

AN ELEVEN-YEAR FOLLOW-UP OF THE BABYTALK EARLY LANGUAGE
INTERVENTION:

Reporting outcome for this clinical sample and considering the interrelated influences
of language, verbal and non-verbal attachment and cognitive and social understanding
in early development.

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Abstract.

Both early language proficiency and early attachment security are associated with improved social and emotional functioning in later development. Armed with this knowledge, this thesis examines outcome following the Manchester based BabyTalk early language intervention. The intervention, initiated in 1991 by Dr Sally Ward, was aimed at encouraging normal language development in children identified at 7 months as being language delayed. This was to occur by empowering mothers to aid their child's language development. One assumption of the current study was that the changes in interactive style were likely to promote or consolidate attachment security as well as language functioning. The current study involves a follow-up of the BabyTalk experimental and control groups at 11-years. An emphasis is placed on exploring the social and emotional functioning of the BabyTalk infants. This is considered both an important outcome of effective language intervention and one of the best windows onto the early attachment relationship with this age group. Earlier findings with the sample are also revisited. Measures for exploring aspects of the construct of emotional intelligence, including both verbally expressed social understanding and non-verbal interaction, were devised. Their validity is explored with a same-aged cohort from the London Parent Child Project (LPCP). Anticipated differences in verbally expressed emotional understanding were not detected between the control and experimental BabyTalk infants, however there are differences in the children's non-verbal interactive style and their prosocial abilities. Results suggest that attachment theorising should acknowledge verbal and non-verbal aspects of attachment as related but separate, and have implications in terms of understanding the complex inter-relationship between language, attachment and social and cognitive abilities. The results of the 11-year follow up, and the importance of these theoretical considerations, are discussed for their relevance to future intervention and to understanding child development more broadly.

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TABLE OF CONTENTS.

Chapter 1 :Introduction	(10)
Part 1: The BabyTalk Language Intervention.	(11)
1.1 <i>BabyTalk - Beginnings.</i>	<i>(11)</i>
1.2 <i>Baby-talk – the sample.</i>	<i>(13)</i>
1.3 <i>The Programme.</i>	<i>(15)</i>
1.4 <i>Results to date.</i>	<i>(18)</i>
Part 2: If there are benefits following language intervention beyond language per se, and where might we look and how might we explain them?	(19)
1.5 <i>Section Introduction and Outline</i>	<i>(19)</i>
1.6 <i>Literature on outcome following early language intervention.</i>	<i>(21)</i>
1.7 <i>Deficiencies in the literature and considerations for future research.</i>	<i>(25)</i>
Part 3: Theorising on the links between early communication and other capacities from the language development literature.	(26)
1.8 <i>Section Introduction</i>	<i>(26)</i>
1.9 <i>Theorising on links between language, literacy and cognitive development</i>	<i>(27)</i>
1.10 <i>Theories on the links between language and psychopathology and social interaction.</i>	<i>(29)</i>
1.11 <i>The need for a psycho-linguistic account.</i>	<i>(31)</i>
Part 4: The Attachment Paradigm.	(32)
1.12: <i>Introduction to attachment theory</i>	<i>(32)</i>
1.13 <i>Literature on long-term outcome associated with attachment security.</i>	<i>(36)</i>
1.14 <i>A review of 'behavioural' interventions intended to enhance attachment</i>	<i>(42)</i>
Part 5 Conceptualising Baby-talk as an attachment intervention.	(45)
1.15 <i>:BabyTalk and Attachment</i>	<i>(45)</i>
Summary.	(49)
 Chapter 2.	
The BabyTalk 7 year IQ findings.	(52)
2.1 <i>Analysis of the 7-year follow-up data - IQ findings for BabyTalk verses control group status.</i>	<i>(52)</i>
2.2 <i>The relationship between language and IQ.</i>	<i>(57)</i>
2.3 <i>Early experience and cognitive outcome.</i>	<i>(60)</i>
2.4 <i>Attachment and cognitive ability.</i>	<i>(68)</i>
2.5 <i>IQ, cognitive ability, and achievement</i>	<i>(69)</i>
2.6 <i>The BabyTalk intervention and cognitive outcome at 11 years.</i>	<i>(70)</i>
Methods	
<i>The sample</i>	<i>(71)</i>
<i>Measures</i>	<i>(71)</i>
Results	(72)
<i>Analysis of the 11 year achievement data.</i>	<i>(72)</i>
Conclusions and Summary.	(75)
 Chapter 3	
Establishing a valid measure of emotional literacy and social cognition. – the F&F (Friends and Family) interview.	(77)
3.1: <i>Introduction.</i>	<i>(77)</i>
3.2: <i>Conceptualising and assessing emotional intelligence / literacy.</i>	<i>(77)</i>
3.3 <i>Social-emotional intelligence and Attachment.</i>	<i>(80)</i>
3.4: <i>Assessing Attachment.</i>	<i>(80)</i>
3.5 <i>Theorising on attachment and social competence.</i>	<i>(86)</i>
Method.	
<i>The Sample.</i>	<i>(90)</i>
<i>Measures</i>	<i>(91)</i>
Discussion.	(110)
3.6 <i>The Sub-scales.</i>	<i>(110)</i>
3.7 <i>The F&F interview – reflecting back on earlier attachment.</i>	<i>(111)</i>
3.8 <i>Attachment and Emotional Intelligence – cognitively, communicatively and behaviourally influenced.</i>	<i>(114)</i>
3.9 <i>Shortcomings of the current study.</i>	<i>(116)</i>
Conclusions.	(117)

Chapter 4	
The Friends and Family interview: investigating differences in emotional intelligence and social competence in the BabyTalk control and experimental groups.	(119)
4.1 Introduction	(119)
4.2: Why emotional intelligence?	(120)
4.3: Towards an integrated view of early language development and social and emotional development.	(121)
4.4 The role of the care-giver in the development of language, communication and social and emotional development.	(122)
4.5 Successful intervention - parent or professional?	(125)
4.6: Why the Friends and Family interview?	(127)
Method.	
The sample.	(129)
Measures.	(130)
Results.	(133)
Discussion	(141)
4.7 BabyTalk and 11 year findings with the F&F interview.	(141)
4.8 Considering why anticipated differences between control and experimental BabyTalk groups did not emerge in the Friends and Family interview.	(143)
4.9: Investigating differences in BabyTalk intervention group 1 and 2 children.	(149)
Conclusion.	(149)
 Chapter 5	
Exploring nonverbal behaviour	(151)
5.1 Introduction - non-verbal behaviour	(151)
5.2 A right-brain predominance in early development.	(151)
5.3: The association between right hemisphere and the social and emotional self.	(152)
5.4 Attachment theory and verbal and non-verbal behaviour.	(155)
5.5 The case for studying non-verbal behaviour	(157)
Part 1 : Establishing the validity of a measure of non-verbal behaviour - the NEBS (non-verbal and emotional behaviour scales) - on the LPCP sample.	(157)
5.6: Introduction	(157)
Method	
The Sample.	(158)
Measures	(158)
Results	(161)
Discussion.	(170)
Summary	(172)
Part II - Non verbal behaviour of the BabyTalk sample	(172)
5. 7 Introduction	(172)
Method.	
The Sample	(172)
Measures	(173)
Results.	(174)
Summary.	(178)
Discussion.	(178)
5.8 Considering important aspects of nonverbal emotional expression.	(179)
5.7 The BabyTalk sample	(182)
5.8 Verbal and non-verbal attachment security?	(182)
Conclusions	(184)

Chapter 6 : Discussion	(185)
Longterm outcome following the BABYTALK early language intervention: theoretical and practical implications.	(185)
6.1: <i>Introduction</i>	<i>(185)</i>
Section 1: Findings and conclusions of the BabyTalk follow-up studies.	(186)
6.2 <i>Exploring emotional literacy</i>	<i>(186)</i>
6.3 <i>Constructing the F&F interview and coding sheet.</i>	<i>(189)</i>
6.4 <i>Findings with the BabyTalk sample</i>	<i>(190)</i>
6.5 <i>Suggestions for further follow-up studies.</i>	<i>(195)</i>
6.6 <i>Building a model of the processes in operation</i>	<i>(196)</i>
Section II: Explaining the findings in an attachment framework.	(198)
6.7: <i>Introduction</i>	<i>(198)</i>
6.8 <i>Language and its association with other aspects of development.</i>	<i>(198)</i>
6.9 <i>Language and Attachment research</i>	<i>(199)</i>
6.10 <i>Evidence for considering verbal and non-verbal aspects of attachment behaviours as related but separate.</i>	<i>(202)</i>
6.11 <i>Linking language, attachment, cognitive abilities, and social intelligence.</i>	<i>(208)</i>
6.12 <i>Considering the relationship between attachment, language, and cognitive and social development.</i>	<i>(210)</i>
Section 3: Further Research.	(212)
6.13 <i>The validity of the F&F interview.</i>	<i>(213)</i>
6.14 <i>Validity of the NEBS (non-verbal and emotional behaviour scales).</i>	<i>(216)</i>
6.15 <i>Review of the measures and suggestions for future research.</i>	<i>(218)</i>
Conclusions.	(218)
References.	(221)
Appendices	(248)

LIST OF TABLES

Table 2.1: Comparative mean WISC subscale and IQ scores for BabyTalk (experimental) or control status children at 7 years of age. (52)

Table 2.2: Comparative mean WISC scores for group 1 and 2 BabyTalk children at 7 years of age. (55)

Table 2.3: Comparative mean SAT level achievement for BabyTalk (experimental) or control children at 11 years of age. (72)

Table 2.4: Comparative mean WISC IQ scores for BabyTalk and control children at 7 (sub-group also followed-up at 11 years). (73)

Table 2.5: Comparative WORD and WOLD language scores for BabyTalk and control children at 7 (sub-group also followed-up at 11 years). (74)

Table 3.1: Descriptive statistics for the F&F interview coding with the LPCP sample. (93)

Table 3.2: Intra-correlation between 'secure verses insecure' and 'coherence' with the other dimensions isolated by the F&F interview coding scheme. (97)

Table 3.3: Associations between the F&F interview scales and earlier attachment assessment. (99)

Table 3.4: Crosstabulations for Strange Situation at 12 months and 'secure verses insecure' at 11 years. (101)

Table 3.5: Crosstabulations for AAI security of mother, and 'secure verses insecure' classification at 11 years. (101)

Table 3.6: Crosstabulations for Strange Situation at 12 months and response to 'what do when distressed'. (102)

Table 3.7: Crosstabulations for AAI security of mother, and responses to 'what do when distressed'. (103)

Table 3.8: Correlation of verbal IQ at 11 years, 'overall coherence', 'secure verses insecure' and earlier attachment measures with aspects of functioning associated with emotional intelligence. (104)

Table 3.9: Summary of hierarchical regression analysis for variables (including mothers AAI) predicting children's 'coherence' of narrative in the F&F interview at 11 years. (107)

Table 3.10: Summary of hierarchical regression analysis for variables (including SS at 12 months) predicting children's classification as 'secure verses insecure' in their responses to the F&F interview at 11 years. (109)

Table 4.1: Descriptives of the F&F interview used in conjunction with the Manchester BabyTalk sample. (132)

Table 4.2: Crosstabulations for treatment status and 'secure verses insecure' as classified from the F&F interview at 11 years. (134)

Table 4.3: Examining differences in the means of the control and experimental BabyTalk groups in their coherence of narrative and reaction to distress. (135)

Table 4.4: Examining differences in the means of the control and experimental BabyTalk groups in their other responses to the F&F interview. (136)

Table 4.5: Examining differences in the means of the control and experimental BabyTalk groups in empathy and prosocial skills. (137)

Table 4.6: Examining differences in the means of the group 1 verses group 2 BabyTalk treatment groups in their responses to the F&F interview. (139)

Table 4.7: Examining differences in the means of the group 1 verses group 2 BabyTalk treatment group in social and emotional functioning measures. (140)

Table 5.1: Descriptive statistics for the NEBS interview coding with the LPCP sample. (160)

Table 5.2: Comparative 11-year non-verbal behaviour scores (NEBS) for the LPCP children classified as secure verses insecure in the SS at 12 months. (162)

Table 5.3: Comparative 11-year non-verbal behaviour scores (NEBS) for LPCP children whose mothers were classified as secure verses insecure in an AAI undertaken before their birth. (163)

Table 5.4: Interrcorrelation of the non-verbal overall scale with other scales in the NEBS. (164)

Table 5.5: Comparing mean scores of 'non-verbal overall' for children classified as secure verses insecure in the SS at 12 months. (165)

Table 5.6: Comparing mean scores of 'non-verbal overall' for children whose mothers were classified as secure verses insecure in the AAI. (165)

Table 5.7: Correlation of verbal IQ and measures associated with social and emotional intelligence with the NEBS. (167)

Table 5.8: Summery for hierarchical regression analysis of concurrent and earlier attachment measures on nonverbal style. (169)

Table 5.9: Descriptive statistics for the NEBS coding with the BabyTalk sample. (174)

Table 5.10: Comparative non-verbal behaviour (NEBS) for BabyTalk (experimental) or control status children at 11 years of age. (175)

Table 5.11: Comparative non-verbal behaviour (NEBS) for BabyTalk group 1 and Group 2 experimental group children at 11 years of age. (177)

LIST OF FIGURES

Figure 1: Patterns of influence and outcome operating on the BabyTalk sample over time. (197)

Figure 2: Suggested effects of mothers' styles of verbal and non-verbal interactions. (207)

Figure 3: Suggested interaction of attachment, language, social intelligence and cognitive abilities. (209)

APPENDICES

Appendix I : The Friends and Family Interview protocol . (249)

Appendix II : The friends and Family Interview coding scheme. (252)

Appendix III : The Nonverbal and Emotional Behaviour Scale (NEBS) coding scheme. (256)

Appendix IV : Self report questionnaire package. (262)

Appendix V Information sheets. (269)

Appendix VI: (273)

Table 2 : Comparative mean WISC sub-scale and IQ scores for group 1 (expressive and receptive language delay with additional listening difficulties) and group 2 (expressive and receptive language delay only) children at 7 years of age.

Appendix VII: (274)

Summary of hierarchical regression analysis for variables (including the SS at 12 months) predicting children's 'coherence' in their responses to the SURE interview at 11 years (n = 42)

Appendix VIII: (275)

Summary of hierarchical regression analysis for variables (including mother's AAI) predicting children's classification as 'secure verses insecure' from their responses to the SURE interview at 11 years (n = 46)

Appendix IX: (276)

A note on attrition in the BabyTalk sample.

Appendix X: (277)

A note on the Group 1 versus Group 2 analysis on the BabyTalk experimental group.

CHAPTER 1

INTRODUCTION

The BabyTalk intervention, applauded as a successful early language intervention following evidence of marked success at preventing language delay at two years post-intervention (Ward, 1999), gained international media attention when it also reported a very significant influence on IQ scores at age 7 years. These findings, the subject of much public debate, and with far reaching implications for enhancing development and theoretical understanding, seem indisputably worthy of further attention. This study was designed in order to revisit the findings at 7 years which have not to date been published in an academic forum, and to conduct a follow up at eleven years aimed at exploring and understanding the potential for enhancement in other areas of functioning.

To this purpose, the following review will discuss the BabyTalk intervention, rationale and research to date. Review of the literature in the fields of language intervention and acquisition will aim to discover in which domains of functioning it is appropriate to study outcome at 11 years. Particular emphasis will be placed on issues of emotional literacy and social cognition. Attachment literature, including material on the development of attachment and attachment interventions will also be reviewed in order to justify the postulation that early language intervention might result in improved mother-child interaction patterns, and that this might be associated with positive outcomes in both cognitive and social domains.

Access to the past data and current cohort of the Baby-talk study allows for further assessment of the success of the intervention in areas of functioning established in the literature as related to language ability. In this endeavour an eleven year-old cohort of children who have undertaken assessments of early attachment and later behavioural and social functioning in the context of the UCL London Parent Child Project will be introduced as a relevant comparison group. Results from this London sample will be used to validate the assessment measures used with the BabyTalk sample, contribute to the discussion of the influence of the quality of the parent-child relationship on later functioning, and additionally allow consideration of whether the low

socioeconomic status BabyTalk sample differs in any ways from a low-risk London sample. In this context, exploration of the concept of emotional development, and the specific nature of the early processes operating that can lead to such pervasive influences on development, will be a focus of discussion.

PART 1: THE BABYTALK LANGUAGE INTERVENTION.

1.1 BabyTalk - Beginnings.

The Baby-talk approach emerged as a distillation of Dr Sally Ward's years of clinical experience as a speech and language therapist, and her extensive theoretical and research background in the areas of language acquisition and child development more broadly. In her professional role, Dr Ward was appointed Principle Speech and Language Therapist with the NW Regional Health Authority with responsibility for children with language, hearing and learning difficulties, and was invited to be an Advisor in Developmental Language Disability to the Royal College of Speech and Language Therapists. In these capacities she undertook clinic-based work with pre-school children exhibiting a wide range of speech and language problems. During this time of clinical practice her strong interest in listening and attention, and their relationship to language development, suggested to her the potential long-term effectiveness of a program based entirely on parental-child interaction.

Correspondingly, in terms of theoretical position, Dr Ward's perspective reflects a broadly systemic understanding of language acquisition. While acknowledging the nativist view that human infants are uniquely predisposed to learn language (Chomsky, 1959), the idea that a 'Language Acquisition Device' (Chomsky, 1960) could operate without being significantly influenced by the nature of that child's social world did not accord with Ward's clinical and empirical experience. More compatible with her approach is the converse interactionist stance, most closely associated with the work of Vygotsky and Bruner. In this paradigm, primary emphasis is placed on the role of social interaction in the development of communication. During communication, language is mapped onto familiar situations, and hence the

quality and type of responses made by the communicative partner determines the basis for language development.

Many researchers have examined the special properties of parent-child speech and their influence on language and learning, for example the use of 'motherese' in encouraging children's arousal, perception and comprehension of language (Sokolov, 1993). Work by Fernald (1993) indicates that appropriate emphasis, communication of emotion and intention, and simple, repetitious linguistic style aids verbal comprehension. Other research has focused on the importance of child-focused attention in determining dialogue for facilitating comprehension (e.g. Barnes, 1983, Harris 1992) and the use of symbolic language (Slade, 1987). While it seems that certain elements of language development operate without reference to environmental influences, for example first word production in infants appears not to be influenced by the level of environmental stimulation they receive, it is indisputable that social experience has great influence on aspects of pragmatic language use and the use of mental state words (Bretherton, I. & Beeghly, M., 1982). Ward (1999) writes that her own perspective and premise on which the Baby-talk intervention is based is neatly summarised in a quote by Lenneberg who writes that

"Infants are biologically programmed to develop language in the same way that much animal behaviour is programmed. To occur satisfactorily, however, the organism must be intact, and the environment provide sufficient stimulus of the appropriate quality" (Lenneberg, 1967, p.373).

The purpose of the Baby-Talk intervention then was to attempt to empower parents to aid their children's language development by providing that 'sufficient stimulus of appropriate quality' in an environment where the child is able to benefit from it (Ward, 1999). The intervention focuses on enhancing interaction by specifically addressing the nature of mother directed speech and optimal conversational exchange (see section 1.3 below for further discussion of the programme). The purpose of this study is to examine whether the altered mother-child interaction patterns might also prevent cognitive, behavioural and emotional difficulties associated with language delay, and even enhance them. Further it will explore the specific nature of what might be occurring in interactions that represent 'sufficient stimulus of appropriate quality'. The current study is based on the assumption that the BabyTalk intervention

positively influenced the overall quality of the parent-child attachment relationship. No observation of this relationship was collected in early childhood with this group, nor could be collected in middle-childhood, although the current study examined social-emotional measures thought to reflect early infant-parent attachment patterns. An additional aim then is to speculate on whether the BabyTalk intervention and linguistic style has implications for development beyond language enhancement, extending to some of the wide range of long-term outcomes associated with early infant-mother attachment strategies.

1.2 Baby-talk – the sample.

A sample of 119 children with language delay to be included in the study were identified by screening all children attending a hearing test in inner-city Manchester. The mean age of the children at that screening was 9.3 months. This is a routine test intended for all children and would not have included children previously identified as exhibiting developmental delay. Screening was undertaken with a tool for the detection of delayed linguistic development in infants previously established as accurate and reliable (Ward, 1992). Children identified by this instrument as having language delays were invited to an initial appointment with a Speech and Language therapist. At this stage children were divided into matched control and experimental groups by banding children in categories of mild, moderate and severe delays as identified by administration of the Receptive Expressive Emergent Language Scales (REEL) (Bzoch and League, 1971). Infants showing language delay of similar severity were randomly placed in the control or experimental group.

In this process children were also placed into one of three groups. These groups were seen as a continuum, with group 3 infants showing the least disability (expressive delay alone), the group 2 infants exhibiting additional difficulties (expressive and receptive delays) and group 1 being the most disadvantageous (expressive and receptive delay with associated listening difficulties) (Ward, 1999). Delay in either expressive or receptive skills was considered being 2 months below chronological age, or quotients less than 83-89 depending on age. In the original sample group 1 was far in away the largest group (57%, $n = 68$), group 2 made up 29% ($n = 34$) and

group 3, just 14% (n = 17). Children received slightly modified programmes depending on the group that they were allocated to.

Attempts were also made to match groups in terms of general development, social background and to exclude children who might additionally suffer from an emotional disorder. To ensure that groups were matched in terms of general developmental level, the children were assessed using the Parent Infant Progression Charts (PIP) (Jeffree and McConkey 1976). One child showed delays of 3 months and was subsequently excluded from the study. All other children were within a month of expected developmental level. Children exhibiting behaviours listed on a checklist indicative of emotional disorder were excluded from the study. Two children were identified in this way. The groups were also well matched in terms of social and economic status. Central Manchester is officially designated as a deprived inner-city area, with the majority of residents living in council housing or densely populated back-to-back Victorian terrace housing. Only 4% of the experimental group and 6 % of the control did not live in housing of this category and were in privately owned detached or semi-detached housing. Sixteen per cent of the experimental groups were from families from ethnic minorities, as were 12 % of the controls. The mean (range) age of the sample once the intervention commenced was 10.6 months (8-21).

At no stage in the study was any indication given to parents that their children had exhibited any delay or sign of disability. Initial screening was offered as involvement in a 'study examining listening and sound-making in babies'. Intervention, which was offered to parents of all babies in the experimental group, was phrased as taking part in a 'study on accelerated language development'. All but one family accepted. The attrition rate between the first and second year was 17% (20 children) and between the second and third year 16% (16 children). None of those actively refused intervention but had either moved house or were not at home when the Speech and Language therapists called. The control group parents were thanked for providing the information and asked if follow-ups could be made in the future. The experimental group received four visits from the Speech and Language therapists, discussing with parents a number of aspects of their lives including background noise in the home and TV usage, and encouraging a certain amount and style of interacting with their children as outlined by the Baby-talk programme, and detailed below.

1.3 The Programme.

The specific elements of the programme were in part tailored to the assessed severity of the children's language delay, the child's specific needs, and the parents' interactive style as assessed at home visits. Fundamental principles guiding recommended behaviour, however, were common to all. The programmes recommended a specific play session of a few minutes (preferably 30 minutes) daily containing two or three specific 'compulsory' activities, and a bank of non-compulsory activities to be added if it was felt appropriate. These might include singing nursery rhymes, playing with bells or rattles, or imitating the babies own attempts at sound production. Further, parents were encouraged to take the programme into more naturally occurring situations throughout the day, pointing out to children the sources of sounds, and naming objects that their children naturally show an interest in. According to the specific nature of their children's difficulties, parents were made aware of all or some of the core BabyTalk principles to encourage their child's optimum development, summarised below:

1. The carer should spend time each day interacting with their child one-to-one, close together and in a quiet room, to allow the baby to discriminate the adult's sounds from more general background noise.
2. 'Child-led shared attention' is important to facilitate the child's attention and allow the child to map meanings onto words.
3. The type of speech used should be that most easy for the child to attend to, typically short clear utterances. The use of melodic and exaggerated speech is encouraged given the critical importance of maintaining children's attention and interest in speech sounds.
4. Carers are encouraged to imitate their child's sounds in order to enhance enjoyment in 'conversation' and to enhance sound perception.

5. Playfully mimicking environmental noises, for example car engines or a dripping tap, is advised to encourage enjoyment in sounds.
6. Frequent repetition of words is encouraged to allow the child to learn and foster recall. The use of rhymes and ritualized phrases ("up she comes") also aids recall and enjoyment in language.
7. Parents are encouraged always to respond to their children's communicative attempts with an appropriate verbal response themselves, encouraging enjoyment in interaction.
8. A high level of verbal input is encouraged by using 'point and label' games as well as encouraging parents to provide a 'running commentary' on their activities even when not necessarily directly interacting with the child ("Mummy is doing the washing up").
9. Parents are encouraged to avoid wherever possible verbally reprimanding children in such a way that might discourage the child from listening to the parent, or make them fear making sounds.

During the home visits the Speech and Language therapists incorporated specific new activities into the individual child's programme if any of these areas proved difficult for the parent to integrate into their daily interactions.

The exact nature of the intervention approach recommended to parents in the experimental condition depended on children's allocation to one of three groups, which was determined by the severity of their difficulties. Group 1 children had the most severe problems, displaying expressive and receptive language delay as well as additional listening difficulties. Group 2 children had expressive and receptive language delay only. Group 3 children had delayed expressive language but normal receptive language ability. Receptive and expressive language development were evaluated by the Receptive and Expressive Emergent Language Scales (REEL) (Bzoch and League, 1971). Equal numbers of control and experimental group children were included in each group (see 1.2).

Group 3 children were given a basic BabyTalk intervention containing the elements listed above. The importance of time alone with the child in a quiet environment was emphasised to parents of group 2 children, in an attempt to enhance verbal comprehension. It was identified that group 1 children had specific difficulties with the task of focusing selectively on sound. This is a skill which is not present at birth, but which usually develops by one year of age (Topp, 1964).

Ward (1999) has explored several reasons offered to explain why this ability to focus selectively on sound may not develop. One reason may be an environment with excessive and distracting background noise. Another is poor quality or quantity of input from parents. It is well documented that successful adult-child speech needs to be modified in order to maintain the child's attention to speech (Fernald, 1989). Ward (1999) notes that poor quality input has as much of an influence on language skills as it does on causing sensory deprivation (Rapin, 1978). The development of semantic and pragmatic aspects of language are acquired only in the context of increasing sensory experience and verbal input (Baron-Cohen, 1987). As a result it is with the group 1 children that an emphasis is placed in the intervention in altering the interactive style of mother and infant. The principles of child-led joint attention are explored with the mother. Parents are told to always respond to their infant's communicative efforts, and told not to use speech to reprimand their children as much as possible. Ward outlines the special aspect of the intervention for group 1 children;

"Response to the infant and development of interactive dialogue are fostered by encouraging the carer imitatively to model his sounds and to respond to his communications with appropriate verbal replies. The carer is encouraged to be close to the infant to help him perceive her input clearly and again to help his structuring of the auditory field" (Ward, 1999, p 250).

It is intuitively likely that these behaviours emphasised in the group 1 intervention are those most likely to influence infant mother attachment. Such a view is supported by Ainsworth's own (1967) summary of behaviour "through which attachment grows" (p.219). She writes:

"He gradually becomes attached through smiling and crying and through *adjusting his posture to his mother*, suckling her breast, *looking at her, listening to her, vocalising*

when she talks to him, scrambling over to her, approaching her, following her and clinging to her." (Ainsworth, 1967, p.219).

Hence the importance of the proximity of the infant to the mother, their eye-contact, and the nature of the shared communication passing between them, all emphasised by the group 1 BabyTalk programme, are also cited by Mary Ainsworth as critical aspects in the development of attachment.

1.4 Results to date.

Although specific measures of the amount of time parents spent following the programme were not undertaken, the great majority of carers reported that they did follow the programme, spending at least 20 minutes a day on average on play sessions, and 10 minutes on other suggested activities (Ward, 1999). At one year after initial assessment, all of the experimental group were in the normal or better range of language ability measured by REEL, while only 8% of controls (4 of 47 children) had reached that level. At three-year follow-up, 29% (12 of 42 children) of the control group had been referred for speech and language therapy while none of the experimental group had. In the control group approximately 85% (35 of 42 children) continued to display language delay, while only three children in the experimental group, who had experienced very adverse circumstances, were below the normal standard. Some children in the experimental group were functioning at the level of four and a half years (Ward, 2000). Some aspect of the altered mother-child interaction and communication style seemed to have had a profound effect on preventing language delay at three years.

It is the seven year follow up, however, which provided the startling results that incurred the interest of the media and academics alike. To date this material has not appeared in an academic journal, but has only been presented at conferences, and is referred to in the 'BabyTalk' book (Ward, 2000). The present report was initiated at the request of Dr Sally Ward. In terms of language development, only 4 children in the experimental group, verses 20 in the controls, showed any delay. Further, on average, the experimental group were one-year and three months ahead of the controls in both reading ability and sentence understanding and construction. Even more

startling was the finding that there was a considerable intelligence difference between the two groups. The average IQ of the experimental group was in the top third of the population, with over a quarter of children in the intellectually gifted range. These results are in stark contrast to the control group who were on average in the bottom third of the population, with only one child in the gifted range. The psychologists assessing the children noted considerable differences between the groups in concentration, attention and enjoyment in the tasks. In her popular book, Ward covered only these major group findings. In Chapter 2, IQ data will be systematically explored and discussed at length, and the general issues of social functioning are explored more coherently at the current eleven-year follow up.

PART 2: IF THERE ARE BENEFITS FOLLOWING LANGUAGE INTERVENTION BEYOND LANGUAGE PER SE, WHERE MIGHT WE LOOK AND HOW MIGHT WE EXPLAIN THEM?

1.5 Section Introduction and Outline

In her opening to her edited volume “Enhancing children’s communication: Research foundations for intervention”, Ann P. Kaiser (1993) comments that one of the most “remarkable and important developments in language intervention” in recent years has been in aiming to facilitate “social communication” rather than focusing on narrow speech and language skills. This shift is seen to “reflect our growing understanding of the inter-related aspects of children’s social, cognitive and linguistic development” (p.3).

This perspective is by no means isolated. The acknowledgment that enhancing language skills is likely to have implications for functioning in a variety of domains now seems firmly entrenched in work in this area. Despite this, a consensus on specifically which areas of functioning are likely to be enhanced by language intervention, or indeed areas of disability which are co-morbid with language difficulties, does not appear to have been reached in the literature. Even more elusive

is an agreed explanatory framework for understanding such wider benefits when they are seen to occur. This is the case despite a number of excellent reviews of language intervention studies in recent years (Law, 1998 & 1997, Fowler et al, 1993), that acknowledge such deficiencies in research in this area. A very comprehensive review of speech and language delay literature prepared for the Health Technology Assessment Programme (Law, 1998) repeatedly laments that;

“few studies examine the long-term effects of early intervention in the area of primary language delay (p.34).”

Pertaining to this, the latter report mentions the present study as a means for beginning to redress this situation;

“The sample identified by Ward (1994) ... is due to be reassessed in school in the near future. This data should contribute considerably to the discussion of the outcome for treated groups in the longer term (p.34)”

In terms of the difficulties of explaining the pathways affecting outcome, the principle author of that report writes elsewhere that lack of knowledge in this area is due in part to “incomplete knowledge of the language acquisition process and how that process interacts with the type of difficulties that language impaired children appear to experience” (Law, 1997, p.11). It is intended that the current project should also contribute to this unresolved issue.

With these limitations in mind, the research that does exist examining later outcome following early intervention is helpful in orientating the initial question of where it might be appropriate to look for benefits in functioning beyond language per se. Consequently, the first section of this review will examine language intervention outcome studies, both those with a narrow focus, for example exploring cognitive outcomes, and others with a broader perspective on outcome. Those studies that focus on outcomes for groups from low socio-economic backgrounds will be given particular attention as being highly relevant to the population in the present study. A review will also be undertaken of work examining the later outcome of children identified with language delays who did not receive any form of intervention, as this

has also suggested areas of difficulty that co-occur with language problems. Deficiencies in this area of research will be discussed, with corresponding recommendations for future research.

In terms of the second principle question, about how we might begin theorising on links between early communication and outcome in various domains, it will be seen that theories proliferate. Some predominant explanations of links between language competency and literacy, IQ and psychopathology, as well as social cognition, as they have emerged in the language acquisition literature will be outlined. It will be argued that a more psycho-linguistic account will be necessary to understand the developmental dynamics connecting language development and factors such as cognitive abilities, mental health, social cognition and emotional literacy.

1.6 Literature on outcome following early language intervention.

Assessing Outcome.

It is now widely acknowledged that the effectiveness of early language intervention needs to be assessed not just in terms of the maintenance of gains on specialised tests following intervention but also in terms of the generalisation of treatment effects. Indeed, this broadened approach is the recommendation of the World Health Organization, which emphasises the need to move away from measuring change in impairment, to more general assessment of change in disability, handicap and distress or well-being (Enderby, 1992). Despite a considerable body of research into intervention for children with language difficulties, this model has generated little in the way of studies, with those attempted rarely extending beyond 24 months following intervention. McCauley & Swisher, (1984) have noted the limitations imposed by the reluctance to move away from commonly employed standardised procedures. Further, often only one single outcome measure is employed.

A notable exception is a recent study conducted by Gina Conti-Ramsden *et al* (2001). Here a large cohort of 200 children who had attended infant language units at 7 years were followed up at 11 years and reassessed on a wide battery of language and literacy measures, a test of non-verbal ability and a communication checklist. Sixty-

three percent scored poorly on three or more measures demonstrating wide-spread difficulties. The findings caused the authors to recognise that the persisting difficulties of this age group were not confined to specific language problems but influenced a wide range of literacy skills and threatened academic performance.

Cognitive Outcome.

A small number of studies have been quite specific in their expectations of enhanced functioning in other domains following early language intervention. Notably such studies have examined the influence of early intervention on later general cognitive functioning. Fowler et al (1993) report findings from a review of several studies examining the effects of early enrichment on language and cognitive development. An admittedly small sample of 20 children from diverse ethnic, educational and socioeconomic backgrounds received the enrichment intervention and subsequent follow-up. In this case 'enrichment' constituted bi-weekly home visits while children were between 6 and 12 months of age, when parents were taught referential learning strategies and social interaction strategies through discussion, demonstration and video-tape. Children were followed up, in some cases as much as sixteen years later, and the authors found that 62% were placed in gifted or advanced schooling programmes (compared to an expected 4.8%) and that 92% have high grades in a variety of subjects and are intellectually independent. Children were also found to be socially well-balanced and have a wide-range of interests. This follow-up data was collected from interviews with family members, and the authors acknowledge that it is incomplete and conclusions should be drawn only tentatively. The current study aims to address this concern by seeing children themselves at eleven years, and using appropriate assessment measures. Significantly, the students included in the later follow-up were all from professional or semi-professional families with at least partially college educated backgrounds. This is particularly noteworthy given the acknowledgment in a later paper of sociocultural variations in enhancement (Fowler et al, 1994). While competencies in children from families with high school or less education were equally improved at early follow-ups, a number of years on they were significantly less likely to be as advanced as children who received the intervention and came from more educated families.

Outcome for low SES groups and the tendency for effects to fade over time.

The tendency to find that impressive short-term enhancement of skills in children from low social and economic status (SES) backgrounds following early intervention programmes which fade over time, presumably as a consequence of later disabling experiences, seems all too pervasive in the literature. Notoriously, initial reports from Head Start projects indicated the ‘washing out’ of gains over time to control group levels (Bronfenbrenner, 1974). High levels of language functioning and measurable cognitive gains following intervention have specifically been noted to recede over the course of later development in low SES samples (Lazar and Darlington, 1982). Consequently, many authors have questioned the validity of investing language intervention resources in this group (e.g. Rhea, 2000).

The literature is not without its success stories, however, and a number of randomised controlled trials have reported enhanced academic achievement and social adjustment following early intervention lasting well into adulthood (e.g. Zigler and Muenchow, 1992). Unlike most Head-start studies which focus on IQ aptitude and more strictly cognitive outcomes, these strong results emerge when broad social outcome measures are examined. In this sense the current study is in the Zigler *et al* tradition.

There is also little justification for assuming that the tendency to fade over time is exclusive to or due to some factor particular to low socioeconomic groups. Whitehurst et al (1992) gave children identified at 2 years with expressive language delays from diverse ethnic and socioeconomic backgrounds a 6 month home-based intervention involving bi-weekly instructions for parents to improve their interactional style with the child. Immediately post-treatment the group had significant gains relative to controls, an effect that had disappeared at a 65 month follow-up.

Authors who have examined language impairments and related functioning in conditions of poverty (Whitehurst & Fischel, 2000) maintain that the same skills predict success and failure in low-income samples as in middle-class samples. It would not seem that the evidence precludes the possibility of positive long-term outcome following intervention, even in a low socio-economic sample such as the Manchester sample.

The literature certainly provides a great body of evidence that even modest interventions can result in significant initial enhancements of language and cognitive functioning, as well reinforcing the influence of less propitious circumstances on achievement. The BabyTalk sample consists, of course, of children from very deprived backgrounds, and it is hoped that analysis of long-term outcome here will contribute further to understanding in this area.

Behavioural Outcome

It becomes apparent that, beyond cognitive abilities, and less commonly, social adjustment, other areas of functioning following early language intervention have had scant attention in the literature. Law *et al* (1998) comment that behavioural outcomes are notably under-specified. On review, only one study (Girolametto *et al*, 1995) with a small experimental group of eight children, was found which addressed this issue. The study reported a reduction in acting-out behaviour following language intervention. The current study will address this issue via self-report to examine whether behavioural difficulties or strengths may be shown to relate to the early intervention.

Outcome of individuals with Speech and Language Difficulties who do not receive intervention.

Equally, if not more illuminating, in terms of considering where change following early language intervention might manifest itself, are longitudinal studies that have examined later functioning of children identified with speech and language impairments but who did not receive intervention. A very comprehensive study examining speech and language outcomes of 242 young adults with and without speech and language impairments has been conducted by Johnson and his colleagues in a community based project in Toronto (1999). Participants were recruited at 5 years and follow-ups conducted at 12 and 19 years. Direct assessments were conducted at all three time periods in an unusually wide area of domains, including consideration of communicative, cognitive, academic, behavioural and psychiatric aspects of functioning. The study replicated earlier findings (Basher & Scavuzzo, 1992; Fey, Catts & Larrivee, 1995) that communication problems are associated with a higher

risk of developing cognitive, academic, behavioural, social and psychiatric difficulties. As the authors comment “replication and extension of these findings with a sound methodology [the first such study to employ prospective longitudinal design in a community sample] enables greater confidence in their use for prognostic, planning and research purposes” (Johnson et al, 1999, p.744).

1.7 Deficiencies in the literature and considerations for future research.

It becomes clear from review of the current literature that examination of factors outside of the domain of language capabilities per se are both very pertinent and under-examined in considering effective language intervention. In this sense, theoretical understanding and even the request of the WHO to broaden the concept of outcome, and consider long-term effects has gone largely unheeded, leaving links between early language and communicative development and cognitive, behavioural, social and emotional functioning under-explored. It also is apparent that the tendency for early effects to fade back to control levels, particularly in work with lower socio-economic groups, warrants further attention. The research reviewed also highlights a number of other deficiencies and recommendations for future research worthy of consideration in the context of the current study.

It is evident that as well as programme variables, child variables, such as age, gender, the nature of presenting difficulties, and, as mentioned at length, social class, are important factors to consider when attempting to make sense of the nature of the processes operating following early intervention. There is also a great need for larger studies with suitable controls and enough statistical power to address major issues. The small sample sizes of existing studies is an area of constant criticism, and unfortunately, given the longitudinal nature of the study and attrition between seven and eleven year follow up, not one that this study is able to address. However, the current study can contribute to some short-comings in addition to taking a broader perspective on outcome. It is still to be explored to what extent communication skills might be malleable and environmentally influenced, and how much they might be susceptible to change, particularly in lower SES groups. Law (1997) has called for a “better understanding of the role of parents”, an important element in understanding

more about successful programme delivery, as well as the developmental pathways and processes operating in the fundamental connections between language and social behaviour. This lack of understanding stems in part from an incomplete knowledge of language acquisition, and how this relates to other areas where difficulties manifest themselves. To paraphrase Law (1997) once again, if we are to explain predictable changes following intervention, we must have a good theoretical rationale for how interventions themselves are operating.

This 'theoretical rationale' will indeed be attempted, but it is pertinent first to examine accounts presented in the language acquisition literature which strive to theorise on the links between early communication and related abilities in other domains.

PART 3: THEORISING ON THE LINKS BETWEEN EARLY COMMUNICATION AND OTHER CAPACITIES FROM THE LANGUAGE DEVELOPMENT LITERATURE.

1.8 Introduction

As the interrelated aspects of children's social, cognitive and linguistic development have increasingly been acknowledged, efforts to explore and understand these pathways have emerged. Interest and resources have particularly been targeted in this area as pressure is increased to understand the reasons for failing readers and school underachievers (Blank, 1982), and develop initiatives to meet new school attainment targets. In keeping with the acknowledgement of the pervasive effects of early experience, attention has been given to early and even pre-verbal communication. As many as 10% of children experience difficulties in developing communicative skills, and in the case of severe delays, research has painted a bleak picture for later literacy, peer relations and psychiatric disorders (Bishop et al, 2000). Once again much work in this area comes from studying the difficulties experienced by children from low socio-economic status groups, and commentators here have moved away from a simple 'deficit' model to place language difficulties at the heart of difficulties often experienced by this group. Efforts have been made to explain the links between early

communication and the development of literacy, cognitive functioning, psychopathology, and social cognition and emotional literacy, and these will be discussed below. It becomes evident that while many of these accounts are helpful in understanding aspects of development, that a more complete understanding would emerge from taking a 'psycho-linguistic' approach, the nature of which will be a major area of discussion in the next section.

1.9 Theorising on links between language, literacy and cognitive development

Theorising on the links between language and literacy.

Many differing views have been represented in the literature linking language skills and literacy. Few have been able to sustain a straight forward 'causal' account, and commentators have indicated frustration that no specific element of language performance is predictive of literacy skills (Bishop *et al*, 2000). That said, oral language skills at 4-5 years are highly predictive of written language achievement at 8-10 years (Blank, 1982). While it is beyond the task of the current discussion to examine in detail the relative merits of these approaches examining the transition from verbal communication proficiency to literacy skills, it is pertinent to note that many accounts recognise that it is necessary to look beyond 'phonological processing', and into the realms of abstract reasoning in order to understand the processes involved. Blank (1982) has drawn from Donaldson's (1978) description of the 'disembedded' nature of much classroom activity and harder reading material. Blank claims that the mastery of disembedded oral language skills (which are likely to develop through the conversational exchange of thoughts, feelings and motivations) are precursors to written language mastery. In studies, disembedded language was understood by children of 5 years who succeeded in reading, but poorly understood by those in danger of failing to read (Blank, 1978). Blank (1982) writes that language is not simply embedded but "a symbol system that transcends the immediate physical context" – it will later be claimed that much the same may be said for interactive style and attachment behaviours.

Language and Cognitive Development.

Blank might also contend that understanding 'disembedded thought', acquired through verbal language, is also critical for advanced cognitive abilities. Indeed, a similar approach has been taken by commentators recognising there is now a considerable amount of evidence to support the view that the development of language makes an important contribution to the course of cognitive development (Tough, 1982). Several decades ago Vygotsky (1967) described how words help stimulate the development of understanding abstract concepts separate from concrete experience. Luria's studies with deprived twins (1961) examined the effects of language on the development of an individual's understanding of the world through the communication of ideas. Tough extends this thinking and places it firmly in the context of early interaction;

"Children who are drawn into the experiences of thinking through the talk in which they are involved with their parents gradually come to use language in this way spontaneously" (Tough, 1982, p. 243).

Tough emphasises the basic importance of language to the process of learning. It will be argued that attachment processes are also seen to be central to the learning process in providing a child with a certain level of confidence in which to explore the environment. Language allows for the interpretation of abstract concepts as they relate to experiences involving the self and others. Early interaction may be the building blocks of abstract thinking and language its cement, the cohesive unifying element which allows capabilities to be extended into cognitive abilities and academic performance. A similar understanding of how this learning is perpetuated is voiced by the researchers involved in the long-term follow up of children earlier 'enriched' in language discussed above (Fowler et al, 1993);

"Verbal mastery, when cognitively based, opens the door to representing, understanding and able negotiating with knowledgeable older persons to constantly expand one's knowledge and advance one's skills" (p.19). It will be seen that attachment relations may also be hypothesised to be central to the processes involved in this cycle.

1.10 Theories on the links between language and psychopathology and social interaction.

Language and behavioural disturbance and psychopathology.

Conti-Ramsden (2001) found in her large survey of language impaired youngsters that 40% also demonstrated behavioural or emotional problems. In reviewing this area, Goodyer (2000) explores several possible explanations for this including underlying neuro-developmental immaturity, environmental risk factors and risks associated with impaired expressive communication. These difficulties can be manifested in a variety of ways, from frustration to social disinterest or impulsiveness, which may be less evident when not engaged in communication, or generalised to anxiety, social withdrawal and peer difficulties (Stevenson, 1996). These different manifestations could represent different distinct disorders with different developmental processes. In a longitudinal study involving 156 children aged between 6 and 11, such concurrent language and overt behavioural disturbances seemed to decline significantly with age (Hayes & Naidoo, 1991). In place of disruptive behaviour, more subtle emotional difficulties characterised by low self-confidence and social withdrawal developed as children reached middle-childhood. This change from anti-social behaviour to disrupted social relations and emotional functioning has been replicated much elsewhere, particularly with girls (Goodyer, 2000). Consequently the current study intends to explore these facets of functioning, examining relationship quality and social loneliness, as well as emotional literacy more broadly.

Language and social interaction

Consequently, attention has also been directed at examining the links between language abilities and social skills and functioning. Is there a co-morbid non-language disorder that disrupts the social language environment increasing the risk of further language and social difficulties?

Goodyer speculates that since difficulties in communication are often manifested in a social situation (in appreciating a point of view, turn taking and topic changing) linked to having an awareness of the feelings, intent and attributions of others, that

language difficulties might often be an outgrowth of 'early emotional deficiencies' (Goodyer, 2000).

In their major review of the speech and language intervention literature, Law *et al* (1998) acknowledge that even where oral language delays have been resolved, multiple educational and social difficulties are noted with children who had earlier speech or language delays. This, of course, might indicate that many interventions that are aimed at improving specific oral difficulties are not getting to the core difficulties that are manifesting themselves in a variety of ways. Some interventions, however, have seemed remarkably successful at influencing outcome in these domains as well. Fowler *et al's* (1993) 'enrichment intervention' which focused on parent-child interactive style as well as more specific language components reported impressively enhanced social competence after just 6 months of parental instruction. Ogston (1993) found that children who progressed most initially and in the long-term were those whose parents practiced turn-taking most consistently. The authors comment, "these two aspects of a rich, cognitive strategy, of which competence in language is key, and flexible social interaction may to an important degree account for the combined high cognitive and strong social competence our subjects have shown in later development" (Fowler *et al*, 1993, p.16). Kaiser (1993) has commented on the early success of a technique for a parent implemented language intervention that incorporates the building of a context for communication, a responsive interactional environment and the use of milieu teaching. She predicts that social referencing in parent-child interactions may contribute to shared social meanings and communication.

It makes intuitive sense that good language skills are a pre-requisite for successful social interactions. Review of the literature begins to reveal a relationship between early social and particularly parental interaction in the context of language learning, and later social and cognitive development. This relationship will be the focus of much of the following discussion.

1.11 The need for a psycho-linguistic account.

While there is a fairly limited literature on interventions designed to address both social interaction and language use, and an incomplete understanding of the exact nature of their relationship, the fundamental connection between language and social behaviour seems widely acknowledged and empirically supported. In order to explore this relationship further it seems appropriate to turn to a body of work from a psychological paradigm developed under the auspices of 'attachment research'. It will be seen that conceptually these two areas have much in common, and the attachment paradigm can be seen to fill in some of the 'missing pieces' of the theoretical accounts explored to date. It is hoped that the literature reviewed above offers indications of where it would be appropriate to look for enhanced outcome following an early language intervention that emphasises parent-child interaction patterns. In examining material about attachment, and attachment interventions, it will be seen that there is considerable overlap in theory, implementation, and potential outcome, and that the attachment paradigm might offer a useful means for understanding the processes operating. Incorporating these two paradigms may offer great explanatory power. There is little justification, of course, except for traditional separations between disciplines, that the behavioural interaction and language-based interactions of parents should be studied separately, and each not have much to offer the other.

In order to introduce this new perspective, some necessary background material on the attachment paradigm will be outlined. Discussion will then aim to justify the conceptualisation of BabyTalk and related language interventions as implicit attachment interventions.

PART 4: THE ATTACHMENT PARADIGM.

1.12: Introduction to attachment theory.

Exploring the beginnings of the capacity to form relationships is a central concern of developmental psychology. In this endeavour, the child's first emotionally meaningful bond or 'attachment' has been the focus of much attention, such that 'attachment research' has emerged as a popular area in contemporary psychology. The view that the parent-child relationship plays a central role in all manner of psychological development is now widely accepted (Goldberg, 2000). Freud famously propagated the view that to understand the adult character it is necessary to look to the child, and that within this process the mother-infant relationship was "unique, without parallel.. and the prototype of all later love relations" (Freud, 1940, p188). The most comprehensive and influential account of attachment, however, was formulated by John Bowlby (1969, 1973, and 1980). Bowlby differed from the psychoanalytic framework in believing that children's actual experience with the principle care-giver (rather than internal phantasy) formed the basis for lasting beliefs about the self, the mother, and strategies in approaching and interpreting relationships.

