

Volume 1

*(thesis)*

**The role of self-cognitions in the  
emotional and behavioural difficulties of  
mainstreamed children with  
hearing impairments.**

HILLY HARVEY

D.Clin.Psy. 2003

University College London

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## ABSTRACT

Though research has explored the experiences of signing children with severe to profound hearing impairments, children with milder hearing losses have largely been excluded from investigations. Evidence suggests that children with hearing impairments have an increased risk of developing emotional and behavioural problems. A paediatric conceptual model was modified to integrate generic with hearing-related factors, and together these were hypothesised to predict children's levels of difficulties. Thus, this study aimed to investigate the levels of emotional and behavioural difficulties in mainstreamed children with hearing impairments, their association with psycho-social factors and the extent to which their effects were mediated by children's self-cognitions.

Results suggest that a large proportion (51%) of participants had clinically significant emotional and behavioural difficulties, the majority of these being internalising problems. Of the predicted associations, classmate social support and maternal awareness of children's attitudes to having a hearing loss independently predicted externalising behaviour and depressive symptoms. Family cohesion, conflict, organisation and expressiveness predicted internalising behaviour. The self-cognitions of global self-worth, physical appearance and communicative competence partially mediated the effects of maternal awareness and classmate social support, though not of the family environment. The mechanisms by which these associations operate are speculated on and theoretical and clinical implications are discussed.

## **CHAPTER ONE**

### **INTRODUCTION**

#### **1.1 OVERVIEW**

Minimal research has been conducted on the difficulties presented by children with hearing impairments in mainstream school. Existing literature regarding the emotional and behavioural difficulties of children with hearing impairments is reviewed. Since these findings have not yet been drawn into a conceptual framework, one was sought from an allied discipline. A theoretical model constructed for children with chronic physical illnesses is described and adapted for children with hearing impairments. The adapted model is used to propose variables that may contribute to the emotional and behavioural difficulties of children with hearing impairments and hypotheses are specified.

##### **1.1.1 Terminology**

A variety of terms have been employed to describe people with hearing impairments. People with a severe to profound sensori-neural hearing impairment of early onset have typically been referred to as “deaf” (Hindley, Hill, McGuigan & Kitson, 1994). However, deafness can also be constructed as a cultural phenomenon. The term “Deaf” is used to describe people who consider themselves to be culturally Deaf. Deaf culture has its own codes of behaviour, values and community activities, with sign language as its dominant means of communication (Harris, 1995). People with mild to moderate hearing losses have been labelled “partially hearing” or “hard of hearing”. The terms “hearing-

impaired” or “with hearing impairments” are generic categories referring to individuals with hearing outside normal limits (Braden, 1994) and will be used here. Though “hearing-impaired” has connotations of being deficient, it is the most frequently employed term by professionals. Furthermore, the labels “Deaf” or “deaf” would be inappropriate for children with mild or moderate impairments who are without hearing-impaired peers, are primarily oral communicators rather than signers and would not identify themselves with Deaf culture. However, in reviewing the literature, the authors’ original terms are used.

Research investigating how children think of themselves has been hampered by the multiplicity of terms used. “Self-image”, “self-esteem”, “self-concept”, “self-schema” (Hammen & Goodman-Brown, 1990) and “self-perception” (Harter, 1985) have been used interchangeably and they are seldom defined in publications. The most prominent theory of children’s appraisals refers to them as multi-dimensional self-perceptions, which include children’s global evaluations of themselves and “a child’s appraisal of both his/her competence/adequacy in areas that are deemed important to the child and society in general” (Harter, 1987). Thus, the umbrella term “appraisals” is used here to encompass all research on children’s views of themselves, though the authors’ original terms are retained in the literature review. “Self-cognitions” is used to refer to the specific appraisals under investigation in the present study, according to Harter’s (1987) definition. This term is used rather than “self-perceptions” to retain the emphasis on conscious, evaluative appraisals made by the individual and to avoid the confusing connotations associated with labels such as “self-concept” or “self-image”.

The term “emotional and behavioural difficulties” has typically been used to refer to problems of aggression, delinquency, withdrawal, social and attention problems, anxiety and depression (Achenbach, 1991). This contrasts with “adjustment” which refers to “behaviour that is age-appropriate, normative, healthy, and that follows a trajectory toward positive adult functioning” (Wallander & Thompson, 1995) and “reacting to... the environment in a healthy effective manner” (Reber, 1985). Thus, adjustment refers to the presence of positive, adaptive behaviours whilst emotional and behavioural difficulties refer to the presence of poor functioning or problems. However, questionnaires used to measure adjustment have often tapped the level of children’s problems rather than their healthy functioning. Consequently, much of the literature on adjustment subsumes, or is synonymous with, research on emotional and behavioural difficulties. In reviewing the literature, the authors’ original terminology is used, though the reader should be aware of the overlap between constructs.

### **1.1.2 Why Study Children with Hearing Impairments?**

In the UK it is estimated that approximately two children in every thousand births have a bilateral sensori-neural hearing impairment greater than 40 decibels (dB) (Fortum, Marhsall, & Summerfield, 2002). Prevalence rates for mild or conductive hearing losses have not been estimated but the total number of children affected by difficulties with their hearing is likely to be much higher.

Recent prevalence studies suggest that children with hearing impairments have elevated rates of psychiatric disturbance. Hindley et al. (1994) found an overall

psychiatric prevalence rate of 50% in children with moderate to severe hearing impairments. Similarly, research on children's views of themselves, though variable, has portrayed them as lower than their hearing peers (Bat-Chava, 1993; Hilburn, Marini & Slate, 1997). Existing evidence suggests this may be influenced by parental child rearing attitudes (Warren & Hasenstab, 1986), peer relations (Farrugia & Austin, 1980; Van Gorp, 2001) and by the family's mode of communication (Desselle, 1994). However, much of the research into the difficulties presented by children with hearing impairments has been disjointed, contradictory and rarely replicated.

### **1.1.3 Why Study Mainstreamed Children with Hearing Impairments?**

Available research that does exist on the emotional and behavioural difficulties and appraisals of children with hearing impairments has usually been conducted on those in segregated educational provision or with severe to profound hearing losses. However, two studies detected lower self-esteem and higher psychiatric prevalence rates in mainstreamed rather than segregated hearing-impaired pupils (Farrugia & Austin, 1980; Hindley et al., 1994). The latter study suggested that children in Hearing Impaired Units (HIUs) in mainstream schools were bullied and stigmatised according to their hearing status. In contrast, the Deaf School provided the protective factors of positive peer identification and a relative lack of victimization by peers. Those in mainstream schools may have difficulty achieving language parity with peers which strains the development of relationships that encourage healthy self-perceptions (Leigh & Stinson, 1991).

Integration into a hearing environment may also serve to reinforce the child's identity as a minority, misfit or "different" (Obrzut, Maddock & Lee, 1999).

Unlike other minority groups, children with hearing impairments do not necessarily share their minority attributes with their parents. Ninety percent are born to hearing parents and may therefore lack positive role models with which to identify. Those with milder impairments may never come to use sign language, to identify themselves as being Deaf or as part of Deaf culture. Since mainstream schools will use spoken language and assisted learning devices as their dominant means of communication, children in these environments may never experience the protective aspects of the Deaf community (Glickman, 1996).

These factors are particularly important in the current climate of educational provision in which the government continues to pursue an agenda of inclusive and integrated education. As more children with special educational needs are placed into mainstream education and as assisted learning devices and technology advances, specialist segregated services are less relied upon. Whilst there is evidence this trend may improve children's academic attainment (Van Gorp, 2001), findings indicate that their social and psychological adjustment may suffer (Farrugia & Austin, 1980). Indeed, "the marginal hearing-impaired (child) cannot find a niche within the hearing community or relate to the deaf community. For this (child), there is no true sense of belongingness or identity, and feelings of ambivalence and isolation become prominent" (Leigh & Stinson, 1991)

## **1.2 REVIEW OF SELECTED FINDINGS IN CHILDREN WITH HEARING IMPAIRMENTS**

Evidence concerning the level of emotional and behavioural difficulties in children with hearing impairments is reviewed. This is supplemented by literature contrasting the appraisals of hearing with hearing-impaired children. Factors that have been associated with emotional and behavioural difficulties and appraisals are then summarised.

### **1.2.1 Emotional and Behavioural Difficulties in Children with Hearing Impairments**

Studies on the prevalence of emotional and behavioural difficulties in children and adolescents with hearing impairments vary widely in their findings, though generally suggest this group has elevated rates of disturbance. In a population-based study Rutter, Graham and Rule (1970) found that 15.4% of deaf children were psychiatrically disturbed, compared to 6.6% of children in the general population. Meadow and Schlesinger (1971) found 31% of their sample of 512 children in a Deaf School had mild or severe disturbance according to teacher reports. Twenty-three percent of children in the Vancouver region with severe or profound losses had moderate to severe levels of disturbance (Freeman, Malkin, & Hastings, 1975), whilst 54% of Fundudis, Kolvin and Garside's (1979) sample of deaf children had psychiatric disorders, with a preponderance of behavioural disorders. Similarly, Mitchell and Quittner (1996) found 44% of their severe to profoundly impaired sample had clinically significant externalising problems.

Aplin (1985; 1987) found that 36% of children in a Deaf School and 17% of partially hearing children in mainstream schools met criteria for psychiatric disturbance. In the only study to include an interview with the child, 25% of children whose hearing loss was caused by maternal rubella had psychiatric problems compared to 4% with no hearing loss (Chess & Fernandez, 1980). Children's level of psychiatric disorder increased with the number of their physical difficulties. Another prevalence study in Finland (Sinkkonen, 1994) found no significant difference in the rate of psychiatric disorder between deaf and hearing-impaired children (18.7%) and a hearing control group (15.8%).

However, these studies are methodologically flawed. Only one study interviewed participants and reliance on teacher reports is likely to lead to inflated levels of behavioural problems and poor detection of emotional problems (Hindley, 2000). Six of the studies used the Rutter scales (Rutter, Tizard, & Whitmore, 1970) which include speech related items to calculate disorder. None of the instruments used had been validated on deaf or signing populations which makes comparison of prevalence rates across populations more tentative. Only Aplin's (1987) study included children with mild hearing impairments and it remains unclear to what extent elevated rates of disturbance can be generalised to children with some degree of functional hearing.

Many of these criticisms were accommodated by Hindley et al. (1994), who undertook a prevalence study on 81 children with moderate to profound hearing impairments in a Deaf School and three HIUs in the London area. Children were

interviewed individually, with an interpreter where appropriate, using the Child Assessment Schedule (Hodges, 1987) which generated DSM III diagnoses and therefore facilitated comparison with other findings. They estimated an overall psychiatric prevalence rate of 50.3%. Rates for children in HIUs were one and a half times higher than those in children in the Deaf School (60.9% and 42.4% respectively). Anxiety disorders provided the largest single diagnostic group and attention deficit and hyperactivity were higher in children with acquired deafness (Hindley & Kroll, 1998). However, overall there was not an excess of behavioural problems, as suggested in previous studies.

Hindley et al.'s (1994) study suggests that with thorough assessment, children with hearing impairments may indeed have high rates of difficulties and that an interviewer's signing ability may mask the detection of affective disorders (Hindley, Hill & Bond, 1993). However, these results should be interpreted cautiously since several factors cast doubt over the validity of what constituted psychiatric disorder. All 14 cases in the borderline range of disturbance, which were included as psychiatrically disordered, had severe to profound hearing impairments. This suggests that degree of impairment or communicative ability may have been confounded with the detection of disturbance. The sample contained four children with cerebral palsy and epilepsy, all of whom were classed as psychiatrically disturbed. The authors stated that anxiety disorders formed the largest group, though no further breakdown of type of disorder was provided. This prevents an assessment of the degree and nature of disturbance. For example, simple phobias were included in the anxiety group and the authors do not state

whether categories such as autistic spectrum disorders were included. A proportion of the sample was not interviewed, and more children attending HIUs than the Deaf School were interviewed which may have elevated rates in the HIUs.

In summary, available research suggests that children with hearing impairments have high rates of emotional and behavioural difficulties, and that previous under-reporting of emotional problems may have been due to inadequate assessment procedures. Only one study on prevalence rates has included children with mild hearing impairments and instead research has focused on those with a severe or profound impairment or who use sign.

### **1.2.2 Appraisals of Children with Hearing Impairments**

Research on the nature of appraisals held by children with hearing impairments is contradictory. Two reviews have suggested that appraisals are lower, or more negative, in children with hearing impairments when compared to hearing peers. Garrison and Tesch (1978) reviewed the literature and found consistently poorer self-concepts in deaf people, though the magnitude of the differences detected varied. Likewise, in a meta-analysis of 42 studies, Bat-Chava (1993) concluded that findings suggest deaf people have lower self-esteem than hearing people, though the majority of evidence (32 studies) came from unpublished theses.

For example, Loeb and Sarigiani (1986) assessed 250 North American children, aged 8 to 15 years, in mainstream schools. Participants either had a hearing impairment, a visual impairment or no significant sensory impairments. Self-

concept was measured using the Piers-Harris Self-Concept Scale (Piers, 1984) which provides information across several domains: global self-esteem, behaviour, intellect, physical well being, anxiety, popularity and happiness. Children with hearing impairments scored significantly lower on global self-esteem, behaviour and popularity subscales than those with visual impairments or the hearing controls.

However, several studies contradict these findings. For instance, Searls (1993) examined the self-concept among deaf and hearing college students using the revised Tennessee Self-Concept Scale (TSCS) (Gibson, 1983). Participants were 51 deaf people and 58 matched hearing people, aged 18 to 28 years. No significant differences existed on the global self-esteem measure. In a UK sample of 20 adolescents with mild to moderate hearing impairments in mainstream schools, no differences were found between their scores and those of a hearing control group on seven out of eight domains of the Self-Perception Profile for Adolescents (Harter, 1988) (Tasker, Sohner, Shann & Ford, 1999). Similarly a more recent review of 33 studies concludes that self-esteem was not related to the extent of mainstreaming (Kluwin, Stinson & Colarossi, 2002).

Two studies support an intermediate position: children with hearing impairments may have similar levels of global self-esteem compared to hearing peers, but appraise themselves more negatively on specific dimensions. Cates (1991) used the Piers-Harris Self-Concept Scale with children with a prelingual, profound hearing loss. Sixty-eight deaf and 68 hearing children, aged 8 to 19 years

participated and their teachers completed observer reports of self-concept using the Behavioural Academic Self-Esteem Questionnaire (Coopersmith & Gilberts, 1982). There were no significant differences between these groups on global self-concept, though the deaf sample had significantly lower self-concept scores on the popularity subscale. Powers (1990) compared the self-concepts of eight adolescents with mild to severe losses in a secondary school HIU to 96 of their hearing peers. Since no standardised measure of self-concept includes a subscale specific to communication, Powers adapted the Harter Perceived Competence Scale for Children (1982) and an additional seven-item communicative ability scale was constructed. Adolescents attending the unit scored significantly lower on the social acceptance and communicative competence subscales than did their hearing peers. However, conclusions based on this result should be tentative due to the study's small sample size.

This area of research has been hampered by methodological problems. Differences in appraisals between hearing and hearing-impaired participants have varied on the basis of the measure, its format and the communication mode in which tests were administered. The various measures of appraisals appear conceptually similar but may have tapped different constructs. One would also anticipate differences between teacher and self-report rating scales.

In summary, there is inconsistent evidence that children with hearing impairments have lower global self-esteem. Only one study cited has detected significant differences in global self-esteem between children with and without hearing

impairments, though this did have the largest sample size. There is evidence that children with hearing impairments may view themselves more negatively on circumscribed domains, such as popularity, social acceptance or communicative competence.

### **1.2.3 Factors Associated with Emotional and Behavioural Difficulties and Appraisals in Children with Hearing Impairments**

Factors that have been associated with emotional and behavioural difficulties in children with hearing impairments are reviewed. Since the research available in this area is sparse, factors associated with appraisals are also included. Findings are classified into those that have focused on the family environment, the mother-child relationship, the school environment, communication and intra-personal factors. However, the evidence is variable, patchy, anecdotal in places and rarely replicated. Details of procedures and measures that were used are given where available, though are not always reported in the literature.

#### *1.2.3.1 Family Environment*

Work on the environment of families with a hearing-impaired child has concentrated on familial control, overprotection or lack of independence, and discipline. In observational studies, hearing parents have been described as more controlling of deaf children than of hearing children (Schlesinger & Meadow, 1972). This was supported by Lederberg (1993) who found that the language delay caused by having a hearing impairment may cause parents to use simpler and more controlling communication as adults “take over” more frequently. She

hypothesised that this would increase passivity in children with hearing impairments and increase the risk of emotional problems. In contrast, permissive, nonintrusive and nondidactic parenting in early childhood has been associated with better adjustment in deaf adolescents (Calderon & Greenberg, 1993).

Families of children with hearing impairments have also been seen as overprotective (Schlesinger & Meadow, 1972). Braden (1994) argues that hearing-impaired children's inability to passively monitor their environment may lead them to be excessively dependent on their parents. In one prevalence study, parents of deaf children reported giving them less independence than hearing controls (Freeman, et al., 1975), which the authors hypothesised were associated with their high rates of difficulties. Warren and Hasenstab (1986) tested 58 children aged five to 11 years with severe to profound hearing losses. Self-concept was assessed using the Picture Game (Lambert & Bower, 1979), a 72-item, self-report picture choice test depicting home, school and play situations. The Maryland Parent Attitude Survey (MPAS) (Pumroy, 1966) was used to determine parental child-rearing attitudes. High parental indulgence, rejection and protection were significantly associated with lower self-concept.

Warren and Hasenstab (1986) also found that family discipline was positively correlated with self-concept. Likewise, Brubaker and Szakowski (2000) examined the parenting practices of 39 deaf children aged three to eight years. Inconsistent discipline was associated with more behavioural problems, as would also be expected in hearing families.

Studies in older children have explored the role of family cohesion. Watson, Henggeler and Whelan (1990) examined family functioning in 75 families of children with mild to profound impairments with a mean age of 12.9 years. Lower family adaptability and cohesion were associated with an increase in behavioural problems. These findings are commensurate with results of the qualitative aspects of Woolf and Smith's (2001) study on 45 deaf children aged 10 to 14 years. Child-reported family cohesion was associated with more positive self-esteem. Where relationships with hearing parents and their children were described as more strained or distant children reported feeling worried, left out and jealous of some siblings' hearing status. Gregory (1998) also reported that families with high degrees of cohesiveness have more positive communication patterns which were associated with better adjustment. Indeed, family cohesion in families of deaf children has also been identified as the most consistent predictor of parental adaptation (Henggeler, Watson, Whelan & Malone, 1990).

Together, these results suggest that parental control and overprotection may be associated with the difficulties presented by children with hearing impairments, whilst family cohesion and discipline appear to be protective factors.

#### *1.2.3.2 Mother-Child Relationship*

Theorists have emphasised the importance of the mother-child relationship for children with hearing impairments. Gregory argues that "optimal development requires complex interaction skills which depend on the quality of mothers' interaction with their children" (Gregory, 1991) since it is often mothers who

assume the responsibilities to communicate with and interpret for the child (Gregory, 1998). However, research in this area has largely been conducted on preschoolers and little is known about mother-child interaction as the child grows up.

Available evidence suggests that mother-child interactions are qualitatively different for hearing-impaired children. Stinson (1974) contended that mothers' interactions depended on the hearing status of the child. Mothers were observed to erode independence and motive-oriented behaviour with their deaf son whilst encouraging these in interactions with their hearing son. In another observational study, mothers of deaf children tended to express more disagreement, tension and antagonism than mothers of hearing children, who asked questions and solicited opinions more frequently (Goss, 1970). Mothers have also been observed to be more controlling in the free play of three to six year-old deaf children than mothers of hearing children (Henggeler, Watson & Cooper, 1984). Manfredi (1993) portrays mothers who are flexible, encouraging, permissive and nonintrusive as having better adjusted deaf preschoolers than those who are rigid, didactic and intrusive.

Children's language skills are usually the means by which mothers can attract and hold their attention, a challenge for those with a hearing loss. Consequently, mothers with deaf toddlers have been found to spend less time in, and have less complexity of, joint attention than those with hearing toddlers (Prezbindowski, Adamson & Lederberg, 1998). The consequences of these features of mother-

child interaction have not been investigated. Marschark (1993) hypothesised that low communication between mother-child dyads led to less secure attachment relationships and were associated with later behavioural difficulties of non-compliance and aggression. However, no evidence exists that children with hearing impairments are less securely attached. There was no association between hearing status and quality or security of attachment as measured by Ainsworth's Strange Situation in 41 hearing and 41 hearing-impaired toddlers (Lederberg & Mobley, 1990).

Though relatively little is known about the effect of early mother-child interaction in later life, two studies have linked this with depression. Leigh and Anthony (1999) examined maternal bonding in 38 adults with hearing impairments, aged 21 to 65 years, who had a diagnosis of depressive disorder. Higher rates of depression, as assessed by the Beck Depression Inventory (BDI), were associated with less perceived maternal care received as a child. Similarly, over one hundred deaf people aged less than 25 years retrospectively rated their communication with their mother and completed the BDI (Leigh, Robins, & Welkowitz, 1990). Perceived quality of mother-child communication was significantly negatively associated with depression. The authors argued that children who felt understood by their mothers were less isolated, felt more accepted and therefore less depressed. However, the retrospective rating employed by these studies may confound maternal factors with depressive participants' selective recall and hindsight bias towards negative memories.

Thus, there is no evidence that children with hearing impairments are more likely to be insecurely attached than hearing children. However, mothers face particular challenges in being flexible and establishing joint attention with their hearing-impaired child. Limited, retrospective evidence has associated early mother-child communication with subsequent levels of depression.

### *1.2.3.3 School Environment*

Elevated psychiatric prevalence rates in children with hearing impairments in mainstream schools (Hindley, et al., 1994) strongly suggest that children in integrated settings face additional difficulties to those in Deaf institutions. It appears that the social aspects of mainstreaming are the most challenging (Leigh & Stinson, 1991). Deaf Schools offer the protective effects of a homogeneous peer group, deaf staff, the use of sign and establishment of a Deaf cultural identity, whilst mainstreamed children with hearing impairments are in a minority and typically face teasing and bullying centered on their deafness (Bat-Chava, 1993).

Manfredi (1993) noted that mainstreamed deaf adolescents had higher levels of social anxiety and more negative self-perceptions compared to those in Deaf Schools. He hypothesised that mainstreamed children were more aware of the constraints derived from their impairments and that realising “the extent of their differentness” accentuated their feelings of loneliness. In support of this, Stinson and Whitmire (1991) found no evidence that increased mainstreaming promoted relational bonds with hearing peers. Participants were 84 mainstreamed adolescents aged 12 to 20 years, had mild to severe hearing impairments and spent

between 9% and 100% of lessons in mainstream classes. As mainstreaming increased, adolescents' perceived social competence decreased. Children with hearing impairments were more emotionally secure in relationships with other hearing-impaired children rather than their hearing peers. This finding was replicated in a larger study on 220 mainstreamed hearing-impaired adolescents (Stinson, Whitmire & Kluwin, 1996). There was no increase in emotional security with hearing peers with more mainstreaming. Physical proximity to hearing peers was not accompanied by identification and relational bonds with them.

Research on preschoolers may provide clues to the mechanisms at work in school settings. Deaf children spend more time in solitary play and less in cooperative play than hearing children. When they do play, this occurs more frequently in dyads, in contrast to hearing preschoolers who play more in triads or larger groups (Lederberg, 1993). Thus, the school-aged deaf child may be at a disadvantage, with less experience of group interactions or skills to manage classroom or playground situations. These factors will be compounded by the difficulty in dividing attention between the environment and peers. Deaf children are less able to passively monitor their environment (Braden, 1994) and this reduces the indirect social information available to them through overhearing. However, caution should be taken in interpreting the effects of mainstreaming on children's difficulties as the direction of effects is not clear. Children who attend HIUs may be referred there due to pre-existing social difficulties rather than acquiring them as a result of the school environment.

#### *1.2.3.4 Communication*

Communicative ability has generally not been included as a variable in studies of psychiatric disorder in children with hearing impairments, possibly due to the difficulties in defining and measuring it. Hindley et al. (1994) found no significant relationship between communication ability and disorder, though they used a crude teacher rated measure for this. In contrast, Sinkkonen (1994) did find a significant correlation between hyperactivity and low communication ability. Other anecdotal evidence suggests a positive association between communicative ability and social maturity in preschoolers (Schlesinger & Meadow, 1972), and between early gestural communication and level of impulse control (Manfredi, 1993).

Other research indicates that parental communicative competence is associated with children's appraisals. Desselle (1994) investigated the association between family communication patterns and self-esteem in deaf children in a residential school. Participants were aged 13 to 19, severely to profoundly deaf with no other significant disabilities. They were administered the Modified Coopersmith Self-Esteem Inventory (Kelliher, 1976) which has four subscales and the Subject Communication Questionnaire, modified to include parental communicative skill. Parents who used total communication (speech, fingerspell and sign) had children whose self-esteem was significantly higher than those who used oral-only means of communication (speech).

Hilburn et al. (1997) compared deaf children with deaf parents, those with hearing parents and hearing children with hearing parents using the Culture-Free Self-Esteem Inventories (Battle, 1981). Thirty-nine children aged 10 to 15 years participated, though information about their hearing loss was not provided. Fathers' skill in manual communication was associated with elevated levels of children's self-esteem.

#### *1.2.3.5 Intra-Personal Factors*

Contradictory evidence has been found for the role of intelligence in children's emotional and behavioural difficulties. Schlesinger and Meadow (1972) reported that IQ was negatively correlated with behavioural problems and children with IQs below 100 were more likely to be judge disturbed. Aplin (1985) found no significant association between IQ and disturbance, though when children with milder impairments were included in the sample, IQ was correlated with internalising problems (Aplin, 1987).

No associations have been found between the characteristics of children's hearing impairments and levels of presenting problems. Severity of hearing loss was not correlated with psychiatric disorder in three studies (Freeman, et al., 1975; Hindley, et al., 1994; Schlesinger & Meadow, 1972) suggesting there is no direct relationship between the physical parameters of hearing impairments and emotional and behavioural difficulties.

