes any assumption of aetiology. The findings describe associations between mother and child characteristics, and the direction of these relationships has not been determined: it must not be assumed that maternal characteristics give rise to child functioning. While this caveat necessarily constrains the conclusions of the present study, it does not necessarily undermine their utility.
This dissertation did not seek to develop or evaluate a causal model of failure to thrive. Instead, the research reported here sought to identify the long term correlates of infant growth retardation, and so it depended on studying current functioning in a sample of mothers and their children who had previously failed to thrive. As noted in Chapter Two, the limitations of earlier research have created a need for a reliable description of mother and child characteristics, before explanatory models can be developed through prospective research. Failure to thrive in infancy did not indicate maternal functioning when the child is six; moreover, infant growth faltering was not uniformly associated with long term limitations in child development. By contrast, maternal characteristics at 15 months and six years indicated significant portions of the variance in child physical and mental development at the time of the follow-up study. These findings imply that the research design provided a useful framework for investigating current functioning among children who failed to thrive, and have clear implications for future research, which will be considered in Section 8.3.

**8.2.b reliability**

In addition to implications for aetiological understanding, use of a retrospective design raised questions about the reliability of maternal reports. The present study sought to address these concerns through semi-structured interviewing about specific experiences, and investigator-based ratings of maternal accounts, and it may be argued that this approach was successful. Levels of maternal reporting of experiences such as disordered eating and childhood abuse were comparable to or higher than those found in similar studies (e.g., Bushnell et al., 1990; Andrews et al., 1995), suggesting that the method overcame potential problems such as poor recall or socially desirable responding. Moreover, the reliability of investigator-based ratings was generally found to be very good, with inter-rater agreement as high as 100% on indices including maternal reports of parental control and childhood sexual abuse.

These observations suggest that findings based on mothers' retrospective accounts can be accepted with some confidence, but it is important to remember that, as noted in Chapter Two, it was not possible to validate maternal reports through comparison with other sources of information. Furthermore, consideration of indices where inter-rater agreement was lower
(e.g., irrelevance of maternal problem solving strategies) must take account of this unreliability. Despite these caveats, it may be argued that the method achieved reasonable validity and reliability within the constraints of the research design.

8.2.c matched pair comparisons

As noted in Chapter Two, evidence of intergroup variation in the present study may have been obscured by pairwise matching; power efficiency was probably significantly reduced when matching was ignored for independent group analyses such as logistic regression (Schlesselman, 1982). In addition, matching may have created a disadvantaged control group, such that comparison children experienced difficulties other than failure to thrive. This contention was supported by the observation that parents or teachers of some control group children expressed concerns about child behaviour problems, and one comparison child was being referred to an educational psychologist at the time of the school assessment, as a result of his disruptive classroom behaviour. It seems plausible that these difficulties are related to disadvantage, since caregiving risks such as a history of maternal depression in infancy and low levels of parental education were associated with poorer social and cognitive functioning among children who thrived in infancy.

Despite these observations, it may be argued for several reasons that intergroup differentiation was minimally obscured by pairwise matching. Foremost, case-comparison matching on area of residence (see Chapter Three) should primarily reflect socio-economic functioning, and change in socio-economic status was the only variable to discriminate reliably between cases and controls. Moreover, as argued in Chapter Two, pairwise matching enables identification of factors that are specific to a history of failure to thrive, rather than descriptive of more general disadvantage. There was minimal evidence of variation between case and comparison group mothers, but different maternal characteristics correlated with the physical and psychological development of previously growth retarded and thriving children. For example, maternal cognitions about child eating problems clearly indicated the timing and physical and psychological developmental sequelae of failure to thrive, although these variables were not related to child functioning.
in the control group. Pairwise matching may have enabled a more specific description of these relationships, by overcoming potential sources of bias in sample characteristics.

8.2.d the family context
8.2.d.i child characteristics

The research reported here may be criticised because an emphasis on the mother might lead to a failure to account for potential child effects. Mainstream psychological research has consistently indicated the 'competence' of young infants (e.g., Slater, Morrison, Town, and Rose, 1985; Bushnell, Sai, and Mullin, 1989), indicating a need to recognise that the relationship between mother and child is transactional. Moreover, failure to thrive is classed as a disorder of feeding (DSM-IV, American Psychiatric Association, 1996), and successful feeding depends on both mother and child making an active contribution to the interaction (Skuse, 1994). These observations warrant particular consideration in light of evidence linking non-organic growth faltering to child characteristics, such as “feeding skills disorder” (Ramsay et al., 1993) and “difficult temperaments” (Goldson et al., 1985). The present study was primarily concerned with maternal characteristics, and so the child’s contribution to the relationship has not been fully explored. Arguably, this focus is justifiable, given practical constraints on the research, but it has inevitably constrained understanding of the sequelae of failure to thrive for the mother and child.

Children’s characteristics were examined in the present study through assessment of their developmental functioning. Child development was clearly shown to be linked to maternal characteristics, and as noted above, these associations are likely to be bi-directional. For example, mothering plays an important role in child social and cognitive development (e.g., Schaffer, 1992), but equally, children’s social skills influence maternal responses in the interaction (e.g., Bugental, Mantyla and Lewis, 1989). Developmental assessments may offer a limited understanding of the child’s role in the mother-child relationship, because they study child functioning in isolation, but this attention was thought to be warranted in the present context to enable exploration of the developmental implications of infant growth failure.
8.2.d.ii  the role of other family members

The present study has not addressed the influence of other family members, beyond assessment of maternal social support: it is important to recognise that, as noted in Chapters One and Two, mothers and children interact within a family context. Within the limitations of the present study, interviewing of other family members was not practical, but this approach has probably constrained understanding of the family context of mother and child characteristics. Mothers are not the only family members that affect child functioning, and there is clear evidence that interaction with siblings and fathers also fosters developmental change (see, e.g., Dunn, 1988; Slomkowski and Dunn, 1992; Vollen and Belsky, 1992).

Variation within the failure to thrive group will partially correspond to characteristics of other family members, and it cannot be assumed that the mother comprises the only influence on child nutritional intake. For example, Fosson and Wilson (1987) reported that sibling rivalry was associated with inadequate feeding interactions in families of growth retarded infants. In addition, researchers such as Littman and colleagues (1994) have highlighted the importance of considering fathers' beliefs about feeding practices; this observation was supported anecdotally in the present study by one case group mother, who commented that her husband would regularly punish their daughter for "messing about" at mealtimes by sending her to bed without food.

8.2.e  sample size

On several occasions analyses presented in this dissertation had limited power due to small numbers. Contact was maintained with 87 families from the original sample (over 90%), but full data were not available from all the respondents on all measures. For example, some mothers declined to respond to parts of the interview, and mothers who did not speak English did not complete sections including assessment of maternal cognitions, because translation might lead to lack of reliability in the presentation and analysis of language dependent measures (see Chapters Three to Six). These limitations were beyond experimental control, and as a consequence, the numbers included in each analysis varied, so power efficiency may have been reduced by small sample sizes for some analyses. Non-significant associations between
maternal characteristics and child functioning might be more reliably observed if the research was replicated with a larger sample.

8.2.f measurement of child physical stature

Use of school nurse records to provide data on child physical stature precluded evaluation of the reliability and accuracy of measurements, and this approach may be subject to criticism (see Majrowski et al., 1994). These data are additionally limited because they are cross-sectional, and so calculation of growth trajectories was not possible, and a definition of “recovery” from failure to thrive could not be made. Moreover, Tanner (1989) commented that cross-sectional data can be misleading; failure to account for growth velocity may give rise to bias because of individual differences, for example, in the timing of growth spurts. Nevertheless, Chapter Three argued that use of cross-sectional anthropometric data gathered by school nurses was advantageous. It may be reasoned that the validity of these data has been illustrated by variation between cases and controls in child height and weight at six years, and by clear associations between mother and child characteristics and the physical stature of children who failed to thrive.

8.3 Implications for intervention

Despite the constraints outlined above, the findings presented in this dissertation have potentially valuable implications for intervention. Variation within the case group indicated that failure to thrive was not inevitably associated with developmental problems for the child at six years, and so consideration of factors that were associated with limited child functioning should highlight pertinent areas of concern. It may be argued that the results of the present study have limited applicability for intervention, because unreferred cases are known to be untypical of those seen clinically (Mitchell, Gorrell and Greenberg, 1980); research with referred samples may be advantageous in informing clinicians about the characteristics of cases they are likely to see.

That assertion warrants consideration, but equally, those maternal characteristics that related to child functioning in the present study may provide a useful basis for discriminating between
subgroups of children who have failed to thrive. Because community sampling offers a less extreme picture of failure to thrive, evidence of within group variation could be applied to offer a fuller description of cases that present clinically. Moreover, observed links between maternal characteristics and child development should offer a fruitful focus for intervention aimed at preventing developmental difficulties subsequent to infant growth faltering, and this argument may be justified regardless of the causal nature of links between mother and child functioning.

It is noteworthy that limited maternal strategies for dealing with child eating problems were related to smaller physical stature among children who had failed to thrive. In addition, case group mothers' use of highly power assertive strategies was associated with limited child cognitive skills, whereas low power maternal problem solving indicated better cognitive abilities among these children. Accordingly, intervention might usefully address mothers' problem solving skills, with specific attention to difficult feeding interactions. Clinicians have increasingly attended to parents' mealtime management skills in intervening with failure to thrive (e.g., Harris, 1993), and other studies of parenting have shown the long-term benefits of using problem solving skills training to address difficulties such as physically aggressive caregiving (e.g., Acton and During, 1992).

Harris has suggested that intervention should be tailored to account for the multifactorial causes of infant growth retardation, and this argument is clearly valid. Nevertheless, the development of maternal techniques for dealing with child eating problems may be worthwhile, regardless of the aetiology of growth faltering. For example, small stature among case group children might reflect malnutrition that arose because mothers generated few effective strategies for handling mealtime interactions. Alternatively, restricted maternal problem solving might result if inherent child characteristics such as oral-motor dysfunction (e.g., Mathisen et al., 1989) restricted nutritional intake; mothers might come to see few strategies as appropriate if attempts to overcome child eating problems are repeatedly unsuccessful. Mothers in either situation would benefit from guidance in dealing with situations that they see as difficult.
In addition to concern about maternal problem solving, it may be useful to focus interventions on the social and cognitive skills of children who have failed to grow. Smaller failure to thrive group children had poorer social problem solving abilities than larger children, and while the causal nature of this association is unknown, it demands attention. Kazdin, Siegel and Bass (1992) described an intervention program for dealing with antisocial child behaviour that incorporated problem solving skills training for parents and children; this approach had marked benefits for parent and child functioning, which were maintained at a one-year follow up investigation. It may be useful to apply similar methods to intervention with children who have failed to thrive. Furthermore, although there were only moderate case-control differences in child cognitive skills at six years, findings consistently showed that children with a history of growth retardation had more difficulties than controls, and so intervention should take account of this risk and address child characteristics, in addition to attention to maternal functioning.

Drotar and Sturm (1988) highlighted the need for clinicians to make “concerted efforts” to account for parental understanding of their child’s failure to thrive, and this argument seems particularly pertinent in light of observed links between maternal attributions and child physical development in the present study. Nevertheless, relationships between child stature and maternal attributions were contrary to predictions, and so further investigation of these findings would be prudent before their implications for intervention can be fully understood. This caveat warrants attention, but consideration of maternal attributions may still prove useful in intervention programs, given their importance as indicators of child development; research in other areas has shown the value of studying attributions for tracking change in therapy (Firth-Cozens and Brewin, 1988).

### 8.4 directions for future research

The present study has served to describe maternal characteristics associated with a history of failure to thrive, and with the timing and developmental consequences of the syndrome. With regard to these findings, the research has highlighted several pertinent areas for future investigations, which could overcome criticisms outlined in Section 8.2.
8.4.a an explanatory model for failure to thrive

Failure to thrive in the present study was not uniformly associated with mother or child characteristics at six years, and variation within the failure to thrive group was striking. Future prospective research could attempt to identify subtypes of non-organic growth retardation, by developing a predictive model based on mother and child characteristics. As part of a prospective longitudinal investigation, data could be collected on factors that indicated the timing and developmental consequences of failure to thrive in the present study, so that characteristics preceding growth faltering can be identified. Research would inevitably be costly and time-consuming, but it is necessary to go beyond descriptive accounts, and identify the risk factors that give rise to infant growth retardation, and to developmental problems subsequent to growth faltering.

8.4.b mother and child behaviour

A prospective aetiological model must account for the bi-directional nature of links between mother and child characteristics, and so it would be useful to explore the factors identified by the present study in conjunction with observations of the mother-child interaction. This approach would account for aspects of child behaviour that may elicit maternal cognitions or responses, and has the potential to explain apparently incongruous findings such as the observation that mothers' personal controllable and global peer attributions indicated greater height for age among children who have failed to thrive. Moreover, such research would be necessary to evaluate the claim that a subgroup of failure to thrive stems from inherently "difficult" child characteristics (Goldson et al., 1985).

8.4.c the emotional relationship between parent and child

The study of mothers' caregiving cognitions has offered a valuable understanding of maternal characteristics associated with the development of children who fail to thrive, and this knowledge could usefully be extended by consideration of the emotional content of the mother-child relationship. Other studies of family functioning have highlighted the importance of links between cognition and emotion. For example, Bugental and colleagues (e.g., 1993) found evidence that attributions moderate the affective content of parent-child communication, and
Brewin et al. (1991) studied patients with schizophrenia and reported that relatives' attribution to personal and controllable causes was a “powerful predictor” of hostile and critical emotional attitudes.

### 8.4.d indicators of maternal functioning

The findings reported here have reflected the focus of the thesis, but arguably, the data collected could offer a broader understanding of maternal functioning, beyond concerns about maternal characteristics associated with the child’s history of failure to thrive. Few U.K. researchers have explored maternal psychological characteristics in non-clinical investigations, and so additional analyses of relationships between different aspects of maternal functioning in the present study may offer potentially valuable insights regarding a community sample of mothers of young children. In addition, future research might usefully examine the context of development for children who have failed to thrive, by considering links between characteristics of other family members and the measures of maternal functioning that indicated child development in the present study. This concern seems particularly apposite given the finding that mothers’ reports of marital satisfaction were associated with small stature among children who failed to thrive.

### 8.5 conclusion

The research reported in this dissertation has been subject to a number of constraints, but it offers a valuable description of maternal psychological characteristics associated with a history of failure to thrive, and with the timing and developmental consequences of infant growth faltering. The findings highlight several fruitful areas for future research and intervention. The dissertation began by raising three key questions about non-organic failure to thrive, and the findings of the thesis have illuminated these concerns.

First, the dissertation questioned whether failure to thrive in infancy was associated with long term developmental problems for the child, in terms of physical stature, social cognition, and cognitive functioning at six years. There was some evidence of developmental limitations among children who failed to thrive: they were smaller than
comparisons at six years, in terms of height and weight for age, and they performed more poorly on tests of memory and quantitative abilities. It is not clear why deficits should be specific to these areas of child cognition, and findings should be viewed with regard to variation within the case group; a number of previously growth retarded children were above the population average in terms of height and weight for age, and there was no indication of general cognitive or social cognitive deficits among children who failed to thrive. The timing of growth faltering within the first year of life was not related to the physical or psychological functioning of children who failed to thrive, and there was no evidence of differences in the cognitive abilities of previously growth retarded children who were classed as smaller or larger for age at six years. These findings undermine the contention that malnourishment during a critical period in early infancy has an adverse effect on brain development (e.g., Frank, 1985), but small for age case group children did perform more poorly than larger children on measures of social information processing.

Maternal characteristics were shown to be significantly related to child physical and psychological functioning at six years, but links between child physical stature and characteristics that have been associated with risk of caregiving difficulties operated in a manner opposite to that proposed by this thesis: higher levels of maternal disadvantage indicated greater height and weight for age among case and control group children. By contrast, associations between maternal characteristics and child cognition and social competence supported predictions; mothers who described social or psychological risk factors had children with more limited psychological functioning at six years. These patterns were consistent across groups, although there were differences between cases and controls in the aspects of maternal functioning that indicated child abilities. There is a need for future research to consider the mechanisms by which maternal characteristics are related to child physical and psychological functioning, but, regardless of the direction of effects, the utility of examining maternal characteristics associated with child development is apparent.
The second concern of this thesis was to identify current maternal characteristics associated with the child’s history of non-organic growth retardation, through comparisons of mothers whose children failed to thrive and mothers whose children grew normally in infancy. There was minimal evidence that case and comparison group mothers differed at six years; however, variation within the case group was noteworthy. If failure to thrive has a range of possible causes (e.g., Woolston, 1985), these could be reflected by corresponding variation in maternal characteristics, and it is unlikely that a uniform description of the mothers whose children failed to thrive could be achieved. Moreover, diversity is likely to have increased between assessments at 15 months and six years, as the children develop and environmental variables intervene. The retrospective design of the present study precludes any causal inferences, but findings suggest that future prospective research might usefully consider subtypes of failure to thrive.

With regard to that assertion, the third aim of this dissertation was to determine whether any subgroup of previously growth retarded children could be distinguished on the basis of mother or child functioning at six years. Maternal characteristics distinguished reliably between children who failed to thrive early and later in the first year of life, such that when children had failed to thrive later, mothers had more difficulty in suggesting ways of dealing with child eating problems at age six, and reported higher levels of depression when the child was 15 months old. Relevance of mothers’ strategies for child eating problems also discriminated between case group children who were small or larger for age at six years. Relative to mothers of smaller case group children, mothers of larger children were better at suggesting relevant ways of dealing with child eating difficulties, but in contrast to expectations, these women also reported more dissatisfaction with current marital support.

These observations do not imply causal relationships, but they have clear implications for research and intervention with failure to thrive. The findings of the research have indicated the utility of working with maternal problem solving skills, particularly with regard to mothers’

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1 These women also made marginally fewer attributions of child behaviour problems to personal, controllable and global causes for the child.
strategies for dealing with difficult mealtime interactions. This approach has already been applied effectively in intervention with non-organic failure to thrive. Children who have failed to thrive may also benefit from problem solving skills training, which has proved successful in addressing parent-child problems in other areas.

The present study has highlighted several important concerns for future research. Foremost, the research reported here is descriptive, rather than explanatory, and so aspects of maternal functioning associated with the timing and developmental consequences of failure to thrive should be investigated prospectively, using longitudinal research that commences prior to infant growth faltering. A fuller understanding of links between mother and child functioning could be achieved by combining the method of the current research with observational measures of the mother and child’s contribution to the interaction, and attention to potential links between maternal affect and cognitions. Finally, there is a need to consider wider influences on mother and child characteristics, and future investigations should address this concern by studying other family members, notably fathers and siblings.

It may be concluded that current definition of the syndrome of non-organic failure to thrive in terms of infant growth retardation had limited usefulness as an indicator of mother or child functioning at six years. The present study could not provide evidence of aetiology, but the extent of variation in mother and child characteristics in the failure to thrive group is consistent with the argument that children who experienced non-organic growth retardation form a diverse group. Some mothers showed characteristics at six years that have been associated with increased risk of caregiving difficulties, but others did not, and infant growth failure was not universally associated with impaired child development. There is a need to account for subtypes of non-organic failure to thrive, with reference to the mother and child, in order to achieve a more useful definition of the syndrome. Such understanding depends on prospective research, but the results of this thesis clearly showed the value of considering maternal functioning: regardless of the aetiology of infant growth failure, characteristics of the primary caregiver were important indicators of the development of previously growth retarded children in the present sample.
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appendix 1

Annotation: The Process of Parenting in Failure to Thrive

Janet M. Boddy and David H. Skuse

The definition of failure to thrive

Nonorganic failure to thrive (FTT) is the diagnostic classification assigned to an infant who fails to achieve a satisfactory rate of growth (commonly, weight below the third per centile), where no organic cause can be identified. The inadequacy of this definition has increasingly been recognised; the term defines a symptom rather than a disorder, and Skuse (1985, p. 174) commented that it does not fulfill the criteria for a satisfactory medical diagnosis, but is “merely an arbitrary description of a pattern of growth”. Wilcox, Nieburg and Miller (1989) noted further problems such as lack of consistency in anthropometric criteria and cut-off points. Mayes and Volkmar’s (1993) discussion of the nosology of failure to thrive also highlighted the variability of definitions; this is reflected in their observation that the reported incidence of the syndrome ranges from 1.3 to 20.9%.