Bowlby's framework stemmed not only from psychoanalytic thought, but also from another approach popular at the time; ethology. In his conceptualisation, the child is seen as 'biologically based' by virtue of genetic inheritance to form a deep attachment to the caregiver, in a process similar to the imprinting displayed in birds (e.g. Lorenz, 1935). In the past this ensured survival by encouraging proximity and attendant protection and access to food. Proximity seeking, seen as at the heart of attachment, continues to be activated by the child in times of danger by signaling and approaching behaviours such as crying and clinging, which activates an equally 'programmed' response from the mother. As such it may be understood as a pre-verbal form of communication operating at an instinctive unconscious level.

The concept of attachment includes social, emotional, cognitive and behavioural components (Goldberg, 2000). As well as offering survival needs, attachment also relates to exploration and learning, as secure children feel confident to explore the

world around them in the knowledge that protection will remain available and can be returned to. The exploration system may be seen to complement attachment in this way. Bowlby regarded the capacity to make emotional bonds as a principle feature of effective personality functioning and mental health (Bowlby, 1969). Elsewhere he wrote “essential for mental health is that the young child should experience a warm, intimate and continuous relationship with his mother (or permanent mother substitute) in which both find satisfaction and enjoyment” (Bowlby, 1951, p.11). ‘Attachment security’ is defined by Ainsworth, the other early major pioneer in attachment research, as the state of being secure or untroubled about the availability of the attachment figure (Ainsworth *et al*, 1978). ‘Failures’ in the attachment system, such that the infant can not anticipate consistent and positive responses from the caregiver, are considered to have detrimental effects on later development, insofar as the infant needs to devote too many resources to monitoring and seeking (or inhibiting the search for) the availability of the caregiver.

The significance of this attachment relationship for concepts about the self and capacities for social relatedness is explained through Bowlby’s formulation of the internal working model (IWM) (1969). This is effectively a schema where expectations of other’s behaviours are formed from experience, and from which behaviour likely to cause that expected reaction are derived, in order to provide a feeling of security and control over a predictable external environment. Bowlby theorised that the most important of these is established vis-à-vis the mother, when reflection on the quality of that interaction is incorporated into a sense of self, and is thereafter used to guide actions and anticipate reactions of all significant others in life.

While the IWM is meant to be protective of the self in adding coherence and reducing unanticipated distress, it can result in behaviours that are not conducive to creating future quality relationships or effective world exploration. If the attachment figure gives help and comfort when needed the child will form an IWM of the parent as loving and the self as worthy of love. Such a child would be considered securely attached. Conversely, if the demand of comfort is not always welcomed, children will consider the parent rejecting and themselves as not worthy of love (Bowlby, 1973). Such children might avoid proximity and later avoid close relationships, behaviours relating to a classification of ‘avoidance’. Alternatively children may display a

degree of anxiety and upset, which also tends to incur a sense of rejection when their upset is on account of caregiver ineptitude. This pattern of attachment security, linked to difficulties in relationship formation, is known as the resistant, ambivalent, or worried classification. These attachment styles represent coherent strategies that serve defensive functions and are intended to get the attention of the caregiver. Some 'unclassifiable' children do not fit these patterns, and seem to lack a consistent attachment strategy, often employing contradictory approach and avoidance behaviours or displaying fear towards their caregiver. This group, who are likely to find future equally relationships confusing, are termed disorganised, a classification most closely associated with later social, emotional and pathological difficulties. Although the processes of the IWMs become more habitual and automatic and less accessible to awareness (Bowlby, 1980), as the term 'model' implies they are open to modification. If events over the course of development are dissonant enough with the held beliefs that an alternative schema is necessary to incorporate them, a new IWM may be formed. For example, an adult might form a concept of the self as resilient and capable of love towards others, despite negative past experiences. It is clear that the attachment paradigm assumes an on-going interplay of emotion, cognition and behaviour (Steele and Steele, 1994).

Theorising on the parental factors influencing attachment formation.

Given the very strong correlation between attachment classification and outcome over a broad range of domains, research has sought to explore the antecedent conditions influencing attachment formation. Bowlby (1969), continuing to theorise from an ethological perspective, suggested that the key element in this process was a parent's sensitivity in responding to a baby's signals. In an attempt to clarify this situation, De Wolff and van IJzendoorn (1997) conducted a meta-analysis of 66 studies examining the strength of the association between maternal sensitivity and infant attachment security. In this pursuit, the authors followed Ainsworth *et al's* (1974) definition of sensitivity as the mother's ability to perceive the infant's signals accurately, and the ability to respond to these signals promptly and appropriately. Modest effect sizes for sensitivity alone led the authors to conclude, "The original concept of sensitivity may not capture the only mechanism through which the development of attachment is shaped" (De Wolff and van IJzendoorn, 1997, p.585). Of relevance for the current

discussion were two domains of maternal interactive behaviour which were explored and found to have effect sizes as great and higher than sensitivity; mutuality and synchrony. The latter construct, synchrony, is defined as “the extent to which interaction seemed reciprocal and mutually rewarding” (Isabella, Belsky, & Von Eye, 1991, p376). Mutuality is a construct of several maternal behaviours including “positive exchanges where both mother and infant attend to the same thing”, “mother’s skill at modulating the baby’s arousal” and “active maintenance of the interaction” (Kiser, Bates, Maslin and Bayles, 1986, p.71). The authors do not themselves elaborate in their discussion on these parenting styles other than to acknowledge that other aspects of parenting and family life need to be examined for their influence on the development of attachment. It would seem clear however that these specified influences in fact relate, if not correspond, to aspects of communicative style.

Parental communicative style does receive some attention in early attachment literature. Ainsworth herself noted in the Ganda study that the best predictor of attachment was the mother’s communicative skills in terms of her ‘excellence as an informant’. In her clinical descriptions of mother’s in her Baltimore study she suggested that mothers of future secure infants were relatively flexible and emotionally expressive, while mothers of future avoidant infants were more rigid and less expressive (Goldberg, 2000). Despite these comments, future investigation has tended to focus on behavioural rather than language and communicative aspects of parent child communication.

It should be noted that current theorising has also examined not only caregiver behaviour but also infant influences on the development of attachment. There is clear evidence that temperamental characteristics exert both direct and indirect influences on attachment (Susman-Stillman *et al*, 1996). Despite investigation of effects on attachment of a variety of infant conditions such as developmental delays, chronic illnesses and premature birth (van IJzendoorn, M.H., Goldberg, S. *et al*, 1992) the effects of early language delay would not seem to have been explored to date. The limited research and theorising on attachment and its relationship to language competence and literacy will later be given full attention below.

1.13 Literature on long-term outcome associated with attachment security.

In his formulation of the IWM, Bowlby conceptualised attachment as a ‘life-span construct’. A wealth of literature has attempted to explore the long-term effects of attachment security, and indeed found that security relates to later functioning in a variety of domains. A comprehensive review of all of this literature is beyond the scope of this discussion, and has been excellently conducted elsewhere (e.g. see Goldberg, 2000). However it is noteworthy that areas where attachment security or insecurity seems to most strongly predict functioning are the very same areas seen to suffer in children with language delays. Consequently a quick review of the literature linking attachment status with social cognition, emotional literacy, empathy and peer relationships, behavioural difficulties and psychopathology, and cognitive functioning will be undertaken. The limited literature examining both speech and language development and attachment will also be examined. Subsequently, interventions aimed at encouraging secure attachment formation will be reviewed to see whether there are any similarities between recommendations in successful attachment interventions, and language interventions. It will then be possible to consider the validity of understanding BabyTalk as acting as both a language and attachment intervention.

Research on Attachment and Social competence and Emotional Literacy.

Attachment-related IWM's are predicted to direct attention, and select memory and appraisal of situations, and hence shape behaviours in social interactions as well as interpretations of them. Much evidence has been accumulated exploring the influence of differences in early attachment on a wide array of subsequent social development outcomes. As individuals enter later childhood they typically spend more time with friends than with families or by themselves. The quality of peer relationships is hence considered very important to social development, and has been the focus of much research. Some convincing findings associating early attachment with peer functioning have emerged from the Minnesota Study (Sroufe *et al*, 2001). This longitudinal study examined early attachment (at 12 and 18 months) with assessments by various professionals and in a variety of natural and contrived settings at pre-

school, middle childhood and adolescence. Secure children were rated by teachers in pre-school as more socially competent and more popular, and were more likely to help a classmate in distress, while avoidant children were less empathetic. In middle childhood, children earlier rated as secure made friends more easily, and in adolescence were again rated as more socially competent, had higher self-confidence and displayed stronger leadership skills. The nature of the findings caused the authors to comment that attachment was most strongly related to peer relationships where those relationships “centered on trust, vulnerability, or freedom to experience emotion or emotional closeness” (Sroufe *et al*, 2001, p.257).

Reviewers have commented that what is missing in many studies finding these continuing competencies are explorations of the linking measures or mechanisms operating, such as medial emotional or cognitive processes (e.g. Goldberg, 2000), or indeed communicative competence.

Consequently, attempts have also been made to explore correlates between early attachment and later ‘emotional literacy’. It is predicted that children who are securely attached will express emotions about the self openly, have a better understanding of the feelings of others, and have a richer emotional vocabulary. Insecure children might either inhibit or describe inappropriate emotional expression. A rare attachment study that did examine the verbal comments made during mother-child interaction, suggests one mechanism by which these differences are manifested. Goldberg, MacKay-Soroka and Rochester (1994) found that mothers of secure babies are more likely to make emotion related comments, and much more likely to explain reasons behind emotions. The principle author writes, “..even in infancy, attachment patterns are linked with distinctive messages from care-givers regarding the expression of emotions. Secure infants are told that all emotions are acceptable and that emotions are a topic for conversation. [Insecure children] receive the message.. that emotions are not for discussion” (Goldberg, 2000, p140-141). Work by the Grossmanns has reported similar findings (e.g. Grossmann and Grossmann, 1991).

Longitudinal research is consistent with the idea that secure individuals are later more accurate in depicting emotions in others and also more openly expressive about themselves and their own feelings. Cassidy (1988) using a methodology including

children discussing with a puppet their feelings about themselves, and others feeling's about them, found that six year olds identified as secure and avoidant differed on how they thought they were viewed by others. The majority of secure children (68%) described themselves positively but acknowledged that they had flaws.

Differences in feelings about the self occasioned by different attachment strategies is, of course, very much in line with Bowlby's conceptualisation, where acceptability to the attachment figure, despite faults, is seen as central to the emerging sense of self. In a similar vein, Easterbrooks and Abeles (2000) found that in an interview discussing positive and negative aspects of themselves, children's 'ease of access to self evaluations' (EASE) was related to their concurrent performance on a separation anxiety test. The London Parent Child Project (e.g. Steele , Steele *et al*, 1999) has made significant inroads into exploring the effects of early relationships upon subsequent social and emotional functioning. Of particular note among this work, infant mother attachment at one year was found to predict the six year-old child's understanding of mixed emotions displayed by cartoon characters in potentially distressing circumstances. In a more recent paper, Steele, Steele and Johsson (2002) have linked attachment to a central feature of social cognition, i.e. "the capacity to openly acknowledge, and elaborate a resourceful plan for coping with distress in the self and others" (p.23). Children were rated according to the content and quality of their responses to a task where they attributed thoughts and feelings to victims and onlookers in moderately distressing situations illustrated by cartoon depiction and prompted by a story beginning. Children who were able to acknowledge the central characters distress and elaborate a resolution to that distress were more likely to have mothers who had been judged as autonomous-secure (as opposed to insecure) in their responses to the Adult Attachment Interview (AAI) conducted prior to the child's birth. (See Chapter 3 for further discussion of the Adult Attachment Interview and other attachment assessment techniques). This pattern held when controlling for children's verbal intelligence, previously assessed parent-child attachment patterns and concurrent parenting attitudes. It is interesting that this link emerged with the mother's AAI but not attachment security at one year assessed by the 'Strange Situation'. This could be taken as further evidence of an influence of possibly stable mother-child communication patterns and styles, which may be as important, or

indeed interacting with, behavioural interactions associated with attachment, in terms of long-term outcome.

Research on Attachment and Behavioural difficulties and psychopathology

The flip-side of the recognition that secure attachment results in enhanced social competence, is the idea that insecurity might influence difficulties which compromise well-being. Indeed, studies in all age groups concur in finding associations between psychological disturbance and attachment (Goldberg, 2000). In terms of associations with behavioural disruption, Greenberg *et al* (1991) found that preschool boys with disruptive behaviour were more likely to be assessed as insecurely attached. In a meta-analysis of similar studies, Atkinson *et al* (1999) found a significant but weak relationship between conduct disturbed behaviour and attachment security. Avoidant children were seen to exhibit more externalising behaviour problems but also more internalising problems. Effect sizes for children who were classified as disorganised were even higher.

There are a number methodological difficulties in examining the etiology of psychopathology, from which attachment studies are not immune. Prospective studies are costly and time consuming and typically only provide a small number of cases, while retrospective studies can not rule out alternative explanations of directional influence or confounding factors. It is acknowledged that psychopathology has a very complex causation, and studies examining attachment are looking at it as a vulnerability factor and not as a 'cause'. That said, insecure attachment patterns are greatly over-represented in clinical populations (Wallis and Steele, 2001). In many cases there is seen to be an association between unresolved mourning regarding loss or trauma. A study of patients with borderline personality disorder showed a high prevalence of sexual abuse and lack of resolution of abuse (Fonagy *et al*, 1996). Other studies have linked unresolved loss, or the failure to successfully articulate experiences to the self and integrate them, to depressive disorders (Cole-Detke & Kobak, 1996) and suicide (Adam, Sheldon-Keller & West, 1996).

Some compelling evidence seems to link early disorganisation with later maladjustment, presenting the lack of an organised attachment strategy as the most

disabling tendency. This is a pertinent reminder that insecurity itself is not necessarily pathological. Carlson (1998) undertook an impressive large-scale prospective study involving 157 participants followed to 19 years. Using teacher's ratings and self-report measures, avoidant attachment, disorganisation, behavioural difficulties at preschool and the quality of the parent-child relationship at 13 years, all predicted psychopathology at 17 years. Disorganisation was seen to contribute significantly to psychopathology even with all other factors controlled, and was consistently and significantly related to dissociative experiences. Despite evidence of links between attachment and mental health, however, it remains clear that a great number of factors need to be taken into account to begin understanding what are very complex processes. These factors include life events, language skills, self understanding and emotional intelligence, which the current study emphasises as important aspects of outcome and will be principle areas of the eleven year assessment.

Research on Attachment and cognitive abilities and language competence.

Theorists have also questioned whether individual differences in information-processing strategies associated with different attachment classifications are carried over to influence general cognitive ability. The link between attachment and cognitive ability might be thought to occur in a variety of ways, including the likelihood that the secure adult would be a better instructor (*attachment-teaching hypothesis* Bowlby, 1980), the confidence of the secure child to explore their environment (*attachment-exploration hypothesis*, Bretherton et al, 1979) and even the fact that secure children are likely to form many close and potentially enlightening relationships (*social-network hypothesis*, Main, 1983). An early narrative review of such studies (Bretherton et al, 1979) indicated that there were as many studies reporting no association between attachment status and cognitive ability as there were positive associations. In a study of very young children, Main (1983) found that the exploratory play of secure toddlers tended to be longer, more focused and complex than insecure children. Interestingly, these children were also more likely in problem solving tasks to use self-directed speech, thought to be an early form of metacognition. In one of the largest studies addressing the association between attachment and cognitive skills, Jacobsen et al (1994) followed 85 Icelandic children

from 7 – 18 years. Attachment was assessed at 7 years using a picture separation story, and later assessments at 9, 12 and 15 years involved Piagetian tasks and syllogistic reasoning. At all ages and in all tasks the secure children were found to be most competent, and the children classified as disorganised found them most difficult. A 1995 meta-analysis of attachment, intelligence and language (van IJzendoorn, Dijkstra *et al*, 1995) paints a less confused and an altogether different picture of the associations to the earlier Bretherton study. The latter study also investigated language and attachment but reported no significant correspondences. Van IJzendoorn's study reviewed 32 studies and found a significant but weak correlation between attachment and DQ (developmental quotient) or IQ (intelligence quotient), $r = 0.09$. In marked contrast to the earlier study, the combined effect size of the studies on attachment and language competence (of which there are only seven even when defining language competence very broadly) was substantial, $r = 0.28$. The relatively weak DQ/IQ scores precludes the explanation that the relation between language and attachment is determined by DQ/IQ differences. The authors comment that future studies should think of examining the interlocking of socio-emotional and cognitive/language development, and conclude that;

“research on the process through which the quality of attachment affects cognitive and language development is badly needed to explain the quite strong association between attachment and language, and the quite weak relation between attachment and DQ/IQ.” (van IJzendoorn, Dijkstra *et al*, 1995, p 126). Van IJzendoorn *et al* cite the attachment-exploration hypothesis, the social exploration hypothesis and the attachment teaching hypothesis as possible mechanisms for explaining this unexplored link between attachment and language competence.

In view of this evidence, it does seem rather strange that more work has not been undertaken to explore what emerge as closely related developmental influences. That which has been undertaken has been rather tentative. In their work exploring attachment formation in deaf pre-school children, Greenberg and Marvin (1979) suggested that language served to better align intentions and goals in the attachment partnership. In the much lauded paper “Security in infancy, childhood and adulthood: a move to the level of representation” Main *et al* (1985) suggest that secure attachment might promote abilities important for language development, such as attention, organisation of information and memory. Only a very few studies,

however, have explored security and language acquisition. Bus and Van IJzendoorn (1988) explored the relationship between attachment, interaction and emergent literacy, and found secure dyads paid more attention to the formal aspects of written language, and mothers appeared to require more from their securely attached children in the reading domain. Meins (1998) appears to be one of the only researchers currently undertaking work in the area of attachment and language acquisition. This recent study found that secure children have a larger vocabulary at 20 months, and use a wider variety of nouns in their speech. She reports that mothers of secure children were less likely to report them engaging in periods of verbal but meaningless speech. The focus of this work is to explore Meins own conceptualisation of maternal *mind-mindedness* (Meins 1997) or the ability of the mother to treat their child as an individual with a mind, rather than a creature with needs to be fulfilled. She proposes that differences in maternal mind-mindedness might underlie differences in both security of attachment and language acquisition (Meins, 1998). In this sense, although it is not expressly articulated, she may be seen to be articulating a verbal communicative component to the attachment relationship.

The relevance of language capabilities has been much more incorporated in work on adult attachment, indeed coding of the AAI takes great notice of the coherence of an adults narrative about emotional issues and relationships. It seems time that the role of conversational interaction between child and caregiver be recognised for its importance in attachment formation. It remains to be explored whether attachment formation can be said to similarly influence language acquisition, and the two mutually influence later outcome.

1.14 A review of 'behavioural' interventions intended to enhance attachment.

An examination of the literature on intervention in attachment formation revisits many of the considerations that the prior discussion has explored. Studies are particularly illuminating for what they failed to achieve. They firmly indicate that more is involved in attachment than sensitive mothering, and emphasising that much in the processes of attachment formation is currently unexplained.

It is still early days for ventures aiming to alter attachment status, and to date no studies have examined long-term outcome of intervention and functioning in related domains. Instead studies report on any changes displayed in attachment classification and sensitive mothering. Indeed, most studies are devised assuming a causal approach to the development of attachment based on the 'sensitivity' paradigm outlined above, and aim to change the quality of the infant-parent attachment by changing mother's sensitivity. Given that the work by De Wolff and Van IJzendoorn (1997) illustrated that there is more to attachment than sensitivity, it is perhaps unsurprising that many of the interventions are more effective in changing parental sensitivity scores than at altering attachment insecurity (IJzendoorn, Juffer *et al*, 1995). The lack of long-term follow-up studies following intervention means that we have little insight into the generalisation of that more sensitive care-giving as children's needs change at later developmental stages, and it is unclear whether the intervention has made a lasting impression on the parent. It is also of interest in the context of this study that the association between maternal behaviour and infant attachment is significantly weaker in studies of lower class samples (De Wolff and van IJzendoorn, 1997).

One of the most well known attachment intervention experiments was conducted by Anisfeld et al (1990) and explored whether increased physical contact would promote secure attachments in mother-infant dyads from a low SES, predominantly ethnic minority American sample. Children were randomly allocated into either an experimental group where mothers were provided with cloth carriers for their infants, or a control group who were given a plastic seat. In this case, although there was no significant changes in sensitivity, in the experimental group 83 % of children were secure as assessed by the Strange Situation, versus only 38% in the control group. These authors also recognised that proximity was influencing security above and beyond what was attributable to sensitivity (Anisfeld et al, 1990).

While the majority of 'sensitivity' interventions do not display effects in terms of security classification (e.g. Beckwith, 1988), highly pertinent in the context of this study is the finding that those interventions that offered multiple components, including verbal exchange, exerted some of the highest influences on secure attachment formation. An excellent example is a study that provided mothers of 31

infants at high risk due to the effects of poverty and maternal depression, with home-visiting services (Lyons-Ruth, Connell, Grunebaum and Botein, 1990). The service was aimed to provide mothers with a trustworthy relationship, help the family with resource allocation to meet their needs and also “modeling and reinforcing more interactive, positive and developmentally appropriate *exchanges* between mother and infant” (Lyons-Ruth et al, 1990, p234). The authors found no change in parental sensitivity, but among untreated infants there was a very high level of insecurity (80%), while only 43% of those who did receive treatment were insecure. Similar results emerged from a study (n=100) by Van den Boom (1994) which aimed to increase sensitivity but also paid attention to stimulating playful interaction and communicative style. This study is of particular interest because it was conducted on a group of highly irritable infants from a low socioeconomic background. The intervention group had significantly more securely classified children as compared to a control group of matched children, indeed they displayed a percentage of securely classified children approaching that typical sample from a normal population (62%). This finding contributes to the earlier discussed issue of temperamental influences on attachment formation, suggesting that child temperament is subordinate to, or at least influenced by, parental interactive style. It also shows promise, of course, for intervention outcome in deprived and behaviourally difficult groups. Of particular interest in the context of this study is the finding that at two years children given the intervention had more meaningful interactions with their mothers, better verbal interactions, showed more imitation and commented more on their mother’s actions. A follow-up at three years showed this sample to be displaying fewer behaviour problems and able to form better peer relationships (van den Boom, 1994,1995).

The attachment intervention literature, then, leads to the conclusions that interventions can be successful, but that parents influence their children’s attachment formations through some components of interaction in addition to sensitivity. As IJzendoorn, Juffer *et al* affirm, “In attachment theory, the search for alternative pathways to attachment (in-)security should be opened” (1995, p 245). Those alternative pathways may lead outside the traditional attachment paradigm thinking. Interventions following the intergenerational influence aspect of the attachment paradigm have also attempted to influence attachment formation by addressing mother’s and mother-to-be’s internal working models of attachment. A good example

is the Minnesota Program (or STEEP – step towards effective enjoyable parenting) which addressed mother's feelings, attributions and representations of the parent-child relationship. Although now used by a number of community agencies, as with similar studies, preliminary results indicate no significant effect of the intervention on attachment status (Erickson *et al*, 1992).

Thus with both the language intervention literature and attachment security intervention literature we see that a part of the processes operating between intervention and outcome remain unexplained. Theorising on successful language acquisition and secure attachment formation is similarly lacking. It has become apparent that similar outcomes are also associated with enhanced language abilities and secure attachments, and with insecurity/ disorganisation and language impairment. Might this constitute more than tentative links between areas of development acknowledged as inter-linked? Might the psychological process unexplained in successful language acquisition have something to do with the special relationship between mother and child? Might the nature of mother-child communication have as much influence in attachment formation as behavioural interactions? Might elements of the Baby-Talk and effective communicative interaction programmes influence attachment formation, and initiate the implicated influences on later development?

PART 5 CONCEPTUALISING BABY-TALK AS AN ATTACHMENT INTERVENTION.

1.15 BabyTalk and Attachment

This section of discussion will focus on the validity of the assumption that the Baby-talk intervention, and other language interventions, might also influence attachment formation. The 'face validity' of this analogy will be examined by outlining how the recommendations about interactive style in the Baby-talk and other interventions might relate to attachment formation. The implication of findings in the language literature about the efficacy of parental verses external intervention will be discussed.

Finally, evidence about the intensity of effective intervention, and similarity of outcome will be revisited.

Face validity

A number of the nine core principles of the BabyTalk intervention intended to encourage the child's optimum development (see section 1.3 above) could be predicted to influence attachment formation. Programme delivery is intended to occur one-to-one with mother and child close together. Ward (2000) writes "The first essential... is to establish that you have half an hour a day on a one-to-one basis with your baby, when you can be totally focused on each other. This total availability is the greatest gift you can give him" (p.33). It would certainly seem to be a time when the great gift of "making a child feel secure and untroubled about the availability of the attachment figure" (Ainsworth *et al*, 1978, p. 14) is likely to be conferred.

In the BabyTalk programme parents are encouraged to always respond to their children's communicative attempts with an appropriate response themselves. This relates to the idea of 'mutuality' (Kiser *et al*, 1986) deemed as important for attachment formation. The importance of consistency of response emphasised here is also seen as very important in terms of secure attachment formation. Inconsistency is one of the most detrimental interactive styles and is thought to be one formation mechanism of the most pathological 'disorganised' attachment pattern (Main and Hesse, 1990). Also implicated in disorganised attachment is children's fear of the caregiver. In the BabyTalk programme parents are encouraged to avoid wherever possible verbally reprimanding children in a way that might discourage the child from listening to the parent, or make them fear making sounds.

'Child-led shared attention' is another premise of the BabyTalk intervention. Bowlby thought that a central part of the attachment relationship was to make the child confident to explore the world around them in the knowledge that protection will remain available and can be returned to (Bowlby, 1951). Child-led attention prevents parents from becoming over-involved and allows the child the freedom to explore for them-selves in the confidence that they are being observed and are safe. Securely attached children's early experiences of their environment tend to occur in

collaboration with the caregiver, rather than through individual explorations of the world (Meins, 1998). This relates to the concept of 'synchrony' (Isabella et al, 1991) in attachment formation theorising.

Finally, joy and fun in interaction and communication is also encouraged by the intervention, as well as listening to and attending to the child. In terms of later outcome following attachment formation, the role of the IWM of the child's own sense of worth and the rewards of relationships has been discussed. Experiencing a regular joyful interaction with the caregiver is likely to make a child feel worthy of love and conceptualise relationships as rewarding.

The importance of interaction and parental involvement.

In terms of the general language intervention literature, in recent years interactive approaches to language intervention have been noted to be more effective than specific didactic techniques (Yoder, Kaiser and Alpert, 1991). Indeed some authors have acknowledged the value of promoting an optimum interactive style between child and care-giver, but have had difficulty in articulating what optimum might mean in this context (Law, 1997). Tannock and Girolametto (1991) have noted that following training, mothers of infants who succeeded well were more 'in tune' with the abilities of their children, more responsive to their communicative attempts and less controlling of their behaviour and focus of the interactional activities. Brown (1980) examining children in an adoption project found two very important influences on communicative competence; vocal responsiveness to the infant, and the imitativeness of mother-child vocalisations. There are of course links between all the behaviours above and 'mutuality' and 'synchrony' in the attachment literature. The potentially significant role of parents in language enhancement is illustrated by the findings of a recent meta-analysis of language intervention. Law et al (1998) found that parent-administered treatment in the areas of expressive and receptive language delay are at least as, if not more effective than clinician administered treatment. Meins (1998) notes that although previous research has investigated the relationship between language acquisition and various social-interactional factors within the language learning environment, the possibility that more general social experiences might influence language acquisition has not been researched in detail.

Intensity

While the Baby-talk intervention requires a daily parental intervention, the amount of clinician contact with parents was very limited, constituting only four home-visits over a three-year period. It seems quite remarkable that such limited intervention could result in such marked effects, however other language interventions report similar successes with only limited clinician intervention (e.g. Fowler et al, 1993). It is also of great interest then that in their review, van IJzendoorn, Juffer *et al* (1995) found that long-term interventions for attachment did not seem to be more effective than short-term interventions in enhancing children's attachment security. Ward herself believes that it is very important that parents do not feel overwhelmed by the requirements of an intervention if they are to implement it. The key is to give the parent the tools to easily empower them-selves in aiding their child's development, in an achievable and non-invasive manner. A parent's own confidence in their ability to relate to their child is of course very important for the relationship dynamics, and this might be jeopardised by clinician over-involvement or overly prescriptive interventions.

A sensitive period.

The attachment paradigm is often portrayed as suggesting that there is a 'critical' or 'sensitive' period during early development when, if security is not achieved, the negative consequences are largely irreversible (Clark and Clark, 1976). However, more in keeping with Bowlby's concept of the potential to re-formulate IWMs, is the perspective held by the majority of attachment theorists that although not deterministic in an impenetrable sense, the early years are very important in that they set the foundations of future development (Bowlby, 1988).

Attachment interventions, while they have been successful in some cases in changing attachment classifications of young children, have been much less successful where they have been aimed at changing mother's mental representations of attachment (Van IJzendoorn, Juffer et al, 1995). There is no 'quick fix' at this later stage in the mother's development, but apparently the baby (with judicious brief help from a clinician) may elicit optimal responses that facilitate good-enough child development.

In the language intervention literature, timing of intervention has also for a long time been considered an issue of importance. Bailey and Wolery (1984) for example, assert that language difficulties can be prevented or better managed if intervention commences before the age of three. While other recent studies have suggested that early intervention is not always a necessity (White and Casto, 1985), clinicians are increasingly emphasising the importance of early intervention (Law, 1997).

In the context of extreme deprivation and under-stimulation, children over the age of four are unlikely thereafter either to learn effective communication (e.g. Curtiss, 1982) or to develop healthy close relationships (e.g. Rutter, 1998). It seems clear that both communicative abilities and secure attachment formation are not impervious to later alteration, but that between birth and 3 – 4 years changes are more easily initiated and important foundations for later development are being established.

SUMMARY.

Overview

This review has explored language competence acquisition, intervention and outcome in order to see where additional outcome of early language intervention using the BabyTalk programme might be displayed. As an interactional and behavioural component to language acquisition has become apparent, secure attachment acquisition, intervention and outcome have also been examined to see whether these two developmental processes might be linked to the extent that they interact. The evidence reviewed would seem to justify such an approach. Theoretically, a communicative element to attachment formation is implied but remains largely unarticulated. A secure, close, consistent, joyful interaction between mother and child is advocated by the BabyTalk programme (Ward, 2000) and other successful interventions (e.g. Fowler, 1993). Outcome of successes and deficiencies in attachment and communication manifest themselves in similar, and not obviously connected, developmental domains. A strong correlation between security and language competence has been documented (van IJzendoorn, Dijkstra et al, 1995). What emerges as a certainty from this review is that communication and language acquisition are socially embedded, and anticipating gains in social functioning

following the Baby-talk intervention is justified. As to whether an attachment-influencing component is present in the Baby-talk and other successful language interventions, such that attachment security and language competence are mutually influencing outcome, and are intrinsically inter-related – for the time being the jury is still out. It would seem that their deliberations should focus on how implicated attachment is and what processes might have been in operation, rather than doubting its presence and influence at the scene of the events – such is the strength of professional and eye-witness testimony!

Thesis Outline.

The research reported in the subsequent chapters intends to explore the BabyTalk language intervention, particularly in terms of its effects on various measures of social functioning and emotional understanding. It is hoped that doing so will contribute to the debate about the influence of attachment security on effective language acquisition, communicative expression and emotional literacy.

Before exploring the domains of social functioning and emotional understanding, Chapter 2 examines these data from the 7-year follow up, with particular emphasis on the influence of the BabyTalk intervention on IQ. This is compared to data from the current 11-year study examining school-based achievement scores. Then, with respect to the task of identifying appropriate methods for tapping strengths in the social emotional domain, Chapter 3 reports on an investigation of the validity of a measure of emotional literacy and social cognition, the F&F (Friends and Family) interview. The findings of the implementation of this measure on the Manchester BabyTalk sample are reported in Chapter 4. In Chapter 5, attention is turned to the rather different effects of the BabyTalk intervention on "non-verbal" behaviour and emotional expression.

CHAPTER 2.

THE BABYTALK 7 YEAR IQ FINDINGS.

The seven year follow-up results, which are the focus of this chapter, are currently recorded only in the BabyTalk book (Ward, 2000, p.5):

"The most exciting finding of all was that there was a very considerable difference in the general intelligence between the two groups. The average IQ of the group who had received the BabyTalk programme was in the top third of the population and a quarter of the children were in the intellectually gifted range. In contrast, the average IQ of those who had not received the intervention was in the bottom third of the population, and only one child was in the gifted range."

When Sally Ward first reported these results at educational conferences, her BabyTalk intervention shot into the media spotlight, and led to the popular book by that title. Yet the statistical details of her findings remain to be explored, and are included here as a prelude to the central aim of this thesis, i.e., examining the longer-term impact of the early intervention. The purpose of this chapter is to explore these data that led to the 7-year claims, and to discuss their implications. Consideration will be given to prior findings relating language and IQ performance, and discussion will follow as to whether this rather surprising finding might have been anticipated, and / or how it might be explained. The functioning of the children now that they are 11 years has been undertaken as part of the current investigation by collecting the children's scores in the SATs (Standard Attainment Tests). These data will contribute further to consideration of the long-term influence on outcome following the BabyTalk intervention. It will also indicate a number of areas of functioning worthy of further investigation in the context of the current project.

An important consideration throughout the analysis undertaken in the current project is the lack of detailed knowledge of the nature of the attrition in the BabyTalk groups between assessments. Close attention is given to this issue in Appendix IX.

2.1 Analysis of the 7-year follow-up data - IQ findings for BabyTalk verses control group status.

These reported findings of significant differences between control and experimental group IQ scores were replicated on examination of the raw data from the BabyTalk 7-year follow-up. Findings are displayed in table 2.1 below.

Table 2.1: Comparative mean WISC sub-scale and IQ scores for BabyTalk (experimental) or control status children at 7 years of age.

	Experimental Mean (s.d.) n = 29	Control Mean (s.d.) n = 33	t-value	Sig.
Picture Completion	11.6 (3.3)	9.9 (3.0)	2.20	.048
Coding	10.3 (3.4)	9.1 (3.2)	1.47	.148
Picture arrangement	11.8 (4.2)	9.1 (2.8)	2.93	.005
Block design	10.4 (3.2)	8.2 (2.90)	2.75	.008
Object Assembly	11.6 (2.8)	9.1 (3.2)	3.38	.001
Information	11.2 (3.8)	9.2 (2.7)	2.46	.017
Similarities	12.4 (4.7)	10.2 (3.5)	2.07	.044
Arithmetic	10.6 (3.2)	10.0 (3.1)	0.73	.467
Vocabulary	11.3 (4.0)	8.2 (3.2)	3.33	.002
Comprehension	11.3 (4.3)	8.2 (3.2)	1.97	.054
Verbal IQ	107.9 (20.0)	96.5 (15.0)	2.50	.016
Performance IQ	109.0 (19.5)	93.8 (15.5)	3.35	.001
Full Scale IQ	109.6 (20.1)	94.5 (16.2)	3.23	.002

There was over standard deviation of difference (15 points, see Weschler, 1992) between the average score of the control and experimental groups for performance and full-scale IQ. The BabyTalk group average full scale IQ score (\bar{m} = 110, $\bar{s.d.}$ = 20.1) was highly significantly different from the control group score (\bar{m} = 95, $\bar{s.d.}$ = 16.2), $t(59) = 3.2$, significant at the $p < 0.01$ level.

Full scale IQ performance is typically broken down into two key aspects; Verbal and Performance (non-verbal) IQ. The BabyTalk intervention is of course principally a language intervention, and improvements in verbal aspects of IQ might therefore be anticipated for those children who participated. Differences between control and experimental mean scores were indeed found for Verbal IQ, but the increase in Performance IQ according to group status was even more marked. Thus Verbal IQ for the BabyTalk group (\bar{m} = 108, $\underline{s.d.}$ = 20) and control group (\bar{m} = 97, $\underline{s.d.}$ = 15) showed a significant difference, $t(51.4) = 3.28$, such that $p = .016$. Even more remarkably, however, differences for Performance IQ were such that the BabyTalk group (\bar{m} = 109, $\underline{s.d.}$ 19) differed significantly at the $p = .001$ level from the control group (\bar{m} = 94, $\underline{s.d.}$ 16), $t(53.4) = 3.35$, $p = .001$. Participation in the BabyTalk language intervention was significantly associated with a raise in non-verbal or Performance IQ as well as Verbal IQ.

As is clear in Table 2.1, in all there were significant differences between the BabyTalk and control group's performance on many of the WISC IQ sub-scales (Wechsler, 1992) at the $p < .05$ level, with the exception of 'arithmetic', 'coding', and comprehension which indicated a trend ($p = .054$).

Is IQ improvement shown to differ at 7 years according to the nature of earlier language delay?

The finding that the BabyTalk group improved IQ so profoundly is remarkable. Further analysis of the seven-year data, however, reveals information perhaps even more significant in view of the context of the current project. In the original BabyTalk study, children in both the intervention and control groups were divided into one of three groups referring to the severity of their language delay. These groups were seen as a continuum, with group 3 infants showing the least disability (expressive delay alone), the group 2 infants exhibiting additional difficulties (expressive and receptive delays) and group 1 being the most disadvantageous (expressive and receptive delay with associated listening difficulties) (Ward, 1999). Receptive and expressive language skills were assessed using the Receptive Expressive Emergent Language Scales (Bzoch & League, 1971). Delay in either expressive or receptive skills was considered being 2 months below chronological age

in the first year or 3 months in the second, or quotients less than 83-89 depending on age.

Groups 1 and 2 both include children with both expressive and receptive language delay, but group 1 included the infants most behind in chronological age who suffered from additional difficulties with listening and maintaining attention to auditory stimuli. The latter difficulty has been identified by clinicians and educators as being the basis of many language and learning difficulties (e.g. Katz, 1984). Of all the children screened in Manchester and identified with language delay, group 1 was far in away the largest group (57%), group 2 made up 29% and group 3, just 14%. At seven year follow up, no group 3 children remained in the sample, and the number of group 2 children had fallen to 16% of the sample. In the original sample, numbers of children in each group were evenly distributed between the control and experimental conditions. Although there are only 10 group 2 children in the 7 year follow up they are fairly evenly spread across control and experimental groups ($n=6$ and 4 respectively). While acknowledging the small sample, interesting results emerge when the effects of the intervention on IQ are examined for group 1 children verses those in group 2 at seven years.

Given that allocation to group 1 is associated with more pronounced difficulties, it would be expected that less improvement would be observable in these children verses the children from group 2. In fact, the opposite findings emerged and are displayed in Table 1.2. overleaf.

Table 2.2 : Comparative mean WISC sub-scale and IQ scores for group 1 (expressive and receptive language delay with additional listening difficulties) and group 2 (expressive and receptive language delay only) BabyTalk experimental children at 7 years of age.

	Group 1 Mean (s.d.) n = 24	Group 2 Mean (s.d.) n = 4	t-value	Sig.
Picture Completion	12.1 (3.2)	8.6 (2.8)	1.96	.061
Coding	11.0 (3.1)	6.3 (2.1)	2.92	.007
Picture arrangement	12.5 (4.0)	8.5 (5.3)	1.78	.087
Block design	11.2 (2.6)	5.8 (2.3)	3.86	.001
Object Assembly	12.0 (2.8)	9.5 (2.1)	1.71	.100
Information	11.8 (3.7)	8.0 (3.2)	1.93	.065
Similarities	13.0 (4.8)	9.0 (2.3)	1.63	.116
Arithmetic	11.2 (2.5)	6.3 (4.0)	3.36	.002
Vocabulary	11.7 (4.2)	10.5 (1.7)	.54	.595
Comprehension	11.9 (4.0)	8.4 (5.4)	1.50	.147
Verbal IQ	111.5 (19.6)	89.0 (13.4)	2.19	.038
Performance IQ	113.6 (16.9)	84.7 (17.6)	3.13	.004
Full Scale IQ	115.1 (18.8)	85.5 (16.4)	2.97	.006

Indeed, the group 1 children surpass the group 2 children in IQ level to a higher extent than the experimental group surpasses the controls (almost two standard deviations). Thus group 1 children with expressive and receptive delay and listening difficulties had a full scale IQ mean score (\bar{m} = 114, $\bar{s.d.}$ = 18) significantly higher than group 2 children who earlier exhibited no with no listening difficulties (\bar{m} = 85, $\bar{s.d.}$ 16) $t(26) = 2.97$, $p = .006$. Table 1.2 indicates that these differences between group 1 and 2 hold for both performance and verbal IQ means, as well as the majority of the WISC sub-scales. Caution is needed however in interpreting these results, given the small sample of group 2 children.

At initial assessment (mean - 10.6 months), there was no difference in mean developmental quotient between children allocated to group 1 or group 2. At seven

years, however, differences in IQ are large, with the benefits reaped by the children identified with more pronounced difficulties.

One explanation for this could be that the children with listening difficulties had a problem that was more easily rectifiable. In order for this explanation to account for this group's superior performance these rectified listening difficulties must have accounted for their receptive and expressive language delays. The other children's difficulties might have had a more complex cause that was less modifiable by intervention. Such an explanation, would, however, very much underestimate the complex etiology of listening difficulties. It would also be rather cavalier to assume that these children's listening difficulties explained all aspects of their receptive and expressive language difficulties.

An alternative explanation would emerge if it were found that each group (1 - 3) received a slightly different intervention. Indeed, Ward (1999) notes that group 3 children received a basic intervention, that group 2 had some additional components to their programme specific to their difficulties, and group 1 children had those components and some additional items of their own. It seems then to be these additional items in the programme for group 1 which are having a dramatic effect on IQ scores. Given the current project's emphasis on the importance of caregiver interactive style, it is exciting that "the additional items for this programme address the quality of the caregiver's input" (Ward, 1999, p. 250). In particular, this group are encouraged spend extra time each being close to the infant in order for the child to perceive the mother's input and its source clearly, and to facilitate child-led attention. It seems then that the critical elements of the success of the BabyTalk intervention in raising IQ levels is based on the principles most intuitively likely to enhance mother-infant attachment strategies.

The Impact of the 7 year IQ findings.

Following the findings at 7 years that Ward (2000) quoted in her BabyTalk Book, the success of the BabyTalk intervention was presented at a number on national and international conferences. Material which suggests an ability to influence IQ is of course not only of great interest to parents but is quite controversial - and

consequently courts a great deal of press interest. A typical example was a report made by BBC news which began, "claims that talking to babies can help boost their intelligence has provoked controversy". The correspondent described the BabyTalk intervention and findings, and then continued;

"However, some clinicians and academics are skeptical of Dr Ward's claims that talking to babies can boost their intelligence. Experts have praised the way that the Wilstaar project improves children's language skills, but say that claims that it improves intelligence itself, should be treated with extreme caution.

Dr James Law, a leading expert on speech therapy based at City University, London, said: "I'm wary of strong claims about improving intelligence - I'm reasonably happy with claims about improving speech and language - because speech and language don't necessarily correspond exactly to intelligence."

Rather endearingly the report finished;

"James Birchinough was one of the original Wilstaar babies. His IQ was tested last year, but his mother says he is perfectly ordinary - and has not turned into an egg-head."

Note then that an additional outcome of the BabyTalk intervention is not to turn children into egg heads!

2.2 The relationship between language and IQ.

Dr James Law, an expert in Speech and language research, is quoted above distinguishing between speech and language, and cognitive abilities. Despite their centrality to child development, the similarities and distinctions between development and functioning in domains of language skills and general cognitive ability are not clearly defined. While commentators are happy enough to consider that language abilities can be boosted by early intervention, the political ramifications of

acknowledging the possibility of raising IQ mean that rather greater caution is applied in discussion of such findings.

Review of the literature questions why such different perspectives should be taken on the malleability of these two abilities. Indeed verbal skills feature heavily in the Binet, Wechsler and other widely used mental ability tests. There appear to be close associations between these abilities. Many studies have found that scores on measures of cognitive development for children with language delay are significantly lower than normal (e.g. Carson *et al*, 1998) and exhibit poorer academic achievement (Gualtieri, 1983). Evidence is abundant and accepted that delayed or impaired language is associated with impaired development in social and cognitive domains.

The following sections will examine how we might understand Performance (non-verbal) IQ to also be enhanced by early language intervention such as BabyTalk. Firstly the very large literature exploring links between language and IQ will be briefly visited. Research on cognitive intervention, other language intervention studies reporting IQ outcome, as well as studies of IQ performance following language delay will be examined for their contribution to the understanding the developmental pathways connecting these capacities. Attachment literature that explores associated cognitive or information-processing capacities will be reviewed. These varieties of approaches will be seen to converge in support of a position that frequent responsive and stimulating verbal and non-verbal interactions with caregivers are likely to be a critical aspect of facilitating children's verbal and performance related cognitive abilities. Although attachment security is typically considered to be only weakly associated with IQ, when the importance of the nature of the early relationship between child and caregiver is considered, gains in cognitive abilities following the BabyTalk intervention can rather easily be explained.

Theories about the relationship between language and cognition are many and varied. Explanations of normal language acquisition differ in terms of their relative emphasis on the importance of having pre-developed cognitive structures onto which language abilities can be mapped. The nature of the necessary cognitive structures is also a point of debate. Many studies of normal language acquisition have been influenced by Piaget's view that the ability to use linguistic symbols productively requires good

mental representation of objects and understanding of past, present and future actions (Piaget, 1969). In this understanding, verbal expression is gradually acquired following the development of the necessary cognitive awareness. However, theorists such as Beilin (1975) counter that in many cases, or at least initially, language routines can operate separately from these advanced cognitive structures via imitation and reinforcement. In this sense, language is seen to be at least in part independent of cognitive development, but mediated through common systems or relations and structures. What exactly are these common systems or structures however? From an interactionist stance, social interaction provides the common system which influences language and cognitive development (e.g. Vygotsky, 1978). For Vygotsky, Bruner (1983) and many other theorists, language is considered the central pivot for mediating cognitive development.

These perspectives all find sympathy in the writing of Lenneberg (1967) who commented that for development to occur satisfactorily the organism must be intact (have the appropriate neurological apparatus) and be in an environment providing sufficient stimulus of the appropriate quality (have the appropriate social interaction experiences). It was, as was cited earlier, on such premises about language development that the BabyTalk intervention was founded (Ward, 1999). The same position is equally applicable to cognitive development. In the context of considering the relationship between language and cognitive development we can perhaps only say with confidence that these capacities are distinct but related. Language is at the heart of both complex social communication and the way in which we represent concepts and our understanding of the world around us. Importantly, we can recognise that quality social input and experience are essential for the effective development of both language and cognitive skills.

It is also relevant to note that while language delayed children may show common delays on their verbal IQ, their performance IQ scores do not show significant differences from children of normal developmental levels (e.g. Stark *et al*, 1983). It would therefore seem that if interventions are seen to raise Performance as well as Verbal IQ, then aspects of influence other than language ability are operating.

2.3 Early experience and cognitive outcome.

Early intervention and cognitive outcome - the Headstart literature.

Claims as above, that cognitive ability is socially or environmentally influenced remain controversial. This is despite significant evidence from a variety of sources that intervention programmes aimed at socially deprived youngsters have had lasting effects on IQ and performance. This section will explore data which suggests that early intervention is capable of raising IQ and cognitive development, and will highlight aspects of intervention thought to explain that change which might relate to understanding the impact of the BabyTalk programme. Cognitive development, performance and IQ are used almost interchangeably in this section. Exactly what IQ measures is of course in itself a point of controversy, and this issue will be addressed further later in this chapter.

The most well known investigations in this area are associated with the American based 'Headstart' early intervention projects predominantly undertaken with low SES African-American's. These projects are often cited as indicating the failure of early education efforts, given that over time initial improvements tended to fall away to control levels after children were returned to less stimulating environments (Lazar & Darlington, 1982). Alternatively, however, these projects can be seen as the best evidence of the malleability of cognitive ability and IQ. They demonstrate that even very young children from the poorest backgrounds have a lot of untapped potential for acquiring complex abstract skills through fairly modest early education programmes of only a couple of years duration (Fowler *et al*, 1993).

Intensive centre-based programmes have already reported cognitive benefits well into adolescence (Cambell & Ramey, 1994). Home-based visits based, like BabyTalk, on educating parents to make their interactions with their infants more intellectually stimulating have also reported successfully raising children's cognitive scores over time (e.g. Bradley *et al*, 1994). Two of the best known 'Headstart' interventions, the Abecedarian Project and Project Care have reported continuing influences on cognitive performance at 8 years of age (Burchinal *et al*, 1997). In these studies,

children were randomly allocated to control or experimental status during the first 3 months of life. Children were selected as at-risk on account of economic disadvantage. The experimental groups received intensive preschool intervention in a pre-school setting, followed by a family-based school age intervention. In terms of the hypothesis of the current study, it is fascinating that these follow-up studies have found that the optimal outcome for children involved in the intervention is associated with "responsive and stimulating care at home" (Burchinal *et al*, 1997, p.935). The authors claim that their results suggest that childcare experiences were related to better cognitive performance, due in part to enhancing the child's responsiveness to his or her environment. This is in line with Piagetian and interactionist theorising, and of course relates to attachment theory, an association that will be returned to at length.

