

■ The Sources and Manifestations of Stress Amongst School-aged Dyslexics, Compared with Sibling Controls

Neil Alexander-Passe*

Department of Psychology, Faculty of Arts and Human Sciences, London South Bank University, London, UK

All school children experience stress at some point in their school careers. This study investigates whether dyslexic children, by way of their educational and social difficulties, experience higher levels of stress at school. The School Situation Survey was used to investigate both the sources and manifestations of stress amongst dyslexic children and non-dyslexic sibling controls. Samples were broken down by gender, age and the size of families. Results suggest significant differences between the groups, with dyslexics in academic years 3–5 experiencing the highest stress levels, specifically in interactions with teachers, worries over academic examinations (SATs) and performance testing, causing emotional (fear, shyness and loneliness) and physiological (nausea, tremors or rapid heart beat) manifestations. Results also suggest that dyslexics in larger families (3–4 sibling families) experience greater stress in interactions with their peers, than those in smaller families (two sibling families)—possibly from unfair sibling comparison. Copyright © 2007 John Wiley & Sons, Ltd.

Keywords: dyslexia; stress; siblings; family; emotional; peers

LITERATURE REVIEW

Defining Dyslexia

In the UK, terms such as ‘Dyslexia’ or ‘Specific Learning Disabilities (SpLD)’ are used, overseas and especially in the US, ‘Learning Disabled (LD)’ and ‘Reading Difficulties (RD)’ are commonly used terms. Whilst both sets of

*Correspondence to: Neil Alexander-Passe, Department of Psychology, Faculty of Arts and Human Sciences, London South Bank University, 103 Borough Road, London SE1 0AA, UK. E-mail: neil.alexander-passe@ingshams.co.uk

terms are similar in their emotional manifestations, 'Dyslexia' and 'SpLD' are more specifically concerned with difficulties that affect most situations (not just reading, e.g. co-ordination and balance) with neurological and phonological epidemiology.

The Dyslexic Entering School

From the moment a dyslexic child enters primary school, they must take oral instructions from teachers and remember them long enough to act on them to finish the task. The short-term memory of children with dyslexia will put them at an immediate disadvantage (Thomson, 1995). Their slow and poor phonological awareness will cause slow and inaccurate processing of the spoken language (e.g. slowness to read, becoming confused and ending up copying from others nearby). These problems may affect the child's ability to participate in classroom discussions or activities (Dockrell, Peacey, & Lunt, 2002; OFSTED, 1999). An informed teacher will place the child at the front of the class, allow more time for tasks, repeat instructions and link the child with a friendly classmate who can prompt where needed.

Where teachers are ill informed, problems with fine motor skills will make the dyslexic primary school pupil look clumsy and open them to ridicule from both teachers and peers (e.g. dropping their lunch tray full of food, etc.). On top of this, their inability to organize and deal with timekeeping effectively (e.g. taking the lunch time bell to mean the end of day and leaving school for home prematurely) means they are highly vulnerable at school (Alexander-Passe, 2004a,b; Edwards, 1994; Riddick, 1996).

How Dyslexics React?

According to Thomson (1996) there are two reactions to stress from school in dyslexics. Firstly, 'under'-reactions, where the child withdraws and manifests extreme anxiety, e.g. trembling and sweating when asked to read. These children have a low self-opinion of themselves and generalize every aspect of their life as a failure. Depression is also common in this group (Ryan, 1994). Secondly, we have 'over'-reactions to stress, e.g. being seen as successful in other areas, being the class clown, hiding their failure under a 'couldn't care less' attitude and manifesting silly behaviour. This can also lead to aggression, with extreme cases leading to delinquency (Edwards, 1994). Alexander-Passe (2006) using standardized measures identified high levels of emotional coping along with depression amongst teenagers with dyslexia. The results suggest that gender is a major factor in how dyslexics deal with school-related stress, with significant differences emerging between males and females.

Evidence suggests that school-aged dyslexics in mainstream schools experience both emotional bullying and humiliation at school from both peers and teachers, according to Edwards (1994) and Eade (1999). Morgan and Klein (2001, p. 61) found that a lack of understanding at school and home, resulted in bullying by teachers and peers leading to violent reactions. One dyslexic tutor recalled her own experiences at school (as a dyslexic); she actually stabbed a teacher's hand with the sharp end of a compass, because 'she called me stupid once too often'.

Hales (1995) suggests there is strong evidence to support the view that dyslexics are more disturbed by criticism. Hales found dyslexics experience

considerable amounts of criticism at school, especially before their condition is diagnosed. One explanation is that of Svensson, Lundberg and Jacobson (2001, p. 63):

early failure on a socially, highly valued skill such as reading would cause an almost traumatic frustration leading to aggression, acting out behaviour and eventually, in severe cases, to conduct disorders.

Fergusson and Lynskey (1997) also suggest that a reversed relationship could also be true 'social, emotional and conduct problems can lead to RD'. Dockrell *et al.* (2002, p. 33) note 'problems of rejection and unpopularity in schools for pupils with SEN', especially pupils without statutory statements.

Peer Group

According to Morgan and Klein (2001) responses from the peer group can be a powerful influence on the individual's perception of self. Dyslexics at special schools can overcome feelings of isolation and the sense of being different, those in mainstream school are never allowed to forget they are 'different' and 'abnormal'. Integration in mainstream schools is possible with the right level of support, but this is not commonly possible due to financial constraints (Audit Commission, 2002). Morgan and Klein reported feelings of isolation and loneliness, also they note it shows an awareness that

reflects the ability of dyslexic people to make comparisons with peers and to recognize intuitively their undefined and unacknowledged learning differences (p. 53).

Loneliness and isolation are typical of many dyslexic people, according to Tur-Kaspa, Weisel and Segev (1988).

Siblings

There are very few studies investigating the relationship between dyslexics and their siblings, with the majority being qualitative.

Osman (1997) suggests it is 'generally acknowledged that the presence of a child with Learning disabilities (LD) in the family affects the social and emotional development of siblings'. Osman claims 'siblings were found to have a special and loving relationship with their LD sibling (usually as adults looking back on their childhood), the feelings during childhood are complex and emotionally charged.

Trevino (1979) suggests adverse effects on siblings are more likely to occur in families in which:

- There are only two children one of whom has a disabling condition.
- The children are the same sex and close in age.
- The child without the problem is the eldest female in the family.
- Parents cannot accept their child's learning disability.

Osman (1997) notes that realistically the child with LD usually requires more parental time and attention; thus, a sibling may understandably be resentful of

this. Parents also tend to expect more of the non-LD sibling (e.g. better academic results) and being surrogate parents to protect their LD sibling (e.g. helping with homework or taking care of them in the playground to ward off bullies). Osman suggests that the need by parents of non-LD siblings, for other sibling to be 'super-kids', compensating for their damaged LD child, to protect the 'family ego' is unreasonable.

