

**A COMPARISON OF THE SOCIO –  
PSYCHO -EDUCATIONAL AND  
PERSONALITY CHARACTERISTICS OF  
LEARNING DISABLED AND DYSLEXIC  
CHILDREN WITH NORMAL CONTROLS**

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Philosophy**

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*To the one who gave me two of the most important reasons to improve myself: the father of my precious daughter Pelagia and my adorable son Nickolaos. To my loving husband George.*

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## **Abstract**

**INTRODUCTION:** LD-dyslexic children experience more social isolation, social exclusion, loneliness less access to social goods -i.e. in education, employment, welfare, etc. (Bryan & Bryan, 1990). Students with learning disorders view themselves as more lonely and report lower levels of the sense of coherence than the average achieving pupils. (Wiener, 1998). Their reading and other learning problems are likely to continue into adulthood, with destructive effects on their feelings of self worth, personal relationships and job opportunities.

Last but not least, learning disabilities have been associated with juvenile delinquency. A variety of theories concerning this purported causal relationship have been proposed. Although the assumption that learning disability plays a primary role in a delinquent outcome, remains open to question.

**AIM:** This study examined whether: 1) There is a significant correlation between the socio-psycho-educational- environmental problems and learning disabilities. 2) They can be differentiated from their normal controls on the basis of their psycho-socio-educational profile.

**MATERIAL:** The parents of normal controls participating in the study were individually given a questionnaire to complete about their children's reactions and social behaviour. The dyslexic children's parents had already filled in an extended questionnaire that was especially developed by Professor G. Pavlidis for students with Learning Difficulties and Dyslexia.

**Subjects:** Two hundred and twenty seven (227 - 122 boys and 104 girls) children and their parents, took part in this research. The children attended grades 3 through 6. The sample consisted of a hundred and thirty six (136) normal controls -57 boys and 78 girls, and ninety one (91) dyslexics and learning disabled children -65 boys and 26 girls-drawn from the Dyslexia and I. Q. Center, where they were diagnosed by Prof. Pavlidis. The controls were identified according to their parents answers who had filled in the Pavlidis Questionnaire that was mentioned above. (LD children

had similar characteristics as the dyslexics, however they did not fulfil all the criteria to be classified as dyslexics. For instance, for a child to be diagnosed as dyslexic it is necessary to fall significantly behind in reading. Our LD child had similar problems with dyslexic and ADHD in their written expression etc but their reading was not as bad). The subjects' selection as well as their testing took place according to standard ethics and after the necessary permissions were received and the appropriate informed consents were filled out.

**Results:** The LD-dyslexic children's psycho-socio-educational characteristics were found to be significantly different worse than those of the normal controls of the same age. In fact, the two groups differ so much that on the basis of their psycho-socio-educational profile the Discriminant Analysis (DA) successfully classified the two groups with accuracy of 94,6%. The LD-dyslexic group was correctly identified with 97,6% while the normal controls were classified with 93,7% accuracy.

**Conclusions:** The very high discrimination accuracy between the two groups raises the possibility to use the Pavlidis Questionnaire as a quick, easy to administer, inexpensive and highly accurate screening tool for children with suspected LD-dyslexia. This potential will be of particular importance to countries like Greece, where only few and very limited possibilities exist within the educational system for the diagnosis of the LD-dyslexic children. However, one has to be cautious to the strong possibility not to be able to discriminate between specific LD-dyslexics and children with general learning retardation, whichQ may have very different etiology, e.g. due to low IQ.

## INTRODUCTION

Learning disabilities were almost unknown as a field until the mid-1960s. For the sake of brevity, suffice it to say that historically, dyslexia is not a new discovery for it has existed as a specific medical entity for well over seventy-five years under an assortment of names. It was Kussmaul who, in 1877, first called the loss of reading ability 'word-blindness' (Saunders, R.E., 1965). During the past two decades, however, millions of children have been identified as learning disabled (L.D) and have been 'treated' by educators and psychologists. There is no question that children identified as learning disabled do indeed have serious learning difficulties that commonly begin in the early grades. (Coles G., 1987)

There is a widespread recognition that children with specific learning difficulties may experience social and emotional problems because of their learning difficulties. Poor use of the language skills must cut deep into the personality and cultural factors of those who experience early failure. L.D. children are viewed negatively by others in society. Compared to non-L.D. children, more L.D. children were rejected and fewer were popular. They were classed as shy, seeking help and as victims of bullying significantly more than non-L.D. children. (Nabuzoka, D., Smith, PK., 1993). There is reason to think that, because of the circumstances in which dyslexic children find themselves, an important characteristic of their inner life is that they feel frightened-fear of failure, fear of being «different», fear of words, fear of social «gaffes». (Miles, T., 1996).

They are labeled by teachers and peers as different, which may alienate them from «normal society». There have been many changes in the terminology used to describe people with L.D. in recent years. One of the arguments of 'new' terms is their more positive connotations. Apart from the label 'exceptional', all had very similar negative connotations. (Hastings, RP etc., 1993).

Earlier research demonstrating that learning disabled -who experienced consisted academic failure-, also experience social isolation, social exclusion in relation to their lack of access to social goods -i.e.

education, employment, welfare, etc.- and loneliness experience. (Bryan, JH., Bryan, T., 1990). Children with learning disabilities are more likely to be rejected or neglected by their classmates than children without learning disabilities, and even by their parents and teachers who are supposed to be concerned about the emotional impact of this rejection. Students with learning disorders view themselves as more lonely and report lower levels of the sense of coherence than the average achievement students. (Wiener, J., 1998)

They enjoy minimal academic success throughout their school years, and as learning failure deepens, so does the disappointment and insecurity. Certainly the ramifications extend far beyond the classroom. Their reading and other learning problems are likely to continue into adulthood, with destructive effects on their feelings of self worth, personal relationships and job opportunities. It is not uncommon to hear apprentice tradesmen express remorse over not being able to read well enough to pass prescribed tests in order to become a member of the local union.(Saunders, R.E., 1965)

Recent research on the adult status of individuals with L.D. was reviewed. The manifestations of learning disabilities in adulthood are different than in childhood, and that is why many adults with L.D. are not independent or self-sufficient. A research indicates that there is a considerable gap in access to paid employment for young people with disabilities compared with young people in general. And the transition from school to further education, training, employment, unemployment can be difficult. (Hirst, MA. 1983)

Last but not least, learning disabilities have been associated with juvenile delinquency. There has been a resurgence of interest in the possibility of a link between learning disabilities and juvenile delinquency. In part this stems from an appreciation of the fact that many children who were or are adjudicated have learning and school performance difficulties. Learning disabilities cause school failure, which leads to a negative view of the child by adults, his or her peers, and by the child himself or herself, and then leads to association with a delinquent peer group. If children reject social institutions (such as school), they may seek alternative, frequently

delinquent, activities. Several authors have suggested that there is a strong association between specific learning disabilities and aggression, antisocial behaviour, and juvenile delinquency. Claims that learning disabilities cause aggressive behaviour and delinquency are increasingly common in the popular press. A variety of theories concerning this purported causal relationship have been proposed. (Cornwall, A., Bawden, HN., 1992). For example Davies & Byatt (1997) in their study have tried to discover the incidence of dyslexia and/or basic Skills difficulties amongst offenders on Probation, Community Service, on licence or within the Youth Justice System in the County of Shropshire, UK. Also Alm & Anderson (1997), have been carried out a study at three prisons in the county of Uppsala, and in their results for Swedish group, found that 64% of their sample are considered to have reading and writing difficulties. This includes all types of background causes e.g. dyslexia problems, lack of knowledge, mental retardation, brain lesion or emotional problems.

In today's societies of advanced technology any divergence from the ideal prototype of the perfectly healthy person often causes rejection and exclusion from the majority of social activities. Learning disabled and dyslexic persons have a limited choice and a very little possibility of participating in the social activities in a community, as well as poor social behaviour. Learning disabled children must be identified so that programs which minimise the disability while emphasising the children's strength can be instituted. Since adjudicated delinquents of normal intelligence show a significant degree of academic underachievement, correctional programs must recognise the possibility of learning disability. Vocational training emphasising an individual's strengths can be an effective alternative to traditional educational programs for delinquent juveniles. (McKay, S., Brumback, RA., 1980).

The aim of the study is to compare the social problems, (friendship, loneliness, social exclusion), behavioural and educational problems in relation to their lack of access to social goods and social adjustment in Learning Disabled, ADHD and Dyslexic children to normal controls.

This thesis poses and analyses a problem, but it is not claimed that resolves it. It defines a field of observation and makes a step towards its

investigation. There should be others to come. We do not enter deliberately in many issues and questions that come up during the research. We were not that interested in building up a general theory of learning difficulties and to examine in retrospect if this agrees with experience. Though that it was more essential to start regaining to a limited extent the lost supervision of the procedure, *the peculiar change of human behaviour*, to pursue afterwards a certain understanding of its causes and at the end to collect as many theoretical thoughts emerged during this course. If we succeeded to create a somehow solid basis for speculation and future work towards this direction, this study has fulfilled its purpose. It would need the reflections of many people and the collaboration of different scientific fields, which often nowadays are separated by artificial barriers, to be able to answer little by little the questions that arise in the course of the study. Those concern psychology, anthropology, sociology or ethnology.

Two hundred and twenty seven participants (122 boys and 104 girls) took part in this thesis ranging in age from six (6) to twelve (12) and their parents. The sample consisted of a hundred and thirty six (136) normal controls -boys and girls- from different schools in the region of Thessaloniki and socio-economic status, ninety one (91) dyslexics, ADHD and learning disabled children from the "Dyslexia and I. Q. Centre". All subjects came from the region of Thessaloniki. The subjects' selection as well as their testing took place according to standard ethics and after the necessary permissions were received and the appropriate informed consents were filled out.

The parents of normal controls participating in the study were be individually given a questionnaire to complete about their children's reactions and social behaviour in terms of friendship, social adjustment, educational and behavioural problems. The dyslexic children's parents had already filled in an extended questionnaire that was especially developed by Professor G. Pavlidis for Greek students with Learning Difficulties, ADHD and Dyslexia. Questionnaires were useful in data gathering. Further investigations, particularly socio-educational evaluation, were of major importance.

Both groups of participants wrote a dictated text appropriate for their age. Their spelling errors were categorized according to the Pavlidis Categorization of Spelling errors. Participants also read a text appropriate for their age and a second text two years below their grade, and their reading speed was calculated. Finally, the RAVEN IQ test and WISC-R verbal and performance scores were analyzed, in a classical as well as in a novel way.

The average duration of the test was 45 minutes per child. There were few children who needed 50-55 minutes. The children were tested individually. There was a stopwatch for the timing. The RAVEN IQ test was given for the whole group at the same time

Of the 360 delivered questionnaires, 280 were completed and returned (boys and girls). In this research only 136 were used. In August 1999 PQ was sent to 80 parents in Melissoxori-Thessaloniki, who were from mid-low socio-economic status. 60 questionnaires were returned and 30 of them are used in the research. In December 2000 the PQ was sent to 280 parents who were from middle-high socio-economic status. Questionnaires were returned by 180 of the parents and 106 were used in the research.

The results of this study when seen superficially, i.e. the total percentage of their emotional and behavioral problems, confirm and agree with existing literature, which claims that learning disabled and dyslexic children differ in their social skills social, behavior and psycho-educational profile. Learning disabled children seem to understand what is acceptable behavior in our society, they have problems choosing appropriate social behaviours to actually use. (Schumaker & Hazel,1984).

The combination of these positive psycho-educational findings may facilitate the development of practical and effective diagnostic and remedial methods. Especially, our data may be particularly useful for the development of different methods of treatment for learning disables and dyslexics children, according to their proven personal educational, and social skills weaknesses and strengths. It is hoped that the present study has contributed with its findings to the better understanding of learning

disabled. It may also stimulate future studies which could provide the guidelines for a practical way to differentiate the two groups and may lead to the development of specific personalized treatment methods for learning disabled and dyslexic children.

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**CHAPTER 1:**

**ASSESSMENT AND DIAGNOSIS OF LEARNING  
DISABILITIES & DYSLEXIA**

## 1.1 Definition of Learning Disabilities and Dyslexia

Human behaviour is complex, so learning disabilities might be difficult to define and may be differences of opinion regarding definition, but they can usually be readily recognized. Moreover, learning disabilities commonly are distinguished from other handicaps without great effort. (Myklebust, R.H., 1983). It is difficult to know if the continuing controversies about the learning disability definition reflect the narrowness of the definers' views, vested interests, or legitimate scientific concerns. Problems of interpretation arise mainly because of the lack of theoretical agreement concerning the development of language abilities in general and of patterns of difficulty known as specific learning difficulties (dyslexia) in particular. (Pumfrey, PD. and Reason, R.,1991). [TABLE 1].

Dyslexia is responsible for reading and learning difficulties, failures in school, and frequent psychological problems. Reading is the milestone of education and an essential prerequisite for success in life. The dyslexics and retarded readers had the same reading difficulties, but the causes of their problems were different. Dyslexics differ from non-specifically retarded readers both in the cause of their reading difficulty and in its observable characteristics. (Kinsbourne, 1986).

Dyslexia affects the lives of millions of children and adults worldwide and often has devastating psychological, socio-educational consequences. About 1%-3% of the total population suffers from dyslexia; about 20%-30% of those cases classified as «general reading failures» are probably dyslexics. Research into dyslexia has been characterized by controversy over such fundamental issues as its definition, diagnosis, cause, remediation and even its existence. A central problem has been that of terminology. The controversy arises from the incomplete definitions of the syndrome of dyslexia and from the theories that surround its aetiology. (Pavlidis, 1985, 1986, 1990).

The term *dyslexia* literally translated simply means disturbed reading. Some writers employ it broadly as a synonym for reading disability, while others use it more restrictively to mean a severe disability of constitutional origin. When reading about dyslexia, one should try to determine what the writer means by it.

It is nearly 100 years since Pringle Morgan first published his famous account of Percy, a boy of 14 who could only with difficulty spell out words of one syllable, who wrote his name as 'Precy' and did not notice the mistake until his attention was called to it more than once. Yet the schoolmaster who taught him for some years says that he would be the smartest lad in the school if the instruction were entirely oral. A central problem throughout the book has been that of terminology. Pringle Morgan and Hinshelwood spoke of 'word blindness' and Orton of 'strephosymbolia' (Orton, 1937); and in the literature, besides 'specific developmental dyslexia', one finds 'word deafness', 'word blindness', 'developmental aphasia', 'legasthenia', 'specific reading difficulty', 'specific learning disability', and many others descriptions. (Miles and Miles, 1990). A plethora of ambiguous terms purports to clarify the situation; labels such as slow reader, backward reader, retarded reader, a child with specific reading/spelling/writing difficulties, a child with specific retardation in reading, dyslexia, developmental dyslexia, and a host of others exist. Although in using these expressions people may well have been speaking about broadly similar children, the matter is not simply one of the interchangeable synonyms. The symptomatology and populations described by the above terms are variable but they all share one main factor, the severe reading problem that cannot be explained by the same factors which cause reading backwardness.

These exacerbate the problems of comparison between studies. Typically, terms with Greek roots come from one group of professionals. The term, points to an entity, a syndrome or an area of meaning: loosely translated, the etymology of the term «dyslexia» express a difficulty-not in reading-but in the use of words, how they are identified, what they signify, how they are handled in combination, how they are pronounced, and how they are spelled (Critchley, M.,1981). The word dyslexia means difficulty with words, (dys= difficulty with, lexis= word) (Pavlidis, G. 1981), or *dys*

(poor or inadequate) and *lexis* (language, as words, related to speech and to lexicon). (Rawson, M.B.,1981). Some translators also define it to mean «speech», but this usage does not appear frequently in modern professional literature. The meaning leans also on the French language and perhaps more so on so-called new Latin.(Cruickshank, W.M.,1986). Less etymologically obscure but equally vague terms come from other professionals. [TABLE 2] (Pumfrey, PD. and Reason, R.,1991). The most widely-accepted definition nowadays is that given by the British Dyslexia Association: «A specific difficulty in learning, constitutional in origin, in one or more of reading, spelling and written language, which may be accompanied by difficulty in number work. It is particularly related to mastering and using a written language (alphabetic, numeric and musical notation), although often affecting oral language to some degree». (BDA, 13.4.89).

The variety of labels used in the research literature, as represent by those in Tables 1 and 2 makes the point. Learning difficulties and dyslexia can be defined in more than one way, so when considering these topics we should anticipate differences in points of view. Different professional groups view the phenomena from different standpoints and bring particular knowledge and expertise to bear.

Dyslexia and learning disabilities are used in this study as they have been described in Pavlidis' s research. As a syndrome, that is best exemplified by an unexpected severe reading retardation, which is not caused by any known intelligence, psycho-educational or environmental factors. (Pavlidis, 1990)

Dyslexia is used to describe a constitutional developmental pattern of learning, which does no favour an easy acquisition of fluency in symbolic material (such as our own alphabetical system) in the early years of school learning. It is not a defect, but an individual difference in cognitive style. Its effect is to delay the power and speed of written language acquisition. It is independent of general underlying ability (intelligence), emotional states and socio-cultural levels. May have all or part of this signs:

-Delay in learning how to tie shoes

- Left/Right confusions
- Slow reader/below
- Loses reading place
- Mixing the order of letters/numbers
- Difficulty finding appropriate words
- Difficulty organizing ideas to write a letter
- Messy room, desk, locker or notebook
- Can't manage words
- Difficulty expressing oneself
- Difficulty learning the alphabet
- Difficulty names people and places
- Hesitant in speech
- Low self-esteem due to past frustrations. (Walker, D., 1993)

Some of the symptoms of the dyslexic child are as follows:

- Poor ability to discriminate visual likenesses or differences in words (shop, hope; mane, name) even though vision is normal.
- Poor ability in visual recall of words even though the words have been well studied (Mary for Nancy; wish for with). It could be wondered whether this difficulty is poor visual memory for words or an inability of dyslexics to integrate what they see.
- Poor ability to discriminate between close gradations of sound (pit, bit) even though hearing is normal.
- Poor ability to recall whole words or sounds within words; i.e., short auditory span for spoken words, syllables, or digits.
- Poor ability to tie up or associate spoken letter sounds, syllable sounds, or words with the corresponding visual symbols. (For example, the examiner speaks a word; the student must then select, from four printed possibilities, which word was spoken.)
- Directional confusions. Some examples of this problem are: (a) rotations of the inconstant directional letter forms in the alphabet. such

as *b* for *d*, *p* for *d*, *m* for *w*, etc.; (b)reversals of word, such as *ten* for *net*, *was* for *saw*; (c )reversals of concepts (top for bottom); (d)geographical reversals (east for west); (e)time sequence reversals (first for last).

- **Ambidexterity.** This symptom may be indicated by continued uncertainty as to which hand is most comfortable for habitual usage, or by inconsistency in the use of the same hand for the same task.
- **Early tendency to motor clumsiness.** Awkwardness may show up in gross physical performances, such as running and skipping. Later on there may be poor coordination for the finer motions required in game skills and in writing.
- **Poor ability to reproduce rhythm as sequences by tapping.** Is the difficulty a problem in reproducing the pattern, in matching, or is it a problem of being unable to retain the pattern?
- **Dysfunctions such as:** (a) Immaturity of visuo-motor functioning. (b)Disturbances of figure-ground relationships. (Can the child distinguish foreground from background?) (c) Primitive (representation of) body image. (d) Poor performance in areas of the abstract (in older children).
- **Speech disorders and language disorders,** such as poor sentence construction.
- **Behaviour problems,** such as hyperactivity, disinhibition, and distractibility.

There are a few other possible manifestations in the picture, which should not go unnoted. For instance; spelling, in which there are not only reversals but also a total absence of any proper sequence of the letter or syllable units.(Mulligan, W. 1969)

On the other hand the dyslexic mind may have tremendous musical ability that allows a child to sing or play an instrument easily or at an early age. The child with a dyslexic mind may be able to build whole cities with tiny interlocking blocks and no directions, or solve three-dimensional puzzles without difficulty.(Walker, D., 1993)



The phenomenon is an ordinary feature in many families, other members of the family possessing similar difficulties. It is marked by confusions in left/right directions, by the inability to appreciate order in serial events and by difficulties in assimilating the strings of phonemes and graphemes, which constitute words and sentences. There appears to be a high incidence of mixed motor, perceptual and underlying laterality patterns generally, in the individual.

It can be exacerbated by 'at risk' birth events, underlying neurological difficulties interacting with the genetic constitutional patterns. These cases are sometimes marked by 'the clumsy child syndrome', problems in attending and sustaining concentration as well as the fluency difficulty described above. Sometimes of course 'at risk' birth itself can cause delay and deficit in learning symbolic material including written language and numeracy skills.

There can be special aptitudes in science, engineering, draughtsmanship and spatial tasks generally, especially in the constitutionally determined cases, which in the intelligent individual may reach very superior levels. Progress in serial symbolic learning is much quicker after the age of 8/9 years in many cases, if appropriate teaching is provided.

A major difference between dyslexia and other reading disabilities is that, unlike dyslexia, other categories of reading failure can be predicted on the basis of neurological, intelligence, socio-economic, educational, and psychological (motivational, emotional) factors known to adversely affect the reading process. (Pavlidis, 1990) If, for instance, a child has problems in one or more of the above-mentioned areas, it is expected to have reading problems. The extent of the reading disability is determined by the severity and number of factors that are involved. In contrast, if a child has none of the above mentioned problems, he is expected to be a normal reader. Children can be classified as dyslexic when their failure to learn to read cannot be predicted by deficiencies in any of the known causes of poor reading. Psycho-socio-enviro-educational and intelligence factors do not cause dyslexia, although they can contribute to its severity or amelioration. The causes of dyslexia are constitutional (e.g. subtle brain malformation or

malfunction) but they remain as yet undetermined. If dyslexia is due to neurological factors, then there is no reason why dyslexia should not occur at all intelligence levels and in all psycho-socio-cultural backgrounds, as all other neurologically based condition do.(Pavlidis, 1985).

Of particular interest is the implication of many studies that learning disability is characterized by some failure of generalization, not in the sense of 'concreteness' but more subtly, in the inadequate development of conceptual response strategies for encoding incoming information. Meanwhile our general policy will be to follow wherever possible the terminology of the original researcher (for example, by using 'reading disabled'), but otherwise to use the terms 'dyslexia' and 'dyslexic' unless there is a good reason for not doing so. Those reading this thesis will then need to decide for themselves to what extent generalization is justified.

**TABLE 1: American definitions of learning disabilities (Pumfrey, PD.& Reason, R.,1991)**

Kirk (1962)	A learning disability refers to a retardation, disorder, or delayed development in one or more of the processes of speech, language, reading, writing, arithmetic, or other school subjects resulting from a psychological handicap caused by a possible cerebral dysfunction and/or emotional or behavioural disturbances. It is not the result of mental retardation, sensory deprivation, or cultural and instructional factors.
Bateman (1965)	Children who have learning disorders are those who manifest an educationally significant discrepancy between their estimated intellectual potential & actual level of performance related to basic disorders in the learning process, which may or may not be accompanied by demonstrable central nervous dysfunction & which are not secondary to generalized mental retardation, educational or cultural deprivation, severe emotional disturbance or sensory loss.
National Advisory Committee on Handicapped Children (1968)	Children with special (specific) learning disabilities exhibit a disorder in one or more of the basic psychological processes involved in understanding or in using spoken and written language. These may be manifested in disorders of listening, thinking, talking, reading, writing, spelling, or arithmetic. They include conditions, which have been referred to as perceptual handicaps, brain injury, minimal brain dysfunction, dyslexia, developmental aphasia etc. They do not include learning problems that are due primarily to visual, hearing or motor handicaps, to mental retardation, emotional disturbance, or to environmental disadvantage.
Wepman et	Specific learning disability, as defined here, refers to those

- al. (1975) children of any age who demonstrate a substantial deficiency in a particular aspect of academic achievement because of perceptual or perceptual-motor handicaps, irrespective of aetiology or other contributing factors. The term perceptual as used here relates to those mental (neurological) processes through which the child acquires... basic alphabets of sound & forms.
- United States Office of Education (1976) A specific learning disability may be found if a child has a severe discrepancy between achievement & intellectual ability in one or more of several areas: oral expression, written expression, listening comprehension, basic reading skills, mathematics calculation, mathematics reasoning, or spelling. A «severe discrepancy» is defined to exist when achievement in one or more of the areas falls at or below 50% of the child's expected achievement level, when age and previous educational experiences are taken into consideration.
- United States Office of Education (1976) The term 'specific learning disability' means a disorder in one or more of the basic psychological processes involved in understanding or in using language, spoken or written, which may manifest itself in an imperfect ability to listen, speak, read, write, spell, or to do mathematical calculations. The term includes such conditions as perceptual handicaps, brain injury, minimal brain dysfunction, dyslexia, and developmental aphasia. The term does not include children who have learning disabilities, which are primarily the result of visual, hearing or motor handicaps, or mental retardation, or emotional disturbance, or of environmental, cultural, or economic disadvantage.
- Council for Exceptional Children, Division for A child with learning disabilities is one with adequate mental ability, sensory processes, and emotional stability who has specific deficits in perceptual, integrative, or expressive processes, which impair learning efficiency. This includes

<p>Children with L.D.(1982)</p>	<p>children who have central nervous system dysfunction, which is expressed primarily in impaired efficiency.</p>
<p>Association for Children with L.D. (1986)</p>	<p>Specific Learning Difficulties is a chronic condition of presumed neurological origin, which selectively interferes with the development, integration, and/or demonstration of verbal and/or non-verbal abilities. Specific Learning Difficulties exist as a distinct handicapping &amp; varies in its manifestations and in a degree of severity. Throughout life the condition can affect self-esteem, education, vocation, socialization, and/or daily living activities.</p>
<p>Interagency Committee on L.D. (1987)</p>	<p>Learning disabilities is a genetic term that refers to a heterogeneous group of disorders manifested by a significant difficulties in the acquisition and use of listening, speaking, reading, writing, reasoning, or mathematical abilities, or of social skills. These disorders are intrinsic to the individual and presumed to be due to central nervous system dysfunction. Even though a learning disability may occur concomitantly with other handicapping conditions (e.g. sensory impairment, mental retardation, social &amp; emotional disturbance) with socio-environmental influences (e.g. cultural differences, insufficient or inappropriate instruction, psychogenic factors) and especially attention deficit disorder, all of which may cause learning problems, a learning disability is not the direct result of those conditions or influences.</p>
<p>National Joint Committee on L.D. (1988)</p>	<p>Learning disabilities is a general term that refers to a heterogeneous group of disorders manifested by significant difficulties in the acquisition and use of listening, speaking, reading, writing, reasoning, or mathematical abilities. These disorders are intrinsic to the individual, presumed to be due to central nervous system dysfunction and may occur across the life span. Problems in self-regulatory behaviours, social</p>

perception, and social interaction may exist with L.D. but do not themselves constitute a learning disability. Although L.D. may occur concomitantly with other handicapping conditions (for example, sensory impairment, mental retardation, serious emotional disturbances) or with extrinsic influences (such as cultural differences, insufficient or inappropriate instruction), they are not the result of those conditions or influences.

**TABLE 2: Some pertinent definitions (Pumfrey, PD. and Reason, R.,1991)**

<u>Special educational needs</u>	A child has special educational needs if he has a 'learning difficulty' which calls for special educational provision to be made for him
<u>Special educational provision</u>	That provision 'which is additional to, or otherwise different from, the educational provision made generally in LEA schools for children of his age'
<u>Learning Difficulty</u>	A child has a learning difficulty if he has significantly greater difficulty in learning than the majority of children of that age, or he has a disability which either prevents or hinders him from making use of the educational facilities of a kind generally provided in schools, within the area of the local authority concerned, for children of his age.
<u>Dyslexia</u>	We define dyslexia as a specific difficulty in learning, constitutional in origin, in one or more of reading, spelling & written language which may be accompanied by difficulty in number work. It is particularly related to mastering and using written language (alphabetic, numerical & musical notation) although often affecting oral language to some degree.
<u>Specific developmental dyslexia</u>	A disorder manifested by difficulty in learning to read despite conventional instruction, adequate intelligence, & socio-cultural opportunity. It depends on fundamental cognitive disabilities, which are frequently of constitutional origin.
<u>Specific reading retardation</u>	... an attainment on either reading accuracy or reading comprehension which was 28 months or

more below the level predicted on the basis of each child' s age and short WISC I.Q.

Specific learning difficulties

Children with specific learning difficulties are those who in the absence of sensory defect or overt organic damage have an intractable learning problem in one or more of reading, writing, spelling & mathematics, & who do not respond to normal teaching. For these children, early identifications, sensitive encouragement & specific remedial arrangements are necessary.

Specific learning difficulties

These are defined as organising or learning deficiencies which restrict the student' s competencies in information processing, in motor skills & working memory, so causing limitations in some or all of the skills of speech, reading, spelling, writing, essay writing, numeracy and behaviour.

Specific reading difficulties

A descriptive term used to indicate the problems of the relatively small proportion of pupils, whose reading (and perhaps writing, spelling and number) abilities are significantly below the standards, which their abilities in other spheres would lead one to expect.

Learning Disability

A disorder in one or more of the basic psychological processes involved in understanding or using language, spoken or written, which may manifest itself in an imperfect ability to listen, think, speak, read, write, spell or do mathematical calculations. (The definition specifically excludes visual, hearing or motor handicaps, mental retardation, and the effect of environmental, cultural, or economic disadvantage.)



## 1.2 Diagnosis

It is not always easy to identify one group of people who are clearly LD and another group who are not. Individuals with learning difficulties may appear to possess the characteristics of a person with learning difficulties are so pervasive or severe that they markedly interfere with learning or day-to-day living that a learning disability is suspected. Careful assessment by a multidisciplinary team that utilizes a variety of standardized instruments, informal tasks, and observation is an important part of verifying the existence of learning disabilities.

As have been mentioned above dyslexia has 'many faces' and a variety of different procedures have been used for studying it. Scientists are still searching for the facts that will lead to a positive and an objective diagnosis of dyslexia.

With regard to diagnostic accuracy, it has been hypothesised that variability in the actual diagnosis of LD arises from a number of sources, but most specifically from the overlap of characteristics and correlates of LD with other categories such as the 'emotionally disturbed', the 'disadvantaged', the 'educable mentally retarded', and the large number of youngsters exhibiting reading problems. From all the information that can be collected about a child -test scores, intelligence quotients, parents interviews, school reports, case history, clinical impressions- the clinician must be able to determine the disability with enough specificity as to suggest remedial steps to overcome the problem. The complexity of the task suggests that the clinician (and therefore the child) would benefit from any assistance that could be made available

A review of medical and psychiatric literature concerning computerised diagnosis revealed the difficulties inherent in computer programs, which attempt to supply a definitive diagnosis based on an analysis of symptoms. For these reasons, the decision was made to use the computer as an advisor to the clinician, rather than a replacement -

analysing numerical test scores and reporting these results to the clinician who must then intergrades this information with the non-numerical data at hand. A computer program was designed to analyse test scores in relation to a child's mental and chronological age and grade level, in relation to the task analysis of the subtest. Subtest performance was graphed according to these two relationships. In addition, numerical scores were calculated for each level of the Model and then rated as indicative of very poor, poor, adequate, or good performance by the child. There was 61% agreement between the ratings given by the computer program and those of the clinic diagnostic team. When the determinants of the computer's performance ratings were revised to more accurately represent those of the clinical diagnostic team, an increase to 79% agreement was achieved. (Anderson, D., 1973)

Coles reviewed validation studies focusing on 'the ten most frequently recommended tests and evaluations suggested for a learning disabilities battery', i.e., the *Illinois Test of Psychocholelinguistic Abilities*, the *Bender Visual-Motor Gestalt Test*, the *Frosting Development Test of Visual Perception*, the *Wepman Auditory Discrimination Test*, the *Lincoln-Oseretsky Motor Development Scale*, the *Graham-Kendall Memory for Desings test*, the *Purdue Perceptual-Motor Survey*, the *Wechsler Intelligence Scale for Children*, a neurological evaluation, and an electroencephalogram. Coles presents strong evidence for the view that there is an inadequate empirical base for claiming that such procedures can validly diagnose LD. (Adelman HS., 1979)

The existing scientific evidence can be interpreted in more than one way and this has rendered dyslexia a controversial issue in education, medicine, and psychology. Those who do not accept the concept of dyslexia argue that within the existing scientific knowledge there is not convincing evidence to prove that different causes exist for backwardness in reading, and dyslexia. They claim that the dyslexics' symptoms can be attributed to the same negative psycho-socio-cultural factors, which are at work in backward readers. They consider dyslexia to be a 'middle class syndrome', a convenient label used by wealthy parents in preference to the socially unacceptable category of backwardness. Consequently the anti-dyslexia people feel that by recognising dyslexia they will give an extra

advantage (via educational concessions) to already socially privileged middle class children. The issue is also one of economics because official acceptance of dyslexia would require appropriate funds to copy with it. (Pavlidis, 1979, 1981)

Satz and Morris have classified attempts to identify subtypes of reading disability under two categories, clinical-inferential and statistical. (Harris AJ., 1983). Clinical-inferential category, based mainly on personal clinical experience and subgroups have been identified by visual inspection of complex sets of data. Statistical category uses mainly the Q technique, which is a kind of inverted factor analysis. Instead of providing a way of grouping tests into factors, the Q technique analyses correlations between individuals to classify them into groups with similar characteristics.