#### *1.2.3.6 Summary*

The available literature that examines the factors associated with children's emotional and behavioural difficulties is patchy and often described in insufficient detail. However, some tentative conclusions can be drawn from the evidence. Familial control and overprotection may be associated with difficulties in children with hearing impairments, whilst family cohesion and discipline appear to protect against disturbance. Qualitative differences may exist in interactions between mothers and hearing-impaired children, and early mother-child communication has been associated with later depression. Children with hearing impairments in mainstream school may have more difficulties and more negative appraisals of themselves than those in Deaf Schools. Their sense of being "different" may be exacerbated whilst group interactions are also problematic. Some evidence was found for associations between a child's poor communicative ability and hyperactivity and impulse control, and parents' use of total communication strategies was associated with higher self-esteem. Mixed evidence was found for a relationship between intelligence and emotional and behavioural difficulties.

#### **1.2.4 Limitations of Research on Children with Hearing Impairments**

Interpreting results from available research on children with hearing impairments is complicated by several factors. These relate to the measures used, the participants included and the context of the research.

A variety of measures have been used to assess children's appraisals. The Piers-Harris Self-Concept Scale has been used most frequently and a further seven

different measures were used in the literature. None of these have yet been standardised on children with hearing impairments and authors largely failed to provide information about their construction, reliability or validity. Where it was reported, measures had weak test-retest reliability. Though attempts have been made to construct a measure specific to the hearing-impaired child, for example, the Meadow-Kendall Social-Emotional Inventory (Meadow, 1983) and the Self-Concept Scale for the Hearing Impaired (Oblowitz, Green & de Heyns, 1991), their reliability or validity has not been established. Furthermore, the heterogeneity of measures used suggests that the constructs under examination may vary between studies. Studies assess self-esteem, self-concept and self-competence and definitions for these, where given, vary. Some tap appraisals over several domains, others tap a global measure of self-esteem.

Obrzut et al. (1999) suggest that findings thus far that compare appraisals of hearing and hearing-impaired children may be a function of measurement bias rather than real differences. Measures need to consider item content, relevant variables, use of appropriate syntax and mode of communication. Children with more severe hearing impairments can be expected to have language delays and poorer reading abilities related to their hearing loss (Marschark, 1993). Particular linguistic structures are problematic for children with hearing impairments, such as conditionals, comparatives, negatives, inferentials and lengthy passages (Rudner, 1978). Studies largely fail to report how these factors were taken into consideration in assessing participants.

Studies generally provide inadequate information concerning participants. Thirty percent of children with hearing impairments have additional disabilities (Fortum, et al., 2002), though only one study explicitly used this in their exclusion criteria. In addition, studies rarely provide information on the physical characteristics of their sample's hearing losses. With the exception of Hindley et al. (1994) and Watson et al. (1990), no studies provided information regarding the cause or type of loss, age at onset or diagnosis. Most studies give descriptive labels of participants' hearing loss, such as profound or severe, though fail to say how these labels were obtained.

Much of the cited research refers to its participants as "deaf" which is likely to refer to individuals with severe or profound hearing losses. Therefore, children with mild or moderate hearing impairments have largely been excluded from investigation, which limits the applicability of findings to this population. For example, mother-child interaction or communicative ability may not be so detrimentally affected in children with milder losses who have some functional hearing and are therefore less reliant on sign or visual cues to communicate.

With the exception of the prevalence studies, only three of the studies reviewed here were conducted in the UK (Powers, 1990; Tasker et al., 1999; Woolf & Smith, 2001). Research conducted in North American specialist services may have limited applicability to English mainstreamed populations in a different educational system. Despite evidence that suggests mainstreaming may have negative effect on children's levels of difficulties and appraisals, further research

has failed to investigate factors associated with this. Associations between the mother-child relationship and children's difficulties are particularly tenuous. Studies have examined the differences between interactions with preschool hearing and hearing-impaired children and then conjectured over their relationship to adjustment. Overall, strong evidence for the direct association between the reviewed factors and emotional and behavioural difficulties is lacking.

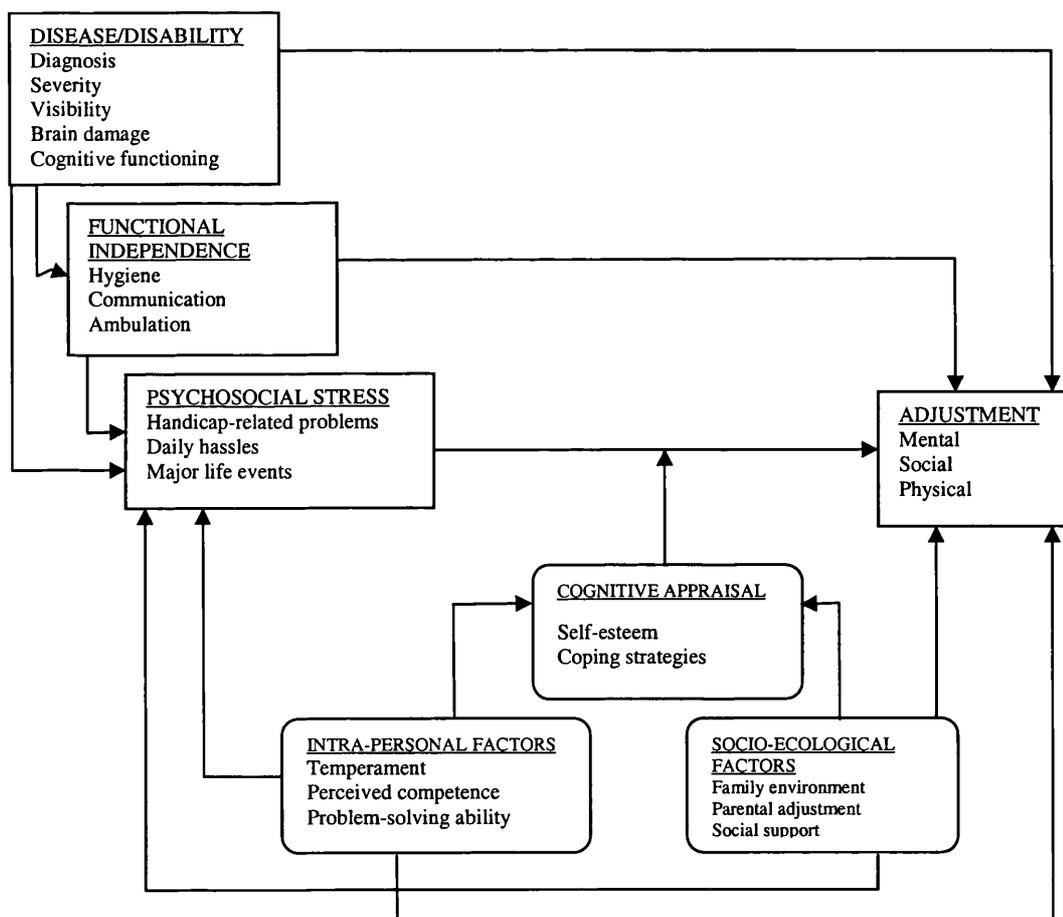
### **1.3 THE APPLICATION OF A PAEDIATRIC MODEL TO CHILDREN WITH HEARING IMPAIRMENTS**

Research on this population has been hampered by the lack of an explicit, unifying model. This would facilitate hypothesis testing and enable subsequent research to build successively on earlier findings. In order to guide the current investigation, a conceptual model of emotional and behavioural difficulties was sought from the allied discipline of paediatric psychology.

Wallander and Varni's (1998) model of adjustment in children with chronic physical disorders was used to give a theoretical framework for the study and is presented in Figure 1. Selected findings concerning the level of emotional and behavioural difficulties are reviewed, as are factors associated with these in paediatric populations, which Wallander and Varni (1998) categorise as either "socio-ecological", "intra-personal" or "disability/disease". The first two categories are hypothesised to have a direct effect on adjustment and an effect mediated by the child's appraisals. The model is then adapted for children with

hearing impairments. Though specific physical disorders have diverse biological processes and treatments, research into their psychosocial aspects has been conducted within a non-categorical approach; one that is not specific to each disorder, but rather examines their commonalities. Therefore, this field of research seemed an appropriate source of epidemiological data for comparison and of a conceptual model for the present purposes. The reader should note that though the model is of “adjustment”, this has largely been measured by levels of internalising and externalising behaviour problems in the research that is reviewed.

**Figure 1**  
**Model of Child Adjustment to Chronic Physical Disorders**



*Square boxes are risk factors, round boxes are resistance factors.  
 Taken from Wallander and Varni (1998).*

### **1.3.1 Levels of Emotional and Behavioural Difficulties in Children with Chronic Physical Disorders**

Children with chronic physical disorders have been described as being at increased risk for emotional and behavioural problems. Lavigne and Faier-Routman (1992) analysed 87 studies and concluded that children with chronic physical disorders were reported as having more internalising and externalising problems than were comparison groups, regardless of whether comparisons were made with controls or normative samples. Cadman, Boyle, Szatmair and Offord (1987) found 22% to 31% of children with chronic physical disorders had a psychiatric disorder compared to 14% for healthy children. In a clinic sample of children with cystic fibrosis (Thompson, Hodges & Hamlett, 1990) over 50% received some form of major psychiatric diagnosis, with anxiety disorder the most common, followed by other internalising types of disorder. Similarly, MacLean, Perrin, Gortmake and Pier (1993) found a preponderance of internalising over externalising behaviours in children with asthma, though at lower rates than in previous studies (15% and 12% respectively). This pattern was replicated by Northam et al. (1996) with rates of 34% and 25% of internalising and externalising behaviour in four to 11 year olds with insulin-dependent diabetes.

These results are consistent with findings in children with hearing impairments. Elevated rates of disturbance have been found in both populations and with similar ranges: from 12% to 50% in paediatric populations and from 15% to 61% in hearing-impaired populations. Eiser (1990) and Cadman et al. (1987) both found that the risk of psychiatric disorder increased with the level of additional

disabilities, which mirrors findings in children with hearing impairments (Chess & Fernandez, 1980). However, the traditional view that hearing-impaired children have more behavioural than emotional problems is not consistent with trends in the paediatric literature.

### **1.3.2 Factors Associated with Emotional and Behavioural Difficulties in Children with Chronic Physical Disorders**

Those factors with the strongest associations are reviewed (Lavigne & Fairer-Routman, 1993): family environment, maternal awareness, social support, intelligence and children's appraisals. Wallander and Varni's (1998) model includes a far greater range of variables though many are untested or lack adequate evidence for their inclusion and are omitted here for the sake of clarity.

### **1.3.3 Socio-Ecological Factors:**

#### *1.3.3.1 Family Environment*

A relatively extensive literature exists regarding the role of family cohesion, expressiveness, organisation and low conflict in low levels of emotional and behavioural difficulties in paediatric populations. Wallander et al. (1989a) found scores on the subscales of cohesion, expressiveness, conflict, organisation and control on the Family Environment Scale (Moos & Moos, 1981) accounted for a significant increase in the variance in adjustment in chronically ill children. Of these, cohesion showed the strongest association. Higher cohesion, organisation and less conflict were also significantly associated with better adjustment in children with congenital and acquired limb deficiencies (Varni, Rubinfeld, Talbot

& Setoguchi, 1989a). In children with spina bifida, low conflict and high cohesion buffered against child's depressive symptoms, whereas high independence exacerbated depressive and anxiety symptoms (Murch & Cohen, 1989). Higher cohesion and expressiveness were significantly predictive of lower emotional and behavioural difficulties, both concurrently and prospectively, in children with newly diagnosed cancer (Varni, Katz, Colegrove & Dolgin, 1996).

Findings in both paediatric and hearing-impaired populations emphasise the importance of family cohesion and low conflict in children's presentations whilst evidence suggests that control and overprotection may be more relevant to difficulties in children with hearing impairments. The role of expressiveness is consistent with findings that parental and child communicative ability are associated with adjustment.

#### *1.3.3.2 Maternal Awareness*

Though not included in the original model, Taylor, Fuggle and Charman (2001) have highlighted the importance of maternal awareness of the child's illness-related attitudes as a socio-ecological variable. Maternal distress, maternal social support, burden of care and maternal awareness of attitudes and perceptions were assessed in siblings of children with chronic physical disorders. Maternal awareness of the siblings' attitudes and perceptions accounted for 35% of the variance of the siblings' total difficulties. None of the other maternal variables independently predicted children's total difficulties. Furthermore, mothers reported that their children had more negative attitudes towards their illness than

their children actually held, particularly about the illness's impact on family relationships. These findings support research that the quality of mother-child relationships is associated with behavioural psychopathology (Dunn, Slomkowski, Beardsall, & Rende, 1994) and are consistent with associations between mother-child interactions and depression in children with hearing impairments (Leigh, et al., 1990).

#### *1.3.3.3 Social Support*

Higher social support has been associated with better adjustment in children with limb deficiencies and newly diagnosed cancer. Classmate, teacher, parent and close friend social support have all shown significant associations. Of these, classmate social support has been the most consistent predictor of global self-esteem (Varni, Rubinfeld, Talbot & Setoguchi, 1989b; 1989c), of lower depression (Varni & Setoguchi, 1996) and of anxiety (Varni, Katz, Colegrove & Dolgin, 1994). This concurs with the experiences of mainstreamed children with hearing impairments who have been described as less emotionally secure in relationships with hearing than hearing-impaired peers. Since group situations can be challenging, classmate social support may be particularly difficult for children with hearing impairments to establish and maintain.

### **1.3.4 Intra-Personal Factors:**

#### *1.3.4.1 Intelligence*

In a meta-analysis, lower IQ had a moderate association with child maladjustment (Lavigne & Faier-Routman, 1992). This is consistent with non-paediatric findings

that IQ is significantly associated with behavioural problems (Moffitt & Silva, 1991), in contrast to the contradictory results found in children with hearing impairments.

#### *1.3.4.2 Children's Appraisals*

Children's appraisals have been one of the strongest predictors of emotional and behavioural problems in paediatric conditions. In one of the largest studies on paediatric cancer, perceived disease related stress accounted for 25% of the variance in total behavioural problems (Wallander & Varni, 1998). Perceived physical appearance has been a robust predictor of depressive symptoms and anxiety in children and adolescents with limb deficiencies (Varni & Setoguchi, 1991; 1996). The effects of perceived physical appearance and general self-esteem on depression and anxiety have also been documented in children with newly diagnosed cancer (Varni, Katz, Colegrove & Dolgin, 1995). It may be that physical appearance is particularly pertinent due to the impact that illnesses, disabilities or treatment side-effects have on perceived attractiveness. Furthermore, Wallander and Varni's (1998) model proposes that the effects of all socio-ecological and intra-personal variables are partially mediated by the child's appraisals. No investigations have been conducted into the role of appraisals in emotional and behavioural difficulties in children with hearing impairments, making parallels between the two populations hard to draw.

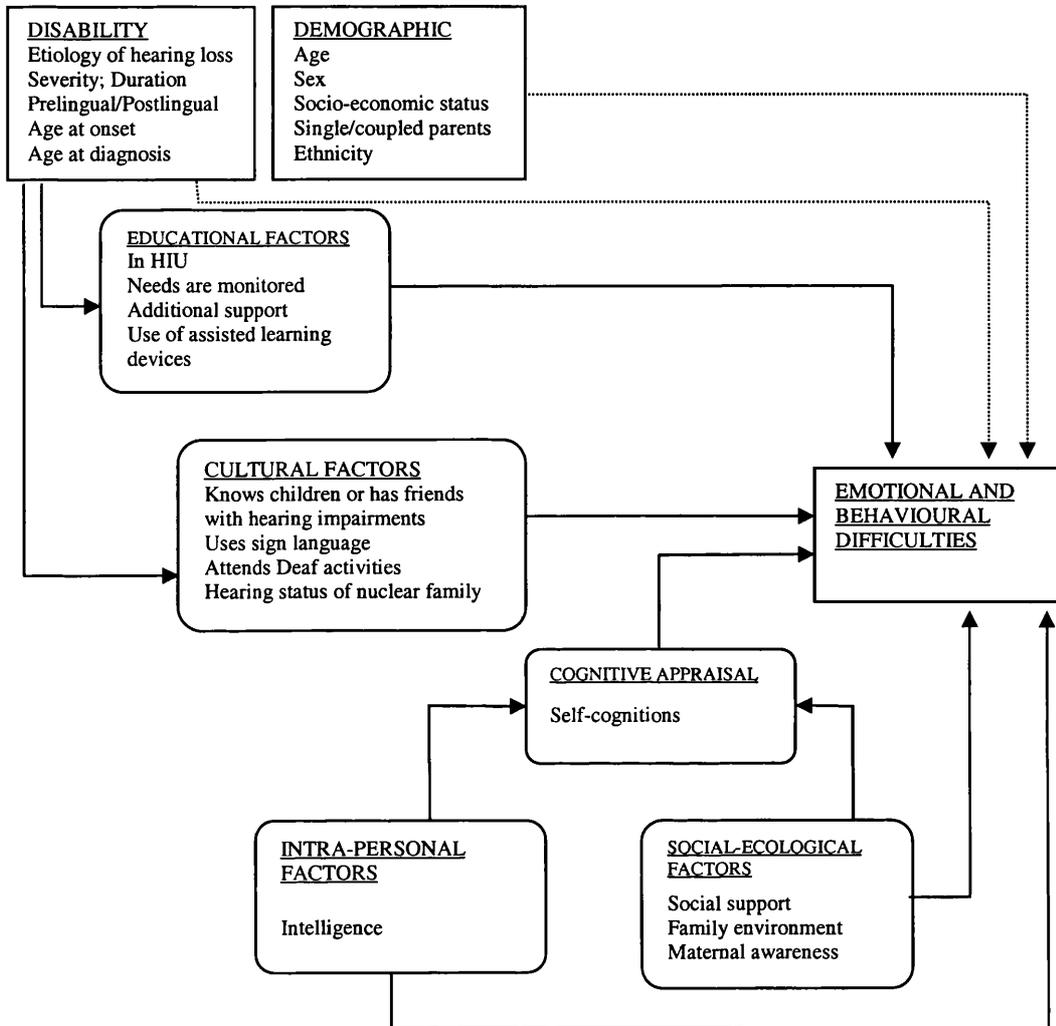
### **1.3.5 Disability and Disease Factors**

There is little evidence that disability and disease parameters are associated with emotional and behavioural difficulties in chronic physical disorders. (Varni, Rubinfeld, Talbot & Setoguchi, 1989b, Wallander et al., 1989b). Different diagnoses within diseases have not been related to adjustment (Varni et al., 1995), neither has age, sex, age at diagnosis or degree of limb loss (Varni & Setoguchi, 1996). Several studies find no evidence that condition severity contributes to behavioural problems, for example, in children with sickle cell (Hurtig, Koepke & Park, 1989), asthma (MacLean et al., 1993) and cystic fibrosis (Thompson et al., 1990). These results are consistent with the absence of any relationship between severity of hearing impairment and psychiatric disorder.

## **1.4 ADAPTED MODEL OF THE EMOTIONAL AND BEHAVIOURAL DIFFICULTIES OF CHILDREN WITH HEARING IMPAIRMENTS**

Wallander and Varni's (1998) model of adjustment was adapted in several ways to integrate factors relevant to children with hearing impairments with those variables with the strongest evidence in the paediatric literature. The adapted model is presented in Figure 2 and the modifications are then described.

**Figure 2**  
**Adapted Model of the Emotional and Behavioural Difficulties of Children with Hearing Impairments.**



*Square boxes are risk factors; round boxes are resistance factors.*

“Adjustment” was renamed “emotional and behavioural difficulties” since this was the construct under examination. Four new background factors were created. The disability variables were modified to include the physical parameters of hearing impairments, such as cause, type and age at onset. Demographic factors had been included under disability variables in the original model and these were separated out. Their weaker associations are shown by a dotted line. Since functional

independence and psychosocial stress had poorer evidence for their inclusion, two new categories were created. One was educational support, since evidence suggests that school setting is related to children's difficulties. The other was cultural factors since the literature portrays contact with Deaf culture as protective.

Concerning intra-personal factors, the evidence for temperament and problem-solving ability was not reviewed due to weaker associations and were removed from the model. In the original model, intelligence was described as a disability variable. However, literature outside of the paediatric population suggests that IQ may be of more importance than previously theorised. For example, Moffitt and Silva (1991), Carr (1999) and Rutter (1989) respectively provide evidence for the role of IQ in delinquency, in conduct disorder and as a protective factor for resilience in the face of adversity. Therefore, intelligence was included as an intra-personal factor.

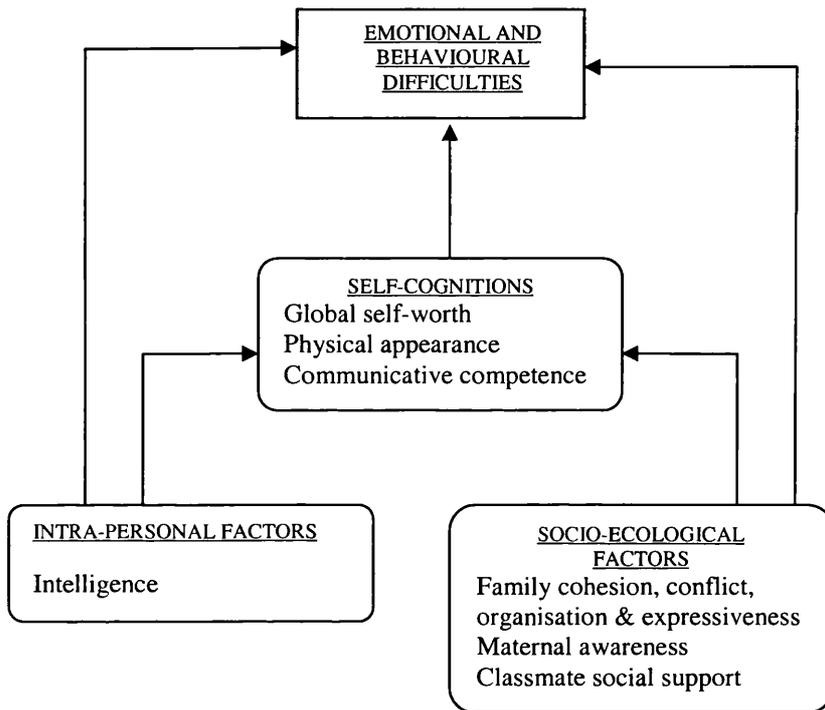
Family environment and social support have considerable evidence behind them and are retained in the model as socio-ecological variables. Of the family dimensions, cohesion, expressiveness, conflict and organisation have the strongest associations with emotional and behavioural difficulties. Maternal awareness was not included in the original model since the relevant research was published subsequent to its development. However, its strong prediction of children's difficulties was seen to justify its inclusion here as a third socio-ecological variable.

As previously discussed, diverse constructs have come under the remit of “appraisals”. Appraisals of the self over several domains have received the most support. These shall be referred to as “self-cognitions” and defined as “a child’s appraisal of both his/her competence/adequacy in areas that are deemed important to the child and society in general” (Harter, 1987). This avoids the ambiguity that accompanies other terms such as “self-esteem” or “self-concept”. The literature suggests that global self-esteem and perceived physical appearance are most strongly associated with emotional and behavioural difficulties in children with paediatric conditions. This could also be interpreted as evidence that additional, condition-specific cognitions are important. Therefore, it was hypothesised that hearing-related cognitions of communicative competence (Powers, 1990) would affect children’s difficulties. Indeed, Musselman, Mootilal and MacKay (1996) suggest that the relationship between a mainstreamed child’s school setting and adjustment may be mediated by their communicative competence. Self-cognitions were hypothesised to partially mediate the effects of the socio-ecological and intra-personal factors, as the original model proposes.

Fewer interactions between variables are presented in the adapted model than depicted in the original since these have not been explicitly tested in the literature. However, the adapted model does suggest that disability parameters such as severity of impairment will affect educational and cultural variables. This is based on clinical experience where children with severe and profound losses are more likely to be in segregated schools, receive more support and have more contact with Deaf culture than those with mild or moderate impairments.

Factors with the strongest evidence for associations with emotional and behavioural difficulties will be focused on. These are shown in Figure 3.

**Figure 3**  
**Variables Hypothesised to have the Strongest Associations**



## 1.5 RESEARCH HYPOTHESES

The study aims to identify factors that contribute to the emotional and behavioural difficulties of children with hearing impairments and to explore to what extent these are mediated by the child's self-cognitions. The following hypotheses will be tested.

## **1. The Level of Emotional and Behavioural Difficulties**

The level of emotional and behavioural difficulties in children with hearing impairments will be higher in comparison with normative data.

## **2. Background Factors**

Emotional and behavioural difficulties in children with hearing impairments will be associated with:

- cultural variables;
- educational variables.

However, they may or may not be associated with:

- demographic variables;
- disability variables.

## **3. Maternal Awareness**

Mothers will endorse more negative attitudes to having a hearing impairment than their children.

## **4. Family Environment, Maternal Awareness, Social Support and Intelligence**

Emotional and behavioural difficulties will be associated with intelligence, family environment, maternal awareness and social support, and in particular with:

- family cohesion, expressiveness, conflict and organisation;
- classmate social support.

## **5. The Role of Self-Cognitions**

The effects of family environment, maternal awareness, social support and intelligence on the child's level of emotional and behavioural difficulties will be mediated by the child's self-cognitions.

## **CHAPTER TWO**

### **METHOD**

#### **2.1 OVERVIEW**

Fifty-five children with hearing impairments were administered a battery of questionnaires and a brief intelligence test. Meanwhile, the children's mothers completed a separate set of questionnaires. The children's assessment elicited an estimate of full scale IQ, information on their self-cognitions, depressive symptoms, attitude to having a hearing loss and social support. Mothers were asked to complete measures of demographic information, contact with Deaf culture, family environment, their awareness of their children's attitude to having a hearing loss and their children's emotional and behavioural difficulties.