These intervention projects have often been developed after using general systems models to identify the factors influencing cognitive and language outcome over time, and particularly the mechanisms through which they operate with children from lower SES backgrounds. General systems theory is useful in that it considers human development to be influenced by a variety of inter-related factors which can enhance or impair development (e.g. Bronfenbrenner, 1974). In this framework, child characteristics, caregiver and family characteristics and the close and wider environment are all considered to be influential, and points of intervention are various. This is a useful heuristic for understanding the variety of points of influence of factors such as parents' intellectual level, poverty, and responsive and stimulating family environments. Cognitive and academic performance enhancement has been demonstrated through correlational analysis to be associated with participation in early childhood programmes. The intention of such systems formulation is to enable proper consideration of the *processes* by which successful interventions are operating (Burchinal *et al*, 1997).

Studies conducted by researches associated with the Abecedarian and CARE projects (Caldwell, Bradley and Elardo) have indeed revealed strong relationships between specific aspects of infants home environments and their intellectual and language development during the preschool years (e.g. Bradley and Caldwell, 1979, 1983). The language stimulation available to the child, emotional support, maternal

responsivity and involvement, and the extent to which the home environment is organised and safe have been associated with children's improved cognitive abilities. Specifically, measures of the responsiveness of the family environment predicted both the mean level of cognitive test scores and their change over time in white middle class children (McCall, Appelbaum and Hogarty, 1973) and low income African American Children (Ramey, Lee & Burchinal, 1989). Dramatically, a recent large longitudinal study demonstrated that responsiveness and stimulation in the family environment accounted for a very large proportion of variation in cognitive performance between poverty groups (Duncan, Brookes-Gunn, Kiebannor *et al*, 1994).

When the Abecedarian and CARE project children were followed up, children showing higher cognitive performance were most likely to have received the intervention. Those who were likely to increase or decrease in their cognitive performance over the following years, however, was related more strongly to the responsiveness and stimulation of the family environment. At the eight year follow up, several of these variables remained significant. The study involved 161 African American Children from low-income families who had participated in one of the Headstart programmes. Longitudinal assessment had included age-appropriate standard IQ and attainment tests, and an assessment of the responsivity and stimulation of the family environment using the HOME inventory (Caldwell and Bradley, 1984). This observation/interview technique is composed of six sub-scales: (1) emotional and verbal responsivity of mother, (2) acceptance of child, (3) organisation of the environment, (4) provision of appropriate play materials, (5) maternal involvement with child, and (6) variety of daily stimulation.

As cited above, HOME scores correlated significantly with IQ, academic achievement and reading achievement. Indeed, within the sample, the association between children's cognitive development and the quality of the home environment was stronger than the association with maternal IQ. Interestingly, however, there seemed to be an aspect of age specificity about which aspects of maternal behaviour were influential on children's achievement. There was a strong relationship between maternal responsivity and children's intelligence during the pre-school years, which was no longer significant by age five. By this age, mother's acceptance of the child

and involvement in encouraging development were the stronger determinants of IQ and achievement. The authors suggest that while the socially responsive early environment is critical for socioemotional and cognitive development in the first few years of life, that as behaviour differentiates, cognitive development becomes more strongly related to other aspects of parental behaviour, such as encouraging intellectual exploration (Bradley & Caldwell, 1984). Such findings may be relevant to the nature of the influences operating on outcome, and duration of outcome, of children receiving the BabyTalk intervention. Overall, the evidence supports the view held by the authors that the influence of the intervention on cognitive outcome is related to what may be understood to be attachment constructs. Their theory is that frequent responsive and stimulating interactions with caregivers facilitate cognitive development by enhancing the child's responsiveness to the environment. This occurs because rewarding experiences with the caregiver encourages further learning through repeated interaction with the caregiver and also seeking educational interactions with others. As attachment theory would concur, the early attachment relationship is the scaffold for language and general cognitive learning experiences.

Early experience and language competence.

That language development in late childhood is similarly influenced by the quality of the home environment is shown in a study of 185 11-year old boys by Walberg & Majorbanks (1973) which found that the quality of the home environment was a better predictor of verbal abilities than were SES variables. This finding was replicated in 1994 by Walker, who demonstrated that parenting style was more predictive of language outcome than either parents' financial level or their educational achievement. Hence researchers exploring the causes of poorer language development among low SES groups have attempted to identify more closely how parenting styles might be associated more strongly with language skills than parent's income and associated advantages or educational attainment. It is important to note that caregiver language input does range across groups from all socioeconomic boundaries, and many lower SES parents spend very high quality interaction time with their children. However, there are average differences between the extent and nature of interaction between different socioeconomic groups. Hart and Riley (1995) through home observations in their Kansas City study found that professional parents

praised or responded positively to their children seven-times more often than parents on benefits, and made negative responses only half as frequently. Children of professional parents were exposed to 2,100 words per hour verses 600 for families on benefits. It is easy to see how tendencies for verbal and non-verbal interactions which vary among different socioeconomic groups are capable of propelling children into wildly different trajectories of language learning.

Early intervention and language competence - the Headstart literature.

A well-known language focused intensive intervention programme with African-American children conducted by Heber and Garber (1981) gave impressive results. The project was conducted while children were between six-months and six years of age. Recognising the importance of parent-child interaction, the intervention included maternal guidance in child-care. Considering the extreme disadvantage of these children and the fact that the mother's IQ's were all below 80, the consistent mean average difference of over 20 points between control and experimental children for both language quotient and IQ is impressive. By age fourteen, however, the same children surpassed controls only slightly. Although they did maintain advantages in school, year placement and graduation rates, this study is also cited as an example of the impoverished background as being a major impediment to generating high abilities in children's development over the long term.

The importance of the influence of the caregiver in language development is also supported by work undertaken with the Abecedarian and CARE project subjects. Once again, the HOME inventory was examined, this time for its relationship with language competence. 'Emotional and verbal responsivity of mother' and 'maternal involvement with child' showed the strongest overall relation to language competence, although all six dimensions were significantly related to language development (Elardo, Bradley and Caldwell, 1977). Language competence was assessed by the Illinois Test of Psycholinguistic Abilities (ITPA) (Kirk, McCarthy & Kirk, 1968). Interestingly, although there were very significant associations between all six dimensions of the age-two HOME scores and language ability assessed by the ITPA at three-years, the association was much weaker with a HOME assessment undertaken at 6 months. At six-months only the 'maternal involvement' and 'organisation of the

physical and temporal environment' HOME dimensions were associated with ITPA, and this with the sub-tests of auditory association and visual association, more non-verbal behaviors than verbal capacities. At two years these same HOME dimensions were associated with all aspects of the ITPA, which also includes: verbal expression, grammatical closure, manual expression and auditory reception. That the very early home environment is more closely associated with non-verbal capacities than verbal abilities may well have implications for the BabyTalk subjects' outcome. This issue is taken up in detail in Chapter 5. In summary, it seems clear that some similar aspects of the home environment, which can be influenced by early intervention, are implicated in both cognitive and language outcome of older children.

Language and cognitive enrichment interventions.

The majority of studies examining 'general language stimulation', then, have been conducted with children from very disadvantaged sectors of society in attempts to offer 'compensatory education'. Generally language stimulation has been embedded in these studies in a global strategy of cognitive stimulation aimed at the development of IQ. Fowler (1993, 1997) has undertaken early intervention programmes using socially interactive play strongly focused on language. His work is excellent evidence that language orientated intervention has lasting positive outcome on children's cognitive abilities, and offers some interesting insights into the likely processes operating in the BabyTalk intervention.

Fowler's (1997) initial enrichment studies were conducted in a child-care setting. Gains following the programme were significant, however Fowler noticed that the gains were strongest in child-care settings with the lowest ratios between numbers of child-care workers and children. Recognising the importance of caregiver child interaction, he began to apply his interventions in the home and parent-child setting. Parents were visited in their homes, bi-weekly for 6 to 12 months. Intervention began with some children when they were 6 months, with others at 12 and some were 16 months. In all approximately 75 children were recruited to the intervention. The strategy focused on word phrase labeling activity during play and in basic care routines. Basic principles taught included turn-taking with the child, relating personally and adapting to the child's style, rate and level, and focusing, timing and

simplifying language to facilitate learning. Engaging with the child through play was intended to influence the child's longer-term ways of exploring and experimenting with the world. The correspondences with the principles and ethos of the BabyTalk intervention are clearly evident.

Regardless of family educational or economic level, every child involved in the intervention responded strongly in language and general cognitive development. Immediately post intervention children's mean language quotients had risen 30 to 40 points. General IQ scores made advances to means of 115 for lower-education families, to 125 for higher education families. Unfortunately, however, the study as a whole is deficient in not having a fully developed control group. The comparison group control scores are taken from a "longitudinal study in a nearby community" (Fowler, 1997, p.52), which begs questions of how comparable this group was, and whether assessments were undertaken blind of control or experimental group status. Later follow-ups, although impressive, consisted mainly of children from the college educated backgrounds. At five years mean language quotients for the children ranged between 150 - 170, and IQ scores from between 132-137, or in the high ability range. At age 15 68% of participants were identified as gifted and 85% were identified by parents and teachers as having excellent verbal and writing skills, as well as varied interests and being independently intellectually motivated. Similar but lesser scores were reported for low-income families. Overall of the total 56 participants followed up from both well and less educated families, 32 (57%) were in special gifted programmes and 43 (77%) maintained A-B grade averages throughout schooling. No control scores were reported.

Despite some methodological deficiencies with the work, the results are nonetheless impressive, and findings raise some important issues for discussion. One of the most important of course is in recognising the importance of the caregiver's interactional style. This was acknowledged largely through the discrepancy between initial and particularly long term outcome for children in child-care verses parental care, and by differing gains in child-care settings according to the amount of one-to-one interaction time they received.

Fowler is not the only theorist to have made this link between the interactional style of the caregiver and later cognitive outcome. In addition to studies cited earlier, Clark-Stewart (1973) found that variation in maternal verbal stimulation in infants between 9 and 18 months was the predominant factor relating to competence development, not only in language but in IQ and other cognitive measures. Similarly Carew (1980) reported that between 8 and 34 months of age language-guided cognitive experiences with parents and carers were the main factors relating to cognitive and language development at age 3.

Also of great interest is Fowler's finding that it made very little difference in terms of language outcome whether intervention was initiated at 6 months or 18 months. Advantages of starting the intervention earlier were however seen in terms of later attendance in special 'gifted' education programmes. It seems that the very early interaction experiences of children has less impact on language development than on later experience, and that the pathways to enhanced competence at this younger age are by methods other than language enhancement. The possibility that non-verbal aspects of behaviour are more malleable at this stage will be a matter for further enquiry (see Chapter 5).

As children get older a central role for language in cognitive processes (as theorists such as Vygotsky (1978) would suggest), is supported. Fowler notes, however, that the strong results from his study reflect the importance of the 'social interactive orientation' or the way that language was presented during enrichment. He writes "In our programs [sic], the key is interaction" (Fowler, 1997, p.77). Mothers who interacted more to engage their infants to participate actively in the intervention fostered greater competence during early development. Mothers who allowed and encouraged balanced turn taking had children whose language and cognitive abilities were most enhanced at later follow-up. In all, the results do seem to well support the authors claim that;

"Early enrichment, when based above all on a rich fabric of interaction around language, provided a highly effective means for the development of competence, both during early and later development" (Fowler, 1997, p73).

2.4 Attachment and cognitive ability.

Much of the literature reviewed has supported the position that the interactive element of early intervention formed an early parental relationship capable of fostering cognitive and language development. The evidence from attachment literature about enhancing cognitive ability offers some support for this position, although as Goldberg (2000) notes, there is considerably more theory available than evidence. Main (1991) suggests that one way that attachment is associated with cognitive development is through the allocation of attention. Insecure individuals are required to spend more of their limited cognitive resources in monitoring their attachment figures and engaging in strategies for appropriate attention. In contrast, the relatively little monitoring required by the secure infant means that more time can be directed towards exploration and the development of cognitive and metacognitive skills. Attachment theory would not of course claim attachment processes to be the only factors influencing cognitive skills. It would however be anticipated that secure individuals, due to the quality interactions associated with their early experience, and to the lesser demands on their attentional resource's due to reduced levels of care-giver monitoring, would be generally more competent.

In terms of very young children, securely attached children tend to play in longer play bouts, display more concentration and more cognitively sophisticated exploration than insecure children (Belsky *et al*, 1984). These children are also more likely to use self-directed speech during play and problem solving (Main 1983). In a study of 3 and a half year olds by Moss, Parent and Gosselin (1993) mother-child dyads were given a 'grocery shopping task'. Secure children were more exploratory and engaged in more task relevant activities than the insecure children in the study. This rather limited literature does indicate that the quality of early parent-child interaction has an influence on children's behaviour in learning situations.

In Chapter 1, attention was briefly given to some of the larger literature on the relationship between attachment and both general cognitive ability and language skills. It was noted that a meta-analysis by van IJzendoorn, Dijkstra and Bus (1995) reported associations between attachment and both IQ and language ability, with

secure children of course displaying the advantage. One of the largest studies exploring links between attachment and cognitive skills is Jacobsen *et al's* (1994) longitudinal study following 85 Icelandic children from age 7 to 17 years. Attachment was assessed at 7 using a picture separation story. At 9, 12, 15 and 17 years the children undertook Piagetian tasks assessing concrete and formal operations, and syllogistic reasoning tasks. Measures of IQ, attention and confidence were also undertaken. At all ages and on all tasks, children classified as secure at 7 years outperformed those classified as insecure. There were group differences in IQ and attention deficits, but group differences in self-confidence were particularly marked. The authors felt that the secure children's confidence to 'explore' accounted for their higher abilities. A study on a French-Canadian sample (Moss *et al*, 1999) found that children classified as insecure-disorganised were particularly hampered in mathematical skills. These studies offer good evidence that secure individuals have cognitive advantages over those with insecure attachment styles, but only limited explanation of the specific mechanisms involved.

Adult IQ and attachment classification

It should be pointed out that discriminant validity of attachment classifications, particularly with adults and measures such as the AAI, emphasise that adult attachment patterns are not strongly related to IQ, or to style of discourse in discussing non-attachment related topics (Crowell, Waters, Treboux *et al*, 1996). This suggests that the relationship between IQ and attachment during childhood is principally related to developmental aspects of cognitive competence, and are less evident once adult levels are achieved (Goldberg, 2000). It may be, however, that striving to keep attachment classification entirely separate from cognitive ability is to falsely separate two inter-related individual differences.

2.5 IQ, cognitive ability, and achievement.

This section has rather skirted around the issue of differences between what we mean by IQ, cognitive ability and achievement. This is many a books worth of discussion; what exactly it is that IQ measures being a particular point of controversy. Mostly this debate is rather unhelpful. The IQ is intended to reflect nothing more mystical

than an individual's intellectual functioning relative to group norms for their particular age group. There is much evidence that IQ is a very strong predictor of achievement. While much debate has centered on the discussion of whether IQ is heritable, acknowledgment of a genetic influence on IQ does not, as many suggest, mean that it is unchangeable. In the context of the work reviewed above, IQ scores are considered as a valid and broad assessment of the types of cognitive abilities associated with achievement in the current cultural and social environment. However, just as valid are direct measures of achievement, and indeed considering achievement level is a more direct assessment that sits more comfortably with general theorising. Data on the SAT (Standard Attainment Tests) of the BabyTalk children were recorded at 7 years along with IQ. They are not reported above, however, due to lack of the necessary data. These attainment tests are undertaken nationally in schools again when children reach 11 years. The results of children in the BabyTalk programme, and the control group, are reported below.

2.6 The BabyTalk intervention and cognitive outcome at 11 years.

The literature reported above begins to explain how the improvement in Performance and Verbal IQ of the BabyTalk children. It offers support for the position that this occurred due to the changes in mother-child interactive strategies initiated by the extra intervention components given to group 1 children. It was obviously of great interest to see if these differences were still in evidence at the 11-year follow up.

In many ways asking the question how 'how long do effects last', which has typified follow-ups to earlier interventions, is simplified and misguided. The particular nature of the outcome may vary with passage of development and environmental circumstances. Far more useful and fruitful is turning attention to what processes are influencing enhancement and its impairment. Such an approach is much better adapted to increase understanding and developing better intervention practices. This project will attempt to give consideration to such important questions. It is of interest nonetheless to see if earlier reported cognitive differences following the BabyTalk intervention remain at 11 years, and for this reason school achievement scores were collected wherever possible.

METHODS

The sample

Forty-five children from the original study were traced at 11 year follow-up. Twenty-one of those were experimental group children, and 24 were controls. The sample included 22 boys and 23 girls, mean age 10 years, 10 months (s.d. = 4.28 months) range = 9 years, 11 months - 11 years, 7 months. Males and females were evenly spread between the control and experimental group, the former having 12 males and 12 females, and the latter, 10 males and 11 females. Where the earlier data was available, the control and experimental groups continued to be fairly evenly matched for severity of delay as it was assessed at 9 months. The experimental group contained 10 group one and 4 group two children. The control group contained 14 group one and 3 group two children.

Measures

Achievement was thought the most important aspect to consider at this time point (see above) and SAT scores were collected for 33 children from schools once they received the results of these tests. In some cases (6 children) this was up to 12 months after the children's in-school assessments if children had been put in a year group behind their chronological age. In 10 cases the test was undertaken at a different school if the child had moved and it was impossible to trace them. For 2 of the children teachers were unwilling to give out this information. For these reasons that SAT data was not collected for all the children visited in school at 11 years.

RESULTS

ANALYSIS OF THE 11-YEAR ACHIEVEMENT DATA

As was mentioned previously, the data collected to reflect achievement at 11-years was the level awarded to the children in their end of Year 6 Standard Attainment Tests (SATs). Children are given an overall score relating to their English, Mathematics and Science test performance. A level of 4 is awarded to children who have reached the target scores set for their age group. A level 3 score indicates that children have failed to meet that target, while level 5 indicates above average functioning. Table 3 shows the means of the levels achieved by the BabyTalk and control group children in each of these areas. The use of 2-tailed significance criterion is used in this chapter only due to the exploratory nature of these investigations.

Table 2.3 : Comparative mean SAT level achievement for BabyTalk (experimental) or control status children at 11 years of age.

	Experimental Mean (s.d.) n = 15	Control Mean (s.d.) n = 17	t-value	Sig.
English	3.93(1.3)	3.88 (1.2)	.104	.918
Mathematics	4.00 (1.3)	3.89 (1.2)	.262	.795
Science	4.20 (3.94)	3.94 (1.2)	.604	.550

Table 2.3 reveals that there are no statistically significant differences at the $p < .05$ level between the means for the experimental and control groups on any of the SAT tests. It is the case, however, that in all instances the experimental group means are higher. It is also most interesting that for Mathematics and Science scores the means of the Experimental group, 4.0 (s.d. = 1.3) and 4.2 (s.d. = 1.2) respectively either meet or surpass the government-set achievement target for their age-group. The control group means fall short of the attainment targets, with scores for mathematics and science of 3.89 (s.d. = 1.3) and 3.94 (s.d. = 1.2) respectively.

Thus a statistically significant difference in SAT achievement scores is not detectable at 11 years, however it could be argued that there is meaningful difference in the context of the assessment measure used.

Following the remarkable differences at the 7-year follow-up, these results are rather disappointing. Admittedly, the SAT is a rather clumsy achievement measure which is arguable not a very sensitive test at this age group, and given the small sample size, more impressive results might have been anticipated with more children and more sensitive achievement measures. None-the-less these results rather questioned whether the 11-year sample was truly representative of the 7-year sample. Consequently, those children ($n = 45$) who were seen at 11-years and who were also seen at 7-years ($n = 32$) were selected for analysis of their achievement scores at 7-years to see if the raised IQ scores for the experimental group in this sub-sample remained present. The results of this analysis are displayed in Table 2.4.

Table 2.4 : Comparative mean WISC IQ scores for BabyTalk (experimental) or control status children at 7 years of age (sub-group who were also follow-up at 11 years).

	Experimental Mean (s.d.) $n = 15$	Control Mean (s.d.) $n = 17$	t-value	Sig.
Verbal IQ	98.4 (20.3)	101.1 (15.0)	.434	.667
Performance IQ	102.3 (20.6)	100.2 (16.1)	.313	.757
Full Scale IQ	100.1 (20.7)	100.8 (17.3)	.090	.929

The results in table 2.4 clearly indicate that differences between the control and experimental groups did not remain. There is no difference between IQ scores for the control and experimental group at 7 years for those children included in the 11 year follow up. In fact, there is a non-significant difference in favour of the controls!

It seems that the sub-group of the BabyTalk sample who have been traced and followed up at 11 years are not representative of the larger group at 7 years in terms of higher IQ functioning. Indeed it would seem that the current sample is made up of all the lowest achieving BabyTalk (experimental) children and highest achieving

control children. It is no longer surprising that an achievement benefit for the BabyTalk children was not evident for this sample at 11 years. In this context, the slightly higher (but of course insignificant) SAT scores of the experimental group are surprising, and perhaps indicate an effect on later achievement that is independent of IQ.

A concern remains that the anticipated benefits of the intervention will not be identifiable in this unrepresentative sub-sample. Further analysis of the seven-year data for this sub-group revealed that there is also, unlike the group as a whole, no difference in the language skills between the control and experimental group. Reported below (table 2.5) are the language skills test results at 7 years for the sub-group of children followed-up at that age who were additionally followed up at 11 years in the context of the current study. The assessments used are widely used reliable and valid measures developed by Dr John Rust and published by the psychological corporation. 'Word' (Weschler Objective Language Dimension, Rust, 1996) assesses language skills and has sub-scales BR (basic reading), SP (spelling) and RC (reading comprehension) and an overall average score WC (or word composite). The 'Wold' (Weschler Objective Language Dimension, Rust, 1992) has sub-scales of LC (language comprehension) OE (oral expression) and WE (written expression).

Table 2.5 : Comparative Word and Wold Language skills scores for BabyTalk (experimental) or control status children at 7 years of age (sub-group who were also follow-up at 11 years).

	Experimental Mean (s.d.) n = 15	Control Mean (s.d.) n = 17	t-value	Sig. (2-tailed)
WORD.BR	96.5 (17.3)	95.7 (17.3)	.145	.886
WORD.SP	81.3 (29.0)	83.7 (32.1)	.224	.824
WORD.RC	89.5 (12.5)	91.5 (17.7)	.361	.727
WORD.WC	92.1 (17.8)	93.1 (20.2)	.145	.886
WOLD.LC	98.9 (15.1)	102.5 (17.1)	.638	.528
WOLD.OE	105.0 (11.4)	99.9 (14.5)	1.10	.281
WOLD.WE	100.9 (14.4)	99.9 (16.9)	.166	.869

Only in the Wold Oral Expression test did the BabyTalk experimental group ($\bar{m} = 105.0$, $s.d. = 11.4$) out-perform the control group ($\bar{m} = 99.9$, $s.d. = 14.5$) by a noticeable margin, and this failed to reach statistical significance $t(30) = 1.10$, $p = .281$ (2-tailed).

It is rather disconcerting that despite the apparent success of the BabyTalk intervention group followed up at 7 years, the sub-group of BabyTalk children in the current study appear to be those who have least benefited from the intervention. It is rather disappointing in terms of our prospects of identifying improvements in other areas of functioning, such as empathy, and social understanding. However, if significant differences in these capabilities are detected, we can anticipate that the magnitude of the effect must therefore be strong and meaningful, and also operating independently of the enhanced language or IQ functioning of the children.

CONCLUSIONS AND SUMMARY.

This chapter has revisited the claims from the 7-year follow-up that the BabyTalk intervention enhanced the participants' IQ. Analysis of these data supported this finding for the larger group of all children followed up at 7 years. Unfortunately this trend did not hold for the sub-group of those children also included in the current study. Not only did these children show no higher mean IQ scores, but experimental and control children showed no significant differences in language functioning either. This of course raises concerns that the current sample does not include those children whom most benefited from the BabyTalk intervention.

The chapter has also considered how the 7-year IQ findings can be understood. This has involved an interesting exploration of the associations between language, early interaction and IQ. The finding that group 1 children, whose intervention programme included a special focus on enhancing the mother-child interaction pattern, improved more than other children suggests that this aspect of the intervention is particularly salient in terms of IQ outcome. Review of the literature has encouraged examining differences in the children's non-verbal behaviour, as well as aspects of social functioning associated with earlier mother-child interaction. It is also of interest that

children's' Performance IQs at 7 years were enhanced even beyond Verbal IQ. This is suggestive that the intervention involves components over and above influencing language alone. Given that the children in the current sample do not represent those who benefited from the intervention in terms of IQ or language skills, it will be interesting to see whether other areas of functioning are independently influenced by the BabyTalk intervention. The next chapters explore one of those areas of functioning, social intelligence, with chapter 3 attempting to establish a reliable and valid measure of this rather intangible ability.

CHAPTER 3

ESTABLISHING A VALID MEASURE OF EMOTIONAL LITERACY AND SOCIAL COGNITION. – THE F&F (FRIENDS AND FAMILY) INTERVIEW.

3.1 Introduction.

The intention of this chapter is to justify the formation and use of the F&F (Friends and Family) interview as a measure of emotional literacy and social cognition. Its validity will be examined from its use with a similar aged cohort to the BabyTalk sample. This cohort and their parents, discussed further below, earlier undertook various attachment and verbal IQ assessments, and the children completed measures designed to elicit their empathetic skills. It is hoped that analysis of these data and responses to the F&F interview will contribute to speculation about the contribution of earlier mother child interactive and communicative patterns, particularly in relation to enhancing capacities for emotional literacy and social cognition in later childhood. The need for forming a measure of emotional literacy will be an initial focus of discussion, as well as what exactly is meant by this construct. How these elements, and others identified as important components of social competence in attachment research, can be assessed in an appropriate measure will then be explored.

3.2 Conceptualising and assessing emotional intelligence / literacy.

The discrepancy between IQ scores and later achievement (Bocchino, 1999), the increasing link in psychological theorising between cognition and affect (Goleman, 1995) and recognition that successful functioning in a social environment is dependent on emotional fluency, has meant that psychologists and society have come to emphasise the importance of emotional intelligence or 'literacy'. Despite this interest and acknowledgment, however, few measures for this concept have been

developed. Rather, work to date has focused on defining more precisely what is meant by this intriguing term.

In 1983, Gardner pioneered this concept and identified two areas of intelligence aligned with the affective domain, which he termed interpersonal and intrapersonal intelligence. He defined them such that;

“*Interpersonal intelligence* is the ability to understand other people: what motivates them, how they work, how to work co-operatively with them.. *intrapersonal intelligence* .. is a correlative ability, turned inwards. It is the capacity to form an accurate, veridical model of oneself and to be able to use that model to operate effectively in life” (Gardner, 1983, p.39).

Other theorists (e.g. Costa, 1991, Goleman, 1995) have extended these concepts, identifying characteristics of highly functioning people with links to inter and intrapersonal skills, such as the ability to listen with empathy, monitor emotion in oneself and others, and to consciously choose behaviours. Daniel Goleman claims that these capabilities have far-reaching implications because “emotional aptitude is a meta-ability, determining how well we can use whatever other skills we have, including raw intellect” (1995, p.83). The idea expressed, which mirrors the key rationale behind attachment theorising, is that an appropriate emotional repertoire is necessary for the successful implementation of other skills and strategies at an individual’s disposal.

As is the case with language and attachment interventions, Goleman notes that while change can occur at any time, attempts to foster emotional literacy “work best when they trace the emotional timetable of development” (1995, p.121). Bocchino (1999) makes specific reference in the emotional literacy literature to the importance of security and language capacities. He lists listening skills, high-level communication skills and appropriate expression of emotion as pre-requisites of enhanced emotional literacy skills. The former two skills are of course related to developing language skills, and the appropriate expression of emotion is a much documented facet of attachment security (e.g. Berlin & Cassidy, 1996, Lay *et al*, 1995, Malatesta *et al*, 1989).

Aspects of Emotional Intelligence and their means of assessment.

The reliability and validity of an appropriate measure for assessing emotional literacy in school-aged children has not been reported. Examining the aspects of competency associated with emotional literacy in the literature, however, it becomes apparent that certain skills could be identified from responses to an interview format based around discussion of an individual's close relationships. Specifically, the capacity to take a 'significant other's' mental and emotional perspective can be examined in this way. Related questions about why others think as they do, can be incorporated, and what the child might think that others think about them.

Intrapersonal questions can also be accessed in an interview format, questioning the interviewee's self awareness, ability to think of themselves in the third person, observe their own emotions and behaviour and be conscious of the insights that that provides (Bocchino, 1999). Talking on somewhat emotionally charged topics allows for an insight into how the young person manages their emotional state. Discussing views about oneself and the most important relationships in your life can be just such emotionally charged topics. The F&F interview, which is organised in this way, allows for an appropriate means of examining attachment related relationship constructs. Consideration of approaches to early attachment and later emotional development are also particularly enlightening because they offer a well developed framework for thinking about early interaction and associated later outcomes.

More generally, an interview format allows for a broad assessment of the level of a child's communication skills, and their success in projecting the message that they intend. A construct that has been successfully incorporated into work on adult attachment, is that of 'coherence', based on the ideas of the linguistic philosopher Grice (1975). In his formulation, coherent discourse is co-operative and adheres to four maxims: quality (to be truthful and convincing); quantity (succinct but complete); relationship (relevance); and manner (attention, politeness and interest). Following these assessments, a global score of 'overall coherence' can be made. Interview material can be easily and insightfully assessed under these criteria.

3.3 Social-emotional intelligence and Attachment.

A child's capacities for emotional understanding, empathy and social cognition are, of course, predicted to relate to earlier mother-child attachment relationships. It has been discussed at length that an assumption of the current study is that the BabyTalk intervention has positively influenced the overall quality of the mother-child relationship, including attachment security. This is, however, a very difficult assumption to prove. No observation of the infant-mother relationship was made with the BabyTalk sample using a measure established as a reliable and valid measure of attachment security such as the Strange Situation (SS) (see below) (Ainsworth, 1978). Further, no measure of attachment for children in late childhood has been agreed upon. Evidence is increasing in the attachment research, however, that one of the best correlates at this age with earlier attachment assessments or later classification from the Adult Attachment Interview (AAI) (George, Kaplan & Main, 1985), are certain social-emotional capabilities. To explain the emergence of the F&F interview in the form it takes, current attachment assessment measures will be examined, specifically the Strange Situation (SS) and the Adult Attachment Interview (AAI). Research that has attempted to examine attachment in late childhood will be critically assessed, with emphasis on approaches that have placed considerable importance on aspects of social and emotional understanding. Aspects of functioning determined as particularly pertinent to the formation of the F&F interview will be addressed. It becomes clear that older-children's social-emotional expression has important associations with the nature of earlier mother-child interaction patterns, and may be a useful way of reflecting back on that early relationship.

3.4 Assessing Attachment.

Assessing attachment in later childhood.

Attempts to chart the *process* of the intergenerational transmission of attachment behaviour have highlighted the lack of an agreed methodology and a conceptual framework for understanding attachment in late childhood. A reluctance to move away from the successes of the measures used in infancy and adulthood, the SS and

AAI, is in part responsible for this. Typically, attempts to consider attachment representations in late childhood have therefore aimed to replicate findings using similar procedures and parallel classifications to the AAI and SS, often to the neglect of what attachment means specifically at this developmental stage. It is essential to think about what attachment might mean in later childhood, rather than falling into the trap of replicating assessment strategies for other age-groups which might not approach the most meaningful constructs at this time. Let us turn our attention first to the SS and AAI, the assessment procedures that dominate attachment research in the infant and adult years.

The Strange Situation (SS)

The Strange Situation (SS) (Ainsworth 1978) is used for attachment classification in infancy. A laboratory procedure, it was designed to capture the balance of attachment and exploratory behaviour during increasingly stressful episodes. The child enters a novel and stimulating 'waiting room' environment and then is put under increasing 'stress' as a stranger enters a room, the child is left alone with a stranger, and then entirely alone. The child's reaction to the parent on their return is central to the attachment classification. Ainsworth went to great pains to validate the measure and attendant classification scheme with detailed and extensive home observations, establishing key differences among mother-child dyads with secure, ambivalent and avoidant infants. Reliability, stability and predictive validity of the measure have been well established, and there is little doubt that the procedure captures fundamental and far-reaching qualities of the infant mother relationship.

Several strategies for assessment in late childhood have therefore attempted to capitalize on the success of the strange situation, under the assumption that attachment strategies are stable and that those patterns of infant attachment have analogues at other stages. Many of these have attempted to activate attachment representations by symbolic means, such as a picture response procedure depicting attachment related scenes (Kaplan, 1987) or the Separation Anxiety Test (Slough, Goyette and Greenberg, 1988) using projective techniques to elicit internal representations of attachment security in middle childhood. In both cases validity had been determined through correspondence to earlier infant SS classification. Evidence

of stability in classification from these similar assessment procedures across this time period is inconsistent. Kaplan reported 80% agreement on secure versus insecure ratings, however several subsequent studies report no continuity at all, e.g. Goldberg et al, (1998). Even assuming stability we might question whether this is a good validity criterion in speaking meaningfully about the child's current relationships and emotional functioning (Goldberg, 2000). Equally, care must be taken to avert the danger of tapping into influential aspects of the parent-child relationship and naming those behaviours attachment without justification (Lamb, Thompson, Gardner *et al*, 1995). There is a clear need to also access in some way more specific representations of attachment in later childhood. This has been attempted with an interview approach.

The Adult Attachment Interview - assessing attachment at the representational level.

After the SS, the Adult Attachment Interview (AAI) is the most developed and widely accepted attachment measure in developmental psychology. It takes the form of a semi-structured interview focusing on childhood experiences. Classifications are made, on the basis of transcriptions, into groups analogous to those identified by the strange situation, although adults may be 'earned secure' if early poor experience has been effectively internalised and overcome. It is not the content of what the individual says or what has happened to them that determines classification, so much as the 'coherence' (Grice, 1975) of the story in terms of how that adult pieces together a narrative of those experiences, feelings and other's behaviour. The aim is to 'surprise the unconscious' (Main 1985) to reveal underlying internal working models of attachment not ordinarily available to consciousness. In a review of studies examining the concordance of parent's AAI with child's SS, van IJzendoorn (1995) found when the three main classifications were considered, concordance was at 69%. In terms of convergent validity, there is limited and mixed data, demonstrating some links with peer relations (Kobak and Sceery 1988) and marital conflict (Cohen et al, 1992). Principally however, the validity of the AAI (and measures derived from it) rests in evidence that it is predictive of care-giving style and subsequent attachment formation with the children in their care (Steele, Steele & Fonagy, 1996).

Solomon and George (1999) write that the achievement of language and symbolic operations during later childhood makes it feasible at that time to assess attachment security at the representational level. Attachment representations become increasingly important during development, and hence narrative methods and interviews are likely to contribute very effectively to the study of attachment in late childhood. It is not surprising therefore that researchers are exploring the application of the AAI or similar procedures to this younger age group. Ammaniti *et al* (2000) used an interview very similar to the AAI, the Attachment Interview for Childhood and Adolescence (AICA). This is adapted from the adult version in minor ways, such as excluding wishes for a child, and clarifying more complex vocabulary. 31 Italian participants were given the interview at 10 years and then again at 14 years. The stability of attachment security categorisation across this time was 74%, quite high, although the authors acknowledged that in fact this meant only 14 out of 20 children who were classified as secure at 10 years were also classified as secure at 14. It may be, as the authors discuss, that adolescents have a tendency to be dismissive of parental relationships while they detach from their parents and become independent. This type of interview with this age-group could then lead to a categorisation that would not be manifest at other times of the individual's development and therefore be considered misleading. Importantly, however, they felt that the interview gave excellent insights into the young peoples' understanding of self, friends and parents, and their recognition and expression of feeling. This caused them to recommend the use of similar interviews, or autobiographical narratives such as those used by Mary Main (Main, Kaplan & Cassidy, 1985). The suggestion is that children are capable at this time of talking meaningfully about themselves, their relationships and the motivations behind other's behaviours.

Attachment in later childhood – age specific factors.

Direct evidence of the importance of investigating social outcome when considering the early mother-child interaction, rather than mirroring SS paradigms, emerges from research with older children. A longitudinal study by Bohlin *et al* (2000) examining attachment and social functioning, found that social outcome at 9 years was more closely associated with SS attachment classification at 15 months than with the projective attachment test intended for use with that age group, the Seattle version of

the Separation Anxiety Test (Slough, Goyette, & Greenberg, 1988). Social functioning in this sample of 96 children followed from 15 months to 9 years was studied through mother and teacher ratings, observations at school and by the child's self reports. They concluded that "the findings from the present study present a picture of secure attachment as fostering positive social expectations, enabling the child to be active, positive, and show initiative in social interactions" (Bohlin *et al*, 2000, p.36). Significantly the authors specifically examined empathy by looking at two items in the pro-social scales used ('is able to interpret another child's feelings' and 'is able to sympathise with peers'). Children who had been avoidant as infants were rated lower on this scale, although secure and ambivalent children's scores were not significantly different. This adds to a number of findings (e.g. Ellicker *et al*, 1992) which have suggested that insecure-avoidant and insecure-ambivalent infants may differ in emotional and social functioning in later life. This will be a matter for further discussion.

Further justification for caution against considering attachment in terms of separation constructs emerges from findings from the Regensburg Longitudinal study (Becker-Stoll & Fremmer-Bombik, 1997). While no connection was found between adolescent attachment classification and earlier infant assessment, infant classifications did predict adolescent displays of autonomy and relatedness with parents. The latter has itself been found to relate to adult attachment classification (Allen, Hauser, *et al* 1996). Again it seems that structural continuities with this age group are better expressed through aspects of psychosocial functioning, rather than in attachment organisation as it is conceptualised for other age-groups (Becker-Stoll & Fremmer-Bombik, 1997). These authors also stress that it may be that at this age there is a tendency to suppress the importance of attachment figures during the drive for autonomy and independence. In line with this interpretation, adolescents have been found to be more reticent than adults in partaking in attachment related interviews such as the AAI (Ward and Carlson, 1995). For this reason, and to focus more particularly on aspects of emotional intelligence as it is understood in the literature discussed above, the F&F interview, a relationship orientated interview, was considered a more appropriate measure to use with the BabyTalk sample than the AAI or AICA.

Review of the few studies that have examined attachment representation in later childhood seem to concur that it is important to distinguish between parental availability and reliance on parental help. Lieberman et al (1999) note that as peer relationships take increasingly significant roles with this age-group, the use of attachment figures is less frequent and more subtle, but that a feeling of parental availability remains important for emotional well-being. This supports Weiss' (1982) view that during late childhood, parental commitment, rather than parental assistance, remains crucial. In view of this, in the F&F interview, it is the child's sense of their parent's availability at times of distress, and how they construe how their parents think about them, which is questioned, rather than levels of assistance or dependence. In addition to this, Grossmann and Grossmann (1991) found that children's perception of parental support at 10 years was not related to their earlier attachment. This issue will be explored in conjunction with the findings from the London Parent Child Project (LPCP) sample. Other elements of children's thinking or expression of their thoughts about relationships will be examined for stronger associations with early security.

In view of thinking of the attachment system as a mechanism of emotion regulation (Sroufe and Waters, 1977) it does seem relevant to specifically ask children what they do when they are upset. Given the Grossmann's 1991 finding discussed above, it seems that analysis of the responses to this question should not focus on whether the child mentions turning to the parent in times of distress verses children who don't. After all, a critical task of adolescence is to develop autonomy so that there is no need for the individual to rely on their parents when distressed (Allen, Hauser, Bell & O'Connor, 1994). The intensity of the adolescent's efforts not to rely on parents is often remarkable and unsurpassed in earlier development (Steinberg, 1990). At times, then, it might be adaptive and healthy for older children to actively avoid their parents when distressed. At others it might be better to turn to them. The capacity to do this is positively related to having a close and enduring, secure relationship with parents. Becker-Stoll *et al* (1997) found both autonomy and relatedness in adolescents was strongly related to their security as infants. Although autonomy may seem that antithesis of attachment behaviour, in fact it takes great confidence in the attachment figure for an individual to 'explore emotionally' being away from the parent, while knowing that they can be turned to in extreme circumstances (Allen & Land, 1999).

Since the attachment system may be considered a strategy for handling intense affect, the emphasis in categorising responses to the question "When you are upset, what do you do?" centered on whether the 11 year olds could find an adaptive approach. Responses were divided into those which were 'active or adaptive', involving either turning to parents, friends or another trusted advisor, but also constructive distraction techniques such as doing a favoured activity. The alternative categorisation was 'passive or unconstructive response to distress'. The young-people in this group tended to mention going to their room and doing nothing, simply diminished the importance of being upset, or displaced their distress, for example by being aggressive with siblings. Seeing attachment in this framework, in terms of how distress is dealt with, allows the recognition of attachment organisation as a stable internal property of the individual rather than simply the relationship with a principle care-giver (Allen & Land, 1999).

3.5 Theorising on attachment and social competence.

Thus an interest in emotional intelligence outcome, and social competencies previously associated with attachment strategies, has highlighted a number of issues that should be addressed to create an enlightening measure of social and emotional competence in later childhood. Already discussed are metacognitive and perspective taking abilities, the approach to organising discussion of emotionally charged topics, and parental availability. All of these aspects are incorporated in the F&F interview. Additionally, attachment research has suggested other aspects worthy of further consideration, including more specific empathetic skills, peer relations, self-reflection and the capacity to acknowledge both positive and negative feelings towards the self and relationships. The latter concept is an important perspective in attachment theorising, articulated by Bowlby in his 1956 lecture "Psychoanalysis and Child-care" (Bowlby, 1979). In this discussion he gave special attention to Freud's notion of 'ambivalence' explained as the failure to integrate life and death instincts (Freud, 1923), which Bowlby rephrased as the inability to acknowledge universally experienced contradictory impulses, and the ensuing failure to control and direct those impulses. Bowlby asserted in this lecture that the capacity to recognise adverse emotions, and acknowledge positive and negative feelings from the self and from

others are legitimate but that they can be controlled, is critical for effective emotional functioning. If the child is not able to “express hostile and jealous feelings candidly, directly and spontaneously” (Bowlby, 1979, p.5), defense mechanisms will emerge to deal with the resulting inner conflicts. These mechanisms may be expressed either in the simultaneous expression of love and hate towards attachment figures, displacement, projection or overcompensation. The F&F interview is therefore structured to allow for the examination and scoring of these tendencies.

Attachment theory consistently emphasises that the nature of the early child-caregiver interaction has strong implications for the development of empathetic capacities. Children whose expressions of emotion have been appropriately responded to, should act appropriately towards and understand others. Belsky (1999) comments that in attachment, inter-personal safety strategies develop towards intra-personal emotion regulation patterns and later into social skills, including the tuning of adolescents’ strategies to his or her social environment. Liable and Thompson (1998) found evidence to support such a position. Pre-school children who were secure did indeed score higher on assessments of emotional understanding. Significantly, and as predicted by Bowlby’s theorising, it was these children’s enhanced understanding of negative emotion which marked them out from the insecure children. Consequently, the F&F interview seeks to ask questions about negative emotional experiences such as jealousy, peer disagreements, and the emotions surrounding them.

Peer relations have been acknowledged as important for the development of social skills and self esteem. Findings from a study examining attachment and peer relationships (Lieberman *et al*, 1999) indicated that the *quality* of parent-child relationships generalises to the *quality* of children’s close peer relationships, rather than popularity or the existence of reciprocated friendship. This is, of course, in line with Bowlby’s formulation and Freud’s dictum about the mother-child relationship. The quality of friendship is incorporated into the F&F interview on the strength of such theories and findings, and the hypothesis that enhanced language skills and corresponding emotional literacy might allow children to form stronger emotional ties.

Some of the most convincing evidence in support of a role for attachment in the development of social competence comes from the Minnesota longitudinal study (Elicker *et al*, 1992). Forty-seven children at summer camp were assessed during middle childhood. Children earlier classified as secure were found to form more meaningful friendships, were more accepted and adhered better to group norms. The latter might have resulted from their enhanced capacity to recognise norms due to better social awareness. By adolescence, camp leaders rated secure children as more competent, with greater leadership skills and more confident group spokespersons. The evidence suggested that while attachment plays a role in these outcomes, that many other factors are also operating. This allows for the recognition that social development is multiply determined, and early attachment is just one among many different influences operating, likely to include communicative capabilities.

Attachment and reflecting on 'the self'

A rather limited range of social-representational correlates of attachment security has been examined in the literature. One concept that has been explored, however, is variation in the ability to reflect on the self. This is of particular interest with this age group, as this capacity is just in its infancy, and probing children on this topic means that they are sometimes considering themselves in this way for the very first time. Cassidy (1988) used puppet characters to engage six-year-olds in describing themselves, and also undertook a concurrent assessment of attachment security. Children classified as secure were found to describe themselves in positive terms, but also were capable of acknowledging that they were imperfect. In contrast, insecure children had a more negative self-image and/or resisted admitting their flaws. These aspects are addressed in the F&F interview, which asks children to say what they most and least like about themselves.

Adolescence is characterised by dramatic increases in the differentiation of self and other (Bowlby, 1973). The F&F interview also asks the child to consider what they think their friends and family think about them, to see whether they differentiate these figures' viewpoints, and also that they differentiate these from their own.

A quite specific aspect of reflecting on the self has been addressed by Easterbrooks and Abeles (2000). These authors established a means of assessing a child's ease of access to self evaluations (EASE), and found this to relate to a concurrent emotional security measure. Children with high EASE ratings were also found to have fewer internalising and behaviour problems. The composition of the F&F interview allows for this phenomenon of self-evaluation to be explored.

The nature of the child's response to the interview format itself is likely to be of interest. Grossmann and Grossmann (1991) noted such individual differences when German 10 year-olds were interviewed by an unfamiliar experimenter. Children securely attached as infants were comfortable with the interviewer and personal questions, while those who were insecure either had difficulty engaging or were inappropriately intimate.

Summary.

In summary, the F&F interview was devised and used in this study because there are no agreed measures of either emotional literacy or parent-child attachment for children in late childhood. Review of the literature has highlighted a variety of social functioning components related to both early parent-child interaction quality and the domain of emotional literacy. In this way, every effort has been made to produce a valid measure, and the interview approach and coding scheme have significant face validity. The usefulness and validity of this measure will be further explored with a similar aged cohort to the BabyTalk group. This cohort were assessed on a variety of aspects of concurrent and earlier functioning, including parents' AAI, child SS assessments, and at 11 years, empathy measures and verbal IQ. Consequently it should be possible to see whether the F&F interview and coding scheme is a measure which is predicted by earlier mother-child attachment. Importantly, it will be possible to see whether the measure seems to pick up individual variation in functioning in this middle-class group. In terms of considering concurrent validity, there will be an exploration of whether responses to the F&F interview are related to other measures of related functioning, such as empathy measures and the child's strengths and difficulties. Finally, the data set permits the testing of the discriminant validity of the F&F interview, for example in respect to verbal IQ.

METHOD.

The Sample.

The data investigated here comes from 55 children and their parents who have participated in the London Parent-Child project (LPCP), a longitudinal investigation of attachment patterns across generations initiated by Miriam Steele (1990). The follow-up study providing these data for the current investigation involved 27 boys and 28 girls, mean age 11 years, 5.7 months (s.d. = 3.9 months), range = 11 years, 1 month – 12 years, 7 months. The mothers of the children, and their partners were recruited in the context of hospital antenatal classes at a London teaching hospital. Selection criteria included mother's current cohabitation with the child's father, age above 20, and competency in the English language (Raven, Court & Raven, 1986). The resulting sample was non-clinical, white, and predominately middle-class, with 70% possessing university degrees. Full demographic characteristics of this sample can be found in Steele, Steele & Fonagy (1996). The participating families at follow-up are highly representative of the larger original sample, as well as the attachment profiles in the wider non-clinical population (van IJzendoorn & Bakermans-Kranenburg, 1996).

In terms of assessments taken which are relevant to the current investigation, mother's AAI was conducted prior to the birth of first-born infants. SS with mother was undertaken at 12 months. Empathy ratings, the Strengths and Difficulties Questionnaire, verbal IQ scores and the F&F interview were conducted at 11 year follow up. Previous work with the LPCP has produced significant insights into the intergenerational transmission of attachment. Steele, Steele and Fonagy (1996) reported that mother's AAIs before a child's birth was related to the infant-mother attachment relationship as assessed by the SS. A similar pattern of influence was recorded for fathers, but as no data on fathers is available in the context of the BabyTalk study, father's AAI and SS and their relationship to the F&F interview is of limited interest for the current project. Children's understanding of mixed emotions, assessed by performance on a cartoon-based task at six years, was predicted by both mother-infant SS, and the mother's AAI (Steele *et al*, 1999). Material from the 11-

year study is currently in press. Here children's acknowledgment of distress in a similarly constructed cartoon based task was related to mother's AAI and to concurrent maternal warmth (Steele, Steele & Johansson, 2002). Material from the 11 year F&F data had not been investigated prior to the current study.

Measures

The choice of measures used in the current project in addition the F&F interview were in part determined by the available data from the earlier phases of the longitudinal London Parent Child Project (LPCP). Earlier measures include mother's attachment strategy assessed by the AAI prior to the child's birth, and an assessment of the mother-child attachment relationship using the Strange Situation (SS) procedure with the mother at 12 months. The choice of additional measures undertaken at the 11 year assessment was determined theoretically, with measures of empathy and social functioning undertaken to consider concurrent validity, and a measure of verbal IQ required as a control variable.

Measuring Social Cognition and Emotional Literacy.