Another point of view in diagnosis of learning disabilities is Money' s J. (1983) claims. He believes that child abuse and neglect as a primary cause of permanent IQ impairment and learning disability, though long known, has been largely disregarded in favour of hereditary and quasi-neurological theories of aetiology. Any organs of a child' s body, not only the genitalia, can be abused, including the mind/brain and peripheral nervous system. In some cases academic delay or underachievement relative to chronological age may affect all subjects in the curriculum, whereas in other cases it is manifested as subject-specific underachievement. In that case the child may be given an academic diagnosis of specific learning disability -for example, dyslexia- and be placed in a special program.

Shelley D. Smith, Kimberling, Pennington, and Lubs, (1983) support that specific reading disability is diagnosed in an individual with severe reading and spelling problems in the absence of neurological, intellectual, emotional, or environmental handicap. Although multiple aetiologies are likely within this broadly defined group of affected individuals, a strong positive family history is frequently reported by educators working with affected children. This suggest that many cases may be primarily genetic in origin. The lack of precise diagnostic criteria and laboratory tests have restricted the ability of investigators to define

specific entities and modes of inheritance within the overall group, although dominant inheritance has been reported in some families.

It has been proposed that problems in visual discrimination, visual memory, letter reversals, eye movements, binocular convergence, and scotopic sensitivity may be causal factors in dyslexia. (Catts, H.W., 1996). Most recently, researchers have also provided data suggesting that dyslexics have deficits in the transient visual pathway, a major neuropathway for visual processing. Research on the visual basis of dyslexia, however, is still quite inconclusive. Some findings in this area have failed to be substantiated in well-controlled investigations. Others have not been replaced using comparable methodologies. Therefore, it is unclear at this point whether or not visual deficits are an important contributing factor to dyslexia. (Catts, H.W., 1996). Although researchers agree that dyslexics exhibit erratic eye movements, they disagree on the extent and nature of the relationship between erratic eye movements and the disability itself. Three schools of thought exist. Those who believe that dyslexia is only language-based argue that erratic eye movements are the result of the reading failure. Accordingly, in a frantic, unfocused effort to make sense of the reading matter, the dyslexic exhibits eye movements that jump and skip all over the line. The weakness of this language-based theory is that it does not explain the difficulties dyslexics have with non-language tasks, such as sequencing problems. The second theory holds that dyslexia is a perceptual problem. Its proponents argue that dyslexics have erratic eye movements because of a perceptual malfunction, which in turn causes the reading failure. The difficulty with this second theory is that it does not account for the language problems, especially oral language problems, which afflicts more than half of dyslexics. Each of these schools of thought fails to explain many of the classic dyslexic symptoms and assumes that eye movements must be either cause or effect of the reading problem. (Pavlidis, 1986,)

Professor Pavlidis, (1986), proposed a third theory - that erratic eye movements and dyslexia are the symptoms of one or more commonly shared, or independent but parallel, central neurological deficits. Either erratic eye movements and dyslexia share the same common cause, or two different malfunctioning parts of the brain-one causing dyslexia, one

causing erratic eye movements- may result from a third common factor that causes the two different parts of the brain to malfunction. One such common link was proposed by the late Prof. Norman Geschwind. For the diagnosis of dyslexia, however, it is not important to know whether erratic eye movements are the cause or the effect of dyslexia or if erratic eye movements and dyslexia share a common or independent but parallel cause. (Pavlidis, 1985)

Drawing on the relationship among dyslexia, erratic eye movements, and sequencing abilities, we developed a system to present non-reading stimuli and to track, record, and accurately analyse eye movements. This method uses a series of lights to stimulate the non-verbal aspects of reading and thereby test the patient's sequencing ability and eye movement patterns. This task involves no memory or language skills or any emotional associations with reading problems. Words are replaced with lights. (Pavlidis, 1986.)

Lack of knowledge of the causes of dyslexia has forced the adoption of definitions based on exclusionary criteria. Learning disability is generally diagnosed by the exclusion of negative neurological, social, and psycho-emotional aetiology and by a significant discrepancy between levels of intellectual as compared with academic achievement. Learning disability is a diagnosis by exclusion, describing a deficit condition, which exists in the absence of other positive findings. The child so diagnosed has been proven to be without sensory impairment, intellectual retardation, neurological disease, or home and school environments, which would deny him or her the proper climate and essential opportunities for learning. (Rudel, R.G., 1980). The diagnosis of dyslexia by the use of exclusionary criteria delays diagnosis (by at least 1.5 - 2 years after beginning school). It is, therefore, imperative to utilise comprehensive exclusionary diagnostic criteria when studying dyslexia.

In all Pavlidis' studies the criteria used for identifying dyslexics have been fairly strict and as «quantitative» as possible. The criteria were set after long consultations with educational psychologists and careful critical search through the dyslexia literature. The main aim of the criteria is to distinguish

dyslexics from backward readers, and for dyslexics to be at least as retarded in reading as backward readers. Another aim has been the quantification of as many qualitative factors as possible, that is, educational opportunities. The children had to fulfil all the following criteria in order to be included in studies. These are: (Subjects' Selection criteria: Pavlidis, 1990)

i. Normal I.Q (average or above average determined by the WISC-R test).

The I.Q scores of the ADHD and LD must be equal or greater than the normal range (min 1 SD below mean plus 2 SE i.e WISC-R 92 verbal or 94 performance) or one of the two must pass the above level and the other to be above 85. The normal comparison group was not assessed for their IQ, but since they attended a normal school and according to the teacher's report, their IQ should be at least average. However, we should mention the limitation of the present study to match the children for their IQ.

ii. At least two years retarded in reading in relation to chronological age (CA)

They must be at least two years retarded in reading if they are >10. Reading retardation is assessed relative to C.A. Reading score is to be derived from standardized word recognition or sentence reading test. The control group had a normal reading and spelling ability according to the teacher's report and the parent's report.

iii. Normal or corrected vision and hearing

Both their vision and hearing must be normal or correct. People with amblyopia, nystagmus, abnormal eye movements or any other specific neurological condition (except dyslexia or ADHD) would be excluded.

iv. Average or above average socioeconomic background. To minimize the potential confounds of social adversity, we excluded individuals from the lowest socioeconomic status. Thus, the children of

both groups should have at least one employed parent and at least one of their parents should have finished high school.

v. Greek being the native language

v. Adequate educational opportunity

vi. Not on any psychoactive medication or within its washout period

Children should not be on any medication known to affect cognitive processes motor performance, attention or reading per se.

vii. No overt emotional problems prior to commencing school

viii. No overt physical handicaps that could account for reading and other emotional or cognitive problems (i.e. brain injury, brain malformation, brain tumor, seizures).

The current diagnostic tests of dyslexia not only lead to delayed identification of dyslexics, but also to exclusion of children whose reading problems could be attributed to psychosocial factors; so children from adverse socio-economic background and/or emotional disturbed, cannot be unequivocally diagnosed as dyslexics by any existing diagnostic test.

In general, all that is clear that we do not have enough systematic, empirical data related to the diagnostic classification of LD and its outcomes to provide a basis for deciding whether or not this particular classification schema is worth keeping and, if not, what the new schema should be.

The final point here relates to issues of what might be termed the 'civil rights of Dyslexia'. Notions of the stigmatising nature of disability labels and their use as instruments of social control and suppression are increasingly anachronistic, particularly in relation to the issue of Dyslexia. The fact is that dyslexics are an increasingly self-defined group characterized by the desire to find a non-stigmatising explanation and

treatment for emotional and behavioural difficulties' that have been previously ignored and/or misconstrued by professionals. In these circumstances the dyslexia diagnosis is seen as a definition of a problem, which brings with it clear lines to follow towards a potential solution. In this way it can be contrasted with the vague and ill-defined, yet utterly stigmatising label of emotional and behavioural disorder. (Cooper, P. 1997)



### **1.2.1 I.Q. & DYSLEXIA**

In most cases, the researchers have in fact used largely similar selection procedures, subjects being chosen for special study because there was evidence of a discrepancy between their reading level and their intelligence level as judged by standard intelligence tests. The discrepancy is not the result of educational or environmental factors. In other words, there is a wide gap between IQ and school achievement. Further, this gap is not the result of poor teaching at school, inadequate stimulation at home, or emotional factors, but instead may be the result of how that person's brain is organised. However, this does not by itself justify the assumption that 'dyslexics', or whatever else one calls them, picked out in this way, are a homogeneous group or that generalisations about the «typical» dyslexic can be made without further argument. This is an issue, which cannot be decided until one has reviewed a large quantity of research.

To put the intelligence-achievement discrepancy into a more prehensible context, it may be useful to review certain facts about intelligence testing.

An exact definition of intelligence is probably impossible, but the data at hand suggest at least one: an ability to handle complexity and solve problems in some useful context. The other issues surrounding intelligence-its neural and computational basis, its ultimate origins, its quantification-remain incomplete, controversial and of course political. Historically, the idea of IQ has been used to justify excluding certain immigrants groups, to maintain status quo policies and even to sterilize some people. (Yam Ph., 1998).

The intelligent tests are designed to measure learning capacities and achievement. During the nineteenth century was developed a tool in order to detect those children who could not benefit from the education, which included reading, writing, and arithmetic. These tests were eventually

extended to include higher levels of instruction and even to test employment for the civil service, employment that generally involved considerable pencil-and-paper work. Some tests clearly measure what has been learned, while others involve more novel problems, which demand spontaneous generation of coping strategies. In tests, as in real life, speed can be critical in as much as one aspect of intelligence is the time it takes for an appropriate response to be elicited. A score at or above the average (90 to 110 IQ) does generally predict normal school performance; therefore, when a child with an average IQ score fail to learn, he is said to have a learning disability (assuming that all the other exclusionary factors are also negative).[Rudel, R.G., 1980] The Wechsler Intelligence Scale is the most widespread used test for the appraisal of the intellectual ability of children, while sometimes the use of RAVEN is advisable, because it is easy to use and brief.

The relation between reading ability and intelligence has been a matter of great interest to reading specialists for a long time. When a student with a low-average intellectual level, experiences academic difficulties, some professionals may feel that the lower intelligence is the cause of the problem. Others may believe that the student could do better academically or make passing grades if it was not for the learning disability.

A student with a high-average or superior intellectual level may maintain grade level performance in elementary school, but develop academic problems in higher grades. Some professionals feel baffled because if a child does not show early academic problems, it seems unlikely that LD is the reason for later problems. Other professionals suggest that a capable student may develop sufficient compensations in the early school years to make acceptable grades, but become unable to manage when faced with the note-taking, longer reading assignments, foreign language requirements, and similar demands in secondary and postsecondary schools. (Lokerson, 1992).

The measurement of general intelligence has been inextricably tied to the diagnosis of reading disabilities and dyslexia for both theoretical and practical reasons. The theoretical reason that intelligence measures have

been used in the diagnosis of dyslexia involves the hypothesis that poor reading in a child of average general intelligence is different in fundamental ways from poor reading in a child whose general intelligence is also low. A core theoretical assumption of the concept of dyslexia is that the reading problems of children with a specific reading disability (reading ability discrepant from intelligence) have a different aetiology, involve different cognitive impairments, require different kinds of interventions, and have a different prognosis than the reading difficulties of children whose poor reading skills are consistent with their level of general intelligence. (Torgesen, J.K., Wagner R.K. 1998)

This is the crux of the issue underlying the use of IQ tests for children with learning disabilities.

To be diagnosed as dyslexic, an individual typically must demonstrate a significant discrepancy between reading achievement and intelligence quotient (IQ) test performance. Generally this means that the individual must show poor reading achievement but normal intelligence. Individuals who have a reading disability and a low IQ typically have not been included under the diagnostic category of dyslexia, regardless of other factors (e.g., opportunity, instruction). These children have been labelled backward readers, low achievers or garden-variety poor readers. A critical assumption underlying this distinction is that children who demonstrate a significant achievement-IQ discrepancy (i.e., dyslexics) are cognitively and neurologically different from children who fail to show such a discrepancy (i.e., low achievers). (Catts, H.W., 1996).

A two-year longitudinal study (Kershner JR, 1990) investigated whether IQ and self-concept were significant predictors of learning ability among 25 children with learning disabilities aged 8-24 years at baseline. Measures included the Wechsler Intelligence Scale for Children-Revised (WISC-R) and the Coopersmith Self-Esteem Inventory. IQ had no relationship with learning ability, whereas self-concept predicted patterns of successful achievement in spelling, arithmetic, and written language, but not in visual word recognition. Results provide support for the "specificity" presumption in LD and for the importance of self-concept as a possible primary cause of academic underachievement.

The «*limited*» research in this area has raised concern about whether such procedures are being used validly to establish that youngsters meet the criteria for being classified as LD and about the construct and predictive validity of many 'diagnostic-prescriptive' tests. For example, a recent study by Smith, Coleman, Dokecki, and David\* found that of 208 school-labelled LD children, 37 percent did not meet the criterion of normal intellectual ability (i.e., in this instance using the WISK-R, they did not have a full-scale IQ of at least 76 and either a verbal or performance IQ of at least 90. (\*Adelman, HS., 1979)

A majority of studies that have investigated this issue report a positive but moderate relationship between measures of reading ability and IQ. WISC-R has been widely used for the evaluation of mental abilities in children with learning difficulties, although many researchers dispute the relation of intelligence tests with the diagnosis and remedial methods of specific learning difficulties. WISC-R or the more recent WISC-III gives a significant amount of information, which enable us to perceive better the weaknesses and talents of children with learning difficulties. It is certain though, that none of the intelligence tests themselves can be considered as a diagnostic tool for the diagnosis of learning difficulties or dyslexia.(Pavlidis, etc., 1998).

In a review Stanivich, Cunningham, and Feeman (1984) found that the correlation between measures of reading ability and I.Q. ranged from .3 to .7 with coefficients above .6 typically obtained beyond the age of 14 years. It would appear, therefore, that IQ and reading ability are positively and significantly associated with each other. This general conclusion, however, is in conflict with the conclusion of Aaron and Olsen (1985) supporting that someone can be smart but still not be able to read well because he is deficient in the decoding skill, which, in itself is not a sufficient, but a necessary requirement for reading. The decoding skill does not have much to do with being smart. It has to be noted that the subjects investigated in Aaron & Olsen' s study are a special group of college students and are, therefore, not representative of the typical dyslexic child.\

Kinsbourne & Warrington,(1966) and Ingram, Mann & Blackburn (1970) started with groups showing large differences in Verbal and

Performance IQs. Those with higher Verbal IQ tended to have visuospatial deficits, and those with higher Performance IQs tended to have language difficulties. (Harris AJ., 1983).

Collette' s & Minke' s behavioural analysis of specific dyslexia is contrasted with traditional genetic, neurological and developmental theories which hold that the dyslexic' s inability to read is based on impaired intellectual functioning and decreased perceptual and attentional skills caused by a biological limitation. The results are taken to support the position that the specific dyslexia syndrome is subject to the laws of learning and can be viewed as a function of a deficient learning history. (Collette, HM, Minkie, KA, 1978)

As we shall see, there is a plethora of studies, which specify the relation between IQ and reading ability

**Table 3: Correlation between Learning Ability and IQ**

<b>RESEARCHER</b>	<b>CORRELATION BETWEEN LEARNING ABILITY AND I.Q.</b>
Pavlidis G.Th., (1998)	None of the intelligence tests themselves can be considered as a diagnostic tool for the diagnosis of learning disabilities or dyslexia
Fletcher J.M., Francis D.J., Shaywitz S.E., etc (1998)	IQ tests have limited utility for the identification of children with LD
Aaron & Olsen (1985)	The decoding skill does not have much to do with being smart. (the subjects investigated are a special group of college students and are, therefore, not representative of the typical dyslexic child)
Stanvich, Cunningham, Feeman (1984)	I.Q. and reading ability are positively and significantly associated with each other
Collette H. M., Minkie K.A. (1978)	The dyslexic's inability to read is based on impaired intellectual functioning and decreased perceptual and attentional skills caused by a biological limitation. The specific dyslexia syndrome is subject to the laws of learning and can be viewed as a function of a deficient learning history.
Catts, H. W. (1996)	Reading disability and low I.Q. =low achievers or backward

	<p>readers.</p> <p>Children who demonstrate a significant achievement -I.Q. discrepancy (i.e. dyslexics) are cognitively and neurologically different from children who fail to show such a discrepancy (i.e. low achievers)</p>
Kershner J. R. (1990)	<p>Scores on a self-concept measure are a better predictor of academic achievement progress than are scores on an IQ measure among students with LD</p>
Share et al. (1989)	<p>In the New Zealand studies, concluded that the relation between IQ and reading was too weak to permit useful predictions for individual children on the basis of IQ alone. In this longitudinal epidemiological study, defined as lower in IQ were often not impaired in reading. The authors agree that there is a significant predictive relation between IQ and reading achievement but disagree that this relation is strong. (Fletcher J.M., Francis D.J., Shaywitz S.E., etc 1998)</p>

### 1.3 Summary

The meaning of school difficulty is usually associated with the meaning of school disability, although the word “difficulty” map out the same mechanisms of labelling that have been described (labels such as slow reader, backward reader, retarded reader, a child with specific reading/spelling/writing difficulties, a child with specific retradation in reading, dyslexia, developmental dyslexia, and a host of others exist). In core of the disability there is always placed a reference in a situation, anyway that this could be expressed. The disability is related to particular places where relations play a significant role such as family, school, work etc. It is related with some type of difficulty to comply in these places and their rules. So, the duration of this difficulty in place and in time will differentiate the handicap from the difficulty. Therefore, the appearance of a specific difficulty is irrelevant to the occurrence of a permanent handicap that is related to every rule. In the first case, the school rules determine the school difficulties and the family rules would determine the family difficulties. [Chancerel, J.L., (1987)]

Dyslexia and learning disabilities are used in this study as they have been described in Pavlidis' s research. As a syndrome, that is best exemplified by an unexpected severe reading retardation, which is not caused by any known intelligence, psycho-educational or environmental factors. (Pavlidis, 1990). The word dyslexia means difficulty with words, (dys= difficulty with, lexis= word) (Pavlidis, G. 1981), or *dys* (poor or inadequate) and *lexis* (language, as words, related to speech and to lexicon). Children can be classified as dyslexic when their failure to learn to read cannot be predicted by deficiencies in any of the known causes of poor reading. Psycho-socio-enviro-educational and intelligence factors do not cause dyslexia, although they can contribute to its severity or amelioration. The causes of dyslexia are constitutional (e.g. subtle brain malformation or malfunction) but they remain as yet undetermined. If dyslexia is due to neurological factors, then there is no reason why dyslexia should not occur at all intelligence levels and in all psycho-socio-cultural backgrounds, as all other neurologically based condition do.(Pavlidis, 1985).



The current diagnostic tests of dyslexia not only lead to delayed identification of dyslexics, but also to exclusion of children whose reading problems could be attributed to psychosocial factors; so children from adverse socio-economic background and/or emotional disturbed, cannot be unequivocally diagnosed as dyslexics by any existing diagnostic test.

In general, all that is clear that we do not have enough systematic, empirical data related to the diagnostic classification of LD and its outcomes to provide a basis for deciding whether or not this particular classification schema is worth keeping and, if not, what the new schema should be.

Notions of the stigmatising nature of disability labels and their use as instruments of social control and suppression are increasingly anachronistic, particularly in relation to the issue of Dyslexia. The fact is that dyslexics are an increasingly self-defined group characterized by the desire to find a non-stigmatising explanation and treatment for emotional and behavioural difficulties that have been previously ignored and/or misconstrued by professionals. In these circumstances the dyslexia diagnosis is seen as a definition of a problem, which brings with it clear lines to follow towards a potential solution. In this way it can be contrasted with the vague and ill-defined, yet utterly stigmatising label of emotional and behavioural disorder. (Cooper, P. 1997)

Of particular interest is the implication of many studies that learning disability is characterized by some failure of generalization, not in the sense of 'concreteness' but more subtly, in the inadequate development of conceptual response strategies for encoding incoming information. Meanwhile our general policy will be to follow wherever possible the terminology of the original researcher, Prof. Pavlidis (for example, by using 'learning difficulties'), but otherwise to use the terms 'handicaps' and 'disabled' unless there is a good reason for not doing so. Those reading this thesis will then need to decide for themselves to what extent generalization is justified.

**CHAPTER 2:**

**STUDIES IN SOCIAL DOMAIN  
SURVEY OF THE LITERATURE**

## 2.1 A SOCIAL VIEWPOINT

**Social factors** have long been recognised for their importance in learning. During the recent past, there has been growing interest in the social and personal life of the learning disabled child. There are studies that show that personal or social factors contribute to the diagnostic process.

*“The worst thing, I used to find, was that I didn't have any friends. When I think back to that time, I would lie in bed listening to the radio or watching anything and everything on TV. I wouldn't be at all surprised to discover that this is a problem that occurs with other dyslexic children....” (Saskia Van Stoel)*

*«When you have a learning problem it puts a lot of stress and pressure on you. It robs you of being a whole person since you are not able to reach your potential. Your life is hellish since you think you are intelligent, yet you are not accomplishing anything...Learning problems cause emotional problems too. Some people turn to drugs and alcohol. I turn to eating.... My learning problems and their emotional effects have prevented me from enjoying life...» (Stein, N.L., 1987)*

Qualifications are an indispensable item in our society. Few would like to disagree with the statement that acquisition of social and academic skills are of major importance if one expects to become a contributing member of society. Every adult carries his youthful experiences with him, not only in a psychological sense but also in the form of exam qualifications or in the case of dyslexic people often a lack of qualifications. A youth characterised by failure and struggle continues to affect you when you are an adult (Saskia Van Der Stoel). This illustrates that sense of frustration and anger, which can be engendered by learning difficulties. Failing readers have to cope not only with their own self-doubts but also with the knowledge that their poor progress far from being a secret shame, often becomes a public failure.

A clearer understanding of these social and emotional influences and ways in which their effects can be alleviated, or turned to advantage, is

needed. This chapter, therefore, reviews some relevant perspectives. It then considers the implications of these views for the identification of pupils who might need additional support.

From a theoretical perspective, the social initiation-intervention emerged from developmental, social psychology, and earlier attempts at peer-mediated treatment. Self-concept, broadly defined, relates to the individual's perceptions on her or himself.

The existing scientific evidence can be interpreted in more than one way and this has rendered dyslexia a controversial issue in education, medicine, and psychology. Those who do not accept the concept of dyslexia argue that within the existing scientific knowledge there is not convincing evidence to prove that different causes exist for backwardness in reading and dyslexia. They claim that the dyslexics' symptoms can be attributed to the same negative psycho-socio-cultural factors, which are at work in backward readers. They consider dyslexia to be a 'middle class syndrome', a convenient label used by wealthy parents in preference to the socially unacceptable category of backwardness. Consequently the anti-dyslexia people feel that by recognising dyslexia they will give an extra advantage (via educational concessions) to already socially privileged middle class children. The issue is also one of economics because official acceptance of dyslexia would require appropriate funds to cope with it. (Pavlidis, 1979, 1981)

### 2.1.1 Social Skills and Learning Disabilities

Social skills, like any other skills, have to be learned. Yet much of what children learn about socially appropriate behaviour is not actually taught to them; they simply pick it up as they go along. Talking about social skills we mean any cognitive function or overt behaviour in which an individual engages while interacting with another person or persons. Cognitive functions (often labelled "social perception") include such capacities as empathizing with or understanding other persons' feelings, discriminating and making inferences about social cues, and predicting and evaluating consequences for social behaviour. Overt behaviours include the nonverbal (e.g. head nods, eye contact, facial expression) and verbal (e.g. what the person says) components of a social performance (Schumaker J. B., Hazel J.S, 1984). Johnson and Myklebust (1976) have identified this problem as an inability to identify and recognize the meaning and significance of the behaviour of others. (Wanat P.E. 1983)

Social skill deficits have gained much attention in the theoretical and scientific literature over the past few years. Empirical evidence is now available indicating that: (Schumaker J.B., Hazel J.S, 1984)

(a) LD children, according to responses on sociometric measures, are less well liked than their peers (e.g. Bruininks 1978a, 1978b; T. Bryan, 1974b, 1976; Garrett & Crump 1980; Permuter, Crocker, Cordray, & Garstecki, 1983; Scranton & Ryckman, 1979);

(b) LD youths' performance on a role-play test of eight important social skills is very similar to the performance of juvenile delinquents (Schumaker, Hazel, Sherman & Sheldon, 1982)

(c) LD youths are the lowest frequency participators among a group of low participators in school activities (Deshler & Schumaker, 1983); and

(d) LD individuals' social problems continue into adulthood (Blalock, 1982; Vetter, 1983; White, Schumaker, Warner, Alley, &

Deshler, 1980). [For a review of the above literature see: Schumaker J.B., Hazel J.S, 1984]

These findings have led to a justified concern about the social abilities of the learning disabled. Thus, the LD population's social deficits may be just as handicapping as their academic deficits. If LD individuals have no means of compensating for their academic deficits through social competence, they are likely to be underemployed and less satisfied than their peers. (Schumaker J.B., Hazel J.S, 1984)

Duncan D., Matson JL, Bamberg JW, etc (1999), in their study, investigated differences in social skills among four groups of individuals with severe and profound learning disabilities. The comparison groups were composed of individuals engaging in self-injurious behaviour, aggression, both behaviours, or neither of the behaviours. They measured social skills using the Matson Evaluation of Social Skills for Individuals with Severe Retardation, a standardized assessment of social skills in persons with severe or profound learning disability. The results indicated that individuals displaying maladaptive behaviours exhibited a restricted range of social behaviours compared to controls. Also, group membership based on self-injury and aggression was predicted based on profiles of scores on the Matson Evaluation of Social Skills for Individuals with Severe Retardation. These findings are consistent with reports in other studies that note social skills deficits in aggressive and self-injurious persons with learning disabilities. However, in this case a standardized assessment of these deficits was possible and specific skills problems were identified.

Swanson HL & Malone S (1992), conducted a meta-analysis of 39 studies concerning the social skills of children classified as learning disabled. Children with learning disabilities were less liked and were more likely to be rejected than were normal achieving children. Results also show that children with learning disabilities were more likely to be rated as aggressive and immature, to suffer personality problems, and to have difficulty attending when compared with non-handicapped peers.

### **2.1.2 Social Behavior, Academic Failure and Learning Disabilities**

Learning disability is not just a school disability; it is a total life disability. The same dysfunction that interferes with normal learning processes also impact on peer relationships, self-image, family relationships, and social interactions. If attention deficit disorder is present, the same hyperactivity or distractibility that creates problems for the child in the classroom interferes with peer and family relationships. When a learning disability is properly recognised, diagnosed, and treated, the child has the potential for a reasonably successful future. Without help, the child's disabilities may become incapacitating and function as a major handicap throughout life. (Silver LB., 1986)

Due to their social behaviour, many learning disabled children, already have been given a head start in experience failure, many even before they reach school age. They have become social outcasts in their neighbourhoods and have had many trying experiences at home, even with well-meaning parents. (Wanat P.E. 1983)

Recent studies find that these children's behavioural and social difficulties might persist beyond the elementary school years. The results of studies of LD high school students and post secondary adults found that both groups indicated significant social problems. (J.H. Bryan and T. Bryan, 1990)

The importance of social acceptance in school is difficult to overstate, especially as our society and family life changes, increasing the role of the schools as a socialization agent. A lack of affective attachments to significant others, such as peers and teachers, can lead to feelings of rejection that may result in social alienation. Social alienation has been suggested to be significant factor contributing to learning disabled students' disengagement from school and eventual dropout. (Seidel JF., Vaughn S., 1991)

Most schools are designed for the standard child who achieves equally well in all subjects. The school system has difficulty in accepting them. The problem is then either totally ignored, or generalized to other areas. Another aspect of dyslexia, which can affect social functioning, is the fact that dyslexic children often find themselves at a school, which in certain respects is too easy for them. And children feel that. One can well imagine that these feelings will affect their behaviour, which in turn does not make it any more acceptable to the other children.

Factors associated with school dropout can be grouped into several categories: demographic, family-related, economic, peer-related, and student alienation. Whereas alienation in general has been thought to be a contribution to school dropout, social alienation from teachers and peers has not received much attention in research and no research has been found addressing how social alienation influences school dropout in LD students.

There has been widespread concern that the integration of children and adolescents with learning disabilities into regular education and community settings has often not been accompanied by their being welcome into networks of satisfying interpersonal relationships. (Wiener, J. & Sunohara G., 1998)

A critical educational issue is the rate which adolescents drop out of school. Data from the Greek National Centre for Educational Statistics (1997-1998) report a 3,39% national school dropout rate (attending public lyceums only), and in Thessalonica the dropout rate exceeds 4,24% (3 grades). According to the data from the Greek National Centre for Educational Statistics (1996-1997) report a 67,56% dyslexic and learning disabled children which attend special education classes in public schools. Only the 32,43% suffers from abnormalities-disabilities (like blindness deafness, autism, movably problems, mental retardation, emotional and psychological problems, etc.) in public special education' s school and 36,66% in public and private special education' s schools. (Tables: 4.1, 4.2, 4.3)



Table 4.1: School Dropouts

Total amount of students with disabilities in private schools	<6 year-old	6-12 year-old	13-18 year-old	>19 year old	With LD
820	55	143	314	308	0

Table 4.2

Total amount of students with disabilities in public schools	<6 year-old	6-12 year-old	13-18 year-old	>19 year old
12272	117	10487	1349	319
With learning disabilities	67,56%			
8292	33	8188	71	0

**Table 4.3**

Prefecture of Thessalonica	Grade	Total amount (till the end of the academic year)	Drops
Lyceums	A, B, C, D	25886	1097
	A	9663	750
	B	7973	161
	C	8152	186
	D	98	0
General Lyceum	A-B-C-D	25244	1083
	A	9400	740
	B	7780	158
	C	7966	185
	D	98	0
Experimental Lyceum	A-B-C	485	6
	A	172	4
	B	158	2
	C	155	0

Musical Lyceum	A- B-C	109	4
	A	43	2
	B	35	1
	C	31	1
Athletic Lyceum	A	48	4

Data from the National Centre for Educational Statistics-Miami- (1983) report a 27% national school dropout rate and in many large cities the dropout rate exceeds 40%. Estimates of school dropout rates with some special education groups appear to be alarmingly high as well. Approximately one-half of students identified, as learning disabled and participating in school LD programs will not remain in school to receive a diploma or certificate. (J.F.Seidel, S.Vaughn, 1991)

Although it is known that students with learning disabilities are at greater risk for school dropout than are non-learning disabled students, the extent to which these two groups differed on their perceptions of social alienation, a significant risk factor is unknown. (J.F.Seidel, S.Vaughn, 1991)

It seems inevitable that for many children in schools, an academic failure will not be a momentary, short-lived experience. Rather, the failure, regardless of its cause or social definition, will likely turn to a long-term experience. For some learning disabled people academic failure will be accompanied by social failure, and may have life-long consequences. Years of frustration, anxiety, rejection, criticism and discouragement will have some effect on the social-emotional development of learning disabled people. Indeed, it may well be that next to "failure"; one of the few other

characteristics common to learning disabilities is that of socio-emotional consequences. (Chapman J.W., 1990)

Studies made in the developed countries have shown that school and, in general, education have great significance and participation in prevention and smooth psychosocial development of the child. According to these studies one of the most important factors seems to be the way the school functions as a social institution, something that is found in the school's environment and in the so called 'hidden curriculum', in contrast to the open analytical curriculum. Other elements are also included here, like the relations between teachers and children as well as the participation of pupils in the procedures of school function. In contrast to what would be expected, factors like school's natural environment, number of pupils in the class etc, do not seem to play a significant role (Tsiantis G., 1987).

Knowing that dyslexic children are the intelligent, charismatic kids, we can then realize that they face problems in the school's structured environment and become completely indifferent to everyday school work. There are opportunities to develop their abilities and to excel in athletics, arts and other out of school activities. The system of values in our society should be based in opportunities, variety, choices and challenges.

### 2.1.3 Collaboration Between Teachers and Learning Disabled Students

A prominent theme in this chapter has been the role of collaboration between **teachers** and learners and the ways in which these collaborations give rise to literacy.