#### **2.2 PARTICIPANTS**

##### **2.2.1 Inclusion and Exclusion Criteria**

The sample was composed of children with a bilateral hearing loss in mainstream school and their mothers. The inclusion criteria specified that children should be 8 to 14 years old, be fitted with hearing aids and have a loss that had been diagnosed and stable for at least two years. This was to ensure the participants' hearing would be sufficiently impaired to cause difficulties in communicating, and longstanding enough to have an impact on their daily life and view of themselves. Children spent less than 50% of school lessons in an HIU to ensure they had sufficient experience of being mainstreamed. Children's first language was English and their primary and

preferred means of communication was oral rather than sign. This was to ensure participants would have appropriate receptive and expressive communication for administration of the measures, and since none of them had been validated on signing populations.

Families were excluded if the mother's English was insufficient to understand the questionnaires. Children were excluded if they had identified learning difficulties, global developmental delay, Asperger's syndrome, significant speech or physical impairments over and above that thought to be due to the hearing impairment. These criteria were used to reduce the likelihood that results would be affected by non-hearing related factors. Children with unilateral hearing loss were excluded since having normal hearing in one ear allows the child to compensate for loss in the other and overcome some of the difficulties faced by children with a bilateral loss. Only one child from each family could take part to avoid confounding the influence of family-related variables.

### **2.2.2 Recruitment**

The participants were recruited from a London Centre for Children's Audiology. Participants fulfilling the inclusion criteria were identified from a database of all children who had attended appointments at the hearing aid department in the last three years, and those children given routine clinic appointments during the six months of data collection. Participants' medical records were screened to verify that they met the inclusion criteria.

Ninety-six children were eligible for the study. They were sent child and parent information sheets and an invitation letter with an opt-in reply slip to return to the researcher to express their willingness to participate or not (see Appendix 1). Mothers were then contacted by telephone to answer any questions and arrange appointments. Where possible, those that had not responded within one month were contacted by telephone. Of all families identified, 59 (61%) agreed to participate in the study, 27 (28%) did not return the reply slip and could not be contacted by telephone, and a further 10 (10%) declined to take part. Four families (4%) who had initially opted in subsequently opted out due to events such as family bereavements or moving house. Thus, 55 (57%) of the target population participated.

### **2.2.3 Demographic and Disability Information**

Table 1 shows the demographic characteristics of the sample. The families' socio-economic status was defined by the profession of the main earner in the household and the non-manual class included those that been unemployed for more than a year (Standard Occupation Classification, 2001). The majority of families (85%) were of White ethnic origin with roughly equal proportions of single and two parent families, males and females, and manual and non-manual parental occupations. The frequency of parental manual occupation did not differ significantly from that expected from the 2001 Population Census for the South East of England. However the sample contained more non-White participants than expected from the census ( $\chi^2 = (1) 14.74, p < .001$ ).

**Table 1**  
**Demographic Characteristics of the Sample (n = 55)**

		frequency	percentage
Gender:	Male	29	52.7
	Female	26	47.3
Ethnicity:	White	47	85.5
	Indian	2	3.6
	Asian other	3	5.5
	Black mixed race	1	1.8
	Arabic	2	3.6
	(non white total)	8	14.5
2001 Census:	White (expected frequency)	(52.7)	95.8
	Non-White	(2.3)	4.2
Single parent family:	yes	26	47.3
	no	29	52.7
Socio-economic status:	Non-manual	30	54.5
	Manual & unemployed	25	45.5
2001 Census:	Non-manual	(24.3)	44.2
	Manual & unemployed	(30.7)	55.8
Mean age in years (s.d.)		11.30	(1.98)

Table 2 shows details about participants' hearing impairment which were obtained from their medical records. The level of hearing impairment was calculated by taking the mean pure tone threshold over 0.5, 1, 2 and 4 kilohertz on participants' most recent audiogram. This was classified as mild, moderate or severe according to guidelines set out by the British Society of Audiology (BSA, 1988). Most participants had a sensori-neural (permanent) hearing impairment (82%) and most impairments were of unknown aetiology (58%). The onset of the hearing impairment was at birth for 58% of participants, though only 40% had been identified by three years of age.

**Table 2**  
**Disability Characteristics of the Sample (n = 55)**

		frequency	percentage
Level of hearing loss: (average pure tone from 500h to 4 kh)	mild (20 - 40)	12	21.8
	moderate (40 – 70)	34	61.8
	severe (70 – 95)	9	16.4
Type of hearing loss:	sensori-neural	45	81.8
	conductive	8	14.5
	mixed	2	3.6
Cause of hearing loss:	Antenatal – genetic	7	12.7
	Perinatal –metabolic	1	1.8
	Prematurity	3	5.5
	Postnatal – toxic	1	1.8
	Genetic – late onset	5	9.1
	Conductive – deformities	3	5.5
	Conductive – otitis media	3	5.5
	Unknown	32	58.2
Prelingual loss:	yes	39	70.9
	no	16	29.1
Onset at birth:	yes	32	58.2
	no	23	41.8
Loss was diagnosed before age 3:	yes	22	40.0
	no	33	60.0
<hr/>			
In years:	mean	standard deviation	range
Age of onset (of those whose onset was after birth, n = 23)	3.92	2.72	0.42 – 10.00
Age at diagnosis (n = 55)	3.37	2.48	0.00 – 12.00
Number of years between age of onset and age at diagnosis	1.59	1.63	0.00 – 7.00

#### 2.2.4 Ethical Considerations

Ethical approval for the study was obtained from the relevant Hospital Trust (see Appendix 2 for letters of approval). During telephone contacts and before administering the assessments, the researcher explained the purpose and content of

the study and elicited any questions from both mother and child. Families were informed that a summary of the findings would be available on completion of the study, if they wished to receive them.

Information sheets emphasised that the child's treatment at the centre would not be affected whether they chose to participate or not. Families were informed that their responses would be confidential and used only for the purposes of the study. If the child had particular issues that the researcher felt the parents should be made aware of, for example, a high score on the Children's Depression Inventory, further input from the centre or a referral to the Psychology Service would be discussed with the mother.

Before and after the assessments mothers and children were given an opportunity to ask any questions and explore how they found the process. Prior to signing the consent form, parents were shown a copy of the teachers' questionnaire.

Written consent was obtained from mothers as well as the children (see Appendix 3). Mothers gave consent for their children to participate, for information held on medical records to be used in analyses and for a questionnaire to be sent to the children's teachers to supplement the background information already gleaned. The children gave their written consent to take part with the understanding that they could stop the assessment at any time. The completed consent forms were filed in the children's medical notes.

The information sheets gave a contact telephone number and address for the Clinical Psychology department at the centre. Mothers and children were notified they could contact the service at any point if the topics covered in the questionnaires raised concerns or if they wished to pursue a referral.

### **2.3 DESIGN**

The design was questionnaire-based, with the addition of a two-subtest child IQ measure, administered to a one group sample. A control group was not used since the research questions were specific to the factors involved in cognitions and difficulties in children with hearing impairments, and to maternal awareness of hearing-related child cognitions, rather than to issues of comparisons between children with and without hearing impairments. In a power analysis, 41 participants were required to have an 80% power level for detecting an overall regression value of  $r\text{-squared} = .25$  ( $p = .05$ ) using four independent variables.

### **2.4 ASSESSMENT PROCEDURE**

Forty two assessments (76%) were conducted at the children's home and 13 (24%) were carried out at the centre.

The children's assessment lasted approximately one hour and included two IQ subtests (Matrix Reasoning and Vocabulary) and four questionnaires: the Self-Perception Profile for Children, Children's Depression Inventory–short form,

Having a Hearing Loss–child version and the Social Support Scale for Children. The IQ subtests were administered first since this enabled rapport to be established and engaged the children in a discourse around non-personal topics. The questionnaires were ordered so that the most emotive items, such as those in the Children’s Depression Inventory, appeared in the middle of the assessment (see Table 3). The assessment concluded with the measure of social support, thought to elicit more positive cognitions. Whilst the researcher conducted the children’s assessment, mothers were given questionnaires to answer concurrently in an adjacent room. These included Background Information, the Family Environment Scale, Having a Hearing Loss–parent version and the Child Behaviour Checklist.

**Table 3**  
**Summary of Measures Given to Child and Mother in the Order Administered**

<b>Child</b>	<b>Mother</b>
IQ subtests	Background Information
Self-Perception Profile	Family Environment Scale
Children’s Depression Inventory	Having A Hearing Loss – parent version
Having A Hearing Loss – child version	Child Behaviour Checklist
Social Support Scale	

## **2.5 MEASURES**

Table 4 outlines the variables in the proposed model and their accompanying measures. The measures are then described and information on their reliability and validity is reviewed.

**Table 4**  
**Measures used for all Variables**

<b>Variable type:</b>	<b>Variable label:</b>	<b>Measure:</b>
Dependent	Emotional and behavioural difficulties	Child Behaviour Checklist (Achenbach, 1991) Children's Depression Inventory (Kovacs, 1992)
Mediating	Self-cognitions	Self-Perception Profile for Children (Harter, 1985) Modified version (Hoare et al., 1993) Communicative Competence Subscale (Powers, 1990)
Independent	IQ	Wechsler Abbreviated Scale of Intelligence (WASI) 2 subtest form (Wechsler, 1999)
Independent	Social support	Social Support Scale for Children (Harter, 1985)
Independent	Family environment	Family Environment Scale (Moos & Moos, 1994)
Independent	Maternal awareness	Statistical agreement between child and mother responses on "Having a Hearing Loss" questionnaire
Background	Demographic	Information obtained from mother's questionnaire
	Disability	Information obtained from medical records
	Cultural	Information obtained from mother's questionnaire
	Educational	Information obtained from teacher's questionnaire

## 2.5.1 Emotional and Behavioural Difficulties

### 2.5.1.1 *Child Behaviour Checklist (CBCL), (Achenbach, 1991)*

The Child Behaviour Checklist (CBCL) is a 118-item standardised questionnaire for behaviour problems in children aged 4 to 18 years. It is completed by a parent and provides a total behaviour problem score and two broad band factors of internalising and externalising behaviour. Internalising behaviour refers to social withdrawal, somatic complaints, anxiety and depression, whilst externalising behaviour refers to disruptive behaviours such as aggression, stealing and hyperactivity. The CBCL also gives scores on eight syndrome, narrow band scales: withdrawal, somatic complaints, anxiety/depression, social problems, thought problems, attention

problems, delinquent behaviour, aggressive behaviour. Scores for the total, internalising and externalising factors are expressed as a standardised T score with an approximate mean of 50 (SD = 10), with higher scores indicating greater pathology. A T score of 60 or over on the broad band scales and of 67 or over on the narrow band scales is considered clinically significant. Normative data is given according to sex and ages 4 to 11 years and 12 to 18 years and details of the standardisation sample are provided by Achenbach (1991). The psychometric properties of the CBCL are well documented. The checklist has high inter-interviewer reliability, good test-re-test reliability and good internal consistency for both the syndrome and the broad band scales. The CBCL is widely used in research with children, particularly with paediatric populations, and has been described as the “gold standard” (Perrin, Stein & Drotar, 1991) of assessment of psychological functioning in children. Therefore, its use facilitates comparison with previous findings. See Appendix 4 for a copy of the measure.

#### *2.5.1.2 Children’s Depression Inventory – short form (CDI-s) (Kovacs, 1992)*

This is a self-report measure of depression for children aged 7 to 17 years of age and has been widely adopted in clinical practice and research to quantify the severity of depressive symptoms. In its full form the Children’s Depression Inventory (CDI) has 27 items giving scores across four domains. The short form is a 10 item measure and was developed to be used as a screening measure or when time is limited.

The CDI has been described as having one of the lowest reading ages of all childhood depression scales. Each item consists of three choices, scored 0, 1 or 2 with a maximum total score of 20. Higher scores indicate greater severity of depressive symptoms. The child is asked to rate their feelings over the last two weeks. Scores from the CDI-s are converted into a standardised T-score and can be compared to normative data for boys and girls aged 7 to 12 and 13 to 17 years. Results from the short form are said to give comparable results to the full format and it approximates the overall content of the full CDI at an acceptable level (Kovacs, 1992). It also has good internal consistency. See Appendix 5 for a copy of the measure.

## **2.5.2 Self-Cognitions**

### *2.5.2.1 Self-Perception Profile for Children (Harter, 1985; Hoare, Elton, Greer & Kerley, 1993)*

Self Cognitions were measured using the Self-Perception Profile for Children, developed by Harter (1985) and later standardised on a British population with changes made to the vocabulary in some items (Hoare et al., 1993). This later version was used since it was more appropriate for a UK sample.

The Profile is a self-report questionnaire, designed to tap children's domain-specific judgements of their competence and global self-esteem. The scale measures cognitions of scholastic competence, social acceptance, athletic competence, physical appearance, behavioural conduct and global self-worth. Assessment across several domains provides a rich description of self-cognitions and allows topics that

may be particularly associated with children's problems to be differentiated, in contrast to instruments giving only a single self-concept score, such as the Coopersmith Self-Esteem Inventory (Coopersmith, 1967).

Each subscale is measured by six items, producing a 36 item questionnaire entitled "What I am Like". Rather than using two-choice response formats, for example true or false, a structured alternative format was devised, to reduce the likelihood of children choosing socially desirable answers. For example:

Really true for me	Sort of true for me	Some kids would like to have a lot more friends	<b>BUT</b>	Other kids have as many friends as they want	Sort of true for me	Really true for me
<input type="checkbox"/>	<input type="checkbox"/>				<input type="checkbox"/>	<input type="checkbox"/>

The child selects one box and items are scored between 1 and 4, where 1 represents the least and 4 the most positive self-cognition.

Hoare et al. (1993) confirm that the modified version has similar characteristics to the original questionnaire and that children rate themselves above the midpoint of 2.5 on several domains. The modified version's internal consistency is good and its high completion rate suggests it is easy to understand (Hoare et al., 1993).

#### *2.5.2.2 Communicative Competence Subscale (adapted from Powers, 1990)*

Previous research on children with hearing impairments has suggested that an additional domain of communicative competence is relevant (Powers, 1990). Powers created a seven-item subscale to be used in conjunction with the Self-Perception Profile. Since some of the items within it lacked face validity and correlated poorly with the others, the four items that correlated most with each other

were selected to create a communicative competence subscale to be used in the present study. These were identical in format to the rest of the Self-Perception Profile and contained two items concerned with receptive communication and two with expressive communication. See Appendix 6 for a copy of the self-cognition measures.

### 3.5.3 IQ

#### 3.5.3.1 Wechsler Abbreviated Scale of Intelligence- 2 subtest form (WASI),

*(Wechsler, 1999)*

The Wechsler Abbreviated Scale of Intelligence (WASI) is a recently developed measure, designed to meet the demand for a short and reliable measure of intelligence. It is a standardised and validated short form of the Wechsler Intelligence Scale for Children III<sup>UK</sup> (WISC III<sup>UK</sup>) and the Wechsler Adult Intelligence Scale III (WAIS III). The WASI is designed to be individually administered to individuals aged 6 to 89 and can be used in a two or four subtest form to provide a full scale IQ. Its subtests are similar in format to the WISC-III and WAIS-III counterparts and are those with the highest loading on *g*, or general intellectual functioning.

The WASI two subtest form is comprised of vocabulary and matrix reasoning tests and was chosen here since it is the only two subtest measure standardised to provide a full scale IQ score. This contrasts with the widespread practice of typically using the vocabulary and block design subtests from the WISC-III<sup>UK</sup> and either pro-rating scores or using two scaled scores in analyses. This practice either reduces validity,

as in the former, or complicates analyses, in the latter. Thus, the use of the WASI provided a short IQ test based on independent norms with a large standardisation sample and a unitary score to reduce the probability of Type I errors in data analysis. Both the vocabulary and matrix reasoning subtests have good internal consistency and test-retest reliability.

A further advantage of using the WASI is that since items differ from, but are parallel to, items of their counterpart subtests, the WASI can be used alongside the WISC-III or when the WISC-III has been recently administered. Since most children with hearing impairments require specialist provision or educational support at school, it was foreseen that participants may have already been administered the WISC-III, or would be in the near future. Therefore, use of the WASI was thought to avoid practice effects confounding the present scores and future assessments.

### **3.5.4 Social Support**

#### *3.5.4.1 Social Support Scale for Children (Harter, 1985)*

This is a self report measure, designed to tap a child's perceived support and positive regard shown by others and has been widely used in the paediatric literature (Wallander & Varni, 1998). It assesses a child's perceived support from the four sources of parents, teachers, classmates and a close friend.

Each of the four subscales is measured by six items, producing a 24-item questionnaire. Items follow the same format as the Self-Perception Profile and are

scored in the same manner. The scale was standardised on a large sample of children in the United States with good internal consistency. Intercorrelations among subscales are moderate and suggest they tap relatively distinct domains of support (Harter, 1985). See Appendix 7 for a copy of the measure.

### 3.5.5 Family Environment

#### 3.5.5.1 Family Environment Scale (FES) (Moos & Moos, 1994)

The Family Environment Scale (FES) is a self-report measure of 90 items, tapping three underlying sets of dimensions: relationship, personal growth and system maintenance dimensions. These dimensions are measured by 10 subscales, described in Table 5.

**Table 5**  
**FES Dimensions, Subscales and their Descriptions (Moos & Moos, 1994)**

Subscale	Description
<b>Relationship Dimension</b>	
1. cohesion	The degree of commitment, help, and support family members provide for one another
2. expressiveness	The extent to which family members are encouraged to express their feelings directly
3. conflict	The amount of openly expressed anger and conflict among family members
<b>Personal Growth Dimension</b>	
4. independence	The extent to which family members are assertive, are self-sufficient, and make their own decisions
5. achievement orientation	How much activities (such as school and work) are cast into an achievement-oriented or competitive framework
6. intellectual-cultural orientation	The level of interest in political, intellectual and cultural activities
7. active-recreational orientation	The amount of participation in social and recreational activities
8. moral-religious emphasis	The emphasis on ethical and religious issues and values
<b>System Maintenance Dimension</b>	
9. organisation	The degree of importance of clear organisation and structure in planning family activities and responsibilities
10. control	How much set rules and procedures are used to run family life

The FES has been used extensively in research, particularly in the paediatric literature. It is also used to inform clinical practice and monitor change (Moos & Moos, 1994). Each domain is measured by 10 items in which the respondent is required to answer true or false to a family related statement. The average intercorrelation between these subscales ( $r = .24$ ) indicates that they measure relatively distinct characteristics.

Normative data are given for a large sample of “normal” and distressed families (Moos & Moos, 1994). When compared with normal families, distressed families are lower on cohesion, expressiveness, independence, intellectual and recreational orientation and higher on conflict. The internal consistencies for each of the 10 subscales all fall within an acceptable range and vary from moderate for independence to good for cohesion, intellectual-cultural orientation and moral religious emphasis. The test-retest reliabilities for the 10 subscales at two months are also acceptable. See Appendix 8 for a copy of the measure.

### **3.5.6 Maternal Awareness of Children’s Attitude to Having a Hearing Loss**

#### *3.5.6.1 The Having a Hearing Loss Questionnaire*

No existing instrument was identified that measured a child’s attitudes towards having a hearing loss. Paediatric questionnaires that tap illness attitudes such as the Illness Perception Questionnaire (Weinman, Petrie, Moss-Morris & Horne, 1996) were also inappropriate. Items such as “my illness is likely to be permanent rather than temporary”, and “recovery from my illness is largely dependent on chance” were not transferable to a hearing-impaired population. Thus the “Having a Hearing

Loss” questionnaire was constructed for the study. Maternal awareness of a child’s attitudes to having a hearing loss was operationally defined as the statistical agreement between child and mother responses this questionnaire.

Using the Self-Perception Profile and the Social Support Scale, the two items that loaded most heavily onto the 11 domains in factor analyses were selected. The stem of each selected item was taken to form the basis of a new questionnaire. For each domain, “with my hearing loss” was added to a positively connoted stem, and “because of my hearing loss” to a negatively connoted stem. Two items were deleted because neither their negative or positive stem would combine with the ending phrase to make a grammatically correct sentence. Though the term “hearing loss” has connotations of deficiency, it was used rather than “hearing-aid” since not all participants would wear their hearing aids consistently or regularly. Children with hearing impairments in mainstream schools were thought unlikely to identify themselves as “Deaf” and since “impairment” requires a higher reading age, “hearing loss” was used.

This produced a 20-item measure that tapped the extent to which the child’s hearing impairment affected their self-cognitions and social support. Participants were asked to respond “yes” or “no” to each statement in accordance with previously published formats for measures of maternal awareness (Taylor et al., 2001). The Having a Hearing Loss-parent version was formed by prefacing the questionnaire, asking the respondent to put themselves “in their child’s shoes”, and answer the questions as they thought their child would (Taylor et al., 2001). The mother then

answered the items as they appeared in the child version. The score is given by the total number of negative attitudes endorsed.

The psychometric properties of the new scales were assessed by their internal consistencies and their test-retest reliabilities. Internal consistencies were adequate for both child and parent versions ( $\alpha = 0.73$  and  $0.77$  respectively). Fifteen families were asked, and agreed, to complete the measure again exactly one week later and questionnaires were sent by post. Mothers and children completed them at home and 12 questionnaires that were returned within four days were used. Test-retest reliabilities of the scales' total scores were good for both the child version ( $r = .86$ ) and the parent version ( $r = .75$ ), though are slightly lower than the test-retest reliability of Taylor et al. (2001). See Appendix 9 for child and parent versions of "Having a Hearing Loss".

### **3.5.7 Background Variables**

#### *3.5.7.1 Demographic Information*

In accordance with literature on other paediatric populations (Wallander & Varni, 1998) demographic characteristics and features of children's hearing impairments were obtained from the Background Information questionnaire given to mothers at assessment. The demographic variables were age, sex, socio-economic class, ethnicity and family members. See Appendix 10 for a copy of the measure.

### *3.5.7.2 Disability Information*

Disability information regarding the nature of children's hearing impairments was obtained from their medical records. Where this was unavailable, information from the Background Information questionnaire was used. The variables included were based on Braden's (1994) description of the physical parameters of hearing impairments: severity and type of impairment; cause if known; age at onset; pre- or postlingual onset and age at diagnosis.

### *2.5.7.3 Cultural Information*

Details about participants' contact with Deaf culture was obtained from the Background Information questionnaire completed by mothers (see Appendix 10). Cultural variables were identified based on Harris's (1995) and Bat Chava's (1993) definitions of Deaf culture. Hence, mothers were asked whether sign was used by child or parent; if other members of the nuclear family had a hearing impairment; how many children their child knew with a hearing impairment; how many friends they had with a hearing impairment; if they had any other contacts with people with hearing impairments.

### *2.5.7.4 Educational Information*

Having gained parental consent, a questionnaire was sent to the child's class teacher requesting further information on school resources they received. Details were requested regarding number of children in the school with a hearing impairment; whether the child has a statement of special educational needs; attendance at a hearing impaired unit; any additional support provided; type of assisted listening

devices and any difficulties observed at school. See Appendix 11 for a copy of the teachers' invitation letter and teachers' questionnaire.

## **2.6 Pilot Study**

All measures were piloted on seven dyads of children with hearing impairments and their mothers. This confirmed that the format and content of the measures was acceptable and the questions were comprehensible. However, some dyads were unsure that answering yes or no to item 16 on the Having a Hearing Loss questionnaire would represent a negative attitude. This item was therefore omitted from the total score on parent and child versions.

## **CHAPTER THREE**

### **RESULTS**

#### **3.1 OVERVIEW**

This chapter describes the testing of each research hypothesis. To reduce the risk of Type I errors occurring, the possibility of creating composite variables was first explored to decrease the number of variables to be entered in analyses. The level of emotional and behavioural difficulties in children with hearing impairments was compared against standardised norms. Associations between dependent variables, demographic and disability parameters and cultural factors were then tested. The nature of maternal awareness of the child's attitude to having a hearing loss was calculated, and following this, associations between dependent, mediating and independent variables were delineated. Subsequently, the relationships between these variables, as outlined in the a priori model, were tested using hierarchical regression.

##### **3.1.1 Data Reduction**

To reduce the probability of Type I errors, two composite variables were created for self-cognitions and family environment. The subscales of the Self-Perception Profile with the addition of the communicative competence subscale, were used to measure self-cognitions. The subscales of global self-worth, physical appearance and communicative competence were predicted to be those most strongly associated with the dependent variables and to mediate the effects of the independent variables. These three subscales were highly correlated with each other ( $r = .71, p < .001$ ;  $r =$

.44,  $p = .001$ ,  $r = .36$ ,  $p = .007$ ) and were thus combined to give a self-cognitions composite score.

Four subscales from the Family Environment Scale were predicted to be most associated with the dependent variables: expressiveness, cohesion, conflict and organisation. The latter three were significantly correlated with each other ( $r = .42$ ,  $p = .002$ ;  $r = .39$ ,  $p = .003$ ;  $r = .34$ ,  $p = .011$ ). Expressiveness was not correlated with any of the other three measures at the 5% level. Therefore, a composite measure of cohesion, conflict and organisation was created, with conflict inversely scored. Expressiveness was entered separately in analyses.

### **3.1.2 Normality**

All independent, mediating and dependent variables approximated to normality, assessed according to skewness and kurtosis statistics and histograms, and were therefore suitable for parametric tests. A significance level of 5% was used in all analyses, unless otherwise stated.

### **3.1.3 Non Participants**

Information on the 41 non-participants was available concerning age, gender and level of hearing impairment. No significant differences on gender or level of impairment between participants and non-participants were detected using chi-squared tests (see Table 6). The mean age of the groups differed significantly ( $t(94) = 2.46$ ,  $p = .016$ ), suggesting that participants were younger than non-participants.

**Table 6**  
**Comparisons Between Participants and Non-Participants**

	Participants	Non-Participants	Target Population
<b>Gender of child:</b>			
Male n (%)	29 (53%)	18 (44%)	47 (49%)
<b>Hearing loss:</b>			
Mild	12 (22%)	10 (24%)	22 (23%)
Moderate	34 (62%)	23 (56%)	57 (59%)
Severe	9 (16%)	8 (20%)	17 (18%)
Age in years: mean (s.d.)	11.30 (1.98)	12.25 (1.74)	11.71 (1.93)

### 3.2 LEVEL OF EMOTIONAL AND BEHAVIOURAL DIFFICULTIES IN CHILDREN WITH HEARING IMPAIRMENTS

#### 3.2.1 Descriptive Information on all CBCL Subscales

Table 7 provides descriptive information of participants' t scores on broad band and narrow band scales of the CBCL. The total behaviour problems score is given to facilitate comparison with other research. However, since it is a composite of internalising and externalising behaviour, it was not used in further analyses to reduce the likelihood of Type I errors. The reader should be aware that the t scoring for the narrow band subscales is truncated, so that a t score of 50 was assigned to all raw scores that fell below the 50<sup>th</sup> percentile. Thus, these scores lost sensitivity to detect differences in the lower end of the normal range at the expense of those in the clinically significant range.