Osman also notes that many non-LD siblings feel guilty for being 'normal' and ask themselves 'why him and not me?' along with not wishing to do too well at school to embarrass their LD sibling. An interesting avenue for questioning was Osman's finding that non-LD siblings were excluded from family decisions about children with LD, resulting in their lack of knowledge which led them to 'become resentful, anxious and confused with questions they may be afraid to ask', such questions she found to include 'is what my brother has contagious?', 'If I'm bad will I get it too?' or even 'will I be responsible for my brother when my parents are old?'. However, she also found understanding, one sibling explained that 'dyslexia is not a disease; rather like a kind of illness that doesn't go away'.

Kurnoff (2000) suggests that raising a family is always a balancing act, especially if you have more than one child. If one child has a LD, but others do not, you may wonder how to manage their different practical and emotional needs? In her study of 27 siblings (young children, teenagers and young adults) she found:

- An older sibling often tends to be more protective over a younger child with dyslexia.
- Younger non-LD siblings tend to see their older LD sibling through 'rose-tinted glasses'. For them 'different' does not mean 'better' or 'worse'.
- Age is a factor, but only with teenagers, who have strong concerns about being different. Young children lack the intellectual understanding and thus essentially take their sibling with LD at face value.
- Home atmosphere is a factor. Calm families with a sense of control are optimistic. Where there are concerns about differences, academic limitations, parental confusion, the dyslexic child seems to be 'worried and confused'.
- 67% did not resent their parents spending extra time with their dyslexic sibling.
- 35% help their dyslexic sibling.
- 76% are more understanding of others with disabilities.
- 56% are confident about their dyslexic sibling's future.

The majority of non-LD siblings she met considered themselves 'fortunate not to have to struggle in school' (Kurnoff, 2000).

Dawson (2006) found that siblings of LD children often express confusion and disappointment about getting less attention from their parents, than their LD sibling. She agrees with Osman (2006) that 'brothers and sisters need to have open and honest conversations with parents and each other about LD, in order to understand and manage the problems that arise'. Dawson noted common feelings of 'guilt over not having a learning disability, anger and resentment about getting less attention and frustration over having to deal with a sibling who is different'.

Bloom (1990), Cordoni (1990), Dyson (1993) and Silver (1988) all note that siblings of children with LD are at risk of problem behaviours, such as:

- Non-compliance with parents and teachers.
- Difficulty with impulse control.
- Distractibility.
- Disruptive and immature social behaviours.
- They also found that siblings with LD sometimes reject their LD sibling in school and play situations.

Minuchin (1988) found that parents of children with LD expect their non-LD sibling to perform better at school or excel in extracurricular activities. From such expectations among the non-LD sibling, Dyson (1993) and Lobato (1990) found the development of positive reactions such as patience, empathy, understanding and tolerance. However, more studies (Lobato, 1990; McHale, Sloan, & Simeonsson, 1986; Stoneman, Brody, Davis, & Crapps, 1988) note negative reactions from such parental expectations, including:

- Anger.
- Resentment over perceptions of differential treatment.
- Embarrassment over their sibling to peers.
- Fear they will catch the disability.
- High demands for achievement.
- Guilt over having resentment/negative thoughts about the sibling.

Bloom (1990), Cordoni (1990), Dyson (1993) and Silver (1988) also note that families with LD and non-LD siblings are characterized by having:

- Higher levels of anxiety.
- Overprotectiveness.
- Rigidity issues.
- Family discord.

Lardieri, Blacher, and Lee Swanson (2000) found that siblings of LD children 'held strong feelings of love and affection for one another and that they thought very highly of their (LD) brothers and sisters' and that these findings were not significantly different from non-LD families. They also found that families experiencing high levels of stress, could be characterized by being 'dysfunctional or chaotic'. Lastly, they found no significant differences between families with and without LD siblings in terms of sibling behaviour, sibling self-concept and perceived sibling impact.

Experimental hypothesis

It is hypothesized that dyslexics, when compared with sibling control groups, will show different profiles in the sources and manifestations of stress. Specifically, dyslexics will show higher stress from academic and teacher interactions, with emotional manifestations.

The following questions will be asked:

- Do school-aged dyslexics experience different stresses, than their non-dyslexic siblings?
- Do school-aged dyslexics manifest stress differently, than their non-dyslexic siblings?
- Does age affect sources and manifestations of stress?
- Does the size of the family affect the sources and manifestations of stress?

METHODOLOGY

Participants

Participants were recruited from a flyer sent to dyslexic associations in England and Scotland, distributed by the British Dyslexia Association (BDA). Two school-aged groups were recruited; dyslexics and their non-dyslexic siblings. This control group was chosen as firstly being of comparable social backgrounds and secondly allowing analysis of both by family and as a complete group. Proof of dyslexia assessment was sent by parents to confirm diagnosis.

Sample

All participants were siblings in families of both dyslexics and non-dyslexics. In total, $N = 155$ children took part, $N = 78$ dyslexic and $N = 77$ non-dyslexic controls. Of the dyslexics, $N = 22$ were female and $N = 56$ were males. Of the controls, $N = 51$ were female and $N = 26$ were male. An additional $N = 5$ were excluded as having a co-morbidity condition to dyslexia (e.g. ADHD). All were school-aged with the mean age for the dyslexics being 12.76 yrs (SD 2.964) and for the controls 12.1 yrs (SD 2.602). The groups were also sub-divided into three academic year groups (3–5, 6–9 and 10–12) for further analysis.

Apparatus

The project uses the 'School Situation Survey' (SSS) questionnaire by Dr Barbara J. Helms and Dr Robert K. Gable (1989). The questionnaire identifies sources and manifestations of stress (letters in brackets will be used to differentiate between the sub-types of stress).

APPARATUS—TEST VARIABLES

Each variable's initials (e.g. TI) will be used in charts.

Sources of Stress

Teacher Interactions (TI): Assesses students' perceptions of their teachers' attitudes towards them. Students who score high on this scale most likely have negative perceptions of their teachers' feelings towards them and are possibly experiencing stress as a result of their interactions with their teachers.

<i>Academic Stress (AS):</i>	Assesses situations that relate to academic performance or achievement. Students who score high on this scale are likely to be experiencing stress relative to their grades, test taking and to general academic performance.
<i>Peer Interactions (PI):</i>	Assesses students' social interactions or their perceptions of their classmates' feelings towards them. Students who score high on this scale would have stress related to peer interactions.
<i>Academic Self-concept (ASC):</i>	Assesses students' feelings of self-worth, self-esteem, or self-concept relevant to perceived academic ability. Students who scores high on this scale would indicate poor academic self-concept.

Manifestations of Stress

<i>Emotional (E):</i>	Assesses feelings such as fear, shyness and loneliness. Students who score high on this scale are probably experiencing frequent feelings of stress or emotional discomfort.
<i>Behavioural (B):</i>	Assesses actions, reactions or behaviour towards others, such as striking out or being hurtful or disrespectful. Students who score high on this scale are likely to misbehave or act out in school.
<i>Physiological (PH):</i>	Assesses physical reactions or functions such as nausea, tremors or rapid heart beat. Students who score high on this scale are likely to be experiencing frequent physiological symptoms of stress.