*A failure by teachers to accept the existence of dyslexia was coupled with the readiness to label the pupils as disruptive and/or “dim”. The pupils’ emotional reactions included truancy, psychosomatic pains, isolation, alienation from peers, a failure of communication within the family, lack of confidence, self-doubt and denigration, competitiveness disorders, sensitivity to criticism and behaviour problems. (Pumfrey D, Reason R. 1991)*

Many teachers are unhappy about the dyslexic child as he and the parents are. Like them, teachers sometimes know something is wrong but they have not been trained to be diagnosticians or remedial experts. Feeling threatened by the situation, they react with defensive attitudes to the parents. (Kline, C.L.,M.D., 1986) Teachers view learning-disabled children as reflecting more social and emotional difficulties than their non-disabled peers. (J.H. Bryan and T. Bryan, 1990)

Perhaps the feelings of social alienation learning disabled students who dropout, reflect an accurate perception of being treated differently by their teachers and peers. When compared with NLD students, teachers are less interested in accepting LD students in their classrooms. Although teachers interact more with learning disabled students, the interactions are more likely to be for managing LD students’ behaviour and the interactions are not viewed positively by the teachers. Dorval, McKinney, & Fagans’ (1982), McKinney, McClure & Feagans’ (1982) studies, suggests that teachers’ perceptions and interactions may influence students’ feelings of social alienation and susceptibility for school dropout. (J.F.Seidel, S.Vaughn, 1991)

Haager D. & Vaughn S., (1995), examined from the perspectives of parents, teachers, peers, and self, the social competence of students with learning disabilities, low achievement (LA), and average to high achievement (AHA), guided by a theoretical model of social competence that includes social skills, behaviour problems, peer relations, and self-perceptions. Parent ratings of social skills did not differ significantly among achievement groups; however, for two factors of behaviour problems (internalising and hyperactivity), students with LD and LA were rated as having more problems than AHA students. Teachers perceived students with LD and LA as demonstrating poorer social skills and more behaviour problems than AHA students. Peer ratings indicated that students with Low Achievement and LA were less liked by their peers than were AHA students, yet only LA students received significantly higher peer rejection. Self-reports differentiated the groups on one factor: cooperation.

Barga NK, (1996) in a study examines factors that have contributed to the success of students with LD in schools and explores how these students manage their disabilities from kindergarten through college. The study followed a qualitative research methodology consisting of reviewing academic records and conducting interviews and classroom observations over a 6-month period. The subjects were 9 students experienced labelling, stigmatization, and gatekeeping throughout their school years. Furthermore, the students employed a variety of positive and negative coping techniques included relying on benefactors, implementing self-improvement techniques, and utilizing particular strategies and management skills to assist with academics. Negative coping techniques were describe as “passing” and created tension for the students. Students employed passing techniques to avoid disclosure of their disability and to make it through school. The results of this study have significant implications for school administrators and university educators who provide services for students with LD under current federal laws, and further underscore the need for such students to self-advocate. (Barga NK, J. Learn Disabil. 1996 Jul; 29(4): 413-21)

Bryan JH and Bryan T, (1990), in their research, conclude that it appears clear that teachers view learning disabled children as reflecting more social and emotional difficulties than their non-disabled peers.

#### 2.1.4 Peer Status and Learning Disabilities

Peer status of children with LD has been a major area of investigation since Bryan's (1974) seminal study. In his study, Bryan used nominations and the Guess Who Technique to compare 35 white and 29 black boys and 10 white and 10 black girls with a randomly chosen control group matched for sex, race, age and classroom. Children were drawn from the 3<sup>rd</sup>, 4<sup>th</sup> and 5<sup>th</sup> grades. The analysis indicated that control children received more positive votes than did the LD youngsters. The LD group received more negative nominations than did the NLD group, and this was due to the high rejection rate associated with LD females. (Bryan JH and Bryan T, 1990) That means that in the area of peer relationships, Bryan (1974) has found that LD children were less accepted by their peers than normal children; LD children in particular were rejected by their other classmates. These children are placed at a further disadvantage because their attempts at interpersonal interaction are usually inappropriate. (Wanat P.E. 1983).

The research on peer status of children and adolescents with LD in the 1970s and 1980s was conducted because peer rejection is an important index of social maladjustment. (Wiener J., Sunohara G., 1998). It also seems clear that the lack of acceptability (according to Bryan JH and Bryan T, 1990 findings), reflects their being ignored or tolerated or outright rejected by their peers remains to be determined. Given the importance of friendships in the socialization of children, these findings are disquieting.

Similar results were obtained by Gresham & Reschy (1986), who tested 200 children, 100 of whom were LD, 7.5-11.5-year-olds, on three scales. The scales involved ratings concerning classmates' desirability as a playmate, a worker, and finally the frequency with which they exhibited behaviours predictive of peer acceptance. LD children were rated significantly lower than NLD peers on all three scales. Levy & Gottlieb (1984) also found LD children to be less acceptable to classmates than their NLD peers. Using the dimensions of work and play, they found 3<sup>rd</sup> though

5<sup>th</sup> graders were more likely to rate the LD child as less desirable than a comparison group of NLD (J.H. Bryan and T. Bryan, 1990). With the LD minority that is doing poorly academically, they are likely to be a target of peer devaluation (J.H. Bryan & T. Bryan, 1990). Children with learning disabilities are more likely to be rejected or neglected by their classmates than children without learning disabilities, and by parents and teachers who were concerned about the emotional impact of this rejection.

On the other hand Juvonen and Bear (1992)- (for a review of this literature, see Wiener, J., Sunohara G., 1998)-, found that children with LD who are integrated into general education classes with full-time enhanced support from a special education teacher (in these classes a general education teacher and a special education teacher co-teach a group of approximately 30 children, 10 of whom have learning disabilities) have friends who do not have learning disabilities and are socially accepted by the group. Studies consistently found that children with LD are more likely to be popular than are children without LD. Children with LD were found to be deficient in social perception and role taking and conversational skills, and they were shown to be more prone to internalising and externalising behaviour disorder. Furthermore, two meta-analytic reviews of the literature showed clear differences between students with and without LD in a variety of the social domain, with deficient performance on the part of children with LD. (Wiener J., and Harris PJ., 1997)

In Smith DS & Nagle' s (1995) study, the results suggests that the children with LD perceived themselves as less competent than did the controls in the areas of intelligence, academic skills, behaviour, and social acceptance. Smith and Nagle compared the self-perceptions of third and fourth grade children to learning disabilities (LD; n=59) and non-disabled students (n=57) using the self-Perception Profile for Learning Disabled Students. These differences were not related to the length of time subjects with LD had received special education services. Contrary to expectations, subjects' self-perceptions were not effected by whether they chose LD or general education class peers as a reference group.

Wiener J.M., (1998), report: boys with LD were found to have fewer mutual friendships than girls with LD and children without LD, even



though the boys with LD nominated at least as many friends as other children. Children with LD in different special education placements however did not differ in the number of friends they have. Children with LD, including those in Inclusion and In-Class Support programs, were likely to have children with learning problems as their friends than children without LD. Not surprisingly, children with LD in self contained special education classes were more likely to have friends in special education than other children with LD. Boys with LD chose younger children as friends more often than did girls with LD or children without LD other children. Girls with LD chose other children with learning problems as friends more often than did other children. Notwithstanding the problems that children with LD have with peer relations, Wiener J.M. found that almost all of these children had a mutual friend, and that they have as many friends as children without LD.

The distinction between, friendship adjustment and acceptance by the peer group, was examined by Parker JG and Asher SR (1993). Third through fifth (3<sup>rd</sup> - 5<sup>th</sup>) grade children (N=881) completed sociometric measures of acceptance and friendship, a measure of loneliness, a questionnaire on the features of their very best friendships, and a measure of their friendship satisfaction. Results indicated that many low-accepted children had best friends and were satisfied with these friendships. However, these children's friendships were lower than those of other children on most dimensions of quality. Having a friend, friendship quality, and group acceptance made separate contributions to the prediction of loneliness. Results indicate the utility of the new friendship quality measure and the value of distinguishing children's friendship adjustment from their general peer acceptance.

Consistent with previous studies, Stone WL & La Greca AM (1990), report in their study that results revealed that children with LD obtain significantly lower sociometric scores relative to their non-disabled peers. Moreover, children with LD were found to be disproportionately overrepresented in the rejected and neglected sociometric groups, and underrepresented in the popular and average groups. Over half of the total LD sample was classified into one of the low status categories, with approximately equal numbers in the rejected and neglected groups.

### 2.1.5 Isolation and Dyslexia

Many students with learning disabilities exhibit minimal self-awareness and do not recognize their learning strengths because experience has taught them to focus on their learning weakness (D. J. Merchant, A. Gajar, 1997). *«When will society realize that it needs to recognize the worth of us dyslexics and get out of us what there is in there? Surely our talents can be put to good use?» (Saskia van der Stoel). “What you do notice is that your handicap trains you terrifically. I program everything into my brain in fact my memory is my files. That is an adaptation, just as deaf people learn to lip-read and blind people learn to rely on their hearing” (Saskia van der Stoel)*

Margalit M. (1998), investigated loneliness and coherence among Israeli preschool children with learning disabilities, in an attempt to identify the sources of social deficits before academic failure was established. The sample consisted of 187 preschool children divided into three groups: (a) 60 children at high risk for developing learning disabilities in six mainstreamed preschool settings (47 boys and 13 girls), (b) 76 non-handicapped peers from the same preschools (56 boys and 20 girls), and (c) 51 children (38 boys and 13 girls) at high risk for developing LD who were regular students at 17 preschools and receive special help in the afternoons outside their educational settings, at a regional learning centre for students with LD. The research instruments consisted of the Children's Sense of Coherence Scale, The Loneliness Scale, a peer nomination procedure, and teachers' ratings. Two-way MANOVAs demonstrated that the two groups of children (groups [A] and [C]) with LD and with a high risk for developing learning disabilities experienced higher levels of loneliness and lower levels of coherence. A subgroup examination revealed that they were less accepted by non-disabled peers and had less reciprocal nominations. Furthermore, their teachers viewed them as showing more maladjustment.

Margalit M. & Freilich R. (1998) in their study, shown that students with learning disorders viewed themselves as more lonely and reported

lower levels of the sense of coherence than the average achievement students. Their teachers rated the students with learning disabilities as demonstrating more externalising behaviour difficulties and lower levels of academic achievements than the average achievers and the low achievers. Their peers expressed lower levels of peer acceptance than the average achievers. They also demonstrated the fact that we are dealing with chronic difficulties and without comprehensive interventions that will focus efforts at each of the students' individualized difficulties; no significant chances can be expected.

Prevalence and severity of depression and related negative cognitive self-statements are assessed in 465 junior and senior high school learning disabled and seriously emotionally disturbed (SED) adolescents (aged 12.2-28.11 yrs) receiving special education services in public school resource room programs, by Maag JW and Behrens JT (1989). 21% of the Ss sampled experienced severe depressive symptomatology. Some senior high females exhibited a more negative cognitive style than their male peers, although no differences were found at the junior high level. There were no differences in severity of depressive symptomatology and related dysfunctional cognitive self-statements between LD and SED Ss. Results indicate that depression is a prevalent condition among many LD and SED adolescents.

Schumaker J.B., Hazel J.S, (1984), in their research found that LD individuals have difficulty working cooperatively with others, either in pairs or groups, and performing a wide variety of complex skills such as resisting peer pressure, negotiating, and giving negative feedback. Also they have difficulty leading a discussion or activity even when placed in the leader role. Finally, some behavioural excesses are apparent. LD individuals make more rejection statements, make more negative comments, and engage in more negative interactions than their peers.

Social alienation is defined to include both an individual's perception of being rejected or perceived unfavourably by others and the individual's rejection of and lack of positive perceptions toward others. Social alienation from teachers and classmates include both the perception

of how others feel about the individual and how the individual feels about others.

Some studies indicate that LD individuals do not appear to be social isolates. For example, they spend as much time interacting with peers, take as many turns while interacting, and have as many interactions with peers as non-LD individuals.

Children do not like being exceptions. They prefer to live in a large uniform whole. Anyone who stands out needs to be very sure of his ground in children's culture if he is not immediately to be excluded. That is why as a child you try as far as possible to adapt to the expectations of your age group. And if you think you are not meeting those expectations in all respects, you will perhaps try to camouflage your deficiencies or compensate for them in some other way. (Saskia van der Stoel)

### 2.1.6 Unemployment and Dyslexia

Work has made the man himself, a fact that is an essential feature of human nature. This means that work is a natural need for humans and through work a person can create, using his natural abilities. This leads to the conclusion that work forms the human being and contributes to the development of his personality, by giving him the chance to cultivate and develop his abilities. Through work essential social relations of the individual are made and especially his relations to society. Through his professional occupation the person is incorporated in the society, to the extent that the goods he produces are not being used only by him but also by the society. In this sense we refer to social work (Παπαϊωάννου, Σ., 1990).

If we accept that the position of an individual in the production process plays a primary role in determining his position as well as his relations in all social levels, then this becomes, especially in people with special needs, of great importance. These individuals are found in a disadvantageous position concerning their position in the production process. An especially determining factor for the inclusion of these individuals from the production process is their inclusion from every professional education or specialisation.

Concern for social problems also has been found in the **market place**. There is a considerable gap in access to paid employment for young people with disabilities compared with young people in general; there is substantial variation in the occupational experience of young adults with different types of impairment; and the transition from school to further education, training, employment, unemployment or day care can be difficult (Hirst MA, 1983). A survey of employer attitudes towards hiring the handicapped found that only one-half of the employers surveyed would hire workers with learning disabilities (Bryan and Bryan, 1990). Relatively little is known about the characteristics of adults who are unemployed because of their learning disabilities. Increased knowledge about this

population will enhance the development of more effective programs, as well as policy options.

The increased expectation for people with learning disabilities to become more autonomous and independent is generally a positive and dynamic force. However, care must be taken to ensure that, within this environment, people with learning disabilities are not isolated or lack support as this increases their vulnerability. These issues exist for all people within our society, but people with learning disabilities are more vulnerable because of their lack of voice.

## 2.2 VIOLENCE AND LEARNING DIFFICULTIES

### 2.2.1 Sociological aspect of aggressive behaviour

Delinquency is not defined clinically, but legally. A delinquent is a minor who has committed a felony. (Oxford Advanced Learner's Dictionary of Current English, 1989). Is the detachment from total institutionalisation, the common behavioural archetypes, which a group or a society recognises. The meaning of deviation is not universal, but is defined socially according to what is valued and established within each society. The deviation, which is the opposite procedure of adaptation, on the basis of the social criteria used for its classification, it provokes the presence of the respective mechanisms of social control. R. Merton & R. Nisbet in their work for the Modern Social Problems, they discriminate the variations into: violating, anticonformistic and rebellious. Violating are behaviours, which violate a regulation without one disputing or asking to abolish the regulation. Anticonformistic are the behaviours by which the person expresses his opposition and his actual rejection of the social code he violates. Rebellious are the behaviours by which the person does not oppose to a certain regulation, but with the whole system of legal order which he disputes in total (Dictionary of Human Sciences, 1992).

Two tendencies dominate in the research field about violation and manner disturbances, the first one comes from psychology and the second one comes from sociology. Recently, specialist's views from the economy sector are also being expressed. Psychology examines the causes, which predispose and drive certain people towards behaviour disturbances and violation, as well as the changes being observed in the behaviour of these people as age progresses. The interest of sociologists is focused on social groups, on the wider social structure and on the respective institutions. At times, responsible for violating behaviour were considered to be adolescent subculture groups, differences in social class, age and nationality, being stigmatised after involvement with Justice and the failure to complete the development of the typical and atypical social control. Specialists from the

economy sector believe that the violation and the criminality are the outcome of logical decisions of a person, depending on the loss-profit calculations (Τσαρουχά Α. & Παπαγεωργίου Β, 2001).

Several types of violating behaviour were used as diagnostic criteria for the psychiatric category of behaviour disturbances from the 10<sup>th</sup> Classification of Psychic and Behavioural Disturbances ICD-10 of World Health Organisation (WHO, 1992) and the reviewed edition of the Diagnostic and Statistical Handbook of Psychic Diseases of the American Psychiatric Association, DSM-IV (APA, 1994). According to ICD-10, the *Behaviour Disturbances from childhood and adolescence* are characterised by repetitive and persistent pattern of antisocial, aggressive or provocative behaviour, which – in the most serious cases are responsible, depending on the age, for serious violations of social expectations, norms and regulations. The above are defined as disturbances, if they last six months or more. According to the 4<sup>th</sup> edition of the Diagnostic and Statistical Handbook of Psychic Diseases of the American Psychiatric Association, DSM-IV (APA, 1994) we have the Behaviour Disturbance, the Opposing-Provocative Disturbance and the Divisive Behaviour Not Otherwise Defined. The characteristic of these disturbances is the repetitive and persistent behavioural motif, according to which basic privileges of others or basic and related to age social norms and regulations, are violated. Behaviour disturbances may take place in different contexts like home, school, or community and can evoke an important clinical problem in social, academic and occupational performance of a person (Tsaroucha A, Papageorgiou B, 2001).

The violating behaviour can be understood only if both the individual differences and the environmental influences are considered (Gottfredson, 1990). The temperamental features that predispose to antisocial behaviour are impulsiveness, opposing behaviour, low tendency for appraisal, low mental ability, high mobility level and physical strength. The tendency to avoid risks and the increased intelligence are considered to be protection factors. Several researchers support that impulsiveness and other features of the hyperactivity syndrome form predisposition factors for antisocial behaviour. There exist important evidences that youngsters with early violating behaviour fulfil more often the criteria for hyperactivity



syndrome, in contrast to those that develop violating behaviour later in life. The hyperactivity syndrome is also associated with low academic performance, early school drop out and limited professional success (Tsaroucha A, Papageorgiou B, 2001).

### 2.2.2 Studies of Dyslexia and Delinquency

Poor reading relates strongly to delinquency. Reasons for the link between reading and delinquency may give clues to a link between poor reading and violence. Two theories were considered. The sociologically based theory of Cohen (1955) relates delinquency to value conflicts between socio-economic classes, which results in frequent cases of both poor reading and delinquency among lower class children. However, (1) the delinquency/poor-reading link holds regardless of class; (2) both reading and delinquency relate to Verbal IQ. (3) In turn, IQ relates to class and to ethnicity. These considerations, prompt the inclusion of social class, ethnicity, and Verbal IQ as variables in exploring a possible reading/violence link. Second the neurological based theory of Luria (1963) emphasises the function of verbal ability in controlling acting out behaviour. However, Schubert and Cropley's (1972) demonstration that spuriously dull scores for non-Anglo children may distort control expectations, again argues for inclusion of ethnicity as a variable. (For a review of the above literature see: Andrew, J. 1979). Principal psychiatric, sociological, psychological, and criminal justice explanations of chronic youth offenders are examined, and an alternative theory, based on the dyslexia model, is presented. If sociopaths are adults who cannot learn to follow societal norms, then it is possible that are youth that cannot learn these norms & are thus not guided by the various social control mechanisms. These youth may become chronic youth offenders & can be labelled as "socially dyslexic". The developmental of teaching/ learning techniques similar to those now used with alexic and dyslexic children should help these youths adopt social norms. Early identifications of the socially dyslexic chronic youth offender & more effective treatment techniques administered by highly trained youth workers will help reduce this social problem (Curtis, John H., 1981). There is a widespread recognition that children with specific learning difficulties may experience social and emotional problems because of their learning difficulties, but it is often not realized the impairment of social skills may itself be a form of learning difficulty. This is due to a limitation in the way that the brain is

able to understand social conversations. This is called a social cognition (or social learning) deficit. (Selikowitz M., 1990)

Hafner H., (1985), explain: the impression that, there is a link between juvenile delinquency and learning disabilities is only partially justified. The considerable increase in the demand for psychiatric and psychotherapeutic help is influenced by quite a number of factors that vary in nature and direction. The most essential contribution was made by changes in the age composition of the population-and here primarily by the growing number of mental ill elderly persons- and by the enormous increase in life expectancy. Civilization factors in a closer sense, like the raising of the achievement level for school beginners play an essential role particularly for changes in the frequency of certain deficits of achievement and feeling, such as reading disorder. Except for age-related changes, we do not seem to have become more "learning disabled or dyslexic" than the generation of our parents, but more pessimistic. One important assumption is that society provides a critical influence on behavior and thought that guides participant as they engage in literacy interactions. The society or culture determines how literacy is defined, instructed and evaluated.

One «third factor» -behaviour problems- is often related to reading difficulty but «behaviour problems» is too similar to delinquency to be considered a true "third factor." Some of the other third factors offered, however, have included more interesting suggestions: socio-economic class or large families; poor ocular tracking; and organic brain dysfunction. The latter factor, organic brain dysfunction, has been linked to both delinquency and reading. To account for the connection, five general theories have emerged. These suggest briefly: (a) poor lateralization, (b) poor perceptual-motor functioning, (c) poor left-hemisphere functioning, (d) an imbalance between hemispheres, and (e) a global brain dysfunction or generalised retardation. (Andriew, 1981)

Some studies, in which learning disabilities are related to delinquent outcome, use fairly broad criteria to define learning disability and attention disorders as well as delinquency. For example, merely backwards readers may be counted as learning disabled. Felons and status offenders may both be defined as court-involved delinquents. It is therefore, not surprising that

in recent reports in the literature authors, who considered the prevalence evidence, arrived at different conclusions regarding the link between learning disabilities and delinquency. (Hollander E. H., 1986)

School, is an important part in an average adolescent's life. The attitude of the parents towards their teenage son, his own self-image and attitude of his peers toward himself, depend a great deal on his academic achievement. It is also recognized that the very same attitudes described above play a significant role in the development of grades and delinquent behaviour in an adolescent. The close relationship of learning problems, achievement of grades and delinquent behaviour therefore is hard to deny. (Shamsie, J.S., 1968)

The association between juvenile delinquency and learning disabilities has been a focus of considerable discussion and controversy. Aggression, delinquency and poor reading have been linked together frequently, if not conclusively, because delinquent behaviour has been associated with chronic failure at school. As a result, researchers are beginning to question whether indeed poor reading may cause delinquency, or vice versa-or whether a third factor may underlie both problems. Nevertheless, only a limited number of investigators have directly contrasted these two populations (juvenile delinquency and learning disabled).

In those studies, which have examined the link between antisocial behaviour and school problems, research methodology has varied, resulting in conflicting evidence and limited consensus.

The results of the few studies assessing LD individuals' ability to choose appropriate social behaviour tend to be complementary. For example, when LD children's moral-reasoning ability was measured, or when they were asked to indicate which ingratiation tactics were appropriate for particular situations, no differences were found between them and their peers. Thus, LD children appear capable of specifying what is generally considered an appropriate behaviour when given several fixed choices. Nevertheless, when they were asked to choose which of several behaviours they would actually use, LD individuals were found to be significantly more likely than their peers to choose less socially acceptable

responses. (Schumaker J.B., Hazel J.S, 1984). Although LD individuals seem to understand what is acceptable behaviour in our society, they have problems choosing appropriate social behaviours to actually use. This finding is cause for concern especially in view of LD individuals' propensity to choose antisocial behaviours when pressured by peers because such a propensity may serve as a link between learning disabilities and juvenile delinquency. (Schumaker J.B., Hazel J.S, 1984)

The hypothesis of a general dislike of school and learning aversion in children with learning and spelling disability could not be confirmed. As far as the attitude to the subjects and to the teachers, particularly to the teachers of German, is concerned no deviation from the norm generally existed. The contrast between frequent behavioural disorders in school and the general positive attitude towards school is interpreted as an appetency-aversion conflict. The dominance of appetency is caused by the favourable social and pedagogic conditions in society and is regarded as a prerequisite of successful therapy. (Kossow HJ., Kleinpeter U., 1976)

In Bryan T, Pearl R, Fallon P., (1989)' s study, assessed the reported responses of junior high school students with learning disabilities and normally achieving classmates to peer pressure to conform in prosocial and antisocial activities. The results replicate those of an earlier study in finding that students with learning disabilities indicated more willingness than their classmates to conform to peer pressure to engage in antisocial actions.

Disturbed peer relationships have been related to dropping out of school, juvenile delinquency, job termination, bad conduct discharges from the military, police contacts, and psychiatric hospitalisation. (Bryan T., 1997)

We recognise that all dyslexic children will not necessary demonstrate acting out behaviour and some will persevere in the school setting without coming to our attention. However, in the field of probation and corrections we are aware that a large number of children referred for delinquent tendencies have reading problems and that many are reading well below grade level. Certainly, in reviewing our referrals, we can locate many cases in which a child of fifteen, sixteen, or seventeen scored as a

non-reader or several grade levels below his chronological age. We recognise that these children may have had many problems, such as cultural deprivation, low IQ's, and emotional problems. However, the foregoing information was sufficient for us to feel it would be worthwhile to explore the possibility that dyslexia might be a contributing factor in their delinquency. Typically, these delinquent children are of average to superior intelligence, but because of their handicap they are unable to achieve in the regular school setting. They may have enjoyed a perfectly normal kindergarten experience except for being rather hyperactive. Their school problems begin when they reach the level where they are supposed to learn to read. No matter how hard they try, they faced with failure each day in the school setting. We further feel that if some of these children had been discovered and properly treated in the early grades, they could have been, at the time of this writing, achieving at an appropriate level and that this success may have prevented their delinquent involvement (Mulligan, W. 1969)

Juvenile delinquency in the United States is increasing in incidence, and children are becoming involved in delinquent activity at much younger age. Learning disabilities have been associated with juvenile delinquency in Mckay S & Brumback RA's (1980) study.

Dyslexia is a leading cause to emotional problems among children and adolescents in North America and Britain. About 80 percent of juveniles charged with delinquency are severe retarded in reading. Bender's extensive study reveals that on the child psychiatry inpatient service at Bellevue Hospital in New York, 50 percent of the non-retarded boys to age 12years and 75 percent of those 12 to 16 years were severely retarded readers or non-readers. (Kline, C.L., M.D. 1986)

Samples of poor and normal readers were followed through adolescence and into early adulthood to assess continuities in the comorbidity between reading difficulties and disruptive behaviour problems. Reading-disabled boys showed high rates of inattentiveness in middle childhood, but no excess of teacher-rated behaviour problems at age 14 and no elevated rates of aggression, antisocial personality disorder or officially recorded offending in early childhood. Increased risks of juvenile offending

among specifically retarded-reading boys seemed associated with poor school attendance, rather than reading difficulties per se. Reading problems were associated with some increase in disruptive behaviour in their teens in girls. (Maughan B., Pickles A., Hagell A., Rutter M., Yule W., 1996)

Meltzer LJ. Roditi BN. And Fenton T.(1986), designed a study to address the link between antisocial behaviour and school problems by comparing the cognitive and learning profiles of delinquents and learning disabled adolescents. Specifically, 53 delinquents, 26 learning disabled adolescents, and 50 average achievers were evaluated with newly developed educational and cognitive inventories. These assessment techniques were used to analyse several functional areas including processing efficiency, problem solving and response style. Application of discriminant analysis to the cognitive and educational profiles of these adolescents suggested the existence of various subtypes of delinquency. Learning disabilities characterised one of these subgroups. It was concluded that more specific descriptions of the learning profiles of adolescent delinquents hold promise for rehabilitation and, perhaps, prevention of juvenile delinquency.

Cornwall A., and Bawden HN., (1992), claim that learning disabilities cause aggressive behaviour and delinquency are increasingly common in the popular press, and a variety of theories concerning this purported causal relationship have been proposed. This research is flawed by a lack of specificity in the definition of learning disabilities, with studies often examining heterogeneous groups of children with learning problems. The present review examines the relationship between specific reading disabilities (the most frequently diagnosed learning disability) and aggressive behaviour. The data suggest that there is not enough evidence to conclude that reading disability causes aggressive or delinquent behaviour, although limited evidence does suggest that reading disability may worsen pre-existing aggressive behaviour.

Jorm AF., Share DL., Matthews R., and Maclean R., (1986) followed a sample of 453 Australian children over the first three years of schooling. Behaviour problems were assessed at the beginning of the first year at school and at the end of the second and third years. At the end of

the third year the children were classified as specific reading retarded, general reading backward or normal. At school entry backward readers were found to have behaviour problems, principally relating to attention deficit. It was concluded that this factor may play a causative role in their reading difficulty. Retarded readers, on the other hand, showed no evidence of behaviour problems.

It has been stated that no deviant child among exceptional children suffers more in the way of retaliatory and rejecting attitudes on the part of those around him than does the delinquent youngster. It has also been found that teachers and youth workers do not like to deal with a delinquent child. This is in fact a sad state of affairs because though these youngsters may be difficult and lack motivation however, they do possess the potential to become successful criminals or tax paying citizens of our Community of tomorrow. Very much depends upon the help provided during the difficult years of adolescence. (Shamsie, J.S., 1968)

Structural equation modelling was used with data from a longitudinal study of child development (N=698) to examine relationships between early reading attainment and antisocial behaviour at age 7 and 9 years and subsequent behaviour in adolescence. While reading, analysed as a continuous variable, did not directly influence later delinquency, antisocial behaviour during the early school years was strongly predictive of delinquency at age 15 years, particularly for boys, and had a detrimental effect on reading. These findings were independent of social disadvantage, and were unchanged by adjusting reading scores for IQ. Reading disability at 9 years old, however, predicted conduct disorder at age 15 in boys. (Williams S., McGee R., 1994)

The results of Hollander E. H. study, (1986), in two hundred juveniles, who ranged in age from 12 to 18,9 years, shows that delinquency is not a unitary clinical entity. Although this study indicate that most delinquents have a developmental handicap, the results should not be interpreted to mean that a developmental disorder in and of itself is associated with a delinquent outcome. Delinquency appears to be associated with having a developmental handicap in the context of severe



family disorganization- divorce, separation, alcoholism, child abuse, reliance on public welfare, and criminality among other family members.

Smart D., Sanson A. & Prior M., (1996) elaborate a study of children's reading and behaviour problem status from Grade 2 to Grade 4 of elementary school and they tested hypotheses concerned with the temporal and causal connections between these two closely associated disorders. Children who were comorbid had the worst outcome at follow-up, suggesting that behaviour problems may exacerbate reading delay. Reading-disabled children were lower (albeit in the normal range) on intelligence, but when IQ was controlled, large group differences on reading and spelling were still evident. Attention deficit hyperactivity disorder (ADHD) type behaviour problems significantly differentiated children with comorbid, problems from children with behaviour problems alone. Sex differences were noted in the association, with two-thirds of reading-disabled girls having no behaviour problems, suggesting that pathways to reading disability may be gender specific.

### 2.3 FAMILY' S EXPECTATION

We are labelling this category *family' s expectation*. Although most parents may be concern about their children, and most parents of children with LD may be concerned about their children' s academic achievement, the extent to which the parents who participated in our study were concerned about their children' s social relationships, behaviour, skills, were extraordinary. Concern for LD students' personal and social well being does not spring only from the educational community. It finds support from parents of LD youngsters who have indicated that social problems are significant in their children' s lives. Parents, teachers and peers have viewed the lack of appropriate social skills in learning disabled children, as being a very serious handicapping factor associated with learning disabled children

When children do not achieve educational progress as expected, members of the family, in particular parents and the child concerned need to accommodate the tensions and conflicts that can arise.

Indeed, the recent definition of learning disabilities advanced by the Association for Children and Adults with Learning Disabilities includes the statement that “throughout life the condition can affect self-esteem....” That these concerns are not spun from whole cloth is suggested by a review of studies of LD children published from 1970 to 1977 (Keogh et al., 1982). Keogh et al. found that behavioural characteristics were mentioned as frequently as learning-relating symptoms. (James h. Bryan and Tanis Bryan, 1990)

The environment in which the child finds himself also has an important part to play in determining how he will cope with his difficulties. Although parents play an important role in this regard, children experience many stresses that lie beyond their parents' control. Other children, teachers, relatives, and society in general, play an important part in determining how a child sees himself and how he copes.

Since most of a child's life is spent with his or her parents, this interaction is of importance when evaluating the sociability of LD children. Wender (1971) gave a description of the parents' view when he summarized parents' descriptions of their LD children as reflecting infant "King Kongs". Certainly not all LD children fit the category of miniature King Kongs, but there seems to be little doubt about the fact that such children often put substantial stress and strain on family life. (Wanat P.E. 1983)

These kinds of family interactions have been described by Ravenette (1979)[(Pumfrey D, Reason R. 1991)], who discusses the negative effects of the label dyslexia. According to him, the family might place the child in a permanent role of 'disabled', which stands in the way of the child's progress. The label can also lead to misunderstandings between the family and the school if discussion centres around the existence of a condition rather than agreed and shared methods of intervention.

Children starting their school experience at 5 or 6 years of age are still working through separation-individuation phenomena and are still vulnerable to separation anxiety. Unsatisfactory experiences at school are apt to catalyse fears of love, of rejection, and even of desertion. In addition, early identity problems originating from incompletely resolved oedipal conflicts could cause shame and guilt. With a strong desire to please the parents, the child, who fails to learn to read, senses parental disappointment and occasionally rejection. Even the most supportive, empathetic parents understandably are unhappy about their child's poor academic progress. And the child perceives this unhappiness as a negative response to him, caused by him. (Kline, C.L.,M.D., 1986)

Family dynamics severely tested in these circumstances, often end up in disarray. Parents search for reasons but frequently find themselves in blind alleys. Sometimes they label the child lazy and unmotivated. They alternately offer rewards and threaten punishments. Often, conferences with teachers are frustrating and unsatisfactory. Many teachers are unhappy about the dyslexic child as he and the parents are. Like them, teachers sometimes know something is wrong but they have not been trained to be

diagnosticians or remedial experts. Feeling threaten by the situation, they react with defensive attitudes to the parents. (Kline, C.L.,M.D., 1986)

Wiener, J., Sunohara G., (1998) found that the mothers were concerned about their children' s social immaturity, social-perceptual and social-cognitive difficulties, problems with social communication, and inappropriate behaviours that may alienate peers. They were worried that their children would be especially vulnerable to being exploited when they became adolescents. The mothers naturally expressed concern when they perceived their children to be experiencing loneliness or depression. One of the issues with which several of the mothers struggled, however, was whether they should be concern about the fact that their children did not seem to perceive that they had no friends, or appeared not to be upset about it. From the mothers' perspective, these children seemed to have a falsely positive view of their relationships.