Lachenmeyer and Davidovicz (1987) raised further questions about definition, noting that the distinction between organic and nonorganic failure to thrive is not as clear as many researchers assume. Their contention is supported by Goldson (1989), and Mathisen, Skuse, Wolke and Reilly (1989), who reported neurological abnormalities in, for example, oral-motor or gastro-intestinal functioning in infants who had been diagnosed as failing to thrive without organic cause.

Keywords: Failure to thrive, parenting behaviour, social cognition, parental thinking

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The process of parenting in failure to thrive

Although diagnosis of failure to thrive—whether organic or nonorganic—is based on the description of a pattern of growth, the syndrome has often been described as a form of child abuse or neglect (e.g. Taitz & King, 1988). Traditionally, the child's growth failure has been attributed to inadequate parenting, in the form of “maternal deprivation syndrome” (Patton & Gardner, 1962; Fischhoff, Whitten & Pettit, 1971). This notion was derived from research by Spitz and others (e.g. Spitz, 1945, 1946) which was concerned with the impact of separation from the mother early in life.

Spitz studied institutionalised infants, and concluded that prolonged mother-child separation tended to result in psychogenic disorders, notably “anaclitic depression” and “hospitalism”. The symptoms of anaclitic depression bear a great deal of similarity to the diagnostic criteria for nonorganic failure to thrive (e.g. delayed physical growth and psychosocial development), leading researchers such as Patton and Gardner (1962) to the conclusion that infants who fail to grow experience a similar lack of mothering to institutionalised infants. Although mothers of such infants were physically present, psychopathology was thought to have prevented them from being able to care adequately for their children, so the children became depressed and exhibited the symptoms of “hospitalism”. Despite the widespread acceptance of this perspective, there were important problems with the research on which it is based (Pinneau, 1955), which raise questions about the validity of the link between maternal separation and physical development.

Early research into maternal deprivation syndrome was based on the premise that children who fail to thrive were receiving adequate calories, and so their poor growth was a direct consequence of emotional deprivation. This assumption was questioned by Whitten, Pettit and Fischhoff (1969), who studied a group of hospital referred children who were failing to thrive and were thought to have experienced inadequate parenting. The majority gained weight when they had an adequate caloric intake, even without stimulation from a caregiver. It has since been widely argued that all failure to thrive has an organic aetiology, malnourishment (e.g. Woolston, 1985; Skuse, 1993), but it is still often assumed that this in itself has its origins “in an antagonistic or chaotic emotional life of the parents and because of problems of interaction between mother and child.” (Hanks, Hobbs, Seymour & Stratton, 1988, p. 101), and in maternal psychopathologies such as narcissistic personality disorder (Chatooor, Dickson, Schaeffer & Egan, 1985) and substance abuse (Polan et al., 1991).

Despite the common emphasis on the role of parenting in failure to thrive, nonorganic failure to thrive is usually identified when an adequate organic explanation cannot be found for the child's growth failure; it is “a diagnosis of

*The term “parent” is used throughout the text for simplicity, unless other characteristics of the caretaker, such as gender, are specified.
exclusion” (Mayes & Volkmar, 1993, p. 22). Recent reviews have repeatedly drawn attention to the inconsistency among investigators in defining the syndrome (Skuse, 1985; Wilcox et al., 1989; Mayes & Volkmar, 1993). Moreover, for the majority of infants a definition in terms of the absence of organic aetiology lends little to understanding (Lachenmeyer & Davidovicz, 1987). Skuse, Wolke and Reilly (1992) reported that organic disorders were primarily responsible for failure to thrive in just 5% of the growth retarded infants they studied. However, for many children with minor degrees of organic dysfunction, organic factors—such as those described by Goldson (1989) and Mathisen et al. (1989)—are likely to be among a variety of influences that determine nutritional status. If research and intervention are to proceed usefully, a clear positive definition is necessary. Classification of failure to thrive as a feeding disorder (Mayes & Volkmar, 1993) would allow a focus on malnourishment, directing investigators to become more specific in identifying and describing each of the multiple contributing factors leading to a child’s inadequate caloric intake. If failure to thrive is to be considered as a syndrome, rather than a collection of symptoms, we must consider each aspect of its multidimensional aetiology in detail, while acknowledging that no one factor is in itself causal. Lieberman and Birch (1985) and Drozar (1991) supported a multifactorial model, and argued convincingly that research should examine the family system, rather than just the mother. The ability of a parent to cope with her child will depend on a number of factors, including child characteristics and psychosocial stressors (Belsky & Vondra, 1989); these factors must be accounted for in a consideration of the role of parenting in failure to thrive. Recognition of the multifarious aetologies of failure to thrive has lessened the burden of responsibility that was traditionally placed on the mother. Nevertheless, often for practical reasons, intervention tends to focus on the primary caretaker, and so it is important that we understand the role of this individual in the aetiology of the child’s problem, and his or her perception of that problem. An effort to attend to other factors should not diminish the importance of studying parenting; on the contrary, research into parenting is vital if we are to redress the perspective of early research, and understand the role of the mother in failure to thrive. The purpose of this paper is to review the literature surrounding the parenting of children who fail to thrive without identifiable organic cause, in order to determine the following:

I. Given the methodological inadequacy of early uncontrolled studies, to what extent does the literature show differences between parents of thriving children and those whose children fail to grow?

II. With reference to current knowledge, how might future research increase understanding of the role of parenting in failure to thrive?
Any attempt to address these issues must consider the psychological processes involved in parenting a child who fails to thrive. This area is of particular importance because of the discrepancy between early and recent research. Uncontrolled studies tended to find a dramatic incidence of maternal psychopathology, but later investigators using improved methodology have found little evidence of psychological differences between parents of failure to thrive children and comparisons. It might be argued that early methodologically flawed research should be dismissed, or excluded from a current review of the literature, but such a dismissal is likely to be imprudent, given the perseverance of the "maternal deprivation" model. For example, the inclusion of nonorganic failure to thrive in the classification of "reactive attachment disorder" in DSM-III-R (American Psychiatric Association, 1987) suggested that the parent plays a primary role in the condition, through persistent disregard of the child's needs, and "grossly pathogenic care".* If the utility of this perspective is to be evaluated, the research on which it is based must be considered; such an examination has particular significance if the research is neither recent nor empirically adequate.

Mainstream psychological research has indicated the "competence" of young infants (e.g. Slater, Morrison, Town & Rose, 1985; Bushnell, Sai & Mullin, 1989), enabling recognition of the role of the infant in the parent–child relationship. The failure to thrive literature has often considered parental characteristics in isolation, without acknowledging the infant's contribution to the interaction or the processes by which a parent responds to her child. Early studies of parenting in failure to thrive tended to consider parenting behaviour in isolation, but more recently, investigators have recognised the infant's contribution to the interaction; Polan et al. (1991) reported that growth retarded infants expressed less positive affect than thriving infants during observation of the mother–child interaction. These differences may be a cause or a consequence of the child's growth failure, but they serve to demonstrate that both infant and mother influence the parent–child relationship. Research carried out after the syndrome is identified cannot determine whether interactional patterns follow or precede failure to thrive, because they have already been established. Child rearing is a reactive process: attempts to determine the role of parenting in failure to thrive must acknowledge the transactional nature of the parent–child relationship.

Methodological Issues

Methodological problems in failure to thrive research are widespread and take many forms. The need for empiricism has been considered in many previous reviews (notably, Skuse, 1985; Lachenneyer & Davidovicz, 1987), and a comprehensive discussion is not necessary in this context. However, certain

*It has since been argued (Maves & Voikmar, 1993) that nonorganic failure to thrive should be reclassified in DSM-IV.
methodological issues have particular implications for the study of parenting; accordingly, they warrant attention in this review prior to a more detailed examination of the literature.

**Sampling**

Sampling problems persist, despite a move towards controlled studies. Investigators still tend to rely on hospital referred samples, although research using hospitalised infants is prone to a number of confounding variables. Foremost, it is doubtful that referred cases are representative of infants who fail to thrive. Skuse et al. (1992) provided evidence of the need for community based research from a whole population survey; only 28% of children identified as growth retarded had been referred to a paediatrician about their developmental delay, implying that children who are referred are not typical of those who fail to thrive. Research by Mitchell, Gorrell & Greenberg (1980) noted considerable differences between failure to thrive in hospital referred cases and in the primary care setting, indicating that findings based on hospitalised samples cannot be generalised to a wider setting.

The use of hospital samples fails to consider the impact of referral and intervention on the family. Clinical intervention tends to emphasise the role of nonmedical factors, and this emphasis probably contradicts the parents' understanding of the syndrome; Sturm and Drotar (1991) found that mothers were most likely to attribute their child's growth failure to medical problems, so they were probably unhappy with nonmedical intervention. In addition, a non-medical approach may be seen as threatening by parents because it implies their failure to care for their child (Kotelchuk & Newberger, 1983; Miguel & Burton, 1990). Problems of sample attrition have affected a number of investigations (e.g. Drotar & Eckerle, 1989; Sturm & Drotar, 1991); these difficulties might occur because the assessment procedure is threatening or invasive in some way.

Community based research is clearly necessary, but it is both expensive and time consuming, and so it is tempting for the researcher to survey hospital referred cases in order to satisfy economic and practical considerations. Studies of hospital samples may have some value in informing clinicians about the cases they are likely to see, but until improvements are made in identification and referral, hospital based research cannot provide a representative picture of failure to thrive, and so can only make a limited contribution to theoretical development.

Inconsistency between studies of psychosocial risk factors associated with failure to thrive may in part arise because of the use of control groups. The majority of families studied come from socioeconomically deprived backgrounds, and so control groups are often matched for socioeconomic status. Consequently, control families are also likely to experience many of the psychosocial stressors that are thought to be associated with failure to thrive. Control children do not fail to thrive, but the parents' vulnerability to child rearing difficulties may be expressed in other ways (Rutter, 1989) that are not
addressed by the researcher; comparison group children may manifest other problems, such as poor socioemotional or behavioural adjustment. The lack of group differences reported by a number of investigators (e.g. Casey, Bradley & Wortham, 1984; Singer, Song, Hill & Jaffe, 1990) may reflect a common degree of psychosocial stress among case and control families, as a consequence of their socioeconomic circumstances. Better intergroup distinction might be achieved if investigators focussed on the mechanisms by which psychological and social stressors result in malnourishment for some infants but not others.

Methods of assessment

Dowdney, Skuse, Heptinstall, Puckering and Zur-Szpiro (1987) draw attention to the variability of assessment measures in the failure to thrive literature, which may explain the diversity of research findings. The extensive use of questionnaire measures has probably further impeded theoretical development. Reviews of the literature (e.g. Lachenmeyer & Davidovicz, 1987; Drotar, 1991) have concluded that theory and research must account for the complexity of the syndrome; this requirement has been acknowledged in behavioural studies, which have adopted increasingly detailed empirical assessments, with, for example, the use of structured schemes for coding specific aspects of mother and infant behaviour (e.g. Heptinstall et al., 1987; Mathisen et al., 1989; Drotar, Eckerle, Satola, Pallotta & Wyatt, 1990; Wolke, Skuse & Mathisen, 1990). Less stringent requirements have been accorded to the study of parental thinking, which continues to rely on questionnaires and global assessments.

Several studies report problems of “retardation” or variable literacy among mothers whose children to not thrive (e.g. Jacobs & Kent, 1977; Singer et al., 1990); these individuals will experience difficulty with paper and pencil measures. Singer et al. (1990) excluded an unspecified number of mothers from their sample because they were “intellectually unable”, “mentally impaired” or “psychotic”, and so, presumably, they were unable to respond to the questionnaire measures used in the study. The incidence of these characteristics in mothers of children who are not thriving surely warrants consideration; their exclusion creates biased sampling and offers an inadequate picture of maternal characteristics associated with failure to thrive. Many studies report a low level of formal maternal education; questionnaire measures may be threatening to individuals who have had little experience of written tests. In addition, some questionnaires demand that the parent thinks in fairly abstract terms—such as rating her degree of “contentment with child” (Casey et al., 1984). Most people do not customarily think in abstract global terms, so maternal responses may be an artifact of the test, because the mother generates a series of transient beliefs in response to the items in the questionnaire; it is doubtful that the standard questionnaire format can ever adequately assess parental thinking (Holden & Edwards, 1989).

The environment in which families are studied influences the reliability and validity of research findings: hospital based assessments provide an inadequate
picture of family relationships. Skuse (1985) observes that mother–infant dyads are seldom “their usual selves” when interacting in the clinic; in addition, a clinical assessment of failure to thrive precludes consideration of the family context of the syndrome (Drotar, 1991) and of situation specific stressors that influence child rearing (Roberts & Maddux, 1982). Studies of the parent–child interaction in a clinical setting will offer a less representative picture of family life than research carried out in the home.

### Parenting Behaviour Associated with Failure to Thrive in Infancy

Social development in infancy depends on the interaction between parent and child; the feeding interaction is of critical importance in establishing their relationship (Stern, 1977). The feeding interaction in failure to thrive appears to be unsuccessful, because the child does not achieve an adequate nutritional intake. Drotar (1991) suggested that maladaptive feeding interactions arise because dysfunctional relationship patterns lead to such problems as inconsistency in feeding and conflict at mealtimes, implying that observations of interaction would foster an understanding of the nature of problems within the parent–child relationship.

Early studies (e.g. Patton & Gardner, 1962; Evans, Reinhart & Succop, 1972; Fischhoff et al., 1971) often drew conclusions about maternal behaviour associated with failure to thrive, but they contained serious methodological problems, and so it is not possible to accept their findings with any confidence. Lachenmeyer and Davidovicz (1987) commented that an “overwhelming number” of theorists adopt a psychoanalytic perspective; the methodology of many researchers also follows the psychoanalytic tradition, with an emphasis on case studies and impressionistic analyses that precludes any firm conclusions. For example, Fischhoff and his colleagues carried out unstructured and apparently highly subjective observations of 13 mother–infant dyads; one mother is criticised for wearing “an excessive amount of makeup”. Shapiro, Fraiberg and Adelson (1976, p. 461) argued that “it is the mother who is the key” in failure to thrive, on the basis of the clinical evaluation of a single family.

Chattoor and her colleagues (Chattoor et al., 1985; Chattoor, Egan, Getson, Menvieille & O’Donnell, 1987) presented a causal model of developmental subgroups of failure to thrive, such as “infantile anorexia nervosa”, from a psychoanalytic perspective. A number of problems exist with this research; it used a clinically referred sample, and provided no evidence of whether the maternal behaviour described is a cause or an effect of difficulty in feeding her child. The authors made a distinction between infantile anorexia and failure to thrive, but they did not include a comparison group of children who were not thriving, so one cannot draw this conclusion. In addition, it is likely that it is unwise to draw a parallel between food refusal in infancy and in later life; the criteria used to make a diagnosis of anorexia nervosa, such as distortions of body image, which are necessary in DSM-III-R and ICD-10 (World Health
Organisation, 1990), could not be applied to infants. Schmitt and Mauro (1989) also attempted to define subgroups of failure to thrive on the basis of a clinical sample, but once again the lack of scientific method undermines any confidence in their conclusions.

Case studies may be of interest to clinicians in the field, but it is clear that such research lends little to an understanding of the parent–child interaction. Other researchers have used improved methodology, but maintained a psychoanalytic perspective, arguing that distortions in the mother–child interaction can be understood by considering the concept of attachment (Bowlby, 1969). Gordon and Jameson (1979) carried out a controlled study of mother–infant attachment, reporting that 6/12 failure to thrive and 2/12 comparison infants were insecurely attached. These numbers are too small to allow statistical significance, and since half the infants who failed to thrive were not insecurely attached, the results provide very limited evidence that distorted mother–infant attachment is associated with failure to thrive. Drotar and his colleagues (Drotar et al., 1985; Finlon et al., 1985) also studied attachment in infants who were failing to grow. They found roughly equal proportions of securely and insecurely attached infants, and reported no differences in maternal behaviour between the securely attached and avoidant groups. While implying that growth failure is not synonymous with attachment disturbance, these findings are limited because no comparison group was studied. Furthermore, the authors reported a high degree of sample attrition, and the numbers involved in many of the subgroup analyses are too small to permit any degree of confidence.

Pollitt, Eichler and Chan (1975) attempted to address the methodological flaws of previous research, in a controlled outpatient study of 38 families with a child who was not thriving. Structured observations were carried out in the home, indicating that mothers whose children were failing to thrive showed less physical and verbal interaction with their children than controls. The investigators’ methodological rigour lends weight to their conclusions, but the reliability of their observers’ ratings may be questioned because they were not blind to the experimental hypotheses. Casey et al. (1984) and Drotar et al. (1990) carried out standardised home observations and found a number of differences in maternal behaviour between cases and matched controls, including lower ratings of sensitivity, emotional expression, responsiveness, acceptance and cooperation. Observations in both studies were made blind to experimental hypotheses and group status, allowing greater confidence in the results, but, as with the majority of studies, the authors used hospital referred samples. Heptinstall et al. (1987) carried out one of the few studies using a community sample; standardised home observations of mealtimes were made blind to case/control status, using a time-sampling technique which coded the occurrence of food-related behaviours in the parent and the child. A number of differences in parenting behaviour were observed: case mothers were rated as more indifferent or anxious than mothers of thriving children. They showed
more negative affect, and they were less likely to give instructions, communicate or socialise at mealtimes.

Through improvements in methodology and objective assessment procedures, recent research has provided some insight into parenting characteristics associated with failure to thrive; understanding would be enhanced by further community based research. However, if this research is to contribute to an aetiological model of failure to thrive it must fulfill two criteria: first, investigators must account for the role of the infant in the interaction; second, an aetiological model demands prospective study. The majority of research has been carried out subsequent to the identification of poor growth, and so it precludes the drawing of any causal inferences. Pollitt, Gilmore and Valcarcel (1978) addressed this issue in a prospective study, which considered whether mother and infant behaviour during feeding would predict infant growth during the first month of life. They carried out standardised ratings of maternal and infant behaviour during a feeding interaction when the child was 20–36 hours old, and noted that children whose mothers switched to a nonfeeding activity during the feed (e.g. cleaning the infant) gained less weight. This observation has valuable implications, and points to the need for prospective longitudinal research to inform about the role of parental behaviour in the aetiology of failure to thrive. In conclusion, the body of research offers some evidence of an association between parental behaviour and failure to thrive; prospective community based research is necessary in order to establish the extent of this association.

Psychological Factors Underlying Failure to Thrive

It could be argued that a focus on behaviour is insufficient, and that an understanding of failure to thrive requires consideration of the influences that underlie the parent's behaviour and lead to infant malnourishment. The parent is not a lone figure in the child's world; the child is at the centre of a complex network of forces which will guide his behaviour and development. Nonetheless, the effect of maternal attachment on the development and behaviour of the child has consistently been demonstrated (e.g. Cassidy, 1986; Russell & Russell, 1989) and should not be underplayed. It is important to consider those factors which, by affecting the parent's behaviour, act upon her relationship with her child, and possibly his future development.