Reasoning Behind the Apparatus

Chandler (1981) and Schultz (1980) found that certain aspects of a school environment can be stressful for students; this may manifest itself in stress, tension or anxiety relating to situations that feel threatening or are perceived as threatening a student's self-esteem, security, safety or way of life. With Moore (1975) and Chandler (1982) commenting that stress in certain proportions is important for personal growth and optimum functioning but excess levels can be threatening to ones health, more so in children/young adults.

Students who are engaged in compulsory education spend the greater part of their day at school. They are placed in situations where high academic and social demands are made on them. Philips (1978) and others have noted that schools use an official academic curriculum and a hidden social curriculum. Both types of curriculum can cause stress, young children find interactions with their peers challenging which can sometimes lead to aggressive confrontations.

Philips found that teachers establish certain atmospheres in how they teach classrooms, favouritism by students of certain teachers is evidence that different interaction methods are used to mixed success. Encouragement and discouragement can be given by teachers in certain words or reactions, this can be taken to heart by young children, who are brought up to believe

everything said whether sarcastic or not, as found by Philips. Helms and Gable (1989) found that children assign meaning to everything they see, they code it to one of three things: positive, negative or threatening and respond accordingly. Threatening events are the source of stress and can manifest themselves in numerous ways (emotional, behavioural or physiological). Normally students learn to cope from strategies they have learned from encountering everyday minor stresses, but if major stresses develop, various manifestations can appear.

Forman and O'Malley (1984) found that students with high anxiety tend to engage in more problem behaviour (than those who do not), are more distracted by their peers, have poor self-concepts and generally have lower academic achievement. Academic work almost always suffers when higher than average stress levels are found. Many begin to lose their own self-worth, especially being part of normal society. Reed (1984) also found that students need 'validation' from teachers to tell them that they are achieving their best.

Students who suffer from stress that they cannot cope with effectively, normally manifest their stress in emotional, behavioural or physiological behaviours (Elliot & Eisdorfer, 1982). It is common to find that students are unable to recognize that they are stressed and how their bodies manifest their stress. Symptoms include: sarcastic or verbal attacks on peers or talking back to teachers, displaying aggressive behaviour, being inattentive in class, difficulty concentrating, chronic fatigue, headaches and abdominal pain unrelated to illness.

Commonly when the stress is not recognized by peers, teachers, schools, students receive a lack of sympathy and a vicious cycle is set in motion that can have serious consequences for physical, intellectual and emotional development (Alexander-Passe, 2004a, b; Edwards, 1994; Riddick, 1996).

Scoring

All frequency scores were on a five-point scale: Never = 5 to Always = 1. The TI, PI, E and B were based on six questions, AS and PH on three questions and the ASC was on four questions. For confidentiality reasons, volunteers were coded by their postcode. From the scoring manual, a high (3), medium (2) or low (1) standardized stress rating was given, according to age and gender.

Internal Consistency, Test-Retest and Correlations to Other Measures

Internal-consistency coefficients of the seven scales are moderate, from 0.68 to 0.80 based on a $N = 7036$ school-aged sample, in (3–5, 6–8, 9 and 10–12) grade clusters (Gable, 1986; Nunnally, 1978). Test-Retest reliabilities, based on $N = 621$ grade 7–9 children with an interval of 3 weeks, ranged from 0.61 (Physiological scale) to 0.71 (Teacher Interaction scale). The SSS has been correlated to the State Trait Anxiety Inventory for Children (STAIC, Spelberger, Edwards, Lushene, Montuori, & Platzek, 1973) on an $N = 1111$ samples of 5th, 7th & 9th grade children. Correlations ranged from 0.10 (Behavioural scale) to 0.71 (Emotional scale) with a significance of $p < 0.05$. One explanation given by Helms and Gable (1989) for the mixed correlation was that the STAIC has an theoretical emotional

base compared with the SSS which is based on theoretical behavioural (affect) base.

RESULTS

Part 1

The data were analysed by both gender and academic age groups.

By Group Alone

Results in Appendix A indicate strong differences between dyslexics and controls, especially in Peer Interaction and Academic Self-concept.

By Gender Alone

The results broken down by gender (see Appendix B) suggest that the experimental four groups (Dyslexic Females, Dyslexic Males, and Control Females & Control Males) perform differently. Noticeably there are major differences with the sources of stress (Peer Interaction and Academic Self-concept) and manifestations of stress (Behaviour and Emotion). Looking at the genders more closely, dyslexic females score the highest (of the four groups) in Peer Interaction, Teacher Interaction and Academic Self-concept for sources of stress, with Behaviour for the manifestations of stress. The dyslexic males scored the highest (of the four groups) in Academic Stress for the sources of stress, with Emotion and Physiological for the manifestations of stress.

From the control siblings, females scored (like dyslexic females) higher (than control males) in Teacher Interactions, but unlike dyslexic females, they scored lower in Peer Interactions and Academic Self-concept (sources of stress). Also, unlike dyslexic females, they scored higher in Emotion manifestations of stress. Control males scored higher than control females in Peer Interactions, Academic Stress and Academic Self-concept of the sources of stress and Behaviour and Physiological manifestations of stress.

By Academic School Year (Another Way to Look at Age)

Three academic year groups were investigated (see Appendix C): 3–5 yrs (commonly 8–10 yrs old), 6–9 yrs (commonly 11–13 yrs) and 10–12 yrs (commonly 14–17 yrs). To improve readability, the results have also been plotted, see Figure 1.

Part 2

$N = 72$ families took part in this study ($N = 158$ participants), with both dyslexics and non-dyslexics. The majority ($N = 59$) were two sibling families, followed by ($N = 11$) three sibling families and $N = 3$ four sibling families. Case studies were chosen to focus on interactions in three different-sized families (one for each type).