**Table 7**  
**Descriptive Information on CBCL Subscales**

	mean	s.d.	range
Total problems	55.58	10.68	29 - 81
Externalising	52.80	10.40	32 - 81
Internalising	55.67	11.45	31 - 85
Withdrawn	55.75	7.68	50 - 81
somatic complaints	57.84	8.85	50 - 98
anxious/depressed	57.85	8.67	50 - 82
social problems	56.22	7.96	50 - 79
thought problems	56.76	7.87	50 - 85
attention problems	58.15	9.05	50 - 86
delinquent behaviour	55.04	6.94	50 - 77
aggressive behaviour	55.93	8.40	50 - 87

### 3.2.2 Comparison to Standardised Norms

Means for the CBCL subscales are presented in Table 8 and their statistically significant divergence from the normative data was calculated using t tests. Younger boys' mean score was higher than normative data for all subscales except social problems. Differences were detected in younger girls' scores on social and attention problems, older boys' scores on withdrawal, somatic complaints and anxious/depressed, and older girls on the anxious/depressed subscale. Since younger boys were the largest group, the small numbers contained in the others may have compromised the power to detect significant differences.

**Table 8**  
**Means of CBCL Subscales by Age and Gender**

Clinical Scales	Ages 8 – 11		Ages 12 - 14	
	boys (n=21)	girls (n=13)	boys (n=8)	girls (n=13)
Total problems	53.38***	54.38	55.13	52.54
Externalising	56.86**	51.38	49.63	49.62
Internalising	56.95**	54.62	57.13*	53.85
Withdrawn	56.67*	54.00	59.00*	54.00
Somatic complaints	57.95**	56.31	62.75***	56.15
Anxious/depressed	57.70**	57.00	60.00**	57.62*
Social problems	56.19	58.08*	57.13	53.85
Thought problems	58.19***	55.85	56.00	55.85
Attention problems	59.29***	60.46***	57.00	54.69
Delinquent behaviour	57.05*	54.77	52.50	53.62
Aggressive behaviour	57.71**	56.69	53.75	53.62

\* p < .05; \*\*p < .01; \*\*\*p < .001.

On the broad band scales of total, externalising and internalising problem behaviour, a t score of 60 or over falls in the 90<sup>th</sup> percentile and is considered clinically significant (Achenbach, 1991). A t score of 70 or over falls in the 98<sup>th</sup> percentile and is considered highly clinically significant. On the eight other subscales, a t score of 67 or over falls in the 95<sup>th</sup> percentile and is considered clinically significant (Achenbach, 1991) with a t score or 70 or more falling in the 98<sup>th</sup> percentile. Table 9 presents the frequency, percentage and statistical significance of participants falling within the clinically significant ranges as detected by chi-squared tests. Eighteen (33%) and 14 (25%) of participants fell within the clinically significant range for internalising and externalising behaviours respectively, though only the frequency of internalising behaviours were significant at the 98<sup>th</sup> percentile. All frequencies on the narrow band subscales were significantly higher than normative data at both cut-off points, with the exception of delinquent and aggressive behaviour at the 98<sup>th</sup> percentile. However, caution should be taken in interpreting

those values significant at the 98<sup>th</sup> percentile since frequencies in these groups fell below five.

**Table 9**  
**Frequencies (and Percentages) of Clinically Significant CBCL Scores**

Clinical Scales	90 <sup>th</sup> percentile	95 <sup>th</sup> percentile	98 <sup>th</sup> percentile
Total problems	18 (33%)*	--	6 (11%)*
Externalising	14 (25%)*	--	2 (4%)
Internalising	18 (33%)*	--	6 (11%)*
Withdrawn	--	7 (13%)*	6 (11%)*
somatic complaints	--	7 (13%)*	4 (7%)*
anxious/depressed	--	9 (16%)*	6 (11%)*
social problems	--	7 (13%)*	5 (9%)*
thought problems	--	9 (16%)*	4 (7%)*
attention problems	--	11 (20%)*	8 (15%)*
delinquent behaviour	--	6 (11%)*	3 (5%)
aggressive behaviour	--	6 (11%)*	2 (4%)

\*p < .05; \*\*p < .01; \*\*\*p < .001.

Twenty-four participants (44%) fell either in the 90<sup>th</sup> percentile of the internalising or externalising scales, and a further four participants (7%) fell in the 95<sup>th</sup> percentile on one or more of the narrow subscales. This suggests that 28 (51%) participants had clinically significant difficulties in one or more areas.

### 3.2.3 Depressive Symptoms

Participants' raw score on the CDI-s was converted into a t score, which allowed percentiles to be calculated. T scores had a mean of 49.96, a standard deviation of 10.81 and ranged from 39 to 100. This did not significantly differ from the standardised norm of a mean of 50 and standard deviation of 10. Four participants (7%) fell within the 90<sup>th</sup> percentile and one participant (2%) fell within the 98<sup>th</sup>

percentile on the CDI-s. Neither of these were significantly different from the standardised population as tested by chi squared tests.

In summary, as a whole the sample's mean scores on the broad band scales fell within one standard deviation of the normative data. However, when broken down by age and gender, younger boys were at risk of externalising, internalising, thought and attention problems and younger girls of social and attention problems. Older boys were at risk of all forms of internalising behaviour. Older girls were at risk of anxiety and depression. All CBCL subscale scores were significantly higher than expected from the norms at the clinically significant cut-off point of the 90th percentile, though not for externalising behaviour at the 98<sup>th</sup> percentile. Results suggest that 51% of the sample met criteria for clinically significant difficulties on one or more subscales. There was no evidence that child self-reported depressive symptoms differed significantly from normative data.

### **3.3 BACKGROUND FACTORS, EMOTIONAL AND BEHAVIOURAL DIFFICULTIES AND SELF-COGNITIONS**

The composite self-cognitions variable was used in the following analyses, since its constituents (global self-worth, physical appearance and communicative competence) were hypothesised to be those most significant in mediating the effects of the independent variables on the dependent ones. Descriptive information for the self-cognitions variables is presented in Table 10.

**Table 10**  
**Descriptive Information of Self Cognitions on SPP Domains**

	mean	s.d.	range
Scholastic competence	2.75	0.73	0.25 – 4.00
Social acceptance	2.91	0.63	1.67 – 4.00
Athletic competence	2.80	0.73	1.17 – 4.00
Physical appearance	2.78	0.73	1.33 – 4.00
Behavioural conduct	2.99	0.72	1.50 – 4.00
Global self-worth	3.06	0.67	1.50 – 4.00
Communicative competence	2.88	0.73	1.25 – 4.00
Self-cognitions composite	8.72	1.74	5.00 – 12.00

### 3.3.1 Associations with Demographic Variables

T tests were conducted to test the difference between gender, ethnicity (white versus non-white), single parent families, socio-economic status (manual versus non-manual) and internalising behaviour, externalising behaviour, depressive symptoms and the self-cognitions composite. In all cases, the variables approximated normality after the groups had been defined. Externalising behaviour was significantly different, according to socio-economic status ( $t = 4.20$ ,  $df = 53$ ,  $p < .001$ ) with mean externalising behaviour scores of 59 and 48 for manual versus non-manual parental occupation. No other differences were significant at the 5% level. Age was not correlated with the dependent or mediating variables. Since participants' age range was wide, the sample was split into two groups about the mean (11.30 years), giving 29 classified as "younger" and 26 as "older" to provide groups that would be more homogeneous regarding developmental stage and life stressors. No significant differences on the dependent or mediating variables were found, neither was there a significant difference in mean age between male and female participants.

### **3.3.2 Associations with Disability Variables**

Associations were tested between the dependent and mediating variables and seven disability variables: mean pure tone, level of hearing loss (mild, moderate, severe), cause of hearing loss, type of hearing loss, age of onset, pre or postlingual onset and age at diagnosis. The cause of hearing loss was regrouped into four categories: genetic (n = 12), peri or post-natal (n = 5), conductive (n = 6), unknown (n = 32). Since 32 (58%) of participants had their hearing loss at birth, a dichotomous variable, onset at birth or not, was created.

Correlations were used to test the associations between the three dependent variables and mediating variable and pure tone threshold and age at diagnosis, analysis of variance for level and cause of hearing loss and t tests for type of hearing loss, prelingual onset and onset at birth. No associations were significant.

### **3.3.3 Associations with Cultural Variables**

Associations were tested between the three dependent variables, mediating variable and seven cultural variables: whether the child attends a Hearing Impaired Unit (HIU), use of sign between parent/s and child, use of hearing aids, other nuclear family members with a hearing loss, whether the child knows other children with a hearing loss, has friends with a hearing loss or has any other contact with people with hearing loss outside school or family contexts. Results on these variables are presented in Table 11 and suggest that the majority of participants had little contact with Deaf culture. Though 60% knew other children with hearing impairments, most participants did not attend an HIU or use sign language, had no family

members with a hearing loss and had no friends or other contact with people with a hearing loss.

**Table 11**  
**Frequencies on Cultural Variables**

	Yes (%)	No (%)	
Attends HIU	15 (27%)	40 (73%)	
Parent/s and child use sign language	7 (13%)	48 (87%)	
Other nuclear family members have a hearing loss	17 (31%)	38 (69%)	
Knows other children With a hearing loss	33 (60%)	22 (40%)	
Has any friends with a hearing loss	16 (29%)	39 (71%)	
Other contact with people with a hearing loss	6 (11%)	49 (89%)	
Uses hearing aid:	Sometimes at school or home	mostly at school or home	mostly at school and home
n (%)	8 (15%)	9 (16%)	38 (69%)

T tests were used to test associations between these variables, the three dependent variables and mediating variable, except for use of hearing aid, where analysis of variance was used. Mean externalising behaviour differed significantly according to whether participants attended an HIU or not ( $t = -2.13$ ,  $df = 53$ ,  $p < .038$ ). The mean externalising scores were 57 and 51 respectively. Mean self-cognitions composite differed significantly according to whether participants had any friends with a hearing loss or not ( $t(53) = -2.09$ ,  $p = .042$ ). Mean self-cognitions were 9.46 and 8.42 respectively. However, there was no association with self-cognitions when the number of friends was used as a continuous variable. Associations between

dependent variables and whether participants knew other children or had friends with a hearing loss was not significant when tested on the dichotomous variables in Table 11 using a t test, nor when the numbers of acquaintances or friends were used as continuous variables using correlation. No other associations were significant.

Teachers' questionnaires were only returned for 40 participants (73%). However, since exclusion of those participants without teacher questionnaires would significantly reduce the power to detect associations, and since variables included in the teachers' questionnaire did not have strong evidence for their association with emotional and behavioural difficulties, these were not included in the analysis. Descriptive information obtained from those teachers that did response is presented in Appendix 12, for interest and to suggest avenues of possible future study.

In summary, of the demographic variables, a manual socio-economic background was associated with higher externalising behaviour. Of the cultural variables, attending a Hearing Impaired Unit was associated with higher externalising behaviour and not having any friends with a hearing loss was associated with lower self-cognitions. No other associations reached statistical significance.

### **3.4 MATERNAL AWARENESS OF CHILDRENS' ATTITUDE TO HAVING A HEARING LOSS**

Maternal awareness of children's attitude to having a hearing loss was defined as the agreement between mother and child on the "Having a Hearing Loss" questionnaire

(HHL). Descriptive information of the child's and mother's responses to the HHL are presented, followed by the frequency and percentage agreement for each questionnaire item. Finally the measure of agreement is calculated.

### **3.4.1 Descriptive Information**

Responses to the HHL were scored according to the number of negative answers endorsed. The child's mean number of negative responses was 4.98, with a standard deviation of 3.52 and scores ranging from 0 to 14. The mother's mean number of negative responses was 7.20, with a standard deviation of 4.02 and scores ranging from 0 to 16. Mothers rated their child as having significantly more negative attitudes to their hearing loss than reported by the child themselves as detected by a paired t test ( $t(54) = -4.27, p < .001$ ).

Mother-child agreement was calculated on an item by item basis. The mean number of items agreed on was 13.27, with a standard deviation of 2.90 and agreement ranged from 7 to 19 items. Thus, child and mother agreed on a mean of 66% of items, with percentage agreements per mother-child dyad ranging from 35% to 95%. Child negative responses, mother negative responses, mother-child agreement and percentage agreement were all normally distributed, though child negative responses were slightly positively skewed.

### **3.4.2 Mother-Child Agreement on "Having a Hearing Loss" by Item**

Agreement between child and mother fluctuated considerably between items and these are presented in Table 12. Higher mother-child percentages were found on

more observable items such as those associated with parental and teacher social support (items 16 to 20) and athletic competence. Dyads agreed less on the impact of having a hearing loss on more internal aspects such as global self-worth and physical appearance. These also tended to be items on which both child and parent most frequently endorsed negative responses, though parents to a larger extent.

**Table 12**  
**Percentage of Child and Mother Negative Responses and Agreement on Items of the HHL.**

Having a Hearing Loss Item Stem (items end ... because of / with my hearing loss)	child negative responses	mother negative responses	mother- child agreement
1. I am slow at doing my homework...	29	44	67
2. I have a lot of friends with...	36	49	67
3. I am not good enough at sports...	22	26	82
4. I am happy with the way I look...	27	44	60
5. I do things I shouldn't do...	20	42	64
6. I find it difficult to say what I mean..	35	51	69
7. I am happy being the way I am...	38	58	51
8. I am good at my school work...	16	35	71
9. I find it harder to make friends...	26	36	67
10. I do well at sports...	24	31	75
11. I wish I looked different...	35	44	55
12. I am good at listening...	27	53	56
13. I sometimes wish I was someone else...	35	51	47
14. My classmates sometimes make fun of me...	33	51	56
15. I don't have a close friend to tell problems to...	20	24	64
16. My parents care about my feelings more...	yes: 40; no 60	yes:71; no 29	71
17. My teacher doesn't care about me...	13	18	73
18. I often get asked to play games...	26	29	71
19. My parents wish I was different...	6	7	87
20. My teacher cares if I feel bad...	29	24	76

Agreement was calculated as a kappa coefficient measure due to the binary response format of the HHL. Each child-mother dyad's agreement across the 20 items was thus calculated for entry into further analyses. The mean kappa coefficient for agreement across the HHL questionnaire for the total sample was 0.33 with a standard deviation of 0.28, a range from -0.25 to 0.90, and was normally distributed.

### **3.5 ASSOCIATIONS BETWEEN PSYCHO-SOCIAL VARIABLES, SELF-COGNITIONS AND EMOTIONAL AND BEHAVIOURAL DIFFICULTIES**

Research questions 4 and 5 were tested in two stages: firstly using correlations and secondly with hierarchical regression. As illustrated in Figure 2 (chapter one) it was hypothesised that family environment, maternal awareness, social support and IQ would predict the level of emotional and behavioural difficulties in children with hearing impairments. After data reduction (see section 3.1.1) descriptive information for all variables was calculated (see Table 13). The following independent variables were then correlated with the three dependent variables: IQ, four social support variables, the family environment composite measure, the eight remaining family dimensions and mother-child agreement as measured by kappa coefficients. These independent variables were also correlated with the self-cognitions composite variable and the four remaining self-cognitive domains. These were in turn correlated with the dependent variables. Prior to model testing,

correlations between the independent variables were calculated to inform the interpretation of further analyses.

**Table 13**  
**Descriptive Information on Psycho-Social and Cognitive Variables**

	mean	s.d.	range
IQ	101.62	12.09	79 - 143
Classmate social support	3.13	0.63	1.83 – 4.00
Teacher social support	3.23	0.74	1.17 – 4.00
Parent social support	3.58	0.50	2.00 – 4.00
Close friend social support	3.44	0.56	2.00 – 4.00
Family environment composite	19.00	4.35	6.00 – 27.00
Expressiveness	6.40	1.53	4.00 – 9.00
Independence	6.33	1.19	4.00 – 9.00
Achievement orientation	5.02	2.02	1.00 – 9.00
Intellectual-cultural orientation	6.05	2.15	1.00 – 9.00
Active-recreational orientation	5.05	2.11	0.00 – 9.00
Moral-religious emphasis	4.72	2.41	1.00 – 9.00
Control	4.45	1.97	1.00 – 9.00
Mother-child agreement	0.33	0.28	-0.25 – 0.90
Self-cognitions composite	8.72	1.74	5.00 – 12.00
Scholastic competence	2.75	0.73	0.25 – 4.00
Social acceptance	2.91	0.63	1.67 – 4.00
Athletic competence	2.80	0.73	1.17 – 4.00
Behavioural conduct	2.99	0.72	1.50 – 4.00

### 3.5.1 Associations between Psycho-Social and Dependent Variables

Bi-Variate correlations with these variables are given in Table 14. Externalising behaviour was significantly correlated with IQ, the composite and intellectual-cultural orientation family environment variables and child-mother agreement. Internalising behaviour was significantly correlated with the composite and expressiveness family variables and child-mother agreement. Depressive symptoms were significantly correlated with classmate, parent and close friend social support and child-mother agreement.

**Table 14**  
**Correlations between Psycho-Social Variables and Emotional and Behavioural Difficulties**

	Externalising	Internalising	Depressive
IQ	-.27*	-.15	-.22
Classmate social support	-.07	-.03	-.53***
Teacher social support	-.09	.01	-.26
Parent social support	-.04	.13	-.34*
Close friend social support	-.03	-.14	-.41**
Family environment composite	-.39**	-.40**	-.07
Expressiveness	-.26	-.37**	-.22
Independence	.06	.09	-.09
Achievement orientation	.20	.02	-.23
Intellectual-cultural orientation	-.47***	-.14	-.17
Active-recreational orientation	-.16	-.11	-.15
Moral-religious emphasis	-.15	-.02	-.07
Control	.18	.07	.15
Mother-child agreement	-.49***	-.29*	-.45***

\*p < 0.05; \*\* p < 0.01; \*\*\* p < 0.001.

### 3.5.2 Associations between Psycho-Social Variables and Self-Cognitions

Bi-variate correlations between these variables are given in Table 15. IQ was only significantly associated with scholastic competence. Classmate social support was significantly correlated with all self-cognitions except behavioural conduct. Teacher social support was significantly correlated with scholastic competence and behavioural conduct. Parental social support was significantly correlated with all but athletic self-cognitions and close friend social support was significantly correlated with all self-cognitions. None of the family environment variables were significantly correlated with the self-cognitions composite. Expressiveness was significantly correlated with scholastic competence. Four other correlations between family and cognitive variables were significant, though only at the 5%

level. Mother-child agreement was significantly correlated with all self-cognitions except athletic competence.

**Table 15**  
**Correlations between Psycho-Social Variables and Self-Cognitions**

	composite	scholastic	social	athletic	behavioural
IQ	.24	.40**	.16	.10	.12
Classmate social support	.42**	.35**	.72***	.42**	.24
Teacher social support	-.04	.28*	.07	.20	.27*
Parent social support	.42**	.35**	.72***	.16	.34*
Close friend social support	.34*	.38**	.43**	.30*	.27*
Family environment composite	.16	.24	.10	.13	.11
Expressiveness	.22	.36**	.15	.33*	.08
Independence	-.04	.05	.17	.01	-.06
Achievement orientation	.21	.16	.29*	.20	.10
Intellectual-cultural orientation	.09	.26	-.08	-.13	.29*
Active-recreational orientation	.10	.22	.08	.13	.03
Moral-religious emphasis	.04	.27*	-.25	-.08	.06
Control	-.10	-.09	-.21	-.18	-.15
Mother-child agreement	.38**	.33*	.30*	.10	.32*

\*  $p < 0.05$ ; \*\*  $p < 0.01$ ; \*\*\*  $p < 0.001$ .

### 3.5.3 Associations between Self-Cognitions and Dependent Variables

Bi-variate correlations were conducted between the five self-cognitive variables and the three dependent variables (see Table 16). All self-cognitive variables were significantly associated with depressive symptoms. Behavioural conduct was significantly associated with externalising behaviour and athletic competence with internalising behaviour. However, only the composite variable was significantly correlated with all three dependent variables.

**Table 16**  
**Correlations between Self-Cognitions and Emotional and Behavioural Difficulties**

	Externalising	Internalising	Depressive
Self-cognitions composite	-.36**	-.42***	-.72***
scholastic competence	-.15	-.25	-.46***
social acceptance	-.10	-.19	-.48***
athletic competence	.00	-.34*	-.48***
behavioural conduct	-.50***	-.05	-.46***

\*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$ .

### 3.5.4 Associations between Psycho-Social Variables

Bi-variate correlations were calculated between those independent variables that had been hypothesised to have the most significant effects on emotional and behavioural difficulties: IQ, classmate social support, the family environment composite, expressiveness, mother-child agreement and the self-cognitions composite. These are presented in Table 17. IQ and the family environment composite variable were significantly correlated with child-mother agreement at the 5% level. Of those variables contained in the family environment composite, only cohesion was significantly correlated with mother-child agreement ( $r = .28, p = .037$ ).

**Table 17**  
**Correlations between Psycho-Social Variables**

	IQ	classmate Social support	family envirt composite	expressiveness	mo-child agreement
IQ	-	.14	.15	-.03	.35*
Classmate social support		-	.06	.09	.20
Family Environment com.			-	.21	.28*
Expressiveness				-	.15
Mother-child agreement					-

\* $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$ .

### **3.6 DIRECT AND MEDIATED EFFECTS OF INDEPENDENT VARIABLES ON DEPENDENT VARIABLES**

As outlined by Baron and Kenny (1986) the direct and mediated effects of the independent variables were examined by conducting four hierarchical regression tests. Test 1 establishes that the independent variables have some overall effect on the dependent variables. Test 2 establishes that the independent variables have an effect on the mediator variable, self-cognitions. Test 3 establishes that the dependent variables covary with the mediator, even after controlling for all other variables. Test 4 establishes whether the effects of the independent variables are substantially diminished when the mediator is controlled. Final models for each dependent variable are presented towards the end of the chapter, based on the model presented in chapter one.

Five independent variables were predicted by the conceptual model to be most strongly associated with emotional and behavioural difficulties: IQ, classmate social support, the composite family environment, expressiveness and mother-child agreement. These were entered in the same order in all regressions. This sequence was based on the strength of associations found in previous research. IQ and classmate social support were entered in the first step. The family environment composite and expressiveness were entered as the second step. Mother-child agreement was entered as the third step. In the case of externalising behaviour, an initial step containing manual occupation and attending an HIU was added, to control for their previously detected associations. The residuals after all regressions

were normally distributed, according to residual plots and cook's distance. In all tables, results from the final model in each regression are presented.

### **3.6.1 Test 1: Effects of Independent Variables on Dependent Variables**

The results of regressing the five independent variables on the three dependent variables are presented in Table 18, which shows the beta values for the final stage of each regression. Manual occupation and mother-child agreement were significantly associated with externalising behaviour, over and above all other variables. The composite family environment and expressiveness were significantly associated with internalising behaviour. Classmate social support and mother-child agreement were significantly associated with depressive symptoms over and above all other variables.

**Table 18**  
**Test 1: Effects of Independent Variables on Dependent Variables**

Externalising behaviour	B	S.E. B	$\beta$	R <sup>2</sup> change
1. Manual occupation	8.49	2.40	0.41***	
Attends HIU	4.63	2.43	0.20	0.33***
2. Full scale IQ	0.00	0.10	0.00	
Classmate social support	1.83	1.76	0.11	0.01
3. Composite family envt	-0.46	0.26	-0.19	
Expressiveness	-0.79	0.73	-0.12	0.10*
4. Mother-child agreement	-11.87	4.34	-0.32**	0.08**
Internalising behaviour	B	S.E. B	$\beta$	R <sup>2</sup> change
1. Full scale IQ	-0.06	0.12	-0.07	
Classmate social support	0.90	2.28	0.05	0.02
2. Composite family envt	-0.77	0.34	-0.29*	
Expressiveness	-2.16	0.94	-0.29*	0.23***
3. Mother-child agreement	-6.07	5.61	-0.15	0.02
Depressive symptoms	B	S.E. B	$\beta$	R <sup>2</sup> change
1. Full scale IQ	-1.36	0.25	-0.06	
Classmate social support	-18.80	4.65	-0.45***	0.31***
2. Composite family envt	0.54	0.69	0.09	
Expressiveness	-2.53	1.92	-0.15	0.03
3. Mother-child agreement	-32.01	11.43	-0.34**	0.09**

\*p < .05; \*\*p < .01; \*\*\*p < .001

### 3.6.2 Test 2: Effects of Independent Variables on Mediating Variable

Since it had been hypothesised that those variables in the self-cognitions composite would have the strongest associations with emotional and behavioural difficulties, this composite was used as the mediating variable. The results of regressing the independent variables onto the self-cognitions composite are presented in Table 19. Attending an HIU, classmate social support and mother-child agreement were significantly associated with self-cognitions. Though mother-child agreement was

only significant when manual occupation and attending an HIU were entered, this suggests an association is there when care is taken to control for background factors.

