A PRELIMINARY INVESTIGATION INTO THE IMPACT ON ADOLESCENTS WHO ATTEND SCHOOL WITH A SIBLING WITH A LEARNING DISABILITY.

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Submitted in part fulfilment of the degree of doctorate in
Clinical Psychology at the University of Edinburgh.
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DECLARATION

I declare that I am the sole author of this thesis and that the work contained herein is my own. This thesis, or any part of it, has not been submitted for any other degree of professional qualification.

Ginny Avery August 2005.

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ABSTRACT

Rationale: The translation of the principles of normalisation into social policy has led to a radical shift in service provision for people with a learning disability (LD). This has led to an interest in the impact of increased contact between children with a learning disability and their siblings. A potentially central factor in the adjustment of siblings of children with a learning disability, which has yet to be investigated, is the nature of their school experience and the impact that this has.

Aims: The overall aim of the current study is to investigate the impact that attending either the same school as, or different school from a sibling with a learning disability has on the school experience, self-concept and sibling relationship of the non-disabled sibling.

Design and Method: A between subjects design was employed. Self-concept and the quality of the sibling relationship were measured by standardised self-report measures. A semi-structured interview conducted in the adolescent's school was used to gather data about their school experience.

Results: Overall there were no significant differences between the three groups on measures of self-concept, the quality of the sibling relationship or the overall satisfaction of school experience. However there were some significant differences between comparisons of individual groups on certain facets of self-concept and on some aspects of the quality of the sibling relationship.

Discussion: The results are discussed in terms of the previous literature and possible reasons for the reported differences between the groups. The methodological limitations of the current research are considered and directions for future research are highlighted.

1. INTRODUCTION

1.1 Overview

The aim of the current study is to investigate the impact of attending school with a sibling who has a learning disability. Specifically, the aim is to investigate how this impacts on the non-disabled sibling's self-concept and the quality of the sibling relationship.

The first section will provide relevant contextual information, in particular with regards to the changes in social and educational policies within the field of learning disabilities over recent years. The impact of such social policies on sibling contact and relationships will also be discussed. This section will also introduce the different terminology used in this area. It is worth noting that the language used to describe people with learning disabilities reflects changes in society's values over the period of the review. The terms once used are now unacceptable and devalue the individual with a learning disability and can appear shocking. The second section will operationalise the term self-concept and provide an indication of the definition and model of self-concept used within the current research. This will be followed by an examination of the importance of the sibling relationship. A review of the literature pertaining to factors that can influence this relationship will be provided, with particular reference to the impact of one sibling having a disability. The variety of outcomes and the methodological weaknesses of previous research will be highlighted. The final section will look at the importance of school experiences within the development of a child and why it is an area of interest for the current study, before moving on to outline the aims and hypotheses of the current research.

1.2 Background Information

1.2.1. Changing Policies

The social environment in which both children and adults with a learning disability develop has been subject to a number of major reforms over recent years. All of these are likely to have had a major impact on the development of individuals with learning disabilities. The introduction of such policies is likely to have different effects for different cohorts of people with a learning disability, depending on when they were born. Some of these policies and changes will be discussed below to provide a context for the current research and also to highlight how the current environment may be very different to that, in which previous research in the area under investigation, has been conducted. This fact alone emphasises the need for continuing research in the area.

1.2.2. De-Institutionalisation

The environment in which children with disabilities have been raised has been subject to a number of major changes over recent years. In the recent past children with a learning disability were still being sent to live in institutions and were subject to special schooling arrangements (Jay, 1996). Recent changes in government policy have aimed to bring care and service provision for these individuals into line with more mainstream policies. This has been fundamentally influenced by the philosophies of social role valorisation and normalisation, which have been translated into the practice of more inclusive health and education by policy documents such as 'The same as you?' (Scottish Executive, 2000a) in Scotland and Valuing People (DOH, 2001) in England. These promote the values of independence, choice and inclusion. These fundamental social changes will be briefly set in an historical context to highlight why up to date research is needed, before providing information about the current environment in which people with learning disabilities are raised.

1.2.3. Historical Overview

Little is know about the fate of people with a learning disability in pre-industrial Britain as there are few records in existence. In fact their existence in communities was virtually undocumented and reference to 'idiots' or 'imbeciles' only comes into being from the late seventeenth century in records of work houses (Digby, 1996). As there was, however, generally lower levels of literacy and education and more emphasis on manual work, it could be hypothesised that many people who would be identified as having a learning disability by today's criteria (e.g. DSM-IV, APA, 1995) would have functioned as a member of their community unnoticed.

After the industrial revolution many people moved towards big cities to find work. This coming together of large numbers of individuals made it very difficult for anyone with difficulties (due to age, infirmity or a learning disability) to work. The government response was to create large asylums as a result of the Poor Laws (1834) to house such people, who were described as 'feeble minded'

As we move into the 20th century the institutions remained, but the reasons for people being sent to them changed. With the introduction of the eugenics movement, laws were brought about which ensured that all people who were considered 'defective' could be separated from society as it was feared that the conditions of these people could be inherited. It was posited that they would be to the detriment of the rest of society if they were allowed to stay in the community. It was this fear of contamination that led to segretative social policies (Digby, 1996). The Mental Deficiency Act (1913) was introduced which meant that all people admitted to institutions were certified as mentally defective.

At the start of the 20th century psychologists, such as Alfred Binet, started to develop theories of intelligence and measures of intelligence testing. This created a framework in which individuals, particularly children, could be classified as 'mentally defective' and therefore placed in an institution away from the general public (Digby, 1996). After the introduction of the National Health Service (NHS) the institutions became known as hospitals and the people in them became patients who needed caring for. There was a move away from seeing these people as dangerous and a threat to society to people who needed to be cared for and looked after.

With the change in social policies and the introduction of ideas of normalisation (discussed below) people with a learning disability were no longer seen as a threat to society and concerns were raised over the standards of care they received in large hospital institutions (Jay, 1996). This change in thinking was backed by a government paper suggesting a move to more community based services for people with a learning disability, Better Services for the Mentally Handicapped (DHSS, 1971).

The idea of enabling people with learning disabilities to become more integrated and valued members of mainstream society is still in force today and has been backed by even more recent government policy documents. This up to date legislation will be discussed below, but first an overview of the political and social ideas of social inclusion, normalisation and social role valorisation, which led to such changes, will be given.

1.2.4 Normalisation and Social Role Valorisation

The term normalisation refers to a set of principles that underpin the idea that people with a learning disability have as much right as anyone to experience 'normal' things in everyday life. These might include living in ordinary places and doing ordinary things the same as any other member of their community. Wolfensberger (1972) defines normalisation as the

> 'utilisation of means which are as culturally normative as possible, in order to establish and/or maintain personal behaviours and characteristics that are as culturally normative as possible' p28.

The unique value of every individual in society and their right to choice and equal opportunity are emphasised by the principles of normalisation. There is also a recognition that some individuals may need support in order to fulfil their potential and that they have a right to access this support. The old style institutions were seen as a barrier to the principles of normalisation and these changes in social policies aided the move from housing people with a learning disability in institutions to community living arrangements.

The term social role valorisation has its roots in the principles of normalisation and was originally posited by Wolfensberger (1983) as a development of this principle into a complex social theory. Social role valorisation addresses the social devaluation of individuals as part of a stigmatised group. It states that by a process of societal evaluation some groups are assigned a lower social value and are consequently vulnerable to becoming devalued.

The social principles of social role valorisation and normalisation have had a huge impact on the way that people with a learning disability are educated and brought up. No longer are individuals separated from their families and raised in institutions but, instead, they are encouraged to be active members of the communities in which they live. This is in keeping with current government policies on social inclusion, which emphasise the right of all individuals to participate fully in society (The Scottish Office, 1999). In order to ensure that services are capable of meeting the needs of individuals with a learning disability, governments since the 1960s have introduced a number of new policies, all of which have been greatly influenced by the principles of normalisation. The latest of these policies will be reviewed below.

1.2.5 Current Policies

Since the last government white paper, Better Services for the Mentally Handicapped (DHSS, 1971) many of the large institutions have been closed and there has consequently been an increase in the number of individuals with a learning disability living in local communities Despite having moved to community living arrangements there was evidence that this did not increase the integration of these individuals into local communities and that individuals with a learning disability had few meaningful relationships (Fleming & Stenfert Kroese, 1990). They also had little interaction with other people without a learning disability (Jahoda, Cattermole & Markova, 1990). Although the government recognises the need for specialist services for this client group it also acknowledges that there needs to be more integration of health and local authority services to meet the needs of clients with a learning disability. Recent government papers in England (Valuing People, DOH, 2001) and Scotland (The same as you?, Scottish Executive, 2000a) have aimed at providing a framework for this. In Scotland the 'Same as You?' document defines one of its main aims as improving the quality of life of people with learning disabilities. It recognises that although the review looks at services for this group of people the focus is on how to make these services fit with people's lifestyles. The document established seven principles that are important in helping people with a learning disability to live full lives. These are:

1. People with learning disabilities should be valued. They should be asked and encouraged to contribute to the community they live in. They should not be picked on or treated differently from others.
2. People with learning disabilities are individual people.

3. People with learning disabilities should be asked about the services they need and be involved in making choices about what they want.
4. People with learning disabilities should be helped and supported to do everything they are able to do.
5. People with learning disabilities should be able to use the same local services as everyone else, wherever possible.
6. People with learning disabilities should benefit from specialist social, health and educational services.
7. People with learning disabilities should have services which take account of their age, abilities and other needs.

(Scottish Executive, 2000a, p 11)

These principles highlight the change in government policy to focus much more on the rights of individuals and the principles of inclusion. This change has not just been in the health service, but is also reflected in the education of people with a learning disability.

1.2.6 Education

These changes in attitudes and policies in health provision can also be seen within the school and education environment. Within the education setting, children with disabilities have not always been entitled to education. Not until the 1970 Education (Handicapped Children) Act or in Scotland the Education (Scotland) Act (Scottish Executive, 1974) was education for all children, no matter how severe their disability, ensured. This was because the responsibility for educating people with a learning disability transferred from the health authorities to local authorities. The education of children with learning disabilities was then provided through special schools and units. As with the changes in the health care system, new policies have been introduced since 1970 which have promoted the inclusion of children with disabilities in mainstream schools.

Currently the education of all children in Scotland falls under the legislation of the Education (Scotland) Act 1980 (as amended 1981) (Scottish Executive, 1981). This act states that education authorities have a duty to establish which children have pronounced, specific or complex special educational needs. They also have a duty to assess and record those needs in a Record of Needs document.

Section 15 of the Standards in Scotland's Schools Etc. Act, (Scottish Executive, 2000b) introduces the principle of mainstream provision, i.e. that all children have the right to be educated in mainstream schooling along with their peers, unless there are good reasons not to do so. This legislation also places a duty on education authorities to mainstream pupils who attend special schools or classes as defined under the Education (Scotland) Act 1980. It is backed by the philosophy of social inclusion and aims to challenge the ethos of schools and the attitudes of young people by having disabled peers educated alongside them in mainstream classrooms.

The current framework of Records of Needs is about to be replaced by the Additional Support for Learning (Scotland) Act (Scottish Executive, 2004). This act broadens the criteria for people who can receive additional learning support. It recognises that some individuals may need additional support in school for short periods due to transient events and establishes that they have a right to this support. This new act aims to help all children to be able to attend regular mainstream classes by providing the necessary support that they need to do so.

A summary of the different types of education provision for children with learning disabilities is provided below, in accordance with the Education (Scotland) Act 1980, along with an overview of the terminology used to describe the pupils receiving support. This will then be followed by an overview of terminology used in much of the literature in order to clarify the terms used within the current study.

1.2.6.1 Special Schools

Special schools are those schools, or a special class forming part of a primary or secondary school, which makes provision wholly or mainly for children who have Records of Needs (section 135(1) of the Education Act 1980)

1.2.6.2 Special Educational Needs

According to the 1980 Act a child or young person is said to have special educational needs if he/she has a learning difficulty which calls for special educational provision to be made for him/her.

1.2.6.3 Learning Difficulties

According to this act children or young people are said to have a learning difficulty if they meet one of three criteria.

1. They have significantly greater difficulty learning than the majority of those of their age; or
2. They suffer from a disability which either prevents or hinders them from making use of educational facilities of a kind generally provided for those of their age in schools managed by their education authority; or
3. Those who are under the age of 5 years and, if provision for special educational needs were not made for them, are or would likely be when over that age, to have a learning difficulty as defined above.

1.2.6.4 Learning Disability

The term learning disability, or Mental Retardation, as it is defined in the DSM-IV (APA, 1995) has three aspects. They are that:

1. An individual must have a significantly subaverage intellectual functioning: an Intelligence Quotient (IQ) of approximately 70 or below on an individually administered IQ test.
2. That there must be concurrent deficits or impairments in present adaptive functioning (i.e. the person's effectiveness in meeting the standards expected for his or her age by his or her cultural group) in at least two of the following areas: communication, self-care, home living, social/interpersonal skills, use of community resources, self-direction, functional academic skills, work, leisure, health, and safety. And that
3. The onset is before age of 18 years.

Although this is the official meaning of the diagnosis of a learning disability its use within the literature is not so straightforward and the term may be used to convey a number of different meanings. Some of these are discussed below.

1.2.7 Terminology in the Literature

The term disability is one that can have a number of different connotations. It is, therefore, important to provide a definition of the terms used within the current research and how this relates to the previous literature. The term disability has been used broadly within the research and has been used to cover a number of meanings from severe learning disabilities or mental retardation (Coleby, 1995; Hannah & Midlarsky, 1999) to Autism or Down Syndrome (Gold, 1993; Cuskelly & Gunn, 1993) as well as physical disabilities (Harvey & Greenway, 1984). There is also a body of literature investigating the siblings of children with chronic health problems (e.g. Cadman, Boyle, & Offord, 1988). The current study is interested in siblings of children with learning disabilities. For this reason previous research which has focused on siblings of children with health problems or physical disabilities will not be reviewed. The literature investigating siblings of children with autism and Down Syndrome will, however, be reviewed due to the high overlap between these diagnoses and that of a learning disability.

Different terminology is common throughout the literature, and research examining siblings of people with mental retardation, learning difficulties and learning disabilities have all been published. All of these differing terms have been included in the current review, but for simplicity will be referred to in the thesis as learning disability. In studies in which the type of disability is unclear or the authors have investigated more than one type of disability the term 'siblings of children with disabilities' will be used.

In summary, it is apparent that the circumstances in which people with learning disabilities have been raised and live have changed considerably over the last 30 years. With the reduction in institutionalisation, increased community presence and, importantly, increased presence within the family unit, the changes experienced are not likely to be limited to individuals with a learning disability, but extend to all those within the family unit, including brothers and sisters. This is likely to influence the self-concept of all concerned. A discussion of self-concept and the research which has influenced the current study is given below.

1.3 Self Concept

The aim of this section is to introduce the notion of self-concept and provide a rationale for the model used within the current study. The model will be described and the literature linking self-concept and siblings of children with disabilities will be reviewed.

1.3.1 Definition and Conceptualisation

The construct of self-concept has a long history of being researched within social sciences (e.g. Wylie, 1974). Its impact in regulating both interpersonal processes (such as social perception and social comparison) and intrapersonal processes (such as information processing and affect regulation) have been of interest to researchers. (Markus & Wurf, 1987).

Unfortunately much of the literature published on self-concept shares the difficulty of definition and the resulting multiplicity of terms used. Byrne (1996) notes five major factors associated with the definition of self-concept. These are a

> "lack of a universally accepted definition, assumed synonymity of self terms, ambiguous distinction between the terms self-concept and self-efficacy and between self-concept and self-esteem, and the tendency to convey informal rather formal (i.e. systematic) notions of self-concept." (p2).

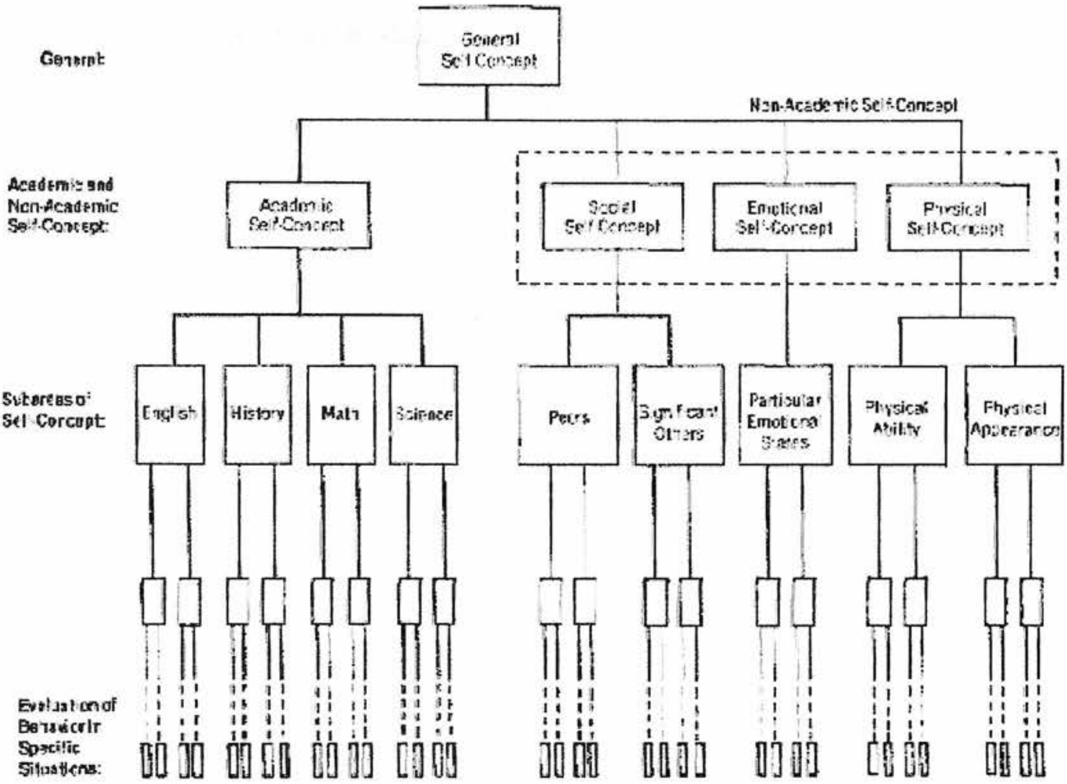
These definitional problems create difficulties for researchers in the area. Firstly, because of the lack of consistency in the terms used and the lack of an accepted definition, it becomes unclear as to whether separate researchers are attempting to measure the same construct. The second problem related to this is that differences in definition at the conceptual level inevitably lead onto problems at the level of measurement (Byrne, 1996). For this reason it is important to provide background information as to the conceptual framework of self-concept used in the current study and subsequently how this relates to the measurement techniques used.

Much early research conceptualised self-concept as a uni-dimensional concept, (e.g. Coopersmith, 1967) however since the advent of construct validity research there is now a great deal of evidence to support the fact that self-concept is multi-dimensional in nature (e.g. Marsh, 1990b). Construct validity research has been used to show that self-concept has been shown to be multidimensional in construct and that as a construct it cannot be fully understood without taking into account this multidimensional structure (e.g. Marsh, 1990b). Due to this evidence self-concept has been conceptualised as a multi-dimensional concept within the current study.

1.3.2 The Shavelson Model

One of the most researched, in terms of construct validity, and best accepted multi-dimensional models of self-concept (e.g. Byrne, 1996; Marsh, 1990b) is that of Shavelson, Hubner and Stanton (1976). This model underpins the self-concept measure used in the current research and proposes that self-concept is a multi-dimensional and hierarchically ordered structure, the original structure of which can be seen in figure 1. This means that separate facets of self-concept, such as academic self-concept and general self-concept can be interpreted as separate constructs, although they are interrelated. The hierarchical structure of the model suggests that the strength of the correlations between separate facets will vary systematically with higher correlations being noted between facets at the top of the structure (e.g. general self-concept) and those in the next layer (e.g. academic self-concept) than those between facets lower down the hierarchical structure (e.g. general self-concept with academic achievement). As different facets of self-concept can be seen and interpreted as separate constructs, the impact of external variables can have varying effects on the different facets of self-concept. An individual may, therefore, report good self-concept in one area, e.g. physical self-concept, but have poor self concept in other areas, e.g. academic self concept.

Figure 1: *Shavelson Model (from Shavelson, Hubner & Stanton, 1976).*



1.3.3. Research with Siblings

The current study is interested in investigating the impact of having a sibling with a learning disability. One of the proposed areas of impact is in relation to the self-concept of the non-disabled sibling. The literature pertaining to issues of having a sibling with a learning disability is reviewed in the next section, however studies that have specifically examined the impact on the self-concept of siblings will be reviewed in this section.

A few early studies have attempted to investigate the impact that having a brother or sister with a learning disability has on the self-concept of the non disabled sibling.

Dyson and Fewell (1989) compared 37 siblings of children with disabilities with 37 matched siblings of normally developing children. Using the Piers-Harris Children's Self-Concept Scale (Piers & Harris, 1969) the authors found no differences on self report scores of self-concept between the two groups. The study did, however, include a number of different types of disability including physical disabilities, autism, and learning disability. In addition, while the authors found no effect of type of disability in their analysis, they only had a very small number in each disability group, making the calculations very under powered and therefore, unlikely to detect any differences. Dyson and Fewell (1989) also noted that there was a great deal of variation within their results with some siblings of children with disabilities reporting high self-concept scores and others reporting low scores. They conclude that the effect of having a sibling with a disability on self-concept is individual and that the mere presence or absence of a sibling with a disability may not affect self-concept. They suggest that other factors may be more influential on self-concept and that this needs to be investigated.

An additional limitation of this study is the self concept measure used i.e. the Pier-Harris Childrens Self-Concept Scale (PHCSCS) (Piers & Harris, 1969). Byrne (1996) argues that more recent measures of self-concept are much more firmly grounded in theory. She goes on to state that the PHCSCS (Piers & Harris, 1969) is predominantly a measure of global self-concept and that the cluster scores should only be used as a guide to identifying areas of concern, as the measure is not truly multi-dimensional. This, she argues, is because the measure was never constructed a priori to measure specific facets of self-concept and that the six dimensions of the

PHCSCS (Piers & Harris, 1969) evolved from a posteriori principal component analyses.

In a larger study examining the self-concept of adolescents, Auletta and DeRosa (1991) compared 70 adolescent siblings of children with profound learning disabilities with 70 adolescent siblings of children with no disabilities. They also looked at maternal self-concept in the two groups. Self-concept was measured by the Tennessee Self-Concept Scale (Fitts, 1965) in all groups. No differences in self-concept scores were reported between either sibling self-concept or maternal self-concept. Again the authors noted a wide variation in scores. It should also be noted that the children with severe learning disabilities were attending special day training centres and did not therefore, attend the same school as their sibling.

The above research suggests that the self-concept of siblings of children with disabilities is not always adversely affected by the mere presence of a disabled child. Both studies, however, noted that there were wide variations in the self-concept scores of siblings with some reporting very negative self-concept and others reporting quite positive self-concept. The research specifically looking at self-concept in siblings of children with disabilities is limited by the mixed groups used in the research and the measures used to assess self-concept. Both research studies were also carried out over 14 years ago and are unlikely to account for the impact of government policies on the way that children with disabilities are raised and educated. These changes, in turn, are likely to impact on siblings, who now have the opportunity to spend increasing amounts of time with their disabled siblings in inclusive programmes. The consequent impact of this increased involvement on sibling self-concept needs to be addressed.