The rationale for the nature and format of the F&F (Friends and Family) interview and its coding scheme has been subject to extensive discussion. The interview protocol is reproduced in appendix I, and the coding scheme in appendix II. The interview was administered in the context of home visits and recorded on video. Interviewing was undertaken by graduate students trained to administer the interview. This did not include the author. Efforts were made to ensure that interviewing style was similar, however some differences in levels of prompting and approach inevitably occurred. Coding was undertaken directly from this video footage rather than from transcriptions. This was because the video footage was found to provide important information in terms of emphasis and expression of responses, the child's non-verbal behaviour, and anxiety or comfort with the interview situation. When these students attempted to code from transcriptions they failed to achieve inter-rater reliability. The constructs established as important and included in the coding scheme were all rated on a four point scale for their presentation in the interview, where 0 = no evidence,

1 = slight or mild evidence, 2 = moderate evidence and 3 = marked evidence. A classification of security in relation to the relationships discussed was also made. Due to the small number of children in the various sub-groups of insecure attachment, these were collapsed into 'secure vs insecure'. In the current sample, 64% were deemed secure, and 36% insecure, a very typical distribution in a non-clinical sample. The current study intends to establish the validity of the F&F interview.

Importantly, the author coded the 55 video interviews blind to the earlier attachment status of the LPCP sample. Inter-rater reliability was established with Dr P.D. Moran using Cronbach's ALPHA (median - 0.91, minimum, - 0.72, maximum, - 1.00).

Establishing the constructs to be used in analysis.

Previous discussion of the formation of the F&F interview and coding scheme has explored how inclusion of constructs was based on existing literature review and theoretical awareness. The final selection of constructs to be used in analysis was also partially dictated by the need to achieve reliability, and the importance of collapsing highly correlated items into one construct to reduce the need to conduct large numbers of analysis and resulting Type I errors.

It was found that a number of the constructs in the interview were highly inter-correlated, and for the sake of clarity it was thought parsimonious to re-compute these constructs by calculating their mean score. In this way, scores for the elements of coherence identified in the analysis of the AAI (truth, economy, relation, manner, overall coherence) were found to correlate with an ALPHA of 0.97, and were calculated into a total coherence score. Similarly, 'Can assume perspective of others' was calculated (from assumes perspective of mother, father and friend, ALPHA = 0.89). Can assume the perspective of mother was also included in analysis in its own right, however, as due to the nature of the current study it was deemed an important separate aspect of this capacity to take another's view point. 'Recognises diverse feelings' was created from recognises diverse feelings towards self, mother, father and friend and had an ALPHA value of 0.79.

A number of constructs were dropped from further analysis because it was not possible to establish high inter-rater agreement, this included Ambivalence, Dissociation, and Sadness. Several more were not included in the analysis because the interview was not conducted in such a way that the construct could regularly be coded, and thus many missing variables were present. This applied to 'evidence of a developmental perspective', and some coding in relation to siblings and friends. The descriptives for the final variables selected as appropriate for analysis are listed below (n = 55).

Table 3.1 Descriptive statistics for the F&F interview coding with the LPCP sample.

	Mean	S.D.	Min	Max	Skew ness	Kurto sis
Total coherence	2.15	0.64	.50	3.00	-.563	-.452
Can assume perspective of others	1.71	0.74	.17	3.00	-.405	-.608
Can assume perspective of mother	1.70	0.83	.00	3.00	-.428	-.465
Can acknowledge diverse feelings towards self and others	2.12	0.63	.13	3.00	-1.395	1.899
Mother's availability	1.92	0.83	.50	1.00	-.168	-1.169
Father's availability	1.64	0.79	.00	3.00	-.006	-.883
Social competence	2.07	0.67	.00	3.00	-.756	.820
School competence	2.19	0.50	1.00	3.00	-.229	.468
Contact with friend	1.93	1.12	.00	3.00	-.591	-1.051
Quality of best friendship	2.10	0.60	1.00	3.00	-.204	-.910
Avoidance	0.62	0.77	.00	3.00	1.168	.714
Passivity	0.34	0.61	.00	2.00	1.69	1.81
Shame re mother	0.13	0.43	.00	2.00	3.565	12.39
Shame re father	0.20	0.56	.00	2.00	2.678	5.895
Differentiation of parental models	1.92	0.73	.00	3.00	-.538	.291
Secure verses insecure	1.36	0.49	1.00	2.00	.583	-1.724
Secure with non parental figure	1.83	0.98	.00	3.00	-.722	-.192
Reaction to distress	0.54	0.50	.00	1.00	-.153	-1.903

The scales.

Deviations from normality were not thought sufficient to demand the use of non-parametric statistics. Despite some high figures for skewness and kurtosis, these are not in excess of guide-line levels. Due to expectation of the direction of change in all analyses, the use of one-tailed tests was deemed appropriate, and are used consistently throughout the current project.

Considering the Mothers' Attachment Strategy and Understanding of her own Relationship Experiences.

The Adult Attachment Interview (AAI) (see above for consideration of the usefulness of this approach) was administered to all the expectant mothers following the schedule outlined by George *et al*, (1995). The interview is structured almost entirely around the individual's relationship with their parents and/or major care-givers, asking for specific memories to support global evaluations. Classification depends largely on the idea of coherence, discussed above. Basic classification is into one of three groups, either insecure (dismissing or preoccupied) or secure-autonomous. The interviews were coded independently by Dr Howard Steele and Dr Miriam Steele. High levels of inter-rater reliability were recorded (see Steele *et al*, 1996). Given the small numbers in each sub-group of insecure responses, these were collapsed into one insecure group for analysis. Of the 55 interviews from the mothers studied in this context, 32 (58%) were secure, and 23 (42 %) were insecure. A similar distribution of adult attachment patterns has been documented in the literature on responses to the AAI in the non-clinical population (van IJzendoorn, 1996), confirming the representativeness of the sample.

The Early Mother-Child Attachment Relationship.

The Strange Situation (SS) procedure was undertaken in infancy to assess mother-child attachment. The procedure is discussed above, and takes the form of a 20 minute laboratory-based assessment involving two brief separations and two three-minute reunions with the parent. Children may be classified secure, insecure-avoidant, insecure-resistant or disorganised in relation to attachment behaviours displayed, with an emphasis on the child's behaviours and expressions at the reunion. Once again, because of the small numbers involved in the sub-groups of insecure attachment, for analysis purposes classification was collapsed into secure or insecure. Of the 55 infants assessed, 32 (58%) were deemed secure, and 23 % (42%) insecure.

Controlling for Verbal Ability.

Given the verbal competence required for the F&F interview, it was thought necessary to undertake measures of verbal IQ to preclude the possibility that the capacity to talk coherently, take other's perspectives, and the other capacities tapped by the F&F interview, were in fact determined by verbal ability. This was assessed using the vocabulary and similarities sub-scales of the Weschler Intelligence scale for children – III – UK version (Weschler, 1992), administered during the 11 year home visit. The test is appropriate for this age group. The vocabulary sub-scale tests word knowledge, while the similarities sub-scale taps into abstract thinking by asking how two terms (e.g. apple and banana) are alike. The WISC is a much used assessment, with good reliability and validity. Test re-test reliability is of about 0.9, and the WISC is considered a good predictor of later school achievement (Sattler, 1988). A total IQ score was computed by adding together the scores achieved on these two sub-scales, to be used as a control measure in the analysis.

Empathy.

The use of an established measure of empathy was included to consider the concurrent validity of the F&F interview. The questionnaire used in the current study was compiled using Bryant's index of empathy (Bryant, 1982) and adding the empathetic concern and perspective taking factors from the Davis Interpersonal

Reactivity Index (IRI) (Davis, 1980). The latter measures empathy as a multi-component capacity. Score stability was indicated with a test-retest reliability of .83 between 4th and 7th grade (Litvack-Miller *et al*, 1997). Bryant's index considers empathy as a general trait. It has been significantly correlated with another affect based empathy scale (Mehrabian and Epstein, 1972), $r = .54$, $p < 0.001$. Non-significant correlation between social desirability responses and reading achievement provide support for the discriminant validity of the measure. These scores are included in the analysis in this study as representing aspects of emotional intelligence.

Social functioning.

The Strengths and Difficulties (SDQ) devised by Goodman (1997) was considered another excellent measure to consider the concurrent validity of the F&F interview. Its 25 questions are intended to give a balanced overview of children and young-peoples' (4 –16 years) behaviours, emotions and relationships. The sub-scales are prosocial behaviour, hyperactivity, emotional symptoms, conduct problems and peer problems (see Goodman, 1997 for further details). Thus this measure was also useful in contributing to the discriminant validity of the measure, as some of the subscales relate to aspects of social-functioning that the F&F interview is intended to consider (e.g. prosocial behaviour) while other aspects may be thought unrelated to it (e.g. hyperactivity). Either a parent, teacher, or the child themselves can complete the questionnaire. In the current analysis self-report responses are examined. SDQ scores were divided into subgroups of normal, borderline and clinical.

The SDQ was validated against the Rutter Questionnaire (Elander and Rutter, 1996); a long established and respected behavioural screening questionnaire. It is advantageous over other measures in being succinct, for its focus on strengths as well as difficulties, and emphasis on prosocial behaviour (Goodman, 1997).

RESULTS.

Exploratory analysis.

As an initial exploratory analysis, the intra-correlation between the various constructs isolated from the F&F interview was examined. Notably 'secure verses insecure' and 'coherence' (mean = 2.14, s.d.=0.64) correlated highly with a remarkable number of other constructs. Table 3.2 below reports the correlation between these latter two constructs and other dimensions from the interview coding.

Table 3.2: Intra-correlation between Secure verses Insecure and 'Coherence' with the other dimensions isolated by the F&F (Friends and Family) interview coding scheme.

	Secure vs Insecure	Coherence
Secure verses insecure	1.000	-.756**
Coherence	-.756**	1.000
Can Assume perspective of others	-.367**	.639**
Can assume perspective of mother	-.592**	.683**
Acknowledged diverse feelings towards self and others	-.256	.622**
Mother's availability	-.730**	..702**
Father's availability	-.517**	.463**
Social competence	-.316**	.526**
School competence	-.283**	.551**
Quality of best friendship	-.311*	..606**
Avoidance	.635**	-.783**
Passivity	.158*	-.245
Differentiation of parental models	-.372*	.498**
What do when distressed	-.347**	.460**

Notes: * p<.05 (1-tailed) ** p<.01 (1-tailed)

Differentiating 'overall coherence' and 'secure verses insecure.'

It becomes apparent that 'overall coherence' is highly correlated not only with other dimensions constructed to specifically tap aspects of emotional intelligence such as can assume perspective of others ($r=.639$, $p<.01$) or perceived 'social competence' ($r = .526$, $p<.01$), but also with specifically attachment related constructs such as 'mother's availability' ($r = .702$, $p<.01$), 'avoidance' ($r=-.783$, $p<.01$)) and 'secure verses insecure' itself ($r = -.756$, $p<0.01$). Secure verses insecure also taps into a number of emotional intelligence constructs, typically somewhat less strongly than 'coherence', although often at a level of significance where $p<.01$. Secure verses insecure, for example, correlates with 'can assume perspective of others' ($r= -.367$, $p<.01$), but does not correlate significantly with diversity of feelings towards self or others.

Despite these differences, it might be considered that this high intra-correlation reflects a lack of discrimination in the interview coding between these two concepts. It is a concern that coding of security might have relied too heavily on preconceived notions of coherence and narrative approach. However, when these two constructs are examined in relation their association with outcome and control variables, clear differences emerge. Investigation of the correlation between earlier attachment measures and each of the scales in the F&F interview (see Table 3.3 below) demonstrates that these two constructs 'overall coherence' and 'secure verses insecure' are among the most successful at reflecting back on earlier attachment history. Both 'secure vs insecure' and 'overall coherence' are highly significantly associated with mother's AAI before the child's birth, and the SS with mother at 12 months. In line with expectations 'secure verses insecure' is more closely associated with the behaviourally assessed SS, while mother's AAI is related to the communication associated 'overall coherence'. In terms of further differentiating these constructs, Table 3.8 also demonstrates how 'secure verses insecure' and 'coherence' are differentially related to empathetic, perspective-taking and behavioural outcomes, enhancing evidence that these two constructs are related but distinct.

The F&F interview and earlier attachment.

Table 3.3: Associations between the F&F interview scales and earlier attachment assessment. (n=55)

	AAI security of mother	SS with mother at 12 months
Coherence	.325**	.255*
Can assume perspective of others	.260*	.216
Assuming perspective of mother	.351**	.283*
Can acknowledge diverse feelings towards Self and others	.039	-.028
Mother's availability	.098	.121
Father's availability	.109	.255*
Social competence	.121	.232*
School competence	.123	.137
Contact with friend	-.022	.111
Quality of best friendship	.172	.265*
Avoidance	-.255*	-.255*
Passivity	-.016	-.016
Shame re mother	.166	.166
Shame re father	.248*	.248*
Differentiation of parental models	.177	.124
Secure verses insecure	-.279*	-.355**
Secure base from non-parental source.	.217	.453*
What do when distressed	.137	.327*

Notes: * p<.05 (1-tailed) ** p<.01 (1-tailed)

It is evident that the interview allows for an allocation security which is highly significantly related to earlier attachment classification in the SS at 12 months ($r = -.355$, $p < .01$). As the intergenerational pattern of attachment would predict, security assessed here at 11 years is also related to Mother's AAI. The child's 'coherence' of narrative at interview at 11 years is closely related to their parents capacity to talk coherently about their attachment relationship before the child's birth ($r = .325$, $P < .01$). This measure is also significantly related to attachment behaviour shown at 12 months in the SS. The associations between security classification at 11 years and earlier attachment are clearly displayed in Table 3.4 and Table 3.5 below. In table 3.4 we see that the robustness of the association is demonstrated that across all fields, counts differ from expected counts. Here we see that 38 of the 55 (69%) participants were categorised secure or insecure at 11 years, who were similarly classified at 12 months. Inspection of this table shows that the action in the table, where counts differ from expected counts, is particularly apparent in the cells associated with predicting security. Ten children who are classified as secure in the F&F Interview were classified as insecure in the 12 month SS. In table 3.5, 36 participants out of 55 (65%) were classified at 11 years as their mother's AAI undertaken before their birth.

Also associated with earlier AAI security of mother, is the child's ability to reflect on their mother's feelings and motivations. 'Assuming the perspective of mother' is associated with AAI security of mother ($r = .354$, $p < .01$), and also the SS with mother at 12 months ($r = -.355$, $p < .01$). In terms of considering the communicative aspect to attachment security formation, it is interesting that a child's understanding of their mother's feelings and emotions, associated with the mother's AAI and presumably derived from mother's sharing and discussion of her feelings, is related to the early attachment relationship between mother and child.

Table 3.4: Crosstabulations for strange situation at 12 month, and secure verses insecure classification at 11 years (using Fisher's exact p-value).

		Strange situation with mother at 12 months		
		Insecure	Secure	Total
Secure	Count	10	25	35
	Expected Count	(14.6)	(20.4)	(35)
Insecure	Count	13	7	20
	Expected Count	(8.4)	(11.6)	(20)
Total	Count	23	32	55
	Expected Count	(23)	(32)	(55)

Chi square = (1) = 6.94, p = 0.0115

Table 3.5: Crosstabulations for AAI security of mother, and secure verses insecure classification at 11 years (using Fisher's exact p-value).

		AAI Security of Mother		
		Insecure	Secure	Total
Secure	Count	11	24	35
	Expected Count	(14.6)	(20.4)	(35)
Insecure	Count	12	8	20
	Expected Count	(8.4)	(11.6)	(20)
Total	Count	23	32	55
	Expected Count	(23)	(32)	(55)

Chi square = (1) = 4.27, p = 0.0502

'What do when distressed' and earlier attachment.

Table 3.3 clearly displays that 'active' verses 'passive' responses to the question 'what do you do when you are upset' is associated with the SS at 12 months but not with Mother's AAI. Tables 3.6 and 3.7 show these associations using Chi Squared.

Table 3.6: Crosstabulations for strange situation at 12 month, and response to 'what do when distressed (using Fisher's exact p-value).

		Strange situation with mother at 12 months		
		Insecure	Secure	Total
Passive	Count	15	10	25
	Expected Count	(10.6)	(14.4)	(25)
Active	Count	8	21	29
	Expected Count	(12.4)	(16.6)	(29)
Total	Count	23	31	54
	Expected Count	(23)	(31)	(54)

Chi square = (1) = 5.769, p = 0.0268

Table 3.7: Crosstabulations for AAI security of mother, and response to 'what do when distressed' (using Fisher's exact p-value).

AAI Security of Mother		Insecure	Secure	Total
Passive	Count	12	13	25
	Expected Count	(10.2)	(14.8)	(25)
Active	Count	10	19	29
	Expected Count	(11.8)	(17.2)	(29)
Total	Count	22	32	54
	Expected Count	(23)	(32)	(54)

Chi square = (1) = 1.016, p = 0.4074

In the case of the association between 'what do when distressed' and SS with mother (Table 3.6) we see that the counts differ from expected counts in all fields. 21 out of 29 (72.4%) of participants who reacted 'actively' to distress had been secure in the SS at 12 months. 15 out of 25 (60%) of those who acted 'passively' to distress had 10 years earlier been classified as insecure.

In Table 3.7, showing associations with the mother's AAI, there are no significant differences between expected and observed counts. This suggests that the association between 'what do when distressed' and earlier attachment is not associated with the mother's verbal interactive style, and may have more to do with non-verbal interactive properties highlighted by the SS

Controlling for verbal IQ.

It may be questioned whether 'coherence' might not simply be tapping verbal IQ skills, which are passed from mother to child. Table 3.8 demonstrates that this is

unlikely to be the case. While 'coherence' and 'verbal IQ at 11 years' are significantly highly correlated ($r=.327$, $p<.01$), 'coherence' but not verbal IQ at 11 is correlated with the emotional intelligence related outcomes listed. 'Secure verses insecure' is not significantly related to IQ at 11 years ($r = -.212$), further differentiating the former measure from coherence.

Table 3.8 : Correlation of verbal IQ at 11 years, 'overall coherence' and 'secure verses insecure' and earlier attachment measures with various aspects of functioning associated with emotional intelligence.

	Verbal IQ at 11	Coherence	Secure vs Insecure
Verbal IQ at 11 years	1.000	.327**	-.212
Total Score for empathy	.149	.314*	-.214
IRI Empathic concern	.174	.271*	-.390**
IRI Perspective taking	.203	.328*	-.248
SDQ Prosocial skills	-.034	.286*	-.346**
SDQ Hyperactivity scale	-.043	.000	-.034
SDQ Emotional symptoms	-.051	.082	.075
SDQ Conduct problems	-.041	.037	-.009

	Mother's AAI	SS with Mother
Verbal IQ at 11 years	.050	.165
Total Score for empathy	.058	-.034
IRI Empathic concern	.354**	.214
IRI Perspective taking	.107	.209
SDQ Prosocial skills	.093	.094
SDQ Hyperactivity scale	-.004	.294*
SDQ Emotional symptoms	-.061	-.174
SDQ Conduct problems	.027	.200

Notes: * $p<.05$ (1-tailed) ** $p<.01$ (1-tailed)

The F&F interview and concurrent measures of empathy and behavioural difficulties.

As can be seen in Table 3.8, neither 'coherence' nor 'secure verses insecure' correlated with 'hyperactivity', 'emotional symptoms' or 'conduct problems'. As such a link has not been predicted, this is very pleasing in terms of the discriminant validity of these measures. It seems that 'coherence' is not simply measuring behavioural organisation or more broad emotional difficulties. Coherence is significantly related to all of the measures considered to be related to emotional intelligence; empathy, empathetic concern, perspective taking and prosocial behaviour. As the literature would predict, security at 11 years is also highly significantly related to prosocial behaviour ($r = -.346$, $P < 0.01$) and empathic concern or responses to distress in others ($r = -.390$, $p < .01$). The evidence is accumulating that meaningful aspects of emotional understanding and behaviour are caught in the constructs of 'secure verses insecure' and 'coherence'. The former is associated with early attachment and some related prosocial behaviour. 'Coherence' appears to be related to security, but is a distinct construct. It is a more meaningful predictor of emotional intelligence both as it is represented in the F&F interview, and also various other validated measures of empathy and perspective taking.

Assessing whether 'coherence' and 'secure verses insecure' are related to earlier attachment and maternal representations of attachment after taking account of the influence of children's IQ at 11, as well as concurrent empathetic and prosocial skills.

Hierarchical regressions were undertaken to determine whether both 'coherence' and 'secure verses insecure' were independent predictors of earlier attachment histories of mother and child. In the first regression procedure, the variable 'coherence' was entered as the depended variable (Table 3.9). The order of entry for predictors was the child's verbal IQ at 11 years, perspective taking and empathetic concern subscales from the IRI, the prosocial sub-scale from the SDQ, and AAI security of mother. (The AAI security of mother was more strongly correlated with 'coherence' than the

SS at 12 months (see Table 3.3) and the latter was not found to be an independent predictor of 'coherence' after the above-mentioned variables were controlled for. At the first step, children's verbal IQ at 11 years contributed an insignificant R^2 change = .04, $F(1, 37) = 1.63$, $p > .05$. At the next step, the IRI perspective taking and empathetic concern subscales contributed a small and insignificant R^2 change = .05, $F(2, 35) = 1.31$, $p > .05$. At the third step, the prosocial subscale of the SDQ contributed significant R^2 change = .12, $F(1, 34) = 2.54$, $p < .05$. At the final step, AAI security of mother contributed and additional and significant R^2 change = .16, $F(1, 33) = 4.30$, $p < .01$. The addition of maternal AAI security into the model represented a significant improvement, F -change $(1, 33) = 8.97$, $p < .01$.

Table 3.9: Summary of hierarchical regression analysis for variables (including Mother's AAI) predicting children's 'coherence' of narrative in the F&F interview at 11 years (n = 41)

Variable	B coef	<u>SE B</u>	Beta	p
Step 1				
Children's Verbal IQ				
At 11 years	.01	.012	.21	.20
Step 2				
Children's Verbal IQ				
At 11 years	.02	.01	.30	.09
IRI Perspective Taking and	.00	.02	.00	.99
Empathetic concern subscales	.13	.09	.26	.14
Step 3				
Children's Verbal IQ				
At 11 years	.01	.01	.26	.12
IRI Perspective Taking and	.01	.02	.11	.48
Empathetic concern subscales	.13	.08	.27	.11
Prosocial subscale From SDQ.	.14	.06	.38	.02
Step 4.				
Children's Verbal IQ				
At 11 years	.01	.01	.18	.24
IRI Perspective Taking and	.01	.02	.08	.60
Empathetic concern subscales	.01	.08	.05	.77
Prosocial subscale From SDQ.	.12	.05	.34	.03
AAI Security Of mother.	.55	.18	.46	.01

Note $R^2 = .04$ for Step 1; $R^2 = .10$ for Step 2; $R^2 = .23$ for Step 3; $R^2 = .39$ for Step 4.

Table 3.9 makes it evident that the way that the mother talks about her own attachment relationship before her child's birth makes a unique and powerful contribution to predicting the child's emotional literacy at 11 years, as assessed by the coherence of their narrative in discussing themselves and their important relationships. In contrast general verbal skills and distinct measures of empathy did not contribute significantly to predictions. Although the addition of prosocial skills to the model significantly improved predictions, the strongest predictive power was from introducing maternal AAI security. The importance of this finding, and that that SS at 12 months did not improve predictions of scores for 'coherence' significantly in a similar regression (see Appendix VII), is discussed further below.

Table 3.10 shows the regression procedure undertaken to examine whether the earlier SS would significantly improve predictions of categorisation of 'secure verse insecure' at 11 years. Here it is clear that the SS at 12 months does not contribute independently to the model predicting security at this later time. (Mothers AAI was also not independently predictive of later 'secure verses insecure' categorisation either. (This analysis can be seen in Appendix VIII). The dependent variable in the current analysis was 'secure verses insecure', and the order of entry was again verbal IQ, IRI empathetic concern and perspective taking, the prosocial subscale of the SDQ, and finally SS with mother at 12 months. At the first step verbal IQ did not enhance predictions over chance, with an insignificant R^2 change = .03, $F(1, 42) = 1.36$, $p > .05$. At the next step empathetic concern and perspective taking made a small but insignificant R^2 change = .12, $F(2, 40) = 2.45$, $p > .05$. The third step, the Prosocial subscale of the SDQ did reach significance with an R^2 change = .07, $F(1, 39) = 2.78$, $p < .05$. Finally, the entry of SS at 12 months at this point made an R^2 change = .04, $F(1, 38) = 2.8$, $p < .05$. The addition of SS at 12 months to the model at this point did not represent a significant improvement, F -change $(1, 38) = 2.57$, $p > .05$.

Table 3.10: Summary of hierarchical regression analysis for variables (including the SS at 12 months) predicting children's classification as 'secure verses insecure' from their responses to the F&F interview at 11 years (n = 46)

Variable	B coef	SE B	Beta	p
Step 1				
Children's Verbal IQ At 11 years	.01	.01	.18	.25
Step 2				
Children's Verbal IQ At 11 years	.01	.01	.09	.57
IRI Perspective Taking and	.02	.01	.23	.13
Empathetic concern subscales	.01	.06	.29	.06
Step 3				
Children's Verbal IQ At 11 years	.01	.01	.13	.41
IRI Perspective Taking and	.01	.01	.13	.39
Empathetic concern subscales	.11	.06	.27	.07
Prosocial subscale From SDQ.	.08	.04	.28	.08
Step 4.				
Children's Verbal IQ At 11 years	.01	.01	.12	.41
IRI Perspective Taking and	.01	.01	.08	.60
Empathetic concern subscales	.08	.06	.21	.16
Prosocial subscale From SDQ.	.08	.04	.27	.08
SS at 12 months.23	.15	.24	.12	

Note $R^2 = .00$ for Step 1; $R^2 = .16$ for Step 2; $R^2 = .22$ for Step 3; $R^2 = .27$ for Step 4.

Table 3.10, then, offers further evidence that the SS captures more than the mother's AAI in terms of its reflection in children's later outcome in terms of security. However, the mother's AAI was itself more reflective of the coherence of children's narrative at 11 years than the children's own SS at 12 month.

DISCUSSION.

3.6 The Sub-scales.

'Coherence'.

The results reported provide preliminary evidence that the F&F interview might be an effective measure for assessing emotional literacy. Of particular interest is the way that the 'coherence' score in this measure seems to capture so many of the aspects of the interview thought to relate to emotional intelligence. Even more pleasing is the way that it correlates significantly with established and respected measures of functioning on components of emotional intelligence, such as empathy and perspective taking (Bryant, 1982, Davis, 1980) and prosocial behaviour (Goodman, 1997). Related to verbal IQ, the 'overall coherence' is predictive of aspects of emotional literacy, while verbal IQ was not. All indications are that it will provide an excellent tool for future analysis. Other subsections are not redundant in the interview, however, and warrant further investigation for correlates with other specific aspects of emotional functioning. Importantly, consideration of all these dimensions in the coding is essential for arriving at an informed rating of 'overall coherence'.

'Secure verses Insecure'.

A related but distinct score, also of special interest is that of 'secure verses insecure'. This categorisation is formed by consideration of the young person's discussion of their important relationships. If their approach was thoughtful, accurate and considered without unease, a secure classification was given. If, however, the child avoided discussion on these topics, was overly confident without justification about their relationships or flippant, or if they displayed concern about their relationships,

either expressedly or by labouring with these topics and finding it difficult to move on, they were considered insecure. This categorisation correlated very highly with the children's attachment security assessed with mother in the strange situation at 12 months. It was also associated with a number of aspects of emotional intelligence in the interview. In terms of its correlation with other validated measures, it is interesting that it correlated with prosocial behaviour, and emotional *concern* rather than understanding. It has been mentioned that a number of studies have been surprised to find that while children classified as avoidant often fail to recognise and anticipate emotions so well, that ambivalently classified children do not differ from those thought secure (Bohlin *et al*, 2000, Elicker *et al*, 1992). It may well be that it is in responding to those emotions with an appropriate level of concern that differentiates those groups more clearly. Security across the years was more stable for those children classed as secure at 12 months, than those classified as insecure. This finding has been made by other longitudinal attachment studies.

The 'empathetic concern' of the 11 year olds is also an outcome measure of interest, because it was more closely associated with their mother's AAI, than with the coherence of their own narrative (unlike the total empathy scores which was associated with 'overall coherence' but not earlier security measures). This might suggest that the mother's better verbal discussion had influenced the child's understanding of and responses to distress, but that some children did not yet have the communicative skills to mirror that emotional competence communicatively. Alternatively it may be that the mother's response to distress had influenced the children's empathetic concern, and that defense-mechanisms had been constructed by some children and which are reflected in their narratives and responses to, if not recognition of, distress in others.

3.7 The F&F interview – reflecting back on earlier attachment.

It is impressive that a security classification following completion of the F&F interview coding at 11 years is highly related to the assessment of the child's security at 12 months. Even more startling is that the social competence of the 11 year old child, and the way that they organise their thoughts about relationship experiences, is

strongly associated with the way that their expectant mother's responded to questions about their own attachment relationships 11 years previously. Analysis of these data confirms that this is not simply due to the transmission of verbal IQ. Given the intercorrelations between security of mother and of her child, coherence of narrative, and social competence, we might begin to speculate on a pattern of influence where all of these factors are dynamically inter-related.

Patterns of influence.

While much emphasis has been placed on examining the influence of the mother-child interactional behaviour (assessed by the SS) on later emotion understanding, social competence in the current investigation was found to relate more strongly to the mother's AAI than to SS assessment. It may be that, as Steele *et al* (2002) suggest, maternal attachment interview responses are likely to be more stable over time than infant-mother attachment patterns. Indeed, this leads to consideration about how a mother's verbal interaction with her child is likely to have as much of an inter-related impact on their child's feelings of security as behavioural interaction. The mother-child conversations about emotions as the child develops are likely to exert a continuing influence on the child's understanding and response to emotion and corresponding feelings of self worth, which may have begun their formation through behavioural interaction in pre-verbal infancy. It makes intuitive sense that the way that a mother speaks to a child about emotions, as well as the way she responds to the child's own emotions, are likely to mutually influence the child's later understanding of emotions, and dictate their responses to emotions in others.

This perspective, emphasising the crucial role of mother's responses to and talk about emotion, has been well established in other areas of social development research, notably in Judy Dunn's research examining children's spontaneous talk. Dunn, Bretherton and Munn (1987) noted that an enormous amount of conversation between children and their mothers concerns feeling states, often emerging in emotionally charged contexts. The more that mother's talked about feelings, the more their children talked about them. The amount of feeling state discussion between mother and child was associated with later outcome. Brown and Dunn (1991) found that the ability to talk about inner states has implications for children's capabilities in social

interactions as comforters, teasers and excuse makers. Even more illuminating, in terms of recognising the interaction of communication and attachment security aspects based on acknowledgment and reaction to negative emotion, are studies by Gottman and his colleagues (Hooven, Gottman, & Katz, 1995). Parents were interviewed about their attitudes to emotion, and coded for 'self-awareness' (awareness and tolerance of their own negative emotions) and 'acceptance' (in relation to their children's expression of negative emotions). As Bowlby's 1956 theory would predict (see above) parental self-awareness corresponded to acceptance of children's own negative emotions, and was related to children's social skills assessed three years later.

The current study suggests that a mother able to speak about and respond to emotions appropriately, is one who during pregnancy was able to give a coherent account of her own parenting. Later parts of this study will intend to explore whether this inter-generational transmission can be influenced by teaching the parents how to communicate effectively with their children by following the baby-talk programme.

Thus the study has clearly demonstrated the lasting influence of a mother's verbal communicative style on a child's security and own coherence of verbal narrative. Equally the analysis here has revealed the importance of behavioural interactive style, as measured by the SS. Strange situation classification at 12 months was related to many of the emotional intelligence variables such as coherence of narrative, empathy and prosocial skills which are also associated with the mother's AAI. Significantly, however, whether children acted 'actively' or 'passively' when upset or distressed was related to SS at 12 months but not mother's AAI. Thus it is clear that behavioural or non-verbal aspects of parent-child interaction, while often related to the influence of verbal communicative style, may at time offer its own unique influence on later development. In chapter 5, response to distress is explored further in the context of acknowledging it as 'non-verbal behaviour and emotional expression'. In this chapter the implication of considering these two attachment influences, "verbal" and "non-verbal", as related but separate entities, is explored at length.

3.8 Attachment and Emotional Intelligence – cognitively, communicatively and behaviourally influenced.

Consideration of the importance of both of these aspects is not novel in the literature. In thinking about the role of early relationships in psychopathology, Greenberg *et al*, even in 1991, were commenting on “how affect, cognition, language, and behaviour are integrated in an increasingly complex fashion at progressive phases of development” (p.21). Understanding social competence, in their conceptualisation, depended on understanding affect and emotion language, cognitive understanding and expectancies, and linguistic and communication skills. They suggest that two primary and inter-related components in the behaviour of parents contribute to optimal development of social awareness. The first of these is sensitive and responsive early parenting leading to a secure internal working model (Bowlby, 1982), and the second, the parents’ appropriate use of language in relation to internal states and particularly affect. (They also note that use of joint planning between child and caregiver, negotiation, and anticipatory guidance, are essential for social cognitive information processing.) It is not, then, that the influences of these aspects of interaction have not been recognised. Particularly due to the tendency to rely on the SS assessment when examining the influence of early relationships, however, the focus of research has been on behavioural interaction at the expense of considering communicative components. It seems clear that this imbalance needs to be redressed, and parent-child communicative and attachment style, and relatedly children’s’ linguistic competence, need to be explored for their critical influence on emotional intelligence.

Attachment stability.

Despite concerns about the stability of infant-mother interaction patterns, the intercorrelations between SS behaviour at 12 months and ‘secure verses insecure’ categorisation 11 years later are impressive. This is especially the case as this age-group are about to embark on adolescence and the strive for autonomy and rejection of past attachment relationships as they once were, reforming the ‘goal corrected partnership’ (Bowlby, 1969). Indeed some of the interviews suggested that for some 11 year-olds, expressing a reliance on or interest in relationships with their parents

was not 'de rigeur'. Children sometimes displayed a genuinely close relationship with their mothers, confiding in her and enjoying their relationships, but did not mention turning to their mothers at times of distress. It seemed that dealing with upset by spending time alone or turning to friends was a more 'socially acceptable' response. It may also be that working mothers are not physically available to their children all the time, but do give optimal support when they are with the child. Often if prompted as to whether they would turn to someone at home, Mother's were then mentioned with confidence. The interview coding reflected the concern that children's reports about parental availability might not be reflective of the parent-child relationship at this age group (Grossmann & Grossmann, 1991). Scores for 'mother's availability' from the F&F interview were not correlated with SS with mother at 12 months or mothers AAI. The 'secure vs insecure' categorisation was associated with 'mothers availability', however, and this may account for some of the differences between security classifications at these time points.

In many cases, however, the discrepancies between classification at 12 months and 11 years represented a change from insecurity to security. It may be that these are cases that would indeed be deemed 'earned secure' if they later undertook the AAI. Attachment theory does of course allow for change in response to the changing relationship experiences of the individual. It is perhaps important to re-emphasise the difference between creating a measure that can predict accurately to the past, and thinking about an individual's current approach to important relationships. The findings suggest that in thinking about these relationships at the current time, emotional functioning, as identified in the F&F interview, gives a very good insight.

It is important to acknowledge that Mother's AAI before the child's birth, and not the SS at 12 months, is independently predictive of the child's 'coherence' of narrative in the F&F interview at 11 years. This finding is suggestive that ongoing maternal influences, rather than a critical period of early parent-child interaction, are influencing children's later functioning. The implication for attachment research is that maternal AAI responses are likely to be more stable over time than the SS, infant-mother interaction patterns. The importance of language in shaping attachment relationships is also emphasised by these findings.

The Self.

The ability to talk about and reflect on the self was earlier identified as an important component of emotional literacy. Work by Easterbrooks & Abeles (2000) with 8 year-olds was cited, in the context of which the Ease of Access to Self-Evaluations (EASE) scale was devised. In their study this was found to correlate with concurrent security assessments. In responses to the F&F interview, evidence of the ability to show understanding of positive and negative feelings towards the self, did correlate with 'overall coherence' and 'security verses insecurity'. In her work with the LPCP for her undergraduate dissertation, Sarah Potter (2001) found that there was no association between EASE scores and earlier attachment classifications. As a result, and because EASE score was found to correlate highly with 'overall coherence', it was not thought that this measure captured anything in addition to the F&F interview coding, and was not included in the analysis reported.

3.9 Shortcomings of the current study.

A significant limitation of the current study is that the child's attachment with the father has not been studied. This was justified in the current study, as this measure is being validated for use with the BabyTalk sample. The intervention was conducted with mothers and therefore no data is available on the child-father relationship. In the context of using this measure in wider attachment research, it would be interesting to explore the relationship between the F&F interview scores and father AAI and SS with father at 18 months. Preliminary investigations suggest that both of these are significantly associated with 'secure verses insecure' and 'overall coherence'. Further examination of this data might indicate the interaction of mother and fathers AAI with their child's later 'overall coherence' in relating to and discussing friends and family.

Another area of concern is raised by Johnson's (1997) work with 10 year olds which found a marked difference in outcome for boys and girls who were high in reflective self-other functioning. Girls with this quality were rated by their teacher as being more socially skilled than their peers. In contrast, boys who were rated high in reflective self-other functioning were seen as socially rejected and less socially

competent by their teachers than were boys rated lower on this variable. This has clear implications for the validity of the F&F interview with boys, and warrants further investigation.

In an ideal world, the validity of the F&F interview would be examined in relation to detailed assessments of the child's interactions at home and with peers, which demonstrate their capacities for perspective taking, empathy and empathic concern, and the influence of these on their interactions and view of themselves. Such an approach represents a rather insurmountable task. A more achievable validity investigation would be to examine how children's parents, peers and teacher would rate them on these capacities. It is not ideal, but made necessary by the available data, that all of the 11-year measures used in the current study were self-report. It would further be interesting to directly investigate whether children's narratives in relation to the attachment related topics raised by the F&F interview elicits levels of 'coherence' different from those that would emerge from children's discussion of less emotionally sensitive topics. This has been demonstrated to be the case in adult responses to the AAI (Waters *et al*,1996), and the fact that 'coherence' is unrelated to verbal IQ suggests that this might be the case here also.

CONCLUSIONS.

In conclusion, it would seem that the F&F interview and coding scheme is a useful and reliable measure for considering emotional intelligence and aspects of social competence in 11 year-olds. In doing so it fills something of a void. Despite the general acknowledgments of the importance of these capacities, no agreed measure of establishing individual differences in these competencies has emerged. In line with the hypothesis of this study, analysis of these data suggests that emotional intelligence and social competence are related to verbal competence and earlier attachment. Particularly strongly related to children's functioning in these domains are the mother's responses to the AAI. This suggests an important ongoing influence of the way a mother communicates her concerns and responses to emotional issues to her child. In evaluating attachment theory and research, Goldberg (2000) writes "Attachment theory and research advances, but does not exhaust, our understanding

of the place of parent-child relationships in development” (p.250). Consideration of communicative-style, in the context of understanding more of the role of the parent-child relationship in development, would seem to be justified by the current evidence.

Categorisation of the 11 year old child as ‘secure vs insecure’ about their important relationships, as they discuss aspects of themselves, their family and friends, seems able to predict earlier attachment status significantly more accurately than chance. This is especially the case if children are classified as ‘secure’ at 11 years. In the context of the BabyTalk study, then, the measure will offer useful insights into whether the intervention might have enhanced aspects of emotional literacy and social cognition. The current findings suggest that it will also be valid to consider the 11 year-old child’s security in relation to important relationships, and allow reflection back on the nature of earlier mother-child interactions.

CHAPTER 4

THE FRIENDS AND FAMILY INTERVIEW: INVESTIGATING DIFFERENCES IN EMOTIONAL INTELLIGENCE AND SOCIAL COMPETENCE IN THE BABYTALK CONTROL AND EXPERIMENTAL GROUPS.

4.1 Introduction

The intention of this chapter is to establish whether the BabyTalk intervention may be said to have influenced the children's capacities for emotional intelligence and social competence. In doing so it reports the findings of the application of the Friends and Family interview and coding scheme to the BabyTalk sample. Discussion will concern the implications of these findings both in terms of what it suggests about the efficacy of the BabyTalk intervention, and also how they further contribute to our understanding of the relationship between language development and attachment formation.

Chapter 1 was largely dedicated to justifying why we might anticipate enhanced emotional intelligence to be an additional outcome of the BabyTalk intervention even 8 years following programme delivery. This was done from a number of different perspectives, which will briefly be reviewed. Additionally in this chapter, theorising on caregiver influences on language and related emotional functioning will be explored. In the context of language intervention research, differential findings according to the nature of programme delivery also support the idea of the critical role that care-giver interaction has on both language and emotional intelligence outcome. These reasons which support the relevance of examining social and emotional abilities following the intervention will be addressed, following which the formulation of the F&F interview as a measure of emotional intelligence is also briefly revisited.

4.2: *Why emotional intelligence?*

The inspiration for the current study was largely the recognition that the BabyTalk language intervention has components in common with an attachment intervention. The programme encourages daily, uninterrupted, quality interaction between mother and child. During this time interaction is child-led and accepting, the child is encouraged to explore the world of sound, and the pair are encouraged to take mutual pleasure in their interaction. An older child or adolescent's emotional understanding and social cognition is considered a factor strongly associated with the nature or security of their early attachment relationships (e.g. Bohlin *et al*, 2000, Elicker *et al*, 1992, Steele *et al*, 2002). Consequently, a finding that children in the BabyTalk intervention have enhanced emotional understanding, would offer support for this view that one outcome of the intervention is to enhance the mother-infant attachment bond.

Prior research findings also justify considering social and emotional outcome. Emotional intelligence performance following language intervention has not commonly been explored. However, a small study which did explore this issue (Fowler *et al*, 1993) has reported enhanced social competence and understanding following an early language and enrichment intervention similar to BabyTalk. Other early intervention programmes (e.g. Zigler & Muenchow, 1992) have reported enhanced social adjustment following early intervention. Kaiser (1993) has noted that social-referencing in parent-child communication is essential for successful language development and also successful social functioning. In addition we know from extensive research that untreated individuals with language difficulties are likely to develop social and psychiatric difficulties as adults (e.g. Johnson *et al*, 1999, Baster and Scaruzzo, 1992).

Even in childhood there is a high concurrence of communication disorders and emotional behavioural disorders. As a consequence, researchers have become more inclined to acknowledge the intrinsically inter-related aspect of childhood developmental pathology. Justifying some of the hopes for the current study in advancing theoretical understanding of the relationship between language, attachment

and emotional understanding, it is recognised that impaired development, and the processes of its amelioration, provides good insight into understanding normal developmental processes. It is clear that developmental perspectives and outcome research which focus only on isolated domains of development without consideration of far-reaching inter-relationships are not being true to developmental realities (Sroufe and Rutter, 1984).

Work with at risk populations also links language and communication with social and emotional development. Cicchetti (1989) investigated language skills of maltreated children. At 31 months there were significant differences in language ability of maltreated children and non-maltreated control matched for low socioeconomic-status, in favour, of course, of the non-maltreated controls. At this time, Cicchetti noted that this was compelling evidence that "social and emotional factors play important roles in the development of language" (p.412). In the light of such findings, Prizant and Wetherby (1990) comment that it is likely that early language intervention with delayed children which incorporates their parents "may serve as a significant preventative measures against the development or exacerbation of emotional and behavioural problems" (p.3).

There is increasing recognition in language based research that language should be considered more broadly as 'social communication' (Kaiser, 1993). It makes intuitive sense that good language skills are a prerequisite for good social relationships, which are central to the development of emotional intelligence. In combination, this work is convincing that communication and language acquisition are socially embedded and anticipating gains in social and emotional understanding following the BabyTalk intervention seems justified.

4.3: Towards an integrated view of early language development and social and emotional development.

As a consequence of these acknowledgments, researchers have suggested that benefits in terms of understanding, intervention and treatment might result from forming an integrated view of early language and communication development and

socioemotional development (e.g. Prizant *et al*, 1990, Greenberg, 1991). Despite interest in this area, however, Howlin and Rutter's (1987) comment that "the nature of the relationship between language, cognitive, behavioural and emotional development is poorly understood" (p.290) remains valid today. In exploring social and emotional outcome following and early language intervention, the current project hopes to elaborate on current understanding about that relationship. One approach to doing so is to consider the role parental attachment plays in mediating both language and emotional development. In fact this view has been tentatively explored for some time. Such theorising will be briefly reviewed, along with the evidence supporting it with different age groups. Subsequently the important role of parents in eliciting successful outcome in language interventions which include positive emotional outcomes will be examined. Such work may be seen to offer support for the critical importance of the parent-child relationship, and viewing attachment as an influence on language and also emotional development.

4.4 The role of the care-giver in the development of language, communication and social and emotional development.

In 1975, Sameroff and Chandler proposed that developmental researchers should reject unidirectional models of causality, and instead recognise the transactional nature of development. In this construct, development is seen as a result of the dynamic interrelationships between child behaviour, caregiver responses and environmental variables that may influence either party. Goldberg's (1977) model of mutual efficacy in care-giver child interactions built on this belief, but even more closely parallels attachment theorising, by emphasising the importance of bi-directional, contingent social responsiveness of care-giver and child. In exploring this critical relationship, Sameroff (1989) gives the example of how low-birth weight children, might develop language delay and poor emotional intelligence. The anxiety of the parent may lead to poor interaction style (over or under-stimulation), or insecure attachment styles. This may cause or exacerbate temperamental difficulties in the child caused by biological factors. As a result an altered pattern of interaction interferes with normal language development and also the understanding of emotion which emerges in the context of normal parent-child interaction.

This development, of both language and emotional intelligence, is then seen to be influenced by a parent's ability to teach readable signs to the child, the child's ability to produce their own readable signs, a caregivers ability to respond appropriately to the child's signals, and the habituation of such patterns. In addition, biological and environmental factors affecting the caregiver and child will influence their availability and responsivity (Dunst *et al*, 1990). Framed in this way the transactional model can be seen as recognising the importance of what may be termed attachment responsivity, which can clearly relate to both language development and social awareness. As such it uses the parent-child relationship and the environment as a means of integrating aspects of communication and language development with socioemotional development, (Cicchetti, 1989).

Importantly such a perspective supports the idea that both parent and child behaviour influences the nature of interaction. It has been claimed that the interactive style of parents of poor language learners was caused by the characteristics of their children (e.g. Horsborough *et al*, 1985). Later studies, (e.g. Conti-Ramsden and Dykins, 1991) however have recognised that familial styles of interaction develop after mutual regulation by mother and child. This study examined within family consistencies and differences in mother's interactions with language impaired and normally functioning children. Although the study was small and exploratory, the concept that interaction is influenced by the nature of all participants accords with contemporary psychological thought (e.g. Hinde 1997). This leaves open the possibility that a language intervention such as BabyTalk would be capable of teaching carers to modify their interactive style independently of the child's behaviour.

This transactional model also recognises that the relationships between communication, language and social and emotional factors will be qualitatively different at different stages of development (Prizant, 1990).

In infancy, prior to 12 months, infants are striving to form physiological and emotional regulation. Gestures are most likely to relate to intentions as references to objects or events. The caregiver's response to these pre-intentional communicative behaviours is likely to be of great importance. In normal development the caregiver introduces intent to the infant in pre-verbal dialogues in which affective states are

shared (Dore, 1986). Tronick (1989) has noted how important children's affective expression is in regulating their caregiver's responses to them. That children are keenly aware of and able to interpret affective cues from others is made clear by the visual cliff experiments (e.g. Campos *et al*, 1983), where infants used the caregiver's facial expression in making a decision about whether to cross the apparent danger. Stern (1985) has noted that in early development, affect is the medium and the message of early communication. Thus in this early stage, parental responsiveness is clearly tightly bound with communicative efforts, emotional expression and the understanding of emotion. Communication is about the understanding of emotion for both caregiver and child. For those children not exposed to favourable circumstances where affect is shared, either because their caregivers were depressed (Tronick, 1989) or they were maltreated (Cicchetti, 1989) children are less expressive of emotion and less likely to react to it in others. The pattern between experience of emotion from caregivers, and its later recognition is clear. These findings also raise the idea that early experience of emotions is particularly tied to their later expression in terms of non-verbal communication. This might therefore be a fruitful area to look for later outcome following the increased levels of communication between mother and child occasioned by following the BabyTalk intervention.

As children grow a little and reach *toddler-hood*, a vocabulary begins to emerge. At the same time as the attachment relationship consolidates, the child develops a sense of self and the beginnings of the capacity to regulate emotions and responses in themselves and others. These capacities are mapped onto their affective experience and remain intrinsically bound together.

In *early childhood*, as language ability progresses further, language may still be seen to be intrinsically bound up with the developing understanding of emotion. Lewis (1977) noted that "In providing the child with a means to put his or her feelings into words, language enhances the child's mastery over feelings and allows greater energy for cognitive growth" (p.647). It is clear that the very early experience with the caregiver will mediate that child's experience with and response to emotional experiences. This will continue to influence the emotional response of those around them, as well as the child's confidence to explore emotions in words and the nature of the verbal responses that others give them. Cicchetti (1987) reported that maltreated

children used fewer internal state words and attributed internal states to fewer social agents than controls matched for low socioeconomic status. This example again makes clear how disturbance in the interaction between caregiver and child has implications for both language and social and emotional development. It is also clear how these difficulties could be self-perpetuating following early difficulties, and lead to long-term difficulties in social and emotional understanding and functioning.