Psychosocial factors

Roberts and Maddux (1982), and Drotar (1991) reviewed the literature concerned with family influences in failure to thrive, and proposed a psychosocial conceptualisation: both reviews commented on the neglect of family factors consequent to a traditional emphasis on the mother. Drotar suggested that family influences should form a theoretical framework for research, based on Belsky's model of parental competence (e.g. Belsky 1984; Belsky & Vondra, 1989) in which multiple psychosocial risk factors make a parent
more vulnerable to experiencing difficulty. Gordon and Vazquez (1985) reported that an increase in the incidence of failure to thrive corresponded with increased unemployment in an industrial town, and Lachenmeyer and Davidovicz (1987) pointed to a variety of risk factors, including psychosocial stressors and child characteristics such as minor congenital anomalies, which may be linked with growth failure. An examination of the literature is necessary to determine the extent to which psychosocial stressors are associated with failure to thrive, and to consider the evidence for an aetiological model.

Traditionally, failure to thrive research has paid little attention to the role of psychosocial factors; studies that did consider psychosocial stress are fraught with methodological problems such as lack of comparisons, objectivity or information about the reliability and validity of the classifications they made (e.g. Fischhoff et al., 1971; Evans et al., 1972; Shapiro et al., 1976; Jacobs & Kent, 1977; Chatoor et al., 1985), so it is difficult to draw any conclusions from their observations. More recently, research has considered specific psychosocial stressors that are known to be associated with parenting difficulties and developmental problems—for example, parental conflict (Hetherington, 1979), adverse physical environment (Quinton, 1988), and social support (Oakley, 1988). Dubowitz, Zuckerman, Bithoney and Newberger (1989) looked at psychosocial stress in families of growth retarded and physically abused children. The groups shared many characteristics, but families of infants who were failing to thrive reported fewer psychosocial stressors; they lived in larger homes, and were more likely to report having enough social support. Without a comparison group of families who do not have parenting problems one cannot determine whether these psychosocial stressors characterise “pediatric social illness”, as the authors suggest, or whether they simply describe low socioeconomic status.

Newberger and his colleagues (Kotelchuk & Newberger, 1983; Newberger, Hampton, Marx & White, 1986) provided some evidence that families of children who are failing to thrive tend to be isolated. They reported that mothers of growth retarded infants saw their relatives less often, and liked their neighbourhood less than mothers of thriving children. In addition, parental arguments in case families were more likely to result in physical violence from their partner. The authors noted that these associations do not imply a causal relationship; they studied a referred sample, and mothers may have become isolated because they felt that the “failure” in the child’s failure to thrive was their own. In concordance with Newberger et al., (1986) Drotar and Eckerle (1989) conducted a controlled study of families of hospital referred infants who were failing to thrive; these families reported more problematic relationships than controls, although there were no intergroup differences in conflict and expression of anger. These results are limited by substantial sample attrition among cases (45%) and comparisons (43%); there were no demographic differences between those who did and did not complete the study, but the sample offers a highly selective picture of failure to thrive.

In contrast, a number of controlled studies have reported little association between failure to thrive and psychosocial stress. Drotar et al. (1990) found no
differences between families of hospital referred growth retarded infants and thriving comparisons, in observer ratings of potentially stressful factors such as numbers present and noise levels. Mitchell et al. (1980) used a community sample and Casey et al. (1984) studied hospital referred infants; neither reported intergroup variation in maternal reports of stressful life events. Pollitt et al. (1975) observed no case-comparison differences in marital status or adaptation, and Singer et al. (1990) found no intergroup differences in overall stress, although mothers of growth retarded infants described their child as more stressful than controls. Singer et al. attempted to address methodological problems in earlier research by using a standardised psychometric test, the Parenting Stress Index, nonetheless, their conclusions should be interpreted with caution because they studied a highly selective referred sample; a number of mothers were excluded because they were intellectually impaired, unstable, or psychotic.

Altemeier, O'Connor, Sherrod and Vietze (1985) considered the aetiology of failure to thrive with a prospective study in a primary care setting, and noted significant correlations between subsequent failure to thrive and a number of psychosocial stressors, including mother's and father's life stress; for example, mothers whose children subsequently failed to thrive had experienced more parental arguments and separations, and their partners were more likely to have been arrested. Altemeier et al. provided convincing evidence of the role of psychosocial stress in failure to thrive, but the degree of inconsistency in the literature gives cause for concern. One would expect psychosocial stressors such as relationship conflicts and isolation to be exacerbated by the onset and identification of failure to thrive, particularly when the child is hospitalised as a consequence of his nutritional status. Inconsistency may result because, while growth failure is influenced by psychosocial stress, it is not necessarily caused by it (Woolston, 1985).

The experience of stress is emotional and highly personal. Cox (1978) noted that this subjectivity leads to methodological problems in the assessment of stress, and that misidentification and misnaming of the stressful experience frequently occur. An individual's experience of stress depends on her perception of her ability to cope with environmental demands; her perception is in turn determined by a number of individual characteristics, such as age, social learning and personality. Oakley’s (1988) observations lend support to this model: she noted that psychosocial welfare is related to the mother's perception of her ability to make use of available social support, and Brewin, MacCarthy and Furnham (1989) emphasised the importance of considering an individual’s “hopes and fears” concerning potential sources of support. Future research might achieve a more useful picture of the role of psychosocial stress in failure to thrive by considering the parent’s perceptions of her environment and her child.

**Parental thinking**

Numerous investigators have discussed the role of maternal thinking in failure to thrive; however, they have tended to focus on diagnostic classifications
and maternal psychopathology, rather than considering the cognitive processes that guide the parent’s responses to her environment. The notion of maternal psychopathology has been prominent in traditional theorising about the syndrome; researchers have described maternal characteristics such as severe depression (Evans et al., 1972), character disorder and chronic anxiety (Fischhoff et al., 1971), substance abuse and psychotic stress reactions (Jacobs & Kent, 1977), narcissism (Ayoub & Milner, 1985) and adjustment disorders (Chatoor et al., 1985). Schmidt and Mauro (1989, p. 241) typify the lack of methodological rigour that characterises these studies in their suggestion that, “the bizarre nature of the (child’s) diet will help to disclose a psychotic mother”. Perhaps it is not surprising that these dramatic descriptions are almost entirely derived from clinical impression, and that more stringent research has found little evidence of maternal pathology. Ayoub and Milner (1985) found no correspondence between their clinical observations and the scores of mothers on the Child Abuse Potential Inventory, the only validated instrument that they used.

Singer et al. (1990) carried out one of the few studies utilising a psychometrically validated instrument, the Beck Depression Inventory, to assess psychological well-being. The scores of mothers whose children were failing to thrive fell within the normal range for this test. Skuse et al. (1992) examined mothers’ mental state in a controlled whole population survey using another well known instrument, the General Health Questionnaire (Goldberg & Hillier, 1979). No intergroup differences were found, although levels of depression were high among both cases and controls. A number of other investigators have questioned the assumption of psychiatric disturbance by carrying out controlled studies (Pollitt et al., 1975; Kotelchuk & Newberger, 1983; Benoit, Zeanah & Barton, 1989). Their assessments of maternal psychiatric history and current mental health revealed no evidence of maternal psychopathology. The lack of evidence of maternal psychiatric disturbance has led to a shift in emphasis away from a pathological model, with greater attention being paid to the way that the mother thinks about her child. Pollitt et al. (1978) observed that synchronisation of feeding depends on the mother correctly perceiving and responding to her infant’s signals, suggesting that mothers’ perceptions and responses would provide a worthwhile area of study when there are problems with the feeding interaction. Despite this implication, the majority of research has focussed on mothers’ attitudes and beliefs.

Fenton, Bhat, Davies and West (1989) raised the issue of cultural beliefs, and Pugliese, Weyman-Daum, Moses and Lifshitz (1987) asserted that parental health beliefs, such as a fear of obesity and a desire for a healthy diet, are related to failure to thrive in infancy. These investigators raised interesting fields of study, but their contentions were based on clinical experience, so they provide no indication of the importance of these beliefs among parents of thriving children. Casey et al. (1984) carried out one of the few controlled studies of parental attitudes; they reported several intergroup differences in maternal behaviour but found no evidence of corresponding attitudinal differences. Altemeier et al.
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(1985) reported that mothers' philosophy about parenting did not correlate with subsequent failure to grow, lending further weight to the conclusion that methodologically stringent studies report few, if any, differences in the psychological characteristics of mothers of growth retarded and thriving children, and implying that there is no relationship between maternal thinking and failure to thrive.

The lack of correspondence between professed attitudes and observed behaviour has long been a source of debate in the field of social psychology (La Piere, 1934; Kutner, Wilkins & Yarrow, 1952; Wicker, 1969). It has been suggested that the whole concept of attitude should be rejected, but it is perhaps more appropriate to look for problems with experiments that do not demonstrate consistency between attitudes and behaviour, rather than to question the assumption of consistency. A variety of factors influence an individual's ability to act in a certain way; for example, social pressures (Asch, 1955; Campbell, 1963), time, money (Ajzen & Madden, 1986) and personality (Miller & Grush, 1986). Studies attempting to link a general attitude to a specific behaviour neglect the abundance of intervening variables in the attitude-behaviour relationship. Global attitude measures such as "Contentment with Child" (Casey et al., 1984) fail to account for the intricacy of the parent-child relationship, and so cannot be expected to succeed.

Parental ideas "constitute the real environment where children live and grow" (Emiliani & Molinari, 1988, p. 20) and examination of the cognitive processes underlying parental behaviour can extend understanding of the ideas and beliefs which govern the behaviour of parents whose children fail to thrive. Behavioural differences have been observed between mothers of thriving and growth retarded children, but researchers have yet to explain why parents respond in this way. Skuse, Reilly and Wolke (in press) found that case and comparison infants were equally likely to sleep through feeds, but infants who failed to thrive were less likely to be woken to be fed. This research indicates the importance of the maternal response to the child: Why did the mothers studied by Skuse et al. decide not to wake their babies? A focus on the processes guiding the response might prove more useful than a description of isolated characteristics of parent or child.

Recent research by Sturm and Drotar (1991) had drawn attention to the potential value of studying parental cognitions in failure to thrive. Sturm and Drotar considered maternal attributions about aetiology, and reported that while 47% of mothers attributed their child's growth failure to "general physical problems", only 6% thought that their physician had come to this conclusion; this discrepancy is likely to lead to difficulties with intervention, such as lack of cooperation. Sturm and Drotar reported a number of methodological problems, but they indicated the capacity of attributional research to inform about maternal thinking in failure to thrive.

In summary, it must be concluded that the literature offers little information about the role of parental thinking in failure to thrive. Many investigators have sought to make global classifications, and so there have been few attempts to
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apply theories of social cognition to the understanding of failure to thrive. Research suggests that mothers whose children fail to thrive differ from mothers of thriving children in aspects of parenting behaviours such as communication and sensitivity, but there has yet to be an adequate explanation of the psychological processes that guide parental behaviour. By examining specific processes, such as attributions about child behaviour, the study of parental social cognitions would account for the infant’s role in the interaction, rather than viewing the child as the object of parental beliefs. Existing studies of parental thinking indicate that there is little relationship between parents’ behaviour and their expressed attitudes and beliefs, so future researchers might find it more useful to consider the cognitive mechanisms that guide a parent’s responses to her child and environment.

**Parental history**

Psychoanalytic theory, on which much failure to thrive research has been based, places great emphasis on the role of early adverse experiences in the aetiology of psychological problems in adulthood. It has generally been thought that maltreated children are likely to become abusive parents; although more recent research has challenged this assumption (e.g. Kaufman & Zigler, 1987; Simons, Whitbeck, Conger & Chyi-In, 1991).

Some attention has been paid to adverse early experiences in mothers of infants who fail to thrive, with rather mixed results. Early research (e.g. Fischhoff et al., 1971; Evans et al., 1972; Shapiro et al., 1976) related growth failure to the mother’s experience of loss or lack of nurture in childhood, or to “ghosts” in the nursery (Shapiro et al.); these are the ghosts of unresolved conflicts in the mother’s childhood. These studies are characterised by a plethora of methodological flaws, making it difficult to draw any conclusions about the role of parental history. However, more stringent studies have also implied a link between mothers’ early experiences and infant failure to thrive. Pollitt et al. (1975) reported that mothers of hospital referred infants who were failing to thrive had more stressful recollections of childhood than mothers of thriving controls. Altermeier et al. (1985) also observed that negative maternal recollections of childhood—such as feeling unloved as a child, reporting an unhappy childhood, and the frequency of beating by a carer—were significantly correlated with infant growth failure.

An association between adverse maternal experience and infant failure to thrive has not been consistently observed. Newberger et al. (1986) reported that recollections of childhood did not discriminate between mothers of growth retarded infants and controls, but very little information was provided about the content and validity of their interview, so it might be argued that the assessment failed to measure adequately adverse experiences. However, identical interviews differentiated between mothers of abused children and mothers of nonabused controls, implying that the interview had discriminant validity, and that the lack of differentiation between mothers of growth retarded and thriving infants was genuine. Dubowitz et al. (1989) compared recollections of childhood in mothers
whose children were failing to thrive or had been abused. No group differences were apparent, but there was no control group of mothers without parenting difficulties, so one cannot say whether the results mean that both groups have had unhappy childhoods or that they have both had happy childhoods. Few mothers reported negative feelings, but they may have been reluctant to express their emotions, given the circumstances of the interview (during the child’s hospitalisation for abuse or failure to thrive). The mothers’ reported lack of negative feelings might also reflect their idealisation of childhood (Main & Goldwyn, 1984), so the interview may have failed to assess their actual experiences.

Benoit et al. (1989) reported inconsistent results in their controlled study of childhood attachment in mothers whose infants were failing to grow. Mothers in the failure to thrive group had less secure representations of attachment than controls, according to independent ratings of their responses to a structured interview (The Adult Attachment Interview; George, Kaplan & Main, 1985), but no case-control differences were found in ratings of childhood on a self-report questionnaire (the Mother-Father-Peer scale; Epstein, 1983, cited in Benoit et al., 1989). The authors concluded that this discrepancy occurred because the interview measure produced a more valid measure of adult attachment; equally, the two instruments may measure different constructs. The Adult Attachment Interview asks specific questions about childhood experiences, which are rated independently; the Mother-Father-Peer scale requires that the respondent makes her own judgements. These judgements may be idealised, and are likely to be subject to a higher degree of distortion than memories of actual events in childhood (Brewin, Andrews & Gotlib, 1993).

In summary, the literature suggests a link between mothers’ recall of adverse early experiences and infant failure to thrive, but this association is clearly not inevitable. Rutter (1989, p. 321) argued that “intergenerational discontinuities are at least as striking as continuities”; an understanding of the mechanisms underlying the intergenerational cycle of parenting difficulties requires consideration of why adverse early experiences lead to problems for some parents but not for others. Negative childhood experiences make individuals more vulnerable to a variety of problems, such as psychiatric disorder (Andrews, Brown & Creasey, 1990), and child rearing difficulties (e.g. Dowdney, Skuse, Rutter, Quinton & Mrazek, 1985). Child rearing difficulties can take many forms; the failure to thrive literature offers no explanation of the mechanisms by which the parent’s experience of adverse nurture causes difficulty in adequately nourishing her child, instead of other problems such as physical abuse or neglect. Mainstream psychological research repeatedly indicates the importance of cognitive representations of experiences (e.g. Bowlby, 1969; Main & Goldwyn, 1984; Main, Kaplan & Cassidy, 1985; Davis, 1987; Trickett & Susman, 1989); to account for the nature and extent of any link between parental childhood experiences and infant failure to thrive, future investigators must attend to parental cognitions.
Conclusions and Implications for Research

Kotelchuk and Newberger (1983, p. 323) wrote that, "The role of maternal or social environmental factors in the etiology of FTT still remains basically unproven". Ten years later, it appears that little has changed; their comment continues to provide an accurate summation of current knowledge about the role of parenting in failure to thrive. The reasons for this lack of theoretical development are twofold. First, and most notably, theoretical advancement has been hampered by the paucity of methodologically adequate research. The persistent emphasis on the role of the mother in failure to thrive (as indicated by its conclusion in the DSM-III-R description of reactive attachment disorder) largely depends on empirically flawed research. Methodologically rigorous investigations have reached more ambiguous conclusions. Recent studies of parenting have indicated behavioural differences between mothers of growth retarded and thriving children, but there is inconsistent evidence of differences in psychological characteristics. The diversity of research findings may in part be explained by a lack of reference to developments in mainstream psychology; failure to thrive research has been minimally informed by progress that has been made in the study of parenting, and in psychology as a whole.

Lack of reference to mainstream psychology

The failure to thrive literature has devoted surprisingly little attention to wider developments in psychology, and consequently, it is probable that theoretical development has been impeded in a number of ways. For example, the need for care when using questionnaire measures has been noted in a variety of research settings within mainstream psychology (e.g. Holden & Edwards, 1989; Ortony, Clore & Collins, 1988; Hewstone, 1989; Brewin et al., 1993); it is apparent from the literature that this body of opinion has had little effect on the study of failure to thrive.

The study of parental attitudes provides a further example of the lack of reference to mainstream psychology in failure to thrive research. Theorists in social psychology have been questioning the utility of studying attitudes for over 20 years, and it has been argued that the whole concept of an attitude–behaviour relationship should be rejected (e.g. Wicker, 1969). Rather than seeking to determine whether an attitude–behaviour relation exists, recent research has sought to understand when attitudes predict behaviour (e.g. Ajzen and Fishbein, 1980; Fazio, Chen, McDonel & Sherman, 1982; Ajzen & Madden, 1986). Ajzen and Fishbein (1980) proposed a model for the study of attitudes, which accounts for the role of other factors, such as beliefs about social norms, motivation, and circumstantial factors, that influence an individual’s intention to perform (or not perform) a particular behaviour. Thus, the theory refers only to attitudes towards behaviours, rather than towards objects, people, and so on.

Cognitive theories of attitude (see Chaiken & Stangor, 1987) also point to the complexity of the attitude–behaviour relationship, suggesting that we have systems of attitudes, which are based on underlying cognitive processes.
Theoretical and methodological advances in the field of social cognition have led to an increased understanding of cognitive processes such as attributions and problem solving strategies that have significance for social behaviour and psychological well-being (e.g. Brewin, 1985; Rubin & Krasnor, 1986; Stratton et al., 1986; Hewstone, 1989; Mills & Rubin, 1990). It is clear that the relationship between attitudes and behaviour is neither direct nor inevitable; persistent attention to global attitudes such as "philosophy about parenting" (Altemeier et al., 1985) implies that studies of parental thinking associated with infant growth failure have failed to account for the body of knowledge derived from attitudinal research.

Theoretical developments in social cognition have influenced the study of parenting; Sameroff and Feil (1985) observed that attitudes are only the tip of the iceberg of parental cognition, and Holden and Edwards' (1989) review of research into parental attitudes highlighted their failure as a means of studying social cognition. Mills and Rubin (1990) proposed an information processing model of parenting, which suggested that parents' beliefs about child behaviour guide their responses in the parent–child interaction. Parental beliefs were said to consist of cognitive and affective processes that influence the strategies parents use in child rearing. The model also considers the context of the interaction, and accounts for factors such as social support and personal well-being. Mills and Rubin (1990) studied mothers and fathers, and found support for their model: the more negative a parent's emotional reaction to a hypothetical behaviour problem, the more likely she was to suggest a high power strategy—such as punishment, coercion or threats—for dealing with the problem. Rubin and Mills (1990) provided further evidence for their information processing model of parental cognition in a study of normal, aggressive and withdrawn four year olds. They reported group differences in mothers' beliefs about child rearing strategies and attributions about hypothetical behaviour problems, suggesting that maternal social cognitions were associated with child behaviour. These results demonstrate the utility of investigating the emotions and causal attributions that occur during parent–child interaction; however, little attention has been paid to these aspects of parental thinking in failure to thrive research.