A number of other studies have also considered the self-concept of siblings, but have done so as one variable among many others. This research is reviewed in the section on the impact on siblings below.

1.4 Siblings

This section aims to review the literature pertaining to siblings of children with disabilities. It highlights the impact that having a sibling with a disability can have on the non disabled sibling and discusses the importance of the sibling relationship. The equivocal nature of the findings is considered along with some possible explanations for this, such as the methodological weaknesses of the studies and the possible mediating variables involved.

The sibling relationship is one that is of great importance. It is one of the most powerful, long-lasting human relationships that people have. It is characterised by a wide range of emotional responses which can quickly change from warm to hostile and back again (Dunn & Kendrick, 1982). It is one of the first opportunities for social interaction and through these long term interactions siblings often learn many social skills as the relationships provide opportunities for sharing, companionship, loyalty, rivalry, and the expression of feelings (Powell & Ogle, 1985, p12). Given the importance of the sibling relationship much research has attempted to investigate the impact that one child having a disability can have on the relationship.

1.4.1 Impact on functioning

1.4.1.1 Negative impact

There are a number of studies that have reported a negative impact on siblings of children with disabilities. One such study reported higher levels of anxiety and depression as well as lower levels of self-worth, social acceptance and poorer conduct in siblings of children with a learning disability when compared to a matched control group (McHale & Gamble, 1989). In addition, the authors found that girls reported higher levels of depression than boys did and the boys reported lower levels of perceived competence, although the results did not quite reach levels of significance.

A further finding of the study showed that girls who had siblings with a learning disability experienced lower global self-esteem than any of the other groups in the study. It should be noted that, although higher levels of depression and anxiety were found in siblings of children with a learning disability, the levels reported overall did not reach that of clinical significance. This indicates that, although there may be a difference in depression and anxiety levels between siblings of children with a learning disability and a matched control group, the levels reported are not pathological and would not raise concerns in clinicians.

In a study investigating the impact on preschool children (Lobato, Barbour, Hall & Miller, 1987) boys and girls who had siblings with a disability exhibited higher levels of aggression, as measured by the Child Behaviour Checklist (CBCL:

Achenbach & Edelbrock, 1983) compared to a matched control group of siblings of normally developing children. The boys who had siblings with a disability also exhibited higher levels of depression as rated by their mothers. There were no reported differences in a self-report measure of physical or cognitive competence between the siblings of children with a disability and a control group. Although the authors took great care in matching their control group with the experimental group on quite a large number of variables, the actual population of children with a disability included in the study was quite heterogeneous. It included children with a number of differing disabilities from cerebral palsy and Down syndrome to blindness and head injury. These differing causes of disability may also have an impact on siblings as some disabilities are much more salient and visible than others. Indeed some researchers have found that the type and severity of a disability can be one of the mediating variables in terms of outcome in research on siblings of children with disabilities (Dyson, 1989).

A common finding within the literature seems to be the evidence of behavioural problems in siblings of children with disabilities (Bagenholm & Gillberg, 1991; Coleby, 1995; Cuskelly & Dadds, 1992; Cuskelly & Gunn, 1993; Fisman, Wolf, Ellison, Gillis, Freeman & Szatmari, 1996; Gath, 1974; Gath & Gumley, 1987; Lardieri, Blacher & Swanson, 2000; Lobato et al., 1987). A number of these are early studies, but the more recent study by Lardieri et al. (2000) investigated the quality of sibling relationships as well as parental stress in families both with and without a child with a learning disability. Parents completed the Child Behaviour Checklist (CBCL: Achenbach, 1991) for both the child with a learning disability and their sibling. On the basis of the parental scores for the child with a learning disability, or comparison child in the control group, four groups were created. These were: 1. families who had a child with a learning disability and behaviour problems, 2. families who had a child with a learning disability and no behaviour problems, 3., families who had a child with a behaviour problem and no learning disability and finally, 4. families who had children with no learning disabilities or behaviour problems.

The siblings in each of these four groups then completed both the Sibling Relationship Questionnaire (SRQ, Furman & Buhrmester, 1985) and the Sibling Impact Questionnaire (SIQ, Eisenberg, Baker, & Blacher, 1998), as well as the Youth Self Report section of the CBCL (Achenbach, 1991). The authors found that siblings of children with a learning disability scored higher on externalising behaviours than siblings of children without a learning disability, as rated both by their parents and by their own self-report.

In terms of the sibling relationship significantly higher scores on the Conflict subscale of the SRQ were found for siblings of children with a learning disability as compared to siblings of children without a learning disability. Significant main effects for behaviour problems were found on the Importance/Satisfaction subscale of the SRQ, with siblings of children with behaviour problems scoring lower, and on the Family and Social Impact subscale of the SIQ, with siblings of children with behaviour problems scoring higher. This was a well designed study which reports data from multiple informants and on a number of different variables. The authors do not state, however, that they have made any statistical adjustment for the large number of comparisons that they have carried out. It is, therefore, possible that a number of their significant results may have been achieved purely by chance as a result of doing so many comparisons.

Fisman et al. (1996) examined the adjustment of 46 siblings of children with pervasive developmental disorders, 45 siblings of children with Down syndrome and 46 siblings of developmentally normal children. Teachers, primary caregivers and the siblings themselves were used as informants. Fisman and colleagues (1996) found that parents reported higher levels of internalising and externalising behaviours in siblings of children with pervasive developmental disorders compared to the siblings of the normally developing control group. Teachers also reported higher levels of internalising behaviours in this group compared to both the siblings of children with Down syndrome and the siblings of the control group. The authors acknowledge that the study is limited by the lack of objective observer ratings, being based solely on self-report measures, although potential biases are minimised by the use of multiple informants.

Cuskelly and Dadds (1992) examined behaviour problems in children with Down syndrome and their siblings. They stated that the sisters of children with Down syndrome were reported by mothers, fathers and teachers to be more conduct disordered than brothers. Although there was an increase in the conduct disorder subscale of the Revised Behaviour Problem Checklist (Quay & Peterson, 1983) for this group of sisters, the study lacks an appropriate comparison group of siblings of non disabled children.

The findings from these studies are usually based on parent or teacher reports and may be subject to some reporter bias, depending on the stress levels of the respondent and the nature of their relationship to the identified sibling. Mothers' perspectives on the adjustment of their non-disabled children may be strongly coloured by their own adjustment to their disabled child (Simeonsson and McHale, 1981). In order to try and eliminate these biases some of the more recent studies, as described above, have used multiple informants such as both the parent and teacher and in some cases even the sibling themselves (Coleby, 1995; Cuskelly & Dadds, 1992; Fisman et al., 1996).

As well as looking at externalised problems, such as behaviour and conduct problems, research has also examined the impact of having a sibling with a disability on internalising behaviours such as increased anxiety or depression. A number of researchers have reported an increase in internalising behaviours in these siblings (Coleby, 1995; Fisman et al., 1996; Gold, 1993; Lobato et al., 1987; McHale & Gamble, 1989 Rodrigue, Geffken & Morgan, 1993).

In one of the few UK based studies, by Coleby (1995), the adjustment of siblings of children with learning disabilities was compared to a matched control group. The study compared 41 siblings of children with severe learning disabilities with 41 siblings of a well matched control group. Teachers and parents completed the relevant sections of the Rutter scales (Rutter, 1967) to measure behaviour and the siblings themselves completed the self report measure of manifested anxiety 'What I Think and Feel' (Reynolds & Richmond, 1978). Coleby (1995) reported that the siblings of children with a learning disability scored higher than those in the comparison group on the Rutter scale (Rutter, 1967), as well as on the manifest anxiety scale. In analysing the subgroups she noted that younger siblings demonstrated higher manifest anxiety scores than their comparison group. The author noted in her conclusion that about 20 hypotheses had been tested, but instead of making statistical allowances for this in the analysis of the data she concluded that it was improbable that all the significant results reported were due to chance.

Overall this study would seem to indicate that within the population of the study siblings of children with learning disabilities do suffer from a higher level of adjustment difficulties, including problems with behaviour and anxiety.

Gold (1993) investigated the impact of having a male sibling with autism on depression, social adjustment and the amount of child care responsibilities. She compared 22 siblings of autistic boys with 34 siblings of normally developing brothers. The siblings of boys with autism scored significantly higher on depression scores, as measured by the Children's Depression Inventory (CDI: Kovacs, 1980-1981). Three separate cut-off scores for the CDI have been suggested and based on the first two of these the siblings of boys with autism in this study are not only scoring significantly higher than the control group but scoring in the range that indicates clinical levels of depression. If the most conservative cut-off score is used, however, then only 50 per cent of the siblings of boys with autism score within the clinical range. A further weakness of the study is that when the author compared the CDI scores for the two groups in terms of age of the sibling, adolescents (age 12 and over) or children (aged younger than 12) she found that there were significantly more adolescent siblings scoring higher on depression than those under 12. In fact 91 per cent of siblings of autistic boys scoring above the most conservative cut-off on the CDI were adolescents. This is of relevance as there have been indications within the literature that depression increases in adolescence (Oldehinkel, Wittchen & Schuster, 1999). Another important factor to consider is that, although not significant, there were proportionally more adolescent siblings in the autistic group than in the control group.

1.4.1.2. Causal explanations

In trying to explain the research findings that show a detrimental impact on siblings of children with disabilities, authors have offered a number of causal explanations, including a decrease in parental attention due to the extra demands placed on the parents by the disabled child. In a small pilot study which interviewed siblings of children with disabilities and their parents Burke and Montgomery (2000) found that the siblings of children with disabilities reported receiving less attention from their parents than their disabled brother or sister.

Other studies have noted that siblings of children with disabilities tend to spend more time in caregiving activities related to their sibling with a disability (Lobato et al., 1987; McHale & Gamble, 1989; Stoneman, Brody, Davis & Crapps, 1988) or have to take on more household chores (Bagenholm & Gillberg, 1991).

Stoneman et al. (1988), in a study interviewing the mothers and older siblings of children with a learning disability, found that the older sisters of children with a learning disability had more responsibilities for household tasks and childcare compared to a control group. They also found that, for older siblings of children with a learning disability, increased childcare responsibilities were associated with less positive interaction and more conflict between siblings. The results of the study are difficult to generalise as they focused on a small group of same sex paired siblings from two children families and did not include siblings from mixed sex pairs or from multi-children families.

Early research posited the theory of role tension (Faber, 1960) as an explanation for difficulties experienced by siblings of children with disabilities. This theory relates to the idea that, whatever the chronological age of the learning disabled child, they end up functioning as the youngest sibling in the family. This can create tension for younger siblings of children with a learning disability as they overtake their older sibling developmentally.

As well as looking for factors that may directly influence the sibling relationship some researchers have examined and theorised about more indirect influences. These have included the regulation of sibling responses through parental variables. In particular research has focused on how parental responses to a child with learning disability (especially maternal responses) mediate sibling relationships. In her study described earlier Coleby (1995) found a small but significant correlation between questions assessing the 'burden of care' produced by caring for a child with a learning disability and scores on the siblings' self report of manifest anxiety (Reynolds & Richmond, 1978) and the Rutter A (parent) and Rutter B (teacher) scales (Rutter, 1967). She notes that the effect on siblings may be linked either to a direct effect (increase in time spent in caregiving activities) or an indirect one mediated through the mother.

This idea has also been posited by other authors and fits with a systemic and family systems model of thinking about the impact on siblings of children with learning disabilities. In the study described earlier by Fisman et al. (1996), which examined the siblings of children with pervasive developmental disorders, the authors grouped the independent variables into factors through the use of factor analysis. They reported that the parent distress factor mediated the relationship between parent reports of internalising and externalising behaviour and whether the sibling had a brother or sister with pervasive developmental disorder (PDD), Down syndrome, or no disabilities. They suggest that differences in parent distress between the parents of children with PDD and parents of children with Down syndrome may relate to both factors in the parent as well as to factors in the nature of the child's disability. These results suggest that the parents' ability to cope with having a disabled child in the family may well impact on the adjustment of the healthy sibling.

In summary, the research above suggests that the impact of having a sibling with a learning disability is not straightforward. A number of studies have found an impact on internalising and externalising behaviours, but the research suggests that there may be a number of mediating factors which influence this relationship. These are discussed later. In addition, much of the research cited above suffers from being outdated, having being conducted nearly ten years ago or more. This indicates a need for up to date research into the impact that having a sibling with a learning disability has on the psychosocial adjustment of the non-disabled sibling. This needs to take account of the changes that have occurred in social policies and consequently the changed environments in which these children and their siblings are being raised in. These limitations may also explain why other researchers have found no significant differences between siblings of children with a learning disability and matched control groups on measured variables, while others have described a positive impact. These studies are outlined below.

1.4.1.3. No difference

Contrary to the studies highlighted in the last section, other research has found that there is no impact on siblings of children with disabilities on various measures of adjustment including self-concept, behavioural problems, competence, internalising and externalising behaviours (Auletta & DeRosa, 1991; Dyson, 1989; Hannah & Midlarsky, 1999; Mates, 1990; Rodrigue, Geffken & Morgan, 1993; Singhi, Malhi & Pershad, 2002).

In a study investigating the psychosocial adjustment of siblings of children with cerebral palsy, siblings of children with a learning disability and siblings of healthy children, Singhi et al. (2002) administered a number of self report measures to siblings, including measures of psychosocial adjustment, self-concept, and intelligence. They found no significant differences between the groups on any of the measures and concluded that the

> 'results generally failed to support the proposition that siblings of disabled children are at greater risk for developing psychosocial problems as compared to siblings of healthy children.' (p14)

Unfortunately this study relied solely on the use of self-report measures and hence may be subject to responder bias and effects of socially desirable responses. It may have benefited from the inclusion of reports on adjustment from other sources, such as parents or teachers or alternatively independent observations of behaviour.

In one of the few more recent studies in the area, Hannah and Midlarsky (1999) investigated the impact of having a sibling with a learning disability on competence and psychopathology of their non-disabled siblings, as measured by the Child Behaviour Checklist (CBCL) (Achenbach & Edelbrock, 1983). They compared 50 siblings of children with learning disabilities with 50 siblings of normally developing children on the parent and teacher versions of the CBCL (Achenbach & Edelbrock, 1983) as well as self-report measures of self-esteem. They found that, overall there was no difference in externalising or internalising behaviours on the CBCL (Achenbach & Edelbrock, 1983), between the two groups. They also reported no significant differences between the two groups on their self-report of self-esteem, as measured by the Self-Esteem Inventory (Coopersmith, 1987). The authors did, however, also report two significant results. There were significantly more females who were siblings of children with a learning disability that fell into the clinically significant range for internalisation scores on the CBCL (Achenbach & Edelbrock, 1983) than females who did not have a sibling with a learning disability. In addition, the school performance for brothers of a sibling with a learning disability was significantly lower than all the other groups.

This was a well designed study incorporating information on adjustment from a number of different sources, i.e. teachers, mothers and siblings themselves. It should be noted, however, that a large number of different comparisons were made within the study and the authors did not appear to adjust for the raised alpha level that these multiple calculations would have caused. When making a large number of comparisons you would expect to achieve one significant result in 20 purely by chance.

In a slightly older study Rodrigue and colleagues (1993) compared 19 siblings of children with autism with 20 siblings of children with Down syndrome and 20 siblings of developmentally normal children on measures of perceived competence and measures of social and behavioural adjustment. Perceived competence was assessed via one of two self-report measures depending on chronological age. Social and behavioural adjustment were measured using the Child Behaviour Checklist (CBCL; Achenbach & Edelbrock, 1983). Although the authors reported that siblings of children with autism scored significantly higher than siblings of developmentally normally children on both the internalising and externalising scales of the CBCL (Achenbach & Edelbrock, 1983) their scores were not within the range of clinical significance. The siblings of children with autism did not differ significantly on measures of self-competence or social competence than siblings of children with Down syndrome or siblings of normally developing children. The authors concluded that their results suggested that siblings of children with disabilities are not especially vulnerable to adjustment difficulties.

Mates (1990) in his study of siblings of autistic children also found no difference on measures of self-concept, home behaviour and school behaviour. The study, however, only investigated these variables as an impact of sex of the sibling and family size and it lacked an appropriate control group of siblings of normally developing children. Furthermore, the participants were recruited from a programme designed to offer help and support to families of children with autism, and therefore, one might expect that these siblings might function better than those not receiving any support.

While the remaining studies cited above all found no effect in relation to the impact of having a sibling with a disability they are now fairly outdated studies. The study by Auletta and DeRossa (1991) has been reviewed in the section on self-concept earlier. Given the changes in social policy discussed earlier in the introduction, it is felt that more details of the studies would not contribute further to the current understanding of adjustment difficulties in siblings of children with disabilities within the current social climate.

1.4.1.4. Positive impact

In contrast to the research presented in the previous two sections, some authors have reported that having a sibling with a disability can have positive consequences or mixed results (Cleveland & Miller, 1977; Roeyers & Mycke, 1995; Wilson, Blacher & Baker, 1989). In fact Wilson et al. (1989) reported both positive and negative effects within the one study. They interviewed 24 children about life with their younger severely disabled sibling and concluded that, while most of the siblings reported high levels of involvement and positive aspects of family life, they also acknowledged sadness, and anxiety and these were the most salient aspects mentioned by a minority. Another study with mixed results is that by Coleby (1995) which concluded that, although children are adversely effected by having a sibling with a severe learning disability, they also show increased levels of acceptance.

A recent study by Verte, Roeyers, and Buysse (2003) also reported mixed results in a study examining the adjustment of siblings of children with high functioning autism (i.e. without a concurrent learning disability) compared to that of a control group. Although the authors reported that the siblings of the children with autism exhibited higher levels of internalising and externalising behaviours they also found that the sisters of these children reported a more positive self-concept compared to a control group of siblings of children with no disabilities. The children with autism who participated in this study were recruited via residential treatment programmes, therefore, the siblings of these children only spent weekends and school holidays with them. This factor is likely to have a major influence on the relationship between the child with autism and their sibling and is significantly different from the living circumstances of the control group.

Roeyers and Mycke (1995) looked at the quality of sibling relationships and coping with stressful events in 20 siblings of children with autism compared to 20 siblings of children with a learning disability and 20 siblings of children who had no physical or developmental disabilities. The quality of the sibling relationship was assessed using a translated version of the Sibling Inventory of Behaviour (Scheaffer & Edgerton, 1979). The authors found that, overall, there was no significant difference between the groups on the quality of their relationship, although they noted a trend for siblings of children with disabilities to rate their relationships more positively than siblings of children without disabilities. They did find, however, that siblings of children with autism and siblings of children with a learning disability reported significantly higher levels of acceptance than the siblings of normally developing children. Although Roeyers and Mycke (1995) present their results as a positive finding, they also found that siblings of children with autism reported greater levels of embarrassment than the other two groups. They noted that there may have been an element of selection bias in their results as the families of the siblings of children with autism were recruited via parent's associations, which meant that they had requested help or information about the syndrome. It should also be noted that the Sibling Inventory of Behaviour was originally designed as a parental questionnaire, but was used in the study as a self-report measure completed by the siblings.

Cleveland and Miller (1977) asked siblings of adults with learning disabilities to rate their childhood experiences retrospectively and found that most reported that they and their family had coped well with the presence of a child with a learning disability. Despite the obvious limitations of this being a retrospective self-report study, it also lacks much relevance due to the age of the study. In fact participants were recruited via their siblings who were in institutions, a situation which is unlikely in today's society due to the changes in social policy addressed earlier. Again this highlights the need for up to date research in the area.

1.4.2. Impact on the Sibling Relationship

The importance of sibling relationships has been highlighted earlier and the quality of the sibling relationship is another factor that has been investigated as an area of interest in the literature. As mentioned above, the sibling relationship is likely to be one of the longest lasting relationships that an individual has throughout his/her life and therefore the quality of this relationship is of great importance. The qualitative aspects of sibling relationships, when one sibling has a disability, have been investigated through naturalistic observations (Brody, Stoneman, Davis & Crapps, 1991; Stoneman, Brody, Davis & Crapps, 1987; Stoneman et al., 1988), as well as by self-report from the siblings themselves (Begun, 1989; Eisenberg, Baker & Blacher, 1998; Roeyers & Mycke, 1995; Wilson, Blacher & Baker, 1989).

In a series of studies using naturalistic in-home observations, Stoneman and colleagues (1987, 1988, 1991) noted that sibling relationships were characterised by greater role asymmetry (where one sibling is much more dominant than the other) when compared to a control group of siblings where neither one had a disability. They found that the older siblings accommodated their younger brother or sister with a learning disability by their selection of activities, using less object play (Stoneman, Brody, Davis & Crapps, 1987). Older siblings and sisters in particular, were noted to assume more childcare responsibilities. These greater responsibilities were related to increased sibling conflict as well as decreased out of home activities and peer contacts (Stoneman, Brody, Davis & Crapps, 1988). In interviews with older siblings of children with severe disabilities, Wilson and colleagues noted that the siblings reported high levels of daily involvement and strong feelings of responsibility, and they reported a strong emphasis on positive aspects of family life and having a disabled sibling (Wilson, Blacher & Baker, 1989).

For younger siblings of children with a learning disability it has been noted that there is a change in role asymmetry with the younger sibling becoming more dominant. This is the opposite to that which has been observed in non-disabled sibling pairs (Brody, Stoneman, Davis & Crapps, 1991). The increased childcare roles of the younger siblings were found to be related to less conflict within sibling relationships (Stoneman, Brody, Davis, Crapps & Malone, 1991).

The impact on the sibling relationship of having the disabled child in a residential placement has also been examined (Eisnberg, Baker & Blacher, 1998). It was found that adolescent siblings had less intense relationships, with less warmth and less conflict, when their brother or sister lived outside the home compared to both adolescents who had a sibling with a learning disability living at home and adolescents with a non-disabled sibling. Less intimate and competitive relationships have also been reported by siblings of profoundly developmentally disabled individuals when compared to the sibling relationship that the same children have with their other non-disabled siblings (Begun, 1989). This study, however, only made comparisons within the same family and it is likely that a child with a developmental disability will affect all of the relationships within a family system. No comparisons with children with developmentally normal siblings were made.

In summary, the research to date on siblings of children with disabilities has produced equivocal findings, with some studies finding a negative impact, whilst others have found no impact, mixed results or a positive impact. The literature pertaining to these varying levels of impact has been reviewed above. The difference in outcomes may, in part, be due to methodological issues, however it has been suggested that mediating variables also have an impact (Hannah & Midlarsky, 1999). The nature of such mediating variables and some of the methodological limitations will be discussed in the next sections.

1.5 Methodological Limitations

Many of the methodological weakness of studies investigating the impact of having a sibling with a disability have been highlighted in the research reviewed above. They have included the source from which data has been collected, such as the use of single or multiple informants, and the use of relevant control groups (e.g. Andersson, 1988; Mates, 1990). Some studies have investigated the impact on siblings by only collecting data from one information source, such as the siblings themselves (e.g.

Dyson & Fewell, 1989) or their parents (e.g. Cuskelly & Dadds, 1992) whereas better designed studies make use of multiple informants (e.g. Coleby, 1995).

Another limitation of the research in this area in general is the multiplicity of terms used and the variety of disabilities that they cover. The term disability has been used to cover many different things including individuals with autism, Down syndrome and even physical disabilities. It also covers individuals with complex multiple disabilities and various levels of learning disability. As a consequence much of the research suffers from either being poorly defined in terms of the population being studied or lacks generalisability due to the selective nature of the population studied.