In summary, it is possible to clearly envisage how care-giver interactive style can lead to lasting effects in both children's abilities to communicate and also their emotional functioning and relatedly their interpretation of emotion in others, or 'emotional intelligence'. The language intervention literature offers a limited number of examples, but promising evidence, that improving children's language functioning can also improve their social functioning and emotional understanding. Optimal language development seems to occur in a relaxed home environment and in the context of quality mother-child interactions. If the view is accepted that the care-givers interactive style is critical in this system of influence, then it would be anticipated that the enhancement of language by intervention is more likely to generalise to social and emotional functioning if the parent delivers the intervention rather than a clinician. Recently a number of studies have attempted to explore just this point.

4.5 Successful intervention - parent or professional?

Initial studies were rather suggestive of the reverse position, that parents in a home setting were not as effective at language intervention as clinic based staff. Huntley, Hotl, Butterfill *et al* (1988) published such a finding, although no consideration was taken of the fact that the time offered to those in the clinic was significantly longer than in the home. Also in this study children were not randomly assigned to groups.

More recent work has been more positive about the effects of 'empowering parents' in the process of their children's intervention. Importantly, Tannock and Girolametto (1991) have reported that parent intervention allows a change in what may have been maladaptive interactive styles between mother and child. Following training in several studies reviewed by these authors, parents were able to be more in tune with

the abilities and communicative attempts of their children, as well as less controlling. In the context of the current study, however, interest lies in whether outcome for parent or clinician related intervention leads to different outcome, particularly in social functioning. Although such comparisons have seldom been undertaken, a study by Eiserman, Weber and McCoun (1992) explored just this. Not only were home-parent training groups as effective as clinic groups in enhancing speech and language functioning, but children in the home-parent training group performed significantly better on measures of personal and social skills two years post intervention. Children were allocated to either one hour a week of clinic time, or parents were trained in the context of 40 minute sessions once a month, encouraging them to undertake similar drills to those administered by a clinician, on a daily basis. The authors felt that this was good evidence of the generalisability of the home intervention. It also allayed any fears that a parent delivered intervention might limit the child's social development by restricting intervention to a familiar setting, or that this might damage child-rearing practices well suited to the social context of children's lives (Raven, 1980). Following an attachment perspective, they noted that the parents increased sensitivity to their children allowed them to provide "optimal linguistic cues to elicit and nurture their child's communicative efforts" (Eiserman *et al*, 1992, p. 101).

The Eiserman study was of course examining differences between parent and clinician intervention in terms of short-term follow-up. A report by Fowler (1997) reviewed studies exploring longer-term follow-up, more pertinent to the current study which is of course considering outcome in 11 year olds. Again the conclusion of these studies was that during later development, the developmental advantages of the children in the home intervention studies gradually widened relative to the development of the other children, who this time were given a very similar intervention in a child-care setting. In adolescence, the children given a home-based care-giver intervention were not only more cognitively advanced following Fowler's language intervention (see Chapter 2 for further details) but were also considered more socially competent by parents and peers. Interestingly, children from higher socio-economic status and educational backgrounds improved more than children from lower socio-economic and educational backgrounds. It is something of a shame that the measures of social and emotional functioning in Fowler's studies are rather vague, relying on self or other-report, and it is hoped that later follow-ups of his

interesting work will attempt to employ more standardised or valid tests of these skills.

Despite the small number of studies examining the efficacy of parent administered intervention versus clinic-based intervention, and their limitations, it seems that there is a clear case that parental intervention offers something rather unique, and which clinician approaches can not. Parental intervention seems more likely to induce long-term results, and particularly to generalise enhanced functioning into social skills and children's enhanced emotional understanding. Authors of studies with such findings have speculated that such changes are a consequence of an alteration in ongoing parent-child interactive style, and particularly sensitivity to their children's verbal and non-verbal communications. It remains to be seen whether such effects can be detected in 11 year olds following the BabyTalk intervention.

4.6: Why the Friends and Family interview?

In the current study the Friends and Family interview has been used in an attempt to detect such differences in social skills and emotional understanding. There has been increasing recognition of the importance of emotional intelligence in recent years (Goleman, 1995), however there is as yet no agreed measure of this construct reported in the literature. Indeed, it has been noted that this important construct as yet has "fuzzy boundaries and vaguely specified components" (Adolphs, 2001, p.236). It could be argued that the lack of clarity in common terminology has hindered a more integrated view of language and social and emotional development. Hence the Friends and Family Interview protocol and coding system was devised to examine these capacities in the context of an attachment focused interview. Full details of the construction of the interview are found in Chapter 3, and the protocol and coding sheet are reproduced in Appendices I and II. The interview format was designed to explore the children's interpersonal and intrapersonal abilities and assess their communication skills using challenging and novel questions about themselves and their important relationships. The interview was devised from literature on emotional intelligence and also an attachment framework. As such, as well as assessing

emotional intelligence the interview was a means of examining attachment related relationship constructs.

Chapter 3 reports on how the measure was validated using the LPCP sample. All of the metacognitive and perspective taking sub-scales correlated highly with either both or one of two sub-scales: 'overall coherence' of the children's narrative, and an overview classification of the child as 'secure versus insecure' with regard to attachment. The former measure was particularly associated with the child's mother's AAI undertaken before their birth, while the 'secure versus insecure' classification was more strongly associated with the earlier mother-infant SS procedure. Also associated with SS with mother at 12 months were children's active versus passive responses to distress.

The Friends and Family Interview Sub-scales

The 'overall coherence' of the child's narrative sub-scale was included because the construct has been successfully incorporated into work on adult attachment where it is associated with earlier attachment history. It also of course is very much a language orientated construct, and high scores in the context of the F&F interview require the subject to display an integrated understanding of the self and other's feelings and motivations. The interview approach is of course very suitable for classifying coherence of narrative. The stronger association in the LPCP sample of 'overall coherence' with mother's AAI than the SS assessment, indicates an ongoing influence on the way that a mother communicates her concerns and responses to emotional issues to her child.

The children's 'secure versus insecure' classification was more closely associated with the behavioural SS assessment between mother and child at 12 months. This measure was also strongly related to some of the capacities associated with emotional intelligence (See Chapter 3, Table 3.8). As such, it will offer useful insights both into whether the intervention might have enhanced social cognition, but also allow speculation about the nature and importance of the children's care-giving experiences.

Also considered were the children's responses to a specific question concerning how they respond when they are distressed. Since the attachment system may be considered a strategy for emotion regulation (Sroufe and Waters, 1977), the emphasis in categorising responses to the question "When you are upset, what do you do?" centered on whether the 11 year olds could find an adaptive approach. Responses were divided into those which were 'active or adaptive', involving either turning to parents, friends or another trusted advisor, but also constructive distraction techniques such as doing a favoured activity. The alternative categorisation was 'passive or unconstructive response to distress'. The young-people in this group tended to mention going to their room and doing nothing, simply diminished the importance of being upset, or displaced their distress, for example by being aggressive with siblings. Responses to this question were considered an excellent window onto children's emotional competence and attachment strategies. Although children answered this question in the context of the F&F interview, it could be argued that this question relates to children's non-verbal behaviour rather than verbal abilities.

METHOD.

The sample.

Chapter 1 discusses at length the selection and characteristics of the Manchester 'BabyTalk' sample. The children were selected using a reliable and valid test of language delay in the context of routine health screening at 9 months of age. Children were divided into control or experimental groups matched by severity and type of delay, general development and social and economic background. The content of the BabyTalk programme is covered elsewhere. The BabyTalk experimental programme infants and mothers received four visits from Speech and Language therapists guiding them in the principles of the intervention. The nature and emphasis of that intervention was slightly different depending on whether the child had expressive and receptive language skills with listening difficulties (Group 1) or expressive and receptive language difficulties without listening difficulties (Group 2). Parents were not told that their children had displayed any signs of language delay or disability.

At the 11 year follow-up, 45 children from the original study were traced. From this group, 21 were experimental group children, and 24 were controls. The current investigation involved 22 boys and 23 girls, mean age 10 years, 10 months (s.d. = 4.28 months) range = 9 years, 11 months - 11 years, 7 months. Males and females were evenly spread between the control and experimental group, the former having 12 males and 12 females, and the latter, 10 males and 11 females. Where the earlier data was available, the control and experimental groups continued to be fairly evenly matched for severity of delay as it was assessed at 9 months. The experimental group contained 10 group one and 4 group two children. The control group contained 14 group one and 3 group two children.

As was revealed in Chapter 2, the current sample is not representative of the earlier follow-up samples. Although at the 3 year and 7 year follow ups the experimental groups were found to display significantly enhanced language and cognitive functioning, the data from the current sample for those time periods do not show any significant differences.

Measures.

The F&F interview.

The F&F interview is used here as an effective measure of emotional literacy, accessing aspects of coherence of language skills, empathy and social understanding, and attachment strategies. The rationale for the structure and delivery of the Friends and Family Interview and its coding scheme has been subject to extensive discussion. The interview protocol is reproduced in appendix I. The coding scheme appears in appendix II. The interview was administered in school based assessments and recorded on video. Interviews were undertaken either by the author or her assistant Sarah Potter, BSc. Training and observation / conferencing ensured that interviewing style was similar, however some differences in levels of prompting and approach inevitably occurred. Following findings of its enhanced effectiveness in conjunction with the London Parent Child Project (LPCP) sample, coding was undertaken directly from this video footage rather than from transcriptions. Sub-scales were rated on a

four point scale for their presentation in the interview, where 0 = no evidence, 1 = slight or mild evidence, 2 = moderate evidence and 3 = marked evidence. In addition classification of secure versus insecure with regard to the relationships discussed was also made, and children were identified as acting 'actively' or 'passively' in response to distress.

Coding was undertaken blind by the author. Inter-rater reliability was established with Dr S.J. Opie, a researcher in educational psychology, using Cronbach's Alpha (median = .87, min = .71, max = 1.00).

The descriptive results for the full ratings of the measure are presented overleaf:

Table 4.1: Descriptives of the F&F interview used in conjunction with the Manchester BabyTalk sample (n = 45)

	Mean	S.D.	Min	Max	Skew.	Kurtosis
Total coherence	1.92	0.64	.00	4.00	0.030	-1.243
Can assume perspective of others	1.67	1.65	0.33	2.83	-.236	-.753
Can assume perspective mother	1.86	0.64	0.50	3.00	-.430	-.596
Can acknowledge diverse feelings towards self and others	1.53	1.03	.00	3.00	-.205	-.140
Mother's availability	1.75	0.91	.00	3.00	-.234	-.974
Father's availability	1.23	0.76	.00	2.5	-.220	-1.08
Social competence	1.73	0.63	.00	3.00	-.608	.793
School competence	1.91	0.66	0.50	3.00	-.157	.002
Contact with friend	2.48	0.87	.00	3.00	-1.41	.690
Quality of best friendship	1.99	0.65	1.00	3.00	-.086	-1.04
Avoidance	0.86	0.88	.00	3.00	.669	-.744
Passivity	0.20	0.39	.00	1.00	1.548	.547
Shame re mother	.000	.00				
Shame re father	0.10	0.47	.00	2.5	4.614	20.523
Differentiation of parental models	1.71	0.93	.00	3.00	-.156	-.904
Secure versus insecure	1.46	0.50	1.00	2.00	.138	-1.958
Secure with non parental figure	1.71	0.93	.00	3.00	-.156	-.904
Reaction to distress	0.53	0.50	.00	3.00	-.138	-1.845

Empathy

Other measures of social functioning included empathy scales. Bryant's index of empathy (Bryant, 1982) and a combination of empathetic concern and perspective-

taking factors from the Davis Interpersonal Reactivity Index (IRI) (Davis, 1980) are used. Details of the validity and reliability of these measures appear in Chapter 3.

Social functioning.

The Strengths and Difficulties questionnaire (SDQ) devised by Goodman (1997) is considered to give a balanced overview of children and young-peoples' (4 –16 years) behaviours, emotions and relationships. The sub-scales are prosocial behaviour, hyperactivity, emotional symptoms, conduct problems and peer problems (see Goodman, 1997 for further details).

RESULTS.

Are there differences between the control and experimental BabyTalk children on the measures identified as associated with earlier attachment with the LPCP sample?

The analysis of the responses to the Friends and Family Interview from LPCP sample had clearly identified three major sub-scales to be examined in connection with the control and experimental groups of the BabyTalk sample. The categorisation of the children as secure versus insecure as inferred from their responses to the interview, the 'overall coherence' of their narrative, and the way that they respond to distress were all compared. These aspects of the Friends and Family Interview, identified as being associated with earlier attachment with the LPCP data set (Chapter 3), will be analysed first, since this is where we might best expect significant findings to emerge. Subsequently all of the F&F sub-scales are explored. Finally responses to the same questionnaires completed by the LPCP assessing empathetic and prosocial skills were examined.

Table 4.2: Crosstabulations for treatment status, and secure versus insecure as classified from the F&F interview at 11 years (using Fisher's exact p-value).

		Security assessed from F&F interview at 11 years		
		Secure	Insecure	Total
Experimental group	Count	14	7	21
	Expected Count	(11.2)	(9.8)	(21)
Control Group	Count	10	14	24
	Expected Count	(12.8)	(11.2)	(24)
Total	Count	24	21	45
	Expected Count	(24)	(21)	(45)
Chi-square = (1) = 2.83, p= .1363				

Table 4.2 reveals that although the security of the control and experimental group just misses significance, that there is a trend in the hypothesised direction. 67% of the experimental group were classified as secure, while only 42 % of the control group were. Despite this difference not meeting statistical significance with a sample of only 45, in terms of its theoretical significance this difference seems notable.

Table 4.3: Examining differences in the means of the control and experimental BabyTalk groups in their coherence of narrative and reaction when distressed.

	Experimental Mean (s.d.) n = 21	Control Mean (s.d.) n = 24	t-value	Sig. (1- tailed)
Coherence	1.83 (.62)	2.00 (.65)	-.844	.202
Reaction to distress	.714 (.46)	.377 (.49)	2.376	.001

Table 4.3 displays the results of a t-test to explore whether there was a significant difference between the experimental and control groups associated with core constructs from the F&F interview. Chapter 3 reports on analysis of the F&F interview with the LPCP, and several constructs were particularly associated with earlier attachment history, coherence of their narrative, and their responses to what they do when they are distressed. If attention is given to these constructs, it is clear that there is a significant difference ($p = 0.01$) in the way that children who were involved the language intervention are able to respond to distress. No significant difference is evident, however, in the coherence of the children's narrative. Thus we see that the BabyTalk language intervention with the 11 year follow-up sample is apparently influential on aspects of emotional functioning not directly related to language functioning.

The previous analysis involved exploration of aspects of the Friends and Family Interview identified as being associated with earlier attachment in the LPCP data set (Chapter 3). Table 4.4 (overleaf) explores any relationships between participation in the BabyTalk interventions and any differences in emotional intelligence as assessed by the constructs identified in the Friends and Family Interview.

Table 4.4: Examining differences in the means of the control and experimental BabyTalk groups in their other responses to the F&F interview.

	Experimental Mean (s.d.) n = 21	Control Mean (s.d.) n = 24	t-value	Sig. (1- tailed)
Can take perspective of others	1.56 (.76)	1.78 (.52)	-.1039	.154
Can take perspective of mother	1.81 (.76)	1.91 (.51)	-.521	.303
Can acknowledge diverse feelings with self and others	1.78 (1.96)	1.60 (1.03)	.346	.366
Mother's availability	1.67 (.89)	1.83 (.93)	-.579	.283
Father's availability	1.21 (.69)	1.25 (.83)	-.164	.436
Social competence	1.64 (.62)	1.82 (.64)	-.904	.185
School competence	1.85 (.49)	1.97 (.80)	-.530	.300
Contact with friend	2.55 (.81)	2.42 (.93)	.502	.309
Friendship quality	1.92 (.64)	2.04 (.67)	-.575	.284
Avoidance	0.67 (.92)	1.06 (.81)	1.559	.063
Passivity	0.26 (.44)	0.15 (.35)	.995	.163
Shame re mother	0.00	0.00		
Shame re father	.214 (.681)	.000	1.441	..083
Parental models differentiated	1.66 (.94)	1.76 (.93)	-.352	.364

Quick inspection of Table 4.3 makes it clear that none of these other sub-scales from the F&F interview reach significance. Indeed, investigation of the mean scores show that in some cases, for example social competence and quality of best friendship, the control means are higher than the experimental group means. Given the large number of t-tests undertaken, one significant result would be anticipated by chance, and so we should be wary of drawing too much from two variables which if we were to have investigated them with one-tailed analysis narrowly miss significance. Avoidance is one of these, $p = .063$ (1 tailed). It does however make sense that such an association would arise, given that there is strong if insignificant relationship between treatment status and security, this association may be due to the fact that recognising avoidant communicative style would lead to a classification of insecurity.

Shame re father also approaches significance, $p = .08$ (1 tailed), an intriguing finding. Paternal relationships are not widely explored in the current study as the intervention was undertaken with mothers and there is little background data on fathers. Indeed, many children are from single parent families. Consequently consideration of this association remains rather speculative. However, perhaps acknowledgment of father's faults reflects greater openness to acknowledging faults in loved ones, or perhaps the closer bond between mother and child has meant that children know more about Mother's poor opinions of their estranged partners. There is no association between shame re mother and treatment status because no children acknowledge feelings of shame about their mothers.

In general, however, there is little evidence in Table 4.4 to suggest that the experimental group's social or emotional intelligence has been enhanced by the intervention. The potential link between empathising and prosocial skills and treatment status is additionally explored using valid and reliable measures of emotional and behavioural functioning, and is reported in table 4.5 and 4.6 below.

Table 4.5: Examining differences in the means of the control and experimental BabyTalk groups in empathy and prosocial skills

	Experimental Mean (s.d.) n = 21	Control Mean (s.d.) n = 24	t-value	Sig. (1- tailed)
Empathy (Bryant and Davis)	43.74 (8.22)	40.94 (8.81)	1.08	.143
SDQ Prosocial	8.43 (1.66)	7.46 (2.15)	1.67	.050
SDQ Hyperactive	4.24 (2.49)	4.63 (1.97)	-.581	.282
SDQ Conduct	2.90 (2.23)	2.79 (1.79)	.188	.426
SDQ Total	13.75 (6.14)	12.92 (4.05)	.539	.296
Peer relations	2.40 (1.50)	1.92 (1.59)	1.031	.154
Emotional symptoms	4.04 (2.50)	3.58 (2.13)	.674	.252

In the previous exploration with these data from the LPCP, a sub-scale from the SDQ (Goodman, 1997) Prosocial behaviour was associated with catagorisation as secure

versus insecure in the F&F interview (See Table 3.8, Chapter 3). Perhaps it is not surprising that as table 4.5 demonstrates, this item displays a significant difference between the experimental and control groups on the measure ($p=.050$). A measure of empathy which was also undertaken with the BabyTalk sample (Bryant, 1982) missed significant but indicated a trend towards improved empathetic skills in those children who received the BabyTalk intervention ($p=.143$).

While they did not reach significance, it was none the less pleasing to see that mean scores for empathy, peer relations and hyperactivity all indicated more successful functioning for the BabyTalk treatment children.

Do Friends and Family interview responses, empathy and social skills scores vary according to specific elements of intervention given to group 1 children?

In Chapter 2 it emerged that within the BabyTalk intervention group, IQ performance was most greatly enhanced for those children who were in group 1 (referring to children with expressive and receptive language delay and additional listening difficulties) versus those in group 2 (expressive and receptive language delay only). This was counter-intuitive, given that group 1 status referred to having more severe difficulties. However, it was found that children in group 1 had a modified version of the BabyTalk intervention with more emphasis on high quality one-to-one parent-child interaction. Table 4.6 explores whether this difference was also found with in the F&F sub-scales and table 4.7 (overleaf) in the measures of empathy and social functioning.

Table 4.6: Examining differences in the means of the group 1 versus group 2 BabyTalk treatment groups in their responses to the F&F interview. n = 14 [Please refer to Appendix X]

	Group 1 Mean (s.d.) n = 10	Group 2 Mean (s.d.) n = 4	t-value	Sig. (1- tailed)
Coherence	1.93 (.683)	2.18 (.287)	-.680	.255
Can take perspective of others	2.08 (.718)	1.44 (.616)	-1.531	.079
Can take perspective of mother	2.38 (.791)	1.75 (.250)	2.236	.023
Can acknowledge diverse feelings with self and others	2.15 (2.88)	1.96 (.60)	.126	.441
Mother's availability	1.45 (1.14)	2.25 (.50)	-.326	.104
Father's availability	.875 (.791)	1.625 (.479)	-1.721	.058
Social competence	1.55 (.762)	1.75 (.289)	-.500	.313
School competence	1.875 (.354)	2.00 (0.00)	-1.000	.176
Contact with friend	2.250 (1.03)	3.00 (0.00)	-2.290	.024
Friendship quality	2.357 (.479)	1.650 (.669)	2.270	.018
Avoidance	.750 (.645)	1.050 (.645)	-.519	.305
Passivity	.100 (.316)	.500 (.577)	-.309	.132
Shame re mother	.000 (.000)	.000 (.000)		
Shame re father	.200 (.632)	.625 (1.250)	.633	.131
Parental models differentiated	1.563 (1.05)	2.250 (.645)	-1.185	.142
Security	1.00 (0.00)	1.40 (.516)	-2.449	.018
Reaction when distressed	2.022 (1.03)	1.750 (.957)	.750	.4234

These analysis have been undertaken on a very small sample size (n = 14) and as such the findings should be treated with caution. Given the small sample size, however, the number of sub-scales reaching or approaching significance is rather striking. The additional aspect of the intervention for children in this group, focusing on mother's interactive style, is reflected in the child's capacity to take the perspective of their mother ($t = 2.24$, $p < .05$). Interestingly, there are associations between group 1 programme participation and children's friendships. The association of amount of contact is significant but in favour of the group 2 children. The more important

measure of friendship quality shows a higher mean for the group 1 children, which is significant at the $p < .05$ level ($t = 2.70$, $p = 0.018$). Importantly, there is a difference between the groups in terms of the security classification. All of the group 1 children are classified as '1' or secure, while some of the group 2 children are insecure. This difference reaches significance at the $p < .05$ level, $t = 2.44$, $p = .018$.

Table 4.7 explores whether a difference between the group 1 and group 2 BabyTalk intervention groups is also evident in measures of social and emotional functioning.

Table 4.7: Examining differences in the means of the group 1 versus group 2 BabyTalk treatment group in social and emotional functioning measures. ($n = 14$)

[Please refer to Appendix X]

	Group 1 Mean (s.d.) $n = 10$	Group 2 Mean (s.d.) $n = 4$	t-value	Sig. (1- tailed)
Empathy (Bryant and Davis)	45.20 (6.37)	40.50 (8.47)	.994	.340
SDQ Prosocial	9.00 (1.41)	7.80 (2.04)	1.064	.308
SDQ Hyperactive	5.75 (2.99)	3.90 (2.66)	1.123	.280
SDQ Conduct	3.75 (1.26)	2.90 (2.28)	.693	.251
SDQ Total	18.25 (1.41)	11.40 (2.04)	2.105	.057
Peer relations	2.50 (2.38)	2.20 (1.48)	.290	.388
Emotional symptoms	6.25 (1.71)	2.40 (1.51)	4.175	.001

Differences in means of the two groups outcome for the social measures were mostly not significant, but means indicated higher social functioning for the group 1 children. Emotional symptoms were strongly differentiated by group status at $p = .001$ level ($p = 4.18$). The total Strengths and Difficulties score narrowly missed significance at $p < .05$ level ($t = 2.11$, $p = .057$). Thus, a number of measures of friendship, security and social functioning indicate that outcome differs with the additional components of the BabyTalk intervention given to group 1 children.

DISCUSSION

4.7 BabyTalk and 11 year findings with the F&F interview.

BabyTalk and 'security'.

One of the premises under which the current investigation was undertaken was a belief that the form and nature of the BabyTalk intervention was such that it was likely to influence mother-child attachment. Ten years following the commencement of the intervention it was obviously not going to be possible to test this out directly using accepted paradigms such as the Strange Situation procedure, and the children were not thought old enough to do the Adult Attachment Interview. In part, then, it was thought that one way of hypothesising about this early influence would be to examine aspects of the children's functioning which with this age group had been associated in the relevant literature with early attachment. As a result, aspects of empathising capacities, taking other's viewpoints and discourse skills were assessed. These findings will be explored at length. Also, however, an attempt was made via an interview that asked children to speak about the emotive issues of themselves and their important relationships, to make an assessment of the children's overall major attachment classification.

Following a thorough assessment of the Friends and Family Interview, devised for this purpose, children were classified as being either secure-autonomous or insecure in relation to attachment. The coding scheme for the interview is reproduced in Appendix II. Classification was made after completing all the other scales. Children who seemed able to discuss and acknowledge feelings about important relationships, and were able to openly discuss who they could turn to with confidence were classified secure. Those who were notably reserved or inappropriately flippant about relationships and the emotional support offered to them were considered insecure in relation to attachment. While perhaps a rather subjective measure, good inter-rater reliability with those experienced with children and not necessarily attachment literature was observed. In application with a group of 11 year olds for whom earlier SS attachment classifications were available, security classification on the basis of the

Friends and Family Interview was found to be significantly associated with SS classification at 12 months.

When the control and experimental BabyTalk group were compared for security classification, an association was found between participation and increased likelihood of security. In fact 67% of the experimental group was found to be secure, while only 41% of the control group children were similarly classified. The small sample size meant that this apparently strong effect did not in fact reach significance in Chi-square analysis. This is perhaps a classic example of the difference between theoretical and statistical significance. While there may not be a statistically significant difference here, a meaningful difference exists between 67% or 41% of children being securely attached. Arguably, this is a difference large enough that a widespread implementation of the intervention should be encouraged. Bain and Dollaghan (1991) have commented on the need to distinguish the difference between statistical and clinically valid change in research and studies of speech and language, where sample sizes are typically small.

There is nothing novel about acknowledging that changing the way a care-giver responds to their child's verbal and emotional advances is likely to have long lasting effects on a child's attachment security and associated capacities. Such evidence emerges from previous attachment intervention studies (see Chapter 1) and the discussion at the beginning of the chapter. What is remarkable, however, is that a language intervention such as the BabyTalk intervention, where parents were instructed how to behave with their children in just three visits, has made such a meaningful difference to children's expressed security. Although the evidence that the children's attachment security was altered by the intervention is circumstantial, the evidence is building up to support such a position.

Reaction when distressed.

It was children's responses to the question of what they do when they are distressed which most clearly differentiated those children who had participated in the BabyTalk programme from those who had not. The BabyTalk experimental group were significantly more likely to take an active response to distress, either turning to

someone or distracting themselves with a favoured activity or esteem-boosting cognition. The control children, however, were more likely to engage in 'passive' behaviours including going to their room, tantrums or aggression. This is clearly likely to have implications for the children's mental and emotional well-being, and potentially also the quality of their relationships. The same distinction between responses separated children in the LPCP who had earlier been classified as secure and insecure in the SS at 12 months. A clear case can be made for considering this a measure of behavioural adaptive tendencies rather than a 'verbal aspect' of emotional literacy. The reason for emphasizing this distinction will become clear and be developed in Chapter 5.

BabyTalk and other aspects of the Friends and Family interview.

Other sub-scale scores of the F&F interview did not fair so well in differentiating the experimental and control groups. Predicted differences in children's abilities to speak well and coherently about their relationships, to take other's perspectives, their peer and friendship relationships and the nature of their relationships with their parents did not emerge.

Language skills and views expressed which in the AAI are associated with secure classification, and empathising abilities thought to relate to attachment style, did not differentiate the control and experimental group children. How can we explain these weaker than anticipated or indeed unrelated associations? There is only so much that can be blamed on the small sample size employed by the current study. While this can be considered responsible for important associations not meeting statistical significance, it is unlikely to explain those times when associations do not emerge at all.

4.8 Considering why anticipated differences between control and experimental BabyTalk groups did not emerge in the Friends and Family interview.

This section of the discussion considers why the anticipated improvements in emotional literacy as assessed by the F&F interview were not evident for the

experimental BabyTalk group. The representativeness of the current sample, the measures employed, the social circumstances of the children involved and the possibility of the current study's premise of outcome differences in social and emotional literacy being false, are all explored. A number of factors, including sampling anomalies and the social environment of the participants would seem to be preventing genuine differences in the groups from emerging as they might. Despite findings not being as convincing as might be hoped, evidence is accumulating that a difference in behavioural and verbal outcome needs to be incorporated into the theoretical understanding of the influence of the BabyTalk programme and its relationship to attachment processes.

- The sample is not representative

In Chapter 2 the disappointing finding emerged that the current sample is not representative of the earlier follow-up groups at 3 and 7 years in terms of positive verbal and IQ outcome. At the 7 year follow-up 62 of the original BabyTalk study children were traced and significant differences of over one standard deviation existed between the control and experimental group children in tests of IQ and language and reading (see Chapter 2 for further details). Unfortunately, when the sub-set of children who are involved in the current study are selected and their 7 year data explored, no differences between the control and experimental groups on measures of IQ, language or reading remain evident. It would seem that, purely by unfortunate chance the current sample ($n = 45$) contains those children who least benefited from the intervention, and the most naturally proficient control group children. Perhaps then the current sample is of children who have not benefited from participation in the BabyTalk study and therefore the Friends and Family Interview data reflects that. On a more positive note, the significant differences that do emerge or approach significance are made all the more remarkable given that the children have not shown a language enhancement following the intervention. Further if differences emerge between the groups, and changes are not evident in language ability, the idea that language ability is the pathway to other changes is ruled out, and alternative explanations, such as the mode of parent-child interaction, can more fruitfully be explored.

- Measures are insensitive

Alternatively we could consider that existing differences in children's capacities for social and emotional intelligence were not detected because the measures employed were not sensitive enough. However, in Chapter 3 we saw that the measures were at least detecting differences between children from the LPCP who were secure or insecure. Further, there were associations between the Friends and Family Interview codes and other well established measures of social and emotional functioning. Indeed, just as the average Friends and Family interview scores for the control and experimental group were mostly not significantly different, so these measures of empathy and social strengths and difficulties were not differentiated. Under such evidence it would be a poor workman who would blame his tools.

- Social circumstances.

Perhaps then it is the poor subsequent social environment of these children which is accountable for the anticipated improvements not emerging. Perhaps skills that would have developed and flourished in more optimal circumstances such as those experienced by the middle-class LPCP sample, have faded in the less propitious, low-income environments that the BabyTalk children have experienced. This is, of course, a much-cited reason for the 'failure' of the Head Start programmes in the USA. It certainly makes sense when exploring for example an early intervention to enhance children's mathematics skills, that initial gains will fade when children return to normal educational environments and are simply not taught more advanced mathematics. It remains in question whether we could say the same of social intelligence and the experiences available for its development. However, if we subscribe to the inter-dependency of social, cognitive and linguistic capacities, the implications of the quality of the learning environment are effectively limitless.

The failure of the BabyTalk children to maintain initial gains could on the one hand be explained by their parent's failure to generalise their more optimal interactive style to suit the needs of their children as they get older. Early work on the Head Start initiative in America supported such a position in claiming that schooling made little impact on pupils due to the over-riding impact of the home social circumstances in determining educational outcomes.

Blame may not rest with the home environment, however. More recent studies, and re-evaluation of the old evidence has led to an acknowledgement of importance of the school environment on later attainment. It is recognised that in many cases, opportunities for enhanced development are simply not available in the schooling environment of deprived socio-economic areas. Nisbet and Watt (1994) have undertaken detailed exploration of early intervention initiatives and outcome associated with poverty-associated educational disadvantage in Scotland. In this context they write that "the problem of educational disadvantage linked to poverty remains stubbornly resistant" (Nisbet and Watt, 1994, p5). In an important study, Patterson (1991) has identified the critical influence of the schooling environment on children's learning. Socio-economic status was found to be an important correlate of attainment over and above ability, and significantly, the socio-economic environment of the school was influential over and above any family effect.

Typically, research has emphasised the importance of enhancing both the schooling environment and the home environment for the most lasting, generalisable and impressive enhancements following intervention. Slavin, Karweit and Wasik (1992) in summarising their federally funded major review of early intervention projects in the USA put emphasis on the success or failure of the later school context as paramount. They stressed, however, that successful intervention required a number of elements, including not only school and curriculum quality, but positive relations with parents and peers, and family support programmes. The evidence as a whole concludes that effectiveness in general resides in mixed and comprehensive strategies involving whole communities. Such findings meet with common sense, as well as the well established recognition that the developing child is affected by the interacting processes of all manner of different social and biological influences.

Research in the context of the Head Start interventions has also highlighted the fact that positive outcome is not always immediately apparent, and that latent effects, undetectable at some time periods, may emerge later in life. In a very extensive review of early intervention initiatives, Berreuta-Clement, Schweinhart, Epstein *et al* (1984) found that while initial effects of the intervention on academic functioning diminished in the years following intervention, that success in adult life re-asserted itself in changes such as lower delinquency, single parenthood and unemployment.

This is not only evidence that failure to find outcome change in one age-group precludes the idea that lasting change has resulting following an early intervention. It further suggests that intervention designed to influence language and cognitive ability has implications for social functioning.

- Measuring Social intelligence in this way may not be appropriate with children of this age in the social circumstances in which they find themselves.

Recently it has been questioned whether being acutely emotionally aware is genuinely adaptive for children during at all ages. Gottman et al (1997), following their extensive research into peer relations, have noted how extensive changes in the way children discuss emotions become apparent as children become aware of peer norms for social acceptance and avoiding embarrassment and teasing. They note that one of the major changes in early childhood is the recognition that it is often adaptive to be 'cool' and emotionally unflappable in socially salient situations. They write:

"Thus, the basic elements and skills a child learns through emotion coaching (labeling, expressing one's feelings, and talking about one's feelings) become liabilities in the social world in middle childhood" (Gottman *et al*, 1997, p.41).

In the LPCP sample there was an association between earlier security and some aspects of emotional intelligence in the sense of the ability to discuss emotions. Even in this sample, however, associations did not emerge as might be expected with, for example, the ability to take another's point of view and the ability to express positive and negative feelings towards important others. While the LPCP sample consists of middle class children, many in private schooling, the BabyTalk sample is a low socio-economic group. It can be argued that children have to be 'tougher' emotionally to survive in the social circumstances they find themselves in, and not express all their feelings to avoid ridicule and marginalisation. Perhaps for these youngsters it is in fact an adaptive strategy not to be too open in expressing or acknowledging emotion.

-Behavioural and verbal outcome are different.

We could hypothesize that while the interactive style encouraged by the intervention influenced the attachment bond and in turn certain aspects of the children's later social and emotional behaviour (such as their response to distress and 'current' security),

without this influencing more verbal aspects of emotional literacy. These verbal aspects, including the capacity to talk coherently about important relationships and to describe another's point of view, have been found to be typically more closely related to the parents own verbal attachment style as assessed by the AAI than the interactive style of mother and infant portrayed in the SS (e.g. Steele *et al*, 2002). We can perhaps consider that mother's verbal style has an ongoing influence on their children's verbal style, but that the behavioural interactive style has a unique and long-lasting effect on certain more behavioural components of social and emotional functioning. Consequently it is these behavioural differences where an early change in behavioural interaction, even which has not generalised to behaviours in later time periods, may be seen.

- *The hypothesis was wrong.*

Alternatively, these findings could lead to the acknowledgement that the premise of the current study was simply wrong, and the BabyTalk intervention influenced neither the parent-child interactive style nor social and emotional functioning. While of course one must remain open to recognising that intuition may not prove to be correct in research, the current results suggest not that there is no influence of the BabyTalk intervention, but that it may be of a more particular kind than anticipated. The measures most strongly associated with intervention status, children's reactions to distress, their assessed security, prosocial behaviour and avoidance, are all behaviour-related measures. This suggests that rather than global aspects of social intelligence being influenced, non-verbal aspects of social and emotional intelligence are influenced long after the intervention, and even for children who showed no improvement in their language skills immediately following the intervention. It is considered in the next chapter that this is a consequence of the influence of the change in mother-child interaction on the right-hemisphere which is forming at this time. Such a position finds some support in the exploration of differences within the BabyTalk intervention group according to the emphasis of the intervention delivered.

4.9: Investigating differences in BabyTalk intervention group 1 and 2 children.

Despite the very small sample involved when exploring differences within the BabyTalk group, these results are so illuminating they seem worthy of close attention. All the children in the sample had expressive and receptive language delay, some children, allocated to group 1, also had listening difficulties. These children in fact have better short-term and long-term outcome from the intervention, and importantly, these children received an enhanced intervention which differed from group 2 children only in emphasising more the importance of quality, silent, one-to-one interaction time between mother and child. Children with initial more severe difficulties, but who had the enhanced intervention, were more likely to have close friendships and fewer emotional symptoms. Their parents were also more likely to be available, indicating that parent's enhanced interaction with their children might have generalised, and these children were more likely to be classified secure. Interestingly, there was no difference in 'reaction to distress' - perhaps because the group 2 intervention was sufficient in itself at changing interaction style to enhance this capacity. There seems good evidence to suppose that the interactive style and one-to-one time spent between mother and child is exerting a critical influence on outcome.

CONCLUSION.

It is fascinating that the statistically and theoretically significant differences between those children who had received the BabyTalk *language* intervention and those who have not are in measures specifically asking about *behaviour*. It is not, as might have been predicted, the coherence of the children's narrative, their capacity to take another's perspective, or their expressed security with their parents which distinguishes these groups. The strongest association between intervention status and outcome is in the way that the 11 year olds behave when they are upset. An association does exist with prosocial behaviour, but not expressed empathy. The 'security' of the child in the interview, based on both behaviours and feeling expressed with regard to important and especially parental relationships, just missed statistical significance. There is of course a strong behavioural component to this classification given that the behaviour children described engaging in with important others was

most influential on classification. Similar aspects were found to differentiate the group 1 and 2 BabyTalk intervention children, indicating that the special elements added to the group 1 infant's intervention is responsible for this change. The following chapter explores the idea that given the age at which the BabyTalk intervention is delivered, it is in the children's non-verbal and emotion-related behaviour that differences in outcome are most likely to be evident.

CHAPTER 5

EXPLORING NONVERBAL BEHAVIOUR

5.1 Introduction - non-verbal behaviour

The verbal content of how we speak about emotive experiences or issues is of course only one aspect of what we understand to represent effective social interaction. This chapter explores the idea that social cognition guides automatic as well as volitional behaviours, displayed through non-verbal as well as verbal communicative style. The right hemisphere is implicated in many non-verbal social capacities such as emotional labeling of memories, motivation and the comprehension as well as expression of emotional tone and gesture (Blonder, Bowers & Nabbout, 1991). Recent findings from neurobiology are converging to suggest that it is these non-verbal behaviours which might be most influenced by the nature of early interaction experiences. The left hemisphere, associated with language development, is seen in these studies to develop fully later (after four years of age) and is more open to continuing influences throughout development. The following section will review this material, recognising that the BabyTalk intervention was given to children at a time when social capacities associated with the right hemisphere are most salient. We might therefore anticipate outcome at 11 years to be most clearly reflected in capacities associated with the right hemisphere. This section will also justify consideration of non-verbal behaviours as potentially reflecting earlier mother-infant attachment related interactions influenced in the context of the BabyTalk intervention. The implications of this for attachment theory and understanding of outcome following the BabyTalk intervention will be addressed.

5.2 A right-brain predominance in early development.

An important aspect of children's early development is to understand and learn to act according to the implicit social rules about displaying emotions (Lewis and Michalson, 1983). Recent studies exploring the roles played in social cognition by

specific neural structures and neurotransmitters renders significant support for the hypothesis that the social experience of infants under four years of age is likely to most influence later non-verbal communicative capacities associated with the right hemisphere (e.g. Adolphs, 2001, Chiron, Jambaque, Nabbout, Lounes, Syrotle *et al*, 1997, Devinsky, 2000). In particular, these studies suggest that especially during very early social interactions, it is the right side of the infant's brain and its associated functions that is developing more than the left. This evidence has emerged from a variety of human brain studies made possible by the emergence of non-invasive brain imaging techniques such as SPECT and fMRI. Chiron *et al* (1997) found that between 1 and 3 years the blood flow to the brain shows a right-hemisphere predominance. Correspondingly it is functions localised in the right hemisphere that predominately develop during this time period. The left hemisphere, and its associated language and visuo-spatial abilities, develop a little later. Just as Bowlby framed attachment behaviours as having developed to meet survival needs of the young, so this sequence of development, by focusing initially on visuo-spatial and emotional capacities, is understood to sustain the functions most necessary for the survival of the species (Geschwind and Galaburda, 1985)

5.3: The association between right hemisphere and the social and emotional self.

The functions that remain associated with the right hemisphere throughout the lifespan are diverse. Devinsky (2000) has attempted to explore the evidence that the right cerebral hemisphere is dominant for a sense of 'physical and emotional self'. Right temporal and frontal lesions are associated with impaired impulse control and impaired social relations. He concludes that "whereas linguistic consciousness is a function of the left hemisphere, consciousness of the corporeal and emotional self and aspects of the social self may be a right hemisphere-dominant function" (p.60). Due to the right hemisphere's earlier development, then, it is in behaviours associated with the 'emotional and social self' that the effects of the early interactional environment such as parental sensitivity and the effects of early interventions such as the BabyTalk programme might most likely be displayed.

Many researchers have been engaged in identifying right hemisphere functions. Studies have suggested a continuing right hemisphere predominance for receptive

emotional prosody or the ability to interpret the emotional signal of another person (Nakamura et al, 1999). The right hemisphere, then, is dominant in the perception of emotion in others. It is also associated with the individual's outward emotional expression of autonomic responses to emotional stimuli, (Cacelliere & Kertesz, 1990) facial expressions, (Buck & Duffy, 1980) eye contact, (Manoach et al, 1995) and intonation (Ross, 1981). It has also been reported that attentional processes are associated with the right hemisphere (Meador et al, 1989).

In view of the findings in Chapter 2 it is rather interesting that right hemisphere abnormality is also associated with impaired mathematic skills (Devinsky, 1999). Although the difference missed significance, the BabyTalk intervention children had mean SAT scores for mathematics higher than the control group. It was rather a surprise to find a difference in mathematics ability, and not for English, but differences in the right hemisphere development of these two groups might just possibly explain this anomaly.

One of the most difficult developmental feats for the pre-school child is to learn to mask emotions. Negative emotions are particularly difficult for children to hide, and even school aged children have difficulties hiding negative feelings when asked to display pleasure during negative episodes (Saarni, 1987). Negative affect is linked to the right prefrontal cortex (Davidson and Sutton, 1995). This is most interesting, given that work by Schore (2000) suggests that the orbital frontal cortex, expanded in the right hemisphere is where the IWM is located, and centrally involved in all that Bowlby described as the social and biological functions of the attachment system (Schore, 2000).

The right hemisphere and maternal / attachment behaviour.

In terms of the current project, and understanding the potential intergenerational transmission of these non-verbal communicative tendencies, it is fascinating that very recent studies have indicated that the right hemisphere is preferentially involved in maternal behaviour. Most mothers, left or right handed, carry their children on their left. This is thought to occur because the left visual field allows more direct communication with the right hemisphere (Sieratzki and Woll, 1996). Such findings

add confidence to theorising on the right cerebral cortex's specialised role in human social attachment. Loberbaum et al (2002) demonstrated using fMRI that the right regional brain areas of mothers were more asymmetrically active in response to a child's crying than in response to control noises. Remarkably, in rats, susceptibility to right hemisphere associated social stress and anxiety in the infant is influenced by the mother's attentive behaviours in terms of nursing and grooming. These traits remain stable across the life-span and are transmittable to future offspring (Diorio et al, 1999, 2000).

The right hemisphere is also implicated in aspects of language and communicative tasks typically associated with the left brain. Lesions of the right hemisphere are associated with impaired coherence and organisation of communication, both in verbal expression and non-verbal behaviours (Devinsky 2000). Discussion of autobiographical memory with an emotional content also activates the right hemisphere. These are important reminders of the synergistic communication between the left and right brains, relative contributions made by the two hemispheres fluctuating between tasks and individuals. Clearly the behaviours addressed are not exclusive to one hemisphere, but are predominantly associated with them.

Given its predominant development during early social experience, the finding of the influence of the right hemisphere over the coherence or organisation of communication might also help explain why it is the organisation of communication that an adult makes about their childhood experiences, in the context of the Adult Attachment Interview (George, Kaplan & Main, 1995), which are so predictive of the quality of attachment her infant will develop toward her (van IJzendoorn, 1995). In addition, insofar as the account a speaker is giving of their earliest experiences seems credible, then we take this as a positive sign of coherence. It is as if the coherent speaker has ready access to their earliest attachment feelings, good or bad, and is not overwhelmed by them. It could perhaps be that this stability of coherence is a reflection of continuity in right brain processes.

5.4 Attachment theory and verbal and non-verbal behaviour.

The idea that emotions are an important aspect of the attachment system is not new. From its first formulation, the attachment system was understood to be activated by fear (Bowlby, 1969). Sroufe and Waters' (1977) definition of attachment theory as a theory of emotion regulation is now a seminal text in the field. Attachment theorising, however, has traditionally understood the behavioural aspects of infant-parent attachment to generalise to verbal capacities later in life (see Chapter 1 for a more detailed discussion). This may be considered to occur as interaction is internalised by the infant from expectancies about treatment, and a related internal working model (IWM) of self worth is composed (Bowlby 1969). The IWM takes verbal form as part of the natural process of child development, and the verbal and non-verbal aspects of emotional functioning are not specifically differentiated. As a consequence, the AAI is viewed by some researchers as a verbal expression of beliefs formed by the type of non-verbal interaction assessed by Ainsworth's Strange Situation (1978) (Main, Kaplan and Cassidy, 1985). This is justified given that it accesses how the individual expresses and regulates emotions relating to early childhood (Goldberg, 2000). Findings from the current project, however, question whether we might better consider verbal and non-verbal aspects of the attachment system as inter-related but distinct.

In Chapter 3 the validity of the F&F (Friends and Family) interview was established with a sample of children from the London Parent Child Project (Steele, 1990). Earlier attachment assessments with mother and child were available for these children. Quality of verbal communication associated with the sub-measure 'overall coherence of the narrative' was more closely associated with mothers' AAI security classification, than with interactional behaviour displayed in the Strange Situation. The discussion considered that this might be due to the continuing influence throughout development of the Mother's communicative style. Associated with SS behaviour but not Mother's AAI was the way that children acted when distressed (actively versus passively) (see Chapter 3). Perhaps then, in hoping to detect a difference in the way children function in their close relationships, the behavioural component of the early attachment relationship might more clearly be displayed in

children's non-verbal behaviours. Non-verbal communication, and adherence to non-verbal cues in effective interaction, although perhaps less studied, is acknowledged to be a very important, influential and pervasive aspect of social interaction (e.g. Adolphs, 2001, Devinsky, 2000).

Attachment research on emotional expression and non-verbal behaviour.

Work undertaken in the attachment paradigm examining expression of emotion has largely focused on children of pre-school age. Studies have found correlation between attachment status and non-verbal behaviours associated with the right hemisphere. Malatesta, Culver, Tesman & Shephard (1989) conducted a study with 58 infant pairs. Insecurely attached children were found to be more emotionally negative, except during times of extreme stress when inappropriately positive expressions were commonly displayed. Blockland (1993) examined the facial expression of emotion of 15 children classified as secure, 15 classified as resistant and 15 classified as avoidant in the SS. At 3 years of age all of the insecurely attached children spent more time expressing negative emotions. The resistant children were notable for exaggerating emotions, including displaying more negative affect. In a study with older children, peers were found to rate secure adolescents as less anxious than their insecure classmates (Koback and Sceery, 1988).

Research as a whole concurs that secure children are more spontaneously expressive, and that differences between secure and insecure children are most clearly depicted in the expression of negative emotion. Magai (1999) suggests that differences in children's affective displays and understanding is more closely linked to immediate parental behaviours than to attachment style's of the mother or child. She calls for the recognition that attachment and emotional organisation are "parallel and interconnecting but separable and independent processes" (p.800). This is supported by work from Grossmann's longitudinal study, which found that maternal behaviour was selectively responsive to positive emotion in mothers of insecurely attached infants, such that they delayed in, or neglected, responding to negative affective displays from their infants (Grossmann, 1985, cited in Steele et al, 1999). Perhaps, additionally, the verbal and behavioural aspects of the attachment system need to be considered interconnected but separable.

5.5 The case for studying non-verbal behaviour.

There seems, then, to be good evidence to anticipate variation in non-verbal behaviours associated with the right brain according to the nature of the infant's interaction experiences. Once again it was considered that this hypothesis would be explored with the LPCP sample in order that comparisons with earlier attachment history could be investigated. Subsequently differences in "non-verbal" behaviours between the children from the Manchester sample who had or had not received BabyTalk the intervention could be undertaken. Given that the particular sample of children from the Manchester sample in the current study does not in fact display the enhanced language functioning associated with the whole sample (see Chapter 2), any differences in "non-verbal" communication will be especially meaningful.

PART 1 : ESTABLISHING THE VALIDITY OF A MEASURE OF "NON-VERBAL BEHAVIOUR" - THE NEBS ("NON-VERBAL" AND EMOTIONAL BEHAVIOUR SCALES) - ON THE LPCP SAMPLE.