Family shortcomings or other intrinsic deficits are frequently viewed as contributing factors to the social misperceptiveness frequently seen in children with learning disabilities. This chapter attempts to synthesize research defining the social problems of some children with learning disabilities. Several correlates and characteristics of family, school and environmental systems are discussed in the context of both children and adults with learning disabilities.

The cultural background of the home has been to bear a relation to reading readiness and reading progress. This broad groups of factors, often referred to as "home background", includes a number of environmental aspects, some more important than others, but all effecting the total experience the child brings to the reading situation.

Few studies have been devoted to the family characteristics of children with dyslexia and learning disabilities. The findings from the studies available are often contradictory with regard to father' s socioeconomic status, parents' age, sibship size, and birth order. Mother' s socioeconomic status has attracted little attention. Melekian' s study (1990) was based on a retrospective review of 249 children with severe dyslexia. The major findings were the low occupational status and educational level of parents and the predominance of high-ranking children in large sibships.

However, parental age was not found to be an important risk factor. Matrimonial status seemed unimportant. There was objective agreement upon the predominance of large sibships and high ordinal birth positions, although their significance remains poorly understood. No convincing support was found for the aging hypothesis. Mother's low socioeconomic and educational status may be an aggravating factor.

Qualifications are an indispensable item in our society. Every adult carries his youthful experiences with him, not only in a psychological sense but also in the form of exam qualifications, or in the case of dyslexic people often a lack of qualifications. A youth characterised by failure and struggle continues to affect you when you are an adult. (Saskia Van Der Stoel)

Family relationships can deteriorate once 'the boy' begins to exhibit to the father symptoms reminding the father of his own frustration over reading. Recently a child said: «My father says he can't spell, but he expects me to be perfect» (Saunders, R.E., 1965). Parental expectation is another related social factor; some fathers and mothers believe their children are not fulfilling the potential inherent in their genetic heritage ('why can't he be like me?') or advantaged environments ('look at all I give him'). Such discrepancies are part of the broader social context for diagnosing learning disability. (Rudel, R.G., 1980) Sometimes they are frequently subjected to pressures by the parents, who feel that their child is lazy and does not want to do his homework. Many of these parents feel that their child has an average or superior ability but simply refuses to apply himself. (Mulligan, W. 1969)

Self-image arises from a complex interaction of intrinsic and extrinsic factors. This article explores the importance of people with learning disability attaining a positive self-image. It discusses the effect of society's perception of people with learning disabilities, & questions the willingness of the community to accept such people in a non-judgmental way. It argues that staff caring for this client group have a vital role to play in how people with learning disabilities are perceived by others and discusses the effects that a market philosophy and the popular media have on society regarding people with learning disabilities. Self-worth is

important to everyone; however, the article concludes that a person with a learning disability is seriously disadvantaged in this respect. This aspect of care therefore requires insight, support and skills on the part of those healthcare professionals caring for this client group. (MarkwickA., Sage J., 1997)

Wiener, J., Sunohara G.,(1998) in their study textual of 16 children , report: the parents of 13 children attributed their children' s problems with **peer relationships to social skills deficits**. Five of these parents claimed that their children did not know how to initiate or maintain a conversation. They described situations where the children just froze and said nothing when they met someone they knew and did not know how to make small talk. The parents of seven children described instances when their children unwittingly said things to other children that were mean or inappropriate, were sometimes demanding and uncompromising, and engaged in behaviour that the mothers saw as very silly.

## 2.4 Attention Deficit Hyperactivity Disorder (ADHD)

A second subtype of students with learning disabilities with social problems, are those with **attention deficit hyperactivity disorder**.

Attention Deficit Hyperactivity Disorder (ADHD) is the most commonly diagnosed psychiatric condition. Many believe that the central disability is impaired inhibition, which leads to reduced abilities in social skills, self-control, organization and time management. The behaviours identified by clinicians as problematic—inattention, hyperactivity and impulsivity—have been incorporated into several evolutionary models as selectively adaptive cognitive skills for surviving the challenges of a variable Pleistocene environment. (Baird J, Stevenson JC, Williams DC, 2000)

If attention deficit disorder is present, the same hyperactivity or distractibility that creates problems for the child in the classroom interferes with peer and family relationships. When a learning disability is properly recognised, diagnosed, and treated, the child has the potential for a reasonably successful future. Without help, the child's disabilities may become incapacitating and function as a major handicap throughout life. (Silver LB., 1986)

Research indicates, however, that persons whose behaviour and life history conform to the ADHD diagnostic criteria are at considerably greater risk than the general population for serious social and psychological problems, such as unemployment, marital break up, substance abuse, depressive illness, social isolation and criminality. In the UK, the Cambridge Study of Delinquent Development found 'hyperactivity-impulsivity-attention deficit' to be one of six key childhood factors predictive of offending and antisocial behaviour in childhood and adulthood. This finding should be considered alongside research evidence, which allows high levels of co-morbidity between ADHD and other adolescent behavioural problems, such as Oppositional Defiant Disorder, Conduct Disorder, antisocial and delinquent behaviour. (Cooper P., 1997)

The work of Rourke et. al., Flicek and Landau, and, Bender and Golden suggests that there are subgroups of children with LD who are particularly at risk for problems in the social domain. Rourke et.al., argued that social problems are the result of central information-processing deficits. Landan and Moore (1991) believed that youngsters with ADHD do not have social information-processing problems due to central nervous system differences; rather, they appear to have performance or production deficits. (Bryan T., 1997).

Satterfield JH, Shell A, (1997), in their research, examine the relation between attention deficit disorder with hyperactivity in childhood and criminality in adolescence and adulthood in 89 hyperactive and 87 normal control subjects. In this prospective study, adolescent follow-up intervals ranged from 13 to 21 years and adult follow-up ranged from 18 to 23 years. The official arrest records for all subjects were obtained. RESULTS: Hyperactive subjects had significantly higher juvenile (46% versus 11%) and adult (21% versus 1%) arrest rates. Juvenile and adult incarceration rates were also significantly higher. Childhood conduct problems predicted later criminality, and serious antisocial behaviour in adolescence predicted adult criminality. The risk for becoming an adult offender is associated with conduct problems in childhood and serious antisocial behaviour (repeat offending) in adolescence. Hyperactive children who do not have conduct problems are not at increased risk for later criminality

Not all learning-disabled children will have symptoms of hyperactivity and distractibility. When learning-disabled children become delinquent, the antisocial behaviour may be contributed to the underlying distractibility and poor impulse control associated with the attention deficit and/or hyperactive condition. (Hollander E. H., 1986)



## 2.5 Summary

From the above mentioned literature review, it appears clear that learning disabled children hold themselves in low self-esteem; teachers view LD children as reflecting more social and emotional difficulties than their non-disabled peers; learning disabled individual is not likely to be attending to required academic activities; the majority of LD students are found less acceptable by their peers than their non-disabled counterparts.

Initially social skills deficits are observed in all categories of exceptional children. Second, social skills deficits, which appear in the early years, tend to become more debilitating without active intervention. Third, an absence of social skills inhibits the development of intellectual, language, and related skills. Finally, deficiencies in social skills during childhood, standing as the single best behavioural predictor of significant adjustment problems in adulthood. In all it is fair to conclude that peer social skills represent a legitimate instructional domain, a domain with significant developmental and social consequence that reach for beyond the classroom. (Strain, S.Ph., & Odom, L., 1986)

The problems become more confused when one considers the reading difficulties in acting out adolescents. Most studies in reading and learning problems are based upon investigations done on younger children. The literature on reading problems of adolescents between ages 13-18, with normal and above normal intelligence, with antisocial behaviour is almost non-existent.

On the other hand, research suggests that, if a person remains a poor reader in adulthood, it matter little whether the problem stemmed initially from a localised intrinsic limitation, a general learning problem, or inadequate educational opportunity. Their reading abilities appear to be hindered by weaknesses in the same components of the reading process that have been shown to pose the greatest challenges to children learning to read. (Fowler, Anne E.; Scarborough, Hollis S., 1993)

We can ask ourselves whether dyslexia should be regarded as a 'handicap' as what we are dealing with is children of a completely different

type, yet both parents and aptitudes as a handicap. The cause of this lies not in the distribution of talents but in the way in which our society handles it.

In literature review, we have evidence that the violating behaviour is triggered by many factors and cannot be attributed to only one cause either of biological, environmental or other nature. It is the outcome of the interactions between different factors and is associated with an exceptionally wide variety of problems that make its treatment more complicated. A number of recent studies believe that an overall approach is necessary which will be able to perceive that the antisocial behaviour of young people is a complicated issue, related to certain characteristics of children, their family, same age groups and community systems (school, neighbourhood).

Behaviour disturbances may take place in different contexts like home, school, or community and can evoke an important clinical problem in social, academic and occupational performance of a person. Factors such as low IQ, history of family stress, low socio-economic status, presence of psychiatric disorder, combined with criminality in other family members, or lack of remedial experience, must be taken into account. Unless these factors are shown to have no relationship to social deviance, the assumption that learning disability plays a primary role in a delinquent outcome, remains open to question.

Aggressive behaviour is often a cover for low self-esteem. A child who feels he has failed may vent his anger to others. A child who does not feel good about himself may derive satisfaction from exerting power over others. Such a child may get into fights, bully other children, or engage in arguments and make critical remarks about his siblings and others. (Selikowitz M., 1990)

Parker & Asher (1987) believe that a rejected (means low social peer status) child's future course differs from that of an isolated child insofar as the former may be more likely to suffer from both legal and academic problems. (Bryan JH and Bryan T, 1990)

In Greece, children and adolescents with violating behaviour that are involved with Justice are not referred to psychiatric services for children, and when they do they are not often treated appropriately

(Tsiantis, 1987). The difficulty to have access to help support services and the incapacity of the psychic health specialists to encounter the whole spectrum of psychosocial problems enhances the need to effectively treat violation, a matter that concerns the entire society.

**TABLES 5-12: -Studies in Social Domain-**

Table 5: Social Skills and Learning Disabilities

Researchers	Theory
Schomaker JB & Hazel JS, 1984	Learning Disabled' s social deficits may be just as handicapping as their academic deficits.
Duncan D., Matson JL, Bamburk JW., 1999	Individuals displaying maladaptive behaviours exhibited a restricted range of social behaviour compared to controls (specific skills problems were indentified).
Swanson HL & Malone S., 1992	Children with learning disabilities were less liked and were more likely to be rejected than were normal achieving children. Also, learning disabled were more likely to be rated as aggressive and immature, to suffer personality problems and to have difficulty attending when compared with non-handicapped peers.

**Table 6: Social Behaviour & Learning Disabilities**

<b>Researchers</b>	<b>Theory</b>
Wanat PE, 1993	Learning disabled children experience failure even before they reach school age.
Bryan JH & Bryan T., 1990	Learning disabled indicate significant behavioural and social difficulties that might persist beyond the elementary school years.
Seidel JF & Vaughn S, 1991	Learning disabled are at greater risk for school dropout than are non-learning disabled students.
Chapman JW, 1990	For some learning disabled people academic failure will accompanied by social failure, and may have life-long consequences.

**Table 7: Peer Status & Learning Disabilities.**

<b>Researchers</b>	<b>Theory</b>
Bryan T., 1974, Bryan & Bryan, 1990	Learning-disabled children were less accepted by their peers than normal children. Other classmates rejected them.
Gresham & Reschy, 1986	Learning disabled were rated significantly lower than non-learning disabled (NLD) peers
Levy & Gottlieb, 1984	Learning disabled children were less acceptance to classmates than their NLD peers.
Wiener J & Harris PJ, 1997	Children with learning disabilities were found to be deficient in social perception and role taking and conversational skills & they were shown to be more prone to internalising and externalising behaviour disorder.
SmithDS & Nagle, 1995	Children with learning disabilities perceived themselves as less competent than did the controls in the areas of intelligence, academic skills, behaviour and social acceptance.
Wiener JM, 1998	Boys with learning disabilities were found to have fewer mutual friendships than girls with learning disabilities and children without learning disabilities. Almost all of

	<p>these children had a mutual friend, and that they have as many friends as children without learning disabilities.</p>
<p>Stone WL &amp; La Greca AM, 1990</p>	<p>Children with learning disabilities obtain significantly lower sociometric scores relative to their non-disabled peers. Moreover, learning disabled were found to be disproportionately overrepresented in the rejected and neglected sociometric groups and underrepresented in the popular and average groups.</p>
<p>Juvonen &amp; Bear, 1992</p>	<p>Learning disabled who are integrated into general education classes, have friends who do not have learning disabilities and are socially accepted by the group</p>
<p>Haager D. &amp; Vaughn S., (1995),</p>	<p>Peer ratings indicated that students with low achievement (LA) and LD were less likely by peers than were average to high achievement (AHA) students, yet only LA students received significantly higher peer rejection. Self-reports differentiated the groups on one factor: cooperation</p>



**Table 8: Social Acceptance in School and Learning Disabilities**

<b>Researchers</b>	<b>Theory</b>
Seidel JF & Vaughns S, 1991	Social alienation has been suggested to be significant factor contributing to learning disabled students' disengagement from school and eventual dropout
Wiener J & Sunohara G, 1998	The integration of learning disabled into regular education and community settings has not been accompanied by their being welcome

**Table 9: Psycho-educational Problems and Learning Disabilities**

Researchers	Theory
Margalit M & Frielich R, 1998	Students with learning disorders viewed themselves as more lonely and reported lower levels of the sense of coherence than the average achievement students.
Merchant DJ & Gajar A, 1997	Students with learning disabilities exhibit minimal self-awareness and do not recognized their learning strengths.
Maag JW & Behrens JT, 1989	The consequences for students with learning disabilities of not developing adequate social relationships have been linked to depression
Schumaker JB & Hazel JS, 1984	Learning disabled individuals have difficulty working cooperatively with others, either in pairs of groups and performing a wide variety of complex skills such as resisting peer pressure, negotiating and giving negative feedback.

**Table 10: Collaboration Between Teachers and Learning Disabled Students.**

Researchers	Theory
Pumfrey D, Reason R. 1991	A failure by teachers to accept the existence of dyslexia was coupled with the readiness to label the pupils as disruptive and/or "dim". The pupils' emotional reactions included truancy, psychosomatic pains, isolation, alienation from peers, a failure of communication within the family, lack of confidence, self-doubt and denigration, competitiveness disorders, sensitivity to criticism and behaviour problems.
Kline, C.L.,M.D., 1986	Teachers sometimes know something is wrong but they have not been trained to be diagnosticians or remedial experts. Feeling threatened by the situation, they react with defensive attitudes to the parents.
J.H. Bryan and T. Bryan, 1990	Teachers view learning-disabled children as reflecting more social and emotional difficulties than their non-disabled peers.
Dorval, McKinney, & Fagans' (1982), McKinney, McClure & Feagans' (1982)	Teachers' perceptions and interactions may influence students' feelings of social alienation and susceptibility for school dropout.

Haager D. & Vaughn S.,  
(1995),

Teachers perceived students with LD and low achievers (LA) as demonstrating poorer social skills and more behaviour problems than AHA students.

**Table 11: Learning Disabled' s family**

Researchers	Theory
Haager D. & Vaughn S., (1995),	Parent ratings of social skills did not differ significantly among achievement groups; however, for two factors of behaviour problems (internalising and hyperactivity), students with LD and low achievement (LA) were rated as having more problems than AHA students.

**Table 12: Delinquency and Learning Disabilities.**

Researchers	Theory
Cohen, (1955)	Sociologically based theory: relates delinquency to value conflicts between socio-economic classes, which results in frequent cases of both poor reading and delinquency among lower class children.
Hafner, (1985)	Society provides a critical influence on behaviour and thought that guides participant as they engage in literacy interactions. The society or culture determines how literacy is defined, instructed and evaluated
Schumaker & Hazel, (1984)	LD individuals seem to understand what is acceptable behaviour in our society, they have problems choosing appropriate social behaviours to actually use. This finding is cause for concern especially in view of LD individuals' propensity to choose antisocial behaviours when pressured by peers because such a propensity may serve as a link between learning disabilities and juvenile delinquency.
Parker & Asher (1987)	A rejected (means low social peer status) child's future course differs from that of an isolated child insofar as the former may be more likely to suffer from both legal and academic problems

**CHAPTER 3:**

**Structure and operation of the educational  
system in Greece**

## Introduction

The legislation is also associated with Learning Difficulties, Dyslexia and education. It is therefore necessary to report certain elements regarding the current legislation. In this case it is necessary to have legislative regulations, which would regulate the rights and the psychological needs of children. It is evident that regarding legislative changes there is a need of cooperation between different Ministries, for example Ministry of Health, Ministry of Justice, Ministry of Education as well as reduction and elimination of bureaucratic procedures in which a child with psychological needs is 'lost' or ignored.

According to the Constitution, article 16: 'Education is the basic mission of the State, aiming at the moral, spiritual, professional and physical education of the Greeks, the development in them of a national and religious conscience and their fulfillment as free and responsible citizens. The years of compulsory education cannot be less than nine.

All Greeks have the right to a free education at all levels in state schools. The State shall support distinguished students and **those deserving of assistance or special care, according to their abilities**'. (Ministry of National Education, Directorate of Special Education)

The structure of the whole educational system is developed on three levels:

**A: ELEMENTARY EDUCATION** which includes Kindergartens and elementary schools.

1. The kindergartens provide pre-school training to children from the age of 3,5 for two years and they are not compulsory.

2. The elementary schools are compulsory for six years and starts at the age 5,5 years. All schoolbooks are provided free from the State. A great number of elementary schools, especially in the rural and mountainous



areas and in the small islands, are functioning as one or two-room teacher schools

B: SECONDARY EDUCATION includes the gymnasia and the lyceums.

1. The gymnasia provide a three-year course in general education and are compulsory. All the textbooks are provided free from the State.

2. The lyceums offer a three-year course (upper secondary level) and they are not compulsory. The textbooks are provided free from the State and the lyceums operate as schools or as comprehensive multicurriculum schools. The lyceum certificate is indispensable requirement for taking part in the panhellenic examinations for the entrance into the country' s establishments of higher and superior education (Technical Education Institutions and Universities)

C: HIGHER EDUCATION is provided by the Universities and the Technical Education Institutions. The students (who have graduate from the lyceum) are accepted in these Institutions and Universities after panhellenic entrance examinations, because there is a numerous clausus system. At this level also the studies and the textbooks are provided by the State quite free and for all the students.

### **3.1 BRIEF HISTORY OF SPECIAL EDUCATION IN GREECE**

The systematic development of the field of special education of children with special educational needs in Greece started about twenty years ago under the responsibility of the Ministry of Education.

The years before the 1970s there were some foundations of the Ministry of Social Affairs or of charity organisations providing a kind of special education and medical-social help and protection of the disabled. In 1906, e.g. the first special school was established in Greece, under the name «House of Blinds», in 1937 the National Foundation for the deaf was established, as well as the first public elementary school for the «subnormal children» etc.

In the beginning of 70s the Ministry of Education started to undertake its responsibility for the education of children with special needs. Thus, the inservice education of teachers started with a program of a two-year course (full time) for 30 and later 60 teachers every year. In the same time some public elementary special schools were established especially near the Teachers Training Colleges (Pedagogical Academies), and in 1976 the Directorate of Special Education in the Ministry of Education was created and a little later the first two inspectors of special education were appointed.

In March 1981, the first law (1143/81), concerning special education, was accepted by consensus of all the political parties in the Parliament. In 1985, this law was enriched and incorporated in the Law 1566/85, concerning the general education (primary and secondary levels).

During the decade of 1980s the development of the field of special education was obvious enough, but the needs remain still many and great. The basic characteristic of this development is the differentiation in the strategies and methods of providing special education programmes of the pupils who need them, not in separated and isolated schools or institution but in the mainstream schools. And these strategies lead not only to the

school but also to the social integration of the children and youth with special needs.

### **3.2 TODAY'S SITUATION**

The Ministry's educational policy and philosophy concerning the education of children and youth with special needs is clearly integration oriented, not only in theory but also in practice. Speaking more specifically about the today situation in Greece I think that the following information can give a clear picture of what is going on.

The basic or general education is offered in two levels and covers the ages from 3,5 - 17,5 years. The first level consists the primary education and includes the kindergarten (3,5-5,5 years of age) which is not compulsory and the elementary school (5,5-11,5 years of age). The second level consists the secondary education and includes the Gymnasium (11,5-14,5 years) and the Lyceum (14,5-17,5 years). The compulsory education starts at the age of 5,5 years, when the pupil starts the 6-grade elementary school, and expands up to the end of the 3 grade Gymnasium, that is 9 years of compulsory education. The 3 grade Lyceum is not compulsory, but the grade majority of the students attend and finish Lyceum, at the age of 17,5-18 years.

We have no specific statistics concerning the number of children with special educational needs and learning difficulties but we can accept the international 10% of the population being handicapped and consequently we consider that there are many of them of school age with special education needs.

The majority of these children attend ordinary schools. In fact we want them to stay there not by chance or because of the law, which demands compulsory education, but being also involved part-time in special education programs, individually or in small homogeneous groups, according to their needs and their abilities and in the frame of the whole school function.

The provision of special education programs starts from the ordinary class individually or goes on in homogeneous small groups -

according to the children's needs and difficulties-, which attend special class or resource room programs on a part-time basis, usually one hour per day.

When it is necessary, because of the severity of the handicap, special programs are offered in special schools, at home or, very rarely, in special schools at children's hospitals, for those who have to stay there for a long enough time.

We believe that this educational policy coincides with the contemporary philosophy of school and social integration of the people and especially the children with special needs, without any kind of segregation or labelling.

The policy does not mean that we underestimate the value and the necessity of special schools to those which are considered as unavoidable and from the other side we try to increase the number of school integration programs in ordinary schools (mainstreaming, «one school for all» etc).

Of course, the appropriate teaching and supporting personnel as well as the necessary means and materials are prerequisites.

Approximately, half of the teaching personnel in special educational programs, have attended a two year full time course of inservice education, after five years of teaching experience in ordinary schools, and the other half attended special education seminars or short courses or they are experienced and sensitive teachers.

The supporting personnel of special education units consists by school psychologists, social workers, speech therapists, physiotherapists, ergotherapists and caretakers.

In Greece today there are about 185 special schools for different categories of children with special needs as deaf and hearing impaired, blind and partially sighted, mentally retarded, socially maladjusted autistic, etc. These special schools are of different levels and specifically there are: 37 kindergartens, 131 elementary schools, 7 gymnasiums, 5 lyceums and 3 vocational schools. There are also about 500 special classes (resource rooms) as well as a number of supporting teaching models working with

special programs in the ordinary schools, in order to help children with special educational needs and learning difficulties.

The development of these programs in the ordinary schools is a major trend in Greece today and obviously a good and fruitful way toward school and social integration.

The total number of children and youth involved today (1990-1991) in special education programs of the Ministry of Education is about 12.500, the teaching personnel is about 1.200 teachers of the primary and secondary level of education and the supporting specialised personnel is about 200 people.

Beyond these there are in Greece different institutions of the Ministry of health and Social Affairs as well as some apprenticeship schools of the man-Power Organisation (O.A.E.D.), which offer special programs to about 3.000 children and youth with special needs.

So we can say that the total number of children and youth with special needs in Greece, who are involved in special education and vocational training programs, is about 15.500.

More over, the country is divided in 16 districts of special education and each one is under the pedagogical and guidance responsibility of a school adviser.

*The assessment of children with special educational needs is a very important problem. Special learning difficulties are mainly identified by the teachers and in co-operation with the parents. When the handicap is more prominent and severe, the assessment must be done by the medicopaedagogical service. There are about 30 such medicopaedagogical centres and about 30 moving regional diagnostic units all over the country. (Ministry of National Education, Directorate of Special Education)*

The preceding remarks have described the major legal responsibilities of schools with regard to children with handicaps. These responsibilities include identifying and locating children who are suspected of being handicap, providing a comprehensive evaluation of their needs, planning an individual program for the student cooperatively with the parent or parents, educating children in an environment that is the least

restrictive, and providing parents with due process throughout these activities. It is recognised that neurologists count among their patients numerous children whom they have identified clinically as “learning disabled”, yet who do not qualify for special education under the “specific” LDs definition employed by the school. (Telzrow CF., 1991).

The field of special education in Greece is indeed under development. Much more must be done in the near future. The philosophy and practice of integration is widely accepted by the educational system and by the broad society. We are working step by step towards this direction. A basic strategy is to change the attitude and thinking of teachers and parents toward children with special needs. This change is the key point of all the actions and efforts in favour of the disabled. The whole schools approach and, beyond this, the whole society approach of such problem guarantee, more or less, better solutions. Some good practices there are in function today and they may help us for the future relative planning.

### 3.3 Current practice in making eligibility and placement decisions-policy considerations

The legislation is also associated with Dyslexia and education. It is therefore necessary to report certain elements regarding the current legislation. In this case it is necessary to have legislative regulations, which would regulate the rights and the psychological needs of children. It is evident that regarding legislative changes there is a need of cooperation between different Ministries, for example Ministry of Health, Ministry of Justice, Ministry of Education as well as reduction and elimination of bureaucratic procedures in which a child with psychological needs is 'lost' or ignored.

Early in the history of American public education, students who performed very poorly in school, or who behaved in ways that significantly disturbed school personnel were simply excluded from school. The state and federal courts, though declared education compulsory and declared exclusionary practices illegal for the most part. Initially, school personnel reacted in several ways. Separate schools (usually called asylums) were set up for students who were deaf and/or blind. Others who exhibited academic and behaviour problems were simply tolerated. Later, following the advent of the mental testing movement after World War I, school personnel used tests to group students on the basis of their 'ability'. When such practices were declared illegal in some states or shown not to work well in others, a variety of alternatives were created for students who performed poorly in school. Among those alternatives was special education, a set of services or settings for educating students whose poor performance was due to observable or supposed handicaps.(Ysseldyke JE., 1983)

The common British legal position is to deny the existence of dyslexia (:Sp. L. Difficulties, Initial literacy diffs) as an educational problem, thus eliminating any need for legislation providing for its treatment. (Watts WJ, 1974).

Provision for children with special educational needs is governed by the Education Act 1981 and in Scotland by the Education (Scotland) Act 1980 amended by the Education (Scotland) Act 1981. They came into force



in January 1983, and while some of the names in the Scottish Acts are different the provision is the same, always subject to differences of detail from one local education authority to the next. The 1981 Acts are based on the Warnock report of 1978, which, in few words, recommended: a spectrum of learning difficulty is seen to lead to a variety of special educational needs requiring a spectrum of provision. (Quin V., Macauslan A., 1987)

The education Act 1980 ensures that schools must inform parents of their arrangements to meet the needs of pupils with special education needs. The education Act 1981 seems to have enabled many children to have their special educational needs recognized and, perhaps, addressed. This Act required that a pupil with a significantly greater difficulty in learning than the majority of pupils of his or her age should have a multidisciplinary assessment. Also, requires that children with special educational needs are educated alongside others who do not have special needs. The Education Act 1986 required Local Education Authorities in U.K. to provide 'curriculum statements' for their schools to develop. The general trend was to support the use of the term Specific Learning Difficulties rather than dyslexia but to acknowledge that dyslexia was an increasingly familiar term. (Pumfrey P.D., Reason R., 1991). In 1993 signed a Code & Practice of a new Education Act.

It should not matter whether the problem is learning disabilities, underachievement, or the like. Assistance should be available. Concerns about the number of children who might be identified as having learning disabilities should not be the driving force in reformulation of policy. Rather, there is a need for easier access to educational assistance, and empirical investigations of the level of severity necessary to produce severe and persistent reading disabled.

### 3.4 THE CURRENT STATE OF DYSLEXIA IN GREECE

The awareness of Dyslexia in Greece has greatly increased over the last few years, although it has not yet reached the same level of exposure as in other European nations and the USA. Despite problems, such as, lack of standardised reading tests, more and more children are now being identified as dyslexic in many of the fast growing learning disabilities centres around the country.

Dyslexia was officially recognised by the Greek Government in 1978 with the passing of Public law 420/78 (Ministry of Education, 1994). This specified that students, officially identified as dyslexics, have the right to be examined orally during school assessments. The first special education classes (with mainstream and special schools) were created in 1985 (Public Law 1566/85; Ministry of Education, 1994). However, these classes generally consist of a mixed group of children with the variety of learning problems rather than homogenous groups of children with similar problems. Furthermore, very little help is available for dyslexics of secondary school age as the provision for special education generally in Greece is focused on the primary level. The ministry of Education recently surveyed all its staff members involved in special education (approximately 1300 staff) and out of the 724 replies that were received, 87% of the staff were involved in primary education, 9% in units covering both primary and secondary aged students and 4% in secondary education (Ministry of Education, 1995).

The position of dyslexics is further disadvantaged as Greece generally has very limited provision for psychological services in schools, few specialised teaching materials for dyslexics, and lack of appropriate teacher training (Ministry of Education, 1995). Furthermore, 57% of Greek teachers perceived that their University training was inappropriate for teaching children with dyslexia and other learning disabilities (Pavlidis *et.al.*, 1997)

In summary then it transpires that dyslexia is now a legally  
 recognized disability

### 3.5 Summary

Children with learning difficulties belong to a special category of children with problems in the area of children's psychological health. The extent of the problem is not known, it is either presented in the form of special learning difficulties or as the outcome of psychosociological problems. Because of the increased demands at school, the already existing learning problems emerge and make difficult an efficient pupil's response to school demands (Lazaratou E., Anagnostopoulos I., et al. 2001).

The issue of pedopsychiatric nursing and prevention in Greece has become a subject of publications and presentations in the last five years. It has also been a subject of research by a study group assigned by the Ministry of Health and Welfare in March 1982, in order to suggest direct and midterm measures for the pedopsychiatric nursing in the country (Tsiantis G., 1987).

The evidence gathered through this part of the survey supplements that of the previous survey and our existing knowledge of practice. To a large extent the evidence echoes the previous findings but also shows how the policies of Greece have continued to develop following the Public law 420/78 (Ministry of Education, 1994).

Studies made in the developed countries have shown that school and, in general, education have great significance and participation in prevention and smooth psychosocial development of the child. According to these studies one of the most important factors seems to be the way the school functions as a social institution, something that is found in the school's environment and in the so called 'hidden curriculum', in contrast to the open analytical curriculum. Other elements are also included here, like the relations between teachers and children as well as the participation of pupils in the procedures of school function. In contrast to what would be expected, factors like school's natural environment, number of pupils in the class etc, do not seem to play a significant role (Tsiantis G., 1987).

CHAPTER 4

**METHODOLOGY**

**4.1 HYPOTHESES**

**4.2 PROCEDURE AND MATERIALS**

**4.2.1 ETHICAL CONSIDERATIONS**

**4.3 LEARNING DISABLED SAMPLE**

**4.4 NORMAL CONTROLS SAMPLE**

**4.5 SEMINARS & BRIEFING**

## 4.1 Hypotheses

Lack of knowledge of the causes of dyslexia has forced the adoption of definitions based on exclusionary criteria. Learning disability is generally diagnosed by the exclusion of negative neurological, social, and psycho-emotional aetiology and by a significant discrepancy between levels of intellectual as compared with academic achievement. Learning disability is a diagnosis by exclusion, describing a deficit condition, which exists in the absence of other positive findings. The child so diagnosed has been proven to be without sensory impairment, intellectual retardation, neurological disease, or home and school environments, which would deny him or her the proper climate and essential opportunities for learning. (Rudel, R.G., 1980). The diagnosis of dyslexia by the use of exclusionary criteria delays diagnosis (by at least 1.5 - 2 years after beginning school). It is, therefore, imperative to utilise comprehensive exclusionary diagnostic criteria when studying dyslexia. Children can be classified as dyslexic when their failure to learn to read cannot be predicted by deficiencies in any of the known causes of poor reading. A major difference between dyslexia and other reading disabilities is that, unlike dyslexia, other categories of reading failure can be predicted on the basis of neurological, intelligence, socio-economic, educational, and psychological (motivational, emotional) factors known to adversely effect the reading process. (Pavlidis, 1990) If, for instance, a child has problems in one or more of the above-mentioned areas, he is expected to have reading problems. The extent of the reading disability is determined by the severity and number of factors that are involved. In contrast, if a child has none of the above mention problems, he is expected to be a normal reader. **Psycho-socio-enviro-educational and intelligence factors do not cause dyslexia, although they can contribute to its severity or amelioration.** The causes of dyslexia are constitutional (e.g. subtle brain malformation or malfunction) but they remain as yet undetermined. If dyslexia is due to neurological factors, then there is no reason why dyslexia should not occur at all

intelligence levels and in all psycho-socio-cultural backgrounds, as all other neurologically based condition do. (Pavlidis, 1985).

The current diagnostic tests of dyslexia not only lead to delayed identification of dyslexics, but also to exclusion of children whose reading problems could be attributed to psychosocial factors; so children from adverse socio-economic background and/or emotional disturbed, prior to schooling cannot be unequivocally diagnosed as dyslexics by any existing diagnostic test.