A number of other investigators have made use of developments in social cognition, in their application of attribution theory to work on family functioning (e.g. Stratton et al., 1986; Stratton & Swaffer, 1988; Bugental, Mantyla & Lewis, 1989). For example, Bugental et al. (1989) proposed a transactional model of abuse which emphasised the moderating role of parental attributions in the mother–child interaction. Stratton and Swaffer (1988) lent support to this perspective, and noted that abusive mothers differed from control group mothers in tending to see causes as more internal for their child, and more external for themselves: outcomes were seen as more controllable by their child and less controllable by themselves *. Sturm and Drotar (1991) have studied maternal attributions in failure to thrive, but the authors make little reference to attribution theory. "Attribution" describes the process of ascribing a
specific phenomenon to its origin (Hilton, 1990); the maternal explanations in Sturm and Drotar's study were not attributions, according to this definition, because they did not refer to discrete events. In addition, the authors only analysed the content of the mothers' explanations, ignoring the potential of studying attributional dimensions such as controllability for increasing theoretical understanding of parental cognitions in infant growth failure. Mothers of growth retarded children have been described as less communicative (Heptinstall et al., 1987), accepting (Casey et al., 1984) and cooperative (Drotar et al., 1990) than mothers of thriving controls; since failure to thrive without organic cause is due to malnourishment (e.g. Woolston, 1985), these parenting behaviours are likely to be associated with the child's caloric intake. To understand how these patterns of child rearing contribute to infant nutrition and growth, one must consider the influences that determine the parent's responses in the interaction. Pollitt et al. (1978) reported poorer growth in infants whose mothers switched to a nonfeeding activity during the feed, and Skuse et al. (in press) observed that mothers of growth retarded infants were less likely to wake their children for feeds. Such behaviour is likely to disrupt a child's nutritional intake, but an understanding of why malnourishment occurs depends on the reasons for the mother's behaviour.

Psychosocial stressors and childhood adversity increase vulnerability to childrearing problems, however, this association is neither inevitable nor direct. The parent's cognitions about stressful experiences determine whether she experiences child rearing problems, and also the nature of those problems. To explain parental characteristics theorists must acknowledge that parenting is a responsive process. It is of limited value to know that mothers of growth retarded infants are less communicative with their children if we do not understand how this pattern of interaction leads to malnutrition. Social cognitive theories of parenting address cognitive and affective processes, such as beliefs, emotions and attributions, that guide the parent's perceptions of, and responses to her child and her environment; consequently, a model of parental social cognition has the capacity to explain why stressors such as isolation, or child characteristics such as sleepiness lead to infant malnutrition in some families, while others cope or demonstrate different problems such as abuse or neglect. Developments in the study of social cognition, in the field of parenting and in psychology as a whole, have been almost entirely neglected in failure to thrive research. It is likely that this neglect has limited understanding of the role of parenting in failure to thrive.

* The attribution of a cause as internal suggests that it originates within the person; if the cause is ascribed to external factors, such as circumstances or the characteristics of another person, the attribution is classified as external. If the attribution suggests that the person could normally manage to influence significantly the outcome, then it is controllable; the attribution of a cause as uncontrollable suggests that under normal circumstances the outcome is inevitable, or the causal sequence is inexorable (Stratton & Swarffer, 1988).
Conclusions

I. Given the methodological inadequacy of early uncontrolled studies, to what extent does the literature show differences between parents of thriving children and those whose children fail to grow?

In 1967, Bullard, Glaser, Heagarty and Pivchik pointed to the difficulty that exists in establishing the precise role of the parent in failure to thrive; understanding has progressed remarkably little since then. The literature is characterised by inconsistency, and it is very difficult to be confident of the part played by factors such as psychosocial stress and parental attitudes. Current research suggests an association between parenting behaviour and infant growth retardation, but there has yet to be an adequate explanation of parental thinking. The failure to understand the role of parental cognitions in a child's growth retardation appears to be the consequence of a lack of attention to developments in mainstream psychology, such as those described above, theoretical weaknesses have been exacerbated by the prevalence of empirically inadequate research.

II. With reference to current knowledge, how might future research increase understanding of the role of parenting in failure to thrive?

The study of parental social cognitions in failure to thrive research can explain how parents interpret and respond to their children's behaviour, and increase understanding of their subjective experience of past and present psychosocial stressors. A social cognitive model would address the cognitive and affective processes that guide the child rearing patterns observed in parents of growth retarded children, and so this model has the potential to explain why infants receive inadequate nutrition and fail to grow. These theoretical advances are only possible if future research addresses the methodological deficiencies of early investigations. Foremost, the study of failure to thrive requires a clear positive definition that focuses on the causes of malnourishment, and the recognition that hospital referred cases provide a highly selective sample. The study of social cognition has greatly increased knowledge about the dynamics of family functioning; the process of parenting a child who is failing to grow can only be understood if this knowledge is applied to failure to thrive research.

References


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The process of parenting in failure to thrive


The following introduction was read to mothers before the mother's interview was commenced:

The research that I'm here to do is part of a big study that is being carried out at Great Ormond Street Children's Hospital, looking at various aspects of children's growth and development. Now I'd like to see child's name later on, in order to look at his/her development, but what I'm mainly interested in today is the mother's point of view. I want to find out what you think it's like to bring up a child - and I want to ask you some questions so I can get an idea of what your experiences have been like.

I want to find out how you feel about things - what sorts of problems you come across; what thoughts you have about raising children. I'm interested in your point of view, so what matters to me is what you really think. There aren't any right or wrong answers to the questions I'm going to ask - I just want your ideas and your opinions.

One more thing. I want to stress that whatever we talk about is confidential - it will only be used for the purposes of our research, so nobody else will have access to any information.

Having said that, would it be okay if I tape-record this? I'll be taking some notes as well, but tape-recording helps my memory.

Is there anything you'd like to ask me about before we begin?
appendix 2.b measures of psychosocial functioning

appendix 2.b.i disordered eating
appendix 2.b.l.a
interview assessment of maternal eating

Mothers were questioned about their eating patterns (using the PSE 10/SCAN; Wing et al., 1990) to enable identification of past or current anorexia or bulimia nervosa, and to determine the extent of eating disordered symptoms they described.

Now, as I said before, one of the things we’re interested in is children’s feeding, and as one part of that we want to learn about what mothers usually eat. So, I’d like to ask you some questions about your appetite and eating habits, but first of all can you tell me how much you weigh now and how tall you are?

height _____________
weight _____________

What has your appetite been like recently? Are you eating less than usual, or more, or about the same?

decreased appetite [ ]
increased appetite [ ]
no change [ ]

What about your weight - has that changed in the last 3 months?

lost weight [ ]
gained weight [ ]
no change [ ]

**IF POOR APPETITE OR WEIGHT LOSS:**
How much weight have you lost? As much as ___ stone?

Often people find that they just don’t feel hungry - have you ever felt like that? Have you had to force yourself to eat? Could you tell me about that? Can you tell me what happened when you felt that way?

yes [ ]
no [ ]
IF INCREASED APPETITE &/OR WEIGHT GAIN:
Often people find that they feel hungry a lot of the time - have you ever felt like that? Have you had spells when you were hungry all the time? Were there spells when you seemed to be constantly nibbling at food? Could you tell me about that?

yes [ ]
no [ ]

How much weight have you put on (in the last 3 months) - as much a 5 pounds?

Have you been afraid of getting too fat at any time in the year? Could you tell me about that?

yes [ ]
no [ ]

Have you been afraid of getting too fat even though other people have thought you’re too thin? Could you tell me about that?

yes [ ]
no [ ]

Have you felt preoccupied with the feeling that you were too fat even though you were strictly speaking underweight? Could you tell me about that?

yes [ ]
no [ ]

IF NO EVIDENCE OF DREAD OF BECOMING FAT THEN SKIP NEXT 2 QUESTIONS:
When was the first time you became concerned about feeling fat? How old were you then?

What action have you taken to avoid getting too fat? Have you been trying to avoid fattening foods - such as sweets and chocolates?

ASK FOR EVERYONE FROM NOW ON:
When people are trying to lose weight they try a lot of different things. I’ve got a list of different ways that most people have used at some time in order to lose weight, and I’d like to ask you if you have ever tried any of them.
Have you tried to lose weight by making yourself sick? When did you try that? How often have you done that to help you diet?

- yes
- no

Have you ever tried to lose weight by taking laxatives? When did you try that? How often have you done that to help you diet?

- yes
- no

Have you ever tried to lose weight by taking lots of exercise? How much did you exercise? What sort of exercise did you do? When did you try that? How often have you done that to help you diet?

- yes
- no

Have you ever tried to lose weight by taking appetite suppressants and/or diuretics? When did you try that? How often have you done that to help you diet?

- yes
- no

People often find that they really crave food sometimes - have you ever felt like that? Have you had a feeling of craving for food at any time in the year?

- yes
- no

Have you felt like that even though you knew you were overweight?

- yes
- no

How persistent was it? Could you always resist it or was it out of your control?

- resistable
- not resistable

Many women have periods when they binge eat - that is, they eat very large amounts of food within an hour or so. Have you ever done that? How often do you have periods like that?

- yes
- no
At its height, how many times a week do you eat like that? How long do those periods go on for?

*IF CRAVING OR BINGEING THEN ASK:*

Have you had a fear of getting too fat, in spite of this craving for food?

- yes [ ]
- no [ ]

Sometimes when people have binges they do different things to compensate for bingeing. After these binges have you tried making yourself sick?

- yes [ ]
- no [ ]

What about taking laxatives?

- yes [ ]
- no [ ]

Have you tried fasting for several days after these binges (maybe not eating at all or only taking liquids) or going on a strict diet - eating very little for a week or more? What sort of diet was it? What exactly did you eat during that period?

- fasting [ ]
- strict diet [ ]
- no [ ]

What about appetite suppressants and diuretics - have you tried taking either of them?

- yes [ ]
- no [ ]

*IF EVIDENCE OF EATING DISORDER ASK ONSET/COURSE QUESTIONS*

Most women experience these sorts of things at some time. Has there been any other period in your life when you might have answered yes to any of these questions? Could you tell me about that?

- yes [ ]
- no [ ]
### Appendix 2.b.i.b

**Coding Scheme for Assessment of Disordered Eating**

<table>
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<th></th>
<th>Height:</th>
<th>Weight:</th>
<th>Body Mass Index:</th>
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<tbody>
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<td><strong>Appetite Increase</strong></td>
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<tr>
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<tr>
<td><strong>Weight Lost</strong></td>
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<td>Kg</td>
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<tr>
<td><strong>Gained Weight</strong></td>
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<tr>
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<td><strong>Don't Feel Hungry</strong></td>
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taken action to avoid fat:

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lose weight by appetite supressants/diuretics:

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craving food:

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craves when overweight:

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resists craving:

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frequency of current bingeing:

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frequency of past bingeing:

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fear of fat while craving or bingeing:

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binges then vomits:

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binge then laxative:

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binge then fast:

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binge then appetite suppressant/diuretic:

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<th>DSM-III-R</th>
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<td>yes 1</td>
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<table>
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<tr>
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example of transcribed account of maternal eating

Can you tell me how much you weigh now and how tall you are?

weight: 11 stone  
height: 5'6"

What has your appetite been like recently?

It’s started to go downhill as I’m trying to lose weight. The last two years I’ve been eating quite a lot and have been putting on weight.

So would you say your weight has decreased recently?

Yes

How recently?

From the beginning of this year. I have to lose weight ‘cause I want to go on holiday again this year, so I have to lose it.

Has your weight changed in the last 3 months?

Yes - put on

Often people find that they feel hungry a lot of the time - have you ever felt like that?

Yes, sometimes

Have you had spells when you were constantly nibbling at food?

Yes

Could you tell me about that?

When I’m here by myself and there’s nothing else for me to do, anything I see I just take it.

How much weight have you put on in the last 3 months?

About 3 pounds

Have you been afraid of getting too fat at any time?

Yes. My mum’s fat - I don’t want to be like her.

Have you been afraid of getting too fat even though other people have thought you’re too thin? Yes

Could you tell me about that?

Well, when I had S., I was about this weight, I went up to about this weight when I was pregnant, and after I had S. I went down to about 8½ to 9 stones, and I knew I was putting on weight, and I was keep thinking about my mum, thinking I don’t want to get fat like my mum, I keep seeing the size of my mum. A lot of people thought I was too thin.

Have you felt preoccupied with the feeling that you were too fat even though you were strictly speaking underweight?

No
When was the first time you became concerned about feeling fat?

The very first time, I don’t know - I think I was in my teens, about 14 or 15.

What action have you taken to avoid getting too fat?

Well, I tried not to eat fatty foods, and cut down on junk foods - I do like junk foods in a sense, and I did.

When people are trying to lose weight they try a lot of different things. I’ve got a list of different ways that most people have used at some time in order to lose weight, and I’d like to ask you if you have ever tried any of them.

Have you tried to lose weight by making yourself sick?

No

Have you ever tried to lose weight by taking laxatives?

No

What about by taking lots of exercise?

Yes - I take lots of exercise.

For how long?

Couple of hours in the morning, a couple of hours in the evening.

How long did you do that?

Quite a while I’d say - for about the last two years. I do aerobics and I’ve got home videos as well.

Have you ever tried to lose weight by taking appetite suppressants and/or diuretics?

No

People often find that they really crave food sometimes - have you ever felt like that even though you knew you were overweight?

Yes

Could you tell me what it’s like, and what sorts of things you usually crave for?

Chocolate - all the time!

How persistent is it? Can you resist it or is it out of your control?

I can’t say I can resist it, I just love chocolate.

Now, a lot of women have periods when they binge eat - that is, they eat very large amounts of food within an hour or so. Have you ever done that?

No

Have you had a fear of getting too fat, in spite of this craving for food?

Yes

Sometimes when people have binges they do different things to compensate for it. So after you’ve eaten chocolate as a craving, have you tried making yourself sick?

No, never.

What about taking laxatives?

No.
Have you tried fasting for several days - maybe not eating at all or only taking liquids, or going on a strict diet?

Strict diet I try for one day

What sort of diet would it be?

I say I would just have fruit and juice throughout the day if I can and that’s about it.

And you would do that if you’d had a craving for chocolate?

Yes

Would it just be for one day?

Yes - if I can stand it that long!

What about appetite suppressants and diuretics - have you tried taking either of them?

No

The sorts of things I have been asking about - most women have experienced these sorts of things at some time. Has there been any other period in your life when you might have answered yes to any of these questions?

No

Note: This mother was rated as having no previous or current anorexia or bulimia nervosa, and she scored a total of 16 on the index of symptoms of disordered eating.
Mothers were questioned, as follows, about the family’s socio-economic circumstances to enable coding on the Osborn Social Index. Questioning was carried out in two sections: the first took place at the beginning of the interview, and remaining questions were included after questions about maternal social support (about halfway through the interview). Information about maternal education was available from the 15 month assessment.

PART ONE:

I’d like to start by going over one or two basic details, and then I’d like to go on and ask some questions that will give me a picture of where you live - what sort of house and things like that.

Have you moved since _____’s first birthday?

yes [ ]
no [ ]

IF YES:
When exactly was that? When did you move?

date (month/year) [ ]/[/ ]/[ ]

OR
how long ago [ ] [ ] years [ ] [ ] months

What sort of house would you call this? For example, a self-contained flat; a semi-detached house?

whole detached house or bungalow [ ]
whole semi-detached house or bungalow [ ]
whole terrace house (including end of terrace) [ ]
flat/maisonette (self-contained) [ ]
rooms (non-self contained flat) [ ]
other (please give details) [ ]
Do you own the house or do you rent it?

- owned outright
- being bought
- rented from council
- privately rented - unfurnished
- privately rented - fully or partly furnished
- tied to occupation of father
- other situation (please give details)

How many rooms are there in the house/flat - not including the kitchen, bathroom and toilet, and excluding any rooms that you use for purely business purposes.

number of rooms

Does ____ share a bedroom with anyone else? Who?

- no
- yes - one other
- yes - two others
- yes - more than two others
- not known

How many people are living in the house just now?

PART TWO:

I'd like to move on now and ask you if you are working just now?

- yes
- no

IF YES: What do you do?

IF NO: How long have you not been working?

- date (month/year) [ ][ ][ ][ ]
- how long ago [ ][ ][ ] years [ ][ ][ ] months
- never worked [ ]
IF YES: What kind of hours do you work? For example, do you work full time or part time? Do you work in shifts?

- full time
- part time early
- part time late
- other
- no work
- not known

Do you enjoy your job?

- yes
- no

IF RELEVANT:
I'd like to talk a bit about your partner's work.
Is he working just now?

- yes
- no

IF YES: What does he do?

IF NO: How long has he been out of work?

- date (month/year)
- how long ago
- never worked

IF YES:
What kind of hours does he work? For example, does he work full time or part time?
Does he work in shifts?

- full time
- part time early
- part time late
- other
- no work
- not known
appendix 2.b.ii.b

coding scheme and weights for Osborn Social Index

Osborn weight

(1) **classification of main wage earner’s occupational status**

OPCS social class:

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>I</td>
<td>+5</td>
</tr>
<tr>
<td>II</td>
<td>+3</td>
</tr>
<tr>
<td>III (non-manual)</td>
<td>+1</td>
</tr>
<tr>
<td>III (manual)</td>
<td>-1</td>
</tr>
<tr>
<td>IV</td>
<td>-3</td>
</tr>
<tr>
<td>V</td>
<td>-5</td>
</tr>
<tr>
<td>no information</td>
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</tbody>
</table>

(2) **highest educational qualification of either parent**

- no qualifications: -2
- vocational qualifications (e.g., trade apprenticeships): -1
- G.C.E. ‘O’ level or equivalent: 0
- G.C.E. ‘A’ level or equivalent: +1
- State Registered Nurse: +2
- Teacher's Certificate of Education: +4
- Degree equivalent or higher qualification: +5
- no information: 0

(3) **housing tenure**

- owner occupation: +2
- local authority rented: -3
- privately rented - unfurnished: -1
- privately rented - furnished: -5
- no information: 0

---

1 Taken from Osborn (1987)
2 This information was recorded during the 15 month assessment.
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<tbody>
<tr>
<td>house or bungalow: detached</td>
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</tr>
<tr>
<td>house or bungalow: semi-detached</td>
<td>+1</td>
</tr>
<tr>
<td>house or bungalow: terrace</td>
<td>-2</td>
</tr>
<tr>
<td>flat or maisonette</td>
<td>-4</td>
</tr>
<tr>
<td>rooms</td>
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<table>
<thead>
<tr>
<th>(5) person per room ratio</th>
<th>Osborn weight</th>
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<table>
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<tr>
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<td>-3</td>
</tr>
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<table>
<thead>
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<th>(7) telephone availability</th>
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Mothers were questioned about their support networks, as follows, by interview based administration of the MSSI. This appendix also shows the original coding scheme for the MSSI (from Pascoe et al., 1988); please refer to Appendix 2.b.iv.b for information about the revised scoring scheme used in the thesis.

I'd like to move on now and ask you some questions about the things you do in the home as a mother. I just want to know who does what, so I don’t need any details.

**Firstly, who fixes meals?**

- no one [ ] 0
- you usually do it [ ] 0
- generally someone else [ ] 1
- someone and you [ ] 1

**Who does the grocery shopping?**

- no one [ ] 0
- you usually do it [ ] 0
- generally someone else [ ] 1
- someone and you [ ] 1

**Who fixes things around the house or flat?**

- no one [ ] 0
- you usually do it [ ] 0
- generally someone else [ ] 1
- someone and you [ ] 1

**Who does the cleaning inside the house?**

- no one [ ] 0
- you usually do it [ ] 0
- generally someone else [ ] 1
- someone and you [ ] 1
Who does the work outside?