1.6 Mediating Variables

The literature on siblings of children with disabilities shows equivocal and disparate findings and this is often attributed to mediating variables as well as some of the methodological weaknesses already discussed. Much research has focused on what these mediating variables may be, including the age and sex of the sibling, birth order and socio-economic status, family size, and parental adjustment factors. Some of the attempts offered by authors to rationalise their findings have been discussed alongside the literature reviewed above. This section aims to give a broad overview of these variables and a brief look at the literature relating to them.

Many of the more recent studies that have examined the impact of having a sibling with a disability have failed to find that static variables such as age and sex have an effect on adjustment. For example Singhi and colleagues (2002), in their study examining the adjustment of siblings of children with cerebral palsy, siblings of children with learning disabilities, and siblings of normally developing children, reported that the sex and age of the child were not found to be correlated with either psychological adjustment or self-concept scores of the siblings of children with disabilities. The authors did however report that socio-economic status was positively related to the adjustment scores in all groups.

Rodrigue and colleagues (Rodrigue, Geffken & Morgan, 1993) in their study examining the impact of having a sibling with autism, a sibling with a learning disability or a developmentally normal sibling used correlational analyses to investigate which factors were associated with sibling adjustment. Two significant factors were found to be related to adjustment; age of sibling and parental marital satisfaction. Older siblings were found to have more internalising and externalising behaviours and higher marital satisfaction was found to be associated with higher levels of self-esteem in the siblings of children with autism. This study, as with many others, used correlational analyses to investigate which factors are associated with sibling adjustment. It should be noted, however, that correlations only imply an association between variables and it does not imply causality. It is also possible for correlations to be significant even when they are relatively weak.

In keeping with this, Dyson (1989) suggests caution about the interpretation of mediating factors as, although the correlations between the mediating factors and adjustment in her study reached levels of significance, they were still fairly weak.

It would appear then that the literature that attempts to investigate mediating variables is also inconclusive and suffers from methodological weaknesses. This would suggest that it is unlikely that there is a simple explanation for the discrepancies found in the literature on sibling adjustment. Given the variation in the impact of mediating variables in the literature it is not an area that can be investigated in the current study.

1.7 Impact on Schooling

There are no studies to date that directly assess the impact that having a sibling with a disability can have on a child's or adolescent's school experience. A number of studies have, however, included school performance variables whilst investigating the impact of having a sibling with a disability (Andersson, 1988; Gath, 1974; Gath & Gumley, 1987; Hannah & Midlarsky, 1999).

In a study designed to look at the social relations of siblings of children with a learning disability in Sweden, Andersson (1988) compared 85 siblings of children with a learning disability with their classmates. The author concluded that the former group were more socially isolated in school as well as in their leisure time compared to their classmates. However there was a huge difference in the size of the two groups compared, with 85 siblings of children with a learning disability being included in the analyses compared with 1782 of their classmates. It is also not made clear from the study whether the control group also had siblings or were simply children attending the same school.

An early study by Gath (1974) explored sibling reactions to having a child with a learning disability in the family and found that the older sisters of children with learning disabilities were regarded as failures in the educational system. This study, however, lacked a control group for comparison.

In a better controlled study, looking at siblings of children with Down Syndrome and comparing them with siblings of children with other forms of learning disability, the siblings of the latter group showed more behaviour disturbances in school and had more reading problems (Gath & Gumley, 1987). This was also true when they were compared to a control group of children who were selected for comparison from the same class as the siblings of the learning disabled children. It should be noted, however, that the members of the comparison group of children from the same class were selected by means of being the next person on the register and were not a matched control group.

As mentioned earlier, in their study investigating adjustment and competence in siblings of children with a learning disability Hannah and Midlarsky (1999) reported that more boys who had a sibling with a learning disability had difficulty in school functioning. This was measured by teachers' ratings of competence in areas such as working hard, behaving appropriately, learning, and being happy. It should be noted that the children with learning disabilities in this study were all in attendance at a special school and therefore, were at a different school to that of their siblings.

The limited research in this area, reviewed above, would suggest that the impact that having a sibling with a disability has on a child's school experience is an area that remains under researched and the factors that make a difference to the non-disabled sibling's school experience even more so. One major factor that can be hypothesised to influence school experience is the placement of the disabled child. The social experience that the sibling gains is likely to be different depending on the type of school attended by the child with a disability (Burke & Montgomery, 2000). If the child with a disability attends a special school then this will limit the opportunity for him/her to participate in shared school based activities with their non-disabled sibling. On the other hand, if the disabled child is included in mainstream schooling then these opportunities are likely to increase. In a review of the literature on siblings of children with a learning disability, Dyson (1993) concluded that,

> 'because of the significant role of academic performance in the adjustment of children with a learning disability, the school environment may also influence the siblings' development.' p.242

Another factor influencing the school experience of siblings of children with disabilities is the expectations placed on them by teachers. Richey and Ysseldyke (1983) investigated how teachers' expectations of real and hypothetical younger siblings of children with learning disabilities influenced their evaluation of how the younger sibling would perform. They found that for younger siblings of children with learning disabilities, teachers held lower expectations about their performance compared to younger siblings of non disabled children (Richey & Ysseldyke, 1983). The data was, however, collected through a questionnaire designed by the authors for the study and had not been validated elsewhere. The study using the younger siblings of children with learning disabilities was conducted at the start of the academic year, in order to avoid the teacher's actual classroom experience of the sibling influencing their judgement. This meant that the contact with the younger sibling was theoretically controlled for. However the length of time taken to collect the results meant that some of the teachers had already had the opportunity to spend time in the classroom with the younger siblings.

With the adoption of inclusion policies the chances of attending the same school as a brother or sister who has a learning disability is becoming increasingly likely. Powell and Ogle (1985) suggest that this can either be a positive or a negative experience for a sibling, with the outcome for the sibling being mediated by the structure of the school programme and by the responses and expectations of the teachers and parents. They identify five major concerns that siblings of children with disabilities have to face when their disabled brother or sister attends the same school as them. These are competition, the 'brother's keeper' phenomenon, friends, teasing, and the 'mysterious' special education programme. Each of these ideas posited by Powell and Ogle (1985) will be discussed in more detail.

Competition

By competition Powell and Ogle (1985) refer to the possible problems that may occur from natural sibling rivalry about academic, sporting or other school achievements. They note that, when one sibling has a disability, the balance of competition is likely to be offset in favour of the non disabled sibling and they warn that competition becomes unhealthy when only the achievements of one child are recognised.

Brother's keeper

The 'brother's keeper' phenomenon refers to the idea that some children and young people are required (or worry that they may be required) to act as their sibling's caregiver at school. They may be asked to travel with their disabled sibling, aid in interpreting communication, pass messages between the teachers and parents or other activities. By helping their disabled brother or sister in such ways these siblings often miss out on opportunities for informal contact with their friends or peer group and may feel burdened by such additional responsibilities.

Friends

In terms of friends, Powell and Ogle (1985) highlight that siblings of children with disabilities often have concerns about the reactions that their friends may have to their disabled brother or sister. They suggest that some may not have even told their friends about their brother or sister for fear of rejection.

Teasing

Related to the above point, Powell and Ogle (1985) suggest that the disabled child may be subject to teasing by others in the school and that this can represent a great source of stress for the non-disabled sibling. They are then faced with how to handle such situations for the best, e.g. by getting angry, by joining in or by reporting incidents to teachers or parents.

'Mysterious' special education programme

The final area of concern for siblings highlighted by Powell and Ogle (1985) is what they term the 'mysterious' special education programme. By this, they refer to the limited knowledge that a sibling may have of what happens to their brother or sister at school as part of a special education programme. This is likely to depend on the structure of the school and how integrated their education programme is, as well as the reputation within the school that any special resource unit may hold.

Although Powell and Ogle (1985) present these as the five major concerns likely to face siblings of children with disabilities within a school setting, and go on to offer strategies for dealing with these concerns, they fail to offer any research evidence to substantiate their concerns. Instead much of the contents of the book seems to be based on the authors' work as founders of the Sibling Information Network, in which they state they have invested a great deal of time listening to the voice of siblings. It is likely then that the conclusions that they have drawn within the book may well be valid but are more likely to based on the views of a select group of children who have elected (or their parents have elected) to be part of this select network. Therefore the generalisability of the results can be called into question.

The type of school attended by children with a disability and its impact on their self-concept and that of their siblings was investigated by Harvey and Greenway (1984). The participants in their study were children with physical handicaps and their siblings and they measured self-concept via the Piers-Harris Self Concept Scale

(Piers & Harris, 1969). Among their findings they noted that both children with physical disabilities and their siblings reported lower self-concept than controls. Within the sibling group they found that those siblings who had a brother or sister with a physical disability who attended a normal school had lower self-concept than those in the control group. In summarising their finding the authors conclude that

> 'it is the presence or absence of the handicapped target child at the local school rather than away at a special school which may be the critical factor in terms of the effect of the handicap upon the non-handicapped sibling.' (p282)

This research, although with siblings of children with physical disabilities, highlights the importance of investigating the type of school setting attended by children with disabilities and their siblings. It suggests that having a sibling with a disability attending the local school with their non disabled sibling has a negative impact on the self-concept of the non disabled sibling. The current research is interested in ascertaining whether this is the case for siblings of children with learning disabilities as well as for those with physical disabilities.

There is currently little within the scientific literature that addresses the question of how having a sibling with a disability can impact on the school experience of the non disabled sibling. One charitable organisation (Contact a Family), however has produced a fact sheet on siblings and special needs (1998). In this fact sheet they report that a study interviewing 29 siblings of children with disabilities highlighted a number of difficulties. These were

- Being teased or bullied at school
- Feeling jealous at the amount of attention their brother or sister received

- Feeling resentful because family outings were limited and infrequent
- Having their sleep disturbed and feeling tired at school
- Finding it hard to complete homework
- Being embarrassed about their brother or sister's behaviour in public, usually because of the reaction of others. (p3)

Although this research is not taken directly from a scientific journal, it nonetheless appears in documentation freely available to families and siblings of children with disabilities. This can only add more weight to the need for good quality up to date research investigating the impact on these siblings, particularly relating to their school experience.

Overall it seems that many authors have alluded to the importance of the school environment when researching the impact that having a brother or sister with a learning disability has on the non-disabled sibling. Despite this there does not appear to be any studies within the literature that examine this factor as a main variable in investigating the impact of having a sibling with a learning disability. This is therefore the aim of the current study.

1.8 Summary

The translation of the principles of normalisation into social policy has led to a radical shift in service provision for people with a learning disability. Institutional care has been replaced by community living and segregated education and special schooling is moving increasingly towards inclusion. This has led to an interest in the impact of increased contact between children with a learning disability and their siblings. The research reviewed above has illustrated that there has been equivocal findings in the literature. Some studies have found that having a sibling with a learning disability can lead to greater levels of externalising or behaviour problems (e.g. Lardieri et al., 2000; Lobato et al., 1987) or a greater incidence of internalising problems (e.g. Fisman et al., 1996; Coleby, 1995). Other studies have reported that there is no impact on children or young people as a result of having a sibling with a learning disability (e.g. Singhi et al., 2002). Another set of studies have reported that having a sibling with a learning disability can have a positive impact on the non-disabled child (e.g. Roeyers & Mycke, 1995). In trying to explain these disparate findings authors have focused on a number of mediating variables, such as the sex of the disabled child or their sibling, or birth order effects. Attempts to identify mediating variables, however, have also yielded mixed results. One mediating variable that has not yet been investigated fully is the impact of the school environment on sibling adjustment. A number of authors have made reference to the possible importance of this factor, but to date there are no studies designed to specifically investigate this.

1.9 Rationale for Current Research

Despite the importance of a child's relationship with his or her siblings in his or her overall development, previous research into the effects of one sibling having a disability has yielded inconsistent results. A potentially central factor in the adjustment of siblings of children with a learning disability, which has yet to be investigated, is the nature of their school experience. With the increasing number of children with disabilities being included in mainstream schooling in accordance with recent policies (The Standards in Scotland's Schools etc Act, Scottish Executive, 2000b) more and more children and their sibling with a learning disability will be attending the same school. This will inevitably mean that siblings of children with learning disabilities will be presented with more opportunities to interact with their learning disabled sibling and that some of these interactions will take place in the same environment as the siblings' peer interactions. The purpose of the current study is to investigate the impact of attending school with a sibling who has a learning disability. In particular the study is interested in how this affects the self-concept of the sibling as well as the impact on the sibling relationship. As noted above, research to date would suggest that increased contact with one's sibling with a disability may lead to more intense sibling relationships, characterised by increased conflict, but possibly also increased warmth. Previous research also suggests that increased contact with siblings with a learning disability will impact on self concept.

1.10. Aims and Hypotheses

The overall aim of the current study is to investigate the impact that attending either the same school as, or different school from, a sibling with a learning disability has on the school experience, self-concept and sibling relationship of the non-disabled sibling.

The specific hypotheses are:

1. That the self-concept of adolescents who attend school with their learning disabled sibling will be lower than those who have a learning disabled sibling who goes to special school.

2. That the self-concept of adolescents who attend school with their learning disabled sibling will also be lower than a control group of adolescents who have a non-disabled sibling at the same school as them.
3. That the self-concept of both groups of adolescents who have siblings who have a learning disability will be lower than a control group of non-disabled siblings, regardless of school placement.
4. That the adolescents who have a sibling with a learning disability who attends the same school as them will have more intense sibling relationships, with more conflict and be more equal in status than adolescents who have siblings with a learning disability who attend special school.
5. That the adolescents who have a sibling with a learning disability who attends the same school as them will have less intense sibling relationships, with less conflict and more unequal relationships than a control group of normally developing siblings who both attend the same school.
6. That both groups of adolescents who have siblings with a learning disability will have less intense sibling relationships, with less conflict and more unequal relationships than a control group of non-disabled siblings, regardless of school placement.

2. METHOD

2.1. Participants

In total 53 schools were approached from four different education authorities. Ethical approval was sought and received to approach the schools from the Education Departments responsible for each area (see appendix 1 for letters of approval). From the schools approached 29 (55%) agreed to participate. Using the techniques described below participating schools then identified pupils who met the inclusion criteria. There were three groups comprising:

The Special School Group: A total of 144 pupils who had siblings at a special school

The Inclusion Group: 78 pupils who had siblings with a learning disability who attended the same mainstream school as them

The Control group: 80 pupils as a control group of normally developing brothers and sisters attending the same school as each other.

Parental consent was sought for those pupils identified by schools. From the consent forms received data was gathered from 17 pupils (12% return rate) in the special school group, 15 pupils (19% return rate) in the inclusion group, and 22 pupils (28% return rate) in the control group. Table 1 shows the demographic characteristics of each of the three groups.

Table 1: *Demographic Characteristics of the three groups.*

	N	No. Males	No. Females	Older than Sibling	Younger than Sibling	Mean Age (SD)	Mean no. of siblings (SD)
Inclusion Group	15	4	11	5	10	14.13 (0.99)	2.4 (0.83)
Special School Group	17	2	12	6	11	13.71 (1.05)	1.65 (0.93)
Control Group	22	8	14	9	13	14.82 (1.47)	1.55 (0.67)
Total	54	17	37	20	34	14.28 (1.29)	1.81 (0.87)

2.2. Design

A between groups design was employed to compare the self-concept and quality of sibling relationships across three groups. These groups were

1. Adolescents who had siblings with a learning disability who attended the same mainstream school as them. This group will be known as the 'inclusion group'.
2. Adolescents who had siblings with a learning disability who attended a special school. This group will be known as the 'special school group'.
3. Adolescents who had another normally developing sibling attending the same mainstream school as them. This group will be known as the 'control group'.

2.3. Measures

The following measures were used:

2.3.1. Self-Description Questionnaire- II (Marsh, 1990a)

The self-description questionnaire – II (SDQ-II) is a 102 item self-report questionnaire. It comprises 11 subscales, which are split into 7 non-academic (Physical Ability, Physical Appearance, Peer Relations – Same Sex, Peer Relations – Opposite Sex, Parent Relations, Emotional Stability, and Honesty/Trustworthiness) 3 academic (Reading, Mathematics, and General - School), and overall self-concept (General – Self). Items are scored on a six point Likert scale, ranging from true to false, with positively and negatively worded questions balanced within each subscale in order to offset acquiescent response biases. Adolescents are asked to rate their responses to simple declarative statements, such as 'Overall, I am a failure' as part of the general self subscale and 'I am good at most school subjects', as part of the general school subscale. The subscales are calculated by summing the item scores for each subscale. A total self-concept score is also derived by adding together all of the subscale scores.

The SDQ-II has been shown to have good internal consistency. Coefficient alphas were computed from the total normative sample (N = 5,494) and varied from 0.83 for the Emotional Stability subscale to 0.91 for the Physical Appearance subscale. The internal consistency coefficient for the Total Self-Concept score was reported to be 0.94 (Marsh, 1990a). In a study by Marsh & Peart (1988), described in the SDQ manual, test re-test reliability measured in a cohort of 137 high school girls reported stability coeffficients between 0.72 for Emotional Stability and 0.88 for Mathematics, with the median coefficient being 0.79.

In her book examining self-concept measures across the life span (Byrne, 1996) concludes that, for use with adolescents, the SDQ-II is the most validated self-concept measure, which has established its psychometric properties via extensive testing. For this reason it was considered the most appropriate measure to use for the current study.

2.3.2. Sibling Relationship Questionnaire *(SRQ: Furman & Buhrmester, 1985)*

This measure is comprised of 48 individual items which measure 16 dimensions of the sibling relationship, using a five-point Likert format. Children are asked to respond to questions such as 'How much do you show (insert sibling's name) how to do things he or she doesn't know how to do?' and 'How much do you and (insert sibling's name) like the same things?' Possible responses range from 'Hardly at all' through to 'Extremely much'. The structure of responses relating to the six items examining maternal and paternal partiality (i.e. 'Who usually gets treated better by your mother, you or this sibling?') are slightly different, ranging from 'My sibling almost always gets treated better', to 'I almost always get treated better'. The sixteen subscales of the measure each contain three items and are computed by taking an average of the three items scores. These sixteen subscales are then converted to four factors: warmth/closeness (composed of scale scores for intimacy, prosocial behaviour, companionship, similarity, admiration by sibling, admiration of sibling and affection items), relative power/status (composed of scale scores for nurturance of sibling and dominance of sibling items minus scale scores for nurturance by sibling and dominance by sibling items), conflict (composed of scale scores for quarrelling, antagonism and competition items), and rivalry (composed of scale scores for maternal partiality and paternal partiality items). These four factors (warmth/closeness, relative power/status, conflict, rivalry) are the scores yielded by the measure.

In a study by Buhrmester & Furman (1990) examining the perceptions of sibling relationships during middle childhood and early adolescence the SRQ was administered to children in grades 3, 6, 9, and 12. The average ages for the four groups were 8 years 4 months, 11 years 4 months, 14 years 4 months and 17 years 5 months respectively. Internal consistency coefficients for the four groups were 0.71, 0.79, 0.77, and 0.81 respectively. Test-re-test reliability for the sixteen subscales have been reported as ranging from 0.58 to 0.86 with a mean of 0.71 (Furman & Buhrmester, 1985).

This measure was selected for use in the current study as there are only a few instruments designed to measure the quality of sibling relationships that have sufficient psychometric data available. The alternative choice was the Sibling Inventory of Behaviour (SIB: Schaeffer & Edgerton, 1981). The SRQ (Furman & Buhrmester, 1985) has been developed more recently and was considered to yield factor scores that were more relevant to the current study. It has also been developed as part of a published study, whereas the SIB (although it has been used in published research) is from an unpublished manuscript.

The authors of the SRQ were approached and permission was received from them for the use of their questionnaire within the current study (see appendix 2 for permission). The four factor scores generated were used to assess whether there was any difference in the quality of the sibling relationship across the three groups.

2.3.3. Demographic Questionnaire

A short demographic questionnaire designed by the researcher (see appendix 3) was sent to parents. This questionnaire was designed to gather information about family variables that have been suggested to be mediating variables within the literature. These included birth order of siblings (Coleby, 1995), sex of siblings (Hannah & Midlarsky, 1999) and size of sibship (the number of siblings a person has) (Dyson, 1989). This was used in the present study to establish the number of participants within each of the categories, and to detect whether there was any significant differences in these variables across the three groups.

2.3.4. Semi-Structured Interview

A semi-structured interview was also designed by the researcher in order to examine the more qualitative aspects of the young persons' school experience in relation to their sibling. This was done as no standardised measure exists to assess this. The interview questions attempt to elicit information from the participants about the aspects they feel are positive and/or negative of having their brother or sister at the same/or a different school to them (see appendix 3). The semi-structured interview also encompasses a five point Likert scale on which the young person is asked to rate overall how they feel about having a sibling at school with them (or not at school with them in the case of young people who have siblings at special school). The Likert scale is anchored at the positive end by the response 'Like a lot' and at the negative end with 'Dislike a lot'.

Responses were initially categorised into positive and negative statements and then informally grouped into similar themes. The predominant use for the data was to provide some depth to the quantitative results of the study and individual anonymised quotes were used to highlight possible explanations for the results found in the study.

2.4. Procedure

Appropriate consent was gained from the Director of Education for each local education authority asked to participate in the study. After this was received the Head Teachers of secondary schools within the area were approached by telephone and/or letter. Those schools then interested in participating in the study identified young people who met inclusion criteria. Inclusion and exclusion criteria were as follows:

Inclusion

Pupils were chosen for inclusion in the study by the most relevant teacher in the school. This was usually either the Head Teacher or the teacher in charge of learning support within the school. Due to time constraints of the study it was not feasible to formally assess whether pupils met criteria for having a learning disability (as identified by DSM-IV, APA, 1995, and defined in the introduction). The teachers were sent information about the study (appendix 4) and had the opportunity to discuss the study with the researcher. The teachers then identified children who they felt met the criteria for having a learning disability. The inclusion criteria and selection process for each of the three groups is described below.

Siblings of children at special schools

These pupils were identified via special schools. The special schools approached identified pupils within their school that they perceived had a learning disability and whom they knew had a brother or sister at a mainstream secondary school who was not receiving any additional support. The sibling at mainstream school had to be at least 13 years old.

Siblings of children with a learning disability included in mainstream schools.

These pupils were identified through the mainstream secondary schools that participated in the study, as described above. Pupils were included in the study if they were identified as having a brother or sister attending the same school as them who received additional support for a learning disability. Again the sibling without a learning disability had to be at least 13 years old.

Control Group

These pupils were also identified through the mainstream secondary schools that participated in the study. Pupils were included in the control group if they were at least 13 years old and went to a mainstream school with a brother or sister and neither pupil had additional support needs for any difficulties.

Exclusion

Pupils who met the above criteria, but who the school felt did not have the necessary communications skills, or those for whom it was felt participation would be detrimental, were not asked to take part in the study.

Pupils who had siblings receiving additional support solely for behavioural problems or physical disabilities without a concurrent learning disability were also excluded from the study. If the siblings were receiving support for behavioural and/or physical disabilities as well as having a learning disability a decision was made to include them in the study. This was made in order to increase the numbers of pupils identified as potential participants.

Once potential participants were identified parental information sheets, consent forms (appendix 4) and a demographic questionnaire (appendix 3) were then sent via the school to the families. Consent forms, along with completed demographic questionnaires, were returned via a pre-paid envelope direct to the researcher.

After receiving parental consent arrangements were made to see each young person at the school they attended. Participants were either seen individually or in small groups of no more than two. At the start of the interview participants were given a copy of the participant information sheet (appendix 4) and given an opportunity to ask any questions about the research. Before proceeding participants were asked to sign two copies of the participant consent form (appendix 4), one for the researcher and one to keep.