**Table 19**  
**Test 2: Effects of Independent Variables on Mediating Variable Self-Cognitions**

	B	S.E. B	$\beta$	R <sup>2</sup> change
1. Manual occupation	0.78	0.44	0.23	
Attends HIU	1.08	0.45	0.28*	0.06
2. Full scale IQ	0.02	0.02	0.16	
Classmate social support	1.01	0.32	0.36**	0.22***
3. Composite family envt	0.02	0.05	0.06	
Expressiveness	0.18	0.13	0.16	0.06
4. Mother-child agreement	1.96	0.80	0.31*	0.08*
	B	S.E. B	$\beta$	R <sup>2</sup> change
1. Full scale IQ	0.02	0.02	0.11	
Classmate social support	0.94	0.34	0.34**	0.21***
2. Composite family envt	0.01	0.05	0.02	
Expressiveness	0.17	0.14	0.15	0.04
3. Mother-child agreement	1.55	0.84	0.25 <sup>^</sup>	0.05

<sup>^</sup> p = .07; \* p < .05; \*\*p < .01; \*\*\*p < .001

### 3.6.3 Test 3: Effect of the Mediating Variable on the Dependent Variables

#### Test 4: Effects of the Independent Variables when the Mediator is Controlled

Tests 3 and 4 are conducted as part of the same analysis, and were carried out by entering all independent variables in the regression as before, with the addition of the self-cognitions composite as a fifth step. Results of these regressions for each dependent variable are presented in Table 20. Self-cognitions were significantly related to all three dependent variables, even after controlling independent variables, thus confirming Test 3.

All effects of the independent variables that were significant in Test 1 were still significant in Test 4, except mother-child agreement on externalising behaviour and expressiveness on internalising behaviour, which was only marginally significant. This suggests that all of the effects between independent and dependent variables previously described were direct, with one exception. The beta value for mother-child agreement on externalising behaviour was significant in Test 1 and not significant in Test 4 and substantially decreased (.32 to .17), suggesting this effect was mediated by self-cognitions. However, two other beta values substantially decreased between Tests 1 and 4. The size of the effects of classmate social support (.45 to .27) and of mother-child agreement (.34 to .21) on depressive symptoms also suggest that these were partially mediated by self-cognitions. These results are consistent with Test 2 where there were significant associations between classmate social support and mother-child agreement and self-cognitions.

However, two associations that were not significant in Test 1 become so in Test 4. When controlling for self-cognitions, attending an HIU and classmate social support have significant effects on externalising behaviour, both of which also have significant effects on self-cognitions. This suggests that self-cognitions account for some of the error variance in classmate social support and attending an HIU, and that these new associations are found when more variables are controlled for. Thus, the results of Test 4 also suggest that attending an HIU and classmate social support have both direct effects on externalising behaviour and indirect effects, via self cognitions.

**Table 20**  
**Tests 3 and 4: Direct Effects of Independent and Mediating Variables on**  
**Dependent Variables**

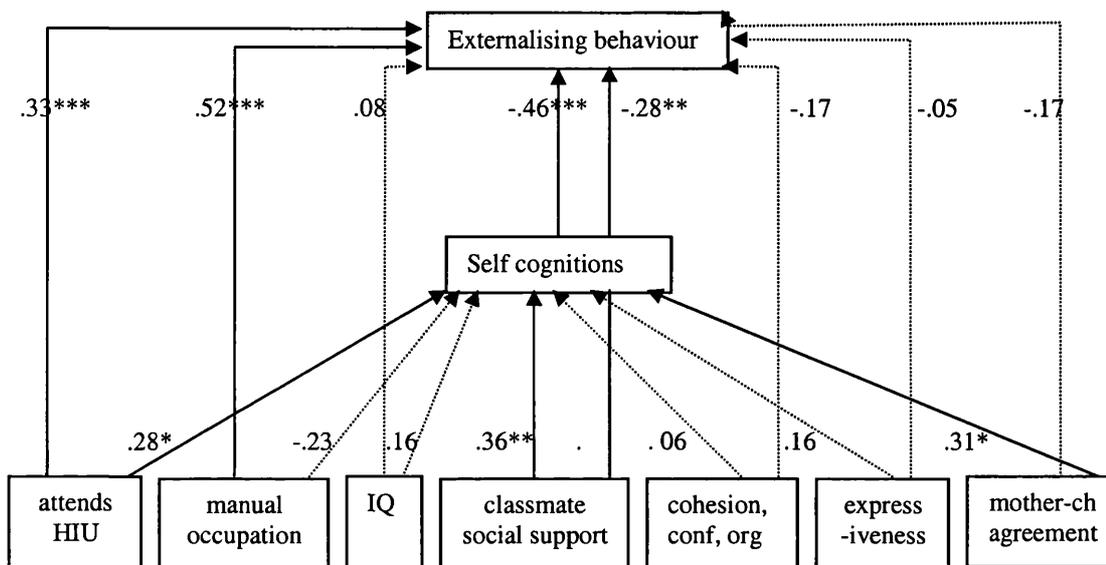
Externalising behaviour	B	S.E. B	$\beta$	R <sup>2</sup> change
1. Manual occupation	10.65	2.15	0.52***	
Attends HIU	7.59	2.24	0.33***	0.33***
2. Full scale IQ	0.06	0.09	0.08	
Classmate social support	4.60	1.68	-0.28**	0.01
3. Composite family envt	-0.40	0.23	-0.17	
Expressiveness	-0.30	0.65	-0.05	0.10*
4. Mother-child agreement	-6.46	4.01	-0.17	0.08**
5. Composite self-cognitions	-2.76	0.69	-0.46***	0.13***
Internalising behaviour	B	S.E. B	$\beta$	R <sup>2</sup> change
1. Full scale IQ	-0.02	0.12	-0.03	
Classmate social support	3.16	2.31	0.17	0.02
2. Composite family envt	-0.75	0.32	-0.29*	
Expressiveness	-1.76	0.90	-0.24^	0.23***
3. Mother-child agreement	-2.32	5.47	-0.06	0.02
4. Composite self-cognitions	-2.42	0.90	-0.37**	0.10**
Depressive symptoms	B	S.E. B	$\beta$	R <sup>2</sup> change
1. Full scale IQ	-0.02	0.21	-0.01	
Classmate social support	-11.45	4.13	-0.27**	0.31***
2. Composite family envt	0.61	0.57	0.10	
Expressiveness	-1.22	1.61	-0.07	0.03
3. Mother-child agreement	-19.86	9.77	-0.21*	0.09**
4. Composite self-cognitions	-7.85	1.61	-0.52***	0.19***

^ p < .06; \* p < .05; \*\*p < .01; \*\*\*p < .001

### 3.7 MODELLING EMOTIONAL AND BEHAVIOURAL DIFFICULTIES

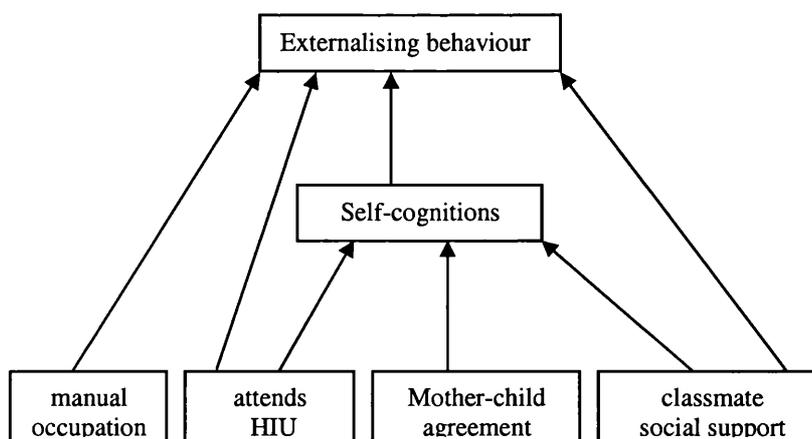
The conceptual models for all associations between independent, mediating and dependent variables are presented below, together with their beta weights. Those associations that were not significant are shown with a dotted line. These are then refined, and the second model for each dependent variable shows only the significant associations.

**Figure 4**  
**Path Diagram Modelling the Effects of Independent and Mediating Variables on Externalising Behaviour**

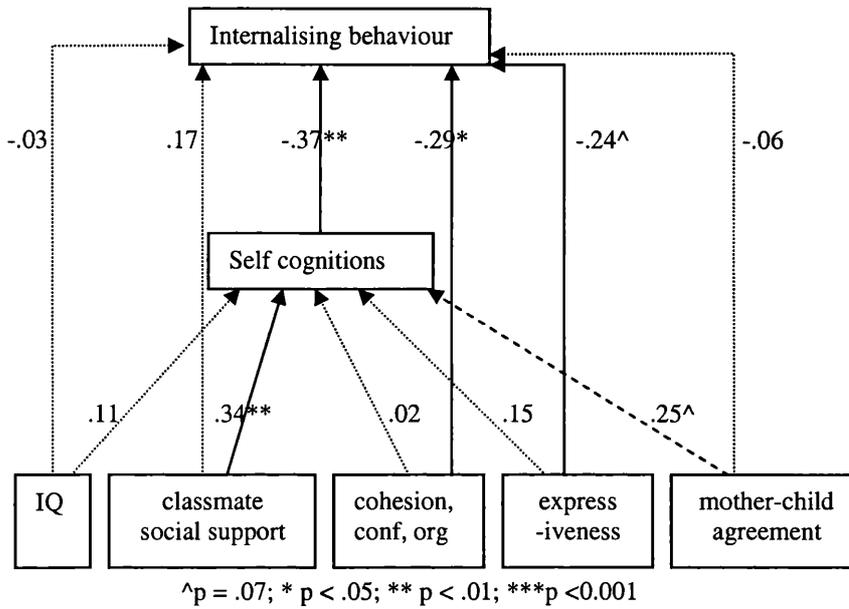


\*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$

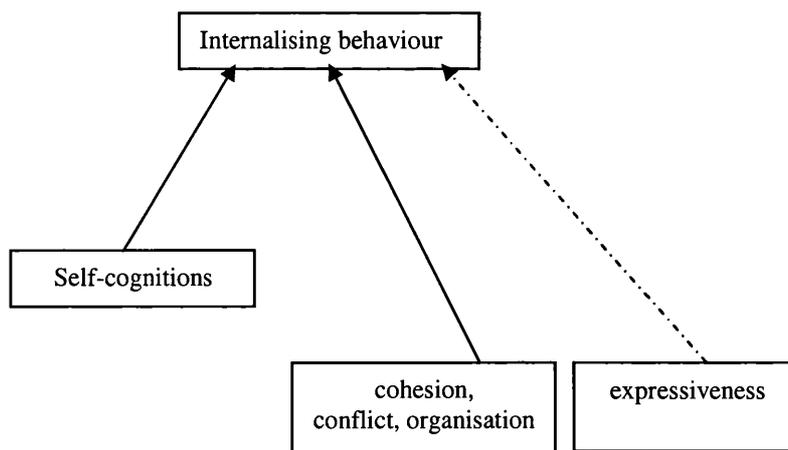
**Figure 5**  
**Path Diagram of Revised Model of Externalising Behaviour**



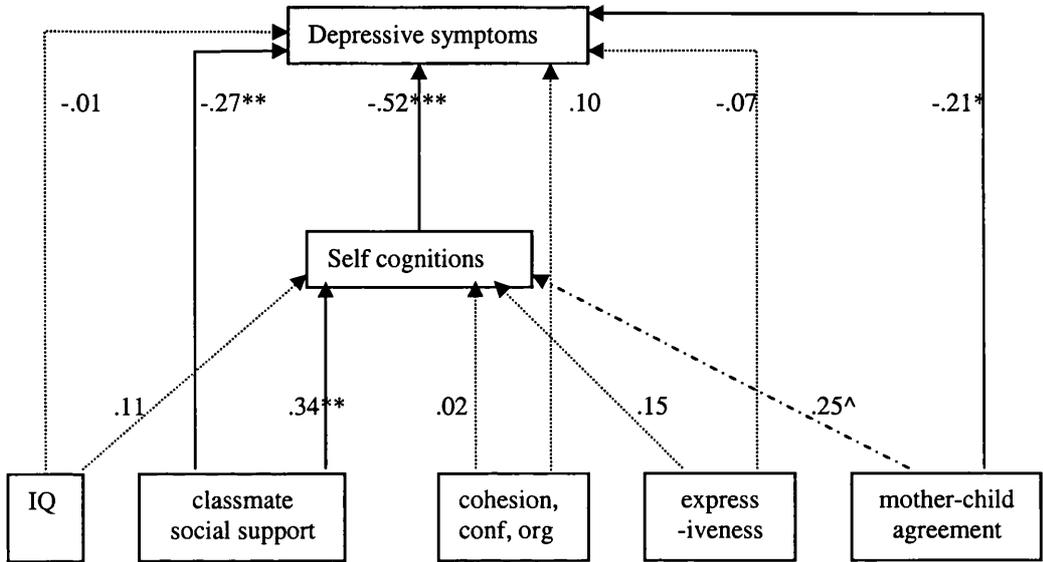
**Figure 6**  
**Path Diagram Modelling the Effects of Independent and Mediating Variables on Internalising Behaviour**



**Figure 7**  
**Path Diagram of Revised Model of Internalising Behaviour**

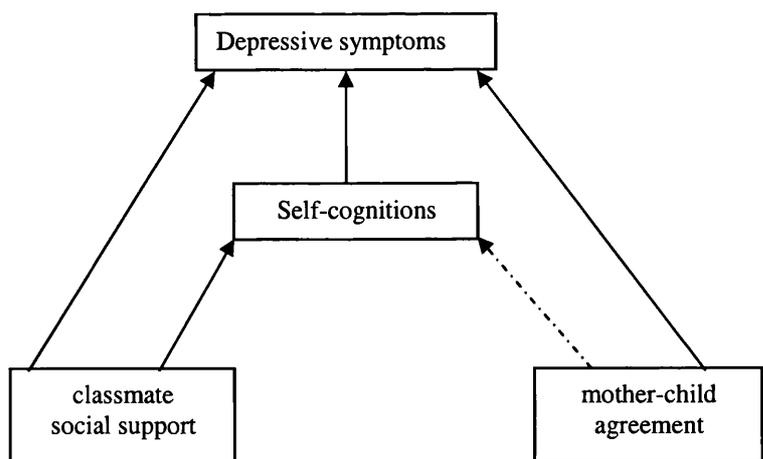


**Figure 8**  
**Path Diagram Modelling the Effects of Independent and Mediating Variables on Depressive Symptoms**



$^{\wedge} p < .08$ ;  $* p < .05$ ;  $** p < .01$ ;  $*** p < .001$

**Figure 9**  
**Path Diagram of Revised Model of Depressive Symptoms**



The conceptual model accounted for 64% of the variance in externalising behaviour ( $r^2 = .64$ ,  $F(8,46) = 10.30$ ,  $p < .001$ ). Attending an HIU, manual occupation, classmate social support, maternal awareness and self-cognitions significantly predicted externalising behaviour. The effect of maternal awareness was mediated by self-cognitions. The other three variables had both direct and mediated effects. The model accounted for 37% of the variance in internalising behaviour ( $r^2 = .37$ ,  $F(6,48) = 4.66$ ,  $p = .001$ ). The composite variable of cohesion, conflict and organisation, expressiveness and self-cognitions significantly predicted internalising behaviour. None of these effects were mediated by self-cognitions. The model accounted for 62% of the variance in depressive symptomatology ( $r^2 = .62$ ,  $F(6,48) = 12.94$ ,  $p < .001$ ). Classmate social support, maternal awareness and self-cognitions significantly predicted depressive symptoms, with some evidence that the effects of the former variables were partially mediated by self-cognitions.

### **3.8 RESULTS SUMMARY**

Results suggest that a subgroup of the sample were at increased risk of externalising and internalising behaviour problems in comparison with normative data. Thirty-three percent of the sample reached clinically significant levels of internalising behaviour, 25% for externalising behaviour and 51% met criteria for clinically significant difficulties on one or more subscales of the CBCL. There was no evidence of higher levels of child-reported depressive symptoms.

Demographic, disability and cultural factors were not associated with emotional and behavioural difficulties, with two exceptions. Attending an HIU and manual parental occupation were significantly associated with externalising behaviour. Mothers endorsed more negative attitudes to having a hearing loss than their child. They were more aware of the observable impact on their child rather than their internal appraisals of having a hearing loss.

Externalising behaviour was predicted by attending an HIU, manual occupation, maternal awareness and classmate social support. Self-cognitions mediated the effect of maternal awareness and partially mediated the effect of classmate social support. Internalising behaviour was predicted by family cohesion, conflict, organisation, expressiveness and self-cognitions with no mediating effects. Depressive symptoms were predicted by classmate social support, maternal awareness and self-cognitions with the former two partially mediated by the latter.

Therefore, of those independent variables in the conceptual model, aspects of the family environment were the most important and had direct effects for internalising behaviour. In contrast, maternal awareness and classmate social support were most strongly associated with externalising behaviour and depressive symptoms with direct and mediated effects, via self-cognitions.

## **CHAPTER FOUR**

### **DISCUSSION**

#### **4.1 OVERVIEW**

This study aimed to investigate the levels of emotional and behavioural difficulties in mainstreamed children with hearing impairments, and the extent to which these difficulties were associated with factors identified from a conceptual model. Existing research suggests that children with hearing impairments and other paediatric conditions have an increased risk of developing emotional and behavioural problems and that the child's self-cognitions have a crucial role in their development. Therefore, a model of adjustment to paediatric conditions was adapted for children with hearing impairments and used to predict factors that would contribute to their emotional and behavioural difficulties. It was proposed that family environment, maternal awareness, social support and intelligence would be associated with emotional and behavioural difficulties and that the effect of these would be mediated by the child's self-cognitions.

#### **4.2 SUMMARY OF FINDINGS**

The results suggest that a large proportion of mainstreamed children with hearing impairments have emotional and behavioural difficulties. Over half of the participants (51%) were rated by their mothers as having clinically significant problems, and the majority of these were of internalising behaviours. Boys were more at risk for withdrawal, somatic complaints, anxiety and depression, younger

boys for delinquency and aggression, and younger boys and girls for attention problems. There was no evidence of increased rates of child-reported depressive symptoms compared with normative data.

Mothers rated their children as having more negative attitudes to having a hearing loss than their children actually reported. Maternal awareness independently predicted externalising behaviour and depressive symptoms, as did classmate social support. In contrast, internalising behaviour was predicted by family cohesion, organisation, conflict and expressiveness. The self-cognitions of global self-worth, physical appearance and communicative competence independently predicted all measures of emotional and behavioural difficulties. They partially mediated the effects of the independent variables on externalising behaviour and depressive symptoms, though not on internalising behaviour. Intelligence was correlated with externalising behaviour, though this relationship was no longer significant when all other variables were controlled for.

Of the background factors, manual parental occupation and attending an HIU were associated with increased rates of externalising behaviour. Having a friend with a hearing impairment was associated with higher, that is, more positive, self-cognitions.

### **4.3 RELATING FINDINGS TO THE BACKGROUND LITERATURE**

#### **4.3.1 Levels of Emotional and Behavioural Difficulties**

The levels of emotional and behavioural difficulties observed here are generally consistent with more recent findings in other children with hearing impairments. The overall rate of 51% is slightly lower than Hindley et al.'s (1994) rate of 61% in children attending an HIU, though higher than their rate of 42% in a Deaf School. Rates here are also comparable to, though slightly higher than, those found in other deaf populations: 48% (Mitchell & Quittner, 1996); 36% (Aplin, 1985); 53% (Fundudis et al., 1979); 31% (Meadow & Schlesinger, 1972). This suggests that children with milder impairments who are oral communicators may be as much at risk of difficulties as signing children with severe or profound losses, if not more so.

Participants had higher levels of internalising, rather than externalising, behaviour. This runs against accepted wisdom that predicts the contrary in children with hearing impairments. In the only other study to use the CBCL, Quittner and Mitchell (1996) found 44% of their severe to profoundly deaf sample exhibited clinically significant externalising problems, almost twice that observed here. Findings from the present study are more consistent with results in other paediatric populations, which show a preponderance of internalising rather than externalising problems (Thompson et al. 1990; MacLean et al., 1993; Varni et al., 1994).

Several explanations can be offered for this finding. Previous studies in children with hearing impairments that report more behavioural problems have tended to rely on teachers' reports. However, those that have included an interview with the child

have detected more anxiety disorders (Hindley, 1998). Thus, previous methodologies may not have been sufficiently sensitive to detect internalising problems that were actually present.

The difference may also be due to characteristics of the samples used. Other studies have included much younger children. Fundudis et al. (1979) included 5 to 11 year olds and Mitchell and Quittner (1996) included 6 year olds, which may have elevated the rates of externalising problems that are more common in younger children.

Alternatively, the results may reflect a real difference in the experiences of mainstreamed children with milder hearing impairments that has previously gone unnoticed. Impulsivity and behavioural problems have been associated with lack of verbally mediated self-control (Hindley & Kroll, 1998). It may be that children who communicate orally and have less severe hearing impairments do have sufficient internal speech to regulate their behaviour. One may speculate that, instead, it is the social ramifications of being different or “in between” that puts the child at greater risk of withdrawal, somatising, anxiety and depression.

Caution should be taken in drawing firm conclusions from these results, since children themselves did not report increased rates of depression. This finding may have been due to mothers’ over-reporting of child symptomatology, or to the nature of the Children’s Depression Inventory. Its items tend to place more emphasis on the cognitive aspects of depression and may have been too complex for the younger

children in the sample to accurately reflect on. Furthermore, some children may have been inhibited from responding too negatively on this measure since it was administered in person by the researcher. Participants were advised that concerning responses may be discussed with their mothers and this may have encouraged children to give socially desirable answers.

### **4.3.2 Factors Associated with Emotional and Behavioural Difficulties**

Findings regarding those factors predicted to be associated with emotional and behavioural difficulties in research questions 2, 3 and 4 are evaluated. Where possible, mechanisms by which they may operate are speculated upon.

### **4.3.3 Socio-Ecological Factors:**

#### *4.3.3.1 Family Environment*

Family cohesion, organisation, conflict and expressiveness were associated with externalising and internalising behaviour, though they did not predict externalising behaviour when other variables were controlled for. This supports previous research on children with hearing impairments that emphasises the importance of family cohesion and low conflict (Gregory, 1998; Watson et al., 1990; Woolfe & Smith, 2001). It may be that the family organisation subscale used here is akin to the dimension of discipline that has been protective in younger children (Brubaker & Szakowski, 2000; Warren & Hasenstab, 1986). Organisation may provide a more structured language environment for the child with a hearing impairment and ease expectations within the family.

However, parental overprotection, lack of independence and control have also been associated with poorer adjustment (Lederberg, 1993; Schlesinger & Meadow, 1972). Neither the control nor independence subscales showed any association with measures of emotional and behavioural difficulties and these differences may have several explanations. Those studies that have associated control and independence with adjustment have generally been conducted on preschoolers with severe or profound losses. It may be that control and independence are more important for children at earlier developmental stages than middle childhood, as studied here. Alternatively, children who are oral communicators with milder impairments may not elicit such controlling behaviour from parents since they are not entirely dependent on visual stimuli to communicate. Likewise, parents may not be so concerned about their children's safety or ability to cope alone if the child is mildly impaired, can ask for help and can communicate more easily with others.

The importance of expressiveness as an independent predictor of internalising behaviour appears to have particular significance for this population. Desselle (1994) and Hilburn et al. (1997) found an association between parental communication skill and their outcome measures. This suggests that the ease of familial communication may be an important factor, and this may have been tapped in the expressiveness subscale. Children with hearing impairments may find group interactions more difficult and are unable to eavesdrop on family conversations. Families with higher expressiveness may compensate for these difficulties when communication issues already strain relationships. In this respect, cohesion may also be important to ensure the child with a hearing impairment feels included and

accepted, rather than isolated within the family. In a clinical sample of 150 deaf children, almost 50% were described as scapegoats and marginalised within their families (Hindley, 1998) and cohesion and expressiveness are well-matched to counteract such dynamics.

The lack of an independent association between family environment and externalising behaviour was unexpected. This suggests that variables related to the school setting, such as attending an HIU and classmate social support, are relatively more important factors for aggression and delinquency. Developmental theories of childhood posit that the significance of the family environment is subsumed by that of peers as a child moves into adolescence (Carr, 1999). In contrast, the present results suggest that peer relationships are more important in externalising behaviour, which was higher in younger children. Meanwhile, the family environment continues to be important in internalising behaviours, which were elevated in adolescents with hearing impairments.

Again, caution needs to be taken in interpreting these results since child-reported depressive symptoms were neither elevated nor related to the family environment, though possible reasons for this have been discussed.

#### *4.3.3.2 Maternal Awareness*

Mothers reported that their children had more negative attitudes to their hearing impairment than their children actually held and this replicates the findings of Taylor et al. (2001). The increase of maternal awareness with the observability of

the construct under examination also supports evidence given by Garber, Van Slyke & Walker (1998) that child and parental reports are more concordant on observable behaviours rather than internal symptoms. Mothers were more aware of attitudes relating to sports performance, the behaviour of parents, teachers and classmates and lowest on items relating to global self-worth, physical appearance and communicative competence. Interestingly, the attitudes that mothers were least aware of were those domains of self-cognitions that were most strongly related to children's level of overall difficulties. Thus, mothers were less aware of their children's view of their attitudes to themselves and more aware of their performance on physical tasks or of others' behaviour.

Several speculative reasons for this are offered. It is well-known that mothers are more accurate at rating children's externalising rather than internalising behaviour. They may also be more aware of the physical and concrete rather than psychological implications of having a hearing impairment because they feel more able to intervene in these, for example, by funding extra tuition lessons or pursuing extra-curricular activities. Mothers' over-estimation of the child's negative attitude may have reflected her own anxieties rather than her child's. However, it was on items that the child rated most negatively that mothers were least aware, suggesting this may not have been the case. The mothers may have been more realistic about the impact of the hearing impairment, whereas the younger children in the sample might have had difficulty in making complex, differentiated appraisals of their situation. Conclusions should remain tentative since the mean mother-child agreement was low compared to that found in Taylor et al.'s (2001) study on maternal awareness in

well siblings. In addition, the “Having a Hearing Loss” questionnaire was constructed for the study and given that its reliability and validity are yet to be established, it may have imperfectly measured maternal awareness.

Despite these concerns, maternal awareness was independently predictive of externalising and depressive symptoms. This supports Gregory’s contention that mothers are particularly important in families with a child with a hearing impairment since it is they who most frequently act as interpreters, in contrast to fathers with whom communication is typically the most difficult (Gregory, 1998). However, little is known about the mechanisms by which maternal awareness acts. Literature on the role of mother-child communication in adjustment (Lederberg & Prezbindowski, 2000; Marschark, 1993) suggests that the active ingredient in maternal awareness is the quality of communication between mother and child. Thus, maternal awareness may reflect the quality of communication, which helps the mother to more accurately anticipate the stresses her child will face. Alternatively, maternal awareness may reflect an internal characteristic of the mother, perhaps something analogous to the notion of theory of mind (Marschark, Green, Hindshaw & Walker, 2000), which enables the mother to better empathise with her child, and therefore meet its needs.