5.6: Introduction

Once again, the validity of the measure to be used with the BabyTalk sample was explored with the LPCP (London Parent Child Project) sample. This group, of course, represents the same age-group as the BabyTalk sample, but is a non-clinical sample with detailed records of earlier parent-child attachment interaction styles. The concept under exploration at this point was whether observable differences in non-verbal behaviour and emotional display are associated with earlier mother and child attachment security.

METHOD

The Sample.

Fifty-five children and their parents who have participated in the London Parent-Child project (LPCP), a longitudinal investigation of attachment patterns across generations initiated by Miriam Steele (1990) make up the current sample. This includes 27 boys and 28 girls, mean age 11 years, 5.7 months (s.d. = 3.9 months), range = 11 years, 1 month – 12 years, 7 months. The mothers of the children, and their partners were recruited in the context of hospital antenatal classes at a London teaching hospital. All mothers were competent in the English language (Raven, Court & Raven, 1986), were living with the child's father and over 20 at the time of recruitment. The resulting sample was predominately composed of white middle-class families, with 70% possessing university degrees. The demographic details of the current 55 families do not differ significantly from the larger original sample. Full demographic characteristics of this sample can be found in Steele, Steele & Fonagy (1996), and more details in Chapter 3.

Measures

Measuring non-verbal behaviour - forming the NEBS.

Given the widespread acknowledgment of the communicative power of non-verbal signals, there was a surprising lack of established measures or approaches for measuring non-verbal behaviour. It was therefore necessary to devise an assessment protocol for the current study that could be used in conjunction with the F&F interview. The studies exploring the functions of the right hemisphere reviewed above clearly identified a number of overt behaviours that can easily be assessed by observation.

It was thought that a measure of vocal expression or intonation should be included as Ross (1981) had identified intonation as related to right hemisphere activity. This measure is also of course associated with more general language skill.

A great number of studies have identified expression of emotion through facial expressions as related to the right hemisphere (e.g. Buck & Duffy, 1980). It was thought that the measure should examine intensity of facial expression, as well as demonstrations of positive and negative affect per se. Davidson and Sutton (1995) specifically identified negative affect as a predominantly right hemisphere associated behavior. Given the fact that insecurely attached children have been noted to be emotionally more negative (Malatesta et al, 1989) specific attention to this form of emotional expression was considered important. As well as a general measure of negative affect, sub-scales of distress or fear, frustration and avoidance were included.

Eye contact and physical orientation during interaction are two other very powerful and important aspects of communication associated with the right hemisphere (Manoach, Sandson & Weintraub, 1995) and were included as subscales.

Finally, the attentional capacity of children has a very far-reaching influence not only on children's interactions but general achievement levels. An important ability to consider in its own right, and also identified as right hemisphere associated (Meador, Loring, Lee *et al*, 1989), this formed the final subscale in the non-verbal and emotional behaviour scales (NEBS). Each sub-scale was a four point scale from minimal to frequent or intense displays of the behaviour under examination. The scale is reproduced in Appendix III.

Coding of the children's non-verbal responses to the F&F interview using the NEBS was undertaken by Dara Faden, a summer intern from the University of Rochester, USA. Very good coding reliability with the author was established on 15 cases. (Reliability analysis for the sub-scales = median = .95, min = .87, max = .98). Attempts were made to entirely ignore the content of the speaker's words and focus only on the non-verbal behaviour and expression of emotion. Given that vocal expression was included on the scale, however, sound was not turned off, and it may have been difficult to ignore the speaker's style. The validity of the measure in terms

of its associations with coherence of narrative and empathy skills is therefore examined. Given the acknowledgment that coding of non-verbal behaviour is unlikely to expose a pure boundry between verbal and non-verbal ability, discussions of these findings will often refer to "non-verbal" in speech marks. Similarly, the F&F interview as a measure of "verbal behaviour" will be treated to the same cautionary proviso of speech mark use.

Descriptive statistics for the NEBS scores are listed below.

Table 5.1: Descriptive statistics for the NEBS interview coding with the LPCP sample.

	Mean	S.d.	Min	Max	Skewness	Kurtosis
Vocal Expression	3.19	0.70	1.00	4.00	-.615	.521
Facial Expression	3.17	0.75	1.00	4.00	-.575	-.077
Body Orientation	3.26	0.67	1.00	4.00	-.748	1.046
Negative Affect	1.89	0.83	1.00	4.00	.415	-.929
Positive Affect	3.06	0.79	1.00	4.00	-.341	-.630
Distress / fear	1.63	0.73	1.00	3.00	.718	-.785
Frustration	1.43	0.72	1.00	4.00	1.709	2.515
Confidence	2.96	0.85	1.00	4.00	-.122	-1.150
Avoidance	1.65	0.70	1.00	3.00	.623	-.753
Attention	3.44	0.79	1.00	4.00	-1.125	.553
Reaction when distressed	.54	0.50	0.00	1.00	-.153	-2.054
Nonverbal overall.	1.16	0.45	0.67	2.33	.577	-.434

It is clear that scores do not significantly deviate from the assumption of normality. Minor violations occur in a couple of the measures. Also included in the list is a recomputed score called nonverbal overall score. This is in fact a mean average of scores for reaction to distress, which can be considered a non-verbal score, and ratings for distress / fear and frustration. The rationale for this construct will be discussed below.

Other measures

In terms of assessments taken which are relevant to the current investigation, mother's AAI was conducted prior to the birth of first-born infants. SS with mother was undertaken at 12 months. Empathy ratings, the Strengths and Difficulties Questionnaire, verbal IQ scores were collected at 11 year follow up. Assessment of "non-verbal behaviour" was made using the NEBS outlined above, which was coded from watching video-taped responses to the F&F interview (see Chapter 3) also undertaken at the 11-year follow-up.

All of the other measures are cited in the Methods section of Chapter 3, and further details of their development, reliability and validity may be found there. Those measures include mother's attachment strategy assessed by the AAI prior to the child's birth, and an assessment of the mother-child attachment relationship using the Strange Situation procedure with the mother at 12 months. The measures of verbal IQ, empathy and strengths and difficulties, used here to explore the NEBS validity, are also outlined in Chapter 3.

RESULTS

The NEBS subscales and earlier attachment

Tables 5.2 and 5.3 show the non-verbal behaviour scores of the 11-year olds grouped according to earlier attachment history. Table 5.2 groups the children from the LPCP according to their SS classification with their mother's at 12 months. Table 5.3 examines differences according to whether or not the mothers' AAI's had been classified autonomous-secure or insecure (dismissing or preoccupied) at the assessment undertaken with the mother before the child's birth.

Table 5.2: Comparative 11-year non-verbal behaviour scores (NEBS) for LPCP children classified as secure verses insecure in the SS at 12 months.

	Secure in SS Mean (s.d.) n = 31	Insecure Mean (s.d.) n = 23	t-value	Sig.
Vocal expression	3.24 (.76)	3.13 (.63)	-4.90	.310
Facial expression	3.19 (.83)	3.14 (.64)	-.270	.394
Body orientation	3.35 (.80)	3.13 (.46)	-1.303	.099
Negative affect	1.74 (.86)	2.09 (.79)	1.512	.068
Positive affect	3.10 (.83)	3.00 (.74)	-.443	.325
Distress and fear	1.45 (.68)	1.87 (.76)	2.126	.018
Frustration	1.26 (.51)	1.65 (.88)	2.059	.020
Confidence	2.97 (.91)	2.96 (.78)	-.048	.481
Avoidance	1.52 (.68)	1.83 (.72)	1.623	.055
Attention	3.45 (.89)	3.43 (.66)	-.076	.469
Reaction to distress	.68 (.48)	.35 (.49)	-2.494	.008

Two of the NEBS sub-scales identify significant differences between the children with secure verses insecure attachment history at $p < .05$ level. These are Distress / Fear, $t = 2.126$, $p = .018$ and Frustration, $t = 2.059$, $p = .020$. Negative affect and Avoidance would show a trend towards identifying significant differences. Also reported here is the children's self-reported reaction to distress, which was collected in the context of the F&F interview, but is arguably a non-verbal behavioural display. This measure reports significant differences according to earlier SS attachment, $t = 2.494$, $p = .008$. In this measure '0' related to a passive or aggressive response, and '1' to an active, distracting or comfort seeking response.

The following table (overleaf) explores the NEBS in relation to earlier security of the mother as assessed by the Adult Attachment Interview (AAI).

Table 5.3: Comparative 11-year non-verbal behaviour scores (NEBS) for LPCP children whose mothers were classified as secure verses insecure in an AAI undertaken before their birth.

	Mother's AAI secure Mean (s.d.) n=31	Mother's AAI Insecure Mean (s.d.) n = 23	t-value	Sig. (1-tailed)
Vocal expression	3.19 (.69)	3.18 (.73)	-.029	.489
Facial expression	3.19 (.75)	3.14 (.77)	-.270	.394
Body orientation	3.31 (.74)	3.18 (.59)	-.692	.246
Negative affect	1.81 (.90)	2.00 (.76)	.804	.213
Positive affect	3.06 (.76)	3.05 (.84)	-.077	.465
Distress and fear	1.50 (.67)	1.81 (.80)	1.586	.059
Frustration	1.34 (.60)	1.55 (.86)	1.017	.157
Confidence	2.94 (.88)	3.00 (.82)	.264	.396
Avoidance	1.56 (.72)	1.77 (.69)	1.079	.140
Attention	3.50 (.76)	3.36 (.85)	-.617	.270
Reaction to distress	.59 (.50)	.45 (.51)	-.999	.161

The NEBS scores do not vary significantly according to the earlier AAI classification of the children's mother. Distress / Fear, however, would show a trend towards a difference in a one-tailed analysis. Note that in the case of the "verbal" assessment of the children in Chapter 3, it was with the mother's AAI that aspects such as 'coherence' of narrative and 'security' were most clearly related. It is clear, however, that in the case of the "non-verbal behaviour" identified by the NEBS, this is rather associated with SS behaviour.

Forming the score 'nonverbal overall'.

Three of the NEBS sub-scales are then associated at the $p < .05$ level with the SS conducted a decade earlier. Distress / Fear, Frustration and reaction to Distress. A composite score was created by calculating the mean of these three scales. (The

reverse of reaction to distress was used to create a variable where a low score related to adaptive functioning). Interestingly these scales were not themselves highly inter-correlated. Distress/Fear was not significantly related to either Frustration ($r=.198$, $p = .152$) or Reaction to Distress ($r=-.210$, $p = .131$). Reaction to Distress was also not significantly correlated to frustration ($r= -.215$, $p = .122$). The inter-correlation of this new variable was then explored with the other NEBS scores to see how representative it is, and results are displayed in Table 5.4.

Table 5.4: Intercorrelation of the nonverbal overall scale with other scales in the NEBS

	Nonverbal overall (Pearsons Correlation, 1-tailed)
Vocal Expression	-.255*
Facial Expression	-.290*
Body Orientation	-.373**
Negative Affect	.741**
Positive Affect	-.418**
Distress and Fear	.726**
Frustration	.716**
Confidence	-.430**
Avoidance	.507**
Attention	-.415**
Reaction when distressed	-.600**

Notes: * = $p < .05$ * $p < .01$

The new variable, named 'Nonverbal Overall' correlated significantly with all the other NEBS scores, and as such is considered a very useful score for further analysis. The relationship between this computed score and earlier attachment history was explored, and is displayed in Tables 5.5 and 5.6.

Table 5.5: Comparing mean scores of 'nonverbal overall' for children classified as secure verses insecure in the SS at 12 months.

	Secure in SS Mean (s.d.) n=31	Insecure in SS Mean (s.d.) n = 23	t-value	Sig.
Overall nonverbal	.99 (.39)	1.39 (.43)	3.56	.001

We see that the computed 'nonverbal overall' score is very highly associated with the SS procedure behaviour with mother conducted a decade before these "non-verbal" measures were collected ($t = 3.56$, $p = .001$).

Table 5.6 : Comparing means scores of 'nonverbal overall' for children whose mother's were classified as secure verses insecure in the AAI.

	Mother's AAI Secure Mean (s.d.) n=31	Mother's AAI Insecure Mean (s.d.) n= 23	t-value	Sig. (1-tailed)
Overall nonverbal	1.06 (.43)	1.30 (.46)	1.947	.057

Although non of the NEBS were individually significantly related to the mother's AAI, this prenatal assessment of the mother's ability to speak about her early attachment relationships, the computed 'non-verbal overall' score only narrowly misses significance ($t = 1.95$, $p = .057$). It would seem that a powerful score has been computed by examining the average score of distress/fear, frustration and response to distress, which not only summerises the other NEBS scores effectively by its high association with all of them, but is strongly related to earlier attachment history.

NEBS Discriminant Validity

In order to explore the validity of the NEBS as a measure of non-verbal behaviour, the subscales were examined for their correlation's with verbal IQ, and measures of social behaviour . Results are displayed in Table 5.7.

Table 5.7: Correlation of verbal IQ and measures associated with social and emotional intelligence with the NEBS.

	Verbal IQ	Total Empathy	IRI Empathic Concern	Perspective Taking
Vocal Expression	.300*	.290	.366*	.060
Facial Expression	.114	.150	.324*	-.043
Body Orientation	.039	.244	.245	.086
Negative Affect	-.182	-.231	-.216	-.107
Social Appropriateness	.399**	.373	.095	.200
Positive Affect	.020	.048	.247	-.078
Distress and Fear	-.234	.024	-.142	-.138
Frustration	-.026	-.166	-.004	-.102
Confidence	.129	-.086	-.008	-.089
Avoidance	-.136	.255	-.037	.044
Attention	.272*	.403*	-.046	.294*
Nonverbal overall	-.199	-.183	-.171	-.229

	SDQ Prosocial	Emotional Symptoms	Conduct Problems	Hyperactivity
Vocal Expression	-.050	-.067	-.052	-.071
Facial Expression	.002	-.074	-.137	-.154
Body Orientation	.367*	.033	-.005	-.200
Negative Affect	-.068	.080	-.098	-.053
Social Approp.	.303	.243	.020	-.288
Positive Affect	-.001	-.052	-.110	-.037
Distress and Fear	-.104	-.091	-.137	.038
Frustration	-.351	.071	-.007	-.149
Confidence	.025	-.102	.190	-.078
Avoidance	-.078	.210	-.089	-.163
Attention	.371*	.183	-.034	-.214
Nonverbal Overall	-.311*	.103	-.094	-.025

Notes: * = $p < .05$ ** $p < .01$

Encouragingly, Distress/Fear and Frustration, the measures associated with SS attachment, did not correlate significantly with Verbal IQ or any of the general measures of social or emotional intelligence. As such they may be seen to have been coded without the influence of language skill or other social behaviours impinging on the observation. Similarly, 'non-verbal overall', the score created using these two variables and 'reaction to distress' correlated only with the 'prosocial' dimension of the SDQ. The latter score is controlled for in the regression below exploring the relative strengths of the associations between early attachment measures and 'nonverbal overall' (Table 5.8).

It is of general interest that Attention correlated significantly at the $p < .05$ level not only with Verbal IQ as might be anticipated ($r = .272$), but also with Empathy ($r = .403$), Perspective taking ($r = .94$), and Prosocial Behaviour ($r = .371$), indicating what an important aspect of functioning the ability of keeping attention to the task at hand is.

Predicting nonverbal interactive style from earlier attachment data.

In order to examine the power of the association between "non-verbal behaviour" and earlier attachment a hierarchical regression was undertaken. The association between mother's AAI and the child's SS is now well established in the literature (e.g. Steele *et al*, 1996). However, the current project is exploring the belief that, while related, a mother's verbal style with her child, and her interactional style, have different types of influence. Would the non-verbal interactive style of the child at 11-years be predicted better by SS behaviour at 12 months or the mother's AAI?

Table 5.8: Summary for hierarchical regression analysis of concurrent and earlier attachment measures on nonverbal style.

Variables	B Coefficient	<u>SE B</u>	Beta	p
Step 1				
Prosocial (SDQ)	0.09	.041	-.311	.038
Step 2				
Prosocial (SDQ)	-0.08	.039	-.294	.040
AAI security Of mother	-0.292	.131	-.309	.032
Step 3				
Prosocial (SDQ)	-0.077	.036	-.269	.040
AAI security of Mother	0.099	.134	-.105	.462
SS with mother.	-.420	.135	-.445	.003

Note: $R^2 = .097$ for Step 1 ; $R^2 = .192$ for Step 2, $R^2 = .229$ for Step 3.

In the regression (Table 5.8 above) the concurrent measure found to be associated with nonverbal overall, 'prosocial skills', was controlled for, and entered into the analysis first. This variable created a significant R^2 change = .076, $F(1, 43) = 4.60$, $p = .038$. At the next step, the inclusion of mother's AAI also created a significant R^2 change at $p < .05$ level = .153, $F(2, 42) = 4.980$, $p = .011$. Finally, the inclusion of SS at 12 months also induced a significant R^2 change, = .299, $F(3, 41) = 7.26$, $p = .001$, and Mother's AAI no longer contributes unique predictive value. The association between the scales and the AAI appeared by virtue of its overlap with the Strange Situation with mother.

Despite the close association between Mother's AA and SS classification, the final step of the regression illustrates that when both of these earlier attachment measures are examined for their ability to predict nonverbal interactive style at 11 years, only SS with mother is relevant.

DISCUSSION.

The non-verbal and emotional behaviour scales (NEBS) proved easy to apply and reliability of coding was remarkably high. It seems not only a useful overview of "non-verbal" behavioural style, but also, and as predicted, identifies behaviours associated with earlier attachment security. As the literature would suggest, aspects of negative affect display acted as a window into early attachment history. Rather than general negative affect, however, two specific dimensions, Distress/Fear and Frustration were associated with earlier insecurity. When these scores are combined with a measure of how children react when they are distressed, a powerful measure of "non-verbal" behaviour, associated with all other NEBS scores and earlier attachment history, is created. This was called 'non verbal overall'.

Avoidance behaviours narrowly missed a one-tailed significant association with earlier insecurity.

Associations with the SS and AAI.

Also in line with anticipated results, "non-verbal behaviour" which was or was nearly associated with earlier attachment, was associated with SS security at 12 months. There were no associations between "non-verbal behaviour" and Mothers AAI undertaken prior to the child's birth. This was despite the fact that SS and Mothers AAI are themselves highly correlated ($r = .470$, $p < .001$). So far, the theory that mothers communicative style influences children's later language approaches to discussing attachment issues, while mother's non-verbal interactive style at 12 months affects children's non-verbal social initiatives and emotional displays, is borne out.

The sub-scales distress/fear and frustration.

Although Distress/Fear and Frustration alone of the non-verbal scales were associated with earlier SS behaviour, a composite of these scales and 'reaction to distress' were strongly associated with all of the other "non-verbal scales" including avoidance, attention, confidence and social appropriateness. As such they seem to be picking up important aspects of non-verbal interaction style.

It is also clear that 'nonverbal overall' is independent of verbal ability as measured by verbal IQ. This is reassuring and suggests that the coding of the behaviours included within it were not influenced by verbal content. This score is not related to any social or emotional intelligence aspects such as empathy or perspective taking, but is related to earlier SS attachment, and weakly to children's mothers' AAI. It is interesting that 'Attention', while not associated with earlier attachment, was found to correlate significantly with many of these social and emotional capacities.

Regression analysis

Security in the SS at 12 months was found to be predictive of 'nonverbal overall' even when controlling for the mother's attachment style. This is impressive given the high correlation between mother's AAI and SS assessment. It also indicates that there may be differences between non-verbal and verbal aspects of attachment. This issue will be returned to at length.

Does this "non-verbal behaviour" generalise?

It would be interesting to explore whether the "non-verbal behaviour" patterns displayed during the F&F interview would be typical of all of the individual's social interactions or is exclusive to these attachment related topics. The coherence of the narrative in the AAI has been shown to be exclusive to that topic area and not related to coherence of narrative when discussing, for example, work related issues (Waters *et al*, 1996). Perhaps the patterns of "non-verbal" display are also unique to this situation, or perhaps are representative of general interactive style. In terms of

theorising on the pathways between early interaction and later non-verbal display such information would likely be enlightening.

SUMMARY

The NEBS appears a useful, reliable and valid measure of "non-verbal behaviour". Some of its scales are associated with early mother-child interaction patterns, others with aspects of social intelligence. An overall score formed from two of the NEBS measures and 'reaction to distress' which correlates significantly with all of the NEBS measures is strongly associated with earlier SS attachment classification. The measure seems entirely appropriate for use with the BabyTalk sample, to which attention will now be turned.

PART II - NON VERBAL BEHAVIOUR OF THE BABYTALK SAMPLE

5. 7 Introduction

Given that the BabyTalk intervention was given at a time shown to be most influential in right hemisphere associated non-verbal behaviour, examining this aspect of the children's functioning is of great interest. Given that in the London Parent Child Project sample showed associations between their "non-verbal behaviour" and different styles of parent-child interaction, it is hoped that we might begin to think about the processes operating in any differences that might be detected between the control and experimental BabyTalk group.

METHOD.

The Sample

The subjects for this investigation are, of course, the Manchester based BabyTalk sample. (Full details about this group are found in Chapters 1 and 4). The children

were selected in the context of routine health screening at 9 months of age using an assessment of language delay. Children were divided into control or experimental groups matched by severity and type of delay, general development and social and economic background. The BabyTalk experimental programme infants and mothers received four visits from Speech and Language therapists guiding them in the principles of the intervention (see Chapter 1).

These data used in this chapter is entirely from the 11-year follow-up collected by the author and her assistant, Sarah Potter. Forty-five children from the original study were traced of which 21 were experimental group children and 24 were controls. Of these 22 boys and 23 girls, the mean age was 10 years, 10 months (s.d. = 4.28 months) range = 9 years, 11 months - 11 years, 7 months. Males and females were evenly spread between the control and experimental group, the former having 12 males and 12 females, and the latter, 10 males and 11 females. Where the earlier data was available, the control and experimental groups were reasonably matched for severity of delay as assessed at 9 months. The experimental group contained 10 group one and 4 group two children. The control group contained 14 group one and 3 group two children.

Analysis in Chapter 2 indicated that the current sample is not representative of the earlier follow-up samples. Although at the 3 year and 7 year follow ups the experimental groups were found to display significantly enhanced language and cognitive functioning, these data from the current sample for those time periods do not show the same patterns of significant differences.

Measures

Non-verbal behaviour - NEBS.

As in the previous section, under examination are the children's "non-verbal" responses as assessed by the NEBS. As with the LPCP sample, responses recorded on video-tape to the F&F interview are under assessment. These were collected in the context of a school visit. The tapes were coded by Dara Faden, who was blind to the experimental status of the children. High inter-rater reliability was established with

the author. (Reliability analysis using Cronbach's Alpha for the subscales = median = .91, min = .75, max = .95). Given that the direction of change was anticipated, the use of one-tailed tests of significance was deemed appropriate. The descriptives for the measure used with this sample are reported below (n = 45):

Table 5.9: Descriptive statistics for the NEBS coding with the BabyTalk sample.

	Mean	S.d.	Min	Max	Skewness	Kurtosis
Vocal Expression	2.88	0.77	1.00	4.00	-.108	-.613
Facial Expression	2.84	0.88	1.00	4.00	-.106	-.928
Body Orientation	3.09	0.87	1.00	4.00	-.808	.196
Negative Affect	2.02	0.81	1.00	3.00	-.041	-1.474
Positive Affect	2.71	1.01	1.00	4.00	-.062	-1.173
Distress / fear	1.64	0.71	1.00	3.00	.647	-.751
Frustration	1.13	0.40	1.00	3.00	3.239	10.803
Confidence	2.67	0.93	1.00	4.00	-.158	-.771
Avoidance	1.64	0.68	1.00	3.00	.583	-.672
Attention	3.31	0.76	1.00	4.00	-.924	.480
Reaction when distressed	0.53	0.50	.00	1.00	-.138	-1.983
Nonverbal overall.	1.08	0.37	.67	2.33	.841	1.331

Only 'Frustration' frustratingly does not meet the criteria of normality according to the statistics of kurtosis and skewness. Fortunately the recomputed variable which includes this measure, 'nonverbal overall,' does meet the criteria of normality for conducting t-tests.

RESULTS.

The mean non-verbal behaviour scores for the experimental BabyTalk and control group were examined for significant differences existing between them.

Table 5.10: Comparative non-verbal behaviour (NEBS scores) for BabyTalk (experimental) or control status children at 11 years of age.

	Experimental Mean (s.d.) n=21	Control Mean (s.d.) n=24	t-value	Sig. (1- tailed)
Vocal expression	2.90 (.62)	2.88 (.89)	.130	.448
Facial expression	2.81 (.75)	2.88 (.99)	-.252	.401
Body orientation	3.00 (.654)	3.17 (1.05)	.654	.258
Negative affect	1.81 (.81)	2.21 (.78)	-1.678	.050
Positive affect	2.67 (.80)	2.75 (1.19)	-.279	0.39
Distress and fear	1.57 (.67)	1.71 (.75)	-.639	0.263
Frustration	1.00 (.00)	1.25 (.53)	-.304	0.016
Confidence	2.81 (.87)	2.54 (.98)	.964	.170
Avoidance	1.57 (.68)	1.70 (.69)	-.670	.253
Attention	3.33 (.66)	3.29 (.70)	.181	.429
Reaction to distress	.71 (.46)	.37 (.29)	2.365	.023
Nonverbal overall	.95 (.28)	1.19 (.40)	-2.291	.027

This table clearly shows statistically significant differences exist between the control and experimental group for two of the NEBS. As was the case with the secure children from the LPCP sample, the experimental group (mean= 1.00, s.d.=0) show levels of frustration lower than the controls (mean = 1.25, s.d. = 0.53) at the $p < .05$ level. In this case the BabyTalk group were rated without exception as displaying level 1 (no frustration), while the some of the control group children did show some frustration.

The important measure of 'nonverbal overall', which in the LPCP sample was associated with earlier attachment history, showed significant differences between the control and experimental group. The experimental group have a lower mean score, associated with less intense displays of negative affect and adaptive responses to distress ($t = -2.29$, $p = .027$).

The BabyTalk experimental group also differed from the control group in terms of the general level of negative affect that they displayed. The BabyTalk group mean (mean = 1.80, s.d. = .81) for negative affect was significantly lower than that of control group (mean = 2.21, s.d.= .78) at the $p < .05$ level. Negative affect was not significantly correlated in the LPCP study with earlier attachment security in the strange situation, but the correlation co-efficient did approach significance. In the general literature negative affect display is associated with earlier attachment history and with right hemisphere activity.

In the LPCP study, the scale Distress/Fear was associated with earlier Strange Situation attachment security. There was not a significant difference between the control and experimental group on this scale for the BabyTalk group. Although the mean for the experimental group (mean = 1.57, s.d. = .68) was lower than that for the control group (mean = 1.71, s.d. = .75), the probability that these results would emerge from the same population was $p = 0.263$, missing significance at the $p < .05$ level.

Table 5.11 : Comparative non-verbal behaviour (NEBS scores) for BabyTalk group 1 and group 2 experimental group children at 11 years of age. [Please refer to Appendix X]

	Group 1 Mean (s.d.) n=10	Group 2 Mean (s.d.) n=4	t-value	Sig. (1-tailed)
Vocal expression	2.90 (.74)	2.75 (.50)	.370	.359
Facial expression	2.70 (.82)	3.00 (.82)	-.617	.275
Body orientation	3.00 (.82)	3.00 (.00)	.000	1.000
Negative affect	1.70 (.82)	1.75 (.96)	-.098	.461
Positive affect	2.60 (.97)	2.75 (.50)	-.290	.388
Distress and fear	1.40 (.52)	1.50 (.58)	-.318	.378
Frustration	1.00 (.00)	1.00 (.00)		
Confidence	3.20 (.92)	2.25 (.50)	2.478	.016
Avoidance	1.50 (.71)	1.25 (.50)	.639	.068
Attention	3.75 (.50)	3.10 (.74)	1.601	.083
Reaction to distress	0.60 (.52)	0.75 (.50)	-.495	.315
Nonverbal overall	0.93 (.31)	0.92 (.32)	.091	.465

In examining outcome for children's IQ and achievement scores, interesting findings emerged from examining children who had slightly different interventions associated with their specific difficulties. Group 1 children had not only the expressive and receptive language difficulties shared with group 2, but additional difficulties with listening. These children in group 1 had an intervention which was even more directive of parents to change the learning environment by spending time one-to-one and face to face with the child in a quiet and rewarding environment. In this analysis, with only a very small number of cases for the analysis undertaken, differences are mostly not significant - any form of the BabyTalk intervention seems to have been effective in eliciting change in displays of negative affect, and reactions to distress. There is a difference, however, in children's body language of displaying confidence, with children from group 1 being significantly more confident ($t = 2.48$, $p = .016$). It is a fascinating concept that interacting differently and in closer proximity with their

young children may have made children more confident a decade later. Given the small sample, however, caution in drawing conclusion is required. Similarly we must be cautious but interested by the finding that attention seems to be improved by the special components of the group 1 intervention. This measure misses significance but analysis indicates a trend towards such a difference ($t = 1.60$, $p = .083$).

SUMMARY.

It is most interesting that those aspects of "non-verbal" behaviour displayed by 11-year-olds when discussing their important relationships which are associated with security at 12 months, are aspects of negative emotional expression, particularly frustration. It is also the case that the aspects of "non-verbal" behaviour which differentiate those children who undertook the BabyTalk intervention are aspects of negative emotional expression, particularly frustration. A computed measure, which combined two negative affect scores, and the way that children react when they are distressed, 'nonverbal overall', was associated in the LPCP with earlier SS security and also differentiated those children who had had the BabyTalk intervention from those who had not.

DISCUSSION.

This chapter has raised a large number of matters for discussion of both theoretical and practical significance. It has also raised a number of issues worthy of further enquiry. On a practical level, the non-verbal and emotional behaviour scale (NEBS) has been shown in application to the LPCP sample to be a useful tool with which to explore aspects of "non-verbal" emotional expression. There is good evidence that non-verbal social cues are not 'noise' in the process of interaction, but perhaps as Tomkins (e.g. 1962) has theorised, these are the most important keys for decoding affective life.

Recent studies under the umbrella of neurobiology have suggested that there are associations between right hemisphere capacities, which include the regulation of emotional expression, and maternal and attachment behaviours. Associations

between type and intensity of emotional expression and attachment strategies have been identified in the attachment literature. The current study supports the position that aspects of non-verbal behaviour offer a window onto earlier attachment history

5.8 Considering important aspects of nonverbal emotional expression.

Negative Emotion

In the literature, the differences between secure and insecure children were most consistently reported in terms of differences in the expression of negative emotion. This finding was replicated in the current study, where insecure children displayed more frequent and intense displays of distress/fear emotion, and behaviours associated with frustration. In terms of general attachment theorising it may be that viewing the association between negative emotion and insecurity in this way obscures the complexity of the relationship between these variables. It is likely that in some cases, security allows individuals the confidence to express more negative emotion, while insecure children would feel compelled to withhold it. However, it seems that in the context of the F&F interview, insecurely attached children displayed significantly higher levels of negative emotion than children who were securely attached in the SS at 12 months. Displays of negative affect when considered together with children's reaction to distress provided a powerful association with earlier mother-child interaction.

Vocal expression and intonation

Not all of the NEBS were associated with earlier attachment status in the current study. Vocal expression, which was included as aspects of intonation and vocal range are associated with right hemisphere development, was not related to the SS at 12 months. Both this measure, and that of general 'emotional expressiveness' were perhaps rather too crudely defined in the NEBS measure. Their investigation using more subtle measures may well have afforded significant results. Aspects of vocal expression seem especially worthy of exploring in further detail and much variation was revealed within the sample. This endeavour is very pertinent as it has the

capacity to clearly associate these differences between groups with right hemisphere processes.

Positive Emotion

Levels of positive emotional expression were not associated with earlier attachment status in the current study. This is perhaps not surprising, given that children's abilities to 'fake' appropriate positive emotional display is more advanced than their capacity to 'fake' negative emotional display (Saarni, 1987). It is also the case that while there may be a link between display of positive emotion and earlier attachment history, that it is a complex association. Whereas insecurity is associated in a linear fashion with higher levels of negative emotional display, it may be associated with either lack of positive emotional display (typically associated with insecure avoidance) or socially inappropriate excessive displays of positive emotion (associated with insecure resistance) (e.g. Cassidy, 1994). Insecure disorganised infants may show all manner of strategies with positive emotional displays. Hence, while the associations between attachment and positive emotional display may be more complex, further studies examining the pathways of influence on positive emotional display are likely to be both fascinating and revealing of the processes in operation.

Confidence

The children's outward displays of confidence were not associated with their earlier attachment history, although there was evidence of a non-significant association between confidence and participation in the BabyTalk intervention for the Manchester sample. This was particularly apparent in those children who had the group 1 version of the intervention. This finding is interesting in its own right, and it is exciting to think that participation in the BabyTalk intervention made the children more confident in talking about themselves and their important relationships.

Avoidance

Outward displays of avoidance behaviour were not significantly associated with earlier attachment history for the LPCP sample. The correlation between avoidance and the SS with mother at 12 months did however only just miss significance, and it is possible to speculate that in a setting that was more likely to induce avoidance strategies, or with a more sensitive measure, that clearer significant associations might have emerged.

Attention

It was hypothesised that capacities for attention might have differentiated those children earlier identified as secure or insecure. Attention is associated with right hemisphere development, and has been offered as one vehicle for explaining the effect of earlier attachment security on later academic and social functioning. The ability to keep attention focused on the task at hand has been identified by educators as one of the most critical aspects in children's learning, and attempts to increase children's attention span have been the focus of many intervention efforts. In fact neither earlier security nor participation in the BabyTalk intervention was associated with attention. Perhaps the task was of too short duration to effectively assess children's capacity to stay on task. Significantly, however, both earlier secure attachment and participation in the BabyTalk intervention was associated with lower outward displays of frustration. The link between levels of frustration and potential difficulties with attention in longer and more demanding tasks is not hard to imagine. Not only is frustration likely to relate to attention differences between these groups, it is also likely to be associated with other aspects of right hemisphere-associated emotion regulation. Poor emotion regulation and frustration could relate to difficulties in social interaction and peer relationships as well as academic differences. Frustration's role in the host of difficulties associated with insecurity, and in the difficulties displayed by children who did not received the BabyTalk intervention, is certainly worthy of further consideration.

5.7 The BabyTalk sample

In term of the findings from the data from the Manchester BabyTalk sample, it is clear that the intervention has elicited some changes in some right hemisphere associated non-verbal behaviour of those children who received the intervention. Significant differences were found in terms of the negative emotion displayed by the BabyTalk experimental and control groups, as well as their outwardly-displayed levels of frustration. The influence on the right hemisphere development might even explain the group's enhanced mathematics functioning seen in Chapter 2.

Although for the LPCP it was distress/fear rather than general negative emotion that was associated with attachment security / insecurity, it seems that a similar process is operating in both of these groups. The computed measure 'non-verbal overall' was strongly associated in the LPCP with earlier attachment security, and in the Manchester sample, with BabyTalk experimental status. Thus the patterns of change on "non-verbal behaviour" for those children who received the BabyTalk intervention, echoes the pattern displayed by children classified as securely attached to their mothers in the SS at 12 months. These changes are in behaviours associated with the right hemisphere thought to develop predominately between 1 and 3 years of age - the period when the BabyTalk intervention was delivered and the IWMs or 'templates' of attachment are thought to be formed. While we can only talk at the level of speculation, it seems that the BabyTalk intervention may be influencing aspects of right hemisphere development that are common to, or in some cases referred to as, attachment behaviours.

5.8 Verbal and non-verbal attachment security?

In Chapter 3 the idea began to emerge that verbal and non-verbal aspects of attachment might be better considered as inter-related but separate. The verbal style of the LPCP children discussing the attachment related issues in the F&F interview was more closely associated with the Mother's AAI conducted before their birth, than their SS security with their mother. The idea was raised that it is perhaps more likely that the mother's verbal interactive style has an ongoing influence on their children's

verbal style that is of more significance than the early non-verbal interactive behaviour displayed in the SS. It was questioned whether perhaps that non-verbal interactive style is also of long term influence, but on related but different and equally important aspects of non-verbal functioning.

This chapter set out to explore that idea of the separateness of verbal and non-verbal interaction's early influence, inspired also by findings from neurobiology, and indeed lends significant support to such an understanding. The "non-verbal behaviour" of the LPCP sample was significantly associated with the SS behaviour of the child at 12 months, but not the mother's AAI. Further, despite the close association between the mother's AAI and child SS with mother, adding two aspects of "non-verbal behaviour", distress/fear and reaction when distressed to mother's AAI made a model significantly better at predicting SS at 12 months than mother's AAI alone. Relationships with father's AAI and SS with father were not explored, since the BabyTalk intervention involved only mothers, however it would be most interesting to explore whether any relationships exist. In terms of the Manchester BabyTalk sample, a difference in "non-verbal behaviour" emerged which we can hypothesise would have been reflected in their SS attachment security had it been assessed. Although the BabyTalk was not associated with changes in the coherence of the children's narrative, which is associated with the mother's own coherence of narrative, children may have been influenced by the mother's non-verbal interactive style, reflected in the children's current "non-verbal" displays. The fact that at 11 years the BabyTalk children show changes in behaviours associated with security in terms of "non-verbal" interaction, but do not show changes associated with security in terms of narrative style, suggests again that these capacities are distinct. It seems that it is something about the non-verbal interactive style of mother and child in the early years which is influencing the outcome changes following the BabyTalk intervention at 11 years. This could suggest that, due to the age of the children when it was delivered, the special nature of the successful aspects of the BabyTalk language intervention are in fact its non-verbal interactive properties, reflected in changes to the children's expression of negative emotion and levels of frustration. We could speculate that the intervention enhanced language only in those children whose mother's were influenced by the intervention to alter their linguistic style with their children over the course of their development.

CONCLUSIONS

What seems certain is that rather than thinking that non-verbal behaviour is eclipsed in importance by verbal behaviour, we must recognise it as a very important aspect of social interaction in its own right. In terms of attachment theorising we may need to re-evaluate what we mean by 'attachment' in terms of these two aspects of functioning, verbal and non-verbal, in which two quite different processes might be in operation. In terms of the BabyTalk intervention, the findings are a clear demonstration that not only language, but other non-verbal aspects of emotional communicative abilities are implicated in quality parent-child communication, and have their own long-term and important influence in the intervention.

CHAPTER 6: DISCUSSION

LONGTERM OUTCOME FOLLOWING THE BABYTALK EARLY LANGUAGE INTERVENTION: THEORETICAL AND PRACTICAL IMPLICATIONS.

6.: Introduction

The findings of the previous chapters fall under three broad areas of consideration that form the structure of this final model-building chapter. The first section of the chapter will re-examine the findings from the 7 and 11-year follow-ups of the Manchester BabyTalk sample. It will review why particular aspects of development were explored, consider the findings that emerged, and suggest a model to accommodate the complicated associations observed among language, cognition and emotional understanding. Section two of this final discussion suggests a need for an expansion in theorising in the area of attachment research to account for the longitudinal differences observed between "verbal" and "non-verbal" aspects of attachment behaviour. Findings from the BabyTalk sample, the London Parent Child Project (LPCP) data and relevant literature will be incorporated to suggest a model to explain the influences both on and of these aspects of attachment. The third major section of discussion will explore the need for further research in this area, and examine the validity and usefulness of the methodology devised for the current project in doing so. The usefulness of the current study for understanding the lasting processes operating following the BabyTalk language intervention, and indeed for understanding normative development, will be critiqued, and suggestions for future research raised.

SECTION 1: FINDINGS AND CONCLUSIONS OF THE BABYTALK FOLLOW-UP STUDIES.

6.2 Exploring emotional literacy -

The language intervention literature.

The current project involved a follow-up study at 11-years of control and experimental group children involved in the Manchester-based BabyTalk intervention (Ward, 1999). For a number of reasons, the focus of this study was to explore the social functioning and emotional literacy of the experimental group in comparison to controls. The need for such variables to be explored following early language intervention has recently been emphasised by both the World Health Organisation (Enderby, 1992) and a large government funded meta-analysis of outcome following early language intervention (Law *et al*, 1998). While exploration of improvements in the areas of social and emotional functioning following language intervention are limited and their methodology questionable (e.g. Fowler, 1993 & 1997), there is preliminary and anecdotal evidence that such an improvement might be associated with successful intervention. In addition to this, many studies which have followed up children identified with language delay who received either no or ineffective intervention have reported impaired emotional functioning and understanding at later follow-up (e.g. Conti-Ramsden *et al*, 2001, Johnson *et al*, 1999). These reviews concurred about the need for further consideration of the effects of language ability on functioning in the realms of cognitive, behavioural and social abilities.

Exploring emotional literacy - IQ data.

In addition, the interest in exploring emotional intelligence with this sample was encouraged by the remarkable results of the 7-year follow-up data. The finding that shot the BabyTalk intervention into the media spotlight in 1999 was that the BabyTalk experimental group had IQ scores well above average and one standard deviation higher than the control group. Closer examination of this data revealed that

this improvement in Full Scale IQ was not brought about by an improvement in Verbal IQ alone. Indeed the difference between the control and experimental groups was even more marked for Performance IQ than Verbal IQ. This had occurred despite the fact that although language delayed children typically demonstrate disadvantages in Verbal IQ, their Performance IQ is typically not impaired (Stark *et al*, 1983). It seemed therefore that additional influences had been at work in the improvements in evidence in the BabyTalk intervention, which might well be in evidence in other areas of functioning.

Exploring emotional literacy - attachment literature.

It would be disingenuous not to admit that the initial interest in the BabyTalk project was a theory about what those 'additional influences at work' might be. It was recognised that the format of the BabyTalk intervention, in encouraging that mother and child to spend at least 30 minutes a day of quality, uninterrupted, one-to-one, child-led and highly vocal interaction avoiding reprimands, at least contained elements in common with interventions designed to enhance mother-child attachment security. The emphasis in the programme of the importance of the mothers' "total availability" (Ward, 2000) does seem likely to have made the child "feel secure and untroubled about the availability of the attachment figure" (Ainsworth, 1978) which remains the working definition of what we mean by infant security.

In her studies in Uganda, Mary Ainsworth noted that the mothers of the most secure infants were those who were most talkative and emotionally open in their engagements with her (Ainsworth, 1967). In this sense, the relationship between a mother's verbal style and her infant's security has long been drawn. More recently, a meta-analysis of attachment research has attempted to identify the key components in mother-child behaviour relating to attachment security (De Wolff and van IJzendoorn, 1997). Of particular importance were two concepts labeled mutuality and synchrony. The former construct, mutuality (Kiser *et al*, 1986) relates to mother and child engaging in joint attention and affective sharing. Synchrony (Isabella *et al*, 1991) refers to the extent that interaction is reciprocal and mutually rewarding. The BabyTalk intervention certainly seems to emphasise such aspects of parent-child interaction. As Belsky (2002) writes of the possible link between attachment and

language abilities, "the very sensitivity that promotes security leads to interactions that are optimally suited for "stretching" the child's linguistic capacities." (Belsky, 2002, p.375).

A secure, close, consistent, joyful interaction between mother and child, then, is advocated by the BabyTalk intervention. It is also emphasised in other interventions associated with successful social outcome (e.g. Fowler, 1993). In the general language intervention literature the value of encouraging the optimum interactive style between parent and infant has been acknowledged, even if the exact nature of that interactive style as 'attachment enhancing' has not been articulated.

In all, consideration of an 'attachment' dimension to the BabyTalk intervention seems justified. However, the methodological tools for examining this hypothesis are not immediately apparent. There is no easy means of access to the earlier attachment history of an 11 year old child. In terms of the wider attachment literature, however, one of the highest correlates with earlier attachment security in this age group is social functioning and emotional understanding (e.g. Bohlin *et al*, 2000, Elicker *et al*, 1992).

Exploring emotional literacy - SDQ (Strengths and Difficulties Questionnaire) Findings.

From the language intervention literature and also from the posited attachment interpretation of the BabyTalk intervention, the current thesis sought to study the Manchester sample at 11 years in terms of the children's social and emotional functioning. Yet, the methodological tools for doing so were, for such an important aspect of functioning, rather limited. One means of assessing some of the aspects of what we understand by 'emotional intelligence' was using an established, respected, reliable and valid behavioural questionnaire, i.e. the Strengths and Difficulties Questionnaire (Goodman, 1997). The sub-scales of this measure are prosocial behaviour, hyperactivity, emotional symptoms, conduct problems and peer problems. In fact, of these sub-scales the only one which reported a statistically significant difference between the control and the experimental group in favour of the experimental group was prosocial behaviour. This finding for prosocial behaviour was of great interest, and indeed all of the subscales and the overall score, with the

exception of hyperactivity, did reveal more optimal scores for the experimental group even if they did not reach statistical significance. This evidence seemed promising enough to anticipate that the more detailed interview-based measure of emotional intelligence might also yield clear differences between the control and experimental group.

6.3 Constructing the F&F interview and coding sheet.

For this purpose of examining emotional intelligence and social functioning the F&F interview and an associated coding scheme were developed and their validity and reliability established in conjunction with a same-aged cohort from the London Parent Child Project (LPCP). The LPCP (Steele *et al*, 1990) is a longitudinal study with a middle-class sample, and data collected includes the parents' Adult Attachment Interviews undertaken before the children's birth, and Strange Situation assessments with the children undertaken at 12 months. Thus, the archive of prior attachment assessments available for the London sample proved a fertile resource for investigating the reliability and validity of an interview-based measure of emotional intelligence appropriate for 11-year olds.

In constructing the interview and coding scheme, attention was given to identifying the key aspects of emotional intelligence and how best to assess these abilities. Developing the F&F interview and coding scheme with the LPCP, as mentioned above, had the added benefit of exploring how children's responses related to their earlier attachment history. As such, the responses of the secure group of LPCP children could be compared with the BabyTalk experimental group, such that any similarities might be suggestive of the intervention's influence on attachment relationships. In considering patterns of attachment at 11 years, some aspects of the interview and coding related more explicitly to core attachment concepts such as parental availability, avoidance behaviours and overall security in significant relationships. In terms of thinking about emotional intelligence, aspects of children's abilities for metacognition and reflective functioning were examined, including their ability to assume the mental/emotional perspective of others, and to show an understanding of diverse feelings being present in important relationships. For further

details of the rationale behind the interview format, refer to Chapter 3. The interview and coding scheme are reproduced in Appendix I and II. Thoughts about the validity of the assessment technique are discussed later in this chapter.

6.4 Findings with the BabyTalk sample

Results from the F&F interview as it applied to the BabyTalk sample.

It was a great disappointment therefore that the differences between the control and experimental BabyTalk group was not statistically significant for most of the subscales of the F&F interview. The two groups were not differentiated by their skill at perspective taking, ability to acknowledge diverse feelings in others or their self-assessed social competence and quality of peer relationships. Also, part of the interview coding was classification of the children as secure or insecure in relation to important relationships. A difference between the groups seemed to emerge here, with 67% of the experimental group classified as secure, versus only 42 % of controls, however this missed statistical significance in such a small sample. One subscale, reaction to distress, did however show a remarkable difference between the control and experimental groups ($p < .001$). This scale referred to children's responses to a question asking what they do when distressed. The BabyTalk experimental group children tended to have active and adaptive responses to this question. Either seeking comfort from others or engaging in a favoured activity that relieved their unhappiness. The control group children were much more likely to act either passively or aggressively; children mentioned sobbing into pillows, just ignoring it, or "taking it out" on their siblings or friends. This sub-scale was, with the LPCP, associated with earlier attachment in terms of the Strange Situation with mother at 12 months, but was not related to the mother's Adult Attachment interview security. It was with great interest that it was noted that this one sub-scale that did differentiate the control and experimental groups was effectively a measure of the child's "non-verbal" behaviour rather than a strictly verbal capacity. This finding, prompted speculations stemming from the literature on early brain development, and encouraged a new approach to looking at the interview data, this time examining non-verbal communication of the children.

Results of the BabyTalk sample's responses to the NEBS.

Children's responses to how they reacted to distress suggested that the influence of participating in the BabyTalk intervention might be more evident at 11-years in terms of their non-verbal behavioural responses to the emotionally challenging questions. Recent research from neurobiology also suggests that in the period when the BabyTalk programme was principally delivered (9 months to 24 months) it is the right side of the brain, associated with emotional expression and non-verbal social capacities, which is predominately developing. The left hemisphere, associated more with language development, is also of course influenced at this time, but develops more fully later and, importantly, is more open to continuing influences throughout development. Interestingly, it is the right side of the brain which is comparatively more active when the attachment system is aroused (e.g. in a mother's responding to her infant's cries).

A closer examination of the children's non-verbal right brain-associated behaviours seemed justified, but once again the methodological tools for doing so were lacking. A protocol for examining "non-verbal" behaviour was therefore established after due consideration of the aspects of behaviour, such as negative affect and eye contact, most likely to be of import. (See Chapter 5 for further details of the rational and formation of the Non-verbal and Emotional Behaviour scales (NEBS).)

The results of this analysis revealed that the control and experimental group children were significantly differentiated in several aspects of their "non-verbal behaviour". Analysis with the LPCP had shown associations between displays of distress and fear and frustration with earlier Strange Situation security with mother. Remarkably, statistically significant differences also emerged between the control and experimental group for their displays of negative affect and frustration. A composite score, non-verbal overall which included the scores from 'reaction to distress' in the F&F interview, and "non-verbal" measures of distress/fear and frustration (highly associated with earlier attachment in the LPCP ($p < .001$)) also clearly differentiated the control and experimental group. These results are exciting, but raised questions about how such marked differences existed in the non-verbal behaviour of the

children but not in their verbal expression of emotional intelligence following a language intervention!