Literature in the learning-disabilities area reveals frequent claims that learning-disabled children experience problems in their social relationships, and that their socio-emotional difficulties persist into adolescence and adulthood. (Rourke, B.P., 1989)

The final point here relates to issues of what might be termed the 'civil rights of Dyslexia'. Notions of the stigmatising nature of disability labels and their use as instruments of social control and suppression are increasingly anachronistic, particularly in relation to the issue of dyslexia. The fact is that dyslexics are characterized by the desire to find a non-stigmatising explanation and treatment for emotional and behavioural difficulties' that have been previously ignored and/or misconstrued by professionals. In these circumstances the dyslexia diagnosis is seen as a definition of a problem, which brings with it clear lines to follow towards a potential solution. In this way it can be contrasted with the vague and ill-defined, yet utterly stigmatising label of emotional and behavioural disorder. (Cooper, P. 1997)

The literature would appear to suggest that learning disabled and dyslexic children, in contrast to normal achievers, are described as follows: They are (1) perceived as less pleasant and desirable by parents, teachers, and peers; (2) the recipients of more negative communications from their parents, teachers, and peers; (3) ignored and rejected more often by their teachers; (4) treated in a notably more punitive and derogatory manner by their parents; and (5) likely to live in families that resemble in important ways those of emotionally disturbed children. Indeed, it is widely held that learning-disabled children are particularly prone to socio-emotional difficulties; some investigators have even suggested that a particular pattern

of socio-emotional problems is generally descriptive of the learning disabled child. (Rourke, B.P., 1989)

### **Hypothesis I:**

The study attempted to compare Socio-economical criteria and Environmental factors in relation to learning difficulties.

◆ Influence of family's social level in personality, behaviour and educational profile of Greeks.

As educational profile, the following factors are considered: reading, spelling, and arithmetic-mathematics. In personality we examine the factors: Self-centered, demanding, persistent, low tolerance levels, pessimistic. In behaviour problems: difficult character, frowns, talkative, demands to dominate, rebellious, anti-authoritarian, disobeying, aggressive, tempered, irritable, nervous, looser, teaser, clumsy.

◆ If the facts prove that children with learning difficulties and dyslexia develop different social characteristics in comparison to non-dyslexic. In other words: if they have low self-esteem, are afraid that the others do not like them, have problems in creating new friends, in keeping friends and in being accepted by other kids.

◆ If difficulties in school (educational profile) evoke emotional problems. In other words: if they are sensitive, emotionally immature for their age, easily heart and cry easily.

### **Hypothesis II:**

It is difficult to state whether the learning and reading problems cause the socially deviant behaviour, or whether the emotional problems lead to the reading and learning problems in a child's life or in adolescents of normal intelligence. There are a host of possible explanations for such effects. One is that LD children, because of their academic problems, develop personal difficulties. Conversely, it can be argued that the personal problems underlie the academic ones. These two hypotheses may indeed be correct. But it should also be remembered that teacher characteristics and teacher knowledge of the diagnostic status or the children are often confounded with the group comparison. (Brvan JH and Brvan T. 1990)



Our hypothesis may be a difficult question to answer in general, but in a given specific case with proper assessment, it is not hard to decide which came first. Children can be classified as dyslexic when their failure to learn to read cannot be predicted by deficiencies in any of the known causes of poor reading. Psycho-socio-enviro-educational and intelligence factors do not cause dyslexia, although they can contribute to its severity or amelioration. (Pavlidis, 1985).

The present study was designed to empirically identify distinct behavior in children with learning disabilities and dyslexia through the use of a questionnaire. The following hypotheses addressed the relationship between: family background, socio-emotional disturbance and learning disabilities. The data provide support for the hypothesis that there is a link between social problems, friendship, loneliness, social exclusion in relation to their lack of access to social goods and social adjustment in Learning Disabled and Dyslexic children, as opposed to normal controls. Also, aggressive behavior is a diagnostic criterion and more children can be identified

**Hypothesis I**

**There is a relationship between the socio-economical status of the family a child grows up into and the learning difficulties he/she is facing**

**Null hypothesis**

**There is no relationship between the socio-economical status of the family a child grows up into and the learning difficulties he/she is facing**

**Hypothesis II**

**There is a relationship between the environmental factors that a child grows up into and the learning difficulties he/she is facing**

**Null hypothesis**

**There is no relationship between the environmental factors that a child grows up**

into and the learning difficulties he/she is facing

Hypothesis III

There is a relationship between the socio-emotional and behavioral problems a child lives with and the learning difficulties he/she is facing

Null hypothesis

There is no relationship between the socio-emotional and behavioral problems a child lives with and the learning difficulties he/she is facing

Hypothesis IV

The LD-dyslexic children can be differentiated from their normal controls on the basis of their psycho-socio-educational profile

Null hypothesis

The LD-dyslexic children can not be differentiated from their normal controls on the basis of their psycho-socio-educational profile

Hypothesis IV poses the important question that arose from the relevant literature, namely that if it is possible to identify the factors that would allow one to decide, with a relevantly high degree of accuracy, whether a child is a normal learner or whether he/she can be classifying as having learning difficulties. In this study, two models were developed, discussed in Chapter 5 that addressed successfully this question.

A difficulty in explaining the aetiological basis of abnormal behavior comes from data that challenge such explanations. For example, if one suggests that extreme prolonged maternal and social deprivation in early years lead to deviant behaviour in later years of life, then how does one explain some cases who show reasonably normal behaviour in spite of growing up in the deprived environment. (Shamsie, J.S., 1968). At present, it is possible to explain the aggressive behaviour and behavioural dysfunction purely on learning theory principles.

In today's societies of advanced technology any divergence from the ideal prototype of the perfectly healthy person often causes rejection and exclusion from the majority of social activities. Learning disabled and dyslexics persons have a limited choice and a very little possibility of participating in the social activities in a community, as well as poor social behaviour. Perhaps the need of those with Dyslexia and Learning Disabilities could be neglected and so individuals could loose out on the support they need. The aim is to raise people's awareness of the needs of people with Dyslexia and Learning Disabilities so they may be met in the future. Each of these approaches to defining a relationship between socio-emotional disturbance and learning disabilities implicitly assumes that reading disabilities is a relatively disorder If aggressive behaviour is found to be a characteristic of children with learning difficulties, then from preschool age we could suspect the problems they will confront and in consequence to anticipate them in combination with other tests for preschool age, as OKG, Pavlidis' screening test, IQ, etc, that is without needing the reading or spelling ability. Learning disabled children must be identified so that programs, which minimise the disability while emphasising the children's strength, can be instituted.

## 4.2 METHOD PROCEDURE AND MATERIALS

Two hundred and twenty seven (227) children and their parents (122 boys and 104 girls) took part in this research, ranging in age from 6 to 12 (M=9) participated in the study. The children were in grades 3 through 6. The sample consisted of a hundred and thirty six (136) normal controls – 57 boys and 78 girls, 1 anonymous- from different schools in the region of Thessaloniki and socio-economic status, ninety one (91) dyslexics and learning disabled children –65 boys and 26 girls-drawn from the Dyslexia and I. Q. Center, according to their parents answers who had filled in the Pavlidis questionnaire that was mentioned above. (LD children had similar characteristics as the dyslexics, however they did not fulfil the criteria to be classified as dyslexics. For instance, for a child to be diagnosed as dyslexic it is necessary to fall significantly behind in reading. Our LD child had similar problems with dyslexic and ADHD in their written expression etc but their reading was not them bad)

In this study we deal with different age groups and with a breadth of disorders ranging from learning disorders and dyslexia across emotional problems and antisocial behaviour. All the normal control subjects come from the region of Thessaloniki and were given the following tests: RAVEN: Standard Progressive Matrices (RAVEN IQ test), Reading Text, Spelling text, Comprehension.

<sup>1</sup>(The frequency distributions of the sample can be found in Appendix I)

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*Bryan T. (1990) maintain that gender differences, when found, indicate that girls are at greater risk for problems in social domain than boys, but this is not a consistent finding. Because there are important differences in the way females and males interact socially, this is an issue that deserves further attention. In terms of personality characteristics, both male and female LD students were identified by teachers as*

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*exhibiting more aberrant behavior such as self-consciousness, inferiority, shyness, social withdrawal, lack of self-confidence, hypersensitivity, reticence, anxiety, tension, and aloofness. Other investigators have found LD males and LD females to have more anxious-withdrawn behavior than NLD children. (Vaughn & Hogan, 1990).<sup>1</sup>*

All of the children and their parents spoke Greek as a first language. The dyslexic and learning-disabled participants were tested and diagnosed mainly in "Dyslexia and IQ Centre, Thessalonica. The normal controls were tested in their schools. Completing the questionnaire took 40-50 minutes. All of the 360 questionnaires were returned complete.

Both groups of participants wrote a dictated text appropriate for their age. Their spelling errors were categorized according to the Pavlidis Categorization of Spelling errors (Pavlidis & Giannouli, 2003). Participants also read a text appropriate for their age and a second text two years below their grade, and their reading speed was calculated. Finally, the RAVEN IQ test and WISC-R verbal and performance scores were analyzed, in a classical as well as in a novel way.

The average duration of the test was 45 minutes per child. There were few children who needed 50-55 minutes. The children were tested individually. There was a stopwatch for the timing. The RAVEN IQ test was given for the whole group at the same time

Of the 360 delivered questionnaires, 280 were completed and returned (boys and girls). In this research only 136 were used. In August 1999 PQ was sent to 80 parents in Melissoxori-Thessaloniki, who were from mid-low socio-economic status. 60 questionnaires were returned and 30 of them are used in the research. In December 2000 the PQ was sent to 280 parents who were from middle-high socio-economic status. Questionnaires were returned by 180 of the parents and 106 were used in the research.

The Pavlidis' questionnaire mainly refers to non-verbal aspects of children's life. The PQ was constructed for clinical and research reasons by Prof. Pavlidis (Pavlidis 1982; 1986). Most of the questions are "closed", but in some of them were open questions, e.g. "describe some specific talents or special qualifications of your child". The construction of this questionnaire was based on a detailed literature review and on the wide international (England, USA, Greece) clinical experience of Prof. Pavlidis. The whole questionnaire is not included in the Appendices, because it remains an unpublished scientific work and intellectual property of its creator, Professor George Th. Pavlidis.

In all Pavlidis' studies the criteria used for identifying dyslexics have been fairly strict and as «quantitative» as possible. The criteria were set after long consultations with educational psychologists and careful critical search through the dyslexia literature. The main aim of the criteria is to distinguish dyslexics from backward readers, and for dyslexics to be at least as retarded in reading as backward readers. Another aim has been the quantification of as many qualitative factors as possible, e.g., educational opportunities. The children had to fulfill all the following criteria in order to be included in studies. These are:

### **Subjects' Selection criteria (from Pavlidis, 1990)**

ix. Normal I.Q (average or above average determined by the WISC-R test).

The I.Q scores of the ADHD and LD must be equal or greater than the normal range (min 1 SD below mean plus 2 SE i.e WISC-R 92 verbal or 94 performance) or one of the two must pass the above level and the other to be above 85. The normal comparison group was not assessed for their IQ, but since they attended a normal school and according to the teacher's report, their IQ should be at least average. However, we should mention the limitation of the present study to match the children for their IQ.

x. At least two years retarded in reading in relation to chronological age (CA)

They must be at least two years retarded in reading if they are >10. Reading retardation is assessed relative to C.A. Reading score is to be derived from standardized word recognition or sentence reading test. The control group had a normal reading and spelling ability according to the teacher's report and the parent's report.

xi. Normal or corrected vision and hearing

Both their vision and hearing must be normal or correct. People with amblyopia, nystagmus, abnormal eye movements or any other specific neurological condition (except dyslexia or ADHD) would be excluded.

xii. Average or above average socioeconomic background. To minimize the potential confounds of social adversity, we excluded

individuals from the lowest socioeconomic status. Thus, the children of both groups should have at least one employed parent and at least one of their parents should have finished high school.

- v. Greek being the native language
- xiii. Adequate educational opportunity
- xiv. Not on any psychoactive medication or within its washout period

Children should not be on any medication known to affect cognitive processes motor performance, attention or reading per se.

- xv. No overt emotional problems prior to commencing school
- xvi. No overt physical handicaps that could account for reading and other emotional or cognitive problems (i.e. brain injury, brain malformation, brain tumor, seizures).

The parents of normal controls participating in the study had individually answered a questionnaire about their children's reactions and social behavior in terms of friendship and social adjustment. The dyslexic children's parents had already filled in the extended questionnaire. Questionnaires are useful in data gathering. Further investigations, particularly socio-educational evaluation, are of major importance.

The subjects' selection as well as their testing took place according to standard recently ethics and after the necessary permissions were received and the appropriate informed consents are filled out

The data were analyzed by the SPSS statistical program.



### 4.2.1 Ethical Considerations

The ethics in this study are of great importance two basic reasons:

a- the participants are children (6 to 12 years old)

b- it is a prognostic procedure, meaning that the possibility of non-diagnosed learning disabled cases is to be extremely high.

For the above reasons it is essential to be thorough, explicit, and descriptive of all paragraphs of the guidelines for psychological research.

#### *Introduction (paragraph 1)*

According to ethical principles (Revised) for conducting research with human participants, paragraph 1.2 *“Participants in psychological research should have confidence in the investigators. Good psychological research is possible only if there is mutual respect and confidence between investigators and participants.”* (British Psychological Society, 1997: p.7). In this study, the confidence and mutual respect was characterized by a dual relationship towards the parents and children as well. Parents were informed by the respective school directors and school personnel of all ethical aspects concerning this research. Prior to this, the experimenter briefed the staff. Additionally, children were approached in class to create a feeling of trust and safety towards the experimenter, who was introduced to them.

Also, *“Ethical guidelines are necessary to clarify the conditions under which psychological research is acceptable”* (British Psychological Society, 1997: p.7). All aspects were reviewed to ensure proper conditions for psychological research. Additionally, conditions and experimental procedures were simply described to the parents and educators, reassuring competence and conduct.

In paragraph 1.3 *“The principles given below supplement for researchers with human participants the general ethical principles of*

*members of the Society as stated in the British Psychological Society's Code of Conduct. Members of the British Psychological Society are expected to abide by both the Code of Conduct and the fuller principles expressed here. Members should also draw the principles to the attention of research colleagues who are not members of the Society. Members should encourage colleagues to adopt them and ensure that they are followed by all researchers whom they supervise.*" (British Psychological Society, 1997: p.7). There were no collaborators in this research, but the assistance of the educators was required regarding several organisational aspects. Educators were well informed how to tackle with these matters, following precise instructions that would ensure proper conduct.

### ***General (paragraph 2)***

In paragraph 2.1 the experimental implications and consequences are explained. *"In all circumstances, investigators must consider the ethical implications and psychological consequences for the participants in their research. The essential principle is that the investigation should be considered from the standpoint of all participants; foreseeable threats to their psychological well-being, health, values or dignity should be eliminated."* (British Psychological Society, 1997: p.7). The diagnosis of children is a delicate issue itself, thus the estimation of implications and consequences of a prognostic research project would be dealt with extreme caution.

### ***Consent (paragraph 3)***

In paragraph 3.1: *"Whenever possible, the investigator should inform all participants of the objectives of the investigation. The investigator should inform the participants of all aspects of the research or intervention that might reasonably be expected to influence willingness to participate. The investigator should, normally, explain all other aspects of the research or intervention about which the participants enquire."* (British Psychological Society, 1997: p.8). Parents were informed in detail of all aspects of the research. There was no disclosure of information. Preschool children were informed as far as possible, in terms

of their understanding. By no means were the children given the impression that they were tested; rather they understood that the nature of the 'game' was getting a good score.

Paragraph 3.3: *"Where possible, the real consent of children and of adults with impairments in understanding or communication should be obtained. In addition, where research involves all persons under sixteen years of age, consent should be obtained from parents or from those in loco parentis."* (British Psychological Society, 1997: p.8). Written consent was obtained from parents who completed the questionnaire whether a) to permit the child or not to participate in testing (spelling, IQ, reading) b) to consent the results (diagnosis) being forwarded discretely and confidentially to educators in order to assist the child in class, tactfully. The consent of children was also required prior to testing. A negative reaction before or during the test would immediately terminate the procedure.

Paragraph 3.6 *"Investigators should realise that they are often in a position of authority or influence over participants who may be their students, employees or clients. This relationship must not be allowed to pressurise the participants to take part in, or remain in, an investigation."* (British Psychological Society, 1997: p.8). This notion was taken into account in the case of the elementary school of the region of Melissoxori, which was the placement of the experimenter.

#### ***Deception (Paragraph 4)***

Paragraph 4.1: *"The withholding of information or the misleading of participants is unacceptable if the participants are typically likely to object or show unease once debriefed."* (British Psychological Society, 1997: p.9). Deception or/and withholding of information did not occur either for methodological nor for convenience reasons.

#### ***Debriefing (Paragraph 5)***

Paragraph 5.1: *“In studies where the participants are aware that they have taken part in an investigation, when the data have been collected, the investigator should provide the participants with any necessary information to complete their understanding of the nature of the research. The investigator should discuss with the participants their experience of the research in order to monitor any unforeseen negative effects or misconceptions.”* (British Psychological Society, 1997: p.9). In this study personal feedback along with behavioural guidelines was given to parents after the completion of the research. Guidelines were also provided from an educational perspective to all educators, in written form as well, for further use in their occupational setting.

Paragraph 5.2 *“Debriefing does not provide a justification for unethical aspects of an investigation.”* (British Psychological Society, 1997: p.9). By no means oral briefing was used to insert any unjustified unethical elements.

### ***Withdrawal from the Investigation (Paragraph 6)***

Paragraph 6.1: *“At the onset of the investigation investigators should make plain to participants their right to withdraw from the research at any time, irrespective of whether or not payment or other inducement has been offered. It is recognised that this may be difficult in certain observational or organisational settings, but nevertheless the investigator must attempt to ensure that participants (including children) know of their right to withdraw. When testing children, avoidance of the testing situation may be taken as evidence of failure to consent to the procedure and should be acknowledged.”* (British Psychological Society, 1997: p.9). Parents were reassured that they could withdraw from the study at any time. Also they were assured that if their children would deny participation, this would be leading to unquestionable withdrawal for conduct and ethical reasons abiding to the rules of the BPS. The previous statements created a feeling of trust between the parents and the experimenter. In this study there were no cases of withdrawal. Children complete all tasks patiently.

Paragraph 6.2: *“In the light of experience of the investigation, or as a result of debriefing, the participant has the right to withdraw*

*retrospectively any consent given, and to require that their own data, including recordings, be destroyed.*" (British Psychological Society, 1997: p.9). It was explained to parents that complete destruction of any data or protocol records regarding their child or themselves could be either been kept for research reasons or destroyed in addition to their withdrawal.

### ***Confidentiality (Paragraph 7)***

Paragraph 7.1: *"Subject to the requirements of legislation, including the Data Protection Act, information obtained about a participant during an investigation is confidential unless otherwise agreed in advance. Investigators who are put under pressure to disclose confidential information should draw this point to the attention of those exerting such pressure. Participants in psychological research have a right to expect that information they provide will be treated confidentially and, if published, will not be identifiable as theirs. In the event that confidentiality and/or anonymity cannot be guaranteed, the participant must be warned of this in advance of agreeing to participate."* (British Psychological Society, 1997: p.10). Parents were informed about the protection of any personal data (The Data Protection Act, N.2472/1997), which was abiding to the Greek legislation and is in accordance to the European Laws.

### ***Protection of Participants (Paragraph 8)***

Paragraph 8.1: *"Investigators have a primary responsibility to protect participants from physical and mental harm during the investigation. Normally, the risk of harm must be no greater than in ordinary life, i.e. participants should not be exposed to risks greater than or additional to those encountered in their normal lifestyles. Where the risk of harm is greater than in ordinary life the provisions of 3.8 should apply. Participants must be asked about any factors in the procedure that might create a risk, such as pre-existing medical conditions, and must be advised of any special action they should take to avoid risk."* (British Psychological Society, 1997: p.10). The content of paragraph 8.1 was made clear to all parents and educational personnel.

Paragraph 8.4: *“In research involving children, great caution should be exercised when discussing the results with parents, teachers or others in loco parentis, since evaluative statements may carry unintended weight.”* (British Psychological Society, 1997; p.10). Parents were required to inform the experimenter whether they wanted to be informed, if their child was in the high risk group.

### ***Observational Research (Paragraph 9)***

Paragraph 9.1: *“Studies based upon observation must respect the privacy and psychological well-being of the individuals studied. Unless those observed give their consent to being observed, observational research is only acceptable in situations where those observed would expect to be observed by strangers. Additionally, particular account should be taken of local cultural values and of the possibility of intruding upon the privacy of individuals who, even while in a normally public space, may believe they are unobserved.”* (British Psychological Society, 1997: p.10). Observation was not an aspect of this study, neither educational personnel was asked to indicate children exhibiting hyperactivity, behavioural problems or inattention.

### ***Giving Advice (Paragraph 10)***

Paragraph 10.1: *“During research, an investigator may obtain evidence of psychological or physical problems of which a participant is, apparently, unaware. In such a case, the investigator has a responsibility to inform the participant if the investigator believes that by not doing so the participant's future well being may be endangered.”* (British Psychological Society, 1997: p.10). The behaviour of the experimenter was strictly equal to all children after the completion of the spelling, reading and RAVEN tests, no matter if performance was poor, or in the cases of withdrawal. All children which participated were praised, but a reward (e.g. candy) was not given, because several children in each school did not participate in the test.

Paragraph 10.2: *“If, in the normal course of psychological*

*research, or as a result of problems detected as in 10.1, a participant solicits advice concerning educational, personality, behavioural or health issues, caution should be exercised. If the issue is serious and the investigator is not qualified to offer assistance, the appropriate source of professional advice should be recommended. Further details on the giving of advice will be found in the Society's Code of Conduct.*" (British Psychological Society, 1997: p.11). In differential issues of diagnosis, the experimenter would refer children to the respective professional. The experimenter made clear to all persons involved in the study, directly or indirectly, that she would not accept as a professional any of the cases diagnosed.

Paragraph 10.3: *"In some kinds of investigation the giving of advice is appropriate if this forms an intrinsic part of the research and has been agreed in advance."* (British Psychological Society, 1997: p.11). Advise was given to all parents through the briefing letter they received prior to the completion of the questionnaire, and to educators as well in the seminars that took place. Debriefing of parents of the high-risk children was also arranged after the completion of the project.

### ***Colleagues (Paragraph 11)***

Paragraph 11.1: *"Investigators share responsibility for the ethical treatment of research participants with their collaborators, assistants, students and employees. A psychologist who believes that another psychologist or investigator may be conducting research that is not in accordance with the principles above should encourage that investigator to re-evaluate the research."* (British Psychological Society, 1997: p.11). It was made clear to all who were involved in the research that the guidelines explained, should be followed by the letter.

### ***Confidentiality and Conduct Issues:***

Special precaution was given to confidentiality issues where anonymity, in terms of personal data of participants, was ensured in all reports. When referring to anonymity, it should be made clear that the

names of participants were used for methodological reasons, but could only be accessed by the experimenter and the supervising Professor Pavlidis. In this study code numbers were also used to assess the previous ethical guideline. None of the records was to fall in the hands of any unauthorised person. Additionally, according to conduct guidelines, insulting, offending or upsetting individuals, breaking the law, illegally copying materials or inventing data was avoided.



### 4.3 LEARNING DISABLED SAMPLE

We hypothesized that all the learning disabled and dyslexics participants would rate receiving professional help as highly important for overcoming dyslexia and learning difficulties

When we collected the data for this study, however, the parents in the waiting room of Dyslexia & IQ Center provided us with such rich, unsolicited data about the quality of their children's behavior, friendship & isolation that we decided that their views needed to be studied more systematically. Furthermore, there is evidence that parents' observations of their children's behavior are both reliable and valid. (Wiener & Sunohara, 1998)

When a child is referred to the «Dyslexia and IQ Centre» for some action, we attempted to obtain a report from the school. We were particularly interested in grade placement, reading level, as well as IQ.

Diagnostic classification for all developmental disorders was based on case records which contained previous educational, psychological evaluations, on intake educational and psychological testing, which included the WISC-R, a questionnaire filled out by parents of the individuals, reading, spelling and comprehensibility tests, and a brief eye movement examination, the OKG, Pavlidis Ophthalmokinesis test.

In inquiring about any history of neurological handicaps, information was collected whether any other children in the family have had reading, learning problems and other questions in a general, non-threatening way. Information included: (1) Mother's pregnancy: any illness; premature birth (2) Birth process: labor, long or difficult; anesthetic; drugs; forceps, accident; respiratory difficulty. (3) Infancy and early childhood: any dehydration; high temperature (duration); illnesses. (4) Any history of neurological handicaps in family. Maternal deprivation is included on the list. We also obtained information on medical information, IQ scores through the use of WISC-R, RAVEN test and also WISC III test.

The opthalmokinesis test (known as Pavlidis test) was also administered to learning disabled and dyslexics.

Data were evaluated in terms of (1) whether the parent questionnaire suggested that the child's reading/spelling difficulty was caused by poor teaching, excessively harsh or permissive parental attitudes and expectations, emotional problems, or physical disabilities and (2) whether the WISC-R performance supported a dyslexic a profile.

In the present study, all of the child participants had educational difficulties. This was one of the reason they had were referred to Dyslexia and IQ Centre. All participants were identified by Professor Pavlidis as learning disabled, dyslexic and having the ADHD syndrome, on the basis of psychoeducational assessment which typically included: a standardized intelligence test (the WISC-R IQ test); reading test; spelling test; comprehension; math test; digit span; and Eye Movements (Pavlidis test). The children with LD in this study had in common the fact that they all were receiving treatment at the same Dyslexia and IQ Centre for their educational and emotional difficulties.

Extensive statistical analysis in order to identify if the LD individuals' social and behavioral problems were a statistically different was performed non-handicapped individuals matched to the LD subjects on the basis of age, sex, ethnicity, and race.

We used light variation of the questionnaire used by Prof. Pavlidis; reprinted with his permission.

The first page of the questionnaire introduced the study, the learning problems to be considered, and the nature of the task; it also asked for demographic information (sex, current educational status, occupational status of the parent, number of siblings). The participants were specifically instructed as follows: "For each questions there are five answers. You have to choose one of the four. There is no problem (1), there is a small problem (2), there is a big problem (3), and there is a serious problem (4).

The shorter version of Pavlidis' questionnaire consists of 24 items in which the participants indicate where the item did or did not describe them. There were seven (7) subscales: I) emotional problems, ii) personality traits at home & in school. iii) distractibility -impulsive-

hyperactivity, iv) fears & worries, v) childish or immature, vi) school problems, vii) problems with friends. The shorter version of Pavlidis' questionnaire is a scale on which parent rate children on 100 items of social behavior, half pertaining to pro-social actions and the remaining to antisocial ones. Each item was rated on a five point scale (There is no problem,...there is a serious problem) We had questions about personal traits that are displayed most frequently at home and in school, and also about personal-social flexibility (adaptability, approach-withdrawal, and positive mood). The scale consists of such items as following rules, sharing toy and equipment and complimenting others, following the teacher' s verbal instructions, making positive statements about the self, and accepting consequences for wrongdoing, etc. Also, Conduct Disorders and Personality Problems. Conduct Disorder items include: aggression, disruptiveness and other behaviour patterns of acting out and peer discipline. Personality Problem items include: anxiety, nervousness, and deficits in social competence. Another one additional factor has been found within certain populations of children and youth: Inadequacy-Immaturity includes items reflecting behavior patterns of immature children.

At this point, we should mention that the present study as it concerned the Learning Disabled sample, was an ex post fact research, and the data had already existed. The researcher used the data, which existed in the Dyslexia and IQ Center as a secondary researcher. However, at this point we should mention that in order the researcher to be familiar with the research materials, she worked in the center and used the same materials diagnosing over 300 children. Thus we made sure that the experimenter had the necessary clinical experience.

#### 4.4 NORMAL CONTROLS (NON-LEARNING DISABLED) SAMPLE

The non-dyslexic sample also, received the "Pavlidis Questionnaire"(PQ). An envelope was sent to the parents via the teachers. It included, a letter explaining the purpose and aims of the research, the above-mentioned questionnaire, a smaller envelope, and a booklet where the parent could be informed about Learning Disabilities and Dyslexia. The letter emphasized the information would be completely confidential and asked if they would like to complete it. The PQ was returned to the researcher through the teachers.(table 13 & 14)

The parents of normal controls who participating in the study were individually given to complete a shorter version of PQ about their children's reactions and social behavior in terms of friendship and social adjustment. The dyslexic children's parents had also filled in the extended version of the same questionnaire developed and used by Professor Pavlidis in U.K., the U.S.A. and Greece, for people with ADHD, Learning Difficulties and Dyslexia. Questionnaires are useful in data gathering. Further investigations, particularly socio-educational evaluation, are of major importance.

Children were drawn from the elementary schools. A profile was compiled on each learning disabled individual consisting of a number of variables. These included results of IQ tests, the determination of diagnostic classification according to OKG, including classification for Attention Deficit Disorder, the assessment of family background, and economic status. Information was supplemented by an individual interview with each learning disabled individual, coded for computer analysis.

Further more, there is evidence that parents' observations of their children behavior are both reliable and valid (Achenbach & Edelbrock, 1990, Gresham & Elliot, 1990, Wiener J., Sunohara G., 1998). Consequently, the focus of the present study is parents' perceptions of the quality of the social behavior of their child.

The majority were Orthodox Christians. Of the total group, 100% were in full time employment. All participants were volunteers.

This sampling method was used in other studies (Pavlidis G.) in this field and because those studies involved predominantly students participants, they provided better material for comparison.

**Test setting:** The children were tested in their schools. The directors of these schools, allowed us to use a classroom for the tests. All the teachers had interest in the research and allow me to test children.

**Response Rate:** The response rate refers to the percentage of delivered questionnaires that are completed and returned. In this study, it was 77,7%. That means of the 360 delivered questionnaires, 280 were completed and returned (boys and girls) but only 136 post the criteria and were used in this research. In August 1999 PQ was sent to 80 parents in Melissoxori-Thessaloniki, who were from mid-low socio-economic status. 60 questionnaires were returned and 30 of them post the criteria and were used in the research. In December 2000 the PQ was sent to 280 parents who were from middle-high socio-economic status. Questionnaires were returned by 180 of the parents and 106 post the criteria and were used in the research.

**Test duration:** The average duration of the test (reading and spelling) was 45 minutes per child. There were few children who needed 50-55 minutes. The children were tested individually. There was a stopwatch for the timing. The RAVEN IQ test was given for the whole group at the same time.

**TABLE 13: Approval of Attendance in the Research**  
(translation from Greek)

*PROFESSOR GEORGE TH. PAVLIDIS*  
*Brunel University, England*

**Subject: Approval of Attendance in the Research:**

***"A Comparison of the Socio-Psycho-Educational  
 and Personality Characteristics of Learning Disabled and  
 Dyslexics with Matched Normal Controls"***

**Full name of Child:**

.....

**Fathers**

**Name.....Town.....**

**School: ..... Class:**

.....

The below signed verifies that I Mr/Mrs..... have read and fully understood the description of research titled "*A Comparison of the Socio-Educational and Personality Characteristics of Learning Disabled and Dyslexics with Matched Normal Controls* " and give my consent for my child to participate in this research. Also, with the consent of my child, I accept his/her participation in this research, with the condition that it will be occupied minimal educational hours (10-15 min) and that he/she will freely have the right to withdraw from the research whenever it wants, without any warning for any reason. The **data** obtained from the questionnaires – reading and spelling tests, and RAVEN test and the **results** of the research will be kept strictly **confidential and anonymous**.

**Signature of parent**

.....

**I approve the results to be given to the school teacher in a confidential manner in order to receive specific directives to help my child:**

**YES..... NO.....**

TABLE 14: Parental Information Sheet

Participation in the Research :

**"A Comparison of the Socio-Psycho-Educational and Personality Characteristics of Learning Disabled and Dyslexics with Matched Normal Controls "**

Dear Parent,

The following information is for your understanding of the research conducted by Mrs. Xistrou Maria, doctoral student of Brunel University.

**Aim of research:** The aim of the study is to compare Learning Disabled and Dyslexic children to normal controls in relation to the social problems, friendship, loneliness, social exclusion and lack of access to social goods and social adjustment. The present research constitutes part of a number of research projects in the field of Learning Difficulties that are researched by Brunel University – Department of Education. Mrs Xistrou Maria, doctoral student, conducts this research.

**Description of research:** In the questionnaires given to the parents of the children, you will find simple questions that concern specific as well as general characteristics of the children (e.g. careless, bad loser, gets moody often etc.). The children that meet certain criteria will proceed to spelling and reading tests. Also the RAVEN IQ test will take place. Actually, it will be presented to the children as puzzle game. The average time the child will be occupied will be 10 to 15 minutes. The tests will take place in the school environment and **only with the approval of the child** .