The finding that maternal awareness did not independently predict internalising behaviour was unexpected. However, this relationship was significant when assessed by correlation, though fell out in the regression analyses. Since family cohesion and maternal awareness were significantly correlated, it may be that an

independent effect of maternal awareness on internalising behaviour was obscured by an interaction between these two variables.

#### *4.3.3.3 Social Support*

As predicted, classmate social support had the strongest correlation with the outcome variables of all the social support domains and independently predicted depression and externalising behaviour. However, the latter relationship only emerged in the regression analyses when all other variables were controlled for which suggests conclusions should be drawn tentatively.

The importance of classmate social support replicates findings in children with chronic physical disorders (Varni & Setoguchi, 1996) and suggests that the attitudes and behaviours of peers are relatively more important than those of a parent, teacher or close friend. This is consistent with previous studies of mainstreamed children with hearing impairments that have highlighted the social difficulties they face (Leigh & Stinson, 1991). There has been no evidence that mainstreamed children with hearing impairments feel more emotionally secure with hearing peers or have improved relational bonds in these settings (Stinson & Whitmire, 1991; Stinson et al., 1996) and the present results go one step further to associate these difficulties with children's emotional and behavioural difficulties.

Several hypotheses can be proposed about the mechanisms that link classmate social support with children's difficulties. One qualitative study on mainstreamed hearing-impaired students consistently reported experiences of not belonging, of

feeling isolated and “in between” (Saur, Layne, Hurley & Opton, 1986) and another study emphasised feelings of loneliness (Murphy & Newlon, 1987) because of the nature of their peer relationships. Thus, the isolation of being different and not belonging may lead a child to feel less accepted and less cared for, aspects that are tapped by measures of depression.

Peer relationships in school settings are very dependent on informal, group interactions (Stinson & Foster, 2000) and these are precisely the situations which are challenging for children with hearing impairments. Much understanding of the rules of social interactions comes through incidental learning, overheard conversations, whispers and yelling in the playground. Children with hearing impairments are therefore at a disadvantage in establishing protective networks of social relationships. Such problems in communication may be compounded by two other findings which suggest that the popularity of deaf children decreases with age, and that their friendships are less likely to extend outside school (Hindley, 1998), further restricting their peer support.

In addition to problems in informal settings, children with hearing impairments may also face difficulties in structured class settings. Children with hearing impairments are often physically isolated in the classroom, sitting at the front or on the side to better understand the teacher. There is some evidence that rapid rates of discussion, turn taking and changes in topic together with more than one person talking at a time in mainstream settings make participation very challenging (Saur et al., 1986). These difficulties in communication may enhance feelings of isolation in some, and

therefore depression. Problems in communication have also been associated with behavioural difficulties (Quittner & Mitchell, 1996; Sinkkonen, 1994) and may be the mechanism by which classmate social support affects externalising behaviour. Alternatively, Wilson, Lipsey and Derzon (2003) have proposed that contact with anti-social peers is particularly predictive of externalising behaviour in the general population. The lack of social support received at school may encourage children with hearing impairments to seek it from other sources, potentially from less well-adjusted peers.

Again, the lack of an association between internalising behaviour and classmate social support was unexpected and does not fit easily with previous research. One might hypothesise that social support is most important in influencing the cognitive aspects of children's presentations and less in their withdrawn behaviour and physical complaints. The differential associations between internalising behaviour and depression warrant further investigation.

#### **4.3.4 Intra-Personal Factors:**

##### *4.3.4.1 Intelligence*

The association between intelligence and externalising behaviour is consistent with paediatric findings (Lavigne & Faier-Routman, 1992) and those on delinquency (Moffitt & Silva, 1991). However, this association was not significant when all other factors were controlled for, neither was intelligence associated with depressive symptoms nor internalising behaviour. This suggests that, though related to behavioural problems, intelligence has a relatively small influence in comparison

with other socio-ecological variables. However, the majority of participants fell within the average range of intelligence since those with specific learning difficulties and global developmental delay were excluded from the study. The lack of variability of the IQ scores may have prevented associations from being detected. It may also be the case that intelligence is a more important factor in behavioural problems in those children in the below average range of intelligence, as suggested by Schelsinger and Meadow (1972).

#### **4.3.5 Background Factors:**

##### *4.3.5.1 Demographic Factors*

The general lack of association between emotional and behavioural difficulties and demographic factors is consistent with existing paediatric literature. At least five other studies have failed to detect associations with age, sex or ethnicity and are confirmed by the present results. Therefore, manual parental occupation as an index of socio-economic status is unusual in its large and independent effect on externalising behaviour. Marschark (1993) observed that families with deaf children generally come from lower socio-economic backgrounds in the United States, and suggested this was related to medical costs. Those families with fewer resources were less able to pay for medical care and may have had higher rates of acquired deafness, for example, from medical trauma or infection. A similar argument may apply to the UK, where more wealthy families can pay for early detection of less accurately diagnosed milder hearing impairments and are better able to mobilise material resources to support their child with, for example, digital hearing aids, extra tuition and speech and language therapy. It is likely that a

multiplicity of factors are associated with an umbrella label such as socio-economic status and that these will interact with other variables, such as intelligence. Perhaps poverty and inadequate housing compound the stressors already faced by the family to put a child at increased risk of behavioural problems (Calderon & Greenberg, 1993). These links are speculative, and clearly require further investigation.

#### *4.3.5.2 Disability Factors*

The absence of any association between medical parameters such as type, severity, cause of hearing impairment and emotional and behavioural difficulties is consistent with previous research. Hindley et al. (1994) found no relationship between severity of impairment and psychiatric disorder and Loeb and Sarigiani (1986) found no association between severity of hearing loss or age of onset with self-cognitions. Lavigne and Faier-Routman (1993) also concluded that disability parameters were poor predictors of adjustment. Though these may be crucial to the medical management of hearing impairments, they appear not to have a significant impact on the psycho-social effects of having a hearing loss. Therefore, results support a non-categorical approach to sampling in hearing-impaired and other paediatric populations, which suggests that children with milder, conductive or postlingual hearing losses are as likely to face emotional and behavioural difficulties as those with prelingual, severe sensori-neural impairments.

#### *4.3.5.3 Cultural Factors*

It is difficult to interpret the elevated rates of externalising behaviour in HIUs and particularly the direction of causality. Hindley et al. (1994) found that children

attending an HIU had higher rates of psychiatric disturbance than those in a Deaf School. One interpretation is that those children with behavioural problems are more readily identified as requiring specialist support and are therefore placed in a school with an HIU attached. This may also suggest that children with internalising problems are less likely to be identified as requiring specialist input.

In contrast, attending an HIU was associated with higher self-cognitions. Therefore, attending an HIU may give children contact with the protective aspects of Deaf culture, facilitate communication and reduce the sense of isolation and being the “odd one out” (Bat Chava, 1993). Alternatively, attending an HIU may reduce children’s contact with the negative attitudes of other children and make them less sensitive to how they are perceived by others. Untangling the direction of causality of factors operating between HIUs, difficulties and appraisals is likely to require more fine-grained research.

Some limited support for the importance of social contact with other children with hearing impairments was found, since participants with one or more friends who also had a hearing impairment had more positive self-cognitions. This provides further support for Stinson and Whitmire’s (1991) conclusion that children with a hearing loss felt more emotionally secure with other children with a hearing loss rather than with hearing peers. Thus, just having one friend facing the same challenges may reduce the feeling of being the “odd one out”, give some protection against negative attitudes and a greater appraisal of global self-worth, physical appearance and communicative competence. It may be that having a friend in a

similar position alters the comparison group for children with hearing impairments. Rather than comparing themselves to hearing peers, they are able to compare themselves with another hearing-impaired child and are therefore able to make more realistic appraisals of themselves and to normalise their experience.

#### **4.3.6 The Role of Self-Cognitions**

Of those variables anticipated to have an impact on emotional and behavioural difficulties, self-cognitions had the largest independent effect across all measures. This is consistent with adult models of mental health which highlight the role of cognitions, for example, in depression (Beck, 1995). The importance of self-cognitions replicates findings within the paediatric literature (Varni et al., 1989b; 1996) and provides new evidence for mechanisms involved in the difficulties of children with hearing impairments. Not only are global appraisals of the self important, so too are appraisals on specific domains of physical appearance and communicative competence. In particular, the results highlight the role of condition-specific cognitions. Previous findings in the hearing-impaired literature suggest that level of communicative skill affects a child's self-esteem (Desselle, 1994) and results here suggest that how able a communicator a child perceives himself or herself to be contributes to his or her overall difficulties.

The extent to which self-cognitions mediate the impact of socio-ecological factors appears to depend on the nature of the variable. The effect of family environment was not mediated by self-cognitions. In contrast, significant proportions of classmate social support and maternal awareness were mediated by self-cognitions,

indicating these variables are important contributors to how a child views his or her self-worth, attractiveness and ability to communicate. As previously discussed, reduced classmate social support may be accompanied by feelings of loneliness, isolation and difficulties in group interactions. Children with hearing impairments may internalise these experiences to see themselves as less worthy, less attractive and less competent at communicating. It could be hypothesised that children with lower appraisals of themselves are more likely to make attributions consistent with depressive styles of thinking, or to have less regard for themselves and others and engage in more externalising behaviour.

Similar mechanisms may be involved in the effect of maternal awareness. Mothers who are less aware of the psychological challenges that having a hearing loss presents may be less conscious of the need to give more affirmation to their children, to contradict the socially aversive experiences of mainstream school. Thus, these children with hearing impairments and unaware mothers come to see themselves as less worthy, attractive and able to communicate as their mainstreamed experiences tell them, with consequential effects on levels of depression and externalising behaviour. Cole (1991) provides a similar competency based model of depression. Attributing negative events to internal, stable and global causes has been related to depression in adolescents (Cole & Turner, 1993). Difficulties in relationships and communicating may be particularly vulnerable to being interpreted as global, stable traits.

Results on the role of self-cognitions in the effects of attending an HIU are particularly difficult to interpret and suggest that the effect here may not be mediated. It appears that for a subgroup of children, externalising behaviour may be associated with attending an HIU, perhaps because certain children are sent there for the specialist resources it provides. However, attending an HIU had a positive effect on self-cognitions and may therefore be protective against the more negative social experiences of mainstreaming. These hypotheses are highly speculative and warrant further investigation.

#### **4.4 THEORETICAL IMPLICATIONS**

Much of the literature on children with hearing impairments has focused either on diagnostic issues or on the early development of preschool children. Those studies which do exist on family functioning have explored the relationship between one or two independent variables and an outcome measure. In particular, school and family settings have not been studied concurrently. In this respect, the present study makes a significant contribution to research on the emotional and behavioural difficulties in children with hearing impairments. The variety of constructs included here enables the differential effects of school and family factors to be examined, whilst controlling for background variables. This study is also unique in assessing a previously unexamined aspect of the mother-child relationship in older children, maternal awareness of hearing-related attitudes.

These findings are conceptually consistent with the ecological systems theory of Bronfenbrenner (1977), which emphasises the need to integrate person-centered models of adaptation with different ecological settings such as family, school, peers and the larger community. However, the direction of influence between variables was not established in this research and can only be speculated upon. The relationship between family, school and child factors is likely to be complex and bi-directional. These may have been simplified here for clarity's sake though should be conceptualised as multiple, reciprocal interactions.

In general, results support the adaptation of Wallander and Varni's (1998) model to children with hearing impairments and are consistent with a non-categorical approach. Factors relevant to children with chronic physical disorders, such as family environment and social support, appear to be transferable to children with hearing impairments. However, there are certain dimensions whose contribution to or protection from children's difficulties appears to be condition-specific, particularly children's communicative competence and family expressiveness. It may also be that the mechanisms by which factors affect emotional and behavioural difficulties are condition-specific. For example, it has been hypothesised here that one of the reasons that classmate social support is challenging for children with hearing impairments is due to their problems with group and informal communication. This is unlikely to be the case in children with cancer, asthma or diabetes.

## **4.5 CLINICAL IMPLICATIONS**

Concerning the problems faced by children with conductive or minimal hearing losses, Sinkkonen (1994) comments that “a decibel level on the audiogram does not reflect the degree of hardship the child experiences”. The present results echo his concern. Difficulties may not be restricted to children with severe to profound hearing losses as a significant proportion of the mainstreamed children with milder impairments included here experienced them too. These individuals and their families require support throughout childhood, not only in the preschool years around diagnosis or early interaction. Furthermore, a variety of factors across settings should be included in clinical assessment, formulation and intervention.

### **4.5.1 Level of Emotional and Behavioural Difficulties**

Measures should be taken to ensure that the elevated rates of internalising and externalising behaviour problems in this populations are identified. One interpretation of the association between attending an HIU and externalising behaviour is that more overt, behavioural problems are being identified by educational services to some extent. Internalising behaviour problems may not be as easily identified, nor be as problematic for education providers and teachers. Thus, procedures should be developed to maximize the identification of withdrawal, somatic complaints, anxiety and depression, of which children were at most risk. Since parent-reported internalising problems were not corroborated by child-reported depressive symptoms, multi-method assessments may be particularly important to detect certain difficulties.

The high level of difficulties also suggests that these findings should be disseminated to other professionals, especially those in most frequent contact with children with hearing impairments, such as teachers and Teachers of the Deaf. Families may be reliant on these professionals to encourage them to access further services, and information about support for emotional and behavioural difficulties should be made available directly to parents. Other clinicians in medical centres should also be aware of the risk of externalising and internalising problems and centres could consider offering families a routine psychological assessment. The principles outlined in these suggestions are commensurate with the nature and findings of the study, though would be refined by further investigation and replication of the results.

#### **4.5.2 Family Environment**

Results suggest that specific family dimensions should be targeted for children with internalising problems. For instance, intervention may draw on the pioneering work of Harvey (1989) on systemic therapy for families of deaf children. It would be beneficial for family work to focus on the relationship dimensions of cohesion, expressiveness and conflict, rather than on the controlling or overprotective aspects previously emphasised in families of children with hearing impairments. These kinds of intervention may ensure children feel part of the family and not excluded, and enable interactions to be more enjoyable, complex and confiding. Particular attention may also be paid to familial means of expression to facilitate the ease of communication between members.

### **4.5.3 Maternal Awareness**

Pipp-Siegal (2002) comments on the importance of parental acknowledgement and suggests that mothers of children with milder losses underestimate the impact of the loss and make less modifications or allowances. Indeed, mothers were less aware of the impact that having a hearing loss had on children's self-appraisals, rather than its observable effects. Techniques should therefore be employed to elicit the child's attitudes and increase maternal sensitivity to these. Circular questioning used in systemic interventions (Cecchin, 1987) may be particularly suited to this task, since they encourage members to take multiple perspectives and to see things as others would. This may also stimulate mothers to solicit opinions and ask questions of their hearing-impaired child, which they have been found to do less of than mothers of hearing children (Goss, 1970).

### **4.5.4 Social Support**

Results suggest that attention should be paid to the social as well as academic challenges of mainstreaming and to ways of extending a protective social network of same-aged peers. Several strategies may be employed to remedy the impact of poor classmate social support on emotional and behavioural difficulties, including teaching social skills, accessing extra-curricular activities and improving classroom support.

Improving the social skills of children with hearing impairments may better enable them to deal with the challenges of informal communication and group interactions. Two intervention programmes for severely impaired mainstreamed children have

included skills such as assertiveness and interpersonal problem solving through role play and modelling (Calderon & Greenberg, 2000; Suarez, 1986), which could also be useful for those with milder difficulties. In addition, attention should be paid to the attitudes and communication skills of hearing peers. If peer interactions are difficult, both sides need to adapt to the other, and mainstreamed children may particularly value feeling accepted and understood by their hearing peers.

Extra-curricular activities may provide the ideal setting for children with hearing impairments to improve relationships with their peers. Semi-structured activities moderated by an adult may ease the strain of informal communication that is challenging in breaks or on the playground. In addition, activities with hearing-impaired peers would allow friendships to develop which appear to be protective against negative self-cognitions and reduce the isolation they experience (Charlson, Strong & Gold, 1992).

Children may also benefit from teachers' consideration of their receptive communication. Teachers should be aware of how easily they can be heard by the pupil and lessons should be structured so they are easy to follow. Careful consideration should be given to group work (Stinson & Foster, 2000) and class discussions since these can be difficult. However, such measures should be taken sensitively so as not to ostracise children further or draw unnecessary attention to their needs (Braden, 1994) since this may exacerbate their feelings of being different or "in between".

#### **4.5.5 Self-Cognitions**

Children's self-cognitions had the strongest of all predicted effects on each outcome measure and results provide partial support for the mediating role of self-cognitions in children's difficulties. Mainstreamed children with hearing impairments therefore appear at risk of internalising the social problems they face as due to their personal inadequacies rather than due to communication issues or others' ignorance. Children's cognitions of themselves as poor communicators, not attractive or likeable enough should be prime targets for intervention. Their modification is consistent with other literature in the use of cognitive techniques for children (Graham, 1998) and specifically for those with hearing impairments (O'Rourke, 2000). Since the effects of maternal awareness and classmate social support appear to be partially mediated by self-cognitions, clinicians may also wish to explore children's interpretations of classmate behaviour and of their mothers' understanding of the impact of their hearing loss.

In view of the importance of communicative competence, it may be appropriate to offer mainstreamed children speech and language therapy. Though this is an increasingly rationed resource, children with milder impairments appear to be at particular risk of feeling unable to communicate in comparison to their hearing peers and these appraisals seem to have a direct impact on the difficulties with which they present.

## 4.6 LIMITATIONS

This research was a preliminary study into the relationships between a variety of psycho-social factors, self-cognitions and emotional and behavioural difficulties in mainstreamed children with hearing impairments. Its cross-sectional nature precludes an examination of the role of developmental issues, a shortcoming that seems particularly important for these children in middle childhood. Furthermore, the results are not necessarily generalisable to all children with hearing impairments. Those with additional disabilities were excluded from the study and they form almost 30% of children with sensori-neural hearing losses (Fortnum et al., 2002). Children whose main means of communication was sign were also excluded. These two groups are likely to face different challenges in communicating and be placed in different school settings. The nature of their difficulties and the factors involved in these groups may have different configurations from those identified here.

The study's external validity may be limited by other factors. Participants were significantly younger than non-participants and results may therefore not adequately reflect the experiences of older children with hearing impairments. Similarly, the vast majority of the sample was White, and though ethnicity information was not available for non-participants, the ethnic homogeneity of the sample precludes generalising the results to diverse ethnic and cultural populations. Indeed, children with hearing impairments from ethnic minority backgrounds may face specific challenges and have a third cultural dimension to negotiate alongside hearing and Deaf cultures.

It is likely that the sample that opted in to the study was an extremely self-selected proportion of the target population. Other factors such as previous treatment received from the Centre and relationships with professionals may have influenced the participation of some families. Since the population is under-researched and in view of the high level of difficulties mothers did report, those families with more problems may have been more likely to take part. However, levels of emotional and behavioural difficulties here are comparable to Hindley et al.'s (1994) larger study in which 87% of the target population participated. Alternatively, families facing current life stressors may have opted out, as suggested by those families that responded initially but later withdrew, for example, due to family bereavements or moving house.

Several of the measures used may have been problematic. Perrin et al. (1991) state that results on the CBCL in paediatric populations should be interpreted cautiously. With regards to using the CBCL with children with hearing impairments, one item taps speech problems. Though this is included in the total problems score, it is not included in the internalising or externalising scores. The somatic complaints subscale which contributes to the internalising behaviour score has one item on dizziness which may have tapped physical complications related to the hearing loss, rather than psycho-somatic problems per se. However, it may also be the case that these children have learnt that somatic symptoms are an appropriate expression of distress. In addition, scores on the somatic subscale were similar to those on other internalising sub-scales. Perrin et al. (1991) also note that the CBCL has limited

sensitivity to detect mild emotional and behavioural problems, which suggests that children with mild to moderate difficulties may not have been identified here.

The WASI that was used to measure intelligence is recently developed and therefore not widely used in research to date which prevents direct comparisons with other studies. Though it was employed as the only two sub-test measure to give a full-scale IQ, it has not been standardised on children with hearing impairments. Researchers advocate using only performance subtest scores in children with profound hearing impairments (Braden, 1994) and a more thorough performance IQ assessment could have been used. However, the full scale IQ was used here since participants were oral communicators with largely mild to moderate losses which have less impact on verbal intelligence (Braden, 1994). Though the IQ scores obtained did not differ significantly from the normative data, the use of the vocabulary subscale may have underestimated the ability of some participants.

The “Having a Hearing Loss” questionnaire is the weakest of all the measures since it was constructed for the study and has no empirical literature to support its validity. Its internal consistency was low on support-related items and the analyses did not control for the possibility of chance agreement, due to the dichotomous response format. Some of the younger participants may have found its structure linguistically complex. Findings regarding maternal awareness should therefore be interpreted tentatively.

Children and parents may have consciously or unconsciously responded with socially desirable answers (Crowne & Marlow, 1960, cited in Barker, Pistrang & Elliott, 1994). This may have particularly influenced children's responses on the CDI-s since families were informed that any concerning results would be discussed with the parents for ethical reasons, and may have contributed to the discrepancy between child-reported and parent-reported depressive symptoms. Alternatively the self-reflection required for answering the CDI-s may have been too cognitively challenging for the younger age group in the sample.

It is possible that some variables were confounded by their dependence upon either child or maternal reports. Since a subgroup of mothers appeared to over-estimate their children's negative cognitions regarding their hearing impairment, it is also possible they over-reported emotional and behavioural problems. Maternal mental health may have affected mothers' reports of emotional and behavioural problems (Briggs-Gowan, Carter & Schwab-Stone, 1996), or their answers may have reflected their own anxieties. For example, the association between family environment and internalising behaviour may have been due to mothers' own emotional states.

It is also conceivable that the association between self-cognitions and classmate social support was confounded by their similar response format. Since the measures for social support, self-cognitions and depressive symptoms tap the child's appraisals of particular domains, associations between these variables may have been due to measurement overlap rather than a reflection of relationships between discrete constructs. Indeed, one may argue that self-cognitions are an integral

constituent of emotional and behavioural difficulties, especially in depression, rather than separable constructs.

Classmate social support only emerged as a significant predictor of externalising behaviour when self-cognitions were controlled for in the regression analyses. This may be a statistical artifact. Alternatively, it may be due to measurement error. Since the self-cognitions and social support measures were similar in their format, they could have elicited a response bias. Consequently, conclusions drawn from this relationship should be tentative.

The amount of variance in children's internalising behaviour predicted by the model was low in comparison to other studies (Varni et al., 1989c), and this implies that other unmeasured factors may have contributed. Previous research has argued that attitudes of hearing peers (Bat-Chava, 2001), the role of siblings (Isarelite, 1986), daily hassles and negative life events (Wallander & Thompson, 1995) and the neglected role of fathers (Gregory, 1998) are related to children's presentations and these were not explored. It is also likely that the sample size was too small to detect associations on some demographic, disability and cultural parameters, and with larger samples these may be significant.

Attempts were made throughout the study to reduce the risk of Type I errors. Data was reduced to form composite family environment and self-cognition variables, background variables were controlled for, and only those variables predicted to have the strongest associations were entered into the regression analyses. Despite these

measures, associations may have arisen by chance. Together with the exploratory nature of the research questions, results should be seen as indicative of possible relationships rather than as strong confirmatory evidence of a particular model.

#### **4.7 FUTURE RESEARCH**

Whilst the results of this study provide initial evidence regarding the nature of emotional and behavioural difficulties and the factors associated with these in mainstreamed children with hearing impairments, future research is clearly needed to replicate these findings. A large proportion of the sample was reported to have clinical levels of difficulties in a population not previously identified as being at risk. Hearing loss has been described as an “invisible” disability (Gregory, 1991) and children’s problems, particularly of internalising symptoms, may go undetected by professionals and teachers. Future studies should explore to what extent these findings are applicable to signing children and those with profound losses or additional disabilities. Wallander and Varni’s (1998) model provides a useful conceptual guide for research and intervention in this population, and its use would ensure successive findings build upon previous ones in an area which lacks a unifying theoretical account.

Much work needs to be done to address the problems of measurement in this population. Intelligence tests, behaviour checklists and self-cognition measures should be standardised on children with hearing impairments. Though headway is being made to construct scales applicable to the behaviours of those with more

severe impairments who communicate by sign (Hindley et al., 1994), mainstreamed oral communicators may be considered a specific group in their own right. Particular attention should be paid to constructing questionnaires that tap context and condition-specific attitudes and the “Having a Hearing Loss” questionnaire may need to be modified and simplified to achieve this. Larger samples should be used in order to detect possible effects of disability and cultural variables. The importance of maternal awareness is in particular need of replication since this variable has the least empirical support behind it.

Due to the dearth of literature on the population under examination, many variables were omitted that have been related to emotional and behavioural difficulties in other paediatric groups. In this study, maternal rather than paternal awareness was assessed and further work could examine the contributions made by fathers. Measures of daily hassles and life events may be relevant to internalising behaviour (Wallander & Varni, 1998), for which the adapted model predicted the least variance. The inclusion of measures of maternal well being may control for the effect of maternal mental health on maternal reporting of symptoms. Multi-informant measures of emotional and behavioural difficulties may also reduce the confounding effects of maternal report.

Insufficient background literature exists to give firmer interpretations about the mechanisms by which the identified factors operate and research is needed to clarify these. With the exception of intelligence, the intra-personal characteristics of children with hearing impairments were overlooked and the dimensions of

temperament (Chess & Fernandez, 1980) and theory of mind (Marschark et al., 2000) have been highlighted by previous research as pertinent to children with hearing impairments and deserve further inspection.