Comparing findings from Group 1 and Group 2 BabyTalk intervention children.

In seeking to understand the findings from the F&F interview and NEBS data further, analysis was made comparing the results for different forms of the BabyTalk intervention which were delivered. The exact nature of the BabyTalk intervention depended on the particular nature of the children's difficulties. Of the children followed up at 11 years, some had earlier been diagnosed with expressive and receptive language delay alone, while others had additional difficulties with listening skills in terms of focusing selectively on sound. The latter children received a more enhanced BabyTalk programme with special emphasis on altering the interactive style of mother and infant. Proximity with the infant during interactions was especially encouraged to help the infant perceive her input clearly and it was emphasised that the mothers should always respond to their child's communicative efforts. These aspects of the intervention ; the importance of the proximity of the infant to the mother, their eye-contact, and the nature of the shared communication passing between them, all emphasised by the group 1 BabyTalk programme, are cited by Mary Ainsworth (1967) as critical aspects in the development of attachment.

In order to examine whether the children who had the group 1 intervention were more likely to display behaviours at 11 years indicative of earlier secure attachment, comparisons were undertaken of group 1 verses group 2 BabyTalk intervention children. Caution is needed when interpreting these results due to the small sample size involved and the post-hoc nature of the hypothesis, however differences were impressive none-the-less. The group 2 children's average full scale IQ was only 85, representing a below average score, while the Group 1 infants had an average IQ of 115. This then represents two standard deviations of difference in terms of the general population performance.

In terms of the F&F interview assessment, Group 1 children were significantly more likely to be able to take the perspective of their mother and to be judged secure overall. The likelihood that they had a better quality of friendship with their best

friend only narrowly missed statistical significance. Differences between group 1 and group 2 in terms of "non-verbal" behaviour were not marked, however, suggesting that any form of the BabyTalk intervention was sufficient to elicit change in that area. Group 1 intervention was, however, significantly more likely to increase the child's confidence displayed during the interview. It seemed that the special properties of the added aspects of the Group 1 children's BabyTalk intervention was accounting for enhanced IQ performance as well as influencing aspects of behaviour associated with emotional intelligence. Properties of the more basic BabyTalk intervention given to group 2 was sufficient to have an impact on "non-verbal" behaviour displayed a decade after the intervention took place. Considerable thought is warranted to consider how these findings can be explained.

Explaining the BabyTalk 11-year results.

The sample.

It was initially a surprise, given the marked differences between the control and experimental group in IQ at 7 years, that a statistically significant difference between the groups was not evident in their SATs results. Perhaps these national tests were rather clumsy measures of children's performance, or perhaps the current sample were not representative of the 7 year sample in terms of academic achievement. To explore the latter hypothesis, the 7 year IQ scores of the control and experimental group were compared for just the sub-group from that sample who were also followed-up at 11 years. In this group no significant differences remained. The same applied to language functioning at 7 years as assessed by the WORD (Weschler Objective reading Dimension, Rust, 1996) and WOLD tests (Weschler Objective Language Dimension, Rust, 1992). Differences between the control and experimental group for those children remaining in the study at 11 years no longer existed. It seemed that somehow the current 11 year BabyTalk experimental group consisted of children who had not in fact benefited from the intervention at all in terms of IQ or language functioning - this in contrast to the highly significant and dramatic changes elicited for the whole group at 7 years. This sampling anomaly is extremely hard to explain, and was initially vastly disappointing in suggesting the poor chances of finding any significant differences between the groups that remained. However the findings

reinforce how inappropriate an approach to long-term follow up is which seeks only to consider 'how long' a particular change will last. Far more illuminating is exploration of the processes in operation driving these changes, which may be expressed differently at different stages of development. Indeed differences in aspects of functioning, particularly "non-verbal" behaviour, were detected, and the fact that they existed independently of language or IQ improvement makes them all the more interesting. The theoretical implications of this are explored below.

First, how can the sampling anomaly have occurred? How can it be that by chance the groups followed up at 11 years contains those children who at 7 years showed least improvement in language and IQ functioning. It could be that this is due in part to differential attrition between 7 at 11 years. The 11-year sample were collected by giving a list of the names of the original BabyTalk sample to the Manchester Local Educational Authority. They in turn supplied the names of the schools that the children attended. Only children who were still attending schools in Manchester were therefore traced, and perhaps some of the highest achieving children had moved to schooling outside of the area or were attending independent schools, perhaps having acquired scholarships. Access to the children depended on both the school agreeing to participate and consent being received from the child's parents. Six schools did not want to participate in the study. Two parents did not actively decline to have their children involved but did not ever return consent forms. It may be that there were systematic reasons, perhaps associated with the children's abilities, why these groups did not want to participate and others did, which may have caused the current sample to not be representative. This is a clear shortcoming of the current study. Future follow-ups should make every effort to trace as many of the original group as possible, finding a means to locate children in private education and having full backing of the LEA to encourage schools to participate.

The educational system and home environment.

A separate but related question is why these children, who at three years were dramatically accelerated in their language abilities, did not show these improvements to such a strong degree by 7 years. We can speculate about some of the difficulties of maintaining improvements in low socio-economic environments. Not only may the

children not have remained in a social environment where the interactions they experienced remained capable of keeping them above their developmental level, but the schooling environment was unlikely to cater for children with advanced abilities. The children of inner-city Manchester are growing up in a tough environment socially and economically. At 11 years they are beginning the transition into adolescence and all of the complex changes in emotions and relationships with parents and peers that that entails. It may well be that enhanced language use and high emotional intelligence are not adaptive for children in that environment and that they wither from lack of use. Research has already identified that children, and in middle class samples particularly boys, who are intelligent and highly socially aware, have a tendency to play down their abilities as they realise that they are not adaptive in terms of their peer acceptance (e.g. Johnson *et al*, 1997, Gottman *et al*, 1997).

6.5 Suggestions for further follow-up studies.

In view of the very unique situation of the children in this deprived inner-city area, and the findings of the studies cited above, perhaps more specialised measures are needed to detect any changes that the BabyTalk intervention might have elicited. Perhaps more consideration should have been given in the interview to the special social circumstances of the children involved and the associated definition of 'adaptive' social behaviour. Theory of mind tasks could perhaps be undertaken with the children using scenarios familiar to them.

IQ scores were not conducted at the 11-year follow-up and it would be interesting to compare scores at a later developmental time-point with those collected at seven years. They were not collected at 11 years given the assumption that the 7 year data would provide this information and that IQ is relatively stable, however, many children in the 11 year sample were not traced and included in the 7 year follow-up.

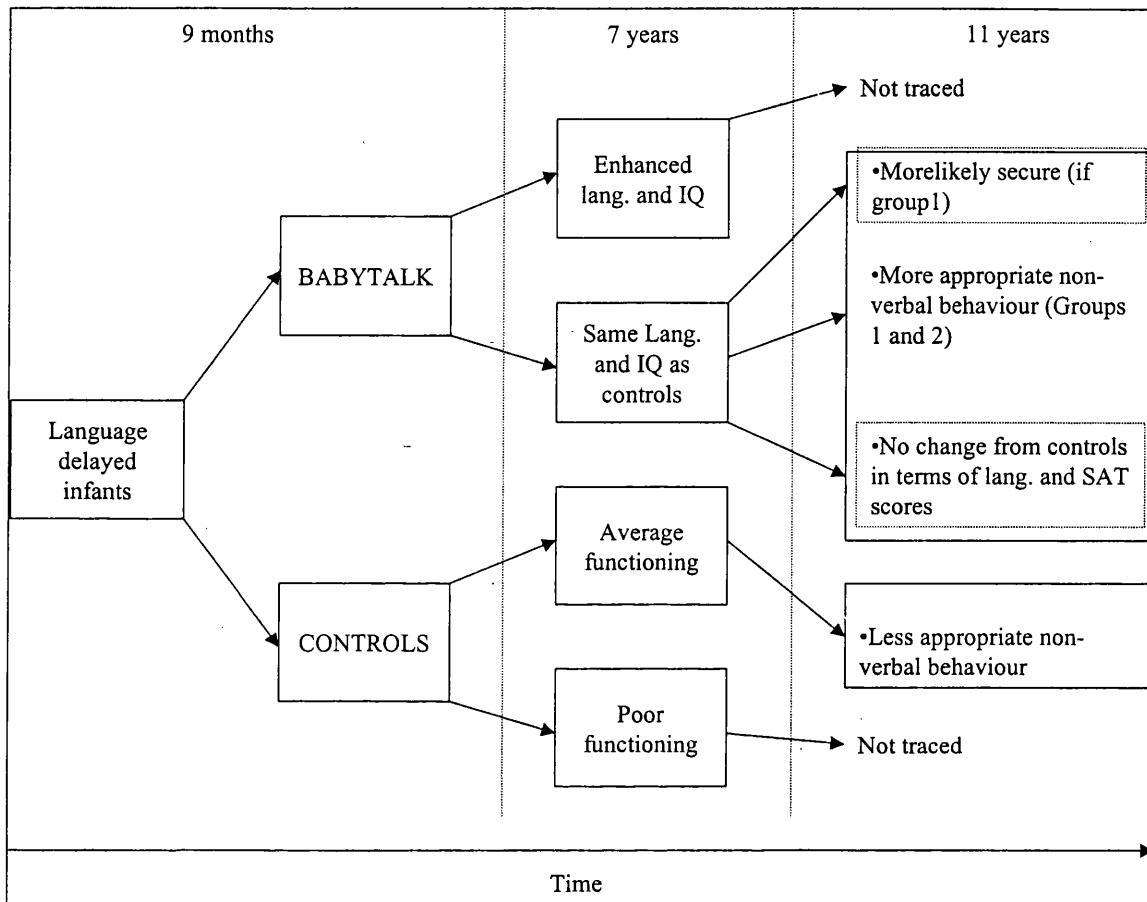
The BabyTalk initiative is currently supported by the government's Sure-Start programme, featuring as a recommended intervention strategy on their website. This programme is aimed at investing money in pre-school-aged children after acknowledging the importance of enhancing development in the early years. As a

result, new BabyTalk intervention samples are available for further study. It would be fascinating and very revealing if Strange Situation assessments could be undertaken with these children and their parents both prior to beginning the intervention and several months afterwards. Observations could also be undertaken in the home examining any changes in parent-child interactive style. This would also allow for the extent to which the parents actually undertake the intervention to be controlled. Fathers could also be encouraged to participate and their possibly unique contribution in this context explored. In addition, the benefits of the BabyTalk intervention in families from different cultural and economic backgrounds could be explored, to see whether the benefits are universal or culture-specific.

6.6 Building a model of the processes in operation.

Figure 1 overleaf summarises the patterns of influence and outcome which have been operating on the BabyTalk sample over time, and were displayed in earlier follow-up and 11 year findings reported in this thesis.

Fig 1: Pattern of influences and outcome operating on the BabyTalk sample over time.



In summary, and as the figure above makes clear, the current study at 11 years was not representative of the 7 year study in terms of including BabyTalk intervention children with enhanced cognitive and language abilities. Despite this, the children who had had the intervention at 11 years were differentiated from controls in terms of displaying more appropriate "non-verbal" behaviours. Both group 1 and group 2 children showed enhanced "non-verbal" skills, however it was the children who had the group 1 intervention who were significantly more likely to be classified as 'secure' in their important relationships. Some special aspect of this more intensive group 1 intervention seems to be influencing the attachment strategy of the child. The intervention overall seems to have been capable of influencing non-verbal communication independently of eliciting change in verbal or academic skills. The next section seeks to consider these findings within the theoretical framework of attachment literature.

SECTION II: EXPLAINING THE FINDINGS IN AN ATTACHMENT FRAMEWORK.

6.7: Introduction

The findings from the BabyTalk sample, coupled with the results of work undertaken with the London Parent Child Project (LPCP), feed into the question of how language, cognition and emotional understanding inter-relate. The following sections will seek to explore through these findings how a psychosocial perspective, using attachment as a pathway, can offer useful insights to this question. By revisiting the relationships between language and emotional understanding, attachment, language and cognitive ability, and the apparent difference between non-verbal and verbal aspects of attachment functioning, an attempt will be made to draw a model of the processes operating. In this project, the case for considering verbal and non-verbal aspects of attachment behaviours as related but distinct will be outlined.

6.8 Language and its association with other aspects of development.

Early on in this project, consideration was given to the relationship between language skills and the development of emotional understanding. Indeed, many efforts have been made to explain the links between early communication and the development of literacy, cognitive functioning, pathology and social cognition and emotional literacy. Blank's work was explored, with reference to the belief that language should be considered a symbol system which transcends the immediate physical context, allowing the development of complex thought about feelings and emotions, as well as their articulation (Blank, 1982). It was noted that much the same could be said about interactive style and attachment behaviours. Understanding 'disembedded thought', acquired through verbal language, was also considered critical for advanced cognitive abilities. Language can be seen as central to the process of learning, and the aspects of learning associated with emotional understanding. Fowler et al (1993) write that: "Verbal mastery, when cognitively based, opens the door to representing, understanding and able negotiating with knowledgeable older persons to constantly

expand ones knowledge and advance one's skills." (p.19). One aspect of the current project was to explore the possibility that attachment relations are also central to the processes involved in that cycle.

In the language literature attention has also been given to examining the links between language abilities and social skills and functioning. Goodyer (2000) has noted how difficulties in communication are typically related to reading social cues such as having an awareness of the feelings and attributions of others, and being aware of the etiquette surrounding turn-taking. Difficulties with language at an early age have long been associated with later peer and interactive difficulties. The fundamental connection between language and social behaviour seems well supported. The earlier review (Chapter 1) explored how conceptually, parents' linguistic styles with their infants, and their early attachment relationships, or behavioural interactive styles between parents and children, have much in common. Institutional / academic separations between disciplines, rather than any theoretical rationale, have prevented the wider exploration of behavioural and emotional interactions and language-based interactions, between parents and children. It is considered that adding an attachment framework to understanding outcome following language delay or intervention fills some of the 'missing pieces' of contemporary accounts. This is an endeavour which has in part been successfully undertaken or begun to be considered by theorists already such as Meins (e.g. 1997) and Bus and van Ijzendoorn (1988). Similarly, thinking about the separate effects of verbal and non-verbal interaction in the attachment relationship may offer its own rewards.

6.9 Language and Attachment research.

Before attempting to construct the developmental pathways operating between language development, attachment, and social and cognitive abilities, the material to date which explores and relates language ability and attachment security should be revisited. Evidence from a variety of different sources is suggestive of a link between early attachment experiences and language competence. Some of the clearest evidence emerges not from attachment research, however, but from language and general developmental intervention studies such as work by Fowler, and that which

emerged from the Headstart intervention programmes. The relationship between language outcome and attachment is often implicit in this work rather than articulated.

Research cited at length by Fowler (1993, 1996) recognised that the nature of the relationship between the care-giver and child is the critical factor in determining the success of a language intervention. This even related to a day-care setting. Outcome of children in a preschool setting was better if they were instructed one-to-one by a regular teacher with whom they were able to form a bond. Despite disagreement about whether intervention is more successful if delivered by a parent or a clinician, reviews have begun to recognise that parent intervention allows change in what may have been maladaptive parent-child interactive styles. Authors of such studies have speculated that long-term changes are a function of an alteration in ongoing parent-child interactive style, and particularly sensitivity to children's verbal and non-verbal communications. For example, a study by Eiserman *et al* (1992) concluded that a most important aspect of parent-led intervention was that parents increased their sensitivity to their children and this allowed them to properly nurture children's communicative efforts. The attachment aspect of this observation was recognised by the authors. There are shortcomings, in terms of sample sizes and methodology of these studies, and an element of speculation about the links between aspects of attachment behaviours such as sensitivity, responsivity and exploration, and language skills. However, a strong sense that parental interactive style has a strong influence on language abilities and related difficulties, emerges.

The varied outcome, and particularly poor long term effects with lower socioeconomic groups, of the Headstart initiatives in America, caused researchers to take a closer look at the developmental processes and pathways involved. These interventions were typically aimed at giving under-privileged children a start in life via an early intervention likely to boost social achievement in terms of academic performance, language skills and social functioning. Studies conducted in research with the Abecedarian and CARE Headstart projects (e.g. Bradley and Caldwell, 1983) revealed that it was special properties of the children's home environment, over and above their socio-economic status, which was best able to predict improvements in their intellectual and language development. These researchers found that the most important effects of the home environment depended somewhat on the developmental

stage of the children. In the preschool period maternal responsivity, a factor clearly related to attachment behaviours, was most influential on children's achievement. After 4 years, it was mother's acceptance of the child and involvement in encouraging the child, arguably also attachment-related behaviours, which were more strongly associated with achievement. This recognition, that while the socially responsive early environment is critical for socio-emotional and academic development in the early years, but at later developmental stages development is related to other facets of parental behaviour, such as encouraging intellectual exploration, may have implications for outcome following the BabyTalk intervention. Importantly, however, this research in addition to other work emphasises that early attachment may well be the primary social scaffold for language, socio-emotional and perhaps areas of cognitive learning experiences.

Work in the area of attachment research has tended to be more tentative in making an association between attachment security and language and cognitive development. The association between early attachment and later social abilities and emotional understanding is, however, empirically well supported (e.g. Bohlin *et al*, 2000, Elicker *et al*, 1992, Steele *et al*, 2002). A 1995 meta-analysis of attachment, intelligence and language (van IJzendoorn, Dijkstra *et al*, 1995) found a weak correlation between attachment and IQ, but the combined effect size of studies on language competence was substantial. The authors noted the need for further work and consideration of the various pathways influencing socio-emotional and cognitive/language development. Meins is one of very few investigators pioneering attachment research that seeks to explore language competence. She has found that secure children have larger vocabularies and that their mothers tend to report that their children engage in less 'meaningless information'. As a consequence, her work has explored the concept of the "mind-mindedness" (Meins, 1997) of parents as fostering differences in attachment, 'Theory of Mind' and language abilities (Meins, 1997, 2002). In this way Meins is perhaps beginning to articulate a verbal communication component to the attachment relationship. Indeed she is currently running a project in the North East of England studying the impact of early mother-infant interaction and joint attention skills on language development, and the results of this work are awaited with great interest.

Given that parents' behavioural styles and communicative interactive styles seem to be closely related developmental influences, it is surprising that more work has not been undertaken to explore the relationship between them. This is especially the case since Mary Ainsworth, one of the pioneer's of attachment research, emphasised that it was mothers with a good verbal communication style who tended to have secure babies (Ainsworth, 1967). Somewhat ironically, however, the Strange Situation, the instrument that Ainsworth devised in order to assess attachment security, may be in part responsible for the neglect of communicative style in child attachment research. This procedure focuses entirely on the behavioural interactive style of mother and infant, particularly in moments of reunion, and verbal communication between them is underplayed or disregarded, admittedly in part because of the limited language abilities of 12 month olds. Researchers have relied on this very useful measure, but as a consequence thought little about the role of verbal communication in attachment. This is despite the fact that Bowlby himself did write at length about how the emergence of language (in the child) transforms the behavioural attachment relationship into a goal-corrected partnership (Bowlby, 1969). The field of attachment has remained in a position where adult attachment is assessed by the Adult Attachment Interview, and thus is assessed by adult's verbal style, and the child-parent attachment by behaviour alone. The transition from behavioural to verbal displays has been assumed to occur at some developmental time-point as the Internal Working Model (Bowlby, 1969) is formed. This process is rather hazy and conceptually under-explored. Evidence from the current project begins to suggest that while verbal and non-verbal attachment are typically closely related, that somewhat different developmental pathways are implicated. This evidence will now be reviewed.

6.10 Evidence for considering verbal and non-verbal aspects of attachment behaviours as related but separate.

In the BabyTalk study, the anticipated link between participation in the intervention and enhanced emotional intelligence did not emerge. There was also no association between intervention status and the coherence of the child's narrative, which with the LPCP had been associated with earlier attachment security. There was a difference between the experimental and control group in terms of security, but this missed

significance. Instead of these "verbal" aspects of behaviour shown to relate to earlier attachment history, and particularly the mother's verbal style, differences in the BabyTalk experimental group were manifest in children's "non-verbal" behaviour. This "non-verbal" behaviour was with, the LPCP, strongly related to earlier Strange Situation assessment, and although also related to the Mother's AAI, this association was no longer significant once SS was controlled for. The BabyTalk children seemed able to have "non-verbal" behaviour associated with earlier SS non-verbal attachment security significantly altered, without changes occurring to their "verbal" style, which was associated in the LPCP group most strongly with Mother's verbal style. It seemed then that non-verbal aspects associated with attachment, such as behaviour when distressed, could be influenced independently of the more verbal aspects of attachment typically assessed with older children and adults, such as the coherence of their narrative when discussing emotionally salient topics.

To recap the mentioned findings from analysis with the LPCP, these data also point to the validity of considering verbal and non-verbal aspects of attachment security as being related but separate dimensions. In this group, for whom earlier attachment data was available, the association with coherence of narrative and social competence was stronger for the mother's AAI than the SS with mother at 12 months. The reverse was true for "non-verbal" interactive style, and particularly children's reaction to distress, which was associated with SS assessment but not the mother's AAI. This data emphasises the importance of the ongoing nature of communication between mother and child. The need to consider the likely influence of the particular way parents talk about their and their children's emotions, in terms of the child's own understanding and response to emotion and their feeling of self-worth, has been emphasised by previous findings with this sample (Steele *et al*, 2002). The current project notes that the behavioural interactive style might be more closely related to the continuing "non-verbal" interactive style of children and, in particular, their response to distress. Typically parental behaviour is likely to encourage a similar quality of verbal and non-verbal behaviour associated with security, and these are likely to be highly inter-related. Indeed they are highly inter-related in the middle class non-clinical sample of the LPCP. The Manchester sample, however, indicates that these abilities can be influenced separately. Conceptually separating verbal and non-verbal aspects of attachment functioning may offer greater insights into the processes in

operation. It might also help target appropriate areas of functioning in intervention work, particularly suggesting that a complete intervention needs to consider both verbal and non-verbal aspects of attachment influences and functioning.

It could be that the effects of the BabyTalk was limited in socio-emotional terms to the 12-18 month period, altering specific aspects of behaviour associated with early influences, but not fundamentally altering the mother's attachment orientations. Considering verbal and non-verbal attachment as separate influences more influential at different stages might also contribute to understanding Meins' (2002) finding that 'maternal mind-mindedness' but not attachment predicts children's abilities at 'Theory of Mind' tasks at 48 months. These verbal capacities might be more influenced by the ongoing effects of mother's appropriate use of mental state comments, while the effects of the non-verbal interactive style would be detected in more stable properties of the child's non-verbal behaviours. The finding by Belsky *et al* (2002), that the attachment security at 12 months is less predictive of later linguistic competence than subsequent maternal sensitivity, referred to as 'lawful discontinuity' (Belsky *et al*, 1991), also supports the idea that language functioning is more influenced by ongoing maternal influences which are potentially independent of early interaction history.

Evidence from neurobiology.

The current study also examined how evidence from neurobiology offers some explanation for how these differences might emerge. This material suggests that, given the nature of early brain maturation, it is non-verbal behaviours which are far more likely to be influenced by the nature of early interaction experiences. The right hemisphere is associated with many non-verbal social capacities including the expression of emotion (e.g. Blonder *et al*, 1991), the ability to interpret the emotional signal of others (Nakamura *et al*, 1999), and interestingly, with attachment related behaviours (Schore, 2000, Loberbaum, 2002). Studies using fMRI and SPECT imaging techniques suggest that during very early social interactions, it is the right side of the infant's brain and its associated functions which is developing more than the left (e.g. Adolphs, 2001, Chiron *et al*, 1997, Devinsky, 2000). The left hemisphere, associated with language development, is seen in these studies to develop

more fully later (after 4 years of age) and is more open to continuing influences throughout development. Clearly the behaviours mentioned are not exclusive to one hemisphere, however the predominant association of non-verbal emotional skills with the right hemisphere, coupled with the predominance of this hemisphere's development in the under threes, offer an alluring explanation for the outcome detected at 11 years following the BabyTalk intervention.

It is also of interest that the right hemisphere is also associated with mathematical skills (Devinsky, 1999) given that the BabyTalk intervention children had mean SAT scores for mathematics higher than the control group. Initially it was a surprise to find a difference in mathematics but not English, but differences in the right hemisphere development of these two groups might possibly explain this anomaly. In the attachment literature poor mathematical ability has been associated with insecure-disorganised attachment patterns (Moss *et al*, 1999).

The idea that emotions are an important part of the attachment system is not new, and some definitions consider attachment theory to be a theory of emotion regulation. Attachment theory has, however, tended to understand that the behavioural aspects of infant-parent attachment simply generalise to verbal capacities later in life. The Internal Working Model (IWM) naturally takes a verbal form as the child develops, and the verbal and non-verbal aspects of attachment are not specifically differentiated. Such a view, however, rather skirts around issues such as how different attachments to different attachment figures synthesise into one clear verbal pattern. Also unclear are which attachment behaviours are more or less susceptible to alteration in a changing environment. It would be most interesting to pursue whether, as the current projects hypothesis might predict, that adults classified as 'earned secure' in the Adult Attachment Interview, who through later relationships have become secure despite poor early caregiver relationships, might show lasting non-verbal behaviours associated with insecure early attachment history. Indeed, Cowan *et al* (1996) have reported that while earned-secure adults can parent effectively, that they remain more prone to depression.

Summary.

In terms of attachment theorising, then, it may be necessary to re-consider what attachment means in relation to two aspects of social functioning, verbal and non-verbal, in which somewhat different processes might be operating. The LPCP and BabyTalk findings indicate that not only language, but other aspects of emotional communicative abilities are implicated in quality parent-child communication, and have their own inter-related but separate influence on long-term outcome. Figure 2 below attempts to show in diagrammatic form how these processes might be operating over time.

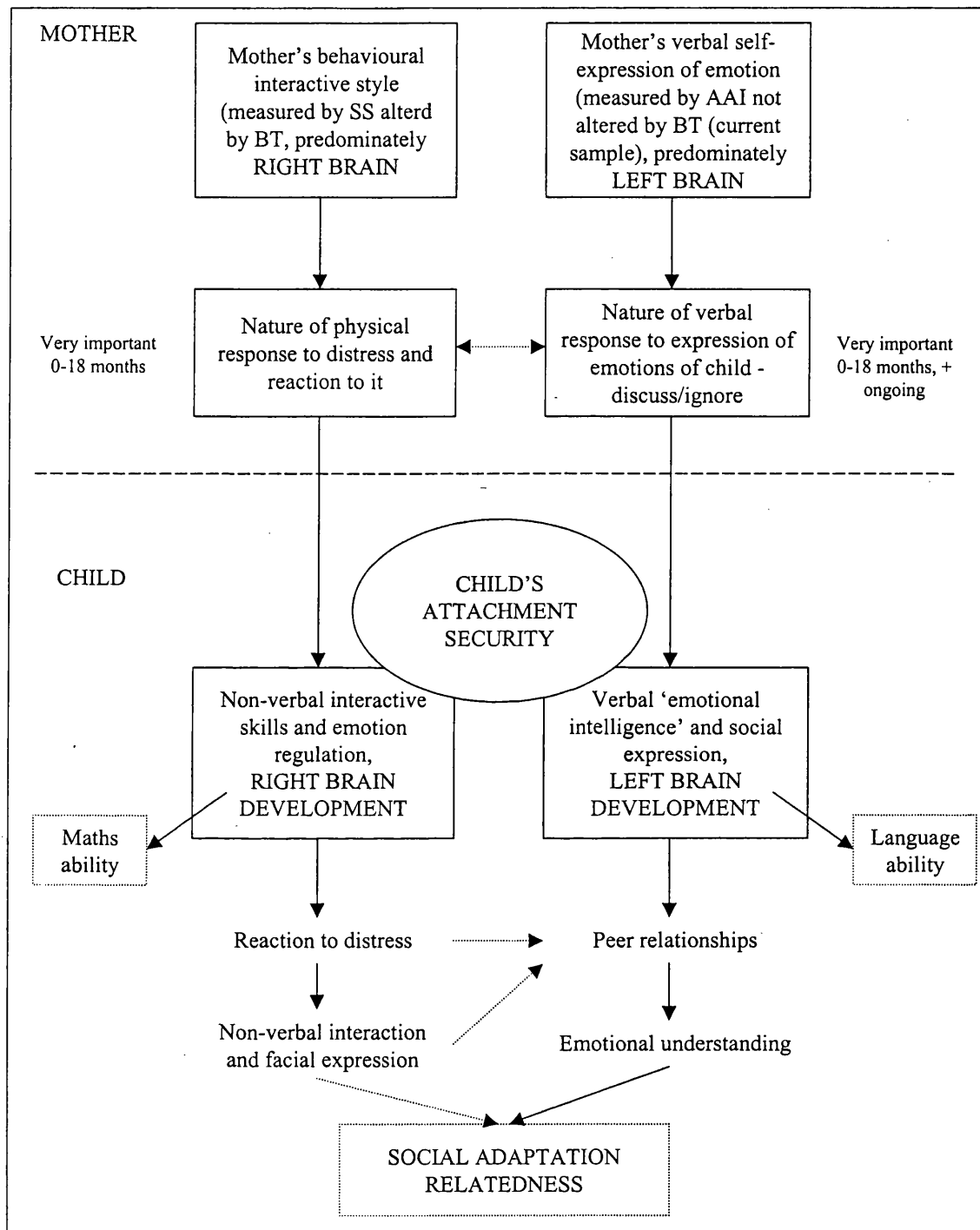


Figure 2: Suggested effects of mothers' styles of verbal and non-verbal interactions

Included in the depiction of the patterns of influences operating and influencing attachment security and related social outcomes is a suggestion for the separate influences of verbal and non-verbal interaction. To revisit the earlier discussion, one reason for conceptualising the separateness of verbal and nonverbal attachment was the fact that the BabyTalk intervention seemed to have influenced "non-verbal" attachment behaviours and outcome independently of "verbal" ones. This separation is also supported by the closer association in the LPCP between SS security and later "non-verbal" emotional behaviours and displays, and the mother's AAI and children's emotional intelligence skills and the coherence of their narratives. The associations between mathematics and "non-verbal" attachment behaviours, and language abilities and "verbal" attachment, are also depicted above. Recent advances in neurobiology in identifying the roles and development of the right and left hemispheres also suggest a developmental reason why these verbal and non-verbal processes might be somewhat separate, and more susceptible to change at different developmental stages.

6.11 Linking language, attachment, cognitive abilities, and social intelligence.

In the context of the current study, significant attention has been given to the relationship between language and attachment, between language and cognitive abilities, and the effects of attachment, language and cognitive abilities on social intelligence. The picture that has emerged is one where these processes are all dynamically inter-related. A theorist who has previously been interested in the relationship between these aspects is Greenberg who in 1991 wrote that "affect, cognition, and language are integrated in an increasingly complex fashion at progressive phases of development"(p.21). In his conceptualisation, social competence is dependent on having an understanding of affect and emotional language, basic cognitive understanding and expectancies, and linguistic and communication skills. These are dependent on a child's social confidence and expectations about how their social efforts will be received. Importantly, Greenberg has drawn attention to what he considers the separate but most critical aspects of parental behaviour which contribute to the optimal development of social awareness. Although not writing in the context of attachment literature, he recognises the

importance of both sensitive and responsive early parenting, and also the parent's appropriate use of language in relation to internal states and particularly affect.

Thus the acknowledgments that these processes are inter-related, and that the language and behavioural aspects of interaction are separately important, are not new in the literature. However this has not received sufficient consideration in the attachment literature, and the developmental trajectories have not been adequately considered. The current project, for example, suggests that interactive style as assessed by the SS may have a direct influence on a child's later ability to deal with reactions and responses to distress. In a separate process, the mother's verbal style with her infant operates via language skills to create the capacity to consider abstract feelings and concepts about the self and others. Within this complex web of influence including attachment, language, cognitive abilities and social intelligence, then, pathways of influence can be detected. Figure 3 suggests how these processes might be interrelated in diagrammatic form.

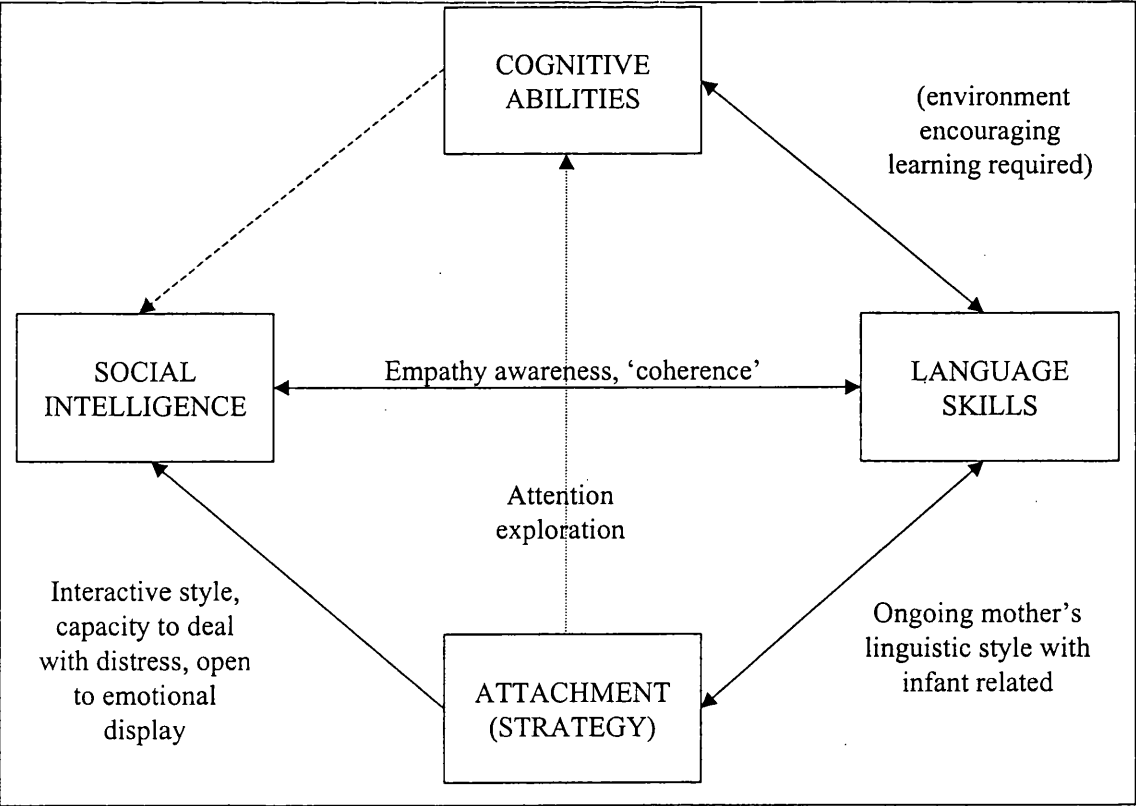


Figure 3: Suggested interaction of attachment, language, social intelligence and cognitive abilities.

6. 12 Considering the relationship between attachment, language, and cognitive and social development.

Attachment and language.

Figure 3 attempts to show how attachment is related to language ability in terms of the mother's ongoing dialogue with her child about the expression of feelings. Recent work from the attachment paradigm, (e.g. Steele *et al*, 2002) has suggested that the mother's approach to discussing emotionally salient issues with her child is likely to manifest itself in the child's own confidence and therefore capacity to engage in discussion of emotional issues. Also, a meta-analysis (Van IJzendoorn *et al*, 1995) has found a correlation between language ability and attachment security which supports the relationship between them. In the current study with the children in the LPCP project there was an association between the coherence of their narrative when discussing emotionally salient topics, and the security of their mother's AAIs. In all, an association between attachment and language seemed clear, and to mark this in the diagram above seems entirely appropriate.

Attachment and Cognitive Ability.

The association between attachment and cognitive ability is more controversial. This may in part be due to a past preoccupation in attachment literature with differentiating attachment from cognitive competence, in an attempt to bolster the discriminant validity of the construct of attachment. In the meta-analysis (Van IJzendoorn *et al*, 1995) referred to above, only a weak association between DQ or IQ and attachment was detected. However, other studies have found more clear associations between attachment and cognitive skills (e.g. Jacobsen, 1994) offering good evidence of cognitive advantages associated with secure attachment, but typically offering only limited explanations of the specific mechanisms involved. It has been suggested that attachment security offers improvement in cognitive development due to the consequent ability to direct attention away from monitoring the care-giver and directly towards novel stimuli, and with confidence (Main 1991). The 11-year BabyTalk intervention children were influenced in "non-verbal" interaction but not

language functioning or cognitive ability, while at 7 years improved language was associated with IQ enhancement. This might indicate that enhanced cognitive abilities operate via the mother's ability to discuss abstract aspects of speech, such as relating to emotions, which itself enables the abstract thinking associated with advanced cognitive abilities. In the diagram, a direct association is tentatively made between attachment and cognitive abilities, while a link via language skills is suggested with more confidence.

Social intelligence.

The current project set out in part to examine whether, perhaps via an alteration in attachment security, the BabyTalk intervention might have influenced children's social intelligence. For the sample of children followed-up at 11 years this could not be said to be the case. However, in the course of analysis, interesting findings, with relevance to attachment theorising, did emerge. Review of the relevant literature revealed a plethora of literature associating earlier attachment history with later capacities associated with emotional intelligence. Attachment has been drawn in the diagram as influencing social intelligence. Work in the current project with the LPCP suggested that the association between the child's social capacities and earlier attachment is in fact closer to mother's verbally expressed attachment strategy before the child's birth than the child's own 12-month Strange Situation assessment. This fuelled consideration of the need to separate these constructs. Language skills can be seen to relate directly to social intelligence, as research on language intervention and outcome suggests, and as common sense might dictate given how important communication is to negotiating relationships. Social intelligence and language skills are joined with a two-way arrow in the diagram, reflecting the fact that language is socially embedded. Since a certain level of cognitive ability is likely to be necessary to engage social intelligence, these capacities are tentatively joined in the diagram.

Although it is not made clear in the diagram, the directions of influence between these abilities, and the importance of each ability is of course likely to vary according to the child's age and developmental stage, and the particular environment in which they find themselves.

There is a clear need to synthesise accounts from different disciplines (attachment theory, language research, general developmental psychology and neurobiology) of the relationship between interactive style, language, cognitive ability and social ability, and to explore these processes in further detail. Exciting projects, such as the data emerging from additional and planned work with the London Parent Child Project, and the study initiated by Meins, exploring the impact of mother-infant interaction on attention and language skills are ongoing. This suggests that there are soon likely to be significant developments in terms of acknowledging and exploring the interrelationship of attachment, language, and social intelligence in the near future. This will be of great benefit in terms of understanding these aspects of development, as well as offering the prospect of developing excellent interventions with a holistic approach to child development, and tailoring intervention to specific needs.

The next section of this discussion will suggest directions of future research to this end of exploring the relationships between attachment, language and cognitive and social development. It will also revisit the BabyTalk sample, suggesting further work to be undertaken with this sample, as well as acknowledging the deficiencies of the current project. This section will also review the methodology used in the current project and assess its validity in conjunction with its use in future research.

SECTION 3: FURTHER RESEARCH.

In order to undertake further research concerning links among language, attachment and cognitive and social development, valid measures are needed. This applies equally to future studies examining long-term outcome following language intervention and attachment-focused research. In the context of the current study, it became clear that few methodological tools for considering attachment, emotional intelligence and non-verbal communication in late childhood have been developed. It was for this reason that the F&F interview was devised and its validity explored with the LPCP sample to consider emotional intelligence and as a way of reflecting back on the early mother-child relationship. The NEBS were also devised as a method for examining non-verbal interactive skills, given that few published approaches for

observing this important aspect of social behaviour were available. The following sections will review the validity of these measures, both in the context of their use in the current project, and also in terms of their application in future studies.

6.13 The validity of the F&F interview.

This interview, then, was devised and used in the study because, despite increasing recognition of the importance of emotional intelligence, there are no agreed measures of either emotional literacy or parent-child attachment for children in late childhood. Review of the literature on emotional literacy and social outcome following earlier attachment history highlighted a variety of social functioning components relating to both emotional literacy and earlier attachment that the measure should contain. These included meta-cognitive and perspective-taking abilities, the approach to organising the discussion of emotionally salient topics, parental availability, and the child's reaction to distress. Attachment research also suggested the relevance of considering empathic skills, peer relations, and the ability to recognise both positive and negative feelings towards the self and others. Detailed review of the appropriate literature was intended to give the measure and its coding scheme good face validity. The issues considered relevant were addressed in the context of a 20 minute interview asking children to speak about themselves, their friends and their family. The interview format was designed to explore interpersonal and intrapersonal abilities and assess their communication skills using challenging and novel questions about the children themselves and their important relationships.

Chapter 3 reported on how the measure was validated with the LPCP sample. Links with the previously assessed attachment status of these children and their parents were reported. Children's verbal coherence at age 11 was particularly associated with the child's mother's AAI undertaken before her birth, while the 'secure versus insecure' classification, especially if 'secure', was more strongly associated with the earlier mother-child SS procedure. Also associated with the SS with mother at 12 months were children's active versus passive responses to distress.

Thus support for the validity of the measure as a measure of attachment security emerges from the association between blind coding of the interviews and the children's earlier attachment history. It is also the case that research has emphasised that social functioning is one of the best windows onto attachment security with this age-group (e.g. Bohlin *et al*, 2000, Sroufe, Egeland & Carlson, 2001,). The idea that the F&F interview was merely assessing verbal IQ was ruled out. Despite there being a significant association between coherence and verbal IQ, coherence, and not verbal IQ, was associated with other valid and reliable measures of social functioning such as empathetic concern, perspective taking and prosocial skills. Using concurrent measures, the sub-scale of coherence emerged as associated with security a distinct concept of its own. It seemed a meaningful predictor of emotional intelligence as it is represented in the F&F interview, and also of various other validated measures of empathy and perspective taking. In all, the constructs of coherence and secure versus insecure in the interview presented as useful tools for further analysis.

The F&F interview was considered a more appropriate measure than the AAI with this age-group. This was in part because of research suggesting that at this age-group the developmental need to move towards autonomy and independence can cause adolescents to suppress their needs towards attachment figures (Ward and Carlson, 1995). The need to focus more particularly on aspects of emotional intelligence was a central reason for using a relationship-orientated interview such as the F&F interview rather than the AAI. The later interview was also considered inappropriate for use with some young people in terms of the period of concentration required to respond to the administration of it, and the potentially emotionally challenging nature of some of the content.

The current study only examined the relationship between current emotional functioning and earlier attachment history with mother. Consideration of the relationship with the father may well produce even more interesting associations with earlier attachment history and enhance the validity of this methodological tool. Preliminary investigations suggest that both father's AAI and SS at 18 months are significantly associated with coherence and 'secure verses insecure'. A role for fathers might be expected given an increasing number of studies acknowledging the complementary roles for fathers and mothers in their child's attachment and social

development (e.g. Grossmann, Grossmann *et al*, 2002, and work in progress by Dr Howard Steele.)

Another issue to be addressed re validity is whether the F&F interview is equally as appropriate with boys as with girls. Work by Johnson (1997) with a middle-class sample has suggested that boys recorded as being high on reflective self-other functioning were considered socially rejected and less socially competent than their peers by teachers, whereas girls with this capacity were seen as more socially skilled. This suggests that the same emotional skills may not be adaptive for both boys and girls, and importantly in the context of the current study, that different social environments may require different adaptations by children for effective functioning. Although differences between girls and boys were not detected in the current study, it may be that in the challenging environment of socio-economically deprived areas, that advanced emotional skills are not advantageous. Although the validity of the F&F interview may have been examined with a middle-class sample, then, more work would be required to be confident of its generisability to other socio-economic groups.

It would also be ideal if the validity of the F&F interview could be examined in relation to detailed assessments of the child's interactions at home and with peers. In this way observations of their capacities for perspective taking, empathy, and the influence of these on their interactions and views of themselves could be compared with the F&F interview findings. This would be a great undertaking, but another useful validity assessment would be to compare the self-report F&F interview classifications with how the children's peers, parents and teachers would rate them on these abilities. As mentioned previously, it would further be fascinating to see whether the coherence of children's narrative in relation to emotionally salient emotional issues differs from when they talk about less emotive subjects. This issue of discriminant validity has been explored in adults where the linguistic style of adults discussing the attachment topics introduced in the AAI interview is markedly different to when they are discussing job obligations (Waters *et al*, 1996). Given that 'coherence' is not significantly related to verbal ability this may be the case here also.

Overall it is possible to say that the F&F interview is an interesting measure, which fills something of a void in its ability to consider emotional intelligence and aspects of social functioning in 11 year olds. It is most certainly worthy of further attention and development. In the middle class sample with which it was first devised, associations with earlier attachment history and other measures of social and behavioural functioning are remarkably strong. The potential usefulness of this measure ranks as one of the most important findings to emerge from the current study.

6.14 Validity of the NEBS (non-verbal and emotional behaviour scales).

Given the widespread acknowledgement of the communicative power of non-verbal signals, there was a surprising lack of established measures or approaches for measuring non-verbal behaviour. An assessment protocol was therefore devised which could easily be used in conjunction with the F&F interview. This included a number of overt behaviours that could easily be assessed by observation, some of which were associated in the literature with the right brain hemisphere and as being associated with earlier attachment history. As with the F&F coding scheme, the validity of the measure was explored with the LPCP sample. A composite score of 'non-verbal overall', a score of overall non-verbal discomfort, was also calculated by using the sub-scales of distress/ fear, frustration and maladaptive reaction to distress from the F&F interview coding. This score formed a powerful measure of "non-verbal" behaviour, in the sense that it was highly inter-correlated with all of the NEBS sub-scales, and associated with earlier attachment as assessed by the SS, but, significantly, not the mother's AAI.

The score 'non-verbal overall' was, as expected, independent of verbal IQ. It also showed discriminatory validity in not being related to social or emotional intelligence aspects such as empathy or perspective taking, but was associated with prosocial abilities. This offers support for the assumption that there is an association between non-verbal interaction skills and the capacity for positive social interaction. Overall, then, with the LPCP, the NEBS appeared a useful, reliable and valid measure of "non-verbal" behaviour. Some of its scales were associated with early mother-child interactions, others with aspects of social intelligence. The overall score is strongly

associated with earlier SS attachment classification. Given this, it was fascinating that the BabyTalk intervention group differed significantly from the controls in a similar way that the secure children differed from insecure children in the LPCP in the SS with mother at 12 months.

The NEBS appears to be a useful tool for exploring "non-verbal" emotional expression. The current study's findings also suggest that non-verbal social cues are not 'noise' in the process of interaction, but are important keys for decoding affective life. As such this area of functioning is worthy of further attention. This work also suggests that non-verbal behaviour might offer a window onto earlier attachment history. Given the limited number of tools available to do this, non-verbal behaviour is likely to be an area of interest for attachment researchers.

Some aspects of the NEBS could, however, benefit from further consideration, work and refinement. For example, there were no associations between vocal expression and aspects of earlier attachment and emotional history. This was despite the fact that vocal expressive style is a right-brain associated behaviour. The 4 point scale of the NEBS was perhaps a rather crude approach to considering this aspect of communication, and a more subtle measure might have afforded different results. Much the same might be said of the NEBS sub-scale 'emotional expressiveness'. Working on refining these scales would be a worthwhile endeavour since an association between these aspects of communication and earlier attachment behaviours and emotional functioning would associate all these aspects of functioning with the right brain.

The findings of the BabyTalk sample suggest that differences in non-verbal communication can occur independently of verbal aspects of interaction. The NEBS were able to detect differences in this Manchester-based sample as well as the LPCP, which is promising in terms of the measure's generisability. Further work, however, would be required to be sure that the measure was measuring the same capacities in different groups of young people.

As with the F&F interview it would be of great interest to explore associations between NEBS performance and the earlier attachment history with and of the father.

This was considered outside the bounds of the current project, which explored the effects of a mother-child intervention - however the implication in terms of attachment theorising make this a fertile area for further exploration.

6.15 Review of the measures

In summary, the findings of the current study suggest that non-verbal behaviour should not be eclipsed by verbal behaviour, and recognised as an important aspect of social functioning in its own right. As such, work on the development of the NEBS or a similar scale would seem imperative. For, with effective tools for considering verbal and non-verbal aspects of attachment and related functioning, the developmental pathway between them, and their intergenerational transmission can more effectively be understood. This data, including the influence of fathers in the model, may lead to a broad understanding of different processes influencing the formation of attachment strategies, and an understanding of the links between language, attachment and cognitive and emotional development. This knowledge could lead to the development of holistic and even relatively simple intervention programmes that could elicit widespread improvement in many aspects of functioning.

CONCLUSIONS.

The current study has perhaps raised more questions than it has answered. In terms of the BabyTalk intervention group, many outstanding issues remain to be answered. What has happened to those children who earlier showed such marked improvements in their language and IQ functioning following the BabyTalk intervention? Have those improvements lasted? Why have the children followed-up in the current study not shown the same degree of improvement? Is this a functioning of their schooling and social environments? Perhaps the social functioning and attachment strategies of children are not influenced by the BabyTalk programme as anticipated? If this is so, why do these children, who show no marked differences in verbal communication, differ from controls in terms of their "non-verbal" emotional and behavioural style? Why do they differ in what they do when distressed?