The participants were then given clear standardised guidelines, as per the manual, on how to complete the self-report measures, the Sibling Relationship Questionnaire (Furhman & Buhrmester, 1985) and the Self-Description Questionnaire – II (Marsh, 1990a). They were reminded that all their answers would be treated confidentially and that they were free to withdraw from the study at any time, with no consequences and without having to provide a reason. The young people were encouraged to answer as truthfully and honestly as possible based on their personal experiences. For those pupils who participated in the study as part of a small group care was taken to ensure that they were seated apart from each other and that they did not discuss the responses to their questions.

As well as completing the two self-report measures described above each participant was met individually and administered a semi-structured interview designed to gather information about their school experience in relation to their sibling. At the end of the semi-structured interview each young person was asked to rate overall how they felt about being at school/or not at school with their brother or sister on a five point Likert rating. Finally they were given the opportunity to add any further information that they felt would be useful or of interest.

2.5. Statistical Analysis

The results of all of the questionnaires were collated and put into an SPSS database. They were then analysed using parametric statistics after the data was checked for normality.

A prospective power analysis was carried out to determine the number of participants required for each group. Power was set at .80 according to convention set by Cohen (1988). A review of previous literature showed that there has only been one previous study to date that has considered school placement as a factor (Harvey & Greenway, 1984). Calculation of an effect size based on their findings revealed a large effect size (d = 0.87) for the difference between children who had a sibling attending mainstream school and that of a control group of children. As Harvey and Greenway's (1984) study was the most comparable in terms of design this effect size was used to calculate the number of participants needed in the current study in order to achieve a large effect size with a power of .80 (Cohen, 1988). To compare three groups using a one way ANOVA it was determined that approximately 21 participants were needed in each group.

3. RESULTS

3.1. Descriptive statistics:

The number of participants and the demographic data relevant to each of the three groups were reported in the method section and summarised in table 1 in that section.

Participants each completed two standardised self-report measures. The first of these was the Self Description Questionnaire (SDQ-II: Marsh, 1990a). As described in the method section this measure yields 11 scores which measure different facets of self-concept and an overall total self-concept score. The median and range for the participants in each of the three groups are presented in table 2. The use of the median and range was deemed appropriate as there was a significant negative skew in a number of the subscales.

***Table 2:** Median and Range of T Scores for each section of the SDQ-II for each of the three groups.*

	Inclusion Group		Special School Group		Control Group	
SDQ-II Scale T Score	**Median**	**Range**	**Median**	**Range**	**Median**	**Range**
Maths	52.0	35.0	54.0	33.0	50.0	30.0
Physical Appearance	54.0	35.0	54.0	38.0	52.5	37.0
General Self	52.0	29.0	54.0	39.0	54.0	29.0
Honesty-Trustworthiness	54.0	33.0	48.0	42.0	56.5	22.0
Physical Abilities	54.0	29.0	53.0	30.0	53.0	36.0
Verbal	47.0	36.0	54.0	29.0	49.0	40.0
Emotional Stability	50.0	40.0	43.0	32.0	52.0	28.0
Parent Relations	53.0	21.0	51.0	40.0	54.0	24.0
General School	51.0	38.0	52.0	27.0	54.5	34.0
Same-Sex Relations	54.0	44.0	58.0	22.0	56.5	48.0
Opposite-Sex Relations	54.0	28.0	58.0	31.0	58.0	41.0
Total	50.0	37.0	55.0	41.0	53.0	24.0

The second measure completed by all participants was the Sibling Relationship Questionnaire (SRQ: Furman & Buhrmester, 1985). The median and range for each of the three groups are reported due to a significant positive skew found in one of the subscales and can be found in table 3.

***Table 3**: Median and Range of the SRQ Factor scores for each of the three groups.*

	Inclusion Group		**Special School Group**		**Control Group**	
SRQ Factor Scores	**Median**	**Range**	**Median**	**Range**	**Median**	**Range**
Warmth/Closeness	23.66	16.0	23.0	24.0	22.33	16.0
Relative Status/Power	0.66	5.33	2.0	5.66	0.50	12.66
Conflict	7.66	8.33	6.66	9.33	9.50	11.33
Rivalry	0.33	2.33	0.83	4.0	0.33	2.0

The results were all entered into a database and analysed using the SPSS statistical package. Initially the data was explored to establish whether it was normally distributed and met the underlying assumptions necessary for parametric statistics to be carried out.

*3.1.1. **Self Description Questionnaire -II** (SDQ-II: Marsh, 1990a)*

The total raw score for each subscale of the SDQ-II was converted to a T score using the tables provided in the manual based on the sex of the participant (Marsh, 1990a). This was done in accordance with advice in the manual as it reports that the effect of gender is significantly different across most of the SDQ-II scales with some scales favouring males and some favouring females. The conversion of the raw scores to T scores using the appropriate table eliminates the effect of any gender differences in the SDQ data.

Inspection of the data revealed that there were several departures from normality on the various Self-Description Questionnaire (SDQ-II: Marsh, 1990a) subscale T scores. These were generally in the direction of a negative skew. In order to remove this skew and make the data more normal the skewed subscales were transformed according to the appropriate transformation suggested by Tabachnik and Fiddel (2001a, p83). Inspection of the transformed data, via tests for skewness and kurtosis (SPSS explore), confirmed that any significant departure from normality had been removed.

The data was deemed to have an acceptable level of variance between the three groups (Tahachnik & Fiddel, 2001b, p85), and therefore did not violate the assumption of homogeneity of variance.

It was therefore deemed acceptable to analyse the data further using parametric statistics as they have been shown to be sufficiently robust and can withstand some violation of their underlying assumptions (Clark-Carter, 2004; Cramer, 1998, Greene & D'Oliveria, 1982; Howell, 1997).

3.2. Inferential statistics

3.2.1.Demographic Variables

3.2.1.1. Sex

As there were differing levels of males and females who participated in the current study a chi squared test was performed to establish whether these differences were significant. The results revealed that there was a significant difference in the overall proportion of males to females participating in the study, $\chi^2 = 7.40$, df = 1, $p < .01$. Although there was a significant difference in the overall proportion of females to males within the current study the difference did not quite reach levels of significance when the three groups were analysed separately, $\chi^2 = 3.27$, df = 1, $p = .071$ for the inclusion group, $\chi^2 = 2.88$, df = 1, $p = .090$ for the special school group and, $\chi^2 = 1.64$, df = 1, $p = .201$ for the control group. In order to establish whether the sex of the participant had any effect on the dependent variables used in the study, *t*-tests were performed. The only significant results were found to be on the Same Sex Relations scale of the SDQ-II, $t = 2.40$, df = 52, $p < .05$, two-tailed, and on the Warmth/Closeness Factor score of the SRQ, $t = 2.71$, df = 52, $p < .01$, two-tailed. Clearly the fact that there is a significant effect of sex on these two variables has to be borne in mind when the data is analysed further. Therefore if there is a significant difference between the groups on either of these factors then the effect of the individual's sex needs to be taken into account.

3.2.1.2. Relative Birth Order

The demographic questionnaire was also used to collect data about whether the adolescents who participated in the study were older or younger than the sibling they rated their relationship with. This data was also subjected to a chi-squared analysis to see whether there was a significant difference in the proportions of the two groups. This analysis revealed that there was no significant difference in the overall proportions of adolescents older than their sibling compared to those younger than their sibling, $\chi^2 = 3.63$, df = 1, $p = .057$. There was also no significant difference in the proportions of older or younger siblings within the three groups, $\chi^2 = 1.67$, df = 1, $p = .197$ for the inclusion group, $\chi^2 = 1.47$, df = 1, $p = .225$ for the special school group and, $\chi^2 = 0.73$, df = 1, $p = .394$ for the control group. Although the overall proportion of adolescents who were either older or younger than their sibling did not differ significantly the result was approaching levels of significance. For this reason *t*-tests were also performed on all of the dependent variables to check whether birth order had an effect. Significant effects of birth order were found on three of the SDQ-II scales, the General Self scale, $t = 2.26$, df = 52, $p < .05$, two-tailed, on the General School Scale, $t = 2.45$, df = 52, $p < .05$, two-tailed, and the total SDQ-II T score, $t = 2.02$, df = 52, $p < .05$. Birth order was also shown to have a significant effect on the Relative Status/Power Factor score of the SRQ, $t = 3.00$, df = 52, $p < .005$, two-tailed.

Again these significant effects need to be kept in mind during further analysis of the data, particularly if significant differences between any of these factors are found when comparing the three school groups on the dependent variables. This point will be returned to later in the results.

3.2.1.3. Age

The mean age of the participants in each group is presented in table 1 in the method section. As age is a continuous variable a one way analysis of variance (ANOVA) was used to assess whether the mean age for each of the groups differed significantly. The result showed that there was indeed a significant difference between the mean age of the three groups, $F = 4.10$, df = 2, 51, $p < .05$. As there was a significant difference age was then correlated with all of the dependent variables within the current study. Age was found to have a significant positive correlation with the SDQ-II Honesty/Trustworthiness factor, $r = .390$, n = 54, $p < .005$. As with the variables discussed above this association is important to bear in mind in further analysis of the data. If any differences between groups are found on the SDQ-II Honesty/Trustworthiness factor then its significant relationship with age needs to be taken into account.

3.2.1.4. Size of sibship

The mean number of siblings that each adolescent had is also reported in table 1 of the method section. Again since the number of siblings each adolescent has can been seen as a continuous variable a one way ANOVA was used to investigate whether the size of sibship varied significantly between the three groups. The results revealed that there was a significant difference, $F = 5.58$, df = 2, 51, $p < .01$. Correlational analysis revealed that the number of siblings that a participant had, had no significant relationship to any of the dependent variables reported in the current study. It was therefore decided that although the number of siblings that adolescents had varied significantly between the groups it would not be taken into account in any further analysis as it showed no relationship with any of the dependent variables.

3.3 Hypotheses

The hypotheses are presented as predicting outcome in a particular direction, therefore one-tailed tests were carried out, where appropriate, to investigate whether there were any significant differences between the groups. The hypotheses that were drawn out from a review of the literature and reported in the introduction are repeated here and examined using the relevant parametric statistics.

3.3.1. Self-Description Questionnaire-II *(SDQ-II: Marsh, 1990a)*

The separate sections of the SDQ-II were analysed using a one way ANOVA to establish whether the three groups differed significantly. Planned contrasts were then used within the one way ANOVA to establish whether predicted differences between the inclusion and special school groups existed and also whether predicted differences between the two groups of adolescents with a sibling with a learning disability and the control group existed.

An initial one way ANOVA was conducted to test for differences between the means of the three groups on each of the SDQ-II scales. Where the T scores had been transformed to meet the assumptions of normality the comparisons were made on the means of the transformed data.

The results of the one way ANOVA's showed that there were no significant differences between the three groups on any of the SDQ-II subscales. The results of these comparisons can be seen in table 4.

Table 4: *Results from the ANOVA's performed on the different scales of the SDQ-II.*

SDQ-II Scale	***F* Value**	**Degrees of Freedom**	***P* Value**	**Effect Size (η^2)**
Maths	0.28	2, 51	.759	.011
Physical Appearance	0.63	2, 51	.537	.024
General Self	0.22	2, 51	.804	.009
Honesty/Trustworthiness	2.31	2, 51	.110	.083
Physical Ability	0.25	2, 51	.780	.010
Verbal	1.09	2, 51	.343	.041
Emotional Stability	2.70	2, 51	.077	.096
Parent Relations	0.49	2, 51	.618	.019
General School	0.14	2, 51	.868	.006
Same-Sex Relations	0.08	2, 51	.920	.003
Opposite-Sex Relations	2.14	2, 51	.128	.077
Total	0.33	2, 51	.721	.013

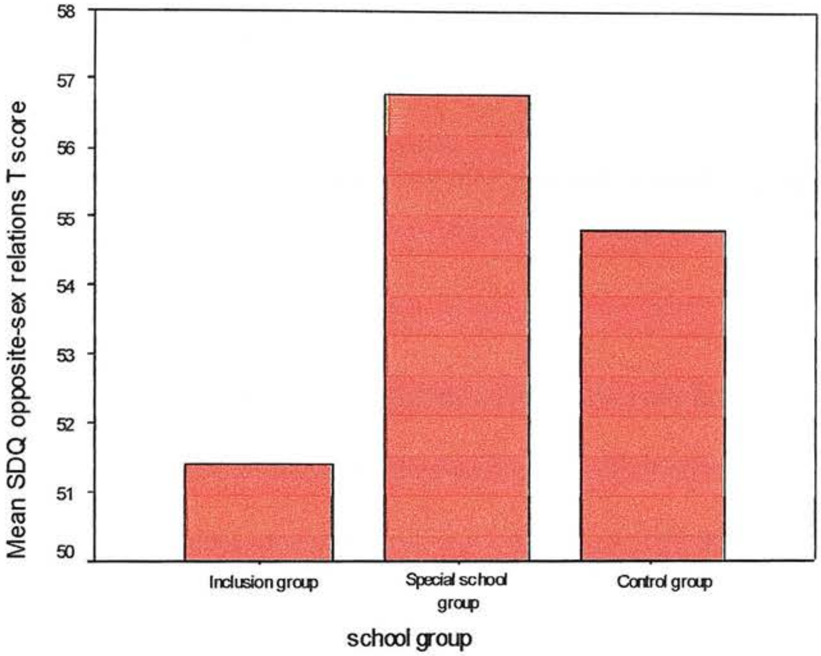
3.3.1.1. Hypothesis 1:

That the self-concept of adolescents who attend school with their learning disabled sibling will be lower than those who have a learning disabled sibling who goes to special school.

Using one-tailed planned contrasts within the one way ANOVA the data was tested to see whether hypothesis 1 could be accepted. There was one significant difference found on the Opposite Sex Relations scale, $t = 2.00$, $df = 51$, $p < .05$. This produced a medium to large effect size (Cohen, 1988), $d = 0.75$. As can be seen clearly in figure 2 the adolescents who had a sibling with a learning disability attending the same school as them had significantly lower self-concept on their rating of their opposite-sex relationships compared to adolescents who had a sibling with a learning disability attending a special school.

There were no other significant differences between these two groups on any of the self-concept scales (see appendix 5, table 9 for results). Therefore overall there is not enough evidence to accept hypothesis 1, although there is evidence for a significant difference on one facet of self-concept.

***Figure 2**: Mean SDQ-II T scores for the Opposite-Sex Relations scale for each of the three school groups.*



3.3.1.2. Hypothesis 2:

That the self-concept of adolescents who attend school with their learning disabled sibling will also be lower than a control group of adolescents who have a non-disabled sibling at the same school as them.

One-tailed planned contrasts revealed no significant differences between the inclusion group and the control group on any of the SDQ-II scales (see appendix 5 table 10 for results). Therefore hypothesis 2 is not supported by the data.

3.3.1.3. Hypothesis 3:

That the self-concept of both groups of adolescents who have siblings who have a learning disability will be lower than a control group of non-disabled siblings, regardless of school placement.

This hypothesis was also tested using one-tailed planned contrasts as part of the one way ANOVA.

A significant difference was found between adolescents who had a sibling with a learning disability and adolescents who had a sibling without a learning disability on the Honesty/Trustworthiness scale of the SDQ, $t = 1.90$, df = 51, $p < .05$, one-tailed.

There was also a significant difference between these two groups on the Emotional Stability scale, $t = 2.11$, df = 51, $p < .05$, one-tailed. Figures 3 and 4 represent the mean SDQ-II T scores across the three school groups for the significant results just reported (see appendix 5 table 11 for all planned comparison results). In each case the significance is between the combined mean of the inclusion and special school group in comparison to the mean of the control group. As can be seen from these figures the control group is reporting better levels self-concept than adolescents who have a sibling with a learning disability, regardless of school placement.

***Figure 3**: Mean SDQ-II T scores for the Honesty/Trustworthiness scale for each of the three school groups.*

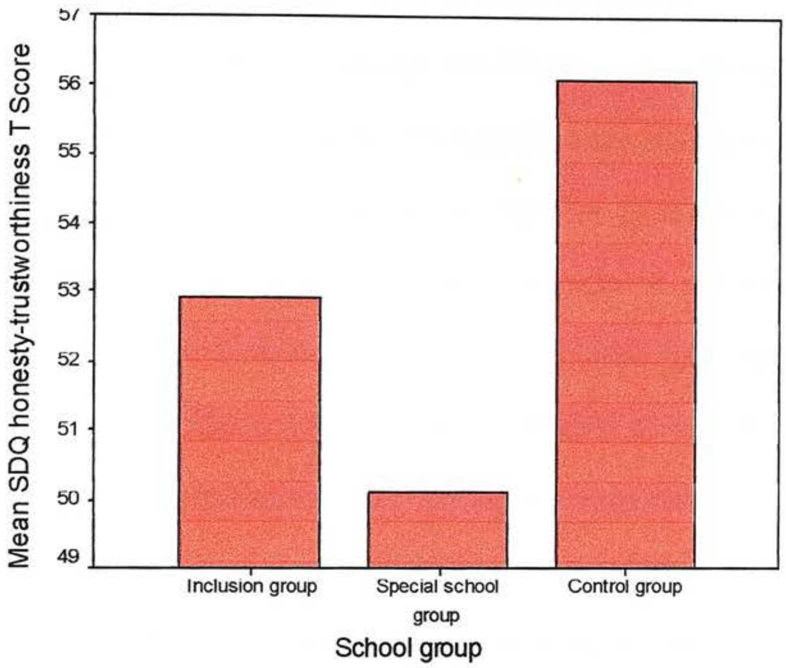
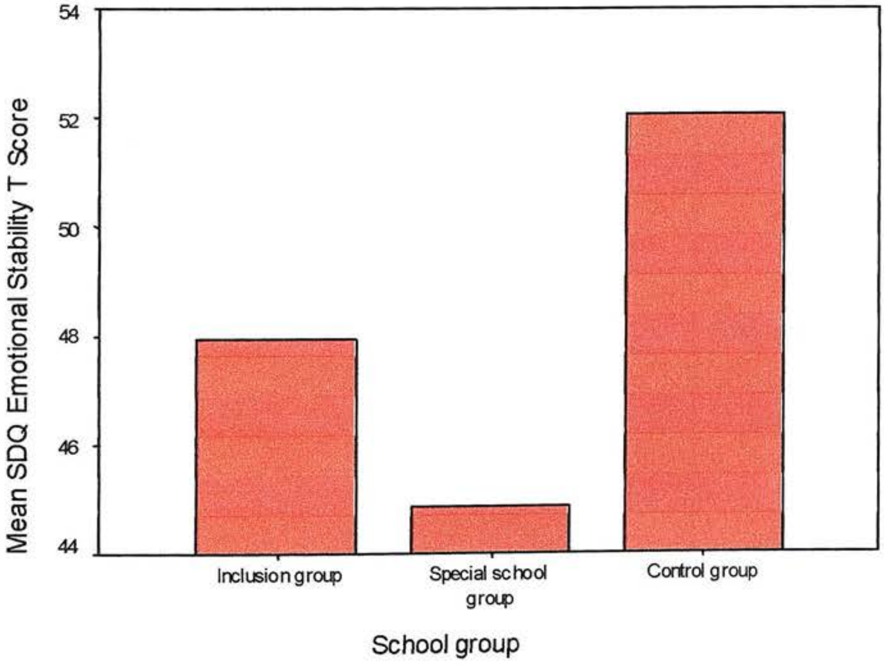
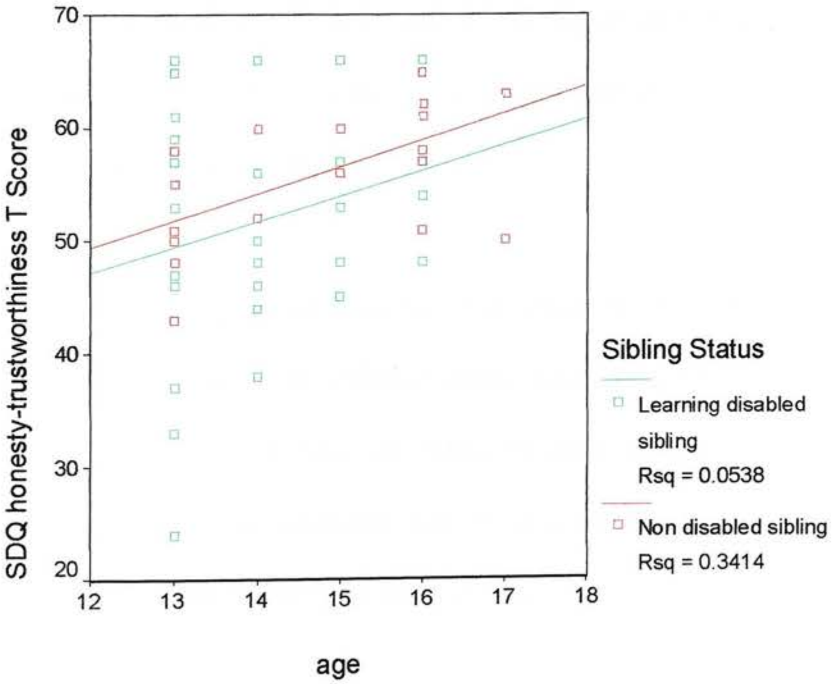


***Figure 4:** Mean SDQ-II T scores for the Emotional Stability scale for each of the three school groups.*



Although there is a significant difference between the groups on the Honesty/Trustworthiness scale this factor was also significantly correlated to the age of the participant, as highlighted earlier. In order to control for the effect of age it was entered as a covariate in a one way ANOVA examining the difference between adolescents who had a sibling with a learning disability and adolescents who had a normally developing sibling. Before carrying out an analysis of co-variance (ANCOVA) the data was checked to makes sure that it met with the necessary assumptions. Figure 5 shows that there was a linear relationship between the covariate (age) and the dependent variable (SDQ-II Honesty/Trustworthiness T score). The data also had appropriate homogeneity of regression.

Figure 5: *Scattergraph showing the relationship between Age and SDQ-II Honesty/Trustworthiness T score for adolescents both with and without a learning disabled sibling.*



After adjusting for age there was no longer a significant difference between adolescents who had siblings with a learning disability compared to those who had siblings with no disabilities, $F = 1.08$, df = 1, 51, $p = .304$. This result indicates that the difference between the two groups is due to the difference in the ages of the adolescents within the group and not a function of whether they had a learning disabled sibling or not.

As the Emotional Stability SDQ-II T score was not significantly correlated with any of the demographic variables no further analysis were carried out and it was assumed that the observed result was due to the differences between the three groups. Calculation of an effect size of this difference revealed that there was between a medium and a large effect (Cohen, 1988) of school group on the emotional stability of the adolescents, $d = 0.60$.

Overall the results show a significant difference between the two groups for the emotional stability facet of self-concept, but no significant difference as a result of group differences for any of the other facets of self-concept. Hence there is not enough evidence to support hypothesis 3.

A number of different comparisons have been carried out on the twelve scales of the SDQ-II, which gives rise to an inflated alpha level. In order to combat this Bonferroni's correction is often employed. However, since exploration of the SDQ-II subscales using correlations revealed that a number of the subscales were significantly correlated the use of a Bonferroni correction was inappropriate, as the data are not truly independent of one another (see table 5 below for correlations). A secondary reason for not employing Bonferroni's correction is that this study is a preliminary investigation and so it was decided to accept an inflated level of alpha in order to avoid a deflation in power.