- no one [ ] 0
- you usually do it [ ] 0
- generally someone else [ ] 1
- someone and you [ ] 1

Who pays the bills?

- no one [ ] 0
- you usually do it [ ] 0
- generally someone else [ ] 1
- someone and you [ ] 1

Who takes your child or children to the doctor if he/she/they is/are sick?

- no one [ ] 0
- you usually do it [ ] 0
- generally someone else [ ] 1
- someone and you [ ] 1

Who sees to it that your child/children go to bed?

- no one [ ] 0
- you usually do it [ ] 0
- generally someone else [ ] 1
- someone and you [ ] 1

Do you have a car?

- yes [ ] 1
- no [ ] 0

**IF YES:**

Who takes care of car problems at short notice?

- you usually do it [ ] 0
- generally someone else [ ] 1
- someone and you [ ] 1

**IF NO:**

Could you get a car in a few hours if you needed to?

- yes [ ] 1
- no [ ] 0
How many relatives do you see once a week or more often? Who are they?

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<th>4</th>
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<th>10 or more</th>
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</tr>
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<td></td>
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</table>

How many people do you feel you can count on in times of need? Who are they?

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<th>4</th>
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<th>7</th>
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<th>9</th>
<th>10 or more</th>
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How many people would be able to take care of your children for several hours if it was necessary? Who are they?

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How many of these people are from your neighbourhood?

*not scored*

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409
DOES MOTHER HAVE A PARTNER? IF NECESSARY ASK:

Are you married or living with anyone at the moment?

- married [ ]
- stable cohabitation [ ]
- separated/divorced [ ] 0
- single [ ] 0

When did you start living together?

- date (month/year) [ ]/[ ]/[ ]
- how long ago [ ] yrs [ ] mths

How happy are you about the way that your partner lets you know what he feels or what he thinks?

- very happy [ ] 4
- happy [ ] 3
- unhappy [ ] 2
- very unhappy [ ] 1
- unsure [ ] 1

Have you and your partner both been living at home during the last 12 months?

(GET DETAILS) not scored

- yes [ ]
- no [ ]

IF NO:

Have you been separated for any length of time during this period?

(GET DETAILS) not scored

- yes [ ]
- no [ ]

Have either of you ever considered a permanent separation or divorce? Could you tell me about that?

(GET DETAILS) not scored

- yes [ ]
- no [ ]

Are there any adults - not including your partner - with whom you have regular talks? Who are they?

- yes [ ]
- no [ ] 0
**IF YES:**
I want you to think about the person that you talk with the most. Are you happy with the talks that you have with this person?

- very happy [  ] 4
- happy [  ] 3
- unhappy [  ] 2
- very unhappy [  ] 1

I'd like to ask you how often - if at all - you attend meetings of the following groups. *score most frequent attendance as:*

- don't belong [  ] 0
- less than once a month [  ] 1
- about once a month [  ] 2
- more than once a month [  ] 3

Firstly, religious groups - for example, church?

- don't belong [  ]
- less than once a month [  ]
- about once a month [  ]
- more than once a month [  ]

Do you attend any educational groups, such as a school parents group?

- don't belong [  ]
- less than once a month [  ]
- about once a month [  ]
- more than once a month [  ]

What about social groups - bingo for example?

- don't belong [  ]
- less than once a month [  ]
- about once a month [  ]
- more than once a month [  ]

Are you involved with any political groups - for example work with a local candidate?

- don't belong [  ]
- less than once a month [  ]
- about once a month [  ]
- more than once a month [  ]

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Do you belong to any other groups that I haven't mentioned?

*PLEASE SPECIFY*

- don't belong [ ]
- less than once a month [ ]
- about once a month [ ]
- more than once a month [ ]

*IF YES TO GROUP MEMBERSHIP:*
Are you a member of a committee, or do you have any other duties in that/any of your group/s?

- yes [ ] 2
- no [ ] 0
appendix 2.b.iii.b
MSSI: revised scoring scheme

In light of concerns outlined in Chapter Four, the following adjustments were made to the original scoring scheme of the Maternal Social Support Index (Pascoe et al., 1988). Ratings for each of these items were totalled to give an overall revised MSSI score.

household and child care tasks
As can be seen in Appendix 2.b.iv.a, items 1 - 8 recorded who carries out a range of household and child care tasks. Questions in this section were scored according to the original coding scheme (Pascoe et al., 1988).

transport
Items 9 (who carries out car maintenance?) and 10 (car ownership) were scored in line with the original coding scheme.

relatives
Pascoe and colleagues' original scoring of support from relatives was surprising in that a mixed response (satisfaction and dissatisfaction) to levels of support received a lower rating than uniform dissatisfaction (uniformly preferring to see relatives more or less often). Consequently, scoring was adjusted, although the original values (0, 1, 2, 4) were maintained:

0 no relatives
1 dissatisfied with support (prefer to see relatives more or less often)
2 mixed response to support (expressed satisfaction and dissatisfaction)
4 happy with levels of support

times of need
Rating of number of people available for support in times of need was based on the original scoring system.

child care
Rating of number of people available for child care was also based on the original system.

marital support
As stated previously (see Chapter Four) it was considered likely that an unhappy marital relationship might be a source of stress rather than support, and so the original coding scheme was deemed inappropriate, since women in unhappy marital relationships received higher ratings of support than single parents. Arguably, being in a very unhappy
relationship may be viewed as being equivalent to being without a partner, since the
caregiver probably does not receive support from her partner, and so this item was rated as
follows:

0  no partner / very unhappy with partner
1  unhappy
3  happy
4  very happy

**support from a friend**

With regard to the arguments presented above, the coding scheme used to rate marital
support was used to rate the caregiver's satisfaction with a relationship with a confidante,
since a very unhappy relationship is not likely to be supportive:

0  no confidante / very unhappy with confidante
1  unhappy
3  happy
4  very happy

**group membership**

Mothers' reports of membership of social groups and committee membership were rated
according to the original scoring method.
appendix 2.c measures of cognitions about caregiving

appendix 2.c.i vignettes of problem child behaviour

Assessment of maternal cognitions about events in caregiving was provided by presentation of vignettes of child behaviour, followed by semi-structured questioning to elicit mothers' strategies for dealing with the problems outlined in the stories, and attributions about why the index child might show the behaviours described. A practice story was given first, to familiarise mothers with the procedure, and they were provided with examples of possible answers if they had difficulty in generating responses to the practice vignette. Stories were matched to the gender of the child; the examples below give the characters' names for male and female versions of the dilemmas.

As one part of our research, we are interested in learning about all the ways that mothers have of dealing with problems that they come across in different situations.

I am going to read you some stories which describe imaginary events. For each story I will tell you the BEGINNING of the story and how the story ENDS. At the beginning of each story somebody has a problem, and at the end the problem is solved. I want you to make up a story that connects the BEGINNING that is given to you with the ENDING that I give you. In other words, you will make up the middle of the story.

I'll start by giving you an example just for practice.
**practice story**
Ms Lewis has a daughter / son called Shirley / Simon who is five years old. Shirley / Simon always makes a lot of mess when s/he eats. S/he often gets food all over her/his clothes and onto the furniture and the floor. This makes a lot of work for Ms Lewis, and so she wants Shirley / Simon to be less messy. The story ends when Ms Lewis is happy because Shirley / Simon doesn't make a mess when he eats.

**problem solving:**
You begin the story with Ms Lewis wanting Shirley / Simon to be less messy.

**sample answers**
For example, you might say: Ms Lewis encouraged Simon to be tidy, and she made sure he had a knife and fork. She sat with him when he ate to make sure that he didn't make a mess, and gradually Simon learned not to make a mess when he ate.

**IF DON'T KNOW:**
Well, what do you think that she could do to solve the problem?

**attributions:**
I want you to imagine that you are in the same situation, and that _____ always makes a lot of mess when s/he eats. Why do you think that might be? Why do you think _____ might be such a messy eater?

**IF DON'T KNOW:**
Well, if _____ did behave like that, why do you think that might happen?
story one
Ms. Jones has a daughter / son called Jane / John. Jane / John is five years old. Ms. Jones is worried because Jane / John is a very slow eater. She wants Jane / John to eat more quickly because at the moment meal times take several hours. The story ends when Ms Jones is happy because Jane / John is eating more quickly.

problem solving:
You begin the story with Ms Jones worried about the length of time that Jane / John takes to eat.

attributions:
I want you to imagine that you are in the same situation, and that _____ takes several hours over meals. Why do you think that might be? Why do you think _____ might be such a slow eater?

story two
Ms Patrick has a daughter / son called Mary / Martin. Mary / Martin is five years old. The last few times that Mary / Martin has had a friend over to play, Ms Patrick has found that the children spend a lot of time fighting over toys and games. Ms Patrick wants the children to play together without fighting. The story ends with the children playing together happily.

problem solving:
You begin the story with the children fighting when they play together.

attributions:
I want you to imagine that you are in the same situation, and that when _____ has friends over they spend a lot of time fighting over toys and games. Why do you think that might be? Why do you think _____ might fight with her / his friends about toys and games?
story three
Ms Smith has a daughter / son called Sharon / Sean, who is five years old. Several times over the last month, while helping out at children's birthday parties, Ms Smith has had the opportunity to observe Sharon / Sean while she is playing. Each time she noticed that Sharon / Sean spent most of the time playing alone, never trying to join the others in their games. Ms Smith wants Sharon / Sean to play with the other children. The story ends with Sharon / Sean joining in with other children's games.

problem solving:
You begin the story with Sharon / Sean playing by herself at a birthday party.

attributions:
I want you to imagine that you are in the same situation. Why do you think ______ might play by herself at birthday parties? Why do you think ______ would behave that way?

story four
Ms Mackenzie has a daughter / son called Carol / Colin who is five years old. Ms Mackenzie is worried because Carol / Colin refuses everything she is fed, and doesn't eat anything at all. The story ends with Carol / Colin eating.

problem solving:
You begin the story when Carol / Colin refuses to eat anything.

attributions:
I want you to imagine that you are in the same situation, and that ______ refuses to eat anything. Why do you think that might be? Why would ______ refuse everything she is fed?
story five
Rachel / Richard is five years old. Ms Robson is Rachel’s / Richard’s mother. The last three times Ms Robson has arrived to pick Rachel / Richard up from school, she has seen her / him playing in a group. Each time, she has noticed that when Rachel / Richard wants a toy that another child is playing with, s/he grabs the toy and pushes the other child down. The story ends with Rachel / Richard no longer grabbing toys and pushing other children.

problem solving:
You begin the story with Ms Robson seeing Rachel / Richard grab a toy from another child.

attributions:
I want you to imagine that you are in the same situation, and that every time ______ wants a toy that another child is playing with s/he grabs it and pushes the other child. Why do you think ______ might behave like that? Why do you think ______ might grab toys and push other children?

story six
Ms Clark has a daughter / son called Alison / Alan who is five years old. Alison / Alan always says that s/he is hungry, and Ms Clark has noticed that s/he has been helping her/himself to food. Recently, she has found that Alison / Alan often gets up in the night to take food from the kitchen. Ms Clark would like Alison / Alan to stop eating in between meals. The story ends with Alison / Alan eating more regularly.

problem solving:
You begin the story with Alison / Alan helping her/himself to food.

attributions:
I want you to imagine that you are in the same situation and that ______ gets up at night and helps her/himself to food. Why do you think ______ might behave that way? Why do you think ______ might take food?
Definitions of relevant and irrelevant strategies are taken from Platt and Spivack (1975); the content of problem solving strategies mothers suggested was coded according to guidelines provided by Mills and Rubin (1990).

**number of relevant means**
An individual “means” is scored for each discrete step that is effective in enabling the mother to reach the resolution stage of the story. Thus, more than one mean can be scored for a participant’s response to a given story.

**number of irrelevant means**
An irrelevant means is scored for a response that includes only steps which are ineffective within the context of the story. Such steps, however, might be reasonable and effective if the ending of the story was different. An irrelevant means is also scored if the participant provides steps that lack the appropriate foundation upon which the middle and end of the story should be built: the underlying means, or first step, is left out.

**coding scheme for content of suggested strategies**

**HIGH POWER**
Use of direct commands, force, threats, or aversive external or internal consequences.

- **forcing appropriate behaviour**
  Verbally commanding the child or physically making the child behave appropriately.

- **punishment**
  Withdrawal of privileges, social or physical isolation, physical punishment.

- **threat**
  Threat of punishment

**MODERATE TO LOW POWER**
Techniques that give the child choice whether or not to comply, provide information regarding the implications of the behaviour in question, or appeal to conscience.
MODERATE POWER

- **modelling**
  Physical demonstration by the parent of how the child could behave.

- **request / suggestion**
  Statements indicating the direction for the child’s behaviour to take with practically no pressure to comply and no arbitrariness; child has choice about compliance.

- **guidance**
  Verbal instruction on how to behave, or help getting started.

- **resolve**
  Help child(ren) reach solution to problem.

- **other-oriented reasoning**
  Referring to others’ needs or to the potential physical or emotional consequences of child’s behaviour for others, i.e., training her/him in perspective taking or empathy.

- **self-oriented reasoning**
  Referring to the consequences of the child’s behaviour for him/herself.

- **normative statements**
  Unembellished statements referring to social or moral values.

- **matter-of-fact reasoning**
  Focusing on non-social or pragmatic reasons.

- **emotional appeal**
  Appeals to child’s conscience; statement of personal reaction to child’s action.

LOW POWER

- **seek explanation from child**
  Ask the child for an explanation of the behaviour; discuss the problem.

- **read to the child**
  Read the child a story pertaining to the issue of concern.

- **support the child**
  Join the child (not necessarily to play); provide emotional support in the situation.

- **rescue**
  Help child escape or avoid situation.

- **redirection**
  Channel child into new activity; divert attention; restructure situation.

- **seek solution from child**
  Ask child to suggest solution to problem.
INDIRECT STRATEGIES
Strategies that do not involve either immediate or direct interaction with the child.

INFORMATION-SEEKING
- consult
  Seek advice from or discuss with teacher, health professional, family member or friend; do some reading.
- monitor
  Keep an eye on the child’s behaviour and/or ask someone else (e.g., teacher) to do so.
- seek explanation from other
  Asking someone for an explanation of the child’s behaviour.

PLANFUL
- provide opportunity
  Plan to create opportunities for child to play with others / change eating patterns.
- restructure play / meal arrangements
  Plan to change situation.
- nurture
  Provide child with more attention and affection; take care of child’s physical needs.
Examples of maternal responses to means-ends problem solving dilemmas are given below. Relevant strategies are underlined.

CHILD EATING PROBLEM: female version

JB:
Ms Clark has a daughter called Alison who is five years old. Alison always says that she is hungry, and Ms Clark has noticed that she has been helping herself to food. Recently, she has found that Alison often gets up in the night to take food from the kitchen. Ms Clark would like Alison to stop eating in between meals. The story ends with Alison eating more regularly. You begin the story with Alison helping herself to food.

MOTHER:
Well, for one, Alison shouldn’t behave like that because it’s stealing anyway and she should always tell her mother if she’s hungry before she goes to her bed, and if the mother doesn’t like her doing it then do what my mate done to her kids - put a lock on the kitchen door.

STRATEGY TYPE: force appropriate behaviour HIGH POWER

No. RELEVANT MEANS: 1
No. IRRELEVANT MEANS: 0
CHILD PEER PROBLEM: male version

JB:
Ms Smith has a son called Sean, who is five years old. Several times over the last month, while helping out at children's birthday parties, Ms Smith has had the opportunity to observe Sean while he is playing. Each time she noticed that Sean spent most of the time playing alone, never trying to join the others in their games. Ms Smith wants Sean to play with the other children. The story ends with Sean joining in with other children's games. You begin the story with Sean playing by himself at a birthday party.

MOTHER:
Sean was sitting on his own at a children's party; his mother came over and said "Why don't you play with the other children?" He didn't say nothing, so she took him by the hand and took him over to join in with the other children and actually joined in herself. Then he joined in. When his mother walked away he was still playing with the other kids.

STRATEGY TYPE:
seek explanation from child
join

LOW POWER

LOW POWER

No. RELEVANT MEANS: 2
No. IRRELEVANT MEANS: 0
appendix 2.c.iii Leeds Attributional Coding System (LACS)

appendix 2.c.iii.a
coding scheme for LACS

Maternal attributions were coded according to the following criteria, taken from Barrowclough’s (1991) and Brewin’s (1988) adaptation of the original Leeds Attributional Coding System (Stratton et al., 1986). Following discussion with an experienced user of the LACS, it was decided that the mother’s perception of her own causal role would not be rated, because there was generally insufficient information for this judgement.

definition of causal attributions
An attributional statement explains or explores the reasons or causes for a particular event or class of related events, where event refers to a reported outcome or behaviour or situation (Barrowclough, 1991). Brewin (1988) noted that dimensional ratings should only be made if they are clearly stated or are an obvious inference from what has been said. There will frequently be doubt, or insufficient information, with an argument to be made for either end of the dimension. Rather than trying to second guess the speaker, and if not convinced that most raters would make the same judgement as you, code as unrateable (9). If the speaker mentions causes or dimensional information that includes both ends of the dimension, code as 8.

attributional dimensions
internal / external
Attributions are coded as internal if the cause originates within the person who is the focus of the rating; an external attribution ascribes cause to a condition or event in the outside world.

personal / universal
An attribution which indicates something particular about the person should be coded as personal; examples of universal attributions include traits which are thought (by the speaker) to be possessed by more than 50% of the reference group, illness, and actions that the speaker sees as situationally appropriate.
**controllable / uncontrollable**
An outcome believed to be inexorable without exceptional effort or upheaval is rated as *uncontrollable*. A rating of *controllable* reflects the speaker's view that the outcome was readily controllable by the target person.

**global / specific**
If a cause has only one plausible outcome it is rated as *specific*; an attribution is only coded as *global* if the speaker views the cause as having a moderate range of plausible and non-trivial outcomes.

**stable / unstable**
If the cause is thought to be continuously present and likely to have a similar effect in future, then it should be coded as *stable*. An *unstable* cause would be coded if the cause (and its link with the outcome) was thought to apply about half the time or less.
Examples of maternal attributions about problem solving dilemmas are given below. Causal statements are underlined.

**CHILD EATING PROBLEM:** male version

**JB:**
*I want you to imagine that you are in the same situation, and that D. takes several hours over meals. Why do you think that D. might be such a slow eater?*

**MOTHER:**
It’s hard to say when you’ve not been in that situation, but if D. was ... *it would normally mean that he didn’t like the food.* In that case, if he was taking his time I’d ask him why and then, you know, come on, hurry up, I’ve got to wash up or whatever, and then I’d just leave him to it. But if he carried on doing it I would feel that he was doing it just to get one up more or less.

**NUMBER OF CAUSES:** 2

**CAUSE ONE:**
internal/external; universal; uncontrollable; specific; unstable

**CAUSE TWO:**
internal; personal; controllable; specific; unstable

**CHILD PEER PROBLEM:** female version

**JB:**
*I want you to imagine that you are in the same situation, and that when L. has friends over they spend a lot of time fighting over toys and games. Why do you think L. would fight with her friends about toys and games?*

**MOTHER:**
I think it would be a bit of selfishness. She doesn’t really want anyone else to play with her toys, is probably what it would be.