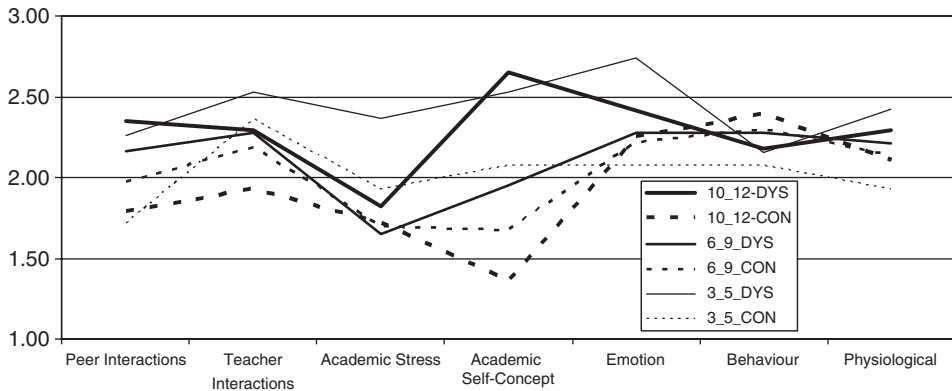


Figure 1. Dyslexic vs control and academic year data charted

Appendix D looks at one example of a two-sibling family taking part in this study (dyslexic male 15 yrs and non-dyslexic male 13 yrs), it suggests that the dyslexic sibling whilst being older has significantly higher Peer Interaction and Academic Self-concept sources of stress, with higher Physiological manifestations of stress. It should be noted the non-dyslexic sibling scored higher for behaviour manifestations of stress. Thus, the dyslexic sibling has stress from dealing with his non-dyslexic peers at school, resulting in feelings of self-worth, self-esteem or self-concept relevant to perceived academic ability. These result in physical reactions or functions such as nausea, tremors or rapid heart beat.

Appendix E looks at dyslexic siblings in a three-sibling family (dyslexic male 9 yrs and non-dyslexic females 9 and 14 yrs). This example indicates the dyslexic, whilst being one of twins (the other not being dyslexic), has high Peer Interaction, but very high Teacher Interaction, Academic Stress and Academic Self-concept sources of stress. With very high Emotion manifestation of stress. Thus, in this three-sibling family, the dyslexic sibling finds interactions with his peers and teachers highly stressful (experiencing stress relative to their grades, to test taking and to general academic performance) and lastly with feelings of self-worth, self-esteem or self-concept relevant to perceived academic ability in the sources of stress. These would manifest in fear, shyness and loneliness as manifestations of stress. In this family, the other 9yr old (non-dyslexic) also experiences Academic Stress and Teacher Interaction Stress, manifesting in Physiological and Emotional symptoms. This suggests a significant coping difference between dyslexic and non-dyslexic twins, with one that finds school difficult and one that does not experience difficulties.

Appendix F looks at a four-sibling family, with two dyslexics (dyslexic male 13 yrs, dyslexic female 17 yrs, non-dyslexic females 16 and 18 yrs). One of the dyslexic siblings is the youngest with the other being the second oldest. There are differences between the dyslexics, mainly with the manifestations of their stress. Both dyslexics show significantly moderate and high Peer and Teacher Interaction with Academic Self-concept sources of stress, also both show significantly high Behaviour manifestations of stress. The older dyslexic shows significantly high Physiological and Emotion manifestations of stress. Thus, both the two dyslexics in this four-sibling family, find Teacher and Peer interactions

stressful (feelings of self-worth, self-esteem or self-concept relevant to perceived academic ability). Their manifestations of stress include reactions, or behaviour towards others, such as striking out or being hurtful or disrespectful. The older dyslexic also experiences frequent feelings of fear, shyness and loneliness, with physical reactions or functions such as nausea, tremors or rapid heart beat. The case study also indicates that the younger non-dyslexic (16 yrs) also exhibits high Physiological and Behavioural, with moderate Emotional manifestations from stress, which could result from Teacher Interaction sources. At 16 yrs old, the non-dyslexic is likely to be pushed academically to do well in forthcoming GCSE examinations. The other non-dyslexic (18 yrs) sibling seems to be coping well with school.

Part 3

As mentioned earlier, the samples represented families with dyslexic and non-dyslexic siblings, with the latter being controls. The majority were two sibling families, with three- and four-sibling families also being represented. As we have looked at specific examples of two-, three- and four-sibling families, we now ask the question, do profiles emerge in dyslexics of different size families, for sources and manifestations of stress?

Appendix G looks at sibling families in groups, significant differences are indicated between the different-sized families, these will be discussed later in this paper.

DISCUSSION

This study used the School Stress Survey to investigate how dyslexics, compared with sibling controls, experience the sources of stress and any manifestations from school stress.

Data were analysed from several perspectives (diagnosis, gender, age and the size of family) to gain an understanding of how school-aged dyslexics cope. The hypothesis of this study was that dyslexics experience different profiles of both sources and manifestations of stress. A discussion will now take place to answer the following questions:

- Do school-aged dyslexics experience different stresses than their non-dyslexic siblings?
- Do school-aged dyslexics manifest stress differently than their non-dyslexic siblings?
- Does age affect sources and manifestations of stress?
- Does the size of the family affect the sources and manifestations of stress?

Do School-aged Dyslexics Experience Different Stresses than their Non-dyslexic Siblings?

The initial analysis (Appendix A) points to major differences in Peer Interaction and Academic Self-concept, and to a lesser degree, Teacher Interaction and Academic stress. Results suggest school-aged dyslexics feel stressed by their

perceptions of their classmate's feelings towards them and have poor feelings of their self-worth related to academic ability. Schools in the 20th century are performance related, with SAT scores determining not only progression but also career choices. The results of such a culture is that both parents and children make a comparison with their child's peers—whilst most children have a portfolio of skills and abilities that off-set any difficulties experienced in other subjects, many dyslexics excel in very few subjects, if any, and thus the balance is not experienced (Alexander-Passe, 2004a,b). Literacy has a knock-on effect to all subjects of the National Curriculum, which contrasts public perception of dyslexia being 'just' experiencing difficulty in English Language.

As found by Alexander-Passe (2004a,b), when school-aged dyslexics feel unable to compete with their peers, they begin to question their own self-worth and their ability to be 'normal'. As soon as they feel 'abnormal' the tower of bricks falls, affecting their self-esteem and self-concept concerning what they can actually achieve. This creates stress in interactions with teachers and affects their ability to achieve in academic settings.

Looking at the gender breakdown data for the sources of stress (Appendix B), gender differences exist for both dyslexics and controls. The most significant gender difference among the dyslexics were in Academic Stress, where the dyslexic males scoring higher than dyslexic females. Such stress could be understood to be related to attaining academic results, test taking and their performance. Old-fashioned values of the male being the 'bread-winner' in the family can drive parents to place more pressure on boys to perform academically.

Other differences between the dyslexic genders are in Peer Interaction and Teacher Interaction, with the dyslexic females scoring higher than their male counterparts. According to research (Terje & Bru, 2004) girls are more affected by social interactions at school; thus this result indicating higher stress from Peer and Teacher Interactions is not entirely surprising in this study. Greater Peer and Teacher Interaction stress among dyslexics (as compared with controls) suggests that dyslexics negatively attribute meaning to teacher and peer interactions, whether real or not.

Do School-aged Dyslexics Manifest Stress Differently, Compared with their Non-dyslexic Siblings?