Table 5: *Intercorrelations between the separate subscales of the SDQ-II*

	M	P Ap	G Self	H/ T	P Ab	V	E S	P R	G Sch	S-Sex R	O-Sex R	Total
M	*	-.123	-.328*	.115	-.229	.368**	.185	-.263	-.522**	-.335*	-.163	.580**
P Ap		*	.681**	-.139	.282*	-.367**	-.390**	.432**	.342*	.389**	.710**	-.648**
G Self			*	-.224	.171	-.375**	-.561**	.522**	.635**	.594**	.607**	-.809**
H/T				*	-.013	.015	.143	-.471**	-.239	-.177	-.180	.359**
P Ab					*	-.090	-.306*	.140	.048	.264	.162	-.348*
Verbal						*	.279*	-.232	-.560**	-.524**	-.276*	.605**
E S							*	-.386**	-.363**	-.465**	-.466**	.676**
P R								*	.217	.489**	.356**	-.571**
G Sch									*	.488**	.303*	-.710**
S-Sex R										*	.424*	-.718**
O-Sex R											*	-.597**
Total												*

M – Maths P Ap – Physical Appearance G Self – General Self H/T – Honesty/Trustworthiness P Ab – Physical Abilities
V – Verbal E S – Emotional Stability P R – Parent Relations G Sch – General School S-Sex R – Same-Sex Relationships O-Sex R – Opposite-Sex Relationships

* significant at the 0.05 level (2-tailed) **significant at the 0.01 level (2-tailed)

3.3.2. Sibling Relationship Questionnaire *(SRQ: Furman & Buhrmester, 1985)*

The data produced for the four factor scores of the SRQ were inspected to see if they met the underlying assumptions for the use of parametric statistics. The Rivalry factor score was found to have a significant positive skew and was therefore converted using the suggested formula from Tabachnik & Fiddel (2001a, p83). Further inspection, using tests of skewness and kurtosis (SPSS explore) revealed that this transformation successfully removed any skew and the data were considered sufficiently normal. The difference in the variances between the three groups was also considered to be acceptable for the use of parametric statistics (Tabachnik & Fiddel, 2001b, p85).

Initially a one way ANOVA was performed on the means of the three groups to assess for any differences on the factor scores of the SRQ. There were no significant differences between the three groups on any of the factor scores of the SDQ. See table 6 for the results of the ANOVA. Planned contrasts were then performed to evaluate whether there was any evidence for the specific hypothesis made.

Table 6: *Results from the ANOVA's performed on the different factor scores of the SRQ.*

SRQ Factor Score	***F* Value**	**Degrees of Freedom**	***P* Value**	**Effect Size (η^2)**
Warmth/Closeness	0.94	2, 51	.399	.035
Relative Status/Power	2.25	2, 51	.116	.081
Conflict	2.28	2, 51	.113	.082
Rivalry	1.26	2, 50	.293	.048

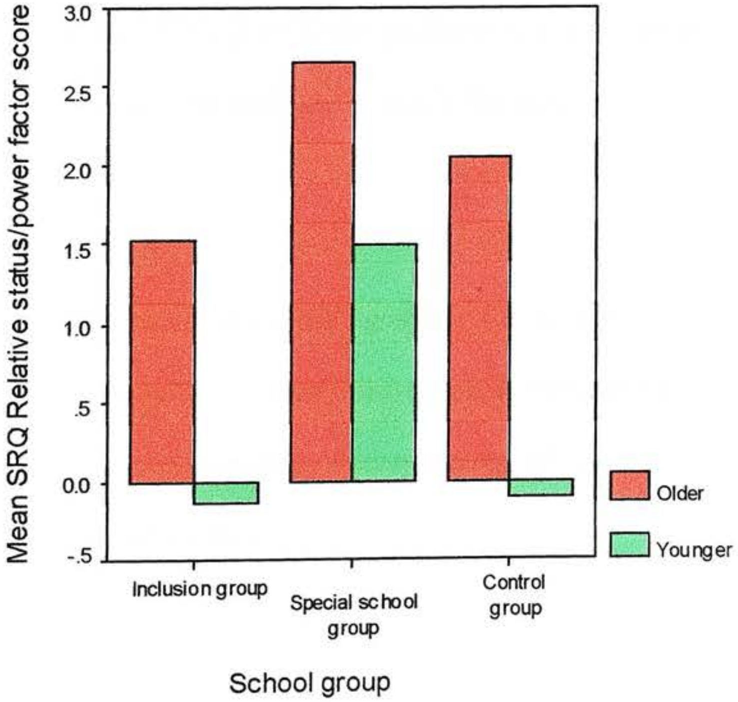
3.3.2.1 Hypothesis 4:

That the adolescents who have a sibling with a learning disability who attends the same school as them will have more intense sibling relationships, with more conflict and be more equal in status than adolescents who have siblings with a learning disability who attend special school.

The one-tailed planned contrasts revealed that there was a significant difference between the inclusion and special school groups on the Relative Status/Power factor of the SRQ, $t = 1.97$, df = 51, $p < .05$. This difference yielded a large effect size, $d = 0.92$ (Cohen, 1988).

As shown earlier in the results the birth order of the adolescents in comparison to their sibling has also been shown to have a significant impact on the Relative Status/Power factor of the SRQ. Therefore it is possible that the significant result found between the inclusion and special school groups is due to the effect of birth order, i.e. whether the adolescent is older or younger than their sibling. In order to try and establish whether this was the case both factors were entered into a 2 (inclusion group vs. special school group) x 2 (older vs. younger) ANOVA. The results revealed that there was a significant main effect of birth order $F = 6.41$, df = 1, 28, $p < .05$, with a large effect size $\eta^2 = 0.19$. There was also a significant main effect for school group, $F = 5.99$, df = 1, 28, $p < .05$, with a large effect size $\eta^2 = 0.18$. There was no interaction effect, $F = 0.18$, df = 1, 28, $p = .672$. As the sample sizes within the groups were unequal there was a resulting difficulty in interpreting the relative contributions of main effects and interactions. To overcome this difficulty the results were represented graphically, see figure 6. Inspection of figure 6 confirms that there is not an interaction effect as the overall pattern of difference between siblings older and younger than their sibling is similar across the different school groups.

Figure 6: *Mean SRQ Relative Status/Power factor scores for older and younger siblings with school group held constant.*



Inspection of figure 6 shows that when adolescents are older than their sibling they report higher levels of Status/Power over their sibling compared to the adolescents younger than their siblings who generally report that they have much less status/power than their older siblings. The exception to this is those adolescents who have siblings in a special school, who report that they have more status/power over their sibling when they are younger than their sibling as well as when they are older than them. The degree to which they report more power over their sibling, however, still varies with relative birth order. Older siblings still report greater levels of power over their sibling that those who are younger than their sibling. This is particularly relevant since the significant difference noted in the original planned comparison was between adolescents who had a sibling at special school and adolescents who had a sibling with a learning disability included in the same school as them

There were no other differences found between adolescents who had a sibling with a learning disability attending the same school as them and those who had a sibling at a special school on any of the SRQ factor scores (see table 12, appendix 5 for results). Thus hypothesis 4 is only partially supported by the data.

3.3.2.2. Hypothesis 5:

That the adolescents who have a sibling with a learning disability who attends the same school as them will have less intense sibling relationships, with less conflict and more unequal relationships than a control group of normally developing siblings who both attend the same school.

Planned contrasts revealed no significant differences between the inclusion group and the control group on any of the factor scores of the SRQ and therefore there is no supporting evidence from this study to support hypothesis 5 (see table 13 Appendix 5 for results).

3.3.2.3. Hypothesis 6:

That both groups of adolescents who have siblings with a learning disability will have less intense sibling relationships, with less conflict and more unequal relationships than a control group of non-disabled siblings, regardless of school placement.

The two groups of adolescents who had siblings with a learning disability were combined and compared to adolescents of children without learning disabilities using one-tailed planned contrasts. There were significant differences between the two groups on Conflict factor score of the SRQ, $t = 2.04$, df = 51, $p < .05$, with the control group reporting more conflict (mean = 7.55) compared to the combined group of siblings of children with learning disabilities (mean = 9.15). The resulting effect size for this difference was $d = 0.56$, which is a medium effect size (Cohen, 1988). As this was not a factor that had been shown to have a significant difference due to any differences in the demographic variables reported above no further comparisons were made. There were no other significant differences between the two groups on any of the other SRQ factor scores (see table 14, appendix 5 for results), thus hypothesis 6 was only partially supported.

As comparisons were made on a number of subscales the intercorrelations between the different subscales were explored. These are reported below in table 7.

Table 7: *Intercorrelations between the SRQ subscales*

	Warmth/ Closeness	**Relative Status/Power**	**Conflict**	**Rivalry**
Warmth/ Closeness	*	-.027	.025	-.322*
Relative Status/Power		*	-.207	-.070
Conflict			*	-.006
Rivalry				*

* Correlation is significant at the 0.05 level (2-tailed)

3.3.3. Semi-structured interview

As part of the semi-structured interview all participants were asked to rate their overall satisfaction with regards to where their sibling attended school on a 5 point Likert scale. As this data is only ordinal nature non-parametric statistics were used to see whether there was a significant difference between the three groups in their overall rating of satisfaction.

The three groups were compared using the Kruskal-Wallis test. No significant differences were found between the three groups on their overall rating of satisfaction with their school environment, $\chi^2 = 1.20$, df = 2, $p = .55$. There was therefore no evidence that the three groups differed significantly in their overall satisfaction of where their sibling attended school.

The semi-structured interview was also used to elicit information from participants about how they felt about either having their sibling attend the same school as them or go to a special school. The participants were given the opportunity to comment on both positive and negative aspects. The answers provided by participants was not analysed formally, instead it was grouped into themes. These themes are presented in table 8 below.

Table 8: *Themes of positive and negative responses from the semi-structured questionnaire with regards to adolescents' experience of attending school with a sibling or not.*

School Group	**Positive Comments**		**Negative Comments**	
Special School Group	**Theme.**	**E.g.**	**Theme.**	**E.g.**
	Support/ Responsibility	‘the special school has teachers that understand him.’	Responsibility	‘‘If he has a problem in school he can’t get help from me about it’
	Having some time apart	‘I like that I can get away from him sometimes.’	Shared Experience	‘Would like to be able to talk about people in school that we both know.’
Inclusion Group	Support/ Responsibility	‘I can help her if she’s struggling.’ ‘Like it because when I came he helped me get around and not get lost.’	Emotional Impact	‘Sometimes embarrassing, he does silly things like singing and saying hi to my friends.’ ‘If people judge me by my older brother.’
	Shared Experience	‘Nice to see someone you know in school.’		
Control Group	Support/ Responsibility	‘That my big brother looks out for me.’	Emotional Impact	‘If he annoys me when I am with my friends.’
	Shared Experience	‘School gives us something to talk about, brings us closer together.’ ‘I don’t have to be relied on for handing notes to mum.’		

As is highlighted in table 8 there were a couple of broad themes that ran across all three school groups. These were to do with the support or responsibility felt towards siblings or received by siblings and the shared school experiences available or unavailable to the adolescents. In the special school group some adolescents reported that they felt their sibling benefited from receiving extra support, whereas others reported the opposite and reported that they would have preferred them to attend the same school as them so that they could keep a more watchful eye on them. Interestingly the only group that felt it was good to have time apart from their sibling were those adolescents whose sibling went to a special school. The adolescents' in the special school group were also the only group not to make any comment on the emotional impact that the school their sibling attended might have on them. As commented on earlier, the principal aim of the semi-structured interview was not to provide data for formal analysis, but rather to gain a flavour of some of the issues raised as important to the adolescents in the study. As such no further analysis of the responses has been carried out, instead individual quotes will be used in the discussion section to illustrate possible reasons for other findings from the current study.

4. DISCUSSION

4.1. Overview

The first part of this section summarises the results of the present study and specifically looks at the hypotheses made in the introduction. It then goes on to highlight the links between the present results and those reported in the earlier review of the literature. The section then evaluates the methodology employed in the current study and notes some of the potential limitations. Finally any clinical implications from the current study and areas for possible future research are discussed.

4.2. Discussion of Results

The findings that were presented in the results section are summarised below and linked to the particular hypotheses made in the introduction. The results are discussed in terms of the relevant literature.

4.2.1. Self Description Questionnaire (SDQ-II: Marsh, 1990a).

This measure was used in the current study to evaluate, via self-report, the self-concept of the adolescents who participated in the current study. There were no overall significant differences on any of the scales of the SDQ-II between adolescents who had a sibling with a learning disability attending the same school as them, adolescents who had a sibling with a learning disability who attended a special school and a control group of adolescents who attended the same school as a normally developing sibling. Comparisons were also made between specific groups in line with the hypotheses reported in the introduction.

4.2.1.1. Hypothesis 1:

That the self-concept of adolescents who attend school with their learning disabled sibling will be lower than those who have a learning disabled sibling who goes to special school.

The results revealed that there was a significant difference between these two groups on the Opposite-Sex Relations scale of the SDQ-II, with adolescents who attend the same school as a sibling with a learning disability reporting lower levels of self-concept on this facet than adolescents who had siblings with a learning disability who went to a special school. There were no significant differences between the inclusion group and the special school group on any of the other SDQ-II Scales.

This would suggest that overall there was not enough evidence to support the hypothesis, however the significant finding in the self-reports of interactions with peers of the opposite sex is interesting and worth noting.

The current study aimed to investigate the potential variable of the school placement of the child with a learning disability on the adjustment of their non disabled sibling. This factor has only been looked at in one previous study by Harvey and Greenway (1984). The current study does not provide support for the differences in self-concept reported by the earlier study. However, it should be noted that the authors of the earlier study were interested in siblings of children with physical disabilities rather than learning disabilities.

The current study did find one difference between adolescents who have a sibling with a learning disability who attended the same school as them and those who had a sibling at a special school in terms of self-concept. This was that the adolescents who have a sibling at the same school as them reported lower evaluations of their opposite-sex peer relationships. In her study Coleby (1995) also noted that school aged siblings of children with a learning disability had restricted contact with their friends. These findings are supported by some of the information provided by the adolescents in the current study about what they felt were some of the positive and negative aspects of going to the same school as their sibling with a learning disability. One adolescent picked up on this point in discussing some of the negative aspects stating

'I don't like him embarrassing me or interfering when I am doing something. I don't like him annoying me and my friends.'

This emphasises some of the difficulties that adolescents describe when they attend the same school as their sibling with a learning disability. A couple of tentative hypotheses are suggested that may provide some explanation for the above result.

Firstly it might be argued that there is a certain stigma attached to having a sibling who has a learning disability. This stigma is liable to be accentuated if an adolescent goes to the same school as their sibling with a learning disability as it is likely to be common knowledge around the school as to who their sibling is. This is not necessarily the case for adolescents who have a sibling at special school. These adolescents can be more selective about who knows they have a sibling with a learning disability. This point is highlighted by the response of one adolescent, who when asked about the positive aspects of having a sibling at a special school responded that it was good because:

'I don't have to tell people that I don't like that I have a brother with learning disabilities.'

The hypothesised reason why this stigma is associated more with opposite sex relationships as compared to same sex relationships is to do with the developmental stage the adolescents are at. During adolescence individuals go through puberty. This change leads adolescents to move from seeking intimacy with their friends of the same sex to develop intimate relationships with members of the opposite sex (Adams, Montemayor, & Gullotta, 1996).

The second hypothesis is related to the above point and regards the development of a sense of a sexual self in adolescents. It is suggested that those adolescents who attend the same school as a learning disabled sibling may have an altered sense of their perceived attractiveness to the opposite sex. They may feel that having a learning disabled sibling makes them less attractive to the opposite sex and hence alters their opposite sex relationships. As discussed above this is more relevant to those adolescents that are at the same school as a sibling compared to those who have a sibling at a special school as the fact that they have a sibling with a learning disability is a lot more salient. Obviously these hypotheses are speculative in nature and would require further research in order to establish the exact nature of the impact on opposite sex relationships.

A final reason for the current finding that needs to be considered is that the difference between the two groups observed in the present study is due to the inflated alpha levels accepted in the analysis in order to maintain power in such an exploratory study.

The impact that having a sibling with a learning disability has on peer relationships is an area that needs to be further investigated. In particular the impact of having your sibling who has a learning disability in the same school where a higher proportion of peer interactions happen needs to be researched. Highlighted from the results of the current study is also the fact that perhaps peer relations need to be considered in terms of same and opposite sex relations as they may be affected differently, especially during adolescence.

4.2.1.2. Hypothesis 2:

That the self-concept of adolescents who attend school with their learning disabled sibling will also be lower than a control group of adolescents who have a non-disabled sibling at the same school as them.

The results provided no evidence to support this hypothesis, and showed that overall the self-concept of the adolescents who attended the same school as a sibling with a learning disability was similar to the adolescents who attended the same school as a sibling with no disabilities.

This result is in keeping with previous literature that has found that having a sibling with a learning disability does not have a detrimental impact on self-concept in comparison to individuals who have siblings without disabilities (Auletta & DeRosa, 1991; Bangenholm & Gillberg, 1991; Hannah & Midlarsky, 1999; Singhi, Malhi, & Pershad, 2002).

4.2.1.3. Hypothesis 3:

That the self-concept of both groups of adolescents who have siblings who have a learning disability will be lower than a control group of non-disabled siblings, regardless of school placement.

The two groups of adolescents who had a sibling with a learning disability were combined and compared to the group of adolescents who had normally developing siblings. This comparison showed significant differences between the siblings of children with learning disabilities and the siblings of children with no disabilities on both the Honesty/Trustworthiness scale of the SDQ-II and the Emotional Stability scale of the SDQ-II. On both scales the adolescents who have siblings with a learning disability self-report poorer levels of self-concept.

However the Honesty/Trustworthiness scale was also significantly correlated with the age of the adolescent. It was therefore important to determine whether it was the age of the adolescent or whether or not they had a learning disabled sibling that contributed to the significant difference in SDQ-II Honesty/Trustworthiness scores observed. After adjusting for the age of the sibling there was no significant effect of having a sibling with a learning disability on the Honesty/Trustworthiness factor score of the SDQ-II. In other words the differences between the two groups occurred due to the differences in the mean age of the adolescents between the two groups rather than because they had a learning disabled sibling, or not.

The results of the study would suggest that overall there is not enough evidence to support hypothesis 3. Once again though there are some small caveats in which some areas of self-concept do seem to be affected by whether or not an adolescent has a sibling with a learning disability.

The two groups of adolescents who had siblings with a learning disability were grouped together and compared to the control group in order to see if the current study supported the results of previous studies that have investigated the impact of having a sibling with a disability, regardless of school placement. The current study provides some support for the results of previous studies that have found that having a sibling with a learning disability does not significantly lower self-concept or self-esteem (Auletta & DeRosa, 1991; Bangenholm & Gillberg, 1991; Hannah & Midlarsky, 1999; Singhi, Malhi, & Pershad, 2002).

Two of these studies (Bangenholm & Gillberg, 1991; Singhi et al.,2002) used the Pier-Harris Children's Self-Concept Scale (PHCSCS) (Piers & Harris, 1969) to measure self-concept which, although it has a number of subscales, is predominantly a measure of global self-concept (Byrne, 1996). Auletta and DeRosa used the Tennessee Self-Concept Scale (Fitts, 1965) to measure self-concept. Although this measure is multidimensional in nature the authors chose only to report the total scores. The current study therefore adds to the evidence in the current literature. It does this by examining self-concept across a number of dimensions, and reporting that on most of these dimensions there is no significant difference between adolescents who have a sibling with a learning disability and those who do not. A note of caution should be given in the interpretation and generalisability of the results due to the small sample size and methodological limitations of the current study, which are discussed later.

The finding that adolescents who have a sibling with a learning disability score lower on emotional well being than those who have a sibling with no disabilities is of interest. Although conclusions at this stage are tentative it certainly warrants further exploration. The finding is of particular interest as previous studies have reported that children who have siblings with a learning disability are at greater risk of internalising problems (Coleby, 1995; Fisman et al., 1996; Gold, 1993; Lobato et al., 1987; McHale & Gamble, 1989 Rodrigue, Geffken & Morgan, 1993).

One hypothesis that may account for this finding is the increased levels of concern that adolescents who have a sibling with a learning disability may feel with regards to their sibling compared to adolescents who have normally developing siblings. This was evidenced in the current study by some of the responses adolescents provided as part of the semi-structured interview. For example one girl said:

'I worry a lot about the future'

In addition a number of adolescents in the study commented that they liked to be able to keep an eye on their sibling with a learning disability, highlighting increased levels of concern. This was represented by statements such as;

'I can keep an eye on her and help her if she has any difficulties', and

'I would like him to go to the same school as me so I can check he is ok and keep an eye on him.'

The reasons that siblings of children with a learning disability show increased difficulties with internalising behaviour (e.g. Coleby, 1995) and evidenced in the current study by lower self-reported emotional stability, needs to be the subject of further investigations.

Overall then the current study showed that having a learning disabled sibling lowers emotional well being and freedom from psychopathology, as measured by the SDQ-II Emotional Stability T score (Marsh, 1990a) in adolescents in comparison to having a sibling who does not have a learning disability. Out of the adolescents who had a sibling with a learning disability, those who attended the same school as their brother or sister had lower evaluations of their interactions with peers of the opposite sex (as measured by the SDQ-II Opposite-Sex Relations scale (Marsh, 1990)) compared to those whose sibling went to a special school.

The results of the current study add to the body of literature that suggests that having a sibling with a learning disability does not impact on self-concept in a general sense, however certain dimensions of self-concept are possibly affected.

*4.2.2. **Sibling Relationship Questionnaire** (SRQ: Furman & Buhrmester, 1985).*

This was the measure utilised in the current study to assess the quality of the sibling relationship. It yields four main factors which were used in comparisons. These are a factor measuring the warmth and closeness of the sibling relationship, a second measuring the relative status or power in the relationship, a third looking at the level of conflict and a fourth examining the amount of rivalry between the siblings. In an overall comparison of adolescents who had siblings with a learning disability attending the same school as them, adolescents who had a sibling with a learning disability attending a special school, and adolescents who went to the same school as a sibling with no disabilities, no significant differences were found in the quality of their sibling relationships. Comparisons were made between specific groups in line with the hypotheses, the results of which are reported below.

4.2.2.1. Hypothesis 4:

That the adolescents who have a sibling with a learning disability who attends the same school as them will have more intense sibling relationships, with more conflict and be more equal in status than adolescents who have siblings with a learning disability who attend special school.

Comparisons revealed a significant difference in the Relative Status/Power factor score of the SRQ. Adolescents who had a sibling with a learning disability attending the same school as them reported significantly less status and power over their sibling than adolescents who had a sibling with a learning disability who attended a special school. This result was confounded by the fact that there was also a significant effect of birth order found on the Relative Status/Power factor of the SRQ. Further investigation showed that there was a significant main effect of birth order as well as a significant main effect of school group. Adolescents who had a sibling with a learning disability attending the same school as them responded in a similar manner to adolescents who had a non disabled sibling attending the same school as them. For both of these groups adolescents who were older than their sibling reported more power over their brother or sister, whereas adolescents who were younger than their sibling reported that their elder siblings had more power over them. On the other hand adolescents who had a sibling at special school reported more power over their sibling regardless of whether they were older or younger than they were, although older siblings also still reported more power than younger siblings. This pattern of responses suggests that in a comparison between the adolescents who had a sibling with a learning disability who attended special school and those whose sibling was included in the same school as them, the differences observed between the two groups were due both to birth order effects and effects of school placement.