**Benefits of this Research:** 1. **For your child:** The results will help the schoolteacher and the family trace any potential school weakness and thus help the child fulfil its educational objectives



easier. 2. **For society:** In our society, each deviation from the 'ideal individual', is often rejected or excluded. The individuals with school difficulties, attention deficits or dyslexia, are usually not treated fair or properly. Because of lack of knowledge often they do not have the support that they need at home or at school. The aim of our research is to supplement the knowledge concerning these individuals starting from you, so as to be treated rightly and effectively in future. The happiness of our children, make the society a better place.

*The personal data collected and the results of the research are confidential. If the parent feels that his child must withdrawn from the research for any reason, he is free to do so whenever he wants and without any prior notice.*

*Thank you.*

Best Regards,

**PROFESSOR GEORGE TH. PAVLIDIS**

**P.S:** *Please*, after you **complete** the questionnaire, put it in the envelope, **seal it** and return it to the **schoolteacher**. If you do not wish to participate please return the questionnaire.

#### 4.5 Seminars and Briefing

Briefing of the school personnel was an important aspect of the research, not only because one of the secondary aims of the study was to make learning disabilities familiar to educators, but also for methodological reasons. The cooperation of the school personnel would ensure the following:

a- Would explain to parents the importance and the aims of the research and why it would be beneficial for their child to cooperate.

b- The questionnaires would be distributed accordingly by engaging to all instructions concerning the anonymity and the personal data protection issues (by using code numbers) as stated in the BPS code of conduct.

c- The school personnel would assist parents who do not understand a specific question. (The questionnaire was thoroughly revised in the briefing of educators)

d- The school personnel would assure that all questions are being answered.

e- The school personnel would gather all sealed envelopes with questionnaires and return them to the experimenter.

f- Dependent on the parents' request and permission, the educators with the guidance of the experimenter, would support the children who were found to be in risk of learning disabilities and dyslexia.

It was essential to fully inform the educators on the topic of the research before referring to their duties. In order to do so two seminars were arranged, one in Melissochori and one in the city of Thessaloniki. The attendance was 100% for both cities of Thessaloniki and Melissochori. Instructions were given to the Thessaloniki Educators at their school facilities. We do not know whether attendance of educators effected the participation percentage. The fact though that the personnel of the elementary school of Melissochori was informed in detail after request of the headmaster, makes us consider the possibility.

The seminar answered basic questions and presented several theoretical as well as practical ideas and considerations such as: *What is learning disabilities and dyslexia, what are the effects of learning disabilities on the children's behaviour, how does this effect the class and fellow students in the elementary school, how do we identify a child at possible 'high risk', what can we do to help a learning disabled and dyslexic child etc.*

**CHAPTER 5**

**STATISTICAL ANALYSES  
RESULTS**

## 5.1 Crosstabulation Analysis Technique

During the first phase of data analysis the distribution frequencies of variables were examined. Afterwards, with the help of the Crosstabulation Analysis technique certain hypotheses were examined regarding the relation between the variables of the questionnaire<sup>1</sup>. To what extent there is some relation between two or more variables, there was an effort to examine certain hypothesis regarding the views and attitudes of people participating to the research.

The SPSS for Windows Release 10 (statistical package used for data processing) together with the table of variable correlation, give us a series of values by which we can determine the statistical significance of the correlation<sup>2</sup>.

If the statistical significance of the  $\chi^2$ -test (either for the Pearson Chi Square value or the Linear-by-Linear Association value) is  $<0.05$  we accept (marginal error 5%) that we can reject the initial hypothesis and assume that those two variables are not independent.

In the next phase we used certain coefficients that determine the validity of this correlation<sup>3</sup>. (There are different relative coefficients, whom we shall use is dependent on the data we have and its codification. The coefficient we used in data analysis is “ $\gamma$ ”).

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<sup>1</sup>When we want to examine if between two variables there is a statistical significant correlation we begin with the initial hypothesis that those two variables are independent. The dependent variable is the variable we are interested at evaluating in each case.

<sup>2</sup>We study the value "Pearson Chi Square", unless more than 20% of table cells have values  $<5$ . In this case we study the value "Linear-by-Linear Association" which is the "corrected" value of the test (Fisher's Exact Test).

<sup>3</sup>Which one of the available coefficients we will use is depending on the data we have and its codification. The coefficient we used in data analysis is “ $\gamma$ ”. The maximum value for coefficient “ $\gamma$ ” is 1 and the minimum is -1. The closer the value is to the above (for those tables that  $\chi^2$  is statistically significant), the stronger the correlation is between the variables we examine. The absolute value of coefficient “ $\gamma$ ” (that is independent of the sign) can be interpreted as the percentage by which the error probability is decreased, when for the estimation of one variable's value we take into consideration the other

variable's value. With each of the above indexes we take a value that expresses its statistical significance. A value  $<0.05$  allows us to claim (error probability 5%) that the regarding correlation of each coefficient is real.

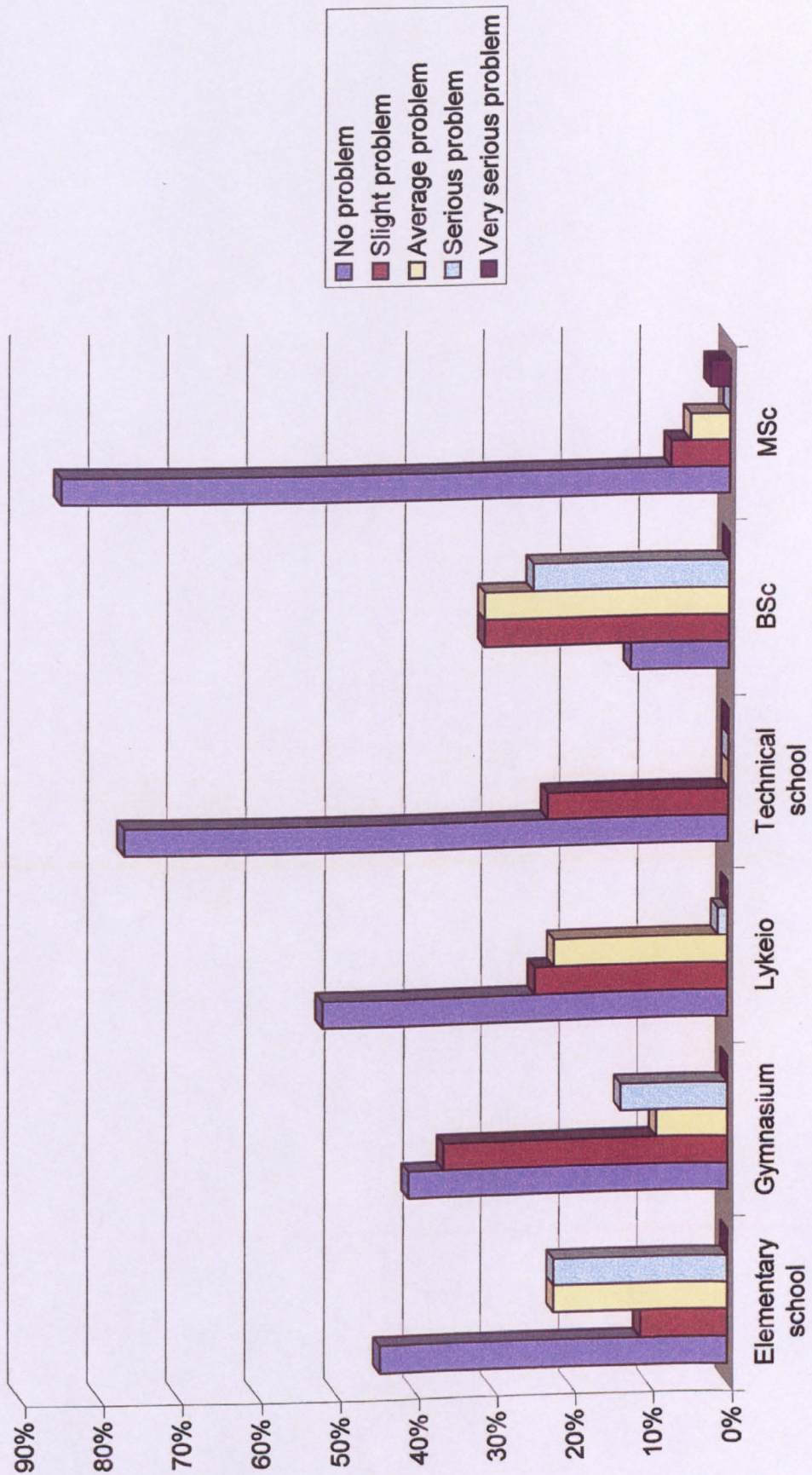
In the following pages, each variable will be classified as dependent or independent and their relationship will be described and explained. (see Appendix II, related tables)

### **Discussion of statistically significant associations**

Variable 1	Variable 2	Value of index "γ"	Significance index "γ"	Comment
<b>Education of the parents – Educational profile</b>				
Mother's Education [Mothe <u>du</u> ]	Reading [v6]	-0,270	0,003	As the mother's educational level increases the reading problems the child is facing decrease
Mother's Education [Mothe <u>du</u> ]	Spelling [v7]	-0,278	0,000	As the mother's educational level increases the spelling problems the child is facing decrease
Mother's Education [Mothe <u>du</u> ]	Arithmetic [v10]	-0,373	0,000	As the mother's educational level increases the arithmetic problems the child is facing decrease
Mother's Education [Mothe <u>du</u> ]	Low tolerance limits [v58]	-0,191	0,043	As the mother's educational level increases the problems the child is facing related to low tolerance limits decrease
Father's Education [Fath <u>edu</u> ]	Teaser [v84]	-0,254	0,05	As the father's educational level increases the problems the child is facing related to behavioural problems (teaser) decrease
Mother's Education [Mothe <u>du</u> ]	Demands to lead [v69]	-0,210	0,017	As the mother's educational level increases the problems the child is facing related to behavioural problems (demands to lead) decrease



# Relationship between Mother's Education & Reading

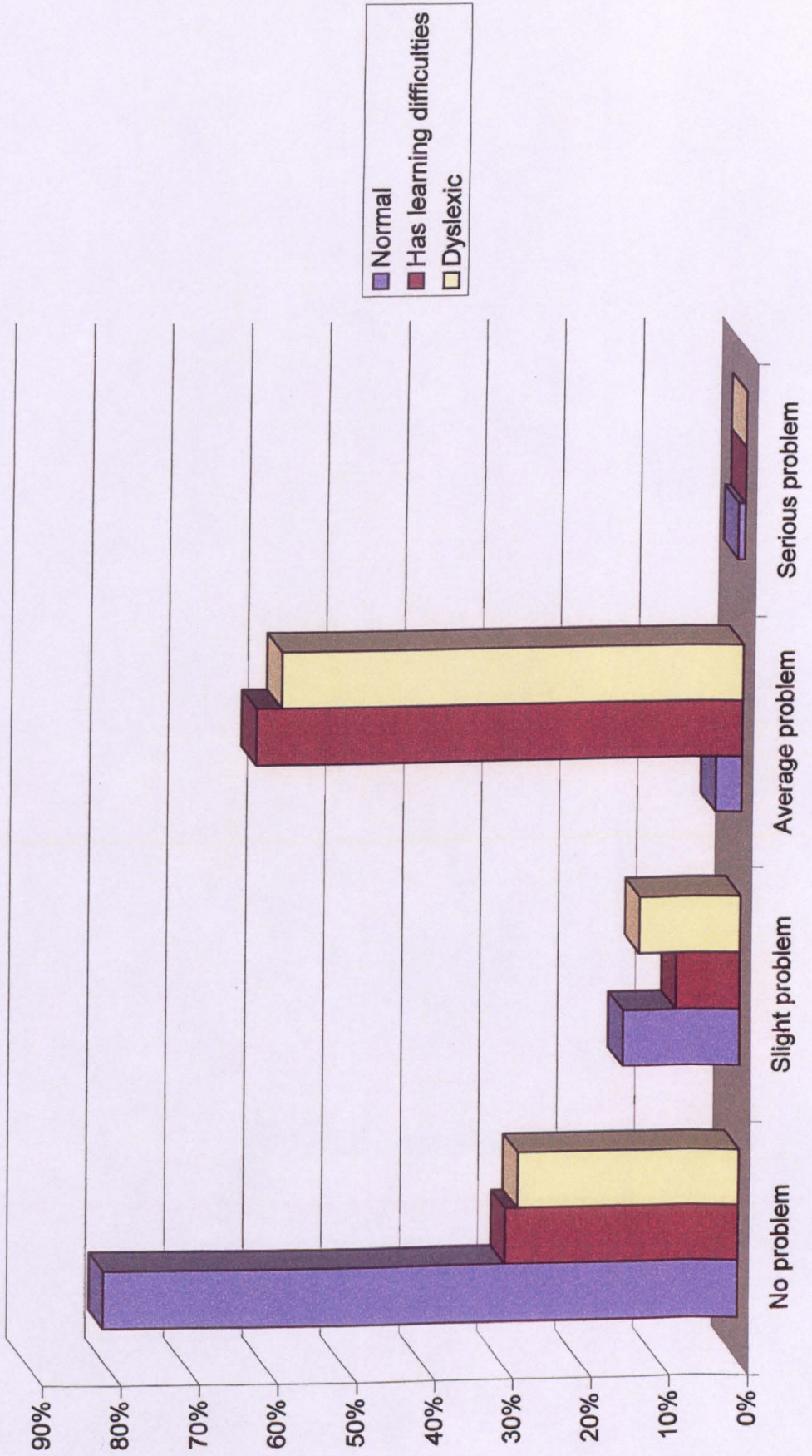


Variable 1	Variable 2	Value of index "γ"	Significance index "γ"	Comment
Mother's [Motheđu]	Rebellious [v70]	-0,192	0,048	As the mother's educational level increases the problems the child is facing related to behavioural problems (Rebellious) decrease
Mother's [Motheđu]	Teaser [v84]	-0,292	0,025	As the mother's educational level increases the problems the child is facing related to behavioural problems (Teaser) decrease

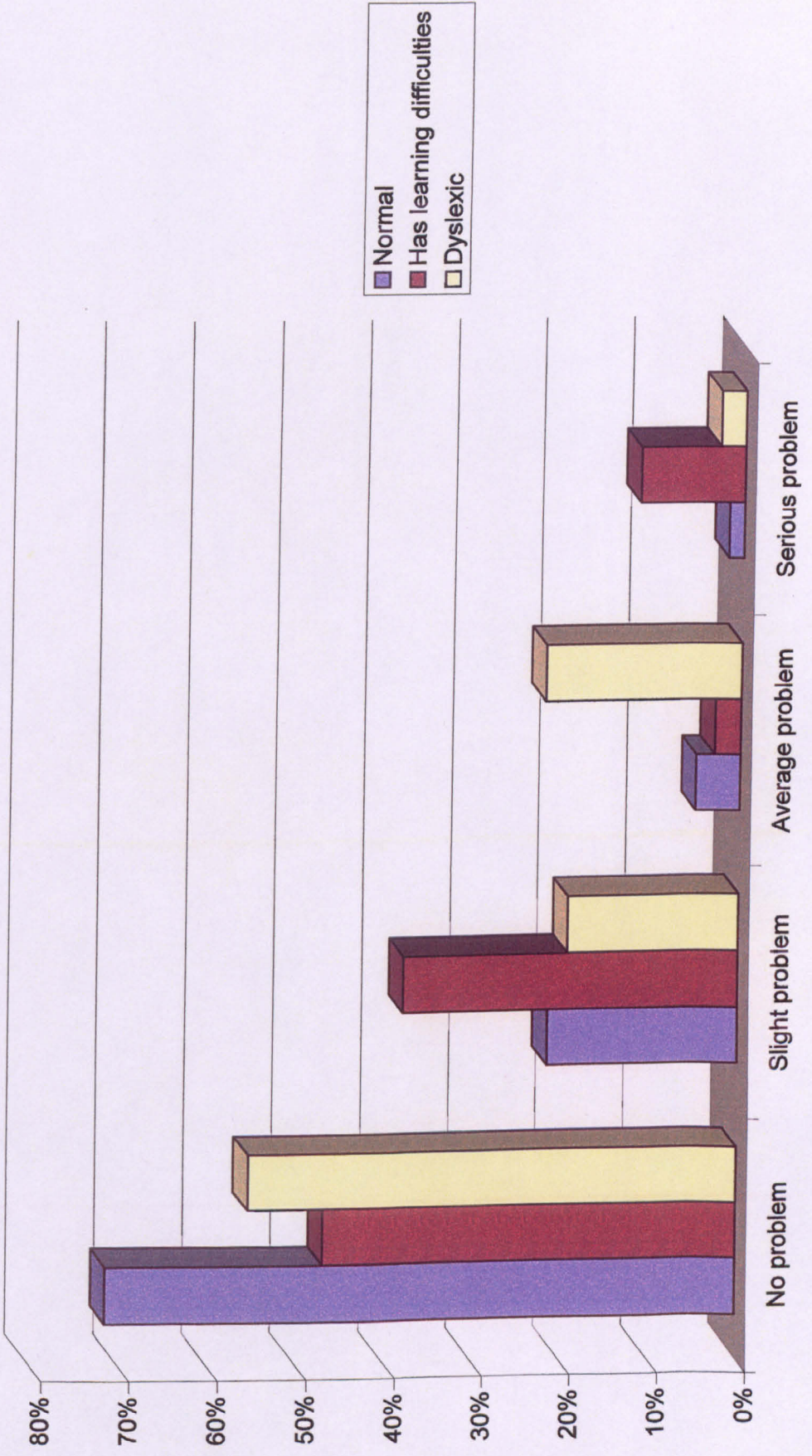
#### Diagnosis – Social characteristics

Diagnosis	Low self-esteem [v78]	0,735	0,000	The children with learning difficulties show problems related to "low self-esteem" to a higher degree than the rest
Diagnosis	Is afraid that the others don't like him [v79]	0,337	0,005	The children with learning difficulties show problems related to "Is afraid that the others don't like him/her" to a higher degree than the rest
Diagnosis	Has difficulties creating new friends [v80]	0,404	0,000	The children with learning difficulties show problems related to "Has difficulties creating new friends" to a higher degree than the rest

# Relationship between Diagnosis - Low self-esteem



Relationship between Diagnosis - Is afraid that the others don't like him



Variable 1	Variable 2	Value of index "γ"	Significance index "γ"	Comment
Diagnosis	Has difficulties Keeping old friends [v82]	0,379	0,000	The children with learning difficulties show problems related to "Has difficulties keeping new friends" to a higher degree than the rest
Diagnosis	Introvert [v100]	0,360	0,000	The children with learning difficulties show problems related to "Introvert" to a higher degree than the rest
<b>Educational profile (reading) – Emotional problems</b>				
Reading [v6]	Emotional [v61]	0,593	0,000	There is a direct relationship between the seriousness of "Emotional" and "Reading" problems
Reading [v6]	Emotionally immature [62]	0,620	0,000	There is a direct relationship between the seriousness of "Emotionally immature" and "Reading" problems
Reading [v6]	Easily hurt [63]	0,480	0,000	There is a direct relationship between the seriousness of "Easily hurt" and "Reading" problems
<b>Educational profile (spelling) – Emotional problems</b>				

Variable 1	Variable 2	Value of index “ $\gamma$ ”	Significance index “ $\gamma$ ”	Comment
Spelling [v7]	Emotional [v61]	0,520	0,000	There is a direct relationship between the seriousness of “Emotional” and “Spelling” problems
Spelling [v7]	Emotionally immature [62]	0,641	0,000	There is a direct relationship between the seriousness of “Emotionally immature” and “Spelling” problems
Spelling [v7]	Easily hurt [63]	0,465	0,000	There is a direct relationship between the seriousness of “Easily hurt” and “Spelling” problems

**Educational profile (arithmetic) – Emotional problems**

Arithmetic [v10]	Emotional [v61]	0,380	0,000	There is a direct relationship between the seriousness of “Emotional” and “Arithmetic” problems
Arithmetic [v10]	Emotionally immature [62]	0,618	0,000	There is a direct relationship between the seriousness of “Emotionally immature” and “Arithmetic” problems
Arithmetic [v10]	Easily hurt [63]	0,433	0,000	There is a direct relationship between the seriousness of “Easily hurt” and “Arithmetic” problems
Arithmetic [v10]	Cries easily [64]	0,211	0,034	There is a direct relationship between the seriousness of “Cries easily” and “Arithmetic” problems

## 5.2 Discriminant Analysis technique

In order to classify if a child is a learning disabled recording to his psycho-socio-educational profile the Discriminant Analysis technique was used. This technique allows us to define those factors that are particularly significant in this estimation (rejecting certain others) and to use them in order to evaluate if a child has learning difficulties or not.

### Overview

Discriminant function analysis, discriminant analysis or DA, is used to classify cases into the values of a categorical dependent, usually a dichotomy. If discriminant function analysis is effective for a set of data, the classification table of correct and incorrect estimates will yield a high percentage correct. There are several purposes for DA. Here we used it in order to classify cases into groups using a discriminant prediction equation. DA answers the question: can a combination of variables be used to predict group membership? Usually, several variables are included in a study to see which ones contribute to the discrimination between groups.

Discriminant function analysis is broken into a 2-step process: (1) testing significance of a set of discriminant functions, and; (2) classification. The first step is computationally identical to MANOVA. There is a matrix of total variances and covariances; likewise, there is a matrix of pooled within-group variances and covariances. The two matrices are compared via multivariate F tests in order to determine whether or not there are any significant differences (with regard to all variables) between groups. One first performs the multivariate test, and, if statistically significant, proceeds to see which of the variables have significantly different means across the groups.

Once group means are found to be statistically significant, classification of variables is undertaken. DA automatically determines some optimal combination of variables so that the first function provides

the most overall discrimination between groups, the second provides second most, and so on. Moreover, the functions will be independent or orthogonal, that is, their contributions to the discrimination between groups will not overlap. The first function picks up the most variation; the second function picks up the greatest part of the unexplained variation, etc. Computationally, a canonical correlation analysis is performed that will determine the successive functions and canonical roots. Classification is then possible from the canonical functions. Subjects are classified in the groups in which they had the highest classification scores. The maximum number of discriminant functions will be equal to the degrees of freedom, or the number of variables in the analysis, whichever is smaller.

In general Discriminant Analysis is a very useful tool (1) for detecting the variables that allow the researcher to discriminate between different (naturally occurring) groups, and (2) for classifying cases into different groups with a better than chance accuracy.

### **Standardized coefficients and the structure matrix**

Discriminant functions are interpreted by means of standardized coefficients and the structure matrix. Standardized beta coefficients are given for each variable in each discriminant (canonical) function, and the larger the standardized coefficient, the greater is the contribution of the respective variable to the discrimination between groups.

To determine which variables define a particular discriminant function we look at the factor structure. The factor structure coefficients are



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the correlations between the variables in the model and the discriminant functions. The discriminant function coefficients denote the unique contribution of each variable to the discriminant function, while the structure coefficients denote the simple correlations between the variables and the functions.

### **Assumptions:**

Discriminant function analysis is computationally very similar to MANOVA, and all assumptions for MANOVA apply.

**Sample size:** Unequal sample sizes are acceptable. The sample size of the smallest group needs to exceed the number of predictor variables. As a “rule of thumb”, the smallest sample size should be at least 20 for a few (4 or 5) predictors. The maximum number of independent variables is  $n - 2$ , where  $n$  is the sample size.

**Normal distribution:** It is assumed that the data (for the variables) represent a sample from a multivariate normal distribution. You can examine whether or not variables are normally distributed with histograms of frequency distributions. However, note that violations of the normality assumption are not “fatal” and the resultant significance test are still reliable as long as non-normality is caused by skewness and not outliers (Tabachnick and Fidell 1996).

**Homogeneity of variances/covariances:** DA is very sensitive to heterogeneity of variance-covariance matrices. Before accepting final conclusions for an important study, it is a good idea to review the within-groups variances and correlation matrices. Homoscedasticity is evaluated through scatterplots and corrected by transformation of variables..

**Outliers:** DA is highly sensitive to the inclusion of outliers. Run a test for univariate and multivariate outliers for each group, and transform or eliminate them. If one group in the study contains extreme outliers that impact the mean, they will also increase variability. Overall significance tests are based on pooled variances, that is, the average variance across all groups. Thus, the significance tests of the relatively larger means (with the large variances) would be based on the relatively smaller pooled variances, resulting erroneously in statistical significance.

**Non-multicollinearity:** If one of the independent variables is very highly correlated with another, or one is a function (e.g., the sum) of other independents, then the tolerance value for that variable will approach 0 and the matrix will not have a unique discriminant solution. There must also be low multicollinearity of the independents. To the extent that independents are correlated, the standardized discriminant function coefficients will not reliably assess the relative importance of the predictor variables.

Though at a theoretical level this technique is not the most appropriate in our case, since not all prerequisites are fulfilled regarding data form, individual tests at different stages of the technique allow us to accept that the results are acceptable and the estimation model valid. This is also strengthened by the fact that applying, in retrospect, this model to the research data, the percentage of false estimation (meaning the estimation that a child has learning difficulties when in reality he does not, or the opposite) is very small and within the expected limits.

This technique (Appendix III) provides us with a table (Classification Function Coefficients) with the coefficients of the two functions we study. The one function is "The child has learning difficulties" and the other is "The child is normal". When we want to estimate in which of the two categories the child belongs, we take the answers to the model's factors and with the help of the above table we

calculate the values of those two functions. If we get a greater value for the function “The child has learning difficulties” then we can assume that the child belongs to this category. Respectively, if we get a greater value for the function “The child is normal” then we can assume that the child belongs to this category.

The two functions provided by the technique are:

Y1: The child is normal

y2: The child has learning difficulties

$$\begin{aligned}
 Y1= & -12.102 + 0.741*v6 + 1.617*v7 + 1.507*v10 \\
 & + 2.186*\text{Mother's Education} - 0.158*v52 + 1.206*v53 \\
 & - 0.446*v54 + 1.045*v58 + 1.887*v60 - 0.841*v66 + 0.595*v69 \\
 & - 0.489*v70 - 0.674*v71 - 0.671*v72 + 1.515*v73 + 0.681*v74 \\
 & - 0.725*v75 + 0.451*v76 - 0.424*v77 + 1.842*v84 + 2.082*v91
 \end{aligned}$$

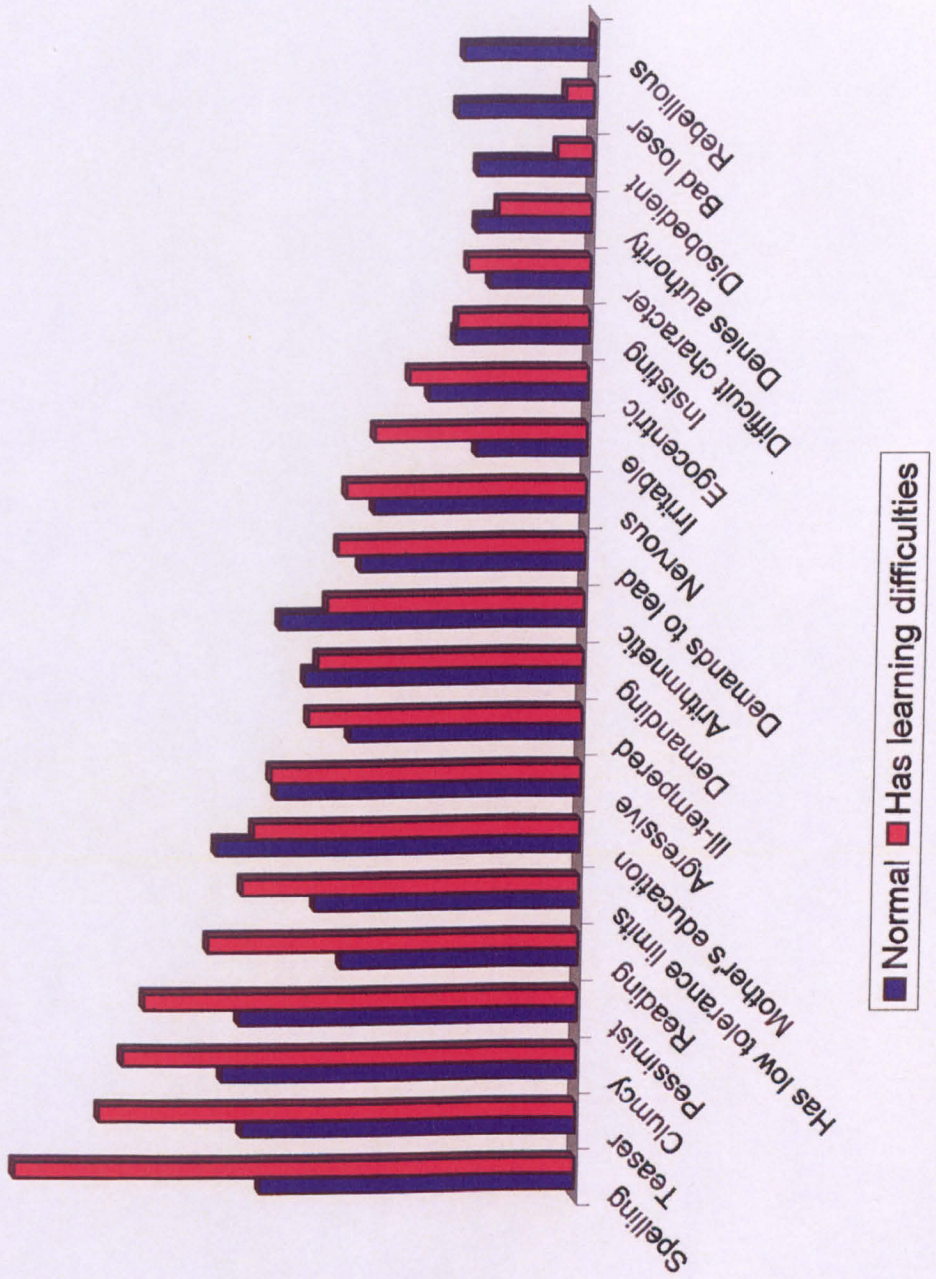
$$\begin{aligned}
 y2= & -25.092 + 2.231*v6 + 4.427*v7 + 0.969*v10 \\
 & + 1.764*\text{Mother's Education} - 0.068*v52 + 1.064*v53 \\
 & - 0.470*v54 + 1.879*v58 + 2.971*v60 - 0.587*v66 + 0.855*v69 \\
 & - 1.983*v70 - 0.920*v71 - 1.591*v72 + 1.574*v73 + 1.155*v74 \\
 & + 0.456*v75 + 0.770*v76 - 1.678*v77 + 3.463*v84 + 3.206*v91
 \end{aligned}$$

## Classification Function Coefficients

	Diagnosis (Normal - With learning difficulties)	
	Has learning difficulties	Normal
Father's education	1,890	1,232
Mother's education	,768	1,530
[v6] Reading	2,113	,641
[v7] Spelling	4,673	1,787
[v10] Arithmetic	1,157	1,621
[v52] Egocentric	-,159	-,305
[v53] Demanding	1,169	1,266
[v54] Insisting	-,174	-,252
[v58] Has low tolerance limits	2,230	1,279
[v60] Pessimist	2,771	1,750
[v66] Difficult character	-,729	-,939
[v69] Demands to lead	,469	,338
[v70] Rebellious	-1,841	-,399
[v71] Denies authority	-1,134	-,819
[v72] Disobedient	-2,067	-,987
[v73] Agressive	1,375	1,376
[v74] Ill-tempered	,654	,348
[v75] Imitable	,644	-,608
[v76] Nervous	1,084	,682
[v77] Bad loser	-1,424	-,243
[v84] Teaser	4,024	2,211
[v91] Clumsy	2,964	1,923
(Constant)	-26,883	-12,827

Fisher's linear discriminant functions

### Classification Function (LD diagnosis)



### **5.3 Logistic Regression Analysis technique**

The Logistic Regression Analysis technique was applied. This technique is at a theoretical level more appropriate in our case, since it does not have particular data requirements as in the Discriminant Analysis technique. The difference between the two techniques is that in Discriminant Analysis we have two functions (see above) and in the other we have only one function (table Variables in the Equation) which gives us the probability of a child to belong in the category "The child is normal" (the factors which are being used in this function are determined by the model and in our case are different to the factors which were defined by the Discriminant Analysis technique. The percentage of false estimation by applying in retrospect this model to the research data, is very small.

In addition to the general estimation that this method offers us, we have the ability, with the help of certain additional coefficients [Exp(B) in table Variables in the Equation] to determine those factors which are more important in the determination of the estimation which we study. (see Appendix IV for a full explanation of the model employed)



## Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1	FATHEDU	-1,772	1,163	2,322	1	,128	,170
	MOTHEДУ	1,707	1,054	2,622	1	,105	5,513
	V6	-1,102	1,143	,928	1	,335	,332
	V7	-5,349	2,156	6,154	1	,013	,005
	V10	2,767	1,375	4,050	1	,044	15,918
	V52	,399	,778	,262	1	,609	1,490
	V53	-,033	1,013	,001	1	,974	,967
	V54	,810	,755	1,149	1	,284	2,248
	V58	-1,716	1,183	2,104	1	,147	,180
	V60	-2,532	1,305	3,763	1	,052	,079
	V66	-,061	1,065	,003	1	,955	,941
	V68	1,920	1,182	2,640	1	,104	6,820
	V69	-2,693	1,340	4,042	1	,044	,068
	V70	3,145	1,308	5,781	1	,016	23,227
	V71	-,357	1,397	,065	1	,798	,700
	V72	,427	1,103	,150	1	,699	1,533
	V73	-,650	1,321	,242	1	,623	,522
	V74	,656	1,103	,354	1	,552	1,928
	V75	-3,125	1,487	4,418	1	,036	,044
	V76	-,859	1,256	,467	1	,494	,424
	V77	3,054	1,829	2,790	1	,095	21,204
	V84	-2,714	1,306	4,318	1	,038	,066
	V91	-2,451	1,260	3,786	1	,052	,086
	Constant	23,679	9,480	6,238	1	,013	1,9E+10

a. Variable(s) entered on step 1: FATHEDU, MOTHEДУ, V6, V7, V10, V52, V53, V54, V58, V60, V66, V68, V69, V70, V71, V72, V73, V74, V75, V76, V77, V84, V91.