Appendix A suggests that the differences between dyslexics and control siblings are not as great as in the sources of stress, with both groups showing moderate manifestations of stress. However, the control siblings score slightly higher in Behaviour manifestations, but the differences are insignificant. The largest differences are for Emotion and physiological manifestations, which are higher among the dyslexics. As the Emotion manifestation is the highest score, one could hypothesize that this is the primary and Physiological being the secondary manifestation. Thus, school-aged dyslexics have feelings of fear, shyness and loneliness which also manifest in symptoms such as nausea, tremors or rapid heart beat. Results indicate that dyslexics commonly perceive themselves as being abnormal and unable to be like their peers, both in the classroom but also in the playground and socially. The results indicate fear, shyness and loneliness which express the alienation young dyslexics feel as a result of their failing academically and failing to be recognized as needing help. Hales (1995) compares

dyslexia to a physical disability, noting that no one would ask a person in a wheelchair to walk, but teachers constantly ask dyslexics to read aloud in class; thus, physical disabilities are recognized and treated fairly, but an invisible disability is ignored and commonly discriminated against.

The results from Appendix B suggest that there are manifestation differences not only between dyslexics, but between dyslexic males and females. The highest score (of all four groups) is for Behaviour, interestingly amongst dyslexic females (the difference is also significant between dyslexic males and females), Helms and Gable (1989) explain Behaviour manifestations to be reactions, or behaviour towards others, such as striking out or being hurtful or disrespectful. Appendix B also indicates high scores for the sources of stress (Peer and Teacher Interactions), seen together, suggest female dyslexics find interactions difficult and thus strike out (Behaviour manifestations) as a defensive mechanism.

Dyslexic males score highest for Emotion and Physiological manifestations of stress, with the physiological manifestation being the most significant difference to dyslexic females. The results suggest that dyslexic males are more likely to be excluded from their peer group, not only by their inability to keep up academically but their own perception of self-worth. If they think of themselves as stupid, they will withdraw. The scores differentiating dyslexic males to control males are not as large as would be expected; thus, it could be concluded that all school-aged children, to some extent, suffer from Behaviour, Emotion and Physiological manifestations of school-related stress, be it examination nerves causing nausea, to being aggressive towards their peers, possibly caused by high testosterone levels or puberty.

Does Age Affect Sources and Manifestations of Stress?

Looking at the sources of stress with the three dyslexic groups (Appendix A and Figure 1), it is difficult to see a pattern, but year group 3–5 does seem to have frequently scored with the highest sources and manifestations of stress, as compared with year group 6–9 dyslexics and to a lesser degree, 10–12yr dyslexics. Why is this? What happens at this time which does not happen in the other years? Year group 3–5 covers the last years of primary school and the stress of gaining entry to a secondary school of their or their parent's choice. Many children are given tutors to gain high marks in their SAT's.

Year group 3–5 dyslexics, score highest in Teacher Interaction and Academic Stress sources of stress and Emotion and Physiological manifestations of stress. On the basis of assumption above, teachers (and parents) are likely to put pressure on them to achieve at subjects they themselves feel unable to. Year group 6–9 dyslexics do not score highest in any of the sources sub-scales, but do in Behaviour manifestations of stress. Year group 10–12 dyslexics score highest in Peer Interaction sources of stress and no sub-scales for manifestations of stress.

Do the control groups follow the same pattern? Year group 3–5 controls score highest in Teacher Interaction, Academic Stress and Academic Self-concept sources of stress but not highest in the manifestations of stress. Looking at the dyslexic 3–5yr group scores, it could be said that they also score high in Academic Self-concept. Thus it could be argued, to a lesser degree, that both

dyslexics and their sibling controls find Teacher Interactions, Academic Stress and Academic Self-concept stressful in 3–5 yr.

It is very interesting that the 3–5 yr group are perceived to be of higher stress than 10–12 yr group, the later covering GCSEs and A levels. One explanation could be that by the time dyslexics reach GCSE taking, their teachers fully know and understand their pupil's abilities and difficulties, whereas, in 3–5 yr group they put pressure on their pupils without full knowledge of their abilities and difficulties.

Does the Size of the Family Affect the Sources and Manifestations Stress?

This question was investigated in two ways, firstly a look at three families (two siblings, three siblings and four siblings) and secondary through group mean data. As noted earlier, out of $N = 155$ participants, there were $N = 118$ in two sibling families, $N = 29$ in three sibling families and $N = 8$ in four sibling families. It should be noted that there maybe pre and post school age siblings who were unable to participate in this study. For Part 3 of this study, one family of each size (two, three and four siblings) were chosen for analysis. The three families were chosen at random.

The investigation of the three families brought interesting results, with the dyslexic in two sibling families scoring highest for Teacher Interaction, Academic Self-concept and Physiological sub-scales. The dyslexic in the three sibling families scored highest for Teacher Interaction, Academic Stress, Academic Self-concept and Emotion. The dyslexics in the four-sibling family scored highest for Peer and Teacher Interaction, Academic Self-concept, and Behaviour (one of the two dyslexics also scored highest for Physiological and Emotion). What does this tell us? The pattern of Teacher Interaction and Academic Self-concept for the sources of stress seems constant. While interesting, the specific data are difficult to generalize from—there could be a number of factors and variables which can affect specific individual results. With that in mind, Appendix G looks at group mean data to begin to make generalizations.

Interestingly, the dyslexic siblings in four-sibling families score the highest in Peer and Teacher interaction sources of stress and especially Behaviour, but to a lesser degree Physiological and then Emotion manifestations of stress. It should be noted that only $N = 3$ dyslexics were in four-sibling families, compared with $N = 63$ in the two-sibling families; thus reservations must be made to the strength of such a finding.

Just using the two- and three-sibling family results found similar differences in larger families (to a lesser degree), with dyslexics in three-sibling families scoring higher in Teacher Interaction, Academic Stress and Academic Self-concept sources of stress and Emotion manifestations of stress. However, the dyslexics from two-sibling families scored highest for Behaviour and Physiological manifestations of stress.

Thus, even discounting the four-sibling families, it would seem there is a difference to the sources and manifestations of stress in dyslexics in different-sized families. There is also a significant difference between the dyslexics and controls in those sized families, especially in Peer Interactions and Academic Stress (three-sibling families), Academic Self-concept (two- and three-sibling

families) for the sources of stress. Differences in the manifestations of stress only include Emotion (for three-sibling families).

There is stress in all families, and school work or the attainment of grades is commonly a source of stress, where the child is highly intelligent, the stress is likely to be manifest internally (Alexander-Passe, 2004a,b; Riddick, 1996). Results seem to suggest that in larger families (three siblings) where the child is having difficulties at school (e.g. dyslexia), the stress is likely to be manifest externally. Throw in factors of unfair comparison with a number of siblings without difficulties in school can create an atmosphere which is emotionally unhealthy for the young dyslexic at home. They also choose to withdraw as a coping strategy.

Does Birth Order Have Any Affect?

Appendix H investigates birth order as a variable for data in this study. Mean data indicate that dyslexics are generally not first-born (be it in two- and three-sibling families). Analysis of the data found no significant mean difference between those dyslexics who are 1st and 2nd born dyslexics in two-sibling families (looking at the sources and manifestations of stress).