**NUMBER OF CAUSES:** 1

**CAUSE:**
internal; personal; controllable; global; stable
appendix 2.d measurement of early adverse family care

appendix 2.d.i interview assessment of mother’s early adverse care

Mothers were questioned, as follows, about their childhood care experiences, using Andrews and colleagues (e.g., 1993) semi-structured interview. The first part of the interview is aimed at eliciting information about family structure, so that the interviewer can account for the role of family members in the mother’s experience of childhood care and/or abuse.

As I said before, as one part of this study we’re interested in the ways in which ideas about bringing up children have changed over the years, and what I would like to do now is ask a few questions about your own childhood.

Are both your parents still alive?

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*IF YES:* Where are they living now?

*IF NO:* How old were you when he or she died?

(DEATH BEFORE 17)

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What did he or she die of?

Was he or she ill for a long time?

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Who looked after you after he or she died?

Do you have any brothers or sisters?
**IF YES:** Are they older or younger than you?

**NUMBER OLDER**
- brothers [ ][ ]
- sisters [ ][ ]

**NUMBER YOUNGER**
- brothers [ ][ ]
- sisters [ ][ ]

When you were a child who was the main wage earner?

Was it your mother or your father? What did he or she do?

Have your parents ever been separated?
- yes [ ]
- no [ ]

Were you separated from either parent before you were seventeen? For what reason?
- yes [ ]
- no [ ]

**IF YES:**
How old were you?

age _____ years

How long was it for?

_____ years _____ months _____ weeks

Why? Who looked after you while your mother or father weren't there?

MAKE A LIST OF CARETAKERS UNTIL 17 YRS AND ASK ABOUT ALL OF THEM
How old were you when you left home? age [ ][ ] years

Why did you leave then?

Were either your mother or your father or other caretaker seriously ill when you were a child?
(GET DETAILS)

yes [ ]
no [ ]

Did either of your parents or other caretaker ever suffer with their nerves? Did either of them ever seem to be very unhappy or depressed? Could you tell me about that? What was it like for you? Were you ever frightened that he/she might try to take his/her own life?

yes [ ]
no [ ]

IF YES: What age were you?
GET DETAILS OF TREATMENT AND PROBE FOR SUICIDE ATTEMPTS

age [ ][ ] years

Did either of your parents or other caretaker ever have a problem with drinking?

yes [ ]
no [ ]

IF YES: What sort of effect did this have on the family?

ASK OF PARENT(S) & CARETAKERS WHO LIVED AT HOME:
(CLOSENESS/ANTIPATHY)
Were you very close to either your mother or your father or other caretaker, say up until the time that you were a teenager?

Was he/she fairly distant or did he/she tend to hug and kiss you a lot?
Which of them - your mother or your father or other caretaker - did you feel closest to?

- mother [ ]
- father [ ]
- other caretaker [ ]
- none [ ]

Why do you think that is?

Was there anyone else that you felt particularly close to at that time?

Did this change at all when you got older? How?

- yes [ ]
- no [ ]

**IF PARENTS WERE SEPARATED ASK ONE WHO LIVED AWAY:**

**(CLOSENESS/ANTIPATHY)**

Did you get to see your mother/father a lot after he/she left?

- yes [ ]
- no [ ]

**IF YES:** Was he/she fairly distant, or did he/she tend to hug and kiss you a lot? Did you still feel quite close to her/him after he/she left?

- yes [ ]
- no [ ]

Did this change at all when you got older? How?

- yes [ ]
- no [ ]

**IF NO (DIDN'T SEE PARENT AFTER HE/SHE LEFT):** Why not?

Did he/she write to you or phone you quite often? Did you feel quite close to her/him?

- yes [ ]
- no [ ]
Did this change at all when you got older? How?

yes
no

**IF MOTHER HAD SIBLINGS ASK:**

*(INDIFFERENCE/ANTIPATHY)*

Did your parents or other caretaker have their favourites? Who?

yes
no

Up until the time when you left home, do you feel that your parents or other caretaker always had time for and took an interest in your life? What sorts of things did they do that made you feel like that?

(GET DETAILS)

yes
no

Did you feel that you could go to them if you were upset or unhappy? Could you give me some examples of when that happened?

(GET DETAILS)

yes
no

**FOR PARENT LIVING AWAY:**

Did he/she always remember your birthday?

yes
no

Did you ever feel neglected?

*(NEGLECT)*

yes
no

**IF YES:** In what way?

Were you looked after materially - as far as things like food and clothes were concerned?

yes
no
Were there ever times you had to do without something? What sorts of things? (GET DETAILS)

   yes [ ]
   no  [ ]

FOR PARENT LIVING AWAY:
Did he/she send you or your mother/father any money to help with your keep?
   yes [ ]
   no  [ ]

Did your parents or other caretaker take an interest in who your friends were? (INDIFFERENCE/ANTIPATHY)
   yes [ ]
   no  [ ]

Were they interested in how you did at school?
   yes [ ]
   no  [ ]

Do you think your parents or other caretaker approved of you up to the time when you were a teenager? What sorts of things did they do that made you feel they approved/disapproved of you? (ANTIPATHY) (GET DETAILS)
   yes [ ]
   no  [ ]

What about your mother, did she think highly of you? How do you think she showed you what she felt?
   yes [ ]
   no  [ ]

Did she praise you? In what sorts of ways did she praise you? Was she hard to please or easy to please?
   praising [ ]
   didn't praise [ ]

What about your father, do you think that he approved of you? How do you think he showed you what he felt?
   yes [ ]
   no  [ ]
Would he praise you? In what sorts of ways did he praise you? Was he hard or easy to please?

(GET DETAILS)

praising [ ]
didn't praise [ ]

IF RELEVANT: What about other caretaker, did he/she think highly of you? How do you think he/she showed you what he felt?

yes [ ]
no [ ]

Would he/she praise you? In what sorts of ways did he/she praise you? Was he/she hard or easy to please?

(GET DETAILS)

praising [ ]
didn't praise [ ]

Did you feel that either of them were disapproving?
What sorts of things did you feel he/she/they disapproved of?

(GET DETAILS)

mother [ ]
father [ ]
other caretaker [ ]

Would your mother or father or other caretaker make hurtful or critical comments?

yes [ ]
no [ ]

About what sort of things? What sorts of things did they criticise you for?
What sorts of things did they say? How often would this happen?

(GET DETAILS)

Did any of this change when you were a teenager? In what sorts of ways? Do you think they got more or less strict with you?

(GET DETAILS)

more strict [ ]
less strict [ ]
no change [ ]
Were your parents or other caretaker very strict?

(PARENTAL CONTROL)

yes [ ]
no [ ]

What sorts of things were they strict about? In what sorts of ways were they strict?

(GET DETAILS)

Were they strict about who your friends were?

yes [ ]
no [ ]

What about things like clothes and make-up?

yes [ ]
no [ ]

When you were older were they strict about going out with boys?

yes [ ]
no [ ]

How old were you when you had your first sexual experience? Who was it with?

(INCEST?)

age [ ] years

How did your parents or other caretaker react if you came home late? Did they ever get cross with you?

yes [ ]
no [ ]

Now, most parents punish their children sometimes. Did your parents or other caretaker ever punish you in any way?

yes [ ]
no [ ]

IF YES: When would they do this? About how often did they punish you?

_____ times per day/week/month/year
Who usually did the punishing?

- mother [ ]
- father [ ]
- other caretaker [ ]
- both [ ]

In what sorts of ways were you punished?

What sort of things did they punish you for?

Did they ever hit you or hurt you in any way? Where did he/she hit you? What sorts of things made it happen? How often did that happen?

- yes [ ]
- no [ ]

*IF "NO" TO HIT OR HURT THEN GO TO: "did anyone else ever hit or hurt you in any way?"

*IF YES: Who usually hit you?

- mother [ ]
- father [ ]
- other caretaker [ ]
- both [ ]

What did he/she actually do?

*ESTABLISH THE EXTENT OF THE VIOLENCE:

Did he/she throw something at you? Did it hit you? Where did it hit you?

- yes [ ]
- no [ ]

Did he/she push or shove you?

- yes [ ]
- no [ ]

*IF YES: Did he/she ever push you or shove you so that you landed against something or hit another object such as a wall?

- yes [ ]
- no [ ]
<table>
<thead>
<tr>
<th>Question</th>
<th>Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>Did he/she slap you?</td>
<td><strong>yes</strong></td>
</tr>
<tr>
<td></td>
<td><strong>no</strong></td>
</tr>
<tr>
<td><strong>IF YES:</strong> Where did he/she hit you?</td>
<td></td>
</tr>
<tr>
<td>Did he/she hit you with something?</td>
<td><strong>yes</strong></td>
</tr>
<tr>
<td></td>
<td><strong>no</strong></td>
</tr>
<tr>
<td><strong>IF YES:</strong> What with? Where did he/she hit you with that thing?</td>
<td></td>
</tr>
<tr>
<td>Did he/she kick or punch you? Where?</td>
<td><strong>yes</strong></td>
</tr>
<tr>
<td></td>
<td><strong>no</strong></td>
</tr>
<tr>
<td>Did he/she burn or choke you? Where?</td>
<td><strong>yes</strong></td>
</tr>
<tr>
<td></td>
<td><strong>no</strong></td>
</tr>
<tr>
<td>Did he/she use - or ever threaten to use - a weapon on you?</td>
<td><strong>used</strong></td>
</tr>
<tr>
<td></td>
<td><strong>threatened</strong></td>
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<tr>
<td></td>
<td><strong>no</strong></td>
</tr>
<tr>
<td>Were you ever injured in any way?</td>
<td><strong>yes</strong></td>
</tr>
<tr>
<td></td>
<td><strong>no</strong></td>
</tr>
<tr>
<td><strong>IF YES:</strong> How badly were you hurt?</td>
<td></td>
</tr>
<tr>
<td>For example, were you ever bruised? How badly? Where were you bruised?</td>
<td><strong>yes</strong></td>
</tr>
<tr>
<td></td>
<td><strong>no</strong></td>
</tr>
<tr>
<td>For example, were you ever cut or burnt? How badly? Where were you hurt?</td>
<td><strong>yes</strong></td>
</tr>
<tr>
<td></td>
<td><strong>no</strong></td>
</tr>
</tbody>
</table>
For example, did you have any broken bones?

- yes
- no

How old were you when this happened?

- age [ ] [ ] years

How often did things like that happen?

- ______ times per day/week/month/year

Are you ever worried that your mother or father or other caretaker might be violent towards you now?

- mother [ ]
- father [ ]
- other caretaker [ ]
- both [ ]

**IF YES:** Why do you think that might happen?

Did anyone else ever hit you or hurt you in any way?

- yes [ ]
- no [ ]

**IF NO THEN GO TO:** "how did your parents get on with each other?"

**IF YES:** Who was that?

When did this happen? What sorts of things made it happen?

How often would it happen?

- ______ times per day/week/month/year

What did he/she actually do? **ESTABLISH THE EXTENT OF THE VIOLENCE:**
Did he/she throw something at you?

yes [ ]
no [ ]

Did he/she push or shove you?

yes [ ]
no [ ]

Did he/she slap you?

yes [ ]
no [ ]

IF YES: Where did he/she hit you?

Did he/she hit you with something?

yes [ ]
no [ ]

IF YES: What with? Where did he/she hit you?

Did he/she kick or punch you?

yes [ ]
no [ ]

Did (s)he burn or choke you?

yes [ ]
no [ ]

Did (s)he use - or ever threaten to use - a weapon on you?

used [ ]
threatened [ ]
no [ ]

Were you ever injured in any way?

yes [ ]
no [ ]

IF YES: How badly were you hurt?
For example, were you ever bruised? How badly?

yes [ ]
no [ ]

For example, were you ever cut or burnt? How badly?

yes [ ]
no [ ]

For example, did you have any broken bones?

yes [ ]
no [ ]

How old were you when this happened?

age ______ years

Are you ever worried that he/she might be violent towards you now?

yes [ ]
no [ ]

_IF YES:_ Why do you think that might happen?

OK, I'd like to move on to something else now. At some time, most women have been sexually approached against their wishes or interfered with. Has that ever happened to you?

yes [ ]
no [ ]

We need to know about this because a lot of women have been approached against their wishes at some point in their lives, and so we want to learn about the different experiences that women have had. We want to learn about the sorts of situations in which women have been sexually approached against their wishes or interfered with.

Have you ever been sexually approached against your wishes, or harassed in some way?

yes [ ]
no [ ]
If no:
OK, well, I'll move on to something else now, this is something that I'd like you to fill in for me - this is just to save a bit of time (BDI). Perhaps if you remember any time that you've been approached against your wishes then we could talk about that later on.

If yes:
How old were you when that happened?

age [ ][ ] years

Who was it?

Can I ask you exactly what happened?

(Probe for details but USE DISCRETION)

(If you would rather not talk about it could I just ask a few questions and you can tell me yes or no?)

Did it involve just intercourse or was it just touching?

intercourse [ ]

just touching [ ]

no touching [ ]

If just touching:
Where did he touch you?

Did he make you touch him? Where did he make you touch him?

yes [ ]

no [ ]

Did he make you watch while he touched himself?

yes [ ]

no [ ]

If no touching: Did he make rude suggestions?

yes [ ]

no [ ]

Did he ask you for sex?

yes [ ]

no [ ]
Did he threaten you at all or use violence?

- yes [ ]
- no [ ]

Could you tell me what happened?

What did he do?

What did he say?

**IF APPROPRIATE:**
Did he say he wouldn’t love you any more if you didn’t?

- yes [ ]
- no [ ]

Did he reward you in any way?

- yes [ ]
- no [ ]

Did anybody else know that it happened?

- yes [ ]
- no [ ]

Who? Did they do anything about it?

- yes [ ]
- no [ ]

**IF ABUSE WAS UNDER THE AGE OF 18:**
Do you know anyone else who had the same thing happen to them?

- yes [ ]
- no [ ]

When was that?

How did you find out about it?

**IF RELEVANT:**
Do you think it happened to anyone else in your family?

- yes [ ]
- no [ ]
IF YES:
Was it by the same person?  yes [ ] no [ ]

How did you find out about it?

Did you tell anybody about it at the time?  yes [ ] no [ ]

IF NO:  Why not?

IF YES:  Who was that?

Did you feel that they were helpful or not really?  very helpful [ ] fairly helpful [ ] not very helpful [ ] not at all helpful [ ]

Did you tell anybody about it much later?  yes [ ] no [ ]

If NO:  go to B.D.I.

IF YES:  Who was that?

Were they sympathetic?  Did they make you feel worse in any way?  sympathetic [ ] made you feel worse [ ]

Was anyone like a doctor or a social worker involved?  yes [ ] no [ ]

IF YES:  Were they helpful or sympathetic?  yes [ ] no [ ]
Were the police ever involved?

yes [ ]
no [ ]

_IF YES:_ Were they helpful or sympathetic?

yes [ ]
no [ ]

Was there a court case?

yes [ ]
no [ ]

_IF YES:_ How did that go?

Well - those are all my questions. Thank you very much for taking the time to answer them for me. The things you have told me will be very helpful in our study. Is there anything you'd like to ask me more about, or anything that I've forgotten to mention that you think is important?
Appendix 2.d.ii
Coding scheme for mother's early adverse care

Mothers' early care experiences were rated on the following dimensions, taken from Andrews and colleagues (e.g., Andrews et al., 1990; see Chapter Six).

Lack of Care
A rating of lack of care was made when there was evidence of high indifference and/or lax control. High parental indifference was taken as a rating of 1 or 2 (on a 4 point scale), and low parental control was indicated by a rating of 3 on a 3 point scale, according to the definitions given below.

Parental Indifference
This four point scale reflects neglect and lack of attention and interest from parent figures before age 17. Both practical and emotional neglect are reflected in the scale, but indicators of actual behaviour and experiences are required. This should not merely reflect hostility towards parents or problems in relating.

1 high
2 moderate
3 some
4 little or none

Parental Control
This three point scale reflects the amount of discipline and control imposed by parents or parent figures before the age of 17. The consistent enforcement of rules of behaviour, rather than punitiveness, indicates the level of control. High control involves heavy restrictions placed on the child, often (but not necessarily) accompanied by high punitiveness. Moderate control described regular and consistent enforcement of rules, but without over-restriction of the child's activities. Low control is rated where parents make little or no attempt to enforce rules of behaviour, allowing the child a free rein.

1 high
2 moderate
3 low
**parental antipathy**
This four point scale takes into account negative affective quality, dislike, hostility, coldness, exclusion and unsympathetic behaviour, as shown by the parent figure(s) towards the respondent. Again, indicators of actual behaviour and experiences are required. This should not merely reflect hostility towards parents or problems in relating.

1. high
2. moderate
3. some
4. little or none

**physical abuse in childhood**
All ratings of child physical abuse (CPA) were based on the peak level of abuse reported by the respondent. In addition to the ratings given below, the duration of abuse, and ages at which abuse started and ended were recorded.

**degree of CPA**
A score of less than 2 was rated as “no CPA” for the dichotomous rating (see Chapter Six).

4. severe
   Beat respondent up; threatened her with a knife or gun; any attempt on respondent’s life
3. marked
   Kicked, bit or hit with a fist, burnt respondent, or hit her with an object
2. moderate
   Slapped respondent around head or face
1. minor
   Threw object at respondent; pushed, grabbed or shoved her; slapped respondent anywhere except head or face
0. no CPA

**degree of injury from CPA**

4. marked
   Broken bones, cuts, burns, severe bruising
3. moderate
   Moderate bruises, black eye, scratches, scrapes
2. some
   Short-term weals
1. little / none
9. no CPA
identity of main perpetrator of CPA
Parents are rated in preference to others.

1 father / step-father
2 mother / step-mother
3 both parents
4 other household member
5 relative / family-friend (non-household)
6 institutional figure (e.g., teacher, warden)
7 other
9 no CPA

physical abuse in childhood
Childhood sexual abuse (CSA) was defined as any sexual contact before age 17, except willing sexual contact with an unrelated child of a similar age. Being “flashed at” and experience of obscene phonecalls were not rated. In addition to the ratings given below, the duration of abuse, and ages at which abuse started and ended were recorded.

degree of CSA
If more than one type of CSA the most severe was rated. A score of less than 4 was rated as “no CSA” for the dichotomous rating (see Chapter Six).

9 intercourse (vaginal or anal)
8 violation with an implement
7 oral sex
6 touching of respondent’s genitals
5 touching of respondent’s breasts
4 touching of other’s genitals
3 sexual kissing
2 respondent required to watch sexual activity
1 other
0 no CPA

frequency of CSA
Rate peak

6 monthly or more
5 every three months or more
4 twice a year or more
3 once a year
2 less than once a year but more than once
1 once only
9 no CSA
identity of main perpetrator of CSA
Parents are rated in preference to others.
1 father / step-father
2 mother / step-mother
3 both parents
4 other relative
5 institutional figure (e.g., teacher, warden)
6 boyfriend / girlfriend
7 acquaintance
8 stranger
9 no CSA
appendix 2.d.iii
example of a transcribed account of childhood care

2.d.iii.a interview transcript

Are both your parents still alive?
Yes.

You have two younger brothers?
Yes.

Any sisters?
No.

Have your parents ever been separated?
No, but they are now. They live in the same house, but it has just started happening since April or May last year.

Were you separated from either parent before you were seventeen?
Yes.

That was when you were 13?
Yes.

Why did you leave then?
Because the way my Mum used to treat me.

Could you tell me about that?
She was always hitting me, and I used to have to do everything while she went to work. I had to come home from school, cook the dinner, put the washing on, do the cleaning, then do my homework. I never had no free time, I wasn’t allowed to have friends round, wasn’t allowed to go out. Couldn’t do anything.

When you left home where did you go?
Went to stay with another school friend.

Did you stay with her permanently?
No - just for a couple of months. Then my Mum and Dad found out where I was and they brought me back home and then I left again - must have been coming on straight away - and then I lived with my cousin when I was about 16.