CHAPTER 6

**Conclusion - Discussion – Generalizations**

## 6.1 Conclusion - Discussion

During the last decade in particular the literature on reading and writing difficulties has increased massively, and it follows that a comprehensive review of all of it -even if we were capable of undertaking such a mammoth task- would almost certainly have made the thesis unreadable. Instead, we have selected a restricted number of studies, which we regard as interesting, important and related to the subject of this thesis. The importance of a multidisciplinary approach is emphasized. Areas covered include: dyslexia, reading difficulties, emotional and social factors and deprivation, delinquency and dyslexia, social welfare. Many other examples of investigations in this area could be cited, but it is felt that those that have been described above are sufficient to suggest the principal directions that research in this field has taken. What is needed is to summarize the principal conclusions and generalizations that have been arrived at on the basis of this thesis-inquiry.

According to references, in former years there was more interest in researches about social behavior and socialization of children with learning disabilities. In the 90's researcher's interest was directed more on other diagnostic criteria searched by neuropsychologists and cognitive psychologists. However, that couldn't eliminate the possibility of using social behavior as a diagnostic criterion. This research is focused on this area, knowing the fact that it could be seen as anachronistic, aiming to show that it may be possible the social behavior of a child in conjunction with other criteria could be used a diagnostic criterion too. Bryan, believes that something like that is not necessary as it depends on where the parents focus their child's problem or how big are the behavior problems to claim such an interest. However, even if it is shown that the psycho-social profile of the LD-dyslexic child is significantly different from the normal controls.

The present research was primarily designed to create a social profile of the learning disabled and dyslexic children, likewise designed to empirically identify distinct behaviour in children with learning disabilities

and dyslexia through the use of the appropriate part of Professor Pavlidis, questionnaire. Also, to compare family background in relation to their individuality and self-image in Learning Disabled children to normal controls. Socio-Emotional Educational and behavioral problems leads us to the conclusion that a child may have Learning Difficulties. Although we must keep in mind that **Psycho-socio-enviro-educational and intelligence factors do not cause dyslexia, although they can contribute to its severity or amelioration.** The causes of dyslexia are constitutional (e.g. subtle brain malformation or malfunction) but they remain as yet undetermined. If dyslexia is due to neurological factors, then there is no reason why dyslexia should not occur at all intelligence levels and in all psycho-socio-cultural backgrounds, as all other neurologically based condition do (Pavlidis, 1985, 1990, 2004). In the present study, most if not all of the Learning Disabled children participants had social skills deficit.

**The results of this thesis using the Pavlidis Questionnaire (PQ) were most promising. The LD-dyslexic children psycho-socio-educational characteristics were found to be significantly worse than those of the normal controls of the same age. In fact, the two groups different so much that on the basis of their psycho-socio-educational profile the Discriminant Analysis (DA) successfully classified the two groups with accuracy of 94,6%. The LD-dyslexic group was correctly identified with 97,6% while the normal controls were classified with 93,7% accuracy.**

In order to classify if a child is a Dyslexic-LD focusing only in his psycho-sociological profile, we excluded questions relevant to educational profile: a) Reading, Spelling and Arithmetic, b) Reading and Spelling. The Discriminant Analysis was repeated. The two groups differed so much that the psycho-sociological profile itself was enough to correctly classify them

with an accuracy of 88,8% and 89,9% respectively. The LD-dyslexic children's psycho-sociological characteristics –reading, spelling and arithmetic excluded - was correctly identified with 83,7% while the normal controls were classified with 90,6% accuracy. The LD-dyslexic group –reading and spelling excluded- were found to be significantly worse than those of the normal controls of the same age. The Dyslexic-LD group was correctly identified with 87,8% while the normal controls were classified with 90,6% accuracy.

The very high discrimination accuracy between the two groups raises the possibility to use the “Pavlidis Questionnaire” as a quick, easily used, inexpensive and highly accurate screening test for children with suspected Dyslexia-LD. It does not depend on language, reading or spelling, as it was explained. It is a non verbal screening test and it can be used even at preschool age for the accurate prognosis and diagnosis of LD.

One has to be cautious to the strong possibility that the items that compose the “Prognostic Model” may not be specific to Dyslexics-LD but may also characterize children with general LD of different etiologies, e.g. low IQ, adverse psycho-socio-educational environment, etc, as shown by Aslanidou & Pavlidis (2004). Even so, the “Pavlidis Questionnaire” with high accuracy differentiates children with LD-Dyslexia from normal controls.

The results are considered in the framework of the current debate over whether learning disabilities and social-skills are causally linked. It may be argued that the present findings are attributable to the narrow standard employed for defining aggressive, delinquent, and learning disabilities. It may be indeed be the case that definitional boundaries

account in our findings. We also consider the implications of this new information for the diagnosis of reading disabilities. Usually, the psychosocial problems of LD-dyslexics are thought of as secondary to their learning problems. In fact, in a recent study by Pavlidis and Aslanidou (2004) it was shown that there is no statistical difference between LD-dyslexics and educationally matched children with mild mental retardation. In fact in the case of our LD-dyslexic children were personally diagnose by Prof. Pavlidis, using exactly the same criteria and the exactly the same Questionnaire as in the present study. These data show that the psychosocial problems found in our LD-dyslexics are not unique to them but the are secondary to the learning problems and to the resulting humiliation, low self-esteem and low self confidence. These lead to rejection (Pavlidis, 2004)

The recent definition of learning disabilities advanced by the Association for Children and Adults with Learning Disabilities includes the statement that “throughout life the condition can affect self-esteem, education, vocation, socialization, and/or daily living activities. [Association for Children with L.D. (1986): “Specific Learning Difficulties is a chronic condition of presumed neurological origin, which selectively interferes with the development, integration, and/or demonstration of verbal and/or non-verbal abilities. Specific Learning Difficulties exist as a distinct handicapping & varies in its manifestations and in a degree of severity. Throughout life the condition can affect self-esteem, education, vocation, socialization, and/or daily living activities”]. Also, Walker, D., (1993) in his description to the signs of dyslexia he mention that a dyslexic child may have low self-esteem due to past frustrations. And this is a sing of recognize a dyslexic child.

From all the information that can be collected about a child -test scores, intelligence quotients, parents interviews, school reports, case history, clinical impressions- the clinician must be able to determine the disability with enough specificity as to suggest remedial steps to overcome the problem. The complexity of the task suggests that the clinician (and therefore the child) would benefit from any assistance that could be made

available. Any psychological *and social* problems are presently being diagnosed by the PQ and using the computer as a technological tool to provide assistance in diagnosing children with possible learning disabilities.

A high percentage of LD students appear to be at risk for social relationship difficulties that may lead to social alienation and eventual school dropout. Dropout prevention models focus on a number of factors that predict school completion. These factors include academic success, social success, economic needs, parental support, and such factors as pregnancy, drug dependency, and motivation.

It would appear irrefutable that, on average, others perceive LD children in a less favourable light than their NLD peers. No study has found that they hold themselves in greater esteem by others. (J. H. Bryan and T. Bryan, 1990)

Not all students with LD experience problems in their social lives. Estimates of the percentage of children with LD who are at risk for problems range from 34% to 59% depending on the criteria used. About 16% of students classified as learning disabled were found to be socially skilled and as well accepted by peers as were children without LD, and inclusionary practices appeared to increase reciprocal friendship choices. Nonetheless, insofar as about 2 million children have been identified in the U.S.A. as having learning disabilities, the number of students experiencing social problems may be in the range of 78,000 to 1,182,000. These figures are striking because it is unlikely that students labelled learning disabled were referred for problems in the social domain. (Bryan T., 1997) It seems clear that, the majority of LD children found less acceptable by their peers than their non-disabled counterparts. Given the importance of friendships in the socialization of children, these findings are disquieting. (J.H. Bryan and T. Bryan, 1990)

The evidence gathered through this part of the survey supplements that of the previous survey and our existing knowledge of practice. To a large extent the evidence echoes the previous findings but also shows how

the school and therefore the social behavior of learning disabled children have continued to develop following remediation programs.

Pumfrey D. & Reason R. (1991), in their book introduce a recent longitudinal study of some 3000 children in Bergen, Norway provides data for the whole cohort and for a subgroup of pupils with specific learning difficulties. The children's abilities in reading, spelling and mathematics are the key dependent variables. In relation to the whole cohort, regression analyses demonstrate that the best predictors of achievement are of a linguist-cognitive nature, explaining between 26 per cent and 42 per cent of the variance, depending on the school subject. The socio-emotional factor explain only 1.2 per cent to 2.7 per cent of the variance, but the researchers describe the dyslexic and retarded pupils as having poor self concepts, lacking self-confidence and being poorly accepted by peers. Dyslexic pupils respond differentially to the same types of instruction, some making above average progress while others 'continue their pattern of slow growth'. These results illustrate the need for individual approaches and more refined research designs that take account the interaction between aptitude, temperament and instruction and do not make blanket assumptions about social and emotional influences. The question asked probably play the most important role in finding differential power in the results of the questionnaires.

Cornwall A. & Bawden HN (1992), present a review that examine the relationship between specific reading disabilities (the most frequently diagnosed learning disability) and aggressive behaviour. The data suggest that there is not enough evidence to conclude that reading disability causes aggressive or delinquent behaviour, although limited evidence does suggest that reading disability may worsen pre-existing aggressive behaviour.

J.H. Bryan and T. Bryan, (1990), believe that must be asked whether the social difficulties of the LD youngster are problematic enough to warrant large-scale interventions. It would seem to us that two standards are used by which social significance is inferred and through which 'pathology' may grow. One standard involves social consensus: i.e. that the problem is so disruptive or inappropriate that a significant audience



defines the actions as problematic and demands intervention. Using this standard, one might ask whether the LD youngster himself feels the need for help. While literature is sparse and is limited to such children's judgments of their popularity, it would suggest that either LD children do not feel rejected or that they feel less worthy but are defensive about it.

Bryan JH and Bryan T, (1990) support that the evidence contributing to the concern about social skills is based upon paper and pencil results. That is, children and teachers are surveyed as to LD children's characteristics; noteworthy however, is the fact that the LD child typically does not so offend others, or strike a pose, which demand social intervention. LD children are behavioural lambs compared to those who are currently being serviced within clinic or hospital settings. To some degree then, The LD youngster's social problems might be characterized as a 'paper and pencil pathology'.

The consequences for students with LD of not developing adequate social relationships have been linked to loneliness (Margalit 1998), depression (Maag & Behrens 1989) and suicide (Peck, 1985). Furthermore, scores on a self-concept measure are a better predictor of academic achievement progress than are scores on an IQ measure among students with LD.(Kershner, 1990). At this point in time, we do not know the cause(s) of the social problems experienced by LD students. It has been hypothesized that problems in the social domain represent a primary disability (i.e., the result of alterations in central nervous system functioning; an information-processing disorder) (Bryan T., 1997)

In fact, these studies have shown that some members of LD samples perform as well as (e.g. Schumaker et al., 1982), and are as well liked as (e.g., Perlumutter et al., 1983; Prillaman, 1981), their non-handicapped peers. Consequently, not all members of the LD population face social problems. Because of the purported heterogeneity of the LD population, the results of the studies reviewed must be examined with caution; aggregated findings are probably masking the "true" picture that a significant proportion (e.g., 26% as found by Schumaker et al., 1982) of the LD population has no social deficits when compared to their non-handicapped

peers. A second problem inherent in identifying the content of social problems relates to the presence of other types of subgroups within the LD population. The way in which the defining variables of these subgroups (e.g., age, sex, ethnicity and race) interact with the social competence of LD individuals may be critical. For example, all the studies in this area have focused on the social skills of LD individuals within a certain age bracket. Usually, the same social skills have not been addressed in other age brackets. Since some evidence suggests that LD individuals' social performance changes as they get older (e.g., Donahue, Pearl, & T. Bryan, 1980; Gerber & Zinkgraf, 1972), it is unclear whether the characteristics of social skills performance at one age apply at other ages. Some deficits may be ameliorated through maturation and hence not be in need of remediation. . (Schumaker J.B., Hazel J.S, 1984)

That the LD child might enjoy a generalized high self-esteem, however is quite unlikely. Thus, while LD children might not suffer from those pains associated with generalized low esteem, it is probable that they also fail to enjoy those pleasures associated with high self-esteem (James h. Bryan and Tanis Bryan, 1990). Within the large (and growing) population of children who are unfortunately labelled as 'dropouts', 'underachievers', 'low learners' or those institutionalized for behavioral nonconformity, one finds that an «academic delinquency» might have been spotted quite early in their educational history. The emotional problems expressed through negative behavior, or lack of involvement in learning, might have been prevented had early symptoms been properly observed and remediated. (Saunders, R.E., 1965).

We can ask ourselves whether dyslexia should be regarded as a 'handicap' as what we are dealing with is children of a completely different type, and aptitudes as a handicap. The cause of this lies not in the distribution of talents but in the way in which our society handles it. An important assumption is that society provides a critical influence on behavior and thought that guides participant as they engage in literacy interactions. The society or culture determines how literacy is defined, instructed and evaluated.

Concluding, it is hoped that the present study has contributed with its findings to the better understanding of the social and personality characteristics of learning disabled children and dyslexics with matched normal controls. It may also stimulate future studies, which would provide better practical ways to differentiate the behavioral problems and may lead to the developmental of specific treatment methods for learning disabled children. It is even conceivable that the specific section of the PQ could be even used to differentiate the normal readers from the LD-dyslexics irrespective of the cause of their Learning Disability.

## 6.2. The Benefits

The benefits of this research fall into two categories: a) benefits to individuals and to society, and b) Research benefits.

### a) Benefits to individuals and to society:

Research frequently provides subjects with treatment, diagnosis or examination for an illness or abnormal condition. This research was concerned with the diagnosis of learning disabilities in graders entailing evaluations via Pavlidis' Questionnaire. The individual benefits of this research were primarily the parent' s knowledge of their child' s condition (if it was in the learning disabled high-risk group), followed by the appropriate guidelines for early intervention.

A secondary benefit, which derived as intended from the research design, was the education of parents. Parent' s familiarization with the concept of learning disabilities, would help further understanding as well as acceptance of this condition. The learning disabilities were presented to parents through information sheets explaining in simple terms what it is and facts about it. Educators were also favoured from this research by obtaining useful information in script as well as from attending the seminars arranged. It should be mentioned that public benefits emerged from the research, as it was the first time that grades were tested for learning disabilities in the areas of the two towns the project took place. Relevant authorities recognised the "good nature" of the research having in mind relevant positive complications.

### b) Research benefits:

Research benefits are expected to contribute to the scientific society, *discriminant analysis result are providing proof of the hypothesis.* In this research all hypotheses were accepted, meaning that the social skills, social behaviour and personality characteristics of children do provide researchers and clinicians with a useful tool. More precisely ,as mentioned interpretation of the results section, a model of twenty one answers in similar questions indicate to specialists whether a case should be considered to be in risk of learning disabilities. Finally the Pavlidis

questionnaire could be easily used by other researchers in future, resolving many diagnostic issues arising from questionnaire validity and standardization, to cross-cultural differences.

### 6.3 LIMITATIONS

The present study was not free of limitations or methodological implications *that could have influenced its findings*.

One of the most important limitations of the study that we should mention here has to do with the problems that the researcher had concerning the Greek literature. Being aware that I enter a field which has not been studied yet in Greece, I feel happy because I hope to contribute towards this direction, but also powerless. There is not a legacy in the level of practice as well as in the theoretical level, there is lack of systematic research, studies and publications about the problems concerning the 'aggressive behavior and especially that of individuals with learning difficulties' in Greece. There is lack of a polymorphic scientific analysis on the issue of 'handicapped' and especially of 'social aspect'. There is not any systematic research to investigate the correlation between an individual's personality and his social behavior.

Another limitation of the study was the access to schools in order to contact normal children. The educational staff was not a hundred percent cooperative, consequently the researcher was not provided with the appropriate spaces in order to give the tests to children, they did not have spare time or they did not allow children to participate to the research. It was frustrating and resulted in lost of money and time.

Also, some parents were very suspicious to complete the questionnaire, even though it was explained to them and all the necessary permits from the school's administration were taken.

Another methodological point was the diagnosis of learning disabled and dyslexic children. It was impossible to find a child with pure dyslexia only, because it is usually associated with being hyperactivity, impulsive, having learning difficulties. (Pavlidis, 2004)

#### **6.4 The need to take Learning Disabilities and Dyslexia seriously:**

The research that has been reviewed has contributed to what appears to be an increasing cry for therapeutic interventions designed to alter the Learning Disabled child's social and behavioral difficulties. In this thesis I have argued that it is necessary that educational professionals, parents and peers take the phenomenon of Dyslexia seriously.

The child who cannot put words to his anxieties will express them in non-verbal ways: emotional lability; aggression; timidity; insomnia; nightmares; enuresis and so forth. (Kline, C.L.,M.D., 1986)

Self image problems vary in form and in severity depending on time factors and most importantly, upon the child's relationship experiences with key people: parents, peers, teachers, and remedial therapist. Many children with a specific learning difficulty adjust well to their disability. Others may have one of a number of emotional difficulties. Whether a child experiences emotional or social difficulties depends on not just his temperament but also the nature of his disability.

The subject of the social behaviour and skills of children with LD has been unexplored by researchers. Consequently, the purpose of this study was to develop a basis that might guide empirical research. Some parents of a clinical-based sample of children with LD suggested or demanded social therapies for their offspring.

It may be helpful to sensitise mothers to the need for being engaged in promoting their children's social relationships. Though parent education and counselling they might learn how to teach social problem-solving skills, to influence the school to consider social relationships when making placements and programming decisions, and to create opportunities for their children to develop friendships in the home and community. The fact

that the parents of the children in our study chose to bring their children to “Dyslexia and IQ Centre” and to participate in a study on behaviour, aggressive, friendship and loneliness, of children with LD may indicate that the parents in our sample are more actively concerned about these issues than most other parents. A social skill-training programme must have a direct impact on the children’s relationships by providing a context for them to meet compatible children and to develop friendships with them.

Parents attributed their children’s improved social skills to the treatment received at “somewhere”, claiming that the improved social and emotional functioning allowed their children to make, and keep, a friend when the opportunity arose in school or in the neighbourhood. Thus, the LD population’s social deficits may be just as handicapping as their academic deficits. If LD individuals have no means of compensating for their academic deficits through social competence, they are likely to be underemployed and less satisfied than their peers. Therefore, interventions for LD individuals must include social skill training if they are to be expected to succeed in a variety of academic and non-academic settings (e.g. work, community, home) despite their other handicaps. (Schumaker J.B., Hazel J.S, 1984)

The National Joint Committee on Learning Disabilities (NJCLD) (1994), believes that inappropriate diagnostic practices and procedures have contributed to misclassification of individuals and questionable incidence rates of learning disabilities. Such practices and procedures result in erroneously including individuals whose learning and behavioural problems are not attributable to learning disabilities and excluding individuals whose deficits are manifestations of specific learning disabilities. The NJCLD views the following issues among others as important to an understanding of current concerns:

- lack for understanding, acceptance, and willingness to accommodate normal variations in learning and behaviour
- the incorrect assumption that quantitative formulas alone can be used to diagnose learning disabilities.



Since adjudicated delinquents of normal intelligence show a significant degree of academic underachievement, correctional programs must recognise the possibility of learning disability. Vocational training emphasising an individual's strengths can be an effective alternative to traditional educational programs for delinquent juveniles.(McKay, S., Brumback, RA., 1980).

The key to working with the LD individual is found in a team or individualized program for teaching them. We use the students' strengths, whether language, visual, auditory, or tactile, and minimize their weaknesses. In Greece, children and adolescents with learning difficulties and dyslexia with social and behavioural problems are not referred to psychiatric services for children, and when they do they are not often treated appropriately (Tsiantis, 1987). The difficulty to have access to help support services and the incapacity of the psychic health specialists to encounter the whole spectrum of psychosocial problems enhances the need to effectively treat violation, a matter that concerns the entire society.

## 6,4 Summary

The present research was primarily designed to create a social profile of the learning disabled and dyslexic children, likewise designed to empirically identify distinct behaviour in children with learning disabilities and dyslexia through the use of the appropriate part of Professor Pavlidis s., questionnaire. Also, to compare family background in relation to their individuality and self-image in Learning Disabled children to normal controls. Socio-Emotional, educational and behavioral problems may help to better identify that a child may have Learning Difficulties. Although we must keep in mind two important facts: 1) The socio-psycho-educational profile of the LD child may not be unique and it is very likely that its secondary to their learning problems. 2) Psycho-socio-enviro-educational and intelligence factors do not cause dyslexia, but they can contribute to its severity or amelioration\_(Pavlidis, 1985, 1990, 2004).

**The results of this thesis using the Pavlidis Questionnaire (PQ) were most promising. The LD-dyslexic children psycho-socio-educational characteristics were found to be significantly different from the normal controls of the same age. In fact, the two groups different so much that on the basis of their psycho-socio-educational profile the Discriminant Analysis (DA) successfully classified the two groups with accuracy of 94,6%. The LD-dyslexic group was correctly identified with 97,6% while the normal controls were classified with 93,7%.**

One has to be cautious to the strong possibility that the items that compose the “Prognostic Model” may not be specific to Dyslexics-LD but may also characterize children with general LD of different etiologies, e.g. low IQ, adverse psycho-socio-educational environment, etc, as shown by Aslanidou & Pavlidis (2004). **Even so, the “Pavlidis Questionnaire” with high accuracy differentiates children with LD-Dyslexia from normal controls.**

The potential benefits of such a successful rate are of great importance. In today’s societies of advanced technology any divergence

from the ideal prototype of the perfectly healthy person often causes rejection and exclusion from the majority of social activities. Learning disabled and dyslexics persons have a limited choice and a reduced possibility of participating in the social activities in a community, as well as poor social behaviour. Perhaps the needs of those with Dyslexia and Learning Disabilities could be neglected and so individuals could loose out on the support they need. The aim is to provide a quick, easy to use, inexpensive and accurate tool for the screening of LD-dyslexics. This potential will be of particular importance to countries like Greece, where only few and very limited possibilities exist within the educational system for the diagnosis of the LD-dyslexic children. The easy identification of children with possible Dyslexia and Learning Disabilities raises the possibility to satisfy their need for treatment. Learning disabled children must be identified so that programs, which also minimise the disability while emphasising the children's strengths, can be instituted.

**GLOSSARY**

## GLOSSARY

(Some technical terms as they are used in this study.)

→**Delinquency**: minor crime, especially when committed by young people **-juvenile delinquency** (Oxford Advanced Learner's Dictionary, 1989)

→**Deviation**: The detachment from total institutionalisation, the common behavioural archetypes, which a group or a society recognises. The meaning of deviation is not universal, but is defined socially according to what is valued and established within each society. The deviation, which is the opposite procedure of adaptation, on the basis of the social criteria used for its classification, it provokes the presence of the respective mechanisms of social control. R. Merton & R. Nisbet in their work for the Modern Social Problems, they discriminate the variations into: violating, anticonformistic and rebellious. Violating are behaviours, which violate a regulation without one disputing or asking to abolish the regulation. Anticonformistic are the behaviours by which the person expresses his opposition and his actual rejection of the social code he violates. Rebellious are the behaviours by which the person does not oppose to a certain regulation, but with the whole system of legal order, which he disputes in total (Dictionary of Human Sciences, 1992).

→**Difficult**: 1~to do (of tasks), requiring effort or skill; not easy 2 (of people) unwilling to co-operate. **Difficulty**: difficult thing to do, understand or deal with (Oxford Advanced Learner's Dictionary, 1989)

→**Disability**: 1) incapacity. 2) Lack of something necessary **Disable**: make somebody unable to do something, especially by making a limb or limbs useless (Oxford Advanced Learner's Dictionary, 1989). The meaning of difficulty is usually associated with the meaning of disability. Difficulty can be objectified through diagnostic efforts when combined with the description of causes. What often results in failure or in risk: our consideration towards difficulty will contribute to reduced potential or even

to the devaluation of the individual. The meaning will therefore be determined according to 'normality', which will be the limit of conformity, and according to the meaning of disability, which will determine the length of difficulty associated with a serious disadvantage either at the sensual, physical, intellectual or at the personality level. In this manner, we determine different reaction types of a person with difficulties or disabilities, for example psychological, sociological, medical etc depending on the different views of specialists towards the one or the other side of the person (Chancerel, J.L., 1987)

→**DSM-III**: diagnostic classification. Is a multi-axial system designed to include all significant clinical conditions. The criteria require that the primary classification reflect the reason for referral or institutionalisation. Principal diagnoses, usually coded on Axis I, include Conduct Disorders, Adjustment Disorders, Attention Deficit Disorders, Retardation, and Schizophreniform Disorders. Also contains V codes described as conditions not attributable to mental disorders, which are a focus of treatment or concern. The V code used in Hollander's study was 'Borderline Intelligence', defined as IQ below 85 and above 69 based on either intake testing or reported scores in the case record. (Hollander E. H., 1986)

→**Dyslexia**: A syndrome that is best exemplified by an unexpected severe reading retardation, which is not caused by any known intelligence, psycho-educational or environmental factors. Children can be classified as dyslexic when their failure to learn to read cannot be predicted by deficiencies in any of the known causes of poor reading (Pavlidis, 1985,1990)

→ **Peer status (social status) of LD student**: reflect their peers' acceptance or their rejection (J.H. Bryan and T. Bryan, 1990)

→**Reading Readiness**: The term 'readiness' for any kind of learning refers to the stage firstly, when the child can learn easily and without emotional strain, and secondly, when the child can learn profitably

because efforts at teaching give gratifying results. Note that 'readiness' does not necessarily imply that a child achieves this state only through growth or maturation. He may also arrive at readiness through having completed the prior learning on which the new learning will be based. (Downing, J. & Thackray, D., (1975). «Reading Readiness». GB.: Honder and Stoughton

→**Social Behaviour**: According to M. Weber, social is the behaviour, which, by the subjective understanding of one or more persons, refers to the behaviours of other people and is oriented towards them during the course. Therefore, it comprises social acting or identifies with it (social acting is the behaviour which aims at the behaviour of other people). In general though, the social behaviour can be defined as the sum of and the variety of activities, actions and practices, as they are demonstrated with one or the other way from people or groups, when they react, respond, answer to messages, stimuli and ideas they get from the environment in which they live and they function. The social behaviour is defined socially and responds to social laws that dominate every given social group (Th. A. Vasiliou, N. Stamatakis, 'Epitomic Conceptual Dictionary of Human Sciences, Sociology, Economy, Philosophy', Gutenberg, Athens 1992).

→**Social skill**: Any cognitive function or overt behaviour in which an individual engages while interacting with another person or persons. Cognitive functions (often labelled "social perception") include such capacities as empathizing with or understanding other persons' feelings, discriminating and making inferences about social cues, and predicting and evaluating consequences for social behaviour. Overt behaviours include the nonverbal (e.g. head nods, eye contact, facial expression) and verbal (e.g. what the person says) components of a social performance. (Schumaker J. B., Hazel J.S, 1984) Johnson and Myklebust (1976) have identified this problem as an inability to identify and recognize the meaning and significance of the behaviour of others. (Wanat P.E. 1983)

**→Sociology:** In 1839 Comte is using for the first time the term “Sociologie”. He named after this term the new science of society which would aim to study the social phenomena and the historical evolution of the human kind by basically applying the methodology of the physical sciences – like experiment, comparison and observation – but also with the help of the historical progressing method. The term Sociology is formed by the Latin word *socialis* (*socio*) and the Greek word *λόγος* which added the ending *-logie*. The new word Sociologie denoted the ‘speaking about society’, the scientific study of society. The extended meaning, as modulated during the years, is nowadays widely known as: It covers the theoretical and empirical analysis of ‘society’ phenomenon which is not considered as the mere group of people that it is comprised of, but either as the unique pattern of their social relations and interactions or the sum of social groups and formations that it is comprised of or the system ‘institutionalised ways of behaving’ (I. Lampiri-Dimaki, 1990).

When people talk about Sociology they generally have in mind studies of particular problems in civilised civilisations. The task of the **sociologist** is usually very specialised since he deals with the study of individual problems, like divorce, crime, mental disturbance, work distress and diligence motives. He examines to what extent a social event disturbs the balance and the order of society. He also helps in comprehending that a problem is not personal but social. Sociology is associated to a great extent with social philosophy from one end, and with social planning from the other end. It seeks not only to discover how institutions function, but also to decide how they should function and to modify them accordingly (E. E. Evans-Pritchard, ‘Social Anthropology’, 1991).

**→About Sociology of Education and Educational Sociology:** The main difference between them is that the subject of **Sociology of Education** is education that is the procedure of production, transmission and reproduction of knowledge. Recently, Sociology of Education deals with the role of school, the social incorporation through the educational structures and the hierarchies, the



choice of knowledge, the language, social inequality a school develops, the interaction of economy and education, the complex of values, principles, ideas as well as the ideological structure of education, the way of how authority is reproduced through. *Educational Sociology* considers the study of educational institution, its functions and effects upon society. The correlation, the contradictions and the impacts to the new approach in education, the relation between teacher and student, the methodology problems of the educational practice, its orientation and effects on an individual and groups, are the issues that Educational sociology considers.

→ **Strephosymbolia**: A delay or difficulty in learning to read which is out of harmony with a child's general intellectual ability. At the outset it is characterized by confusion between similarly formed but oppositely oriented letters, and a tendency to a changing order of direction in reading. (Orton, ST., (1937). Reading, Writing and Speech Problems in Children» USA)

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## **APPENDICES**

**CODE PLAN**

## Code-plan

Variable	Content	Code
DIAGNOSI	Diagnosis <i>(three groups)</i>	0: Normal 1: Has learning difficulties 2: Dyslexic
DIA_CODE	Diagnosis <i>(two groups)</i>	0: Has learning difficulties 1: Normal
CITY	City	1: Lives in Thessaloniki 2: Lives outside Thessaloniki
SEX	Sex	1: Boy 2: Girl
AGE	Age	1: 6 - 7 yrs 2: >7 - 8 yrs 3: >8 - 9 yrs 4: >9 - 10 yrs 5: >10 - 11 yrs 6: >11 - 12 yrs 7: >12 - 13 yrs 8: >13 - 14 yrs 9: >14 - 15 yrs
FATHEDU	Father's education level	1: Elementary school 2: Gymnasium 3: Lykeio 4: Technical school 5: BSc 6: MSc 7: PhD
MOTHEDU	Mother's education level	1: Elementary school 2: Gymnasium 3: Lykeio 4: Technical school 5: BSc 6: MSc 7: PhD

## Code-plan

Variable	Content	Code
	<i>For each one of the following items mark the answer that best describes the child's condition</i>	<i>For the following variables:</i> 1: No problem 2: Slight problem 3: Average problem 4: Serious problem 5: Very serious problem
V1	Inattention / Distractibility	
V2	Impatient	
V3	Hyperactivity	
V4	Behaviour at home / school	
V5	Self Esteem	
V6	Reading	
V7	Spelling	
V8	Spelling - missing accents	
V9	Handwriting	
V10	Arithmetic	
V11	Multiplication tables	
V12	Memorizing	
V13	Memory in general	
V14	Diction – speech	
V15	Does the child have any serious neurological problem?	1: Yes 2: No
V16	Is there a history of dyslexia in the family	1: Yes 2: No
V17	Does the child have any emotional problems?	1: Yes 2: No
V18	Did the child change schools?	1: Yes 2: No
V19	Days being absent from school	n
V20	Does the child follow a special treatment?	1: Yes 2: No
V21	Hours spend doing homework per week	n
V22	Hours spent in front of TV per week	n

## Code-plan

Variable	Content	Code
V23	Hours spend reading for pleasure per week	n
V24	Hours spend listening to music per week	n
V25	Hours spend painting per week	n
V26	Hours spend constructing things per week	n
V27	Hours spend on other activities per week	n
	<p><i>For each one of the following items mark the answer that best describes your child's condition</i></p>	<p><i>For the following variables:</i></p> <p>1: No problem            2: Slight problem            3: Average problem            4: Serious problem            5: Very serious problem</p>
V28	Careless	
V29	Daydreaming	
V30	Forgetful	
V31	Seems not to listen	
V32	Difficulty retaining the attention	
V33	Does not complete a given task	
V34	Moves from one subject to another	
V35	Has difficulty following instructions	
V36	Has difficulty following rules	
V37	At school his / her marks show a lack of uniformity	
V38	Impulsive	
V39	Restless	
V40	Acts without thinking	
V41	Does not wait for his / her turn	
V42	Interrupts the others	
V43	Answers before listening to the question	
V44	Spontaneous	
V45	Demands to fulfill immediately his / her every demand	
V46	Reckless	

## Code-plan

Variable	Content	Code
	<i>For each one of the following items mark the answer that best describes the child's condition</i>	For the following variables: 1: No problem 2: Slight problem 3: Average problem 4: Serious problem 5: Very serious problem
V47	Accident prone	
V48	Acts in an unexpected way	
V49	Leaves everything for the last moment	
V50	Loses very easily his / her interest	
V51	Has breaks very often	
V52	Egocentric	
V53	Demanding	
V54	Insisting	
V55	Oppressive	
V56	Demands excessive attention	
V57	Feels that the others are not just with him / her	
V58	Has low tolerance limits	
V59	Likes to blame others	
V60	Pessimist	
V61	Sentimental	
V62	Immature	
V63	Gets hurt easily	
V64	Cries easily	
V65	His behaviour causes problems	
V66	Difficult character	
V67	Broods	
V68	Garrulous	
V69	Demands to lead	
V70	Rebellious	
V71	Denies authority	
V72	Disobedient	
V73	Aggressive	
V74	Ill-tempered	
V75	Irritable	
V76	Nervous	
V77	Bad loser	
V78	Low self-esteem	



Variable	Content	Code
	<i>For each one of the following items mark the answer that best describes your child's condition</i>	<i>For the following variables:</i> 1: No problem 2: Slight problem 3: Average problem 4: Serious problem 5: Very serious problem
V79	Is afraid that the others don't like him/her	
V80	Has difficulties creating new friends	
V81	Plays with smaller children	
V82	Has difficulties keeping old friendships	
V83	Is accepted by other children	
V84	Teaser	
V85	Anxious	
V86	Teasing everyone	
V87	Doesn't have a sense of time	
V88	Unorganised	
V89	Has difficulty organising his / her time	
V90	Has difficulty organising his space	
V91	Clumsy	
V92	Urinating during his / her sleep	
V93	Sleeps less hours than normal	
V94	His / her mood changes very rapidly	
V95	Calm	
V96	Dishonest	
V97	Panics easily	
V98	Gets attached to adults	
V99	Extrovert	
V100	Introvert	
V101	Sociable	
V102	Lonely	
V103	Happy	
V104	Sad	
V105	Cooperative	

## Code-plan

Variable	Content	Code
V106	Are the child's parents separated?	1: Yes 2: No

**“PAVLIDIS QUESTIONNAIRE”**

# ΚΕΝΤΡΟ ΔΥΣΛΕΞΙΑΣ & ΕΥΦΥΪΑΣ

Ελπίδος 72 - Πολίχνη, Θεσσαλονίκη Τηλ. 031 - 650-800, 642-555

## ΕΜΠΙΣΤΕΥΤΙΚΟ ΕΡΩΤΗΜΑΤΟΛΟΓΙΟ

Ημερομηνία: ..... / ..... / 2009

Όνοματεπώνυμο: .....