One could hypothesis that parents create peer pressure from unfavourable comparison, saying 'why can't you achieve like your OLDER brother/sister?'. Such a comparison is not only hurtful for the dyslexic, but suggests they are unable to reach the attainment of their older sibling. The work of Lobato (1990), Sloan and Simeonsson (1986) and Stoneman *et al.* (1988) notes there can be anger, resentment and embarrassment between family members with LD and non-LD children. As it is also common for a younger sibling to follow in their older sibling's 'foot steps' and attend the same school, unfavourable teacher comparison is also a contributing factor.

CONCLUSIONS

This paper began by looking at available studies on stress among young and teenage dyslexics, followed by studies looking at how interactions at home and school can affect them on a day-to-day basis.

This study investigated school-related stress using the School Stress Survey (Helms & Gable, 1989), with two main sample groups and six sub-groups. Results indicate that the sources and manifestations of stress were different for dyslexic and non-dyslexic siblings. The profiles for the dyslexics are as follows:

Dyslexic females are likely to have negative perceptions of their teachers' and peers' feelings towards them and are possibly experiencing stress as a result of their interactions with their teachers and peers, with poor academic self-concept. They are likely to misbehave or act out in school.

Dyslexic males are likely to be experiencing stress relative to their grades, to test taking and to general academic performance. They are likely to be experiencing frequent feelings of stress or emotional discomfort and the physiological symptoms of stress.

It must be noted that both male and female dyslexics, compared with their control siblings, suggest a profile of negative perceptions of their peers' (these

can include siblings) feelings towards them and are possibly experiencing stress as a result of their interactions with their peers, with poor academic self-concept, manifesting in the likelihood of them misbehaving or acting out in the classroom/school and experiencing frequent feelings of stress or emotional discomfort.

The SSS data also investigated the sources and manifestations of stress by age, with significant differences in the three bands identified (academic years 3–5, 6–9 and 10–12 covering primary, primary/secondary and secondary school bands). The data suggest that dyslexics in academic years 3–5 experience significantly more Academic Stress and poor Academic Self-concept and manifest such stress both Emotionally and Physiologically. In the control siblings, academic years 3–5 also were the most stressful, with significant ratings of Academic Stress and Academic Self-concept, but in contrast with the dyslexics there were no significant manifestations of stress. Such a result suggests fundamental differences with how dyslexic and non-dyslexic siblings cope at school.

Lastly, this paper also investigated family size in relation to the sources and manifestations of school stress. Results suggest that the larger the family, the greater the Peer Interaction and Academic Stress causing Emotional manifestations. It is hypothesized to be from unfair comparison of academic results (parental expectations) between peers causing dyslexics siblings to withdraw and be shy. Investigations of birth order among the dyslexic sample suggest that dyslexics are commonly not first born and thus experience peer interaction stress from unfair comparison with their older sibling. Further investigations found no significant difference (concerning the sources and manifestations of stress) in dyslexics that were first and second born in two-sibling families.

The implications for practitioners and teachers are that the secondary (emotional) implications of having a learning disability (such as dyslexia) should be taken into consideration, alongside any remedial educational assistance. The years of prior failure leading up to help being given can create emotional suffering which should not be ignored.

The next step for this research is further studies into families of dyslexics, focussing on how siblings compare themselves, family dynamics and why different manifestations of stress exist for larger families. Birth order and gender affect the sources and manifestations and may be a useful development for this body of work.

APPENDIX A: DYSLExIC VS CONTROL DATA

		Sources of school stress			Manifestations of school stress			
		Peer Interaction	Teacher Interaction	Academic Stress	Academic Self-concept	Behaviour	Emotion	Physiological
Control <i>N</i> = 77	Mean	1.87	2.104	1.753	1.61	2.286	2.182	2.065
	Std. deviation	0.676	0.754	0.566	0.672	0.741	0.739	0.848
Dyslexic <i>N</i> = 78	Mean	2.231	2.333	1.859	2.256	2.231	2.41	2.269
	Std. deviation	0.737	0.8	0.716	0.711	0.755	0.711	0.75

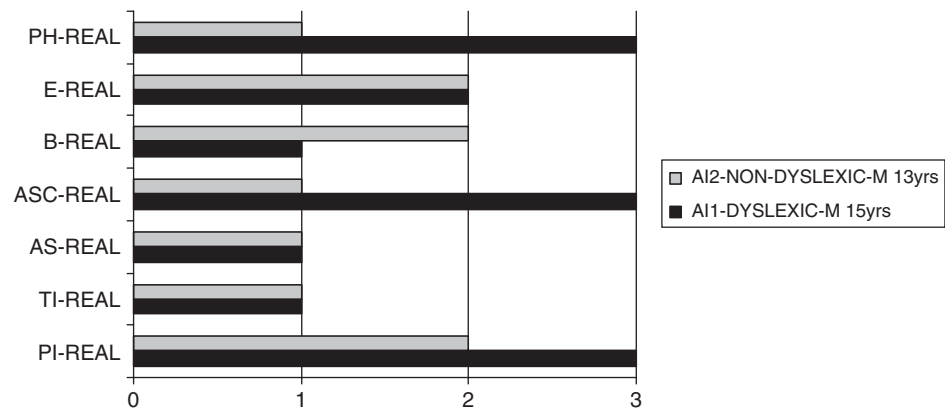
APPENDIX B: DYSLExIC VS CONTROL AND GENDER DATA

		Sources of school stress			Manifestations of school stress				
		Peer Interaction	Teacher Interaction	Academic Stress	Academic Self-concept	Behaviour	Emotion	Physiological	
<i>Dyslexics</i>									
	Females <i>N</i> = 22	Mean	2.318	2.409	1.591	2.273	2.500	2.364	2.182
		Std. deviation	0.646	0.796	0.666	0.767	0.598	0.790	0.795
	Males <i>N</i> = 56	Mean	2.193	2.316	1.965	2.228	2.123	2.439	2.316
		Std. deviation	0.766	0.805	0.706	0.708	0.781	0.682	0.736
<i>Controls</i>									
	Females <i>N</i> = 51	Mean	1.849	2.132	1.717	1.547	2.264	2.226	2.075
		Std. deviation	0.718	0.785	0.568	0.667	0.788	0.750	0.851
	Males <i>N</i> = 26	Mean	1.893	2.107	1.786	1.786	2.321	2.143	2.107
		Std. deviation	0.567	0.685	0.568	0.630	0.612	0.705	0.875