In terms of theoretical understanding of the findings that have emerged, the current study has opened many areas for further exploration. The importance of forming valid and reliable measures for considering emotional intelligence, attachment in late childhood and non-verbal behaviour has become clear. It has also raised important questions in this area. Are verbal and non-verbal aspects of attachment related but separate aspects of attachment behaviour and strategies? What are the patterns of influence operating which relate language, attachment, emotional intelligence and cognitive ability?

Perhaps it is something of a disappointment not to offer more answers to these questions. At a time when attachment is a fertile area of research and many large scale research projects are being reported and initiated, however, the importance of knowing the right questions to ask and explore should not be underestimated.

The current project has particularly noted a difference in verbal and non-verbal aspects of the attachment relationship in need of further exploration. In terms of BabyTalk and other studies exploring long-term outcome following early intervention, asking the question of 'how long do effects last' has emerged as oversimplified. More important in terms of understanding is looking at the processes in operation and seeking to understand them. Effects are likely to take different forms at different stages of development, and the BabyTalk sample may well reveal further fascinating differences between experimental and control groups at later follow-up.

While the current study's most interesting findings may be the questions it poses, it has not been without its own positive findings. It has demonstrated an association between 11-year social and emotional functioning and earlier attachment history, and "non-verbal" behaviour and earlier Strange Situation attachment between mother and child. It has found that there is a statistically significant difference between the control and experimental BabyTalk infants in their response to distress and their "non-verbal" behavioural and emotional style when talking about emotionally salient topics. Further work aimed at exploring further the processes operating in this intervention, including further initiatives to introduce the ideas of BabyTalk to mothers seems entirely justified.

In finding less, in terms of the absence of the anticipated differences in "verbally expressed" emotional intelligence and assessed security in the BabyTalk sample at 11 years, more may well have been revealed. The fact that the "non-verbal" behaviours are influenced independently of "verbal" behaviours suggests that these aspects of development are separate, with widespread implications for attachment theorising and intervention. The findings also suggest that language, attachment and emotional and cognitive functioning are dynamically inter-related. This has implications for understanding child development, attachment and intervention approaches. These findings have emerged from considering research from the attachment field, wider aspects of child development, language and linguistics and also neurobiology. This reinforces the benefits of taking a multi-disciplinary approach to encourage understanding. It allows the freedom to break away from historical separations in the literature that have emerged due to arbitrary subject definition and, within disciplines, historical tendencies. When such an approach is embraced, the processes operating behind them, success and 'failure' in the BabyTalk intervention, processes linking verbal and non-verbal attachment, and language, attachment and social and cognitive development, can be fully explored.

Perhaps the most important finding to emerge from the BabyTalk 11-year follow up is that time for full exploration and understanding of verbal and non-verbal attachment, language and social and emotional cognition, is long overdue. Findings from work currently being prepared for publication, and the methodology in planned studies, should be tailored to make the current project's questions, tomorrow's project's answers.

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APPENDICES

Appendix I : The Friends and Family Interview protocol . (249)

Appendix II : The friends and Family Interview coding scheme. (252)

Appendix III : The Nonverbal and Emotional Behaviour Scale (NEBS) coding scheme. (256)

Appendix IV : Self report questionnaire package. (262)

Appendix V Information sheets. (269)

Appendix VI: (273)

Table 2 : Comparative mean WISC sub-scale and IQ scores for group 1 (expressive and receptive language delay with additional listening difficulties) and group 2 (expressive and receptive language delay only) children at 7 years of age.

Appendix VII: (274)

Summary of hierarchical regression analysis for variables (including the SS at 12 months) predicting children's 'coherence' in their responses to the SURE interview at 11 years (n = 42)

Appendix VIII: (275)

Summary of hierarchical regression analysis for variables (including mother's AAI) predicting children's classification as 'secure verses insecure' from their responses to the SURE interview at 11 years (n = 46)

Appendix IX: (276)

A note on attrition in the BabyTalk sample.

Appendix X: (277)

A note on the Group 1 versus Group 2 analysis on the BabyTalk experimental group.

Appendix I : The Friends and Family Interview protocol .

Introduce the interview

I want to get an idea about you, what sort of person you are, what you like to do, your relationships with friends and family. Usually, in relationships there are good parts, and bad parts, things we like best and things that we're not so happy withthese are some of the things that we may talk about.

Any questions for me before we start?

Remind about right not to answer and confidentiality.

If I ask you a question you don't want to answer, let me know and we'll miss it out. And what you say is confidential, that means what you say is between you and me. The only other people who may listen to the interview are people we work with and trust.

SECTION 1: SELF

Write names down for later questions about siblings.

1. Now, let's start by getting a description of the people close to you in your family. Do you live with your mum and dad?

2. Next, can you give me some idea about what sort of person you are...for example, could you tell me briefly what sort of things you like to do?

Choose one of the activities and ask for an illustration.

Can you tell me about any time you were doing [X] – like, who was there, what did you do, how did you feel, what happened in the end.

3. Now that you've told me about things you like to do, can you give me an idea of the sort of person you are inside?

Specific example.

What are the kinds of things that someone would get to know about you if they knew you well?

4. What do you most like about yourself?

Specific example.

Can you think of a time when.....

What do you like least about yourself? (*Is there something about yourself inside that you would like to change?*)

Specific example.

Can you think of a time when....

5. When you are upset, what do you do?

Specific example.

What happens then?

Is there someone you turn to?

Is there something that happened recently that made you upset?

2: SCHOOL-PEERS

General description.

Get thinking about friends in general.

Check that they spend time together outside school too.

If not, any other close friend.

Now I'm going to ask you about what it is like for you to be at school, and how things are going with friends.

6. So, how are things at school at the moment?

7. Next, could you name three of your friends?

Who would you say is your closest friend?

How long have you been friends?

What sort of things do you and [X] do together?

How often on average do you see [X]?

8. What is the best thing about your friendship with [X]?

What would [X] say was the best thing about you as a friend?

9. What is the thing you like least about your friendship w [X]?

What would [X] say was the thing s/he least likes about you as a friend?

10. Have you ever fallen out with [X]?

How did it start?

What did you do, how did you respond?

How did it end?

How did you feel? How do you think s/he felt?

11. Have you ever felt jealous of [X]?

Can you tell me about a time you were jealous?

Do you think [X] has ever felt jealous of you?

Can you tell me about a time?

3: PARENTS

Now I'd like to ask you a bit about your relationships with your parents.

12. Can you tell me a bit about your relationship with your mum?

What's it like when you and your mum are together?

Can you think of a time when.....?

13. What is the best part of your relationship with your mum?

Can you think of a time when?

What is the thing you like least about your relationship with your mum?

Can you think of a time when ...?

14. What do you think your mum would say are the best, and worst, things about you?

15. (IF APPROPRIATE) can you tell me a bit about your relationship with your dad?

What's it like when you and your dad are together?

Can you tell me about a time when ...

16. What is the best part of your relationship with your dad?

Can you tell me about a time when ...

What is one thing you like least about your relationship with your dad?

Can you tell me about a time when ...

17. What do you think your dad would say are the best, and worst, things about you?

Conclude the interview.

Anything to add/ correct.

Generally, what did you think about these questions?

What questions did you find hardest? Which easiest?

Ask for feedback.

Where there any questions that were upsetting?

Remember, anything you've said to use here today is **confidential**, which means we don't tell anybody else in your family or elsewhere, everything you've told us is kept safe.

Do you have any questions for us?

Thank you very much for your help!

Appendix II: The Friends and Family Interview coding scheme.

Each of the following dimension (1.1, 1.2) are to be considered in relation to the narratives obtained from 11-year olds who responded to the 'Friends and Family Interview' on a four-point scale.

(0=no evidence; 1=slight or mild evidence; 2=moderate evidence; 3=marked evidence)

1. COHERENCE: applying Grice's maxims: assign an overall score as well as one for each of the maxims.

- 1.1 **Truth.** Does the child provide convincing evidence to support their appraisal of self and others? Are you, the listener, persuaded that their past attachment experiences are as the speaker suggests?
- 1.2 **Economy.** Does the child provide what feels like the right amount of information, i.e. neither too little nor too much?
- 1.3 **Relation.** Are the examples brought by the child relevant?
- 1.4 **Manner.** Does the child show an age-appropriate level of attention, politeness and interest? How easy/difficult it is for the child to engage with the interviewer/the task at hand?
- 1.5 **Overall coherence.** For the overall score, ask yourself if the interview seems a plausible, complete and accurate picture of the young person's social and personal experiences/appraisals. Note: When you give a high score for coherence, there will be minimal evidence of defensiveness or self-deception

2. METACOGNITION OR REFLECTIVE FUNCTIONING

- 2.1 **Evidence of a developmental perspective,** where the young person contrasts their *current* thoughts and feelings on a matter of substance (i.e. something other than tastes in food or sporting activities) with their *past* attitudes, styles of response etc. Consider the following response by a boy commenting on how his relationship with his parents has changed since he was little: "I used to sulk a lot but now, I try as hard as I can, to just try and stay where I am, like if it's at the dinner table or something and there's an argument, I try and stay there, even if I'm very upset, whereas before I used to come up to my room."
- 2.2 **Evidence of the ability to assume the mental/emotional perspective of another person.** This is expected to be most readily coded in response to the questions 'What do you think your mother/father/teacher thinks of you'. Rate separately for all others questioned about in this way:
 - 2.2.1 Mother
 - 2.2.2 Father
 - 2.2.3 Best Friend or Other Friend
 - 2.2.4 Sibling
 - 2.2.5 Teacher

2.3 Evidence of the ability to show an understanding of diverse (negative and positive) feelings being present in significant relationships: This should be coded separately for child-mother relationship, child-father relationship, child-child (self) relationship or system, child-friend, child-teacher. The guiding question should be how easily the child can think of both negative and positive aspects of relationships involving himself or herself and other people? Pay special attention to the extent to which the young person can state, and support with relevant details that are integrated into a sense of a whole person/relationships, a favourite and least favourite aspect of each of the following

- 2.3.1 Self
- 2.3.2 Mother
- 2.3.3 Father
- 2.3.4 Best Friend or Other Friend
- 2.3.5 Sibling
- 2.3.6 Teacher

3. EVIDENCE OF SECURE-BASE AVAILABILITY. This is a core attachment assumption, i.e. that the child's mental health continues to depend as it did during infancy on the sense that a secure base, from mother, father, or others, is available. Coding of this construct might be most relevant to the questions that probe what the young person does when they are upset. Spontaneously referring to turning to others for help would score the highest, with reference after prompting scoring in the middle range, and no reference to reliance on others' availability scoring lowest. The question on separation will also be highly relevant here: Does the child express the importance of attachment relationship, the need to rely on others and acknowledges either past or both past and present dependence on parents?

3.1 Evidence of mother's availability

3.2 Evidence of father's availability

3.3 Evidence of secure-base availability from a non-parental source, e.g. grandmother or other (indicate in your notes who this non-parental source is/was; if there are more than one non-parental source then rate with respect to the most available of these)

4. EVIDENCE OF SELF-ESTEEM. Here you should consider separately, the social self, the cognitive (school-achieving) self, the gender-based self, and the body-image held by the young person. Overall, consider the extent to which the interview suggests a robust, hopeful and optimistic orientation toward different aspects of self. Note the exception of 4.5 asks you to consider the extent of references to body parts regardless of the tone, positive or negative, of the reference.

4.1 Social competence (pride in social network)

4.2 School competence (pride in school work, grades etc.)

4.3 Gender-identification (refers with enthusiasm to gender-specific activities)

4.4 Body image/representation (pride, pleasure etc. in physical activities)

4.5 Specific references to body characteristics or body parts

5. **PEER RELATIONS**, with particular attention to assessing the quality of best friendship. Rate this in respect of the friendship identified by speaker as the most important or best one, where the interviewer probes for 'favourite' and 'least favourite' aspects, including whether or not jealousy enters into the friendship at times.

5.1 Frequency of contact outside of school

- 0: meet seldom and on an irregular basis besides school e.g. once a month
- 1: meet about every other week
- 2: regular meetings outside of school, on average once a week
- 3: frequent meetings on a regular basis, more than once a week

5.2 Quality of best friendship

- 0: leisure-time activities are central, meetings are not self-initiated but due to pre-arranged activities such as school and clubs etc.; meetings are characterised by domineering or submissive behaviour; there is no close/emotional contact; no discussion of problems; no confiding in each other; no disclosure of personal and potentially embarrassing information.
- 1: main motivation is to have company (not to be alone); meetings are seldom initiated by both friends; only instrumental support is given (buying him/her sweets, watching a film together) in contrast to emotional support (identifying emotional needs of the friend, talking through problems, offering physical comfort e.g. hugging); common activities are the centre of the friendship e.g. playing football, watching a film).
- 2: main characteristic is solidarity; meetings are initiated and organised by both friends; support is generally instrumental but also partly emotional; difficulties and problems are discussed superficially.
- 3: friendship is characterised by closeness, emotional trust and a certain kind of exclusivity; meetings are frequent and initiated and planned by both friends; there is a tolerance for other friendships or activities but the child prefers to spend his/her time predominantly with best friend; there is mutual emotional support; problems and difficulties are discussed with best friend first.

6. Anxiety and Defense

- 6.1 **Avoidance.** young person denies awareness of 'least favourite' things about self or others, doesn't turn to others when upset and/or cannot recall being upset; excessive self-reliance; a lack of interest in the interview and relationships may also be noted.
- 6.2 **Ambivalence.** Simultaneous existence of having two opposed and conflicting attitudes or emotions, shown in relation to a single person or event; particularly salient is the co-expression of love and hate; spectrum from normal incidence of ambivalence to possible sign of psychopathology.

6.3 Dissociation. (N.B. a concept that is very difficult to define) manifests in both affect and content; when two or more mental processes exist but are not connected to each other; a break with reality in terms of separation or splitting; reveals a lack of integration in the psyche; evident of a confusion in the (multiple?) inner working models of self and attachment figures; can be seen as a defence mechanism; absence of a coherent sense of self and lack of emotional regulation; is shown in trances and lack of sequence in speech and undefined memories; has been shown to be intergenerational; (more likely to be evident in a video tape than audio)

6.4 Sadness, tears and/or fears, manifest anxiety (note at end of interview if this was specific to one topic or relationship).

6.5 Passivity, including whispers, unfinished sentences and a difficulty with using language to specify meaning; the tone and/or content of voice may suddenly shift to that of a younger child; a dependency upon the interviewer may be tangible.

6.6 Idealisation of mother (score in terms of discrepancy between positive overall evaluation and lack of supporting memories; also in terms of unwillingness to consider 'least favourite' aspects of the relationship with the parent).

6.7 Idealisation of father

6.8 Role reversal (caregiving toward, or taking control of decisions toward, that might ordinarily be expected to come from, the parent). Assign a high rating only if concern for the parent's emotional or mental well-being is observed. Being involved for caring toward younger siblings alone, without an accompanying mental and emotional burden, would not qualify for a high score. Remember all these young people are first-born children. An eagerness to please or pacify parental demands would contribute to a high score.

✓ **6.8.1 Role reversal with Mother**

✓ **6.8.2 Role reversal with Father**

6.9 Shame or embarrassment (perhaps age-appropriate for the adolescent?):

- **6.9.1 Mother**

6.9.2 Father

7. Extent to which parental models are differentiated in the child's mind.

8. Assign the interview to one of the three major attachment classifications (SECURE-AUTONOMOUS, AVOIDANT, WORRIED) based on your reading of these category groups.

9. NOTES. Indicate in your notes any possibly traumatic events referred to, e.g. loss or house move, or parental rowing/separation/divorce, also indicating whether or not you think the young person is organised and resolved with respect to this source of anxiety.

Appendix III : The Nonverbal and Emotional Behaviour Scale (NEBS) coding scheme

A. Vocal Expression-

1. MINIMAL VOCAL EXPRESSION- Child is silent for a prolonged time, may sign of make uninterpretable sounds. S/he is affectively flat.
2. MILD VOCAL EXPRESSION- Child's vocal affect can be described as being quite flat- monotonic with little range
3. MODERATE VOCAL EXPRESSION- Child's vocal affect is moderate but is not extreme as a child in the uppermost category where there is much more intensity. It is stronger, sustained and varied than (2) but less intense than (4).
4. INTENSE VOCAL EXPRESSION- Child's vocal affect can be described as quite animated. S/he will use both positive and negative vocalisations of some intensity: laughter/happy vocalisations, crying and anger.

B. Facial Expression

1. MINIMAL FACIAL EXPRESSION OR EMOTION- Child appears bored from his/her facial expression (e.g. yawning). It may be described as expressionless. He/she may also avoid eye contact actively, turning head away. Expression is vacant; eyes wide open but unseeing and unblinking or downcast and dull. There are minimal changes of expression or emotion.
2. MILD FACIAL EXPRESSION OR EMOTION- Child's facial affect is minimal and limited. There may only be brief displays of resignation (i.e. shrug of shoulders, pursing of lips, dropping of eyes) in response to lack of activity rather than to disliked activity. Expression is fleeting and generally not visible or directed as interviewer.
3. MODERATE FACIAL EXPRESSION OR EMOTION- Child's facial affect is moderate and it is possible to detect a range of expression although not of the intensity of a child in the uppermost category. The child's eye contact and expression with the examiner is good but lacks the fluidity and spontaneity of a child in (4). Eye contact is more sustained and varied than (2).
4. INTENSE FACIAL EXPRESSION OR EMOTION- Child's facial affect can be described as quite animated. S/he will appear happy (both appropriate and inappropriate). The child attends visually to the interviewer. His/Her expression will show playfulness (e.g. coy, teasing looks, pleased with outcomes of activities) and will respond to eye contact with sustained look, followed by brightening or smiling.

C. Physical Proximity/ Body Orientation

This code attempts to measure the physical proximity and body orientation of the child towards the interviewer. As such it looks at how open and available or how distant, closed and unavailable the child makes him/herself to the interviewer and the level of eye contact the child makes with the interviewer.

1. The child's body language **does not orientate** itself toward the interviewer during the task. The child does not sit close to or face the interviewer and makes no eye contact with the interviewer. For this code, the child may pull back, cut

short, avoid or appear uneasy with physical or visual closeness with the interviewer.

2. The child's body language **sometimes orientates** towards the interviewer. The child makes little or no eye contact with the interviewer. The child might not sit very close to the interviewer or face the interviewer. For this code, the rate may get some impression that the child is a little uneasy with the physical or visual closeness with the interviewer.
3. The child's body language is **mostly oriented** towards the interviewer and makes some eye contact with the interviewer. S/he will be at ease and comfortable with positioning, physical and visual closeness.
4. The child's body language **does orientate** itself toward the interviewer during the interview. The child faces the interviewer, tends to sit close to the interviewer and makes frequent eye contact. S/he is totally at ease with her positioning, physical and visual closeness to the interviewer.

D. Positive Affect

This code attempts to show the positive affect that the child seems to have and show toward the interviewer. It will also incorporate the child's interest and enthusiasm and engagement for the interview itself. As such it looks at how the child is able to enjoy the task, and how able the child is to be interested and focused on the task and how engaged the child is in the interview. The affect manifests itself in different ways: verbal agreement, verbal enthusiasm, excitement, smiles, laughter, warm tone and voice, eye contact, and proximity.

1. The child shows **no signs of positive affect**. There is a clear absence of any verbal or non-verbal positive affect, so that the child does not smile, laugh, show physical or verbal warmth. The child is also not at all engaged with the interview itself.
2. The child shows **minimal signs of positive affect**. The child shows evidence of some verbal or non-verbal positive affect, but although there may be some smiling, there is also a noticeable absence of other verbal and non-verbal indicators (i.e. excitement, laughter), which are evident in higher codes (3 and 4). The child may only seem partially engaged with the task.
3. The child shows **moderate signs of positive affect**. The child is quite warm towards the interviewer and shows a degree of enjoyment of both the task and the interviewer's presence. Although not to the same extent as a (4), the child will nevertheless demonstrate both verbal and non-verbal positive affect (smiling, verbal enthusiasm).
4. The child **very frequently shows signs of a lot of positive affect** towards the interviewer. The child is very warm towards the interviewer and very engaged in the interview. The child is obviously enjoying both the presence of the interviewer and the task itself to which he/she is very engrossed. This may be in form of frequent eye contact, tone of voice, laughter, smiling, proximity and tactility. It may also manifest in more verbal forms.

E. Negative Affect

This code attempts to measure the negative affect that the child might have and might show toward the interviewer. Negative affect includes, anxiety tension, anger distance, annoyance and feelings of being nervous.

1. The child shows **no signs of negative affect**.
2. The child shows **minimal signs of negative affect**. A minimal amount of negative affect only which will usually be a small amount of one specific affect (i.e. a little anxiety, distress or anger) at a particular part of the interview.
3. The child shows **moderate signs of negative affect**. The child shows some negative affect towards the interviewer or a part of the interview. The child may be a bit anxious or controlling towards the interviewer, which will be evident both through verbal and nonverbal behaviour (i.e. tone of voice, facial expression)
4. The child shows **very frequent signs of negative affect**. The child shows a lot of negative affect towards the interviewer or during one specific part of the interview. The child might show that he/she is annoyed with the interviewer/interview and may display anger and tension in body language and tone of voice. Besides general anxiety, the child may show negative affect in other areas that could manifest themselves in behaving rejecting towards the interviewer in behaviour and speech.

F. Distress and Fear

Distress is defined as children's overt expression of anxiety, fear and sadness. Thus, when coders are rating this dimension, they should consider specific signs of distress, such as (1) facial expressions which reflect tension and anxiety (e.g. eyebrows raised, grimacing, staring, wide-eyed) (2) odd bodily movement or posturing indicating fear or anxiety, including stereotypic movements (e.g. rocking, flapping arms, repetitive movements of legs), postural slumping (e.g. curling down into a ball, sliding and holding the body in an odd position), fidgeting, repeatedly rubbing the eyes, exaggerated arm movements, wringing hands, repeated grooming gestures (e.g. smoothing hair or clothing, touching face), and signs without expressing anger (3) freezing behaviour which is indicated by children remaining tense, motionless and "fixed in place" for more than 5 seconds, (4) facial or postural expressions of sadness (e.g. crying, shoulders slumped down, head down, inner corner of eyebrows are drawn up/skin below eyebrows is triangulate with the inner corner up, the upper eyelid corner is raised, the corner of the lips are down, and (5) crying, which may include tears, whimpering, whining or fretting utterances.

1. **NO DISTRESS**- The child shows no clear signs of distress or fear
2. **MINIMAL DISTRESS**- The child shows very little distress or fear from the interview or specific question(s). Thus, while some distress is present, the signs of distress are generally limited to one or maybe two mild signs of sadness, fear or whining in a limited time period. More disturbing signs of distress, such as freezing, crying or profound expressions of sadness, fear or anxiety are not present.

lethargic in his/her movements. The child's posture may also be significant with a slightly slumped posture without full use of his/her body parts in his/her actions.

3. MODERATE CONFIDENCE- The child's movements are essentially smooth, and are neither rigid nor lethargic. The child's posture is generally good but at times is slightly slumped.
4. HIGH CONFIDENCE- The child's movements are very smooth, and are neither rigid nor lethargic. The child's posture is consistently good overall.

J. Attention

This code measures how task-orientated the child is, his/her involvement and investment with the task, and level of endurance by which s/he is engaged. At one end of the scale is a child who is not easily tired, shows good endurance and engagement and is attracted to novelty and challenge. At the other end is a child who is easily bored and distracted, with little self-discipline and control.

1. LOW ATTENTION- The child is very bored, distracted and unfocused towards the interview.
2. MINIMAL ATTENTION- The child is quite bored at times, may get distracted and disengaged from the interview but overall will be involved and invested in what s/he is doing although it lacks the self-discipline and control of the higher scores.
3. MODERATE ATTENTION- The child is quite task-oriented, involved and engaged in the interview. S/he will show very few signs of boredom or distraction.
4. HIGH ATTENTION- The child is very task-oriented, involved and engaged in the task. S/he seems very attracted to the challenge and novelty of the interview and will show no signs of boredom or distraction.

H. Avoidance

Signs of avoidance constitute any indicators of shutting out, social withdrawal, or requests to leave. Thus, avoidance may take the form of: (1) trying to leave the room, (2) covering or hiding one's face, (3) putting hands over one's ears, (4) turning one's body away from the interviewer (e.g. turning one's back, looking out the window and turning one's head away from the interviewer), (5) fidgeting repetitively and excessively with hair, glasses, nails etc. (6) failing to respond to a question, (7) verbally responding in an inappropriate, extremely brief, hostile or sarcastic manner as a way of cutting the conversation short (e.g. "yeah, whatever" or mumbling), (8) gestures or postures that reflect disengagement during or after the question(s), (9) verbal articulation about wanting to leave the interview

1. NO AVOIDANCE- The child shows no clear signs of avoidance or withdrawal attempts, that is, there are no signs of social withdrawal, shutting out or requests to leave
2. MINIMAL AVOIDANCE- The child shows one or maybe two signs of avoidance that are brief in duration, mild in intensity (e.g. subtly turning one's back to the interviewer), and generally occur during or immediately after the question. More intense forms of avoidance that reflect worrying or intense social withdrawal are not present (e.g. fidgeting repetitively, covering or hiding one's face, requesting to leave, or inappropriate or unresponsive responses to the interview. Thus, while there is some sign of withdrawal and avoidance, it tends to be considered as minimally normal.
3. MODERATE AVOIDANCE- The child shows an attempt to avoid specific questions, a single attempt that is relatively intense in expression (e.g. requesting to leave the interview), somewhat disturbing in quality (e.g. excessive, repetitive fidgeting with hair, glasses etc, inappropriate, indifferent or hostile remarks to the interviewer) or lengthy in duration. The child does not make multiple attempts to leave the interview.
4. FREQUENT AVOIDANCE- The child's quality, and intensity of avoidance attempts leaves the impression that the child has a substantial, prolonged desire to withdraw and/or avoid the interview. This may be reflected in escape/avoidance attempts that are frequent, intense (excessive fidgeting, trying to leave, unresponsiveness or inappropriate responding to questions) or multiple methods of leaving the interview. These signs of avoidance usually continue throughout the interview.

I. Confidence / Posture

This code attempts to measure the child's movement and involvement of his/her whole body in the interview. It takes into consideration the involvement of his/her body parts, his posture, movement, and coordination.

1. LOW CONFIDENCE - The child's body posture is slumped and any movement and response is 'rag doll' in quality (e.g. flaccid, hypotonic muscle movement tone). There is little body movement. When the child does move his/her body, it is lethargic and slow. Behaviour changes are not smooth, but abrupt.
2. MILD CONFIDENCE - The child's movement is not always smooth and may be rigid and abrupt at times. S/he may also come across as being quite slow and

3. MODERATE DISTRESS- The child shows clear distress or fear from the interview or specific question(s), however, it does not disrupt the child's overall functioning across the interview. While the distress signs may be somewhat intense, long lasting and frequent, the mild nature of negativity can be seen in the child's ability to regulate their negativity after the question(s). More specifically, the child may show a few signs of distress from time to time, but the overall signs of distress (1) do not persist following the question (2) are generally absent or limited in nature (3) do not consist of more extreme forms of distress (i.e. signs of difficulties regulating affect such as freezing, crying, profound and prolonged expressions of anxiety or dysphoria).
4. FREQUENT DISTRESS- The child may exhibit multiple and somewhat prolonged expressions of distress, but typically express little or no extreme forms (prolonged freezing, crying). Furthermore, the expressions are generally present during the interview.

G. Frustration /Anger

In rating, coders should consider key features which reflect anger, frustration and dysregulation, including: (1) facial expressions of anger such as furrowing eyebrows (i.e. eyebrows pushed downward and together), and clenching of teeth (2) gestures and postures of anger such as stomping feet or clenching fists, (3) verbal/nonverbal aggression towards the interviewer (4) undirected aggression or aggression not directed toward a person (5) aggression indicative of behavioural or emotional dysregulation, that is aggression that has an aimless, disorganized and uncontrolled quality (e.g. throwing things, kicking the walls, throwing punches in the air).

1. NO FRUSTRATION- The child exhibits no clear signs of anger or frustration during the interview.
2. MINIMAL FRUSTRATION- The child shows very little anger or frustration from the overall interview or specific question(s). Thus, while some anger or frustration is present, the signs of anger are generally limited to one or maybe two mild signs (e.g. mild loss of self control or facial expressions of anger like furrowing the eyebrows) for a limited time period. More disturbing expressions of anger or frustration, such as acts of verbal or physical hostility directed toward the self or intense signs of anger or loss of control are not present.
3. MODERATE FRUSTRATION / ANGER- The child shows some signs of anger or frustration arousal. Although the expressions of anger may be more frequent and take multiple or somewhat more intense forms (e.g. facial and in some cases a very mild and brief postural/gestural sign of anger), the overall signs of anger (1) don't persist (2) do not consist of more extreme forms of anger (e.g. aggression or disturbing expressions of loss of control or anger).
4. FREQUENT FRUSTRATION / ANGER- The child shows signs of having problems regulating his/her anger. The child's anger may be considered somewhat beyond what subjectively be considered a normal, appropriate or well-behaved response. Dysregulated anger is commonly reflected not only in noticeable and intense anger expression but also in verbal or physical hostility toward others and the self, disorganized and uncontrolled patterns of activity.

Appendix IV: Self Report Questionnaire Package: Empathy Scales

The following is a list of things that people sometimes think and feel. Please read them carefully and mark how much you agree or disagree with each one.

Example

	Disagree a Lot	Disagree a Little	Agree a Little	Agree a Lot
1 I like to look at the stars in the night sky	1	2	3	4

Start Here

	Disagree a Lot	Disagree a Little	Agree a Little	Agree a Lot
1 It makes me sad to see a girl who can't find anyone to play with	1	2	3	4
2 I don't feel very sorry for other people when they are having problems or feeling bad	1	2	3	4
3 People who kiss and hug in public are silly	1	2	3	4
4 When I'm mad at someone, I try to imagine how they feel for a while	1	2	3	4
5 Seeing a boy who is crying makes me feel like crying	1	2	3	4
6 I am able to eat all my cookies even when I see someone looking at me wanting one	1	2	3	4
7 When there is an emergency, like when someone is badly hurt, I get very excited	1	2	3	4
8 I don't feel upset when I see a class mate being punished by a teacher for not obeying the school rules	1	2	3	4
9 When anyone is hurt or in bad trouble I feel afraid and uncomfortable	1	2	3	4
10 Sometimes I cry when I watch TV	1	2	3	4
11 I really like to watch people open presents, even when I don't get a present myself	1	2	3	4
12 When I am reading an interesting book or listening to an interesting story, I imagine how I would feel if the things in the story were happening to me	1	2	3	4
13 It makes me sad to see a boy who can't find anyone to play with	1	2	3	4
14 Some songs make me so sad I feel like crying	1	2	3	4
15 It seems like I feel the feelings of the people in the stories I read or hear	1	2	3	4
16 When other people are feeling bad or very upset I feel scared	1	2	3	4
17 I get mad when I see a classmate pretending to need help from the teacher all the time	1	2	3	4

		Disagree a Lot	Disagree a Little	Agree a Little	Agree a Lot
18	Kids who have no friends probably don't want any	1	2	3	4
19	I get upset when I see a girl being hurt	1	2	3	4
20	I feel sorry for other kids whose lives are not as good as mine	1	2	3	4
21	Even when I don't know why someone is laughing, I laugh too	1	2	3	4
22	I get upset when I see an animal being hurt	1	2	3	4
23	When I see someone get hurt, I stay calm	1	2	3	4
24	Boys who cry because they are happy are silly	1	2	3	4
25	When my friends or people in my family have problems, it does not bother me a lot	1	2	3	4
26	It's silly to treat dogs and cats as though they have feelings like people	1	2	3	4
27	When I see another kid being picked on or teased, I feel like I want to help them	1	2	3	4
28	I feel bad and as if I cannot help when my friends or family are upset	1	2	3	4
29	I think it is funny that some people cry during a sad movie or while reading a sad book	1	2	3	4
30	I try to understand my friends better by imagining what things are like for them	1	2	3	4
31	I get upset when I see a boy being hurt	1	2	3	4
32	Things that I see make me feel sad or happy	1	2	3	4
33	Grown-ups sometimes cry even when they have nothing to be sad about	1	2	3	4
34	Before telling someone that I don't like something about them, I try to imagine how I would feel if someone told me that	1	2	3	4
35	Seeing a girl who is crying makes me feel like crying	1	2	3	4
36	Girls who cry because they are happy are silly	1	2	3	4
37	It's hard for me to see why someone else gets upset	1	2	3	4
38	When I read a book or watch a movie, I get so interested in it that I don't notice anything else	1	2	3	4
39	It is easy for me to feel sorry for other people	1	2	3	4
40	When someone needs help in an emergency I get too upset to do anything at all	1	2	3	4
41	When my friends are having an argument I try to listen to everybody before I decide who is right	1	2	3	4

Thank You! Now please continue with the next section

Appendix IV: Life Events Questionnaire

The column on the left describes some things that sometimes happen to people. For each of them, put a "✓" if this has happened to you one or more times in the last year. *Remember, only put a "✓" if it has happened or started happening in the last year.*

Example

1 Going to the dentist

☒

Start Here

1 Birth of a brother or sister

☐

2 Death of a parent

☐

3 Change in mothers' work needing more hours away from home

☐

4 Being less popular at school

☐

5 Serious illness or accident in the family that needs hospitalisation

☐

6 Marriage of father or mother to step-parent

☐

7 Another adult coming to stay with the family (eg grandparents)

☐

8 Parents separated or divorced

☐

9 Having a serious illness or accident that needs hospitalisation

☐

10 More arguments between parents

☐

11 Change in father's work needing more hours away from home

☐

12 Being suspended from school

☐

13 Having more arguments with parents

☐

14 Fewer arguments between parents

☐

15 Moving to a new school

☐

16 A close friend or schoolmate dying

☐

17 Having fewer arguments with parents

☐

18 Becoming involved with drugs or alcohol

☐

19 Death of a brother or sister

☐

20 Family having money problems

☐

21 Death of a grand-parent

☐

22 Having an accident that leaves a heavy scar or disability

☐

- | | | |
|-------|--|----------------------|
| 23 | Doing exceptionally well at school or at an activity | <input type="text"/> |
| 24 | Parents being in trouble with the police | <input type="text"/> |
| 25 | Any parent losing their job | <input type="text"/> |
| <hr/> | | |
| 26 | Failing a grade at school | <input type="text"/> |
| 27 | Going on a first date | <input type="text"/> |
| 28 | Not making a team or group you wanted to be play in | <input type="text"/> |
| 29 | Breaking up with a boy- or girl-friend | <input type="text"/> |
| 30 | Having problems with spots or weight | <input type="text"/> |
| <hr/> | | |
| 31 | Making new good friends | <input type="text"/> |
| 32 | Getting into trouble with the police | <input type="text"/> |
| 33 | Breaking up with a boy- or girl-friend | <input type="text"/> |

Thank You! Now please continue with the next section

Appendix IV: Emotional Loneliness Scale

Please read the questions carefully and mark the answers that are most like you.

Example

1 Do you like to look at the stars in the night sky? No ☒ Yes

Start Here..

1	Is it easy for you to make new friends at school?	No	Yes
2	Do you like to read?	No	Yes
3	Do you have other kids to talk to at school?	No	Yes
4	Are you good at working with other kids at school?	No	Yes
5	Do you watch TV a lot?	No	Yes
6	Is it hard for you to make friends at school?	No	Yes
7	Do you like school?	No	Yes
8	Do you have lots of friends at school?	No	Yes
9	Do you feel alone at school?	No	Yes
10	Can you find a friend when you need one?	No	Yes
11	Do you play sports a lot?	No	Yes
12	Is it hard to get kids in school to like you?	No	Yes
13	Do you like science?	No	Yes
14	Do you have kids to play with at school?	No	Yes
15	Do you like music?	No	Yes
16	Do you get along with other kids at school?	No	Yes
17	Do you feel left out of things at school?	No	Yes
18	Are there kids you can go to when you need help in school?	No	Yes
19	Do you like to paint and draw?	No	Yes
20	Is it hard for you to get along with the kids at school?	No	Yes
21	Are you lonely at school?	No	Yes
22	Do the kids at school like you?	No	Yes
23	Do you like playing card or board games?	No	Yes
24	Do you have friends at school?	No	Yes

Thank You! Now please continue with the next section

SECTION 5

The following is a list of some of the things that people are sometimes like. For each item, think of your answer and mark the box for Not True, Somewhat True or Certainly True. It would help us if you answered all items as best you can even if you are not absolutely certain or the item seems odd. Please give your answers on the basis of how things have been for you *over the last six months*.

Example

I believe in miracles

Not
True

☐

Somewhat
True

☐

Certainly
True

☐

Start Here

	Not True	Somewhat True	Certainly True
I am considerate of other people's feelings	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I am restless, I cannot stay still for long	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I get a lot of headaches, stomach-aches or sickness	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I usually share with others (food, games, pens etc)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I get very angry and often lose my temper	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I am rather solitary. I usually play alone or keep to myself	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I usually do as I am told	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I worry a lot	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I am helpful if someone is hurt, upset or feeling ill	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I am constantly fidgeting or squirming	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I have at least one good friend	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I fight a lot. I can make other people do what I want	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I am often unhappy, down-hearted or tearful	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other people my age generally like me	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I am easily distracted. I find it difficult to concentrate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I am nervous in new situations. I easily lose confidence	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I am kind to younger children	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I am often accused of lying or cheating	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other children or young people pick on me or bully me	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I often volunteer to help others (parents, teachers, children)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I think things out before acting	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I take things that are not mine from home, school or elsewhere	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I get on better with adults than with people my own age	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I have many fears. I am easily scared.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I see tasks through to the end. My attention is good.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Please turn over- there are some more questions on the other side:

Do you have any other comments or concerns?

Overall, do you think that you have difficulties in one or more of the following areas:
emotions, concentration, behaviour, or being able to get on with other people?

None	Yes- minor difficulties	Yes- definite difficulties	Yes- severe difficulties
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

If you have answered "Yes", please answer the following questions about these difficulties:

Do these difficulties upset or distress you?

Not at all	Only a little	Quite a lot	A great deal
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Do the difficulties interfere with your everyday life in the following areas?

	Not at all	Only a little	Quite a lot	A great deal
Home Life	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Friendships	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Classroom Learning	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Leisure Activities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Do the difficulties make it harder for those around you (family, friends, teacher, etc)?

Not at all	Only a little	Quite a lot	A great deal
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Thank you! Now please continue with the last section

Appendix V: Information sheets.

Information Sheet re: 11Yr Follow-Up of Wilstaar Sample

We hope this letter finds you and your family well. We are pleased to be able to tell you that the research project you have kindly helped with in the past is to be extended in a new and interesting direction.

While earlier phases of the project looked at development in learning and educational terms, the next step is to consider social development and friendship. We very much hope that you will be able to take part in what will be a school-based visit. As you will have to leave the classroom for a period of up to 90 minutes, we need to be sure to have permission from both participants and their parents. Therefore you are asked to read this information sheet and return the bottom portion indicating whether we can include you in this next step of the research. Please also show this sheet to your parents and have them sign the parent consent form, and return both to your school as soon as possible.

There is no pressure to take part, but we hope it will be an enjoyable experience for all concerned. The session is to include a computer-based game and an interview about yourself, your parents, your friends and your school. We will ask you about your thoughts on each of these areas, and we will ask you to tell us about some times you remember.

If ANY question makes you feel bad, angry or upset, you can tell us that you do not want to answer that question. It's OK with us if you don't want to answer any questions. You don't have to give any reasons or excuses for that. At the end of the interview you will have a chance to tell us what you thought, and how you felt.



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Dear Mr x,

Re. a long-term follow-up study in Manchester.

I am a Speech and Language Therapist, and worked for many years for the Mancunian Trust. The North West Regional Health Authority awarded me funding for two three year research projects which had the objective of preventing speech and language difficulties which emerge in many children. We discovered a group of 140 nine month olds who were showing delay in language development, and divided them into matched experimental and control groups. We gave home language programmes to the experimental group, and nothing was done for the controls. Both groups of infants were followed up until they were three years old, and it was very exciting to find that the experimental group was far ahead of the controls in terms of language development at that stage.

Four years ago, with the full backing of Andrew Cant, we had the children followed up again by two independent psychologists, who looked not only at their language development, but also their general intelligence. These follow-ups took place in school, with of course parents' permission. Some of the children may have been in your school. The results of this study were even more exciting! Not only were the language abilities of the experimental group way ahead of those of the controls, but there was a very significant difference in their general intelligence. This study has generated enormous interest.

We now have a wonderful opportunity to do a further follow-up of the children, who will now be rising eleven years of age. Dr Howard Steele of the Psychology Department of University College London, has obtained funding for a researcher, Morwenna Opie, to see the children again, to evaluate their social and emotional development in order to further explore the longer-term and possibly diverse beneficial consequences of the early language intervention. The evaluation of these young people's social and emotional development would involve the administration of a previously validated Self-Understanding and Relationship Experiences (SURE) Interview, as well as some other, equally friendly emotion-understanding tasks.

We have received a list from the IT department of the schools the children now attend, and understand that some of the young people from the original study, x x x x, attend your school. Enclosed with this letter are consent forms to be signed by both the young people and their parents, and I would be most grateful if these could be distributed to the families involved, and returned and kept by you at the school. One of our team will phone you in the near future to ensure that this is acceptable and check on progress. We will also be asking you if you would be kind enough to allow one of our team to see the children in school. If you have any queries about any of this, please do not hesitate to get in touch.

We should be enormously grateful for your help in this matter.

This letter will be followed up in the next couple of days with a phone call from Morwenna Opie, the lead researcher 'on the ground' for this project.

Yours truly,

Dr Sally Ward



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PARENT CONSENT FORM



Language, Learning and Relationships Project
University College London

To be completed by the parent:

Have you read the information sheet about this study? ☐ YES ☐ NO

Have you had an opportunity to ask questions and discuss this study? ☐ YES ☐ NO

Have you received satisfactory answers to all your questions? ☐ YES ☐ NO

Have you received enough information about this study? ☐ YES ☐ NO

Do you understand that you are free to withdraw yourself and your child from this study at any time, without needing to give reason for withdrawing? ☐ YES ☐ NO

Do you agree to allow your child to participate? ☐ YES ☐ NO

Name of Parent (PLEASE PRINT)

Signature

Date

Name of Researcher (PLEASE PRINT)

Signature

Date



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YOUNG PERSON CONSENT FORM



Language, Learning and Relationships Project
University College London

To be completed by the young person:

Have you read the information sheet about this study? ☐ YES ☐ NO

Have you had an opportunity to ask questions and discuss this study? ☐ YES ☐ NO

Have you received satisfactory answers to all your questions? ☐ YES ☐ NO

Do you agree to participate yourself? ☐ YES ☐ NO

Name (PLEASE PRINT)

Signature

Date

Name of Researcher (PLEASE PRINT)

Signature

Date

Appendix VI:

Table 2 : Comparative mean WISC sub-scale and IQ scores for group 1 (expressive and receptive language delay with additional listening difficulties) and group 2 (expressive and receptive language delay only) children at 7 years of age.

	Group 1 Mean (s.d.) n = 51	Group 2 Mean (s.d.) n = 10	t-value	Sig. (2- tailed)
Picture Completion	11.1 (3.2)	8.6 (2.8)	2.33	.023
Coding	10.9 (3.1)	7.7 (3.7)	2.98	.042
Picture arrangement	10.9 (3.7)	7.8 (3.3)	2.45	.017
Block design	9.8 (3.0)	6.3 (2.9)	3.41	.001
Object Assembly	10.7 (2.8)	8.5 (3.2)	2.22	.031
Information	10.4 (3.4)	8.9 (2.6)	1.30	.200
Similarities	11.8 (4.2)	9.7 (3.3)	3.12	.006
Arithmetic	10.7 (2.9)	7.8 (3.1)	2.83	.006
Vocabulary	10.7 (4.2)	8.1 (3.1)	1.73	.103
Comprehension	10.9 (3.8)	7.6 (3.9)	2.51	.051
Verbal IQ	104.6 (18.2)	88 (12.4)	3.55	.002
Performance IQ	104.2 (18.3)	84.8 (15)	3.15	.003
Full Scale IQ	105.1 (19.0)	85.1 (13.9)	3.88	.001

Appendix VII:

Summary of hierarchical regression analysis for variables (including the SS at 12 months) predicting children's 'coherence' in their responses to the F&F interview at 11 years (n = 42)

Variable	B coef	SE B	Beta	p
Step 1				
Children's				
Verbal IQ				
At 11 years	.02	.01	.20	.18
Step 2				
Children's				
Verbal IQ				
At 11 years	.01	.01	.14	.37
IRI Perspective				
Taking and	.04	.02	.28	.06
Empathetic				
concern subscales	.12	.08	.21	.17
Step 3				
Children's				
Verbal IQ				
At 11 years	.01	.01	.15	.33
IRI Perspective				
Taking and	.03	.02	.24	.14
Empathetic				
concern subscales	.12	.09	.20	.19
Prosocial subscale	.05	.07	.12	.44
From SDQ.				
Step 4.				
Children's				
Verbal IQ				
At 11 years	.01	.01	.15	.34
IRI Perspective				
Taking and	.03	.02	.20	.21
Empathetic				
concern subscales	.10	.09	.17	.30
Prosocial subscale	.05	.07	.12	.46
From SDQ.				
Sec vs insec at 12 ms	.22	.23	.15	.34

Note $R^2 = .04$ for Step 1; $R^2 = .16$ for Step 2; $R^2 = .17$ for Step 3; $R^2 = .20$ for Step 4.

Appendix VIII:

Summary of hierarchical regression analysis for variables (including mother's AAI) predicting children's classification as 'secure verses insecure' from their responses to the SURE interview at 11 years (n = 46)

Variable	B coef	SE B	Beta	p
Step 1				
Children's Verbal IQ At 11 years	.01	.01	.18	.25
Step 2				
Children's Verbal IQ At 11 years	.01	.01	.09	.57
IRI Perspective Taking and	.02	.013	.23	.13
Empathetic concern subscales	.11	.06	-.29	.06
Step 3				
Children's Verbal IQ At 11 years	.01	.01	.13	.41
IRI Perspective Taking and	.01	.01	.13	.39
Empathetic concern subscales	.11	.06	.27	.07
Prosocial subscale From SDQ.	.08	.04	.28	.08
Step 4.				
Children's Verbal IQ At 11 years	.01	.01	.15	.33
IRI Perspective Taking and	.01	.01	.14	.37
Empathetic concern subscales	.08	.06	.21	.20
Prosocial subscale From SDQ.	.08	.05	.27	.09
AAI with mother	.13	.15	.13	.41

Note $R^2 = .03$ for Step 1; $R^2 = .16$ for Step 2; $R^2 = .22$ for Step 3; $R^2 = .24$ for Step 4.

Appendix IX: A Note on attrition in the BabyTalk sample.

Brief mention is made throughout the analysis conducted with the BabyTalk sample that insufficient data are available on the nature of the attrition of the control and experimental groups over time (at 1, 3, 7 and 11-year follow-up). Differential attrition is a recognised problem that must be acknowledged in any longitudinal study. In the case of this arguably 'opportunistic' study, data on establishing the nature of attrition is significantly and lamentably missing. It seems important to clarify that the author is aware that this is an unavoidable limitation of the current study.

The author was given access to only very limited data-sets relating to the earlier follow-up. Records were only kept as paper files and are incomplete. As Chapter 2 makes clear, the abilities of the group of children followed-up at 11 years, in terms of their language ability and cognitive functioning at 7 years, is lower as an average across all children, and does not show the differences that the larger sample at 7 years demonstrated between the experimental and control group children. It is clear that the experimental group children recruited for the current study did not include the highest functioning children. Discussion of this and speculation as to why this might have occurred appears in section 6.4 (Explaining the BabyTalk 11-year results: The Sample).

In terms of the descriptives of the sample at 1 and 3 years, a complete analysis cannot be undertaken because only the data on those children also seen at 7 years are available to the author. We must rely on the comment by Dr Sally Ward in her 1999 paper that there were no significant changes to the make up of either the control or experimental groups in terms of gender, age or SES and that the groups were matched for these characteristics.

In terms of the attrition between 7 and 11 years that can be examined due to having the necessary data, there are no great changes in the gender distribution across groups. At 7 years, the control group was 45% male and 55% female, and at 11 years 50% and 50% exactly. The experimental group at 7 years was 62% male and 38% female, and at 11 years 47% male and 53% female. Age remains evenly distributed across groups.

In summary, knowing more about the nature of the attrition in the BabyTalk group, most particularly between 7 and 11 years, might help explain more about the reasons for many of the findings made in the current project. Equally, data about the nature of mother-child interaction both at the time of the intervention, and after, would be incredibly illuminating. Sadly, however, these are both questions that the available data make it impossible to address. Lack of knowledge about the nature of attrition, then, is a serious shortcoming of the current project.

Appendix X: A note on the Group 1 versus Group 2 analysis of the BabyTalk experimental group.

In the text, t-tests have been undertaken to examine whether there are outcome differences according to the nature of the BabyTalk programme followed (Group 1 or Group 2 interventions). These test for statistically significant differences between the Group 1 and 2 BabyTalk **experimental** groups only. While this test gives a good indication of where differences might appear, because there is no control group involved in this analysis, it is not a procedure which enables a conclusion that differences found are due to the differences in the interventions delivered. Differences could be, for example, due to the additional listening difficulties that this group had initially. Conducting separate 2x2 ANOVAs on these data, and examining interaction effects, would have been a much more illuminating statistical procedure. These analyses would, of course, have included control group subjects and therefore it would have been made clear whether effects were due to the differential effects of the treatment.