Were either your mother or your father or anyone in your cousin’s family seriously ill when you were a child?
No.

1 To avoid unnecessary length, only those questions pertaining to the rating of early childhood care are presented here.
Did either of your parents or your aunt ever suffer with their nerves?
My Mum I suppose. Well, whatever happened to her she took it out on me, and my brother next to me - anything that went wrong was like she blamed it on us.

Were you ever frightened that she might try and take her own life?
She has tried that. When I had S., that was when I was 18 and she done it. The time before that I must have been about 11.

What kind of treatment did she get for that?
None that I know of.

Did either of your parents or your aunt ever have a problem with drinking?
No.

Were you very close to either your mother - well I guess maybe not your mother - or your father or aunt, say up until the time that you were 18?
I wouldn’t say close, but I preferred my dad to my mum.

Was he quite distant or did he tend to hug and kiss you a lot?
No, I wouldn’t say distant.

Was there anyone else that you felt particularly close to at that time?
My mother’s sister, my aunt - but she went away and left home. She didn’t live with us, but we saw her everyday and we stayed at weekends with her.

Do you think your parents had their favourites
I know my mum’s favourite was my youngest brother, I don’t know about my dad.

Up until the time when you left home, do you feel that your parents or other caretaker always had time for and took an interest in your life?
Yes, I’d say they did. At school they were always pushing me to do better and better.

What about your aunt?
Can’t say - she was elderly.

Did you feel that you could go to your parents if you were upset or unhappy?
Not to my parents, no.

What about your aunt?
I suppose so, certain things.

When you were living with your cousin, did your parents remember your birthday?
I should say yes and no - my Dad did, but my Mum didn’t - and because my Dad used to leave everything to my Mum, like to buy presents and cards, when I wasn’t living at home I didn’t get nothing.

So he remembered but didn’t get you anything?
Yes.

Did you get to see your mother and father much after you left home?
No - I didn’t want to see them.
Did they write or phone at all?
No

Did you ever feel neglected?
I should say yes - in a way. All my Mum wanted was me to do well in school, but if there was anything, she just didn't want to know. Now if it was my brother she was all eyes and ears for him.

Were you looked after materially, say as far as things like food and clothes were concerned?
Yes

Were there ever times you had to do without something?
Yes. When my Dad wasn't there my mum used to punish us - we wouldn't get no dinner, that kind of thing.

After you left home, did your parents send your aunt any money to help with your keep.
No.

Did your parents take an interest in who your friends were?
No

What about your aunt?
No - I never had no friends anyway.

But you said they were interested in how you did at school?
Yes.

Do you think your parents approved of you up to the time when you were a teenager?
No.

What sorts of things did your mother do that made you feel she disapproved of you?
Everything I done wasn't right.

How do you think she showed you what she felt?
By continuously hitting us.

Did she ever praise you?
No - she would say, you can do better

What about your father, do you think that he approved of you?
Don't know - it's hard to say.

How do you think he showed you what he felt?
Well, most of the time he was quiet - he didn’t say nothing.

Would he praise you?
Yes - if I did something he thought was good.

Do you think he was hard to please or easy to please?
Hard.
What about your aunt - do you think she thought highly of you?
I suppose so. Her daughter’s the same age as I am, and being elderly she suffered from arthritis, and her own daughter didn’t give her the time of day. When I moved in I did everything for her, because she couldn’t do anything herself, and I couldn’t live in her house for free. She was always grateful for whatever I had done for her.

What sorts of things did you feel your Mum disapproved of?
Me - just fully me.

What about your father? What sorts of things did he disapprove of?
Sometimes he was disapproving - I wouldn’t say all the time because we hardly saw my Dad ‘cause he was working such long hours, so we would just see him 5 minutes in the morning and half an hour in the evening before he went to work.

What about your aunt? Did you feel she was disapproving?
No.

Would your mother or father or aunt ever make hurtful or critical comments?
Yes - my Mum. About everything, everything. Horrible things, always putting me down, can’t do nothing right. She would tell me about the colour of my skin, that I’m this and I’m that and she wishes she never had me, because it’s because of me she can’t do this.

How often would that happen?
All the time.

Did it change at all when you were a teenager?
No - just stayed the same.

What sorts of things was she strict about?
Everything - I wasn’t allowed, I couldn’t do anything. I had to come straight home from school and stay in the house. No friends were allowed, no phonecalls - I would be lucky if I could watch the television.

Was she strict about things like clothes and make-up?
I was never allowed to wear make-up - not that it ever interested me, but...

Clothes - I don’t know - I just wore what she bought.

You were never allowed to choose?
No.

When you were older was she strict about going out with boys?
Yes. I never met a boy until I met D., and that was S.’s Dad.

So, how old were you when you had your first sexual experience?
17.

How did your parents react if you came home late?
I never ever came home late, I was home at 20 past 4 every evening. I was only allowed to come straight home from school and not to go anywhere else.
What about your aunt, how would she react if you came home late?
I never went anywhere.

About how often did your mother punish you?
Every day. We only saw her in the evening when we came home from school, so it’s like as soon as we got home, and if something wasn’t done the way it was, or she couldn’t find what she wanted - punishment.

In what sorts of ways were you punished?
Hit us or lock us outside, like out in the evening, out in the snow. A couple of times she tied us to a step.

Things like that would happen everyday?
Yes.

What did she do when she hit you?
She’d throw something or she’d pick things up to hit us with.

If she threw something at you, did it ever hit you?
Sometimes - wherever it landed, my side, my back.

Did it ever hit you on the head?
Yes - my forehead.

Did she ever push you or shove you so that you landed on something - like hit an object such as a wall.
Yes.

Did she slap you?
Yes.

Where would she hit you, whereabouts on your body?
My face, my head.

What sorts of things did she hit you with?
Slipper, curtain flex.

Did she ever kick or punch you?
No.

Did he/she burn or choke you?
No.

Did she use - or ever threaten to use - a weapon on you?
Yes - she cut my arm with it (a bread knife - discussed previously in interview)

How often were you injured?
Say nearly everyday.

How badly were you hurt?
Quite badly a few times.

How often were you bruised?
All the time - I was bruised all over.

Were you ever burnt?
No.
Did you have any broken bones?
   No.

How old were you when this happened?
   From when I was about S’s age (5).

Did anyone else ever hit you or hurt you in any way?
   No.

I’d like to move on to something else now. At some time, most women have been sexually approached against their wishes or interfered with. Now, I’m asking about this because a lot of women have been approached against their wishes at some point in their lives, and so we want to learn about the different experiences that women have had. So, we want to learn about the sorts of situations in which women have been sexually approached against their wishes or interfered with. Has that ever happened to you? Perhaps I could just ask you a few questions—would that be O.K.?

How old were you when it happened?
   Eight.

Who was it?
   My uncle.

Did it involve just intercourse or was it just touching? Did he make you have sex with him?
   Yes

Could you tell me what happened, or would you rather I just asked questions?
   (No verbal response, but mother nodded or shook her head, so interview notes record extent of abuse, based on interviewer questions; this information is not presented in this transcript).

Did he say he wouldn’t love you anymore if you didn’t?
   No—he said I wasn’t to tell anyone about us or they would send him away.

How long did it go on?
   While he was living with us ... two or three years.

So that was from when you were about eight to when you were about eleven. How often did this happen?
   Everyday, while my dad was at work.

Did you tell anybody about it at the time?
   No.

Why not?
   They wouldn’t have believed me.
Do you know anyone else who had the same thing happen to them?

I recently found out my cousin was abused by someone else - my mum’s sister wrote her a letter and told her.

Did you tell anybody about it much later?

No

Have you spoken to anyone else about this apart from me?

No.

(This section of the interview ended here, and the interviewer provided information about possible sources of support or counselling, relating to the mother’s experience of maltreatment).

2.d.iii.a childhood care and abuse coding

LACK OF CARE: none (0)

PARENTAL INDIFFERENCE: moderate (2)
maternal indifference: some (3)
paternal indifference: moderate (2)

PARENTAL CONTROL: high (1)
maternal control: high (1)
paternal control: moderate (2)

PARENTAL ANTIPATHY: high (1)
maternal antipathy: high (1)
paternal antipathy: little / none (4)

CHILDHOOD PHYSICAL ABUSE

degree of CPA: severe (4)
degree of injury from CPA: marked (4)
identity of perpetrator of CPA: mother (2)

CHILDHOOD SEXUAL ABUSE

degree of CSA: intercourse (9)
frequency of CSA: monthly or more (6)
identity of perpetrator of CSA: other relative (4)
appendix 3.a
McCarthyst Scales of Children’s Abilities:
example score sheet

The cognitive functioning of children in the present study was assessed using the McCarthy Scales of Children's Abilities (McCarthy, 1972); please refer to the published manual for details of instructions for the administration and scoring of this measure. A completed score sheet for the McCarthy Scales is included overleaf for information.
McCARthy SCALES OF CHILDREN'S ABILITIES

Record Form

NAME________________________ AGE 6 SEX M

HOME ADDRESS________________________

NAMES OF PARENTS OR GUARDIAN________________________

SCHOOL________________________ GRADE________

PLACE OF TESTING________________________ TESTED BY________________________

REFERRED BY________________________

MSCA PROFILE

Enter the 6 Scale Indexes on the appropriate lines below. Then circle the mark representing the Index for each Scale. Draw a line connecting the circles. Note that the values for GC are different from those for the other Scales.

<table>
<thead>
<tr>
<th>SCALE INDEX</th>
<th>Verbal (V)</th>
<th>Perceptual-Performance</th>
<th>Quantitative (Q)</th>
<th>General Cognitive</th>
<th>Memory</th>
<th>Motor</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>78</td>
<td>78</td>
<td>78</td>
<td>78</td>
<td>78</td>
<td>78</td>
</tr>
<tr>
<td></td>
<td>70</td>
<td>70</td>
<td>70</td>
<td>70</td>
<td>70</td>
<td>70</td>
</tr>
<tr>
<td></td>
<td>60</td>
<td>60</td>
<td>60</td>
<td>60</td>
<td>60</td>
<td>60</td>
</tr>
<tr>
<td></td>
<td>50</td>
<td>50</td>
<td>50</td>
<td>50</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td>40</td>
<td>40</td>
<td>40</td>
<td>40</td>
<td>40</td>
<td>40</td>
</tr>
<tr>
<td></td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>22</td>
<td>22</td>
<td>22</td>
<td>22</td>
<td>22</td>
<td>22</td>
</tr>
</tbody>
</table>

COMPOSITE RAW SCORES AND SCALE INDEXES

Enter the composite raw scores from the back cover. Obtain the composite score for GC by adding V + P + Q. Determine the corresponding Scale Indexes from Table 16. (See page 151 of manual for detailed directions.)

<table>
<thead>
<tr>
<th>Scale</th>
<th>Raw Score</th>
<th>Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>Verbal (V)</td>
<td>85</td>
<td>65</td>
</tr>
<tr>
<td>Perceptual-Performance (P)</td>
<td>59</td>
<td>51</td>
</tr>
<tr>
<td>Quantitative (Q)</td>
<td>24</td>
<td>43</td>
</tr>
<tr>
<td>General Cognitive</td>
<td>168</td>
<td>108</td>
</tr>
<tr>
<td>Memory (Mem)</td>
<td>43</td>
<td>56</td>
</tr>
<tr>
<td>Motor (Mot)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

LATERALITY

(Enter information from Laterality Summary on page 5.)

Hand________________________

Eye________________________

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The Psychological Corporation 76-152AS 9-188731

Printed in U.S.A.
1. BLOCK BUILDING  Discontinue after failure on both trials of 2 consecutive items.

<table>
<thead>
<tr>
<th></th>
<th>Trial 1</th>
<th>Trial 2</th>
<th>Trial 3</th>
<th>Trial 4</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Tower</td>
<td>(0-3)</td>
<td>(0-3)</td>
<td>(0-3)</td>
<td>(0-3)</td>
<td>2</td>
</tr>
<tr>
<td>2. Chair</td>
<td>(0-2)</td>
<td>(0-2)</td>
<td>(0-2)</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>3. Building</td>
<td>(2)</td>
<td>(2)</td>
<td>(2)</td>
<td>(2)</td>
<td>3</td>
</tr>
<tr>
<td>4. House</td>
<td>(3)</td>
<td>(3)</td>
<td>(3)</td>
<td>(3)</td>
<td>3</td>
</tr>
</tbody>
</table>

Total Max = 10

2. PUZZLE SOLVING  Discontinue after 3 consecutive failures.

<table>
<thead>
<tr>
<th></th>
<th>Time</th>
<th>Performance</th>
<th>Circle Obtained Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Cat</td>
<td>30°</td>
<td>0 1</td>
<td></td>
</tr>
<tr>
<td>2. Cow</td>
<td>30°</td>
<td>0 1</td>
<td></td>
</tr>
<tr>
<td>3. Carrot</td>
<td>30°</td>
<td>0 0 2</td>
<td></td>
</tr>
<tr>
<td>4. Pear</td>
<td>60°</td>
<td>0 1 2 3 4</td>
<td></td>
</tr>
<tr>
<td>5. Bear</td>
<td>90°</td>
<td>0 1 2 3 4 5 6 7</td>
<td>8 9 8 9 10</td>
</tr>
<tr>
<td>6. Bird</td>
<td>120°</td>
<td>0 1 2 3 4 5 6 7</td>
<td>8 9 8 9 10</td>
</tr>
</tbody>
</table>

Test 4

3. PICTORIAL MEMORY

<table>
<thead>
<tr>
<th>Exposure Time</th>
<th>Response Time</th>
<th>Response</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Allow 10º</td>
<td>Allow 90º</td>
<td>Button</td>
<td></td>
</tr>
<tr>
<td>Horse</td>
<td>Padlock</td>
<td>Paper Clip</td>
<td></td>
</tr>
<tr>
<td>Pencil</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Test 3

4. WORD KNOWLEDGE  Discontinue if score on Part I is less than 6. Discontinue Part II after 4 consecutive failures on that part.

PART I. PICTURE VOCABULARY

<table>
<thead>
<tr>
<th>Card</th>
<th>Response</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Apple</td>
<td>House</td>
<td>Woman</td>
</tr>
<tr>
<td>2. Clock</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>3. Sailboat</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>4. Flower</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>5. Purse</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

Total (Part I) Max = 9

PART II. ORAL VOCABULARY  Discontinue Part II after 4 consecutive failures.

<table>
<thead>
<tr>
<th>Response</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>You get in the bath, put the towel on the side, get out and dry.</td>
<td>2</td>
</tr>
<tr>
<td>To put on yourself when you go out yourself with it.</td>
<td>2</td>
</tr>
<tr>
<td>To play with, with your babies, and mummies.</td>
<td>0</td>
</tr>
<tr>
<td>To saw, people's hair.</td>
<td>1</td>
</tr>
<tr>
<td>Where people work and have lunch.</td>
<td>1</td>
</tr>
<tr>
<td>When people shrink. They go little.</td>
<td>2</td>
</tr>
<tr>
<td>D. K.</td>
<td>0</td>
</tr>
<tr>
<td>Like Friday, Saturday.</td>
<td>0</td>
</tr>
<tr>
<td>Where my dad goes, sings, my uncle plays drums, my other uncle plays guitar.</td>
<td>2</td>
</tr>
</tbody>
</table>

For age 5, start at the indicated item. If items 1 and 2 of Part II are passed, give 9 points for Part I. (See manual.)

Total (Part II) Max = 20

Score 9 + 10 = 19

Test 4

458
5. NUMBER QUESTIONS

<table>
<thead>
<tr>
<th>Number</th>
<th>Right</th>
<th>Answer</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Ears</td>
<td>Two</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>2. Noses</td>
<td>One</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>3. Heads</td>
<td>One</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>4. Toys</td>
<td>Three</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>5. Balloons</td>
<td>Two</td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>6. Candy</td>
<td>Six</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>7. Pennies</td>
<td>Seven</td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>8. Apples</td>
<td>Twelve</td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>9. Crayons</td>
<td>Six</td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>10. Ball</td>
<td>Eighty</td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>11. Secret</td>
<td>Four</td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>12. Cookies</td>
<td>Three</td>
<td></td>
<td>0</td>
</tr>
</tbody>
</table>

Total Score = 37

6. TAPPING SEQUENCE

<table>
<thead>
<tr>
<th>Tapping Order</th>
<th>Score</th>
<th>Trial 1</th>
<th>Trial 2</th>
<th>Trial 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. 1-2-3-4</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. 1-3-4</td>
<td>134</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. 2-4-1</td>
<td>22341</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. 4-1-2-3</td>
<td>4321</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. 2-3-1-4</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. 1-4-3-2-3</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. 4-2-3-1-2</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. 1-2-4-3-1-1</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Total Score = 7

7. VERBAL MEMORY

PART I. WORDS AND SENTENCES

<table>
<thead>
<tr>
<th>Sentence</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>toy - chair - light</td>
<td>3</td>
</tr>
<tr>
<td>doll - dark - coat</td>
<td>3</td>
</tr>
<tr>
<td>after - color - funny - today</td>
<td>4</td>
</tr>
<tr>
<td>around - because - under - never</td>
<td>4</td>
</tr>
<tr>
<td>The boy said good-bye to his dog every morning before he went to school.</td>
<td>5</td>
</tr>
<tr>
<td>The girl tied a pretty pink ribbon on her doll before she went out.</td>
<td>8</td>
</tr>
</tbody>
</table>

Total Score = 9

PART II. STORY

<table>
<thead>
<tr>
<th>Sentence</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>On the way to school Bob met a lady.</td>
<td>1</td>
</tr>
<tr>
<td>The wind was blowing, suddenly blew the letters out of the woman’s hand.</td>
<td>1</td>
</tr>
<tr>
<td>Bob said “I’ll chase after them for you.”</td>
<td>0</td>
</tr>
<tr>
<td>He looked both ways there were no cars, so he picked up all of the letters</td>
<td>1</td>
</tr>
<tr>
<td>Bob shouted, “I’ll get them for you!”</td>
<td>1</td>
</tr>
<tr>
<td>Lady she was very happy and said thank you for being a kind helper.</td>
<td>1</td>
</tr>
</tbody>
</table>

Total Score = 10
12. DRAW-A-DESIGN

<table>
<thead>
<tr>
<th>Test</th>
<th>Pass-Fail</th>
<th>Score</th>
<th>Preferred Hand</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Pass</td>
<td>0-1</td>
<td>R L B</td>
</tr>
<tr>
<td>2</td>
<td>Pass</td>
<td>0-1</td>
<td>R L B</td>
</tr>
<tr>
<td>3</td>
<td>Pass</td>
<td>0-1</td>
<td>R L B</td>
</tr>
<tr>
<td>4</td>
<td>Pass</td>
<td>0-2</td>
<td>R L B</td>
</tr>
<tr>
<td>5</td>
<td>Pass</td>
<td>0-3</td>
<td>R L B</td>
</tr>
<tr>
<td>6</td>
<td>Pass</td>
<td>0-3</td>
<td>R L B</td>
</tr>
<tr>
<td>7</td>
<td>Pass</td>
<td>0-3</td>
<td>R L B</td>
</tr>
<tr>
<td>8</td>
<td>Fail</td>
<td>0-3</td>
<td>R L B</td>
</tr>
<tr>
<td>9</td>
<td>Fail</td>
<td>0-3</td>
<td>R L B</td>
</tr>
</tbody>
</table>

Total: Test 12

13. DRAW-A-CHILD

Administer only if child earned 1 or more points on Test 12.