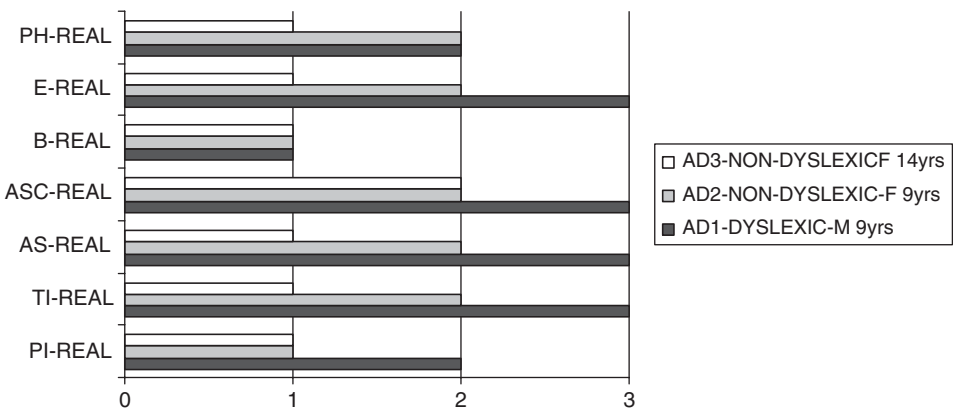
APPENDIX C: DYSPLEXIC VS CONTROL AND ACADEMIC YEAR DATA

	Sources of school stress				Manifestations of school stress			
		Peer Interaction	Teacher Interaction	Academic Stress	Academic Self-concept	Behaviour	Emotion	Physiological
<i>Dyslexics</i>								
3–5 yrs N = 18	Mean	2.263	2.526	2.368	2.526	2.158	2.737	2.421
	Std. deviation	0.653	0.772	0.684	0.612	0.688	0.562	0.692
6–9 yrs N = 43	Mean	2.163	2.279	1.651	1.953	2.279	2.279	2.209
	Std. deviation	0.721	0.826	0.613	0.688	0.766	0.734	0.804
10–12 yrs N = 17	Mean	2.353	2.294	1.824	2.647	2.176	2.412	2.294
	Std. deviation	0.862	0.772	0.728	0.606	0.809	0.712	0.686
<i>Controls</i>								
3–5 yrs N = 13	Mean	1.714	2.357	1.929	2.071	2.071	2.071	1.929
	Std. deviation	0.469	0.497	0.475	0.616	0.730	0.829	0.730
6–9 yrs N = 37	Mean	1.973	2.189	1.703	1.676	2.297	2.216	2.135
	Std. deviation	0.726	0.739	0.618	0.669	0.777	0.750	0.855
10–12 yrs N = 27	Mean	1.786	1.929	1.714	1.357	2.393	2.250	2.107
	Std. deviation	0.686	0.858	0.535	0.559	0.685	0.701	0.956

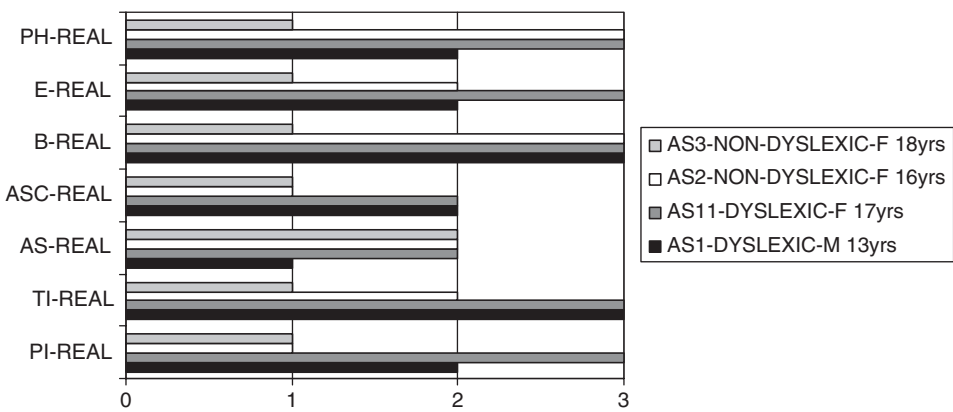
APPENDIX D: TWO-SIBLING FAMILY



APPENDIX E: THREE-SIBLING FAMILY



APPENDIX F: FOUR-SIBLING FAMILY



APPENDIX G: COMPARISON OF TWO-, THREE- AND FOUR-SIBLING FAMILIES

		Sources of school stress				Manifestations of school stress			
		Peer Interaction	Teacher Interaction	Academic Stress	Academic Self Concept	Behaviour	Emotion	Physiological	
Two-siblings Control N = 55	Mean	1.948	2.121	1.759	1.603	2.276	2.207	2.103	
	Std. deviation	0.660	0.751	0.540	0.647	0.696	0.720	0.852	
Two-siblings Dyslexic N = 63	Mean	2.206	2.270	1.841	2.238	2.222	2.381	2.333	
	Std. deviation	0.765	0.807	0.677	0.734	0.728	0.728	0.718	
Three-siblings Control N = 17	Mean	1.579	2.158	1.684	1.737	2.211	2.105	1.947	
	Std. deviation	0.507	0.765	0.671	0.733	0.787	0.809	0.848	
Three-siblings Dyslexic N = 12	Mean	2.182	2.455	2.000	2.273	2.000	2.636	1.909	
	Std. deviation	0.603	0.820	0.894	0.786	0.894	0.505	0.831	
Four-siblings Control N = 5	Mean	2.000	2.200	1.800	1.800	2.600	2.200	2.200	
	Std. deviation	1.000	0.837	0.447	0.837	0.894	0.837	1.095	
Four-siblings Dyslexic N = 3	Mean	2.667	3.000	1.333	2.000	3.000	2.667	2.667	
	Std. deviation	0.577	0.000	0.577	0.000	0.000	0.577	0.577	

APPENDIX H: COMPARISON OF BIRTH ORDER (ALL AND IN TWO- AND THREE-SIBLING FAMILIES)

<i>Birth order (mean data)</i>	
All dyslexics, N = 81	1.772 (SD 0.678)
All controls, N = 79	1.481 (SD 0.572)
<i>Families of two siblings</i>	
Dyslexics, N = 63	1.603 (SD 0.493)
Controls, N = 56	1.375 (SD 0.488)
<i>Families of three siblings</i>	
Dyslexics, N = 13	2.385 (SD 0.768)
Controls, N = 20	1.7 (SD 0.733)

ACKNOWLEDGEMENTS

The author would like to thank the British Dyslexia Association (BDA) for help in gaining this sample, as well as the parents making time for the study in their busy lives. Thanks also go to my wife and four beautiful and lively young children for allowing me the mental space to study.