The significance of attending an HIU warrants further exploration. Research should clarify the direction of influence between attending an HIU, externalising behaviour and self-cognitions and examine which aspects are most salient in these associations. This seems extremely important in the educational climate of inclusion and other aspects of educational provision such as teacher attitudes, ratio of staff to pupils and extra support may play a role.

Researching the difficulties of being in mainstream school with a hearing loss reinforces the “deficit” view of hearing impairments. However, many children do not share this experience and studies should also focus on the positive aspects of deafness. This is more likely to be the case in children with severe or profound losses in Deaf Schools, who experience the protective facets of Deaf culture such as having a common language, access to Deaf role models and a sense of belonging to a particular community. By discovering which aspects of Deaf culture are most protective these could then be fostered in mainstreamed children.

Although efforts were made to include children’s subjective experiences of having a hearing loss it remains important to elicit these. Over-reliance on quantitative measures in this population may obscure the subtleties of these children’s experiences. Qualitative research would be more suited to identifying the

subjectivities of children with hearing impairments and would compliment the emphasis in paediatric studies of imposing predetermined variables onto participants. For example, the nature of relationships between hearing and hearing-impaired peers seems to play an important role in children's difficulties. Further research could provide a clearer picture of the problematic aspects of these relationships and how friendships with hearing peers differ to those with hearing-impaired peers. Thus, the use of qualitative methods would permit this largely unresearched population to express their experiences through their own narratives.

#### **4.8 CONCLUSION**

The present findings suggest that mainstreamed children with hearing impairments are at greater risk of emotional and behavioural difficulties. Results suggest factors from a generic paediatric model were relevant to these children and revealed significant interactions between socio-ecological variables and the nature of children's difficulties. Attending an HIU, manual parental occupation, classmate social support and maternal awareness were associated with externalising behaviour. Family cohesion, conflict, organisation and expressiveness were associated with internalising behaviour and classmate social support and maternal awareness were associated with depressive symptoms. The effects of all but the family environment variables and manual occupation were partially mediated by children's self-cognitions. Results highlight the transferability of a generic model to this population, but also emphasise the importance of two hearing-specific factors:

maternal awareness of children's attitudes to their hearing loss and children's perceived communicative competence.

It is hoped that these findings will encourage much needed research into the challenges faced by mainstreamed children with hearing impairments and that awareness of and provision for their emotional and behavioural difficulties will be developed in response.

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## **APPENDIX 1**

**Parents' Invitation Letter**

**Parents' Information Sheet**

**Children's Information Sheet**



THE NUFFIELD HEARING AND SPEECH CENTRE

tel: 0207 915 1458
fax: 0207 915 1435

Royal National Throat Nose & Ear Hospital
Gray's Inn Road
London WC1X 8DA

Tel 020 7915 1300
Fax 020 7833 5518

Dear parent,

We are writing to invite you and your child to take part in a study being carried out at the Nuffield Hearing and Speech Centre. Very little research has looked at which factors make life easier or harder for children with hearing impairments. To this end, we are asking all children aged 8 to 14 years and their mothers whether they would consider taking part.

The study is mainly made up of questionnaires given both to you and your child, and takes around 45 minutes to complete. The answers will give us an idea of what your child thinks of him/herself and of having a hearing loss. By discovering which factors seem to have helped or hindered your child we can find out how best to help other children with hearing impairments.

Information sheets explaining the study are enclosed. Please read them at your leisure. If you and your child would be willing to participate, please return the tear-off slip in the envelope provided. A suitable time will then be arranged for you to complete the questionnaires, either at the Nuffield Centre or during a home visit if more convenient.

We do hope you will consider taking part and thank you in advance for your help.

Hilly Harvey
University College London
hillyharvey@hotmail.com

Rosie Kentish
The Nuffield Hearing and Speech Centre
rosie.kentish@rfh.nthames.nhs.uk

CHILD'S NAME \_\_\_\_\_

- My child and I are willing to take part in the study
My child and I are not willing to take part in the study

I would prefer an appointment to complete the questionnaires at home / at the Nuffield Centre (please delete).

Signed: \_\_\_\_\_

(please print your name): \_\_\_\_\_

Day-time telephone number: \_\_\_\_\_



**Information Sheet for Parents**

Tel 020 7915 1300  
Fax 020 7833 5518

**Self-cognitions in children with hearing impairments**

Hilly Harvey  
University College London

Rosie Kentish  
Nuffield Hearing and Speech Centre

You and your child are being invited to take part in a research study. Before you decide, it is important for you to understand why the research is being done and what it will involve. Please take the time to read the following information carefully and feel free to ask questions later if anything is unclear.

**What is the purpose of the study?**

Some research has suggested that children with a hearing loss may think about themselves differently compared to children who do not. Some studies, though not all, have found that children with a hearing loss have lower self-esteem. They may face particular challenges at school, with friends or at home. However, very little is known about what makes life easier or harder for them. We are trying to explore any links between what children think of themselves and the situations they face day to day.

**Why have we been chosen?**

We are asking every child who has a hearing loss and has attended the Nuffield Centre to take part. They should be aged 8 to 14, in mainstream school and have had some degree of hearing loss for at least 2 years.

**Do we have to take part?**

It is up to you to decide whether you would like to participate. If you do decide to take part you and your child will be asked to sign a consent form. You are free to withdraw from the study at any time and do not have to give a reason. In no way will this affect the care you receive at the Nuffield Centre.

**What will happen to us if we take part?**

If you agree to take part, everything is finished in one meeting. You will be given some questionnaires to fill in which take around 45 minutes to complete. They ask you for general information about your child's hearing loss and also cover other topics such as: what family life is like at home; your view of your child's hearing loss; any other difficulties he/she is having. Meanwhile, the researcher will fill in some other questionnaires with your child, together with some puzzles, which also take around 45 minutes. The questions ask what your child thinks about him/herself and of the support

he/she gets. The puzzles are taken from a well-known intelligence test and your child will be asked to describe the meaning of various words and from several designs, choose which one completes a pattern with a missing piece. This can be done either at the Nuffield Centre when you come for an appointment or at home.

We will also ask for your permission to contact your child's school. This is to find out how many children with a hearing loss are in the school and how it supports them. A copy of the questions to be sent to the teacher will be available for you to see before they are sent.

**What happens if you or your child wants to talk further about any issues?**

If you or your child would like any further advice or support about the topics we discuss you can be referred to the Clinical Psychology service based at the Nuffield Centre.

**Will taking part in this study be confidential?**

Any information which is collected from you or your child will be kept strictly confidential. Your names will be removed from all information so that you cannot be recognised from it.

**What will happen to the results of the study?**

By taking part you will help us discover which factors affect how children with hearing impairments cope. This will help us to help other children who are not coping so well. After the study is finished the results may be published in a journal. Details of this will be available from the Nuffield Centre nearer the time.

**Who has reviewed the study?**

This study has been reviewed by the Royal Free Hospital and Medical School Local Research Ethics Committee.

You are under no obligation to allow your child to take part. However, we would be very grateful for your participation and thank you in advance for your time and help.

If you have any further questions about this study, please contact:

Hilly Harvey  
Sub-Department of Clinical Health Psychology  
University College London  
Gower Street  
London  
WC1E 6BT  
Email: [hillyharvey@hotmail.com](mailto:hillyharvey@hotmail.com)

Rosie Kentish  
The Nuffield Hearing and Speech Centre  
Royal National Throat Nose & Ear Hospital  
Gray's Inn Road  
London  
WC1X 8DA  
Tel: 020 7915 1458

**Information Sheet for Children**

**Self-cognitions in children with hearing impairments:**

**What you think about yourself and your hearing**

Hilly Harvey  
University College London

Rosie Kentish  
Nuffield Hearing and Speech Centre

Often, having a hearing loss makes no difference to life at school or at home. But sometimes it can make life harder.

We do not really know what makes life easier or harder for children with a hearing loss. So, we are asking lots of children to help us find out.

You will answer some questions about what you think you are good at, how you are feeling and about people in your life. We will also do some puzzles. The whole thing will take us about 45 minutes.

Everything you tell me is confidential – that means I will not tell other people what you say without asking you first. Your parent will answer some questions about how things are at home, which is confidential too.

You do not have to take part if you do not want to.

After we have started, if you decide you do not want to carry on, you can stop at any time. You do not have to give a reason for stopping.

**Thank you very much for your help.**

## APPENDIX 2

Letters of Ethical Approval

08 July 2002

Miss Hilary Harvey  
Nuffield Centre RNTNE  
Royal Free Hampstead NHS Trust  
330 Grays Inn Road  
Kings Cross  
London  
WC1X 8DA

.. Dear Miss Harvey

...

**The role of self-cognitions in the emotional and behavioural difficulties of children with hearing impairments**

**Ethics Reference 5990 (Please quote on ALL correspondence)**

I am pleased to be able to inform you that your recent submission to the Royal Free Hospital & Medical School Local Research Ethics Committee has now received approval by Chairman's Action, on the proviso that a copy of the parent consent form is sent to the teacher. The letter to the teacher states that the study has been approved by Royal Free & Medical LREC

This approval will be formally documented at the next meeting of our full committee/MREC sub committee.

This approval is for one year from the date of this letter. We also require to be notified of the completion of the project and to be sent a copy of any subsequent publication. Extension of this period will be dependent on the submission of a brief synopsis of the progress of the project together with an estimation of the time required for its ultimate completion.

In addition we require that:

(a) You inform the committee immediately of any information received by yourself or of any information of which you become aware which would cast doubt upon, or alter, any information contained in the original application, or any amended later application, submitted to the committee which would raise questions about the safety and/or continued contact of the research. This would include the reporting of all "adverse events" of which you become aware. These "adverse events" should also

be reported to the person who provided independent review of the original application.

(b) All those involved in the study appreciate the importance of maintaining confidentiality and that they comply with the Data Protection Act 1998.

(c) All proposed amendments to the protocol, that have a bearing on the treatment or investigation of patients or volunteers, are submitted to the committee for approval.

(d) The conduct of the study complies with good clinical research practice as outlined in the ICH GCP guidelines.

(e) A copy of the patient consent form and information sheet be lodged in the clinical notes.

This approval does not mean that the study may commence. The study may only begin following approval by the Trust through the office of the Director of Research & Development (please contact Zoe Spyvee on extension 8304).

Please note the code number (above) that the submission has been given and quote this in all correspondence.

Yours sincerely



Rosemary Brown  
Ethics Committee Secretary  
Royal Free Local Research Ethics Committee

cc: Mr John Farrell, Head of Pharmacy Services  
Ms Zoe Spyvee, Research and Development Officer

09 September 2002

Miss Hilary Harvey  
Nuffield Centre RNTNE  
Sub department of Clinical Health Psychology  
UCL  
Gower Street  
London  
WC1E 6BT

Dear Miss Harvey

**The role of self-cognitions in the emotional and behavioural difficulties of children with hearing impairments**

**Project ID: 5990** (Please quote on ALL correspondence)  
**Ethics ID: 5990**

**ROYAL FREE TRUST APPROVAL FOR R&D PROJECTS**  
(Reissued for new address)

I am pleased to inform you that following submission of your R&D registration form your project has been approved by the R&D department. This letter ensures that you and the researchers working with you holding trust contracts are indemnified by the trust, under department of health HSG (96) 48, for non commercial research only. This means you can now proceed with your project.

In addition to ensuring your study complies with good clinical research practice as outlined in the ICH GCP guidelines we require the following:

**Patient contact** - only trained researchers holding a trust contract (honorary or full) are allowed to make contact with patients.

**Informed Consent** – Only the lead researcher or other trained researcher should obtain signed consent and in accordance with the ethics committee requirements. The original signed consent form should be kept on file and informed consent will be monitored by the trust at intervals and you will be required to provide the relevant documentation.

**Confidentiality** - All those involved in the study appreciate the importance of maintaining confidentiality and that they comply with the Data Protection Act 1988.

**Amendments** – The R&D office needs to be kept informed of any changes to the project for example regarding patient recruitment, funding, personnel changes or your project status. If changes are made to the protocol they will need to be considered by the ethics committee.

Royal Free Hampstead **NHS**

NHS Trust

Clinical Governance Support Centre  
Royal Free Hospital  
Pond Street  
London NW3 2QG  
Tel:020 7830 2816  
Fax:020 7830 2233  
zoe.spyvee@rfh.nthames.nhs.uk

Progress report – A progress report will need to be completed annually.

Publications – Any publication resulting from your project needs to be reported to the R&D office. This is vital in ensuring the quality and output of research across the trust.

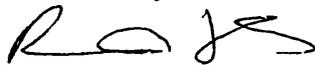
NHS Funding - If the project uses any trust resources any publication must include the following statement.

'This work was undertaken by [investigator's name] with the Royal Free Hampstead NHS Trust who received [funding or a proportion of its funding] from the NHS Executive; the views expressed in this publication are those of the authors and not necessarily those of the Trust or NHS Executive.'

This approval is subject to your consent for information to be extracted from your project for inclusion in NHS project registration/ management databases and, where appropriate, the National Research Register and the UCL Clinical Research Network register.

Should you have any queries please contact the R&D office quoting the ID number.

Yours sincerely,



Richard Jones  
Clinical Governance Support Centre Manager

## **APPENIDX 3**

Parent Consent Form

Child Consent Form

THE NUFFIELD SPEECH AND HEARING CENTRE

Royal National  
Throat Nose & Ear Hospital  
Gray's Inn Road  
London WC1X 8DA

**Self-cognitions in children with hearing impairments**

Tel 020 7915 1300  
Fax 020 7833 5518

Hilly Harvey  
University College London

Supervised by:  
Rosie Kentish  
The Nuffield Speech and Hearing Centre

**Confidential**

**Parent Consent Form**

Please complete this form if you are willing for you and your child to take part in the study.

I have read the information sheet (dated 30/05/02, version 1) explaining this study and have had my questions answered. Yes / No

I understand that I and my child are free to withdraw from the study at any time without giving a reason. Yes / No

I agree that details about my child's hearing loss and school can be obtained from records held at the Nuffield Centre. Yes / No

I give permission for my child's school to be contacted via a questionnaire for teachers. Yes / No

I agree to participate in this study. Yes / No

I agree that my child can participate in this study. Yes / No

Parent's name \_\_\_\_\_ Parent's signature \_\_\_\_\_

Child's name \_\_\_\_\_ Date \_\_\_\_\_

**Thank you very much for your assistance.**



Royal National  
Throat Nose & Ear Hospital  
Gray's Inn Road  
London WC1X 8DA

THE NUFFIELD HEARING AND SPEECH CENTRE

Tel 020 7915 1300  
Fax 020 7833 5518

**Self-cognitions in children with hearing-impairments**

Hilly Harvey  
University College London

Rosie Kentish  
The Nuffield Hearing and Speech Centre

**Confidential**

**Child Consent Form**

Please complete this form if you are willing to take part in the study.

I have been told about the study and have had my questions answered    Yes / No

I understand that I can stop at any time without giving a reason    Yes / No

I agree to take part in this study    Yes / No

Please sign your name \_\_\_\_\_ Date \_\_\_\_\_

Researcher's signature \_\_\_\_\_ Date \_\_\_\_\_

**Thank you for your help.**

## APPENDIX 4

### Child Behaviour Checklist (Achenbach, 1991)

## CHILD BEHAVIOR CHECKLIST

Below is a list of items that describe children and youth. For each item that describes your child now or within the past 6 months, please circle the 2 if the item is very true or often true of your child. Circle the 1 if the item is somewhat or sometimes true of your child. If the item is not true of your child, circle the 0. Please answer all items as well as you can, even if some do not seem to apply to your child.

0 = Not True (as far as you know)

1 = Somewhat or Sometimes True

2 = Very True or Often True

0	1	2	1.	Acts too young for his/her age	0	1	2	31.	Fears he/she might think or do something bad
0	1	2	2.	Allergy (describe): _____					
				_____	0	1	2	32.	Feels he/she has to be perfect
0	1	2	3.	Argues a lot	0	1	2	33.	Feels or complains that no one loves him/her
0	1	2	4.	Asthma					
0	1	2	5.	Behaves like opposite sex	0	1	2	34.	Feels others are out to get him/her
0	1	2	6.	Bowel movements outside toilet	0	1	2	35.	Feels worthless or inferior
0	1	2	7.	Bragging, boasting	0	1	2	36.	Gets hurt a lot, accident-prone
0	1	2	8.	Can't concentrate, can't pay attention for long	0	1	2	37.	Gets in many fights
0	1	2	9.	Can't get his/her mind off certain thoughts; obsessions (describe): _____	0	1	2	38.	Gets teased a lot
				_____	0	1	2	39.	Hangs around with others who get in trouble
0	1	2	10.	Can't sit still, restless, or hyperactive	0	1	2	40.	Hears sounds or voices that aren't there (describe): _____
0	1	2	11.	Clings to adults or too dependent					
0	1	2	12.	Complains of loneliness	0	1	2	41.	Impulsive or acts without thinking
0	1	2	13.	Confused or seems to be in a fog	0	1	2	42.	Would rather be alone than with others
0	1	2	14.	Cries a lot	0	1	2	43.	Lying or cheating
0	1	2	15.	Cruel to animals	0	1	2	44.	Bites fingernails
0	1	2	16.	Cruelty, bullying, or meanness to others	0	1	2	45.	Nervous, highstrung, or tense
0	1	2	17.	Day-dreams or gets lost in his/her thoughts	0	1	2	46.	Nervous movements or twitching (describe): _____
0	1	2	18.	Deliberately harms self or attempts suicide					
0	1	2	19.	Demands a lot of attention	0	1	2	47.	Nightmares
0	1	2	20.	Destroys his/her own things	0	1	2	48.	Not liked by other kids
0	1	2	21.	Destroys things belonging to his/her family or others	0	1	2	49.	Constipated, doesn't move bowels
0	1	2	22.	Disobedient at home	0	1	2	50.	Too fearful or anxious
0	1	2	23.	Disobedient at school	0	1	2	51.	Feels dizzy
0	1	2	24.	Doesn't eat well	0	1	2	52.	Feels too guilty
0	1	2	25.	Doesn't get along with other kids	0	1	2	53.	Overeating
0	1	2	26.	Doesn't seem to feel guilty after misbehaving	0	1	2	54.	Overtired
0	1	2	27.	Easily jealous	0	1	2	55.	Overweight
0	1	2	28.	Eats or drinks things that are not food — don't include sweets (describe): _____					
				_____	0	1	2	56.	Physical problems without known medical cause:
0	1	2	29.	Fears certain animals, situations, or places, other than school (describe): _____	0	1	2	a.	Aches or pains (not headaches)
				_____	0	1	2	b.	Headaches
0	1	2	30.	Fears going to school	0	1	2	c.	Nausea, feels sick
					0	1	2	d.	Problems with eyes (describe): _____
					0	1	2	e.	Rashes or other skin problems
					0	1	2	f.	Stomachaches or cramps
					0	1	2	g.	Vomiting, throwing up
					0	1	2	h.	Other (describe): _____

Please see other side

## CHILD BEHAVIOR CHECKLIST

0 = Not True (as far as you know)			1 = Somewhat or Sometimes True			2 = Very True or Often True			
0	1	2	57.	Physically attacks people	0	1	2	84.	Strange behavior (describe): _____
0	1	2	58.	Picks nose, skin, or other parts of body (describe): _____					_____
				_____	0	1	2	85.	Strange Ideas (describe): _____
				_____					_____
0	1	2	59.	Plays with own sex parts in public	0	1	2	86.	Stubborn, sullen, or irritable
0	1	2	60.	Plays with own sex parts too much	0	1	2	87.	Sudden changes in mood or feelings
0	1	2	61.	Poor school work	0	1	2	88.	Sulks a lot
0	1	2	62.	Poorly coordinated or clumsy	0	1	2	89.	Suspicious
0	1	2	63.	Prefers being with older kids	0	1	2	90.	Swearing or obscene language
0	1	2	64.	Prefers being with younger kids	0	1	2	91.	Talks about killing self
0	1	2	65.	Refuses to talk	0	1	2	92.	Talks or walks in sleep (describe): _____
0	1	2	66.	Repeats certain acts over and over; compulsions (describe): _____					_____
				_____	0	1	2	93.	Talks too much
0	1	2	67.	Runs away from home	0	1	2	94.	Teases a lot
0	1	2	68.	Screams a lot	0	1	2	95.	Temper tantrums or hot temper
0	1	2	69.	Secretive, keeps things to self	0	1	2	96.	Thinks about sex too much
0	1	2	70.	Sees things that aren't there (describe): _____	0	1	2	97.	Threatens people
				_____	0	1	2	98.	Thumb-sucking
				_____	0	1	2	99.	Too concerned with neatness or cleanliness
0	1	2	71.	Self-conscious or easily embarrassed	0	1	2	100.	Trouble sleeping (describe): _____
0	1	2	72.	Sets fires					_____
0	1	2	73.	Sexual problems (describe): _____	0	1	2	101.	Truancy, skips school
				_____	0	1	2	102.	Underactive, slow moving, or lacks energy
				_____	0	1	2	103.	Unhappy, sad, or depressed
0	1	2	74.	Showing off or clowning	0	1	2	104.	Unusually loud
0	1	2	75.	Shy or timid	0	1	2	105.	Uses alcohol or drugs for nonmedical purposes (describe): _____
0	1	2	76.	Sleeps less than most kids					_____
0	1	2	77.	Sleeps more than most kids during day and/or night (describe): _____	0	1	2	106.	Vandalism
				_____	0	1	2	107.	Wets self during the day
0	1	2	78.	Smears or plays with bowel movements	0	1	2	108.	Wets the bed
0	1	2	79.	Speech problem (describe): _____	0	1	2	109.	Whining
				_____	0	1	2	110.	Wishes to be of opposite sex
0	1	2	80.	Stares blankly	0	1	2	111.	Withdrawn, doesn't get involved with others
0	1	2	81.	Steals at home	0	1	2	112.	Worries
0	1	2	82.	Steals outside the home					
0	1	2	83.	Stores up things he/she doesn't need (describe): _____					
				_____	0	1	2	113.	Please write in any problems your child has that were not listed above:
				_____					_____
				_____					_____
				_____					154

PLEASE BE SURE YOU HAVE ANSWERED ALL ITEMS.

PAGE 4

UNDERLINE ANY YOU ARE CONCERNED ABOUT.

## APPENDIX 5

### Children's Depression Inventory (Kovacs, 1992)

#### CDI-s

Kids sometimes have different feelings and ideas. This form lists the feelings and ideas in groups. For each group of three sentences, pick one sentence that describes you best for the past two weeks. After you pick a sentence from the first group, go on to the next group.

There is no right or wrong answer. Just put a mark in the box next to the sentence that fits you best.

- 1  I am sad once in a while  
 I am sad many times  
 I am sad all the time
- 2  Nothing will ever work out for me  
 I am not sure if things will work out for me  
 Things will work out for me OK
- 3  I do most things OK  
 I do many things wrong  
 I do everything wrong
- 4  I hate myself  
 I do not like myself  
 I like myself
- 5  I feel like crying every day  
 I feel like crying many days  
 I feel like crying once in a while
- 6  Things bother me all the time  
 Things bother me many times  
 Things bother me once in a while
- 7  I look OK  
 There are some bad things about my looks  
 I look ugly
- 8  I do not feel alone  
 I feel alone many times  
 I feel alone all the time
- 9  I have plenty of friends  
 I have some friends but I wish I had more  
 I do not have any friends
- 10  Nobody really loves me  
 I am not sure if anybody loves me  
 I am sure that somebody loves me

## APPENDIX 6

Modified Self-Perception Profile for Children (Harter, 1985; Hoare, Elton, Greer & Kerley, 1993)  
with Communicative Competence Subscale.