<table>
<thead>
<tr>
<th>Item</th>
<th>Score (0-2)</th>
<th>Preferred Hand</th>
<th>Child's Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>2</td>
<td>R L B</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>1</td>
<td>R L B</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>2</td>
<td>R L B</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>1</td>
<td>R L B</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>1</td>
<td>R L B</td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>0</td>
<td>R L B</td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td>2</td>
<td>R L B</td>
<td></td>
</tr>
<tr>
<td>8.</td>
<td>2</td>
<td>R L B</td>
<td></td>
</tr>
<tr>
<td>9.</td>
<td>0</td>
<td>R L B</td>
<td></td>
</tr>
<tr>
<td>10.</td>
<td>2</td>
<td>R L B</td>
<td></td>
</tr>
</tbody>
</table>

Total: Test 13

LATERALITY SUMMARY

HAND DOMINANCE

Test 10, Part I: Ball bouncing R L B
Test 10, Part II, item 2: Beanbag catch R L
Test 10, Part III, item 1: Beanbag throw R L
Tests 12 & 13, all items: Drawing R L B

Totals

HAND DOMINANCE

Check one: (See pages 148-149 of manual.)

- Dominance Established (Right-Handed)
- Dominance Established (Left-Handed)
- Dominance Not Established
- Not Scorable

EYE USED IN SIGHTING (Test 11, item 4)

Check one: (See page 149 of manual.)

- Right
- Left
- Not Scorable
14. NUMERICAL MEMORY  
Discontinue Part I after failure on both trials of any item. If child earns 3 or more points on Part I, give Part II and discontinue after failure on both trials of any item.

<table>
<thead>
<tr>
<th>PART I. FORWARD SERIES</th>
<th>Trial 1</th>
<th>Trial 2</th>
<th>Score (0-2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. 5 - 8</td>
<td>58</td>
<td>4 - 9</td>
<td>2</td>
</tr>
<tr>
<td>2. 6 - 9 - 2</td>
<td>692</td>
<td>5 - 8 - 3</td>
<td>2</td>
</tr>
<tr>
<td>3. 3 - 8 - 1 - 4</td>
<td>384</td>
<td>6 - 1 - 8 - 5</td>
<td>2</td>
</tr>
<tr>
<td>4. 4 - 1 - 6 - 9 - 2</td>
<td>4892</td>
<td>9 - 4 - 1 - 8 - 3</td>
<td>2</td>
</tr>
<tr>
<td>5. 5 - 2 - 9 - 6 - 1</td>
<td>45084</td>
<td>8 - 5 - 2 - 9 - 4 - 6</td>
<td>8</td>
</tr>
<tr>
<td>6. 8 - 6 - 3 - 5 - 2 - 9 - 1</td>
<td>5382196</td>
<td>5 - 3 - 8 - 2 - 1 - 9 - 6</td>
<td>1</td>
</tr>
</tbody>
</table>

Total (Part I) = 8635691

<table>
<thead>
<tr>
<th>PART II. BACKWARD SERIES</th>
<th>Trial 1</th>
<th>Trial 2</th>
<th>Score (0-2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. 9 - 6</td>
<td>96</td>
<td>4 - 1</td>
<td>4</td>
</tr>
<tr>
<td>2. 1 - 8 - 3</td>
<td>65</td>
<td>2 - 5 - 8</td>
<td>0</td>
</tr>
<tr>
<td>3. 5 - 2 - 4 - 9</td>
<td>62</td>
<td>6 - 1 - 8 - 3</td>
<td>2</td>
</tr>
<tr>
<td>4. 1 - 6 - 3 - 8 - 5</td>
<td>69</td>
<td>6 - 9 - 5 - 2 - 8</td>
<td>0</td>
</tr>
<tr>
<td>5. 4 - 9 - 6 - 2 - 1 - 5</td>
<td>85946</td>
<td>3 - 8 - 1 - 6 - 2 - 9</td>
<td>1</td>
</tr>
</tbody>
</table>

Score (0-2) for Part II: 0

Total (Part II) = 5382196

Score (0-2) for Test 14, Part I = 0

Score (0-2) for Test 14, Part II = 0

Total (Test 14, Part I) = 0

Total (Test 14, Part II) = 0

15. VERBAL FLUENCY

<table>
<thead>
<tr>
<th>Time Limit</th>
<th>Record Responses Verbatim</th>
</tr>
</thead>
<tbody>
<tr>
<td>20&quot;</td>
<td>tomato, sausage, beans, pie, chips, celery, biscuits, crisps, ground rice</td>
</tr>
<tr>
<td>20&quot;</td>
<td>giraffe, tiger, elephant, monkey, cow, pig, snake</td>
</tr>
<tr>
<td>20&quot;</td>
<td>clothes, shoes, shell suit, mc hammer, trousers, jeans, jacket</td>
</tr>
<tr>
<td>20&quot;</td>
<td>bicycle, bus, car, lorry, van, coach</td>
</tr>
</tbody>
</table>

Score (0-9) for Test 15 = 28

Total (Test 15) = 28

16. COUNTING AND SORTING  
If child passed 9 or more items on Test 5, give full credit on Test 16. Otherwise, administer Test 16 and discontinue after 4 consecutive failures.

<table>
<thead>
<tr>
<th>Score (0-1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Takes 2 blocks</td>
</tr>
<tr>
<td>2. Takes 3 more blocks</td>
</tr>
<tr>
<td>3. Answer: 5</td>
</tr>
<tr>
<td>4. Puts 2 blocks on each card</td>
</tr>
<tr>
<td>5. Answer: 2</td>
</tr>
<tr>
<td>6. Puts 5 blocks on each card</td>
</tr>
<tr>
<td>7. Answer: 5</td>
</tr>
<tr>
<td>8. Point: 2nd block from left</td>
</tr>
<tr>
<td>9. Point: 4th block from right</td>
</tr>
</tbody>
</table>

Total (Test 16) = 8
### 17. OPPOSITE ANALOGIES

<table>
<thead>
<tr>
<th>Item</th>
<th>Analogy</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>The sun is hot, and ice is <strong>cold</strong>.</td>
<td>1</td>
</tr>
<tr>
<td>2.</td>
<td>I throw the ball up, and then it comes <strong>down</strong>.</td>
<td>1</td>
</tr>
<tr>
<td>3.</td>
<td>An elephant is big, and a mouse is <strong>little</strong>.</td>
<td>1</td>
</tr>
<tr>
<td>4.</td>
<td>Running is fast, and walking is <strong>slow</strong>.</td>
<td>1</td>
</tr>
<tr>
<td>5.</td>
<td>Cotton is soft, and rocks are <strong>hard</strong>.</td>
<td>1</td>
</tr>
<tr>
<td>6.</td>
<td>A lemon is sour, and candy is <strong>sweet</strong>.</td>
<td>0</td>
</tr>
<tr>
<td>7.</td>
<td>Feathers are light, and stones are <strong>hard</strong>.</td>
<td>0</td>
</tr>
<tr>
<td>8.</td>
<td>Syrup is thick, and water is <strong>good for you</strong>.</td>
<td>0</td>
</tr>
<tr>
<td>9.</td>
<td>Sandpaper is rough, and glass is <strong>little bit hard</strong>.</td>
<td>0</td>
</tr>
</tbody>
</table>

Total: 5 / Max: 9

### 18. CONCEPTUAL GROUPING

**Score**

<table>
<thead>
<tr>
<th>Item</th>
<th>Analogy</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Little, big</td>
<td>1</td>
</tr>
<tr>
<td>2.</td>
<td>Red, yellow, blue</td>
<td>1</td>
</tr>
<tr>
<td>3.</td>
<td>Square, round</td>
<td>1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Item</th>
<th>Analogy</th>
<th>Correct</th>
<th>Wrong</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.</td>
<td>Square blocks</td>
<td>6</td>
<td>0</td>
</tr>
<tr>
<td>5.</td>
<td>Big yellow blocks</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>6.</td>
<td>Big round red block</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>7.</td>
<td>Small blue square</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>8.</td>
<td>Large blue square</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>9.</td>
<td>Large yellow circle and small yellow square</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

Total: 9 / Max: 12

**Total Score:** 10

**Test 17**

**Test 18**
COMPUTATION OF COMPOSITE RAW SCORES

1. Enter the weighted raw scores which are in the shaded boxes on pages 2-7 of the record form. For each test, enter the score in the box(es) bearing that test's number. (For example, the score for Test 3 is entered in 2 boxes.)

2. Sum the scores in each of the 5 columns. Enter the totals in the composite raw score boxes at the foot of the page.

3. Transfer the composite raw scores to the front cover. (Open the booklet and turn it over so that the front and back covers are side by side.) Enter the scores in the Composite Raw Score column in the box labeled "Composite Raw Scores and Scale Indexes.

(For more detailed directions on the completion of the record form, see Chapter 7 of manual.)

WEIGHTED RAW SCORES

1. Block Building
2. Puzzle Solving
3. Pictorial Memory
4. Word Knowledge, I + II
5. Number Questions
6. Tapping Sequence
7. Verbal Memory, I
8. Right-Left Orientation
(Ages 5 and over ONLY)
9. Leg Coordination
10. Arm Coordination, I + II + III
11. Imitative Action
14. Numerical Memory, I
15. Verbal Fluency
16. Counting and Sorting
17. Opposite Analogies
18. Conceptual Grouping

COMPOSITE RAW SCORE
appendix 3.b.i
Social Problem Solving Test - Revised:
instructions to participants

The social cognitive functioning of children in the present study was assessed as follows. Stories were matched to the gender of the child; the examples below give the characters' names for male and female versions of the dilemmas. Stories were presented in random order to each child; for simplicity, only male versions of the pictures are included in this Appendix.¹

We want to know how children think about things. I've got some pictures, and I'm going to tell you some stories about them. The stories are not quite finished, and I'd like you to help me finish them. I want you to tell me what the child could do or say in each story. O.K? Now listen and watch carefully.

story one
age (younger -> older) / object acquisition

Presented with Picture One

This boy's / girl's name is Rick / Laura, and this is Danny / Kathy. Rick / Laura is five years old and Danny / Kathy is seven years old. Danny / Kathy is older than Rick / Laura. Danny / Kathy has been on the swing for a long, long time. Rick / Laura would really like to play on the swing.

What do you think Rick / Laura could say or do so that s/he could play on the swing?
(if no response, repeat question)

If that didn’t work, what else could Rick / Laura try so that s/he could have the swing?

What do you think you would do or say so, if you wanted to play on the swing?

¹ All information has been taken from Rubin (1988).
**story two**  
*gender (girl → boy) / object acquisition (same version for male and female participants)*  
*Presented with Picture Two*

This boy's name is Bob, and this girl's name is Elaine. They are both five years old. Bob, the boy, has been on the bicycle for a long, long time. Elaine, the girl, would like to ride the bicycle.

What do you think Elaine could say or do so that s/he could have the bicycle?  
*(if no response, repeat question)*

If that didn’t work, what else could Elaine do or say so that s/he could play on the bicycle?

What do you think you would do or say so, if you wanted to ride on the bicycle?

**story three**  
*age (same) / friendship formation*  
*Presented with Picture Three*

This boy's / girl's name is Joe / Kim, and this is Andy / Jenny. Joe / Kim are both five years old. They are both the same age. Joe / Kim and Andy / Jenny are in the same class at school, but this is Andy's / Jenny's first day at the school. Andy / Jenny is a new boy / girl in the class. Joe / Kim would like to get to know Andy / Jenny better.

What do you think Joe / Kim could say or do to get to know Andy / Jenny?  
*(if no response, repeat question)*

If that didn’t work, what else could Joe / Kim try so that s/he could get to know Jenny?

What do you think you would do or say so, if you wanted to get to know Jenny?
story four

age (older → younger) / object acquisition

Presented with Picture Four

This boy's / girl's name is Alan / Sally, and this is Billy / Carol. Alan / Sally is five years old, and Billy / Carol is three years old. Alan / Sally is older than Billy / Carol. Billy / Carol has been playing with the balloon for a really long time, and Sally would like to play with the balloon.

What do you think Alan / Sally could say or do so that she could play with the balloon?
(if no response, repeat question)

If that didn't work, what else could Alan / Sally do or say so that she could have the balloon?

What do you think you would do or say so, if you wanted to play with the balloon?

story five

age (younger → older) / friendship formation

Presented with Picture Five

This boy's / girl's name is Peter / Anna, and this is Kenny / Christine. Kenny / Christine is five years old, and Peter / Anna is seven. Kenny / Christine is younger than Peter / Anna. Kenny / Christine and Peter / Anna are both in the same Scout Pack / dance class, but this is Peter's / Anna's first day in the Scout Pack / dance class. Peter / Anna is a new girl in the Pack / class. Kenny / Christine would like to get to know Peter / Anna better.

What do you think Kenny / Christine could say or do so that s/he could get to know Peter / Anna?
(if no response, repeat question)

If that didn't work, what else could Kenny / Christine try to get to know Peter / Anna?

What do you think you would do or say so, if you wanted to get to know Peter / Anna?
**story six**  
*age (same) / object acquisition*  
*Presented with Picture Six*

This boy’s / girl’s name is Glen / Tracy, and this is Mike / Monica. Both boys / girls are five years old. They are both the same age. Glen / Tracy has had the book for a long long time, and Mike / Monica would really like to look at the book.

What do you think Mike / Monica could say or do so that s/he could look at the book?  
*(if no response, repeat question)*

If that didn’t work, what else could Mike / Monica try to get the book?  

What do you think you would do or say so, if you wanted to the book?

**story seven**  
*sex (boy ➔ girl) / object acquisition (same version for male and female participants)*  
*Presented with Picture Seven*

This boy’s name is Richard, and this girl’s name is Donna. They are both five years old. Donna, the girl, has been playing with the plasticene for a long, long time. Richard, the boy, wants to play with the plasticene.

What do you think Richard could say or do so that s/he could have the plasticene?  
*(if no response, repeat question)*

If that didn’t work, what else could Richard try so he could play with the plasticene?  

What do you think you would do or say so, if you wanted to play with the plasticene?

467
story eight

age (older → younger) / friendship formation

Presented with Picture Eight

This boy's / girl's name is Sean / Lily, and this is Chris / Nina. Sean / Lily is five years old, and Chris / Nina is three. Sean / Lily is older than Chris / Nina. Sean / Lily and Chris / Nina live in the same neighbourhood, but this is Chris’s / Nina’s first day in the neighbourhood. Chris / Nina is a new girl in the neighbourhood. Sean / Lily would like to get to know Chris / Nina better.

What do you think Sean / Lily could say or do so that s/he could get to know Peter / Anna? (if no response, repeat question)

If that didn’t work, what else could Sean / Lily try to get to know Peter / Anna?

What do you think you would do or say so, if you wanted to get to know Peter / Anna?
picture two
Appendix 3.b.ii
Social Problem Solving Test - Revised: coding scheme

The following coding system is taken from Rubin (1988); please refer to the SPST-R manual for full details of the scoring procedure.

4.b.ii.a flexibility

score 0
- no response is given in either response 1 or 2 or both
- an irrelevant answer is given for either response 1 or 2 or both
- response 2 is coded as a direct repeat of response 1

score 1: RIGID
- all categories found in the second response are contained in the first response
- this is true even when the second response does not have all the categories contained in the first response

score 2: MODERATE
- one or more categories found in response 1 also occur(s) in the second response, but one or more new categories have been added in response 2.

score 3: FLEXIBLE
- no categories found in response 1 are repeated in response 2

4.b.ii.a relevance

score 0: IRRELEVANT
The response does not suggest a solution to the problem as presented (i.e., could not result in the child getting the toy or getting to know the other child).
- no answer
- exact repetition of the first response for the second response
- irrelevant response: the solution does not solve the problem, or does not give enough information to allow coding
- repetition of the story line (object acquisition only)
- antisocial or bizarre responses

1 If any new ideas or categories are added the response cannot be counted as an exact repetition, and so should be coded as relevant. Also, if the two responses are similar (contain the same categories) but reworded differently, the second response is not considered to be an exact repetition of the first.
score 1: RELEVANT
The response suggests a feasible solution (i.e., could result in the child getting the toy or getting to know the unfamiliar child.

4.b.ii.a categories of response
4.b.ii.a.i object acquisition
ask
Any answer that contains a question format, or the suggestion that the child could ask the other child for the object.
politeness
Includes the words “please”, “thank you”, and/or “excuse me”
tell - agonistic
Any command or expression of need that is not qualified by a reason or a prosocial category, or the suggestion that the child should tell the other child he wants the toy.
tell - prosocial
The response includes a command as well as an explanation or prosocial qualifier.
wait
Delay implying future possession.
authority
Appeal to another person: both the appeal to authority and the suggestion of what the authority could then do to procure the toy for the child are coded.
fair share / turns
Inclusion of any word that indicates sharing, turn-taking and so on.
trade / bribe
Offering or withholding of a desired object or activity as a consequence of obtaining the toy.
plan for future
Waiting for a specific event or time.
manipulate affect
Any answer involving an emotion, or one which is designed to make the child who has the toy feel guilty, or one which is designed to hurt the feelings of the child who has the toy.
force / grab
Obtaining the toy in a forceful manner.
physical attack on person
The threat or suggestion that the child desiring the toy will physically attack or restrain the other child in some way.
damage to property
The threat or suggestion that the child desiring the toy will physically damage the toy in some way.
loans
The suggestion that the child desiring the toy will play with it for a short time after which time the other child will be free to play with the toy again

finagle
An attempt to distract the child who has the toy or interest him/her in something else.

non-normative
An inappropriate or invalid response

4.b.ii.a.1 friendship formation

invitation
An invitation to engage in mutual physical activity, issued to the other child in question format. Any response in which the child suggests inviting the unfamiliar child to do something or go somewhere.

prosocial and complimentary
A response involving being nice to the other child, making the other child feel good about him/herself and the first child’s intentions. Includes prosocial acts or suggestions such as sharing, helping, compliments or flattery, or giving child appropriate gifts. Includes expressions of desire to be acquainted with the other - these responses contain the words “I want”, “I would like”.

adult intervention
A response involving a third person or adult.

conversation openers
Any purely conversational approach to initiating contact such as personal questions, requests for information, polite or casual remarks, or any response containing the word “talk”.

indirect initiation
Includes non-directive, non-assertive responses in which the child invites friendship, or appears to be seeking invitation, friendship or prosocial acts from the other. This may be in the form of a question or hint. Includes responses suggesting physical proximity in order to get to know other child, or any suggestions that contain the word “could”.

direct initiation
Includes assertive responses or direct offers of friendship in statement form. Also includes direct action towards other child, or offer to engage in a given activity with the child, or commands given to other child.

non-normative
Includes child inappropriate responses such as hand-shaking, or impractical responses that the child could not carry out, or unusual or invalid responses, or conditional offer of an object or material.
appendix 3.b.iii
Social Problem Solving Test - Revised: coded examples of child problem solving

OBJECT ACQUISITION: female version

What do you think Laura could say or do so that s/he could play on the swing?
If she could sit on her lap then they could both swing. share

If that didn’t work, what else could Laura do or say so that she could play on the swing?
I will run home and tell my mum. authority

What do you think you would do or say if you wanted to play on the swing?
I’d just let her - I’d play on the slide. non-normative

FLEXIBILITY: 3
RELEVANCE: 2

FRIENDSHIP FORMATION: male version

What do you think Joe could do to get to know Andy?
Play with him, like him, help him do his laces, and play hide and seek with him and take him to the park and play with him a lot. prosocial / complimentary direct initiation

If that didn’t work, what else could Joe do or say so that he could get to know Andy?
Give him a sweet. He (Andy) might say, “Hey, you know something - I’m your best friend!” prosocial / complimentary

What do you think you would do or say if you wanted to get to know Andy?
I’d say “Please can I get to know you? I might give you the sweet in my pocket right now. Can I play with you?” indirect initiation prosocial / complimentary

FLEXIBILITY: 1
RELEVANCE: 3