References

- Alexander-Passe, N. (2004a). *How children with dyslexia experience school: Developing an instrument to measure coping, self-esteem and depression*. Unpublished MPhil Thesis, The Open University.
- Alexander-Passe, N. (2004b). A living nightmare: An investigation of how dyslexics cope at school. *Paper presented at the 6th British Dyslexia Association international conference*. Retrieved 10th January 2006 from: www.bdainternationalconference.org/2004/presentations/mon_s6_d_12.shtml
- Alexander-Passe, N. (2006). How dyslexic teenagers cope: An investigation of self-esteem, coping and depression. *Dyslexia*, 12(4), 256–275.
- Audit Commission. (2002). *Special educational needs: A mainstream issue*. London: Audit Commission.
- Bloom, J. (1990). *Help me to help my child: A sourcebook for parents of learning disabled children*. Boston: Little, Brown.
- Chandler, L. A. (1981). What teachers can do about childhood stress. *Phi Delta Kappan*, 63(4), 276–277.
- Chandler, L. A. (1982). *Children under stress: Understanding emotional adjustment reactions*. Springfield, IL: CC Thomas.
- Cordoni, B. (1990). *Living with a learning disability* (rev. edn). Carbondale, Southern Illinois: University Press.
- Dawson, J. (2006). Learning disabilities and sibling issues. In *Schwablearning* (2006). *Sibling issues: A parent's guide to sibling issues*. Retrieved on 10th November 2006.

- Department for Education and Skills and Teacher Training Agency. (2002). *Qualifying to teach: Professional standards for qualified teacher status and requirements for initial teacher training*. London: HMSO.
- Dockrell, J., Peacey, N., & Lunt, I. (2002). *Literature reviews: Meeting the needs of children with special educational needs*. London: Institute of Education, University of London.
- Dyson, L. L. (1993). Response to the presence of a child with disabilities: Parental stress and family functioning over time. *American Journal on Mental Retardation*, 98, 207–218.
- Eaude, T. (1999). *Learning difficulties: Dyslexia, bullying and other issues*. London: Letts Educational.
- Edwards, J. (1994). *The scars of dyslexia: Eight case studies in emotional reactions*. London: Cassell.
- Elliot, G. R., & Eisdorfer, C. (Eds.). (1982). *Stress and human health*. New York: Springer.
- Fergusson, D. M., & Lynskey, M. T. (1997). Early reading difficulties and later conduct problems. *Journal of Child Psychology and Psychiatry*, 38(8), 899–907.
- Forman, S. G., & O'Malley, P. L. (1984). School stress and anxiety interventions. *School Psychology Review*, 13(2), 162–170.
- Gable, R. K. (1986). *Instrument development in the affective domain*. Boston: Kluwer-Nijoff.
- Hales, G. (1995). The human aspects of dyslexia. In G. Hales (ed.), *Dyslexia matters* (pp. 184–198). London: Whurr.
- Helms, B. J., & Gable, R. K. (1989). *School situation survey: Manual*. Palo Alto, CA: Consulting Psychologists Press.
- Kurnoff, S. (2000). *The human side of dyslexia*. Monterey, CA: London Universal Publishing. (also published online at www.eddyslexia.com).
- Lardieri, L. A., Blacher, J., & Lee Swanson, H. (2000). Sibling relationships and parent stress in families of children with and without learning disabilities. *Learning Disability Quarterly*, 12(2), 105.
- Lobato, D. J. (1990). *Brothers, sisters and special needs*. Baltimore: Paul H. Brookes.
- McHale, S. M., Sloan, J., & Simeonsson, R. J. (1986). Sibling relationships or children with autistic, mentally retarded, and non-handicapped brothers and sisters. *Journal of Autism and Developmental Disorders*, 16(4), 399–413.
- Minuchin, P. (1988). Relationships within the family: A systems perspective. In R. A. Hind & J. Stevenson-Hind (Eds.), *Relationships within families: Mutual influences* (pp. 7–26). Oxford: Clarendon Press.
- Moore, T. (1975). Stress in normal childhood. In T. Levi, (Ed.), *Society, stress and disease* (Vol. 2). New York: Oxford University Press.
- Morgan, E., & Klein, C. (2001). *The dyslexic adult in a non-dyslexic world*. London: Whurr.
- Terje, M. A., & Bru, E. (2004). School-related stress and psychosomatic symptoms among Norwegian adolescents. *School Psychology International*, 25(3), 317–332.
- Nunnally, J. C. (1978). *Psychometric theory* (2nd edn). New York: McGraw-Hill.
- OFSTED. (1996). *Promoting high achievement: For pupils with special educational needs in mainstream schools*. London: HMSO.
- OFSTED. (1999). *Report into pupils with specific learning difficulties in mainstream schools*. London: HMSO.
- Osman, B. B. (1997). *Learning disabilities and ADHD: A family guide to living and learning together*. New York: Wiley.
- Osman, B. (2006). How learning disabilities affect the child's siblings? In *Schwablearning* (2006). *Sibling issues: A parent's guide to sibling issues*. Retrieved on 10th November 2006.
- Peacey, N., Dockrell, J., & Peart, G. (2002). Analysis of data collected in response to the Audit Commission's statutory assessment and statements of SEN: In need of review. London: Institute of Education, London University.

- Philips, B. N. (1978). *School stress and anxiety: Theory, research and intervention*. New York: Human Sciences Press.
- Reed, S. (1984). Stress: What makes kids vulnerable? *Instructor*, 93, 28–32.
- Riddick, B. (1996). *Living with dyslexia: The social and emotional consequences of specific learning difficulties*. London: Routledge.
- Ryan, M. (1994). Social and emotional problems related to dyslexia. *The Journal of Adventist Education. Perspectives*, 20(2).
- Schultz, E. W. (1980). Teaching coping skills for stress and anxiety. *Teaching Exceptional Children, Fall edition*, 12–15.
- Silver, L. B. (1988). The impact of neurological dysfunctions on mother/child interactions: A case study of a child with learning disabilities. In E. D. Hibbs (Ed.), *Children and families: Studies in prevention and intervention* (pp. 370–350). Madison, WI: International Universities Press.
- Spelberger, C. D., Edwards, C. D., Lushene, R. E., Montuori, J., & Platzek, D. (1973). *Preliminary manual for the State-Trait Anxiety Inventory for children*. Palto Alto, CA: Consulting Psychologists Press.
- Stoneman, Z., Brody, G. H., Davis, C. H., & Crapps, J. M. (1988). Childcare responsibilities, peer relations, and sibling conflict: Older siblings of mentally retarded children. *American Journal of Mental Retardation*, 93, 174–183.
- Svensson, I., Lundberg, I., & Jacobson, C. (2001). The prevalence of reading and spelling difficulties among inmates of institutions for compulsory care of juvenile delinquents. *Dyslexia* 7, 62–76.
- Thomson, M. (1996). *Developmental dyslexia: Studies in disorders of communication*. London: Whurr.
- Thomson, P. (1995). Stress factors in early education. In T. R. Miles, & V. Varma, (Eds.), *Dyslexia and stress* (pp. 5–32). London: Whurr.
- Trevino, F. (1979). Siblings of handicapped children. *Social Casework*, 60(8), 488–493.
- Tur-Kaspa, H., Weisel, A., & Segev, L. (1988). Attributes for feelings of loneliness of students with learning disabilities. *Learning Disabilities Research and Practice*, 13(2), 89–94.