Standardisation of the Harter Questionnaire with Scottish School Children

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Appendix 1

### WHAT I AM LIKE

Name \_\_\_\_\_ Age \_\_\_\_\_ Birthday \_\_\_\_\_ Class \_\_\_\_\_  
 Boy or Girl(Please Circle)                      Day    Month  
 Child number \_\_\_\_\_

#### SAMPLE SENTENCE

	Really True for me	Sort of True for me		BUT		Sort of True for me	Really True for me
(a)	<input type="checkbox"/>	<input type="checkbox"/>	Some kids would rather play outside in their spare time	BUT	Other kids would rather watch T.V.	<input type="checkbox"/>	<input type="checkbox"/>

1.	<input type="checkbox"/>	<input type="checkbox"/>	Some kids feel they are very good at their school work	BUT	Other kids worry about whether they can do their school work	<input type="checkbox"/>	<input type="checkbox"/>
2.	<input type="checkbox"/>	<input type="checkbox"/>	Some kids find it hard to make friends	BUT	Other kids find it's pretty easy to make friends	<input type="checkbox"/>	<input type="checkbox"/>
3.	<input type="checkbox"/>	<input type="checkbox"/>	Some kids do very well at all kinds of sports	BUT	Other kids don't feel they are good when it comes to sports	<input type="checkbox"/>	<input type="checkbox"/>
4.	<input type="checkbox"/>	<input type="checkbox"/>	Some kids are happy with the way they look	BUT	Other kids are not happy with the way they look	<input type="checkbox"/>	<input type="checkbox"/>
5.	<input type="checkbox"/>	<input type="checkbox"/>	Some kids often do not like the way they behave	BUT	Other kids usually like the way they behave	<input type="checkbox"/>	<input type="checkbox"/>
6.	<input type="checkbox"/>	<input type="checkbox"/>	Some kids are often unhappy with themselves	BUT	Other kids are pretty pleased with themselves	<input type="checkbox"/>	<input type="checkbox"/>
7.	<input type="checkbox"/>	<input type="checkbox"/>	Some kids feel they are just as clever as other kids	BUT	Other kids aren't so sure and wonder if they are as clever	<input type="checkbox"/>	<input type="checkbox"/>
8.	<input type="checkbox"/>	<input type="checkbox"/>	Some kids have a lot of friends	BUT	Other kids don't have very many friends	<input type="checkbox"/>	<input type="checkbox"/>

Appendix 1

	Really True for me	Sort of True for me			Sort of True for me	Really True for me
9.	<input type="checkbox"/>	<input type="checkbox"/>	Some kids wish they could be a lot better at sports	BUT	Other kids feel they are good enough at sports	<input type="checkbox"/>
10.	<input type="checkbox"/>	<input type="checkbox"/>	Some kids are happy with their height or weight	BUT	Other kids wish their height or weight was different	<input type="checkbox"/>
11.	<input type="checkbox"/>	<input type="checkbox"/>	Some kids usually do the right thing	BUT	Other kids often don't do the right thing	<input type="checkbox"/>
12.	<input type="checkbox"/>	<input type="checkbox"/>	Some kids don't like the way they are leading their life	BUT	Other kids do like the way they are leading their life	<input type="checkbox"/>
13.	<input type="checkbox"/>	<input type="checkbox"/>	Some kids are pretty slow in finishing their school work	BUT	Other kids can do their school work quickly	<input type="checkbox"/>
14.	<input type="checkbox"/>	<input type="checkbox"/>	Some kids would like to have a lot more friends	BUT	Other kids have as many friends as they want	<input type="checkbox"/>
15.	<input type="checkbox"/>	<input type="checkbox"/>	Some kids think they could do well at any new sport	BUT	Other kids are afraid they do not do well at new sports	<input type="checkbox"/>
16.	<input type="checkbox"/>	<input type="checkbox"/>	Some kids wish their body was different	BUT	Other kids like their body the way it is	<input type="checkbox"/>
17.	<input type="checkbox"/>	<input type="checkbox"/>	Some kids usually behave the way they know they're supposed to	BUT	Other kids often don't behave the way they're supposed to	<input type="checkbox"/>
18.	<input type="checkbox"/>	<input type="checkbox"/>	Some kids are happy with themselves as a person	BUT	Other kids are often not happy with themselves	<input type="checkbox"/>
19.	<input type="checkbox"/>	<input type="checkbox"/>	Some kids often forget what they learn	BUT	Other kids can remember things easily	<input type="checkbox"/>
20.	<input type="checkbox"/>	<input type="checkbox"/>	Some kids are always doing things with a lot of kids	BUT	Other kids usually do things by themselves	<input type="checkbox"/>

Appendix 1

	Really True for me	Sort of True for me			Sort of True for me	Really True for me
21.	<input type="checkbox"/>	<input type="checkbox"/>	Some kids feel they are better at sports than their friends	BUT	Other kids don't feel they can play as well	<input type="checkbox"/>
22.	<input type="checkbox"/>	<input type="checkbox"/>	Some kids wish they looked different	BUT	Other kids like the way they look	<input type="checkbox"/>
23.	<input type="checkbox"/>	<input type="checkbox"/>	Some kids usually get in trouble because of things they do	BUT	Other kids don't do things that get them into trouble	<input type="checkbox"/>
24.	<input type="checkbox"/>	<input type="checkbox"/>	Some kids like the kind of person they are	BUT	Other kids often wish they were someone else	<input type="checkbox"/>
25.	<input type="checkbox"/>	<input type="checkbox"/>	Some kids do very well at their classwork	BUT	Other kids don't do very well at their classwork	<input type="checkbox"/>
26.	<input type="checkbox"/>	<input type="checkbox"/>	Some kids wish more people their own age liked them	BUT	Other kids feel that most people their own age do like them	<input type="checkbox"/>
27.	<input type="checkbox"/>	<input type="checkbox"/>	In games and sports some kids usually watch instead of play	BUT	Other kids usually play rather than just watch	<input type="checkbox"/>
28.	<input type="checkbox"/>	<input type="checkbox"/>	Some kids wish something about their face or hair was different	BUT	Other kids like their face and hair the way they are	<input type="checkbox"/>
29.	<input type="checkbox"/>	<input type="checkbox"/>	Some kids do things they know they shouldn't do	BUT	Other kids hardly ever do things they know they shouldn't do	<input type="checkbox"/>
30.	<input type="checkbox"/>	<input type="checkbox"/>	Some kids are very happy being the way they are	BUT	Other kids wish they were different	<input type="checkbox"/>
31.	<input type="checkbox"/>	<input type="checkbox"/>	Some kids have trouble working out the answers in school	BUT	Other kids almost always can work out the answers	<input type="checkbox"/>
32.	<input type="checkbox"/>	<input type="checkbox"/>	Some kids are popular with others their own age	BUT	Other kids are not very popular	<input type="checkbox"/>

Appendix 1

	Really True for me	Sort of True for me			Sort of True for me	Really True for me	
33.	<input type="checkbox"/>	<input type="checkbox"/>	Some kids don't do well at new outdoor games	<b>BUT</b>	Other kids are good at new games right away	<input type="checkbox"/>	<input type="checkbox"/>
34.	<input type="checkbox"/>	<input type="checkbox"/>	Some kids think that they are good looking	<b>BUT</b>	Other kids think that they are not very good looking	<input type="checkbox"/>	<input type="checkbox"/>
35.	<input type="checkbox"/>	<input type="checkbox"/>	Some kids behave themselves very well	<b>BUT</b>	Other kids often find it hard to behave themselves	<input type="checkbox"/>	<input type="checkbox"/>
36.	<input type="checkbox"/>	<input type="checkbox"/>	Some kids are not happy with the way they do a lot of things	<b>BUT</b>	Other kids think the way they do things is fine	<input type="checkbox"/>	<input type="checkbox"/>

37	<input type="checkbox"/>	<input type="checkbox"/>	some kids are good at speaking	<b>BUT</b>	other kids are not so good at speaking	<input type="checkbox"/>	<input type="checkbox"/>
38	<input type="checkbox"/>	<input type="checkbox"/>	some kids find it difficult to say what they mean	<b>BUT</b>	other kids find it easy to say what they mean	<input type="checkbox"/>	<input type="checkbox"/>
39	<input type="checkbox"/>	<input type="checkbox"/>	some kids are not so good at listening for a long time	<b>BUT</b>	other kids are good at listening for a long time	<input type="checkbox"/>	<input type="checkbox"/>
40	<input type="checkbox"/>	<input type="checkbox"/>	some kids find lessons easy to follow	<b>BUT</b>	other kids find lessons difficult to follow	<input type="checkbox"/>	<input type="checkbox"/>

adapted from S Powers, 1990

## APPENDIX 7

Social Support Scale for Children (Harter, 1985)

### PEOPLE IN MY LIFE

Name \_\_\_\_\_  
(First) (Last)

	Really True for Me	Sort of True for Me	Sample Item	Sort of True for Me	Really True for Me	
	<input type="checkbox"/>	<input type="checkbox"/>	Some kids like to do fun things with a lot of other people	BUT	Other kids like to do fun things with just a few people.	<input type="checkbox"/> <input type="checkbox"/>
1.	<input type="checkbox"/>	<input type="checkbox"/>	Some kids have parents who <i>don't</i> really understand them	BUT	Other kids have parents who really <i>do</i> understand them.	<input type="checkbox"/> <input type="checkbox"/>
2.	<input type="checkbox"/>	<input type="checkbox"/>	Some kids have classmates who like them the way they are	BUT	Other kids have classmates who wish they were <i>different</i> .	<input type="checkbox"/> <input type="checkbox"/>
3.	<input type="checkbox"/>	<input type="checkbox"/>	Some kids have a teacher who <i>helps</i> them if they are <i>upset</i> and have a problem	BUT	Other kids <i>don't</i> have a teacher who helps them if they are upset and have a problem.	<input type="checkbox"/> <input type="checkbox"/>
4.	<input type="checkbox"/>	<input type="checkbox"/>	Some kids have a close friend who they can tell <i>problems</i> to	BUT	Other kids <i>don't</i> have a close friend who they can tell problems to.	<input type="checkbox"/> <input type="checkbox"/>
5.	<input type="checkbox"/>	<input type="checkbox"/>	Some kids have parents who <i>don't</i> seem to want to hear about their children's problems	BUT	Other kids have parents who <i>do</i> want to <i>listen</i> to their children's problems.	<input type="checkbox"/> <input type="checkbox"/>
6.	<input type="checkbox"/>	<input type="checkbox"/>	Some kids have classmates that they can become friends with	BUT	Other kids <i>don't</i> have classmates that they can become friends with.	<input type="checkbox"/> <input type="checkbox"/>
7.	<input type="checkbox"/>	<input type="checkbox"/>	Some kids <i>don't</i> have a teacher who <i>helps</i> them to <i>do</i> their very best	BUT	Other kids <i>do</i> have a teacher who <i>helps</i> them to do their very best.	<input type="checkbox"/> <input type="checkbox"/>
8.	<input type="checkbox"/>	<input type="checkbox"/>	Some kids have a close friend who really understands them	BUT	Other kids <i>don't</i> have a close friend who understands them.	<input type="checkbox"/> <input type="checkbox"/>
9.	<input type="checkbox"/>	<input type="checkbox"/>	Some kids have parents who <i>care</i> about their feelings	BUT	Other kids have parents who <i>don't</i> seem to care very much about their children's feelings.	<input type="checkbox"/> <input type="checkbox"/>
10.	<input type="checkbox"/>	<input type="checkbox"/>	Some kids have classmates who sometimes make fun of them	BUT	Other kids <i>don't</i> have classmates who make fun of them.	<input type="checkbox"/> <input type="checkbox"/>
11.	<input type="checkbox"/>	<input type="checkbox"/>	Some kids <i>do</i> have a teacher who <i>cares</i> about them	BUT	Other kids <i>don't</i> have a teacher who cares about them.	<input type="checkbox"/> <input type="checkbox"/>

	Really True for Me	Sort of True for Me			Sort of True for Me	Really True for Me	
12.	<input type="checkbox"/>	<input type="checkbox"/>	Some kids have a close friend who they can talk to about things that bother them	BUT	Other kids <i>don't</i> have a close friend who they can talk to about things that bother them.	<input type="checkbox"/>	<input type="checkbox"/>
13.	<input type="checkbox"/>	<input type="checkbox"/>	Some kids have parents who treat their children like a <i>person</i> who really matters	BUT	Other kids have parents who <i>don't</i> usually treat their children like a person who matters.	<input type="checkbox"/>	<input type="checkbox"/>
14.	<input type="checkbox"/>	<input type="checkbox"/>	Some kids have classmates who pay attention to what they say	BUT	Other kids have classmates who usually <i>don't</i> pay attention to what they say.	<input type="checkbox"/>	<input type="checkbox"/>
15.	<input type="checkbox"/>	<input type="checkbox"/>	Some kids <i>don't</i> have a teacher who is <i>fair</i> to them	BUT	Other kids <i>do</i> have a teacher who is fair to them.	<input type="checkbox"/>	<input type="checkbox"/>
16.	<input type="checkbox"/>	<input type="checkbox"/>	Some kids <i>don't</i> have a close friend who they like to spend time with	BUT	Other kids <i>do</i> have a close friend who they like to spend time with.	<input type="checkbox"/>	<input type="checkbox"/>
17.	<input type="checkbox"/>	<input type="checkbox"/>	Some kids have parents who like them the way <i>they are</i>	BUT	Other kids have parents who wish their children were <i>different</i> .	<input type="checkbox"/>	<input type="checkbox"/>
18.	<input type="checkbox"/>	<input type="checkbox"/>	Some kids <i>don't</i> get asked to play in games with classmates very often	BUT	Other kids <i>often</i> get asked to play in games by their classmates.	<input type="checkbox"/>	<input type="checkbox"/>
19.	<input type="checkbox"/>	<input type="checkbox"/>	Some kids <i>don't</i> have a teacher who cares if they feel bad	BUT	Other kids <i>do</i> have a teacher who cares if they feel bad.	<input type="checkbox"/>	<input type="checkbox"/>
20.	<input type="checkbox"/>	<input type="checkbox"/>	Some kids <i>don't</i> have a close friend who really <i>listens</i> to what they say	BUT	Other kids <i>do</i> have a close friend who really listens to what they say.	<input type="checkbox"/>	<input type="checkbox"/>
21.	<input type="checkbox"/>	<input type="checkbox"/>	Some kids have parents who <i>don't</i> act like what their children do is <i>important</i>	BUT	Other kids have parents who <i>do</i> act like what their children do is important.	<input type="checkbox"/>	<input type="checkbox"/>
22.	<input type="checkbox"/>	<input type="checkbox"/>	Some kids often spend recess being <i>alone</i>	BUT	Other kids spend recess playing with their classmates.	<input type="checkbox"/>	<input type="checkbox"/>
23.	<input type="checkbox"/>	<input type="checkbox"/>	Some kids have a teacher who treats them like a <i>person</i>	BUT	Other kids <i>don't</i> have a teacher who treats them like a person.	<input type="checkbox"/>	<input type="checkbox"/>
24.	<input type="checkbox"/>	<input type="checkbox"/>	Some kids <i>don't</i> have a close friend who cares about their feelings	BUT	Other kids <i>do</i> have a close friend who cares about their feelings.	<input type="checkbox"/>	<input type="checkbox"/>

68. In our family each person has different ideas about what is right and wrong.
69. Each person's duties are clearly defined in our family.
70. We can do whatever we want to in our family.
71. We really get along well with each other.
72. We are usually careful about what we say to each other.
73. Family members often try to one-up or out-do each other.
74. It's hard to be by yourself without hurting someone's feelings in our household.
75. "Work before play" is the rule in our family.
76. Watching T.V. is more important than reading in our family.
77. Family members go out a lot.
78. The Bible is a very important book in our home.
79. Money is not handled very carefully in our family.
80. Rules are pretty inflexible in our household.
81. There is plenty of time and attention for everyone in our family.
82. There are a lot of spontaneous discussions in our family.
83. In our family, we believe you don't ever get anywhere by raising your voice.
84. We are not really encouraged to speak up for ourselves in our family.
85. Family members are often compared with others as to how well they are doing at work or school.
86. Family members really like music, art and literature.
87. Our main form of entertainment is watching T.V. or listening to the radio.
88. Family members believe that if you sin you will be punished.
89. Dishes are usually done immediately after eating.
90. You can't get away with much in our family.

# FAMILY ENVIRONMENT SCALE

## FORM R

RUDOLF H. MOOS



### INSTRUCTIONS

There are 90 statements in this booklet. They are statements about families. You are to decide which of these statements are true of your family and which are false. Make all your marks on the separate answer sheets. If you think the statement is *True* or mostly *True* of your family, make an X in the box labeled T (true). If you think the statement is *False* or mostly *False* of your family, make an X in the box labeled F (false).

You may feel that some of the statements are true for some family members and false for others. Mark T if the statement is true for most members. Mark F if the statement is false for most members. If the members are evenly divided, decide what is the stronger overall impression and answer accordingly.

Remember, we would like to know what your family seems like to you. So do not try to figure out how other members see your family, but do give us your general impression of your family for each statement.



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577 College Ave., Palo Alto, California 94306

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Family Environment Scale, (Moos, 1974; Moos & Moos, 1994)

APPENDIX 8

1. Family members really help and support one another.
2. Family members often keep their feelings to themselves.
3. We fight a lot in our family.
4. We don't do things on our own very often in our family.
5. We feel it is important to be the best at whatever you do.
6. We often talk about political and social problems.
7. We spend most weekends and evenings at home.
8. Family members attend church, synagogue, or Sunday School fairly often.
9. Activities in our family are pretty carefully planned.
10. Family members are rarely ordered around.
11. We often seem to be killing time at home.
12. We say anything we want to around home.
13. Family members rarely become openly angry.
14. In our family, we are strongly encouraged to be independent.
15. Getting ahead in life is very important in our family.
16. We rarely go to lectures, plays or concerts.
17. Friends often come over for dinner or to visit.
18. We don't say prayers in our family.
19. We are generally very neat and orderly.
20. There are very few rules to follow in our family.
21. We put a lot of energy into what we do at home.
22. It's hard to "blow off steam" at home without upsetting somebody.
23. Family members sometimes get so angry they throw things.
24. We think things out for ourselves in our family.
25. How much money a person makes is not very important to us.
26. Learning about new and different things is very important in our family.
27. Nobody in our family is active in sports, Little League, bowling, etc.
28. We often talk about the religious meaning of Christmas, Passover, or other holidays.
29. It's often hard to find things when you need them in our household.
30. There is one family member who makes most of the decisions.
31. There is a feeling of togetherness in our family.
32. We tell each other about our personal problems.
33. Family members hardly ever lose their tempers.
34. We come and go as we want to in our family.
35. We believe in competition and "may the best man win."
36. We are not that interested in cultural activities.
37. We often go to movies, sports events, camping, etc.
38. We don't believe in heaven or hell.
39. Being on time is very important in our family.
40. There are set ways of doing things at home.
41. We rarely volunteer when something has to be done at home.
42. If we feel like doing something on the spur of the moment we often just pick up and go.
43. Family members often criticize each other.
44. There is very little privacy in our family.
45. We always strive to do things just a little better the next time.
46. We rarely have intellectual discussions.
47. Everyone in our family has a hobby or two.
48. Family members have strict ideas about what is right and wrong.
49. People change their minds often in our family.
50. There is a strong emphasis on following rules in our family.
51. Family members really back each other up.
52. Someone usually gets upset if you complain in our family.
53. Family members sometimes hit each other.
54. Family members almost always rely on themselves when a problem comes up.
55. Family members rarely worry about job promotions, school grades, etc.
56. Someone in our family plays a musical instrument.
57. Family members are not very involved in recreational activities outside work or school.
58. We believe there are some things you just have to take on faith.
59. Family members make sure their rooms are neat.
60. Everyone has an equal say in family decisions.
61. There is very little group spirit in our family.
62. Money and paying bills is openly talked about in our family.
63. If there's a disagreement in our family, we try hard to smooth things over and keep the peace.
64. Family members strongly encourage each other to stand up for their rights.
65. In our family, we don't try that hard to succeed.
66. Family members often go to the library.
67. Family members sometimes attend courses or take lessons for some hobby or interest (outside of school).

## APPENDIX 9

### Having a Hearing Loss – child version

#### Having a hearing loss

- |    |  |          |
|----|--|----------|
| 1  | I am slow at doing schoolwork because of my hearing loss                   | Yes / No |
| 2  | I have a lot of friends with my hearing loss                               | Yes / No |
| 3  | I am not good enough at sports because of my hearing loss                  | Yes / No |
| 4  | I am happy with the way I look with my hearing loss                        | Yes / No |
| 5  | I do things I shouldn't do because of my hearing loss                      | Yes / No |
| 6  | I find it difficult to say what I mean because of my hearing loss          | Yes / No |
| 7  | I am happy being the way I am with my hearing loss                         | Yes / No |
| 8  | I am good at schoolwork with my hearing loss                               | Yes / No |
| 9  | I find it harder to make friends because of my hearing loss                | Yes / No |
| 10 | I do well at sports with my hearing loss                                   | Yes / No |
| 11 | I wish I looked different because of my hearing loss                       | Yes / No |
| 12 | I am good at listening with my hearing loss                                | Yes / No |
| 13 | I sometimes wish I was someone else because of my hearing loss             | Yes / No |
| 14 | My classmates sometimes make fun of me because of my hearing loss          | Yes / No |
| 15 | I don't have a close friend to tell problems to because of my hearing loss | Yes / No |
| 16 | My parents care about my feelings more because of my hearing loss          | Yes / No |
| 17 | My teacher doesn't care about me because of my hearing loss                | Yes / No |
| 18 | I often get asked to play games by my classmates with my hearing loss      | Yes / No |
| 19 | My parents wish I was different because of my hearing loss                 | Yes / No |
| 20 | My teacher cares if I feel bad because of my hearing loss                  | Yes / No |

## APPENDIX 9

### Having a Hearing Loss – parent version

#### **Having a hearing loss**

Here are some things your child has told us about having a hearing loss. We'd like you to put yourself in your child's position, and indicate how you think their hearing loss has affected them.

**Please put yourself in your child's "shoes" and answer as you think they would.**

- |    |  |          |
|----|--|----------|
| 1  | I am slow at doing schoolwork because of my hearing loss                   | Yes / No |
| 2  | I have a lot of friends with my hearing loss                               | Yes / No |
| 3  | I am not good enough at sports because of my hearing loss                  | Yes / No |
| 4  | I am happy with the way I look with my hearing loss                        | Yes / No |
| 5  | I do things I shouldn't do because of my hearing loss                      | Yes / No |
| 6  | I find it difficult to say what I mean because of my hearing loss          | Yes / No |
| 7  | I am happy being the way I am with my hearing loss                         | Yes / No |
| 8  | I am good at schoolwork with my hearing loss                               | Yes / No |
| 9  | I find it harder to make friends because of my hearing loss                | Yes / No |
| 10 | I do well at sports with my hearing loss                                   | Yes / No |
| 11 | I wish I looked different because of my hearing loss                       | Yes / No |
| 12 | I am good at listening with my hearing loss                                | Yes / No |
| 13 | I sometimes wish I was someone else because of my hearing loss             | Yes / No |
| 14 | My classmates sometimes make fun of me because of my hearing loss          | Yes / No |
| 15 | I don't have a close friend to tell problems to because of my hearing loss | Yes / No |
| 16 | My parents care about my feelings more because of my hearing loss          | Yes / No |
| 17 | My teacher doesn't care about me because of my hearing loss                | Yes / No |
| 18 | I often get asked to play games by my classmates with my hearing loss      | Yes / No |
| 19 | My parents wish I was different because of my hearing loss                 | Yes / No |
| 20 | My teacher cares if I feel bad because of my hearing loss                  | Yes / No |

## APPENDIX 10

### Background Information Questionnaire



## **APPENDIX 11**

Teachers' Invitations Letter

Teachers' Questionnaire

tel: 0207 915 1458  
0207 915 1309  
fax: 0207 915 1435

Royal National  
Throat Nose & Ear Hospital  
Gray's Inn Road  
London WC1X 8DA

Dear teacher,

Re: \_\_\_\_\_

Tel 020 7915 1300  
Fax 020 7833 5518

**The role of self cognitions in children with hearing impairments**

We are writing to invite you to take part in a study being carried out at the Nuffield Speech and Hearing Centre. Recent research has suggested that children with hearing impairments may have more emotional and behavioural difficulties than their hearing peers. However, little is known about which factors make life easier or harder for these children. To this end, we are asking over 100 8 to 14 year-olds meeting certain criteria to take part in a study investigating this.

Both the child and their mother have completed several questionnaires covering topics such as home life, what support they receive and what they think of the hearing loss.

To compliment this, we would be very grateful if you could complete and return the enclosed questionnaire about \_\_\_\_\_. The information you provide will give us a broader picture of the services s/he is receiving and how they might relate to any difficulties s/he encounters.

We have been given parental consent to contact school for further information (copy enclosed).

This study has been reviewed by the Royal Free Hospital and Medical School Local Research Ethics Committee.

Please contact us if you have any further questions, and thank you for your help in advance.

Hilly Harvey  
Sub-Department of Clinical Health  
Psychology  
University College London  
Gower Street  
London  
WC1E 6BT

Rosie Kentish  
The Nuffield Hearing and Speech Centre  
Royal National Throat Nose & Ear Hospital  
Gray's Inn Road  
London  
WC1X 8DA



child's name \_\_\_\_\_

### Teacher's Questionnaire

1 How many children are in ....'s class? \_\_\_\_\_

2 How many other children in the class have hearing impairments? \_\_\_\_\_

3 How many other children in the school have hearing impairments? \_\_\_\_\_

4a Does .... have a statement of special educational needs? **Yes**   
**No**

4b If no, at what stage of the code of practice is he he/she on? \_\_\_\_\_

5a Does .... attend a resource base or hearing impaired unit for part of his/her school day? **Yes**   
**No**

5b If yes, for how much of the day? \_\_\_\_\_

6 Which, if any, of the following supports does ... receive:	<b>Yes</b>	<b>No</b>	<b>Amount</b>
classroom assistant	<input type="checkbox"/>	<input type="checkbox"/>	_____
special educational needs co-ordinator	<input type="checkbox"/>	<input type="checkbox"/>	_____
Teacher of the Deaf	<input type="checkbox"/>	<input type="checkbox"/>	_____
Speech and Language Therapy	<input type="checkbox"/>	<input type="checkbox"/>	_____
Other _____			_____

7 Does .... use an assisted listening device in the classroom:  
hearing aid  radio aid  sound field system

8 If any of the above, does ... use their device:  
all the time   
most of the time   
rarely   
never

9 Does .... appear to you to have any difficulties with hearing in the classroom?  
\_\_\_\_\_  
\_\_\_\_\_

10 Does .... appear to have any other difficulties in the class room (eg with peers, schoolwork):  
\_\_\_\_\_  
\_\_\_\_\_

**Thank you for your time**

## APPENDIX 12

### Summary of Information Collated from Teacher Questionnaires (n = 40)

		frequency	percentage
No. of children in class with hearing loss:	0	23	57.5
	1	9	22.5
	2-8	8	10.0
No. of children in school with hearing loss:	0	9	23.1
	1	5	12.8
	2-8	12	30.0
	9-55	14	35.0
Child is statemented:	yes	22	55.0
	No	18	45.0
If not statemented, stage on code of practice:			
	School action	3	7.5
	School action plus	11	27.5
Child neither statemented nor on code of practice:		4	10.0
No. of sessions in HIU per week:	0	28	70
	0.25	2	5.0
	1	5	12.5
	5	2	5
	8	2	5
	12	1	2.5
Receives classroom assistant:	yes	18	45.0
	No	22	55.0
Of those that receive classroom assistance:			
No. of sessions per week:	mean	9.03	s.d. 7.54
			range 0.5 – 25
Support child receives: SENCo	yes	16	60.0
	No	24	40.0
Teacher of the Deaf	yes	23	56.3
	No	17	43.6
Speech and Language Therapy	yes	5	12.5
	No	35	87.5
Other support	yes	11	27.5
	No	29	72.5

**APPENDIX 12 cont.**

		frequency	percentage
Any problems with hearing in class	yes	21	52.5
	No	19	47.5
Any problems with peers	yes	9	22.5
	No	31	77.5
Any problems with school work	yes	14	35.0
	No	26	65.0
Amount uses assisted learning devices in class:			
Uses hearing aids:	never/rarely	5	12.5
	Most of the time	12	30.0
	All the time	23	57.5
Uses radio aids:	not applicable	22	55.0
	Never/rarely	3	7.5
	Most of the time	8	20.0
	All the time	7	17.5
Uses sound field system:	not applicable	39	97.5
	Rarely	1	2.5