This pattern of interaction from adolescents who had a sibling with a learning disability attending a special school fits with the results from a series of studies by Stoneman and colleagues (Brody, Stoneman, Davis & Crapps, 1991; Stoneman, Brody, Davis, Crapps & Malone, 1991). In their studies they used naturalistic in-home observations to assess the role relations between children and their learning disabled siblings. They noted that when children were older than their sibling with a learning disability they showed the same pattern of dominance over their sibling as did a control group of children with normally developing siblings, only more accentuated. When the children were younger than their learning disabled sibling they also were more dominant. This was a reversal in the roles seen in the control group of children with normally developing siblings. In the current study then the adolescents who had a sibling at special school fitted this pattern, however the adolescents who had siblings attending the same school as them, both with and without disabilities did not show this reversal of roles by the younger siblings.

This finding may reflect a difference in the population of children who go to a special school compared to those who are included in mainstream school. If it is the case that pupils in special schools generally have more severe or complex disabilities then it may be less likely that they will be dominant over their sibling compared to pupils who have less severe disabilities. Therefore one hypothesis that would explain the findings of the current study is that the difference in relative status/power is a function of differing levels of disability across the siblings in the two groups. This would be in keeping with research by Dyson (1989) who reported that the level of disability had a differential impact on siblings of children with different types of disability.

An alternative explanation might be that having a sibling at a special school exaggerates differences between adolescents and their siblings. They feel they have less in common with their learning disabled sibling and therefore are unlikely to think that their sibling would have anything to teach them. This idea of having less in common with siblings at a special school was emphasised by one adolescent in the current study who stated that she felt she was

> 'More distant [from her brother] as [we] don't know each other's surrounding. There are no common themes to talk about.'

For those adolescents who attended the same school as their sibling with a learning disability it might be argued that a process of normalisation has occurred. Their presence at the same school reduces the perceived difference between the adolescent and their learning disabled sibling, making them more likely to accept the fact that they can learn from their sibling as much as their sibling may be able to learn from them. As with other suggested reasons for the results seen in the current research these can only be speculative in nature until such time as further research has been carried out to establish the likely causes of any findings.

Overall then the results provide partial support for hypothesis 4 as there is an observed impact on the reported level of power that adolescents feel they have over their learning disabled sibling when they attend a special school as compared to the same school as them.

4.2.2.2. Hypothesis 5:

That the adolescents who have a sibling with a learning disability who attends the same school as them will have less intense sibling relationships, with less conflict and more unequal relationships than a control group of normally developing siblings who both attend the same school.

This hypothesis was not supported by the results of the current study. No significant differences were found between adolescents who had a sibling with a learning disability who attended the same school as them compared to adolescents who had siblings with no disabilities attending the same school as them. This was true of all four of the factor scores of the SRQ.

This result is in keeping with the results reported by Roeyers and Mycke (1995), who reported no difference in the quality of sibling relationships between siblings of children with autism, siblings of children with a learning disability and siblings of children with no developmental disabilities.

4.2.2.3. Hypothesis 6:

That both groups of adolescents who have siblings with a learning disability will have less intense sibling relationships, with less conflict and more unequal relationships than a control group of non-disabled siblings, regardless of school placement.

The results of the current study showed that adolescents who had siblings with a learning disability reported less conflict in their relationships compared to a control group of adolescents who had a sibling with no disabilities.

This finding supports the research of Begun (1989). In a study comparing 46 sisters to both their disabled and non disabled sibling she found that the sisters' relationships with their disabled sibling were less competitive and less intimate compared to their relationships with their non-disabled sibling. Other previous research in this area has investigated whether extra duties taken on by siblings of children with learning disabilities has led to changes in the quality of the sibling relationship and does not directly assess how the relationship differs from that with normal siblings (Stoneman et al., 1991). However, Stoneman et al. (1991) did find that an increase in the childcare roles performed by siblings of children with learning disabilities led to less conflicted sibling interactions. This finding may provide a possible explanation for the current findings. It might be suggested that the adolescents in the current study also undertook more caring duties for their sibling with a learning disability than did adolescents who had a normally developing sibling. As hypothesised by Stoneman and colleagues (1991) this increase in childcare responsibilities may mean that any negative feelings towards siblings are suppressed due to feelings of guilt or fear of parental sanctions.

This increased level of involvement as well as the increased levels of concern reported in the current study by some of the adolescents who had a siblings with a learning disability may mean that these adolescents are less likely to argue with their siblings. Perhaps the dominant feeling of responsibility or caring for a sibling with a learning disability overrides the normal competitiveness and rivalry that often results in conflict in normal sibling relationships. Once again the rationale for the current findings can be only speculative due to the preliminary nature of the current study and the causal factors of such findings needs to be further investigated.

4.2.3. Summary of results

Overall in terms of the quality of the sibling relationship adolescents who had a sibling with a learning disability reported less conflicted relationships than adolescents who had a sibling with no disability. Of the adolescents who had siblings with learning disabilities, those who attended the same school as their sibling reported less status or power over their sibling than those whose sibling attended a special school. Differences in rivalry and the amount of warmth in sibling relationships were not observed between any of the groups.

On self reports of self-concept adolescents who had a sibling with a learning disability rated themselves as having lower emotional stability than adolescents who had a sibling without a learning disability. Those adolescents attending the same school as a sibling with a learning disability rated themselves as having worse peer relationships with members of the opposite sex than those adolescents who had a sibling who attended a special school. On all other facets of self-concept no significant differences between any of the groups were observed.

4.3. Methodological Issues

Inherent in every research methodology are a number of limitations. These in turn can affect the generalisability of any results. The following section highlights the methodological limitations of the current research, many of which occurred due to the time frame available for the present study. However, other explanations are also offered.

4.3.1. Design

Although the current study did employ a relevant control group unlike some previous studies (e.g. Mates, 1990), it was not possible to match this group on certain variables with the other two groups in the study. The main reason for not employing a matched design was the limited time available for the current study. A number of other factors also contributed to the decision not to try and match each group. The first of these was that the population from which individual participants were being drawn was quite small. That is, the number of adolescents who had a brother or sister with a learning disability attending the same school as them and the number of adolescents who had a brother or sister at a special school. Both these groups also had to be within the local education authorities for which ethical approval for the study had been granted. As these two groups could not be matched, due to the reasons stated above, it was then not possible to use a matched group for the control group. Previous research that has employed matched control groups has often had only two groups, e.g. siblings of children with learning disabilities and siblings of children with no disabilities (e.g. Coleby, 1995; Gold, 1993; Hannah & Midlarsky, 1999). It was, therefore, easier to match participants on relevant demographic variables, whereas the current study was interested in three groups making matching much harder. Overall, the initial low numbers from which participants were drawn, along with the low response rate meant that the matching of participants against certain demographic variables, whilst desirable, was not viable.

Another limitation in the design of the current study was the fact that it was not possible to control for whether the siblings with a learning disability also had any concurrent physical or behavioural difficulties. A decision was made not to have concurrent difficulties as part of the exclusion criteria. This was done to maximise the number of potential participants. A second reason for allowing some variability into the population that was sampled for the current study was that it can then increase the generalisability of any results. If too strict criteria are set for each group, then any results become only applicable to others in similar circumstances. Given the higher incidence of health difficulties (McLaren & Bryson, 1987) and behaviour difficulties (Einfield & Tonge, 1996) in people with learning disabilities it did not seem sensible to exclude those who had other difficulties from the study, as they would not then be typical of the population.

A further limitation in the design of the current study was the fact that it was not possible to assess whether the siblings of the adolescents fulfilled criteria for having a learning disability (DSM-IV: APA, 1995). The categorisation system used for individuals within the education system is that of learning difficulties rather than a learning disability (see the introduction for a definition of both terms). The diagnosis of an individual as having a learning disability requires an IQ assessment as well as an assessment of adaptive functioning. This is a very time consuming procedure and outwith the remit of the current study. This is particularly true as no contact was planned with the sibling with a learning disability as part of the study. In order to try and overcome some of these difficulties the school staff who were responsible for identifying pupils were provided guidelines on inclusion and exclusion criteria and given the opportunity to discuss these with the researcher. Despite this, participants were chosen for inclusion in the study at the discretion of the teacher approached in each school. This may have led to differing levels of disabilities in the adolescents' siblings between the groups. A further point is the fact that schools were given the option of excluding pupils from the study if they thought that participation would be detrimental. Whilst not refuting the ethics of this point it needs to be considered that this could have produced a selection bias in the pupils chosen by teachers for participation in the study. It could be that those pupils that were coping badly at school were not selected for participation.

4.3.2. Mediating Variables

As stated in the introduction, the impact of mediating variables identified in the literature is inconsistent and it is not an area that was investigated in the current study. In the current study, however, when the three groups were compared on certain demographic variables significant differences were found. Given that some of these demographic variables have been suggested to have mediating effects within the previous literature (Coleby, 1995; Hannah & Midlarsky, 1999; Rodrigue, Geffken & Morgan, 1993) it seems important to discuss their impact on the current research. Significant differences between the three groups in the current study were found for the age of the participant as well as the number of siblings they had and the sex of the participant. There was also a difference in the number of participants that were older than their sibling compared to those younger than their sibling, although this difference did not quite reach levels of statistical significance.

The age of an individual has been reported to be significantly correlated to adjustment in siblings of children with autism, siblings of children with a learning disability and siblings of normally developing children (Rodrigue et al., 1993). Specifically Rodrigue and colleagues (1993) reported that older siblings were found to have higher levels of internalising and externalising behaviours, as measured by the Child Behaviour Checklist (CBCL; Achenbach & Edelbrock, 1983). The current study found only one difference related to the age of the adolescent. This was that older adolescents reported greater levels of honesty/trustworthiness on the self-concept measure. Apart from this, although there were differences in the age of the adolescents between the three groups, age was not significantly correlated to any other of the outcome measures. This supports previous findings by other researchers (Coleby, 1999; Singhi, Malhi & Pershad, 2002) who also reported no significant effect of age.

In their study Hannah and Midlarsky (1999) investigated the impact that having a brother or sister with a learning disability has on the adjustment of the non-disabled sibling. They reported two sex differences in their study. The first was that there were significantly more females who had a sibling with a learning disability falling into the clinically significant range for internalising behaviours, as measured by the CBCL (Achenbach & Edelbrock, 1983), than there were females who had siblings without disabilities. Secondly they reported that males who had a sibling with a learning disability had worse school performance than any other group. Significant sex differences were reported in the current study between the three groups, however these differences were not related to any of the differences between groups found on aspects of the sibling relationship or the subscales of the self-concept questionnaire. Therefore these results refute the findings of Hannah and Midlarsky (1999) and are more in line with findings by Coleby (1999) and Singhi, Malhi and Pershad, (2002).

In terms of relative birth order Coleby (1995) reported this to have a significant impact in her study. She noted that siblings who were younger than their brother or sister with a learning disability reported more anxiety and less behavioural problems compared to those who were older than their sibling. Coleby (1995) also reported in her study that the effect on siblings was not related to age or sex.

In a recent study Singhi et al. (2002) also reported that the age and sex of children who had siblings with disabilities were not significantly correlated with either self-concept scores or score of psychological adjustment. This is confirmed by the current study that also looked at self-concept as an outcome variable and found no sex differences and only one age difference for one subscale of the self-concept measure used.

The literature to date is equivocal as to how much impact such mediating variables have on the adjustment of children who have siblings with a learning disability. The fact that there were significant differences between groups on these variables in the current study made their contribution to any effects important to investigate.

As significant differences were found between the three groups for the age of participant, the sex of participant and the number of siblings each participant had these variables were correlated with the dependent variables used in the study. There were only a minimal number of significant correlations found between the demographic variables and the dependent variables used in the current study. When a significant relationship was found between one of the demographic variables and one of the dependent variables that showed a between group difference care was taken to control for this statistically. In this manner the results reported reflect whether significant differences found are as a result of true differences between the three groups studied or whether these differences are mediated by demographic variables.

As this study was only a preliminary investigation into the impact of school placement on the adjustment of adolescents who have a sibling with a learning disability it was not possible to consider all mediating variables that have been suggested in previous literature. One such variable is socio-economic status. This has been suggested to be a mediating variable in research by Singhi et al. (2002). They found that socio-economic status was positively related to adjustment. The current study recruited participants from four different education authorities and across many different schools within those authorities. It is therefore hypothesised that it is unlikely that any particular social class was systematically excluded from being invited to participate in the study. Given the poor response rate, however, it is not possible to tell whether a greater proportion of any particular social class elected to either participate or not participate in the study. This problem, however, is not just relevant to the current study as in most psychological research participants choose whether or not they wish to participate. This self-selection bias has been linked to possible differences in personality traits of responders and non responders (Marcus & Schütz, 2005). This possible self-selection bias was also the case for other potential variables that were not formally assessed due to the preliminary nature of this study. Such variables that have been suggested in previous research include socio-economic status (Singhi et al., 2002) and marital satisfaction (Rodrigue, Geffken & Morgan, 1993).

Another variable that had been considered in previous research in the area is the severity or type of disability that the sibling has. In a study comparing 55 older siblings of children with disabilities with 55 siblings of children with no disabilities Dyson (1989) noted that the type of disability had a significant impact on adjustment. She noted that the siblings of children with a learning disability had higher levels of self-concept and better behaviour adjustment than children whose siblings had sensory or physical disabilities. The current study did not have a measure of severity of disability and did not control for co-morbidity of disabilities. Dyson's (1989) findings may be relevant as there is the possibility that the level of disability differed across the three groups in the study. One possible hypothesis is that the siblings who attended special school had a greater degree of disability, or more co-morbid physical and sensory difficulties than those who were included in mainstream schooling. The impact on siblings of children with learning disabilities had also been shown to be confounded by whether the sibling also has concurrent behaviour problems (Lardieri, Blacher, & Swanson, 2000).

In conclusion there are a number of factors that have the potential to mediate the adjustment of adolescents who have a sibling with a learning disability. As set out in the introduction, and re-iterated here, the previous literature which sets out to establish which variables are likely to have an effect on adjustment is equivocal. Some of these factors have been measured in the current study, whilst others have not as it was deemed impossible to investigate all possible factors. This is particularly true given the wide number of potential factors that have been previously identified and the fact that this was a preliminary investigation into a very little researched area. Where significant differences in demographic variables were found care has been taken to report these and consider any mediating effect that they may have on the results of the study.

4.3.3. Sample

A major difficulty that was encountered whilst carrying out the present study was the low return rate from parents who were asked to consent to their children taking part in the study. This is an important issue to highlight, as it may be that there were important reasons for this that could potentially bias the results of the current study.

Unfortunately the reason for the low response rate cannot be assessed directly, but possible hypotheses for the low return rate are discussed along with implications for the current study.

As discussed above it is possible, as with most psychological research, that the people who choose to take part in the study are significantly different from those who do not. In other words there is a response bias in the data. This means that the generalisability of any results has to be called into question as it might only apply to the kind of people who willingly take part in such research and not to the general population from which they are drawn. In the current study a full range of ages participated and there was a good variety in the number of siblings that the adolescents had. All ages that the self-concept measure was designed to be used with were represented. This hopefully indicates that there was not an overall bias in the ages of the participants who took part in the study, although there may have been some bias in the ages of the participants according to group (see above for discussion of this point). Of course there is no way of telling whether there is a real response bias within the data as it is impossible to find out information about the type of people who chose not to respond. The current study is investigating an area that has not previously been investigated in relation to the adjustment of siblings of children with learning disabilities. This means that whilst it is important to acknowledge these potential biases they should not be seen as a barrier to developing new areas of research.

Connected to the impact that such a low return rate can have on the interpretability of any results is the importance that possible reasons for such a low return rate, and overall low numbers can have. Some of the difficulties encountered in the data collection stage of the research are discussed below.

One such difficulty was the relatively small number of pupils that schools could identify who went to the same mainstream secondary school as a sibling with learning disabilities. This is an interesting point to comment on as many of the teachers were surprised by how few of their pupils who received additional support due to having a learning disability actually had a brother or sister at the same school as them. Some of the reasons for this, stated by the teachers, were that the brothers or sisters of the pupils with a learning disability were either too old or too young to go to the same mainstream secondary school, or that they went to a different secondary school. This raises questions as to why siblings are not attending the same mainstream school as each other when one of them has a learning disability. Is this a choice of the parents, the teachers, the siblings themselves or merely coincidence? Sadly none of the questions can be answered by the current study as it was not something that was formally measured. The implementation of inclusive schooling policies is something, however, that may need to be addressed by future research.

A further point related to the small sample size in the current study is the impact that it had on the power of the analyses used. As stated in the method, based on a large effect size (Cohen, 1988) and a power of 0.80 approximately 21 people were required in each group. Unfortunately there were only 17 and 15 adolescents recruited to the inclusion and special school groups respectively. This had the resulting effect of reducing the power of the current study and therefore increasing the chances of not reporting any significant results even if there was an underlying difference.

4.3.4. Measures

The measures used in the current study were chosen as they were felt to be the most appropriate available (see the method section for a rationale of why each measure was chosen). The measures may, however, have limitations which impacted on the results of the study.

Self-Description Questionnaire-II (SDQ-II: Marsh, 1990a)

During the initial analysis of the results it was noted that the mean T scores generated by participants on a number of the scales of the Self-Description Questionnaire –II (SDQ-II: Marsh, 1990a) were significantly negatively skewed. This meant that there was a bias towards people selecting responses that represented higher levels of self-concept. This then raises the question as to why this negative skew occurred. One possibility is that it was due to differences between the population from which the sample of the study was drawn and the normative population used to develop the questionnaire. Alternatively the sample used in the study could be unrepresentative of the population from which it was drawn.

The first of these arguments may hold some weight as the norms of the SDQ-II are based on the responses of adolescents from schools in Sydney, Australia (Marsh, 1990a). The T scores used in the current study are created from these norms. It is therefore possible that there are underlying differences (such as cultural or educational attainment differences) in the population of Australian adolescents on which the measure was normed and the Scottish population from which the sample of the current study were drawn.

An additional point related to the negative skew observed in the SDQ-II scores in the current study is that this same skew was also noted by Marsh (1990a) in the sample that he used to develop the norms for the measure. He suggested that this skew may be due to the fact that it represents a true skew in the data. That is most students tend to feel positively about themselves. Given this higher proportion of responses above the mean, Marsh (1990a) suggests that differences between T scores at the high end of the scale should be interpreted with caution. For the main significant difference in self-concept reported in the current study, on Emotional Stability, the mean T scores fall just below and above the average T score. The difference between the two mean scores is also greater than the standard error for the emotional stability facet. This means that although caution should be used in the interpretation of this result there is not enough evidence to suggest that the result is invalid.

A further issue that raises the need for results to be interpreted with caution is related to the structure of the measure. The SDQ-II was selected for use as it provided a multidimensional score of self-concept. As discussed in the introduction the SDQ-II is based on the Shavelson (1976) model of self-concept, as seen in figure 1. In addition to being multidimensional in nature this model is also hierarchical. This means that although separate facets of self-concept can be seen as distinct, others are also related in a hierarchical fashion. This is of concern in the analysis of the current results as the separate subscales of the SDQ-II were treated as though they were independent during analysis. In fact, as shown in table 5 in the results section, a number of the subscales of the SDQ-II were significantly correlated. This violation of one of the assumptions of the parametric statistics used highlights the need for caution in the interpretation of results.

Sibling Relationship Questionnaire (SRQ)

The SRQ is another tool that was not originally developed in the UK, but instead is an American measure. The wording of some of the questions and in particular the responses of the SRQ uses American terminology. The response format includes the phrases 'somewhat' and 'extremely much'. Although this was commented on by some of the adolescents whilst they were completing this questionnaire none of them indicated that they had any difficult understanding the meaning of the questions or responses. Another point worth noting with regards to the response format of this questionnaire is that all of the possible responses are written in lower case except for the 'EXTREMELY MUCH' option which is written in upper case (see appendix 3). This response then becomes the most obvious response out of the set and the possibility that it could distort respondents' answers needs to be considered. Examination of participant responses to this measure in the current study, however, reveals a wide range of factor score totals, suggesting that participants have not overly used the 'extremely much' response and have responded in a valid manner.

One significant correlation was reported between the subscales of the current measure which highlights the need for caution in the interpretation of the results as the analyses were carried out using the assumption that the subscales were independent. It should be noted, however, that there were no significant correlations either between those subscales on which significant group differences were reported or with any of the other subscales.

A more general point related to the measures used in the current study is that they both rely on self-report from the siblings themselves. As has been suggested in the introduction, the use of single informants can result in a bias in the results. Due to the restrictions of time in the current study it was not possible to make use of multi respondents such as teachers and parents as well as the child or adolescent themselves, as has been done in well designed studies like that of Coleby (1995). Despite this it was felt that it was more valid to focus solely on self-reports from the adolescents rather than focus on gaining information from others without actually consulting the individual themselves, as has been the case in some previous research (Cuskelly & Dadds, 1992).

4.4. Strengths of the current study

Despite the number of limitations of the current study the research has strengths in a number of areas. As argued above the principal aim of the current study was to start to investigate the impact that school placement has on the adjustment of siblings of children with learning disabilities. There has been no previous research in this area looking at precisely this factor. For this reason the current research is valuable in highlighting other possible factors that have not been taken into account in previous research. In such a preliminary investigation it is not appropriate to try and account for, or control, all of the above mentioned factors. This argument gains further weight when the inconsistent nature of previous research is considered.

As well as looking at a new factor in the adjustment of adolescents who have siblings with a learning disability, the current research also contributes to the body of literature examining the impact of having a sibling with a learning disability. This is done by the combination of the two groups of adolescents who have a sibling with a learning disability and comparing them with the control group (regardless of school placement). This is particularly important as very little of the previous research has been conducted in the UK and none has been conducted specifically with a Scottish population.

The study also benefits from the use of standardised and validated measures. This has not been the case in all research in this area (Wilson, Blacher & Baker, 1989; Cuskelly & Gunn, 1993). The use of a well validated multidimensional measure of self-concept means that the impact of having a sibling with a learning disability has been assessed across a number of areas of an adolescent's self-concept. The different results across the subscales of the SDQ-II suggest that it is indeed important to measure multiple facets of how an individual views him or herself.

4.5. Clinical Implications

The aim of the current research was to investigate the impact of attending school with a sibling with a learning disability on the non disabled sibling's self-concept and the quality of the sibling relationship. Previous literature in the area has produced disparate findings and has highlighted a number of possible mediating variables that might contribute to poor adjustment in this group of individuals. The fact that a number of studies have previously reported that having a sibling with a learning disability has a negative impact on adjustment (e.g. Coleby, 1995; Lardieri, Blacher & Swanson, 2000; McHale & Gamble, 1989) means that professionals working with children and adolescents need to be aware of this. Further knowledge of factors that may either increase or decrease the risk of poor adjustment in this group is useful from a clinical point of view. Not only can it help steer possible interventions, by enabling children or families to help ameliorate risk factors and encourage potential protective factors it may also have implications for resources and service planning. Sibling support groups have been previously run, especially in the USA, and found to be beneficial to participants (Evans, Jones & Mansell, 2001). However before ploughing limited NHS resources into such schemes in the UK, perhaps there still needs to be further research to establish whether these siblings are at greater risk of maladjustment and what factors might predict those at greatest risk.

An interesting point to note that has potential relevance for clinical psychologists is the preliminary finding from this study that siblings of children with learning disabilities showed lower levels on their self-concept of emotional stability. According to the manual (Marsh, 1990a) this scale provides a measure of 'emotional well being and freedom from psychopathology' p2.

A tentative hypothesis may be that although siblings of children with learning disabilities are not reporting any global deficits in their self-concept they may be more emotionally sensitive. This may then become a predisposing factor in developing other emotional difficulties.

4.6. Future Directions

As previously discussed the current study was preliminary in nature and was designed to consider a variable that had been little studied in this area. Future research is therefore needed to clarify some of the issues raised above and establish whether the school that a child with a learning disability attends impacts on any aspects of their sibling's adjustment. This point is particularly relevant given the mixed findings from the present study and the fact that the small sample size meant it was under powered. Given the majority of the effect sizes for the significant results found in the present study it would be suggested that between 20 to 35 participants would be needed in each group to achieve adequate power to calculate between group differences in future studies. This is a promising finding as it does not seem unrealistic that future studies will be able to achieve these numbers. On the other hand many of the non significant results in the current study produced very small effect sizes. This would suggest that even with an increase in the number of participants and the subsequent increase in the power no differences would be observed between the groups.

In order to increase the generalisability of the results of any future studies the use of a matched control group would be desirable. This would ensure that any differences found could not be attributed to differences in demographic variables across the groups studied. The recording and matching of other variables not considered in the current study may also be considered based on previous literature. These might include an indication of the severity of the siblings disability (Dyson, 1989), the socio-economic status of the family (Singhi et al., 2002) or marital satisfaction (Rodrigue, Geffken & Morgan, 1993).

For researchers not limited by financial or time constraints the use of multiple informants would also add to the strength of any future studies. This would provide information on the impact of attending school with a sibling with a learning disability not only from the individual's perspective, but also from that of the teachers and parents.

Following on from this point is the fact that, although there has now started to be a body of literature which has been interested in the impact on normally developing children of having a sibling with a learning disability, little research has investigated the impact that having normally developing siblings may have on an individual with a learning disability. This point seems particularly pertinent given that these individuals are now being integrated more into mainstream schools in line with recent government policy (The Standards in Scotland's Schools Etc Act, Scottish Executive, 2000b).

Much of the research to date has focused on sampling individuals who have a sibling with a learning disability at a single time point. Consequently little is known about the developmental trajectory of these individuals and how their relationship and adjustment to having a sibling with a learning disability varies across time. In order to rectify this problem future studies in the area should consider the use of cross sectional and longitudinal designs.

A couple of specific areas that may be worth further investigation have been highlighted in the text and are reiterated here. The first of these is the need for further investigation into the kind of impact having a sibling with a learning disability attending the same school as a child or adolescent may have. As noted in the present study it may be that overall self-concept remains intact, but that it is certain facets of an individual's perception of themselves that is challenged. In particular future research that may focus on the impact on peer relationships should consider looking at this factor separately for same-sex and opposite-sex relations.

A second facet highlighted earlier for further research is the finding that siblings of children with learning disabilities appear to be less emotionally stable. Further information is needed as to the nature of this instability and whether it is related to any other psychopathology.

In order to address some of the issues highlighted above future research would benefit from the continued use of well designed and controlled quantitative research to allow for better understanding of the type and magnitude of difficulties faced by this group of children and adolescents. This research would be complemented by other research that is more qualitative in nature and which is designed to gain greater insight into the experiences of children and adolescents who have siblings with a learning disability.

4.7. Summary

The aim of the present study was to investigate the impact of attending school, or not, with a sibling with a learning disability on the self-concept and quality of sibling relationship for the non disabled sibling. The results of the study do not fully support the initial hypotheses made, but instead highlight further the complicated picture portrayed by previous research. Overall the study found no evidence to suggest that attending school with a sibling with a learning disability had a differential impact on the self-concept of the adolescents involved in the study. There were significant differences in some small facets of self-concept, however. The results showed that adolescents who went to the same school as a sibling with a learning disability reported a worse perception of their opposite-sex relationships compared to adolescents who had a sibling at special school. There was also an impact on the emotional stability of adolescent siblings of children with a learning disability, regardless of school placement, who reported lower levels of stability compared to a control group of adolescents who attended school with a normally developing sibling.

In terms of the quality of the sibling relationship, adolescents who had a sibling at special school reported having more status and power over their siblings regardless of whether they were older or younger than them compared to adolescents who had a siblings with a learning disability attending the same school as them. Like the control group the adolescents who had a sibling with a learning disability attending the same school as them varied in the report of relative power over their sibling as a function of their relative birth order. That is those who were older than their siblings reported they had more power over them, whereas those younger than their siblings reported that their siblings had more power over them.

The results have been put into the context of previous research and the preliminary nature of the current investigation has been stressed. These factors mean that there needs to be further research in the area to address the shortcomings of the current study and to further the knowledge about the impact that spending increasingly more time with one's sibling with a learning disability has on an individual. Such research could usefully inform educational policies and current debate regarding the inclusion of children with learning disabilities in mainstream schooling and aid clinicians working with this population in understanding potential risk factors.

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APPENDIX 1: LETTERS OF ETHICAL APPROVAL.

◆EDINBVRGH◆
THE CITY OF EDINBURGH COUNCIL

CHILDREN AND FAMILIES

Ms Ginny Avery
Trainee Clinical Psychologist
Section of Clinical and Health Psychology
School of Health in Social Science
The University of Edinburgh
Kennedy Tower
Royal Edinburgh Hospital
Edinburgh
EH10 5HF

10 May 2005

Dear Ms Avery,

Research Permission

Please accept my apologies for the delay in writing to you to confirm that you have permission in principle to carry out the research detailed in your letter of 11 February 2005, and discussed in our telephone conversation on 19 April 2005.

As I explained when we spoke, permission in principle has been granted by the Children and Families Department, but final discretion on participation in research projects lies with Head Teachers and their staff.

I would be grateful if you could send me a copy of your research report when this becomes available, as it will be of interest to colleagues in the Department.

I would like to wish you well with the research, and with your progress towards full qualification.

Yours sincerely,

Graham H. Munn.

Graham H Munn
Principal Officer
(Admin and Support Services)

Wellington Court 10 Waterloo Place Edinburgh EH1 3EG Tel 0131-200 2000 Fax 0131-469 3311

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31 May 2005

Ms Ginny Avery
Trainee Clinical Psychologist
Section of Clinical and Health Psychology
School of Health in Social Science
The University of Edinburgh
Kennedy Tower
Royal Edinburgh Hospital
EDINBURGH
EH10 5HF

Dear Ms Avery

Permission to Contact East Lothian Council Schools
Study involving siblings of children with learning disabilities

I refer to your letter dated 24 May 2005 regarding the above study. I apologise for the delay in responding.

I am pleased to support you in your study by giving permission for you to approach our schools. In giving this permission I would point out that the Head Teachers can decide whether or not to participate in the study.

If you require any further information please contact Susan McNaught, Admin Officer, Schools Support Division, telephone number 01620-827595.

Yours sincerely

S. McNaught

for Derek Haywood
Manager, Schools Support Division

INVESTOR IN PEOPLE

West Lothian
Council

Education & Cultural Services

Lindsay House
South Bridge Street
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West Lothian
EH48 1TS

Tel 01506 776000
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Ginny Avery
Trainee Clinical Psychologist
Department of Psychology
Kennedy Tower
Royal Edinburgh Hospital
Morningside Drive
EDINBURGH
EH10 5HF

WLC/GF/Avery1006/KJ

10 June 2005

Dear Ms Avery

Research Project

Thank you for sending me a copy of your research methodology.

I have now reviewed the documentation and can give approval for the study to take place within West Lothian schools.

May I wish you every success with the project.

Yours sincerely

G Ford

Gordon J Ford
Head of Education (Quality Assurance) and Specialist Services

Midlothian Council **Education**
Fairfield House
8 Lothian Road
Dalkeith
EH22 3ZG

Director
Donald S MacKay

Midlothian

17 June 2005

Ginny Avery
Trainee Clinical Psychologist
The University of Edinburgh
School of Health in Social Science
Kennedy Tower
Royal Edinburgh Hospital
EDINBURGH EH10 5HF

Dear Ginny

Research Project

I refer to your letter dated 6 June 2005 and our subsequent telephone conversation on Thursday 9 June. I can confirm that Donald MacKay, Director of Education has agreed that you may contact Headteachers of secondary schools within Midlothian Council in respect of your research project.

It should be noted that the decision of whether or not to participate is entirely at the discretion of the Headteacher.

Please accept my best wishes on a successful conclusion to your research.

Yours sincerely

Lorraine Brown

Lorraine Brown
PA to Director, Education
lorraine.brown@midlothian.gov.uk

Your Ref:
Our Ref: DSM/LB

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APPENDIX 2: PERMISSION FOR USE OF THE SRQ.

UNIVERSITY OF DENVER
Department of Psychology
Frontier Hall
Denver, Colorado 80208
303-871-2478

Enclosed you will find a copy of the Sibling Relationship Questionnaire (SRQ). I would be pleased to have you use it, but I do have two requests.

1) You may only want to use certain scales. I do not mind this kind of reduction, but I would appreciate it if the scales that are used are kept intact (i.e., not reducing the number of items to one or two or rewriting specific items). These kinds of changes make it difficult to compare results.

2) I would appreciate receiving information about the results of your work.

I hope you find these scales useful. This letter gives you permission to use the questionnaire. Good luck with your research!

Sincerely,

Wyndol Furman, Ph.D.
Professor

APPENDIX 3: MEASURES

1. **Sibling Relationship Questionnaire**
2. **Self-Description Questionnaire-II**
3. **Semi-Structured Interview**
4. **Demographic Questionnaire**

ID # ______________________________ GROUP ____________

Sibling Relationship Questionnaire - Revised (Child) 3/90

My name is ______________________________(completed by)

The phrase "this sibling" refers to ________________ (completed about)

---

1. Some siblings do nice things for each other a lot, while other siblings do nice things for each other a little. How much do both you and this sibling do nice things for each other?	[ ]Hardly at all [ ]Not too much [ ]Somewhat [ ]Very much [ ]EXTREMELY MUCH
2. Who usually gets treated better by your mother, you or this sibling?	[ ]My sibling almost always gets treated better [ ]My sibling often gets treated better [ ]We get treated about the same [ ]I often get treated better [ ]I almost always get treated better
3. How much do you show this sibling how to do things he or she doesn't know how to do?	[ ]Hardly at all [ ]Not too much [ ]Somewhat [ ]Very much [ ]EXTREMELY MUCH
4. How much does this sibling show you how to do things you don't know how to do?	[ ]Hardly at all [ ]Not too much [ ]Somewhat [ ]Very much [ ]EXTREMELY MUCH
5. How much do you tell this sibling what to do?	[ ]Hardly at all [ ]Not too much [ ]Somewhat [ ]Very much [ ]EXTREMELY MUCH
6. How much does this sibling tell you what to do?	[ ]Hardly at all [ ]Not too much [ ]Somewhat [ ]Very much [ ]EXTREMELY MUCH

7. Who usually gets treated better by your father, you or this sibling?	[ ]My sibling almost always gets treated better [ ]My sibling often gets treated better [ ]We get treated about the same [ ]I often get treated better [ ]I almost always get treated better
8. Some siblings care about each other a lot while other siblings don't care about each other that much. How much do you and this sibling care about each other?	[ ]Hardly at all [ ]Not too much [ ]Somewhat [ ]Very much [ ]EXTREMELY MUCH
9. How much do you and this sibling go places and do things together?	[ ]Hardly at all [ ]Not too much [ ]Somewhat [ ]Very much [ ]EXTREMELY MUCH
10. How much do you and this sibling insult and call each other names?	[ ]Hardly at all [ ]Not too much [ ]Somewhat [ ]Very much [ ]EXTREMELY MUCH
11. How much do you and this sibling like the same things?	[ ]Hardly at all [ ]Not too much [ ]Somewhat [ ]Very much [ ]EXTREMELY MUCH
12. How much do you and this sibling tell each other everything?	[ ]Hardly at all [ ]Not too much [ ]Somewhat [ ]Very much [ ]EXTREMELY MUCH
13. Some siblings try to out-do or beat each other at things a lot, while other siblings try to out-do each other a little. How much do you and this sibling try to out-do each other at things?	[ ]Hardly at all [ ]Not too much [ ]Somewhat [ ]Very much [ ]EXTREMELY MUCH
14. How much do you admire and respect this sibling?	[ ]Hardly at all [ ]Not too much [ ]Somewhat [ ]Very much [ ]EXTREMELY MUCH

15. How much does this sibling admire and respect you?	[ ]Hardly at all [ ]Not too much [ ]Somewhat [ ]Very much [ ]EXTREMELY MUCH
16. How much do you and this sibling disagree and quarrel with each other?	[ ]Hardly at all [ ]Not too much [ ]Somewhat [ ]Very much [ ]EXTREMELY MUCH
17. Some siblings cooperate a lot, while other siblings cooperate a little. How much do you and this sibling cooperate with other?	[ ]Hardly at all [ ]Not too much [ ]Somewhat [ ]Very much [ ]EXTREMELY MUCH
18. Who gets more attention from your mother, you or this sibling?	[ ]My sibling almost always gets more attention [ ]My sibling often gets more attention [ ]We get about the same amount of attention [ ]I often get more attention [ ]I almost always get more attention
19. How much do you help this sibling with things he or she can't do by him or herself?	[ ]Hardly at all [ ]Not too much [ ]Somewhat [ ]Very much [ ]EXTREMELY MUCH
20. How much does this sibling help you with things you can't do by yourself?	[ ]Hardly at all [ ]Not too much [ ]Somewhat [ ]Very much [ ]EXTREMELY MUCH
21. How much do you make this sibling do things?	[ ]Hardly at all [ ]Not too much [ ]Somewhat [ ]Very much [ ]EXTREMELY MUCH
22. How much does this sibling make you do things?	[ ]Hardly at all [ ]Not too much [ ]Somewhat [ ]Very much [ ]EXTREMELY MUCH

23. Who gets more attention from your father, you or this sibling?	[ ]My sibling almost always gets more attention [ ]My sibling often gets more attention [ ]We get about the same amount of attention [ ]I often get more attention [ ]I almost always get more attention
24. How much do you and this sibling love each other?	[ ]Hardly at all [ ]Not too much [ ]Somewhat [ ]Very much [ ]EXTREMELY MUCH
25. Some siblings play around and have fun with each other a lot, while other siblings play around and have fun with each other a little. How much do you and this sibling play around and have fun with each other?	[ ]Hardly at all [ ]Not too much [ ]Somewhat [ ]Very much [ ]EXTREMELY MUCH
26. How much are you and this sibling mean to each other?	[ ]Hardly at all [ ]Not too much [ ]Somewhat [ ]Very much [ ]EXTREMELY MUCH
27. How much do you and this sibling have in common?	[ ]Hardly at all [ ]Not too much [ ]Somewhat [ ]Very much [ ]EXTREMELY MUCH
28. How much do you and this sibling share secrets and private feelings?	[ ]Hardly at all [ ]Not too much [ ]Somewhat [ ]Very much [ ]EXTREMELY MUCH
29. How much do you and this sibling compete with each other?	[ ]Hardly at all [ ]Not too much [ ]Somewhat [ ]Very much [ ]EXTREMELY MUCH
30. How much do you look up to and feel proud of this sibling?	[ ]Hardly at all [ ]Not too much [ ]Somewhat [ ]Very much [ ]EXTREMELY MUCH

31. How much does this sibling look up to and feel proud of you?	[ ]Hardly at all [ ]Not too much [ ]Somewhat [ ]Very much [ ]EXTREMELY MUCH
32. How much do you and this sibling get mad at and get in arguments with each other?	[ ]Hardly at all [ ]Not too much [ ]Somewhat [ ]Very much [ ]EXTREMELY MUCH
33. How much do both you and your sibling share with each other?	[ ]Hardly at all [ ]Not too much [ ]Somewhat [ ]Very much [ ]EXTREMELY MUCH
34. Who does your mother usually favor, you or this sibling?	[ ] My sibling almost always is favored [ ]My sibling is often favored [ ]Neither of us is favored [ ]I am often favored [ ]I am almost always favored
35. How much do you teach this sibling things that he or she doesn't know?	[ ]Hardly at all [ ]Not too much [ ]Somewhat [ ]Very much [ ]EXTREMELY MUCH
36. How much does this sibling teach you things that you don't know?	[ ]Hardly at all [ ]Not too much [ ]Somewhat [ ]Very much [ ]EXTREMELY MUCH
37. How much do you order this sibling around?	[ ]Hardly at all [ ]Not too much [ ]Somewhat [ ]Very much [ ]EXTREMELY MUCH
38. How much does this sibling order you around?	[ ]Hardly at all [ ]Not too much [ ]Somewhat [ ]Very much [ ]EXTREMELY MUCH
39. Who does your father usually favor, you or this sibling?	[ ] My sibling almost always is favored [ ]My sibling is often favored [ ]Neither of us is favored [ ]I am often favored [ ]I am almost always favored

40. How much is there a strong feeling of affection (love) between you and this sibling?	[ ]Hardly at all [ ]Not too much [ ]Somewhat [ ]Very much [ ]EXTREMELY MUCH
41. Some kids spend lots of time with their siblings, while others don't spend so much. How much free time do you and this sibling spend together?	[ ]Hardly at all [ ]Not too much [ ]Somewhat [ ]Very much [ ]EXTREMELY MUCH
42. How much do you and this sibling bug and pick on each other in mean ways?	[ ]Hardly at all [ ]Not too much [ ]Somewhat [ ]Very much [ ]EXTREMELY MUCH
43. How much are you and this sibling alike?	[ ]Hardly at all [ ]Not too much [ ]Somewhat [ ]Very much [ ]EXTREMELY MUCH
44. How much do you and this sibling tell each other things you don't want other people to know?	[ ]Hardly at all [ ]Not too much [ ]Somewhat [ ]Very much [ ]EXTREMELY MUCH
45. How much do you and this sibling try to do things better than each other?	[ ]Hardly at all [ ]Not too much [ ]Somewhat [ ]Very much [ ]EXTREMELY MUCH
46. How much do you think highly of this sibling?	[ ]Hardly at all [ ]Not too much [ ]Somewhat [ ]Very much [ ]EXTREMELY MUCH
47. How much does this sibling think highly of you?	[ ]Hardly at all [ ]Not too much [ ]Somewhat [ ]Very much [ ]EXTREMELY MUCH
48. How much do you and this sibling argue with each other?	[ ]Hardly at all [ ]Not too much [ ]Somewhat [ ]Very much [ ]EXTREMELY MUCH

SELF DESCRIPTION QUESTIONNAIRE – II

SDQ II

Your Name______________________________ **Circle one:** **Male** **Female**

School______________________________ **Grade**______ **Age**______ **Date:**______________

This is a chance to look at yourself. **It is not a test.** There are no right answers and everyone will have different answers. Be sure that your answers show how you feel about yourself. **PLEASE DO NOT TALK ABOUT YOUR ANSWERS WITH ANYONE ELSE.** We will keep your answers private and not show them to anyone.

When you are ready to begin, please read each sentence and choose an answer. There are six possible answers for each question - "True", "False", and four answers in between. There are six boxes next to each sentence, one for each of the answers. The answers are written at the top of the boxes. Choose your answer to a sentence and put a tick in the box under the answer you choose. **DO NOT** say your answer out loud or talk about it with anyone else.

Before you start there are three examples below. A student named Bob has already answered the first two examples to show you how to do it. In the third example you must choose your own answer by ticking a box.

EXAMPLES

	FALSE	MOSTLY FALSE	MORE FALSE THAN TRUE	MORE TRUE THAN FALSE	MOSTLY TRUE	TRUE
1. I like to read comic books.............................. 1	☐	☐	☐	☐	☐	☑

(Bob put a tick in the box under the answer "TRUE". This means that he really likes to read comic books. If Bob did not like to read comic books very much, he would have answered "FALSE" or "MOSTLY FALSE".)

2. In general, I am neat and tidy...................... 2	☐	☐	☑	☐	☐	☐

(Bob answered "MORE FALSE THAN TRUE" because he is definitely not very neat, but he is not really messy either).

3. I like to watch T.V.................................... 3	☐	☐	☐	☐	☐	☐

(For this sentence you have to choose the answer that is best for you. First you must decide if the sentence is "TRUE" or "FALSE" for you, or somewhere in between. If you really like to watch T.V. a lot you would answer "TRUE" by putting a tick in the last box. If you hate watching T.V. you would answer "FALSE" by putting a tick in the first box. If you do not like T.V. very much, but you watch it sometimes, you might decide to put a tick in the box that says "MOSTLY FALSE" or the box for "MORE FALSE THAN TRUE".)

If you want to change an answer you have marked you should cross out the tick and put a new tick in another box on the same line.

For all the sentences be sure that your tick is on the same line as the sentence you are answering. You should have one answer and only one answer for each sentence. **Do not leave out any of the sentences.** Once you have started, **PLEASE DO NOT TALK.** Turn over the page and begin.

ID	Surname	Christian Name	Sex 1 - Male 2 - Female	Year	School	Class	Age	DOB	Date	Time

Self-concept Enhancement and Learning Facilitation (SELF) Research Centre, University of Western Sydney.

		FALSE	MOSTLY FALSE	MORE FALSE THAN TRUE	MORE TRUE THAN FALSE	MOSTLY TRUE	TRUE	
1. **MATHEMATICS** is one of my best subjects................	1	☐	☐	☐	☐	☐	☐	1
2. Nobody thinks that I am good looking........................	2	☐	☐	☐	☐	☐	☐	2
3. Overall, I have a lot to be proud of............................	3	☐	☐	☐	☐	☐	☐	3
4. I sometimes take things that belong to other people....	4	☐	☐	☐	☐	☐	☐	4
5. I enjoy things like sports, gym, and dance..................	5	☐	☐	☐	☐	☐	☐	5
6. I am hopeless in **ENGLISH** classes...........................	6	☐	☐	☐	☐	☐	☐	6
7. I am usually relaxed..	7	☐	☐	☐	☐	☐	☐	7
8. My parents are usually unhappy or disappointed with what I do..	8	☐	☐	☐	☐	☐	☐	8
9. People come to me for help in most **SCHOOL SUBJECTS**..	9	☐	☐	☐	☐	☐	☐	9
10. It is difficult to make friends with members of my own sex..	10	☐	☐	☐	☐	☐	☐	10

		FALSE	MOSTLY FALSE	MORE FALSE THAN TRUE	MORE TRUE THAN FALSE	MOSTLY TRUE	TRUE	
11. People of the opposite sex whom I like, don't like me....	11	☐	☐	☐	☐	☐	☐	11
12. I often need help in **MATHEMATICS**.........................	12	☐	☐	☐	☐	☐	☐	12
13. I have a nice looking face..	13	☐	☐	☐	☐	☐	☐	13
14. Overall, I am no good...	14	☐	☐	☐	☐	☐	☐	14
15. I am honest..	15	☐	☐	☐	☐	☐	☐	15
16. I am lazy when it comes to things like sports and hard physical exercise..	16	☐	☐	☐	☐	☐	☐	16
17. I look forward to **ENGLISH** classes............................	17	☐	☐	☐	☐	☐	☐	17
18. I worry more than I need to.....................................	18	☐	☐	☐	☐	☐	☐	18
19. I get along well with my parents................................	19	☐	☐	☐	☐	☐	☐	19
20. I am too stupid at school to get into a good university...	20	☐	☐	☐	☐	☐	☐	20

			FALSE	MOSTLY FALSE	MORE FALSE THAN TRUE	MORE TRUE THAN FALSE	MOSTLY TRUE	TRUE	
21.	I make friends easily with boys	21	☐	☐	☐	☐	☐	☐	21
22.	I make friends easily with girls	22	☐	☐	☐	☐	☐	☐	22
23.	I look forward to **MATHEMATICS** classes	23	☐	☐	☐	☐	☐	☐	23
24.	Most of my friends are better looking than I am	24	☐	☐	☐	☐	☐	☐	24
25.	Most things I do, I do well	25	☐	☐	☐	☐	☐	☐	25
26.	I sometimes tell lies to stay out of trouble	26	☐	☐	☐	☐	☐	☐	26
27.	I am good at things like sports, gym, and dance	27	☐	☐	☐	☐	☐	☐	27
28.	I do badly on tests that need a lot of **READING** ability	28	☐	☐	☐	☐	☐	☐	28
29.	I don't get upset very easily	29	☐	☐	☐	☐	☐	☐	29
30.	It is difficult for me to talk to my parents	30	☐	☐	☐	☐	☐	☐	30

			FALSE	MOSTLY FALSE	MORE FALSE THAN TRUE	MORE TRUE THAN FALSE	MOSTLY TRUE	TRUE	
31.	If I work really hard I could be one of the best students in my school year	31	☐	☐	☐	☐	☐	☐	31
32.	Not many people of my own sex like me	32	☐	☐	☐	☐	☐	☐	32
33.	I am not very popular with members of the opposite sex	33	☐	☐	☐	☐	☐	☐	33
34.	I have trouble understanding anything with **MATHEMATICS** in it	34	☐	☐	☐	☐	☐	☐	34
35.	I am good looking	35	☐	☐	☐	☐	☐	☐	35
36.	Nothing I do ever seems to turn out right	36	☐	☐	☐	☐	☐	☐	36
37.	I always tell the truth	37	☐	☐	☐	☐	☐	☐	37
38.	I am awkward at things like sports, gym, and dance	38	☐	☐	☐	☐	☐	☐	38
39.	Work in **ENGLISH** classes is easy for me	39	☐	☐	☐	☐	☐	☐	39
40.	I am often depressed and down in the dumps	40	☐	☐	☐	☐	☐	☐	40

			FALSE	MOSTLY FALSE	MORE FALSE THAN TRUE	MORE TRUE THAN FALSE	MOSTLY TRUE	TRUE	
41.	My parents treat me fairly	41	☐	☐	☐	☐	☐	☐	41
42.	I get bad marks in most **SCHOOL SUBJECTS**	42	☐	☐	☐	☐	☐	☐	42
43.	I am popular with boys	43	☐	☐	☐	☐	☐	☐	43
44.	I am popular with girls	44	☐	☐	☐	☐	☐	☐	44
45.	I enjoy studying for **MATHEMATICS**	45	☐	☐	☐	☐	☐	☐	45
46.	I hate the way I look	46	☐	☐	☐	☐	☐	☐	46
47.	Overall, most things I do turn out well	47	☐	☐	☐	☐	☐	☐	47
48.	Cheating on a test is OK if I do not get caught	48	☐	☐	☐	☐	☐	☐	48
49.	I am better than most of my friends at things like sports, gym, and dance	49	☐	☐	☐	☐	☐	☐	49
50.	I am not very good at **READING**	50	☐	☐	☐	☐	☐	☐	50

			FALSE	MOSTLY FALSE	MORE FALSE THAN TRUE	MORE TRUE THAN FALSE	MOSTLY TRUE	TRUE	
51.	Other people get more upset about things than I do	51	☐	☐	☐	☐	☐	☐	51
52.	I have lots of arguments with my parents	52	☐	☐	☐	☐	☐	☐	52
53.	I learn things quickly in most **SCHOOL SUBJECTS**	53	☐	☐	☐	☐	☐	☐	53
54.	I do not get along very well with boys	54	☐	☐	☐	☐	☐	☐	54
55.	I do not get along very well with girls	55	☐	☐	☐	☐	☐	☐	55
56.	I do badly in tests of **MATHEMATICS**	56	☐	☐	☐	☐	☐	☐	56
57.	Other people think I am good looking	57	☐	☐	☐	☐	☐	☐	57
58.	I don`t have much to be proud of	58	☐	☐	☐	☐	☐	☐	58
59.	Honesty is very important to me	59	☐	☐	☐	☐	☐	☐	59
60.	I try to get out of sports and physical education classes whenever I can	60	☐	☐	☐	☐	☐	☐	60

		FALSE	MOSTLY FALSE	MORE FALSE THAN TRUE	MORE TRUE THAN FALSE	MOSTLY TRUE	TRUE	
61.	**ENGLISH** is one of my best subjects......................... 61	☐	☐	☐	☐	☐	☐	61
62.	I am a nervous person... 62	☐	☐	☐	☐	☐	☐	62
63.	My parents understand me..................................... 63	☐	☐	☐	☐	☐	☐	63
64.	I am stupid at most **SCHOOL SUBJECTS**.................. 64	☐	☐	☐	☐	☐	☐	64
65.	I have good friends who are members of my own sex... 65	☐	☐	☐	☐	☐	☐	65
66.	I have lots of friends of the opposite sex.................... 66	☐	☐	☐	☐	☐	☐	66
67.	I get good marks in **MATHEMATICS**.......................... 67	☐	☐	☐	☐	☐	☐	67
68.	I am ugly.. 68	☐	☐	☐	☐	☐	☐	68
69.	I can do things as well as most people...................... 69	☐	☐	☐	☐	☐	☐	69
70.	I sometimes cheat.. 70	☐	☐	☐	☐	☐	☐	70

		FALSE	MOSTLY FALSE	MORE FALSE THAN TRUE	MORE TRUE THAN FALSE	MOSTLY TRUE	TRUE	
71.	I can run a long way without stopping......................... 71	☐	☐	☐	☐	☐	☐	71
72.	I hate **READING**.. 72	☐	☐	☐	☐	☐	☐	72
73.	I often feel confused and mixed up............................ 73	☐	☐	☐	☐	☐	☐	73
74.	I do not like my parents very much............................ 74	☐	☐	☐	☐	☐	☐	74
75.	I do well in tests in most **SCHOOL SUBJECTS**............ 75	☐	☐	☐	☐	☐	☐	75
76.	Most boys try to avoid me....................................... 76	☐	☐	☐	☐	☐	☐	76
77.	Most girls try to avoid me....................................... 77	☐	☐	☐	☐	☐	☐	77
78.	I never want to take another **MATHEMATICS** course.... 78	☐	☐	☐	☐	☐	☐	78
79.	I have a good looking body...................................... 79	☐	☐	☐	☐	☐	☐	79
80.	I feel that my life is not very useful............................ 80	☐	☐	☐	☐	☐	☐	80

			FALSE	MOSTLY FALSE	MORE FALSE THAN TRUE	MORE TRUE THAN FALSE	MOSTLY TRUE	TRUE	
81.	When I make a promise I keep it	81	☐	☐	☐	☐	☐	☐	81
82.	I hate things like sports, gym, and dance	82	☐	☐	☐	☐	☐	☐	82
83.	I get good marks in **ENGLISH**	83	☐	☐	☐	☐	☐	☐	83
84.	I get upset easily	84	☐	☐	☐	☐	☐	☐	84
85.	My parents really love me a lot	85	☐	☐	☐	☐	☐	☐	85
86.	I have trouble with most **SCHOOL SUBJECTS**	86	☐	☐	☐	☐	☐	☐	86
87.	I make friends easily with members of my own sex	87	☐	☐	☐	☐	☐	☐	87
88.	I get a lot of attention from members of the opposite sex	88	☐	☐	☐	☐	☐	☐	88
89.	I have always done well in **MATHEMATICS**	89	☐	☐	☐	☐	☐	☐	89
90.	If I really try I can do all most anything I want to do	90	☐	☐	☐	☐	☐	☐	90

			FALSE	MOSTLY FALSE	MORE FALSE THAN TRUE	MORE TRUE THAN FALSE	MOSTLY TRUE	TRUE	
91.	I often tell lies	91	☐	☐	☐	☐	☐	☐	91
92.	I have trouble expressing myself when I try to write something	92	☐	☐	☐	☐	☐	☐	92
93.	I am a calm person	93	☐	☐	☐	☐	☐	☐	93
94.	I am good at most **SCHOOL SUBJECTS**	94	☐	☐	☐	☐	☐	☐	94
95.	I have few friends of the same sex as myself	95	☐	☐	☐	☐	☐	☐	95
96.	I hate **MATHEMATICS**	96	☐	☐	☐	☐	☐	☐	96
97.	Overall, I am a failure	97	☐	☐	☐	☐	☐	☐	97
98.	People can really count on me to do the right thing	98	☐	☐	☐	☐	☐	☐	98
99.	I learn things quickly in **ENGLISH** classes	99	☐	☐	☐	☐	☐	☐	99
100.	I worry about a lot of things	100	☐	☐	☐	☐	☐	☐	100

			FALSE	MOSTLY FALSE	MORE FALSE THAN TRUE	MORE TRUE THAN FALSE	MOSTLY TRUE	TRUE	
101.	Most **SCHOOL SUBJECTS** are just too hard for me.....	**101**	☐	☐	☐	☐	☐	☐	**101**
102.	I enjoy spending time with my friends of the same sex..	**102**	☐	☐	☐	☐	☐	☐	**102**

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SEMI-STRUCTURED INTERVIEW

Icebreaker Questions:

1. What do you like about your school?

2. What don't you like as much?

Research Questions

3. What do you like about being at the same/different school as your brother/sister?

4. What don't you like about it?

5. Is there anything else you want to tell me about school?

Overall how do you feel about having your brother or sister at/not at school with you?

Like it a lot	Like it a bit	Neither Like nor Dislike	Dislike a bit	Dislike a lot
☐	☐	☐	☐	☐

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DEMOGRAPHIC QUESTIONNAIRE.

As well as your son/daughter's participation in the study it would be greatly appreciated if you could complete the following questionnaire about your family. This information will be used in the overall analyses of the results but no reference will be made to individual information and confidentiality will be ensured.

1. How many children are there in your household? Please consider children to be anyone under the age of 18.

2. How many children go to a special school or unit.

3. How many children go to a mainstream school, but receive additional learning support?

4. How many children go to a mainstream school and receive no extra support?

5. Please can you list over the page all of the children in your family along with their ages:

APPENDIX 4: PARTICIPANT RECRUITMENT.

1. **Information sent to Schools**
2. **Information Sheet for Parents**
3. **Information Sheet for Participants**
4. **Consent Form for Parents**
5. **Consent Form for Participants**

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RESEARCH METHODOLOGY

Background to the study:

There has been much research studying the siblings of children with disabilities and the impact that this can have on their functioning. Many studies have found a negative impact on the siblings of children with disabilities (e.g. Lobato et al , 1987). In particular it has been found that siblings of children with disabilities often take on more caregiving roles and household responsibilities. They perceive that they receive less parental attention which may lead to feelings of isolation and low self-esteem (Dyson, 1989). However other studies have found no negative effects (Gold, 1993) or even positive effects (Roeyers & Mycke, 1995) for siblings of children with disabilities.

Research has also found that having a sibling with a learning disability can lower teachers expectations of the non learning disabled child's behaviour and performance (Richey & Ysseldyke, 1983).

Much of the previous research has looked at the differences between children who have a sibling with a disability and those who have siblings without a disability. The current study is interested in the impact of having to attend school with a sibling with a disability in comparison to having a sibling with a disability who attends a different school. This is of interest as it has been suggested that the social experiences of the non-disabled sibling are mediated by the type of school attended by the sibling with a disability (Burke & Montgomery, 2000). The social experience of a child is important to their development and can impact on the development of how they feel about themselves, this is termed their self-concept.

Aims and Hypotheses:

The aim of the study is to investigate the impact of attending school with a sibling who has a learning disability on self-concept.

It is hypothesised that the siblings of children attending special schools will have a higher self-concept compared to those who have siblings included in mainstream schooling at their school and receiving additional learning support.

The research is also interested in the impact on the sibling relationship of having a sibling who has a learning disability and receives additional learning support attending the same school. It is hypothesised that there will be more relationship difficulties in the relationships described by those children whose siblings attend the same school compared to those who have a sibling at a special school.

Overview of Methodology:

With appropriate consent from the Director of Education the following steps are proposed:

1. Head teachers of the schools to be involved will be given details of the proposed research.
2. With their permission the siblings of pupils receiving additional learning support due to having a learning disability
3. It will then be noted whether the pupil receiving learning support due to having a learning disability is at the same school as their sibling or at a special school.
4. A comparison group of pupils who attend school with a sibling not receiving additional learning support will be identified.
5. The parents or guardians of the identified pupils will then be sent an information leaflet and consent form explaining the purpose of the study and asking for consent for their son/daughter to participate. The parents or guardians of the pupils will also be asked to complete and return a short demographic questionnaire. A prepaid envelope will be provided for the return of consent forms and questionnaires.
6. Once the consent forms have been received the researcher will arrange to meet with the pupil for a one off session lasting approximately half an hour in the pupil's school. These sessions will be conducted in small groups of around two to four pupils.
7. At the beginning of the half hour session the pupils will be given an information sheet and consent form. They will then be asked to complete a standardised researched and published measure of self-concept and a measure to assess the nature of their sibling relationship. They will also be asked a number of questions about their school experience in relation to their sibling who receives additional learning support as part of a semi-structured interview.

The pupil will have the right to refuse to take part in the study or withdraw from the study at any time with no consequences.

Pupils who the school deems do not have the necessary communications skills, or those for whom it is felt participation would be detrimental, will not be asked to take part in the study.

It will be highlighted in the information leaflets that if any pupil reports distress about their school experience to the researcher that this will be raised with the Head teacher after the session, and that the school will deal with concerns in accordance with their school policies. It has been made explicit that the researcher has no authority to influence the school placement of the pupil or his/her sibling.

Results of the Study:

All questionnaires will be treated as confidential and will be stored either in NHS or University of Edinburgh premises in a locked filing cabinet. The researcher and supervisors will be the only people with access to the data.

The research is being carried out as part of a thesis for the attainment of the D. Clin.Psychol. The results will be bound as part of the thesis and stored at the University of Edinburgh. Results may be prepared for publication at a later date. Participating schools can apply for a summary of the results from the researcher, but individual data will not be made available.

Copies of the information sheets, consent forms, demographic questionnaire and semi-structured interview are enclosed.

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INFORMATION SHEET FOR PARENTS

We would like your son/daughter to take part in a research study.

Before you give your agreement here is some information to help you understand why the research is being done and what it will involve. Please take time to read the following information carefully. Please contact me if there is anything that is not clear or if you would like more information.

WHAT IS THE STUDY ABOUT?

It is about how young people feel and think about themselves, we call this self-concept. This is something that is considered to be very important. It can impact on the development of an individual.

This study is interested in looking at some of the factors that might impact on the self-concept of young people who have brothers or sisters who receive additional learning support.

Your son/daughter has been chosen because they have been identified as someone who has a brother or sister who receives additional learning support. Alternatively they may have been chosen as part of a comparison group of young people not receiving additional learning support who attend school with a brother or sister.

If you agree to your son/daughter taking part in the study then you are asked to sign a copy of the consent form and return it to me. Your son/daughter will also be asked to sign a consent form and this will be explained to them.

If you or your son/daughter change your mind about being in the study you or they have the right to withdraw at any time without having to state why.

Involvement in the study or stopping participation in the study will not have any effect on your son's/daughter's educational placement.

WHAT WILL IT INVOLVE?

The researcher will meet with your son/daughter on one occasion and will ask them to complete a questionnaire that has been researched and published and is known to measure self-concept. They will then be asked a few questions about how they feel about school. They will also be asked to complete a questionnaire about their relationship with their brother or sister.

It is not anticipated that there will be any negative effects on your son/daughter from their participation in this study. However in the unlikely event that your son/daughter reports some distress when describing their school experiences these concerns will be highlighted to the Head teacher. These will then be dealt with through normal school policies.

WHAT WILL HAPPEN WITH THE RESULTS OF THE STUDY?

All personal information will be treated as confidential and will be stored in a locked filing cabinet.

The results will be put together and written as a report. The report will be submitted to the University of Edinburgh as part of a doctorate in clinical psychology. The University of Edinburgh will keep a bound copy of the report and it may later be written for publication.

No names or personally identifying information will appear in the final report.

It is hoped that the report will improve the knowledge that psychologists have about what influences the self-concept of brothers or sisters of children who have additional support needs and also the relationship between brothers and sisters.

The Director of Education has agreed for this research to be carried out.

You will have a copy of this information leaflet and the signed consent form to keep.

HOW DO I CONTACT THE RESEARCHER?

If you require more information about the research project please contact the researcher:

Address: Ginny Avery
Trainee Clinical Psychologist
Department of Psychology
Kennedy Tower
Royal Edinburgh Hospital
Morningside Drive
Edinburgh, EH10 5HF

E-mail: ginnyavery@hotmail.com Telephone: 0131 5376279

WHAT NEXT?

Please think about the information provided carefully.
If you agree to let your son/daughter take part in the study then please sign a copy of the consent form and return it in the pre-paid envelope as soon as possible.

Please sign a copy of the consent form for each of your sons/daughters that you agree to let take part in the study.

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INFORMATION SHEET FOR PARTICIPANTS

We would like you to take part in a research study.

Before you agree to take part here is some information to help you understand why the research is being carried out and what we will ask you to do. Please take time to go through this information sheet carefully. Please ask me if you have any questions or there is anything you do not understand.

WHAT IS THE STUDY ABOUT?

How young people feel and what they think about themselves is very important.

This study aims to help us understand some of the things that make young people feel both good and bad about themselves. This is important because the more we find out about this the better we can understand and help young people.

WHY HAVE I BEEN CHOSEN?

All the young people in the study have been chosen either because they have a brother or sister who is receiving additional learning support or because they go the same school as their brother or sister.

WHAT WILL IT INVOLVE?

If you decide to take part you will be asked to complete a questionnaire about how you feel about yourself.

You will also be asked some questions about what you think about school and about your brother or sister and your relationship with them.

It is up to you to decide whether you take part in the study. If you agree then you will be asked to sign a copy of the consent form.

If you change your mind about being in the study you have the right to stop at any time without having to state why.

Involvement in the study or stopping participation in the study will not have any effect on you or where you or your brother or sister go to school.

If you get upset whilst taking part or tell me about something bad happening at school I will let your Head teacher know about it after we have met. They will deal with it in the way that the school decides. I cannot change what happens for you at school.

WHAT WILL HAPPEN TO THE ANSWERS I GIVE?

All personal information will be treated as private and will be kept in a locked filing cabinet.

All the results from you and the other young people will be put together into a report. Nobody will be able to know exactly what you said by reading the report.

If you agree to take part you will be given a copy of this information sheet and the consent form to keep.

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CONSENT FORM

Please return completed consent forms in the prepaid envelope along with the demographic questionnaire.

I (parent/guardian name)..

as the parent or legal guardian of (pupil's name) ....

Consent to his/her participation in the research. I have read and understood the information leaflet. I understand that my son/daughter may withdraw from the study at any point without any consequences and without having to provide reasons for their withdrawal.

School attended..

Signed..

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CONSENT FORM FOR PARTICIPANTS

I Have read the information sheet, or had it read to me.

I Have had a chance to ask any questions.

I understand that it is my choice to help with the study.

I understand that any personal information will be kept locked in a filing cabinet.

I understand that I can stop helping with the study at any time, without having to say why.

I am happy to take part in the study.

Signed:

Name:

Date:

APPENDIX 5: NON SIGNIFICANT RESULTS.

Table 9: Results of planned comparisons for differences between the inclusion group and special school group on the SDQ-II scales.

Table 10: Results of planned comparisons for differences between the inclusion group and control group on the SDQ-II scales.

Table 11: Results of planned comparisons for differences between adolescents who have a sibling with a learning disability (combined inclusion and special school groups) and adolescents who have a sibling with no disabilities (control group) on the SDQ-II scales.

Table 12: Results of planned comparisons for differences between the inclusion group and special school group on the SRQ factor scores.

Table 13: Results of planned comparisons for differences between the inclusion group and control group on the SRQ factor scores.

Table 14: Results of planned comparisons for differences between adolescents who have a sibling with a learning disability (combined inclusion and special school groups) and adolescents who have a sibling with no disabilities (control group on the SRQ factor scores.

***Table 9**: Results of planned comparisons for differences between the inclusion group and special school group on the SDQ-II scales.*

SDQ-II Scale	T Value	Degrees of Freedom	P Value (one-tailed)	Effect Size (d)
Maths	0.38	51	.350	0.13
Physical Appearance	0.49	51	.314	0.16
General Self	0.53	51	.284	0.19
Honesty/Trustworthiness	0.92	51	.182	0.28
Physical Ability	0.71	51	.242	0.29
Verbal	1.17	51	.123	0.41
Emotional Stability	0.89	51	.188	0.27
Parent Relations	0.81	51	.212	0.27
General School	0.52	51	.303	0.18
Same-Sex Relations	0.31	51	.377	0.11
Opposite-Sex Relations	2.00	51	.026	0.75
Total	0.44	51	.331	0.13

Table 10: *Results of planned comparisons for differences between the inclusion group and control group on the SDQ-II scales*

SDQ-II Scale	T Value	Degrees of Freedom	P Value (one-tailed)	Effect Size (d)
Maths	0.31	51	.380	0.11
Physical Appearance	0.56	51	.288	0.19
General Self	0.59	51	.278	0.22
Honesty/Trustworthiness	1.09	51	.141	0.44
Physical Ability	0.42	51	.339	0.13
Verbal	0.09	51	.466	0.03
Emotional Stability	1.27	51	.104	0.45
Parent Relations	0.02	51	.493	0.01
General School	0.39	51	.349	0.12
Same-Sex Relations	0.39	51	.349	0.12
Opposite-Sex Relations	1.57	51	.061	0.55
Total	0.81	51	.211	0.28

***Table 11**: Results of planned comparisons for differences between adolescents who have a sibling with a learning disability (combined inclusion and special school groups) and adolescents who have a sibling with no disabilities (control group) on the SDQ-II scales.*

SDQ-II Scale	T Value	Degrees of Freedom	P Value (one-tailed)	Effect Size (d)
Maths	0.62	51	.269	0.18
Physical Appearance	0.99	51	.164	0.28
General Self	0.35	51	.364	0.09
Honesty/Trustworthiness	1.90	51	.032	0.54
Physical Ability	0.05	51	.479	0.01
Verbal	0.85	51	.199	0.25
Emotional Stability	2.11	51	.020	0.60
Parent Relations	0.54	51	.297	0.16
General School	0.14	51	.444	0.03
Same-Sex Relations	0.27	51	.394	0.03
Opposite-Sex Relations	0.63	51	.268	0.15
Total	0.70	51	.245	0.19

Table 12*: Results of planned contrasts for differences between the inclusion group and special school group on the SRQ factor scores.*

SRQ Factor Score	T Value	Degrees of Freedom	P Value (one-tailed)	Effect Size (d)
Warmth/Closeness	1.35	51	.092	0.44
Relative Status/Power	1.99	51	.026	0.92
Conflict	0.48	51	.319	0.17
Rivalry	1.15	50	.128	0.41

Table 13: *Results of planned contrasts for differences between the inclusion group and control group on the SRQ factor scores.*

SRQ Factor Score	T Value	Degrees of Freedom	P Value (one-tailed)	Effect Size (d)
Warmth/Closeness	0.94	51	.177	0.36
Relative Status/Power	0.50	51	.310	0.16
Conflict	1.45	51	.076	0.49
Rivalry	0.27	50	.393	0.09

Table14: *Results of planned comparisons for differences between adolescents who have a sibling with a learning disability (combined inclusion and special school groups) and adolescents who have a sibling with no disabilities (control group) on the SRQ factor scores.*

SRQ Factor Score	T Value	Degrees of Freedom	P Value (one-tailed)	Effect Size (d)
Warmth/Closeness	0.27	51	.396	0.08
Relative Status/Power	0.67	51	.254	0.16
Conflict	2.06	51	.023	0.56
Rivalry	1.07	50	.145	0.31