Πατρώνυμο:..... Φύλο: Α ..... Θ.....

Ηλικία: Ετών ..... Μηνών .....

Οδός: ..... Αριθμός .....

Συνουσία: ..... Πόλη: ..... Τ.Κ.: .....

Αριθμός τηλεφώνου: ..... FAX: ..... E-mail:.....

Σχολείο: ..... Τάξη: ..... Βαθμός: .....

Υιοθετημένο Ναι ..... Όχι .....

Αριθμός μελών της οικογένειας:.....

Επάγγελμα γονέων: Πατέρας: ..... Μητέρα: .....

Στην κάθε ερώτηση βάλτε ΚΥΚΛΟ γύρω από την απάντηση ή από τον κατάλληλο αριθμό

• **Ευφυΐα** Πολύ Χαμηλή / Χαμηλή / Κανονική / Υψηλή / Πολύ Υψηλή  
ΔΕΝ ΕΧΕΙ ΚΑΝΕΝΑ ΠΡΟΒΛΗΜΑ (1) ΜΙΚΡΟ (2) ΜΕΤΡΙΟ (3) ΣΟΒΑΡΟ (4) ΠΟΛΥ ΣΟΒΑΡΟ (5)

(Όσο πιο σοβαρό το πρόβλημα τόσο μεγαλύτερος είναι ο αριθμός)

• Διάσπαση Προσοχής (Απρόσεχτος - Αφηρημένος)	1	2	3	4	5
• Παρορμητικότητα (Ανυπόμονος)	1	2	3	4	5
• Υπερκινητικότητα (Αεικίνητος)	1	2	3	4	5
• Συμπεριφορά στο σπίτι ή στο σχολείο	1	2	3	4	5
• Αυτοπεποίθηση - Αυτοεκτίμηση	1	2	3	4	5
• Ανάγνωση	1	2	3	4	5
• Ορθογραφία	1	2	3	4	5
• Παράληψη τόνων	1	2	3	4	5
• Καλλιγραφία	1	2	3	4	5
• Αριθμητική	1	2	3	4	5
• Προπαίδεια	1	2	3	4	5
• Αποστήθιση	1	2	3	4	5
• Γενική Μνήμη	1	2	3	4	5
• Άρθρωση - Ομιλία - Τραυλισμός	1	2	3	4	5
• Νευρολογικά Προβλήματα (σοβαρά)	1	2	3	4	5
• Ιστορικό Δυσλεξίας στο σπίτι & στους 1ου βαθμού συγγενείς	1	2	3	4	5

• Ποια από τα παραπάνω είναι τα 3 πιο σημαντικά προβλήματα του παιδιού με τη σειρά σπουδαιότητάς τους. 1 ..... 2 ..... 3 .....

• Τα πάει καλύτερα στα Γραπτά ..... ή στα Προφορικά .....

• Τα πάει καλύτερα στα Γλωσσικά (Φιλολογικά) ..... ή στα Πρακτικά μαθήματα .....

• Ποια Διάγνωση υπάρχει και από Πού: ..... Πότε: .... / ... / ...

**ΟΙΚΟΓΕΝΕΙΑΚΟ ΙΣΤΟΡΙΚΟ ΜΑΘΗΣΙΑΚΩΝ ΔΥΣΚΟΛΙΩΝ**

Είχαν ή έχουν μέλη της οικογένειας (συγγενείς εξ αίματος, π.χ. μητέρα - πατέρας, αδελφές - αδελφοί, παππούδες - γιαγιάδες, πρώτα ξαδέλφια) ένα ή περισσότερα από τα παρακάτω χαρακτηριστικά:

Προβλήματα γραφής / ανάγνωσης: ΝΑΙ .... ΟΧΙ ....

Προβλήματα ομιλίας (τραυλισμός, καθυστέρηση έναρξης ή ανώριμη ομιλία): ΝΑΙ .... ΟΧΙ ....

Διαταραχές προσοχής / συγκέντρωσης / Υπερκινητικότητας / Ανωμομνησίας: ΝΑΙ .... ΟΧΙ ....

Αριστερόχειρας: ΝΑΙ .... ΟΧΙ ....

Αμφίχειρας: ΝΑΙ .... ΟΧΙ ....

Σχόλια (αν υπάρχουν): .....

**ΕΠΙΠΛΟΚΕΣ ΚΑΤΑ ΤΟΝ ΤΟΚΕΤΟ**

Βάρος κατά τη γέννηση: Κιλά ..... Γραμμάρια.....

Ηλικία μητέρας κατά τη γέννηση: Ετη ..... Μήνες .....

Πρόωρη γέννηση: Ναι ..... Όχι.....

Τοκετός με ισχιακή προβολή: Ναι ..... Όχι.....

Ανοξία (μπλε μωρό, που δεν ανάπνευσε αμέσως): Ναι ..... Όχι.....

Άλλα σχόλια: .....

**ΑΝΑΠΤΥΞΗ ΟΜΙΛΙΑΣ / ΠΡΟΒΛΗΜΑΤΑ**

Κατά προσέγγιση, ηλικία παιδιού που ειπώθηκε η πρώτη λέξη Έτος ..... Μήνας ....

Κατά προσέγγιση, ηλικία παιδιού που ειπώθηκε η πρώτη πρόταση Έτος ..... Μήνας .....

Το παιδί τραύλισε: Ναι..... Όχι.....

Έχει ανώριμη / καθυστερημένη ομιλία: Ναι..... Όχι.....

Έχει προβλήματα κατανόησης προφορικού λόγου: Ναι..... Όχι.....

Άλλα προβλήματα ομιλίας του παιδιού: Ναι..... Όχι.....

Άλλα σχόλια: .....

Η προφορά των λέξεων και των φράσεων είναι κατανοητή; Ναι..... Όχι.....

Τα λάθη της προφοράς των γραμμάτων αντανακλούνται στο γράψιμο Ναι..... Όχι.....

Επιδεινώθηκε η ομιλία του παιδιού σ' ένα ορισμένο στάδιο της ζωής του; Ναι..... Όχι.....

Αν ναι, τότε; Έτος..... Μήνας...

Αντανακλάται το πρόβλημα στον ψυχισμό ή στην σχολική του επίδοση; Ναι..... Όχι.....

Υπάρχει εξωτερικά κάποιο οργανικό πρόβλημα στα φωνητικά όργανα; Ναι .... Όχι .....

Ανω-κάτω γνάθος Ναι .... Όχι .....

Γλώσσα Ναι..... Όχι.....

Μαλακός ουρανίσκος Ναι..... Όχι.....

Σκληρός ουρανίσκος Ναι..... Όχι.....

**ΠΛΑΓΙΩΣΗ - ΚΥΡΙΑΡΧΟ ΧΕΡΙ**

Ποιο χέρι χρησιμοποιεί συνήθως το παιδί; Δεξί ..... Αριστερό ..... Αμφίχειρας .....

Πιέστηκε το παιδί να αλλάξει χέρι για το γράψιμο, το φαγητό κ.λ.π.;

Ναι.....Όχι..... (Αν ναι, σε ποια ηλικία: Έτη ..... Μήνες .....

**ΚΥΡΙΑΡΧΟ ΑΥΤΙ:** Με ποιο αυτί το παιδί φυσιολογικά ακούει στο τηλέφωνο: Αριστερό.....

Δεξί..... Και τα δύο.....

**ΚΥΡΙΑΡΧΟ ΠΟΔΙ** που χρησιμοποιείται στα ακόλουθα: ΑΡΙΣΤΕΡΟ..... ΔΕΞΙ..... ΚΑΙ ΤΑ 2.....

Κλωτσιά: ΑΡΙΣΤΕΡΟ..... ΔΕΞΙ..... ΚΑΙ ΤΑ 2.....

Αναπήδηση στο ίδιο πόδι: ΑΡΙΣΤΕΡΟ ..... ΔΕΞΙ ..... ΚΑΙ ΤΑ 2.....

-/[ΚΥΡΙΑΡΧΟ ΜΑΤΙ: (Θα συμπληρωθεί από τον Καθηγητή): Αριστερό..... Δεξί..... Και τα 2....

**ΔΙΑΣΠΑΣΗ ΠΡΟΣΟΧΗΣ - ΠΑΡΟΡΜΗΤΙΚΟΤΗΤΑ - ΥΠΕΡΚΙΝΗΤΙΚΟΤΗΤΑ**

ΔΕΝ ΕΧΕΙ ΚΑΝΕΝΑ ΠΡΟΒΛΗΜΑ (1) ΜΙΚΡΟ (2) ΜΕΤΡΙΟ (3) ΣΟΒΑΡΟ (4) ΠΟΛΥ ΣΟΒΑΡΟ (5)

Στην κάθε ερώτηση βάλτε κύκλο γύρω από τον κατάλληλο αριθμό.

	1	2	3	4	5
<b>Απρόσεχτος</b>					
Ονειροπόλος - Αφηρημένος					
Ξεχασιάρης					
Μοιάζει σαν να μην σ' ακούει					
Διάσπαση Προσοχής από Εξωτερικούς ερεθισμούς					
Δεν τελειώνει τις Εργασίες του					
Πηδάει από το ένα θέμα στο άλλο					
Δυσκολεύεται να Εκτελεί πολλές <i>διαδοχικές προφορικές οδηγίες</i>					
Δυσκολεύεται να ακολουθεί κανόνες					
Ανομοιογενής Επίδοση					
<b>Παρορμητικός</b>					
Ανυπόμονος					
Πριν σκεφθεί ενεργεί					
Δεν περιμένει την σειρά του					
Διακόπτει τους άλλους					
Απαντά Πριν τελειώσει η ερώτηση					
Αυθόρμητος					
Άμεση Ικανοποίηση επιθυμιών					
Ριψοκίνδυνος					
Επιρρεπής στα ατυχήματα					
Απρόβλεπτος					
Άνθρωπος τελευταίας στιγμής					
Χάνει εύκολα το ενδιαφέρον του					
Διαλείμματα χωρίς λόγο					
<b>Εγωκεντρικός - Τνωρίζει' Μόνον τις δικές του ανάγκες</b>					
Απαιτητικός					
Επίμονος					
Καταπιεστικός					
Απαιτεί Υπερβολική Προσοχή					
Αισθάνεται αδικημένος					
Χαμηλά όρια Ανοχής					
Επιρρίπτει στους άλλους τις Ευθύνες					
Απαισιόδοξος					
<b>Συναισθηματικός</b>					
Ανώριμος Συναισθηματικά για την ηλικία του					
Πληγάνεται εύκολα					
Κλαίει εύκολα					
Προβλήματα συμπεριφοράς					



## Diagnosis

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Normal	136	59,9	59,9	59,9
Has learning difficulties	37	16,3	16,3	76,2
Dyslexic	54	23,8	23,8	100,0
Total	227	100,0	100,0	

## Diagnosis (Normal - With learning difficulties)

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Has learning difficulties	91	40,1	40,1	40,1
Normal	136	59,9	59,9	100,0
Total	227	100,0	100,0	

## City

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid From Thessaloniki	166	73,1	74,1	74,1
Outside Thessaloniki	58	25,6	25,9	100,0
Total	224	98,7	100,0	
Missing System	3	1,3		
Total	227	100,0		

## Sex

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Boy	122	53,7	54,0	54,0
Girl	104	45,8	46,0	100,0
Total	226	99,6	100,0	
Missing System	1	,4		
Total	227	100,0		

## Age

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 6 - 7 yrs	23	10,1	10,3	10,3
>7 - 8 yrs	43	18,9	19,2	29,5
>8 - 9 yrs	47	20,7	21,0	50,4
>9 - 10 yrs	30	13,2	13,4	63,8
>10 - 11 yrs	40	17,6	17,9	81,7
>11 - 12 yrs	24	10,6	10,7	92,4
>12 - 13 yrs	8	3,5	3,6	96,0
>13 - 14 yrs	7	3,1	3,1	99,1
>14 - 15 yrs	2	,9	,9	100,0
Total	224	98,7	100,0	
Missing System	3	1,3		
Total	227	100,0		



**[v1] Inattention / Distractability**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No problem	57	25,1	31,1	31,1
	Slight problem	48	21,1	26,2	57,4
	Average problem	26	11,5	14,2	71,6
	Serious problem	32	14,1	17,5	89,1
	Very serious problem	20	8,8	10,9	100,0
	Total	183	80,6	100,0	
Missing	System	44	19,4		
Total		227	100,0		

**[v2] Impulsive (impatient)**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No problem	85	37,4	38,6	38,6
	Slight problem	66	29,1	30,0	68,6
	Average problem	40	17,6	18,2	86,8
	Serious problem	17	7,5	7,7	94,5
	Very serious problem	12	5,3	5,5	100,0
	Total	220	96,9	100,0	
Missing	System	7	3,1		
Total		227	100,0		

**[v3] Hyperactivity**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No problem	104	45,8	49,3	49,3
	Slight problem	43	18,9	20,4	69,7
	Average problem	30	13,2	14,2	83,9
	Serious problem	20	8,8	9,5	93,4
	Very serious problem	14	6,2	6,6	100,0
	Total	211	93,0	100,0	
Missing	System	16	7,0		
Total		227	100,0		

**[v4] Behaviour at home / school**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No problem	181	79,7	80,8	80,8
	Slight problem	29	12,8	12,9	93,8
	Average problem	7	3,1	3,1	96,9
	Serious problem	6	2,6	2,7	99,6
	Very serious problem	1	,4	,4	100,0
	Total	224	98,7	100,0	
Missing	System	3	1,3		
Total		227	100,0		

**[v5] Self Esteem**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No problem	137	60,4	60,6	60,6
	Slight problem	36	15,9	15,9	76,5
	Average problem	44	19,4	19,5	96,0
	Serious problem	6	2,6	2,7	98,7
	Very serious problem	3	1,3	1,3	100,0
	Total	226	99,6	100,0	
Missing	System	1	,4		
Total		227	100,0		

**[v6] Reading**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No problem	121	53,3	54,5	54,5
	Slight problem	45	19,8	20,3	74,8
	Average problem	32	14,1	14,4	89,2
	Serious problem	20	8,8	9,0	98,2
	Very serious problem	4	1,8	1,8	100,0
	Total	222	97,8	100,0	
Missing	System	5	2,2		
Total		227	100,0		

**[v7] Spelling**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No problem	100	44,1	45,2	45,2
	Slight problem	48	21,1	21,7	67,0
	Average problem	35	15,4	15,8	82,8
	Serious problem	34	15,0	15,4	98,2
	Very serious problem	4	1,8	1,8	100,0
	Total	221	97,4	100,0	
Missing	System	6	2,6		
Total		227	100,0		

**[v8] Spelling - missing accents**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No problem	61	26,9	56,0	56,0
	Slight problem	29	12,8	26,6	82,6
	Average problem	6	2,6	5,5	88,1
	Serious problem	5	2,2	4,6	92,7
	Very serious problem	8	3,5	7,3	100,0
	Total	109	48,0	100,0	
Missing	System	118	52,0		
Total		227	100,0		

**[v9] Handwriting**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No problem	63	27,8	57,8	57,8
	Slight problem	22	9,7	20,2	78,0
	Average problem	15	6,6	13,8	91,7
	Serious problem	5	2,2	4,6	96,3
	Very serious problem	4	1,8	3,7	100,0
	Total	109	48,0	100,0	
Missing	System	118	52,0		
Total		227	100,0		

**[v10] Arithmetic**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No problem	118	52,0	53,6	53,6
	Slight problem	56	24,7	25,5	79,1
	Average problem	29	12,8	13,2	92,3
	Serious problem	16	7,0	7,3	99,5
	Very serious problem	1	,4	,5	100,0
	Total	220	96,9	100,0	
Missing	System	7	3,1		
Total		227	100,0		

**[v11] Multiplication tables**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No problem	79	34,8	72,5	72,5
	Slight problem	14	6,2	12,8	85,3
	Average problem	10	4,4	9,2	94,5
	Serious problem	3	1,3	2,8	97,2
	Very serious problem	3	1,3	2,8	100,0
	Total	109	48,0	100,0	
Missing	System	118	52,0		
Total		227	100,0		

**[v12] Memorizing**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No problem	75	33,0	68,8	68,8
	Slight problem	19	8,4	17,4	86,2
	Average problem	8	3,5	7,3	93,6
	Serious problem	4	1,8	3,7	97,2
	Very serious problem	3	1,3	2,8	100,0
	Total	109	48,0	100,0	
Missing	System	118	52,0		
Total		227	100,0		

**[v13] Memory in general**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No problem	153	67,4	70,2	70,2
	Slight problem	34	15,0	15,6	85,8
	Average problem	17	7,5	7,8	93,6
	Serious problem	12	5,3	5,5	99,1
	Very serious problem	2	,9	,9	100,0
	Total	218	96,0	100,0	
Missing	System	9	4,0		
Total		227	100,0		

**[v14] Diction - speech**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No problem	98	43,2	89,9	89,9
	Slight problem	7	3,1	6,4	96,3
	Average problem	2	,9	1,8	98,2
	Serious problem	1	,4	,9	99,1
	Very serious problem	1	,4	,9	100,0
	Total	109	48,0	100,0	
Missing	System	118	52,0		
Total		227	100,0		

**[v15] Is there a neurological problem?**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	107	47,1	47,3	47,3
	No	118	52,0	52,2	99,6
	3	1	,4	,4	100,0
	Total	226	99,6	100,0	
Missing	System	1	,4		
Total		227	100,0		

**[v16] Is there a history of dyslexia in the family?**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	105	46,3	96,3	96,3
	No	4	1,8	3,7	100,0
	Total	109	48,0	100,0	
Missing	System	118	52,0		
Total		227	100,0		

## Serious problem / 1st choice

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No problem	78	34,4	55,7	55,7
	Arithmetic	3	1,3	2,1	57,9
	Spelling	7	3,1	5,0	62,9
	Speech	3	1,3	2,1	65,0
	Behaviour at home	2	,9	1,4	66,4
	Difficulty retaining attention	4	1,8	2,9	69,3
	Restless	11	4,8	7,9	77,1
	Impulsive	4	1,8	2,9	80,0
	Handwriting	3	1,3	2,1	82,1
	Spelling/Missing accents	3	1,3	2,1	84,3
	Multiplication tables	1	,4	,7	85,0
	Absent minded	4	1,8	2,9	87,9
	Reading	5	2,2	3,6	91,4
	Hyperactive	7	3,1	5,0	96,4
	Self confident	4	1,8	2,9	99,3
	Memory (in general)	1	,4	,7	100,0
	Total	140	61,7	100,0	
Missing	System	87	38,3		
Total		227	100,0		

## Serious problem / 2nd choice

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No problem	86	37,9	68,3	68,3
	Arithmetic	3	1,3	2,4	70,6
	Spelling	5	2,2	4,0	74,6
	Behaviour at home	4	1,8	3,2	77,8
	Difficulty retaining attention	1	,4	,8	78,6
	Restless	1	,4	,8	79,4
	Impulsive	2	,9	1,6	81,0
	Handwriting	2	,9	1,6	82,5
	Spelling/Missing accents	3	1,3	2,4	84,9
	Multiplication tables	2	,9	1,6	86,5
	Reading	1	,4	,8	87,3
	Hyperactive	7	3,1	5,6	92,9
	Self confident	3	1,3	2,4	95,2
	Learning by heart	3	1,3	2,4	97,6
	Careless	2	,9	1,6	99,2
	Diction	1	,4	,8	100,0
	Total	126	55,5	100,0	
Missing	System	101	44,5		
Total		227	100,0		

## Serious problem / 3rd choice

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No problem	96	42,3	78,7	78,7
	Arithmetic	3	1,3	2,5	81,1
	Spelling	1	,4	,8	82,0
	Behaviour at home	1	,4	,8	82,8
	Difficulty retaining attention	6	2,6	4,9	87,7
	Restless	1	,4	,8	88,5
	Impulsive	4	1,8	3,3	91,8
	Handwriting	1	,4	,8	92,6
	Spelling/Missing accents	3	1,3	2,5	95,1
	Multiplication tables	2	,9	1,6	96,7
	Self confident	2	,9	1,6	98,4
	Learning by heart	1	,4	,8	99,2
	Careless	1	,4	,8	100,0
	Total	122	53,7	100,0	
Missing	System	105	46,3		
Total		227	100,0		

## Father's education

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Elementary school	30	13,2	13,7	13,7
	Gymnasium	34	15,0	15,5	29,2
	Lykeio	79	34,8	36,1	65,3
	Technical school	14	6,2	6,4	71,7
	BSc	54	23,8	24,7	96,3
	MSc	7	3,1	3,2	99,5
	PhD	1	,4	,5	100,0
	Total	219	96,5	100,0	
Missing	System	8	3,5		
Total		227	100,0		

## Mother's education

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Elementary school	18	7,9	8,6	8,6
	Gymnasium	24	10,6	11,5	20,1
	Lykeio	87	38,3	41,6	61,7
	Technical school	17	7,5	8,1	69,9
	BSc	22	9,7	10,5	80,4
	MSc	40	17,6	19,1	99,5
	PhD	1	,4	,5	100,0
	Total	209	92,1	100,0	
Missing	System	18	7,9		
Total		227	100,0		

## [v17] Emotional problems

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	10	4,4	4,7	4,7
	No	202	89,0	95,3	100,0
	Total	212	93,4	100,0	
Missing	System	15	6,6		
Total		227	100,0		

[v18] Did the child change schools?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	28	12,3	13,0	13,0
	No	187	82,4	87,0	100,0
	Total	215	94,7	100,0	
Missing	System	12	5,3		
Total		227	100,0		

[v19] Days being absent from school

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	93	41,0	47,2	47,2
	1	24	10,6	12,2	59,4
	2	11	4,8	5,6	65,0
	3	10	4,4	5,1	70,1
	4	42	18,5	21,3	91,4
	5	2	,9	1,0	92,4
	6	1	,4	,5	92,9
	7	1	,4	,5	93,4
	8	1	,4	,5	93,9
	10	3	1,3	1,5	95,4
	12	1	,4	,5	95,9
	15	3	1,3	1,5	97,5
	16	1	,4	,5	98,0
	25	1	,4	,5	98,5
	30	2	,9	1,0	99,5
	70	1	,4	,5	100,0
	Total		197	86,8	100,0
Missing	System	30	13,2		
Total		227	100,0		

[v20] Does the child follow special treatment?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	16	7,0	7,1	7,1
	No	209	92,1	92,9	100,0
	Total	225	99,1	100,0	
Missing	System	2	,9		
Total		227	100,0		

## [v21] Hours spend doing homework / week

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	1	,4	,6	,6
	1	6	2,6	3,6	4,2
	2	10	4,4	6,0	10,2
	3	14	6,2	8,4	18,6
	4	5	2,2	3,0	21,6
	5	11	4,8	6,6	28,1
	6	8	3,5	4,8	32,9
	7	5	2,2	3,0	35,9
	8	7	3,1	4,2	40,1
	9	1	,4	,6	40,7
	10	28	12,3	16,8	57,5
	11	2	,9	1,2	58,7
	12	12	5,3	7,2	65,9
	13	1	,4	,6	66,5
	14	2	,9	1,2	67,7
	15	23	10,1	13,8	81,4
	16	2	,9	1,2	82,6
	17	1	,4	,6	83,2
	18	6	2,6	3,6	86,8
	20	8	3,5	4,8	91,6
	21	2	,9	1,2	92,8
	24	1	,4	,6	93,4
	25	6	2,6	3,6	97,0
	28	1	,4	,6	97,6
	30	2	,9	1,2	98,8
	34	1	,4	,6	99,4
	58	1	,4	,6	100,0
	Total	167	73,6	100,0	
Missing	System	60	26,4		
Total		227	100,0		



## [v22] Hours spent in front of TV / week

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	9	4,0	5,0	5,0
	1	12	5,3	6,6	11,6
	2	14	6,2	7,7	19,3
	3	12	5,3	6,6	26,0
	4	12	5,3	6,6	32,6
	5	13	5,7	7,2	39,8
	6	12	5,3	6,6	46,4
	7	9	4,0	5,0	51,4
	8	7	3,1	3,9	55,2
	10	31	13,7	17,1	72,4
	11	3	1,3	1,7	74,0
	12	5	2,2	2,8	76,8
	14	8	3,5	4,4	81,2
	15	17	7,5	9,4	90,6
	20	8	3,5	4,4	95,0
	21	3	1,3	1,7	96,7
	24	1	,4	,6	97,2
	25	3	1,3	1,7	98,9
	28	1	,4	,6	99,4
	30	1	,4	,6	100,0
	Total	181	79,7	100,0	
Missing	System	46	20,3		
Total		227	100,0		

## [v23] Hours spend reading for pleasure / week

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	67	29,5	34,4	34,4
	1	28	12,3	14,4	48,7
	2	24	10,6	12,3	61,0
	3	27	11,9	13,8	74,9
	4	13	5,7	6,7	81,5
	5	15	6,6	7,7	89,2
	6	5	2,2	2,6	91,8
	7	6	2,6	3,1	94,9
	8	1	,4	,5	95,4
	10	4	1,8	2,1	97,4
	13	1	,4	,5	97,9
	14	1	,4	,5	98,5
	15	1	,4	,5	99,0
	20	2	,9	1,0	100,0
	Total	195	85,9	100,0	
Missing	System	32	14,1		
Total		227	100,0		

## [v24] Hours spend listening to music / week

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	43	18,9	22,6	22,6
	1	20	8,8	10,5	33,2
	2	28	12,3	14,7	47,9
	3	22	9,7	11,6	59,5
	4	13	5,7	6,8	66,3
	5	24	10,6	12,6	78,9
	6	6	2,6	3,2	82,1
	7	6	2,6	3,2	85,3
	8	2	,9	1,1	86,3
	10	15	6,6	7,9	94,2
	11	1	,4	,5	94,7
	12	1	,4	,5	95,3
	14	1	,4	,5	95,8
	15	2	,9	1,1	96,8
	20	3	1,3	1,6	98,4
	30	1	,4	,5	98,9
	50	1	,4	,5	99,5
	68	1	,4	,5	100,0
	Total	190	83,7	100,0	
Missing	System	37	16,3		
Total		227	100,0		

## [v25] Hours spend painting / week

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	80	35,2	40,8	40,8
	1	21	9,3	10,7	51,5
	2	29	12,8	14,8	66,3
	3	20	8,8	10,2	76,5
	4	4	1,8	2,0	78,6
	5	18	7,9	9,2	87,8
	6	1	,4	,5	88,3
	7	6	2,6	3,1	91,3
	8	2	,9	1,0	92,3
	10	8	3,5	4,1	96,4
	12	1	,4	,5	96,9
	15	3	1,3	1,5	98,5
	20	2	,9	1,0	99,5
	10010390400	1	,4	,5	100,0
	Total	196	86,3	100,0	
Missing	System	31	13,7		
Total		227	100,0		

[v26] Hours spend constructing things / week

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 0	122	53,7	62,9	62,9
1	11	4,8	5,7	68,6
2	15	6,6	7,7	76,3
3	15	6,6	7,7	84,0
4	3	1,3	1,5	85,6
5	10	4,4	5,2	90,7
6	2	,9	1,0	91,8
7	3	1,3	1,5	93,3
8	1	,4	,5	93,8
10	8	3,5	4,1	97,9
12	1	,4	,5	98,5
15	1	,4	,5	99,0
20	2	,9	1,0	100,0
Total	194	85,5	100,0	
Missing System	33	14,5		
Total	227	100,0		

[v28] Careless

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid No problem	92	40,5	42,8	42,8
Slight problem	62	27,3	28,8	71,6
Average problem	24	10,6	11,2	82,8
Serious problem	30	13,2	14,0	96,7
Very serious problem	7	3,1	3,3	100,0
Total	215	94,7	100,0	
Missing System	12	5,3		
Total	227	100,0		

[v29] Daydreaming

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid No problem	106	46,7	47,7	47,7
Slight problem	52	22,9	23,4	71,2
Average problem	30	13,2	13,5	84,7
Serious problem	23	10,1	10,4	95,0
Very serious problem	11	4,8	5,0	100,0
Total	222	97,8	100,0	
Missing System	5	2,2		
Total	227	100,0		

[v30] Forgetful

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid No problem	118	52,0	53,4	53,4
Slight problem	49	21,6	22,2	75,6
Average problem	24	10,6	10,9	86,4
Serious problem	17	7,5	7,7	94,1
Very serious problem	13	5,7	5,9	100,0
Total	221	97,4	100,0	
Missing System	6	2,6		
Total	227	100,0		

**[v31] Seems not to listen**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No problem	111	48,9	50,5	50,5
	Slight problem	53	23,3	24,1	74,5
	Average problem	37	16,3	16,8	91,4
	Serious problem	17	7,5	7,7	99,1
	Very serious problem	2	,9	,9	100,0
	Total	220	96,9	100,0	
Missing	System	7	3,1		
Total		227	100,0		

**[v32] Difficulty retaining the attention**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No problem	79	34,8	35,7	35,7
	Slight problem	70	30,8	31,7	67,4
	Average problem	42	18,5	19,0	86,4
	Serious problem	25	11,0	11,3	97,7
	Very serious problem	5	2,2	2,3	100,0
	Total	221	97,4	100,0	
Missing	System	6	2,6		
Total		227	100,0		

**[v33] Does not complete a given task**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No problem	127	55,9	58,0	58,0
	Slight problem	30	13,2	13,7	71,7
	Average problem	24	10,6	11,0	82,6
	Serious problem	19	8,4	8,7	91,3
	Very serious problem	19	8,4	8,7	100,0
	Total	219	96,5	100,0	
Missing	System	8	3,5		
Total		227	100,0		

**[v34] Moves from one subject to another**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No problem	114	50,2	51,8	51,8
	Slight problem	56	24,7	25,5	77,3
	Average problem	33	14,5	15,0	92,3
	Serious problem	14	6,2	6,4	98,6
	Very serious problem	3	1,3	1,4	100,0
	Total	220	96,9	100,0	
Missing	System	7	3,1		
Total		227	100,0		

**[v35] Has difficulty following instructions**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No problem	155	68,3	70,8	70,8
	Slight problem	43	18,9	19,6	90,4
	Average problem	11	4,8	5,0	95,4
	Serious problem	8	3,5	3,7	99,1
	Very serious problem	2	,9	,9	100,0
	Total	219	96,5	100,0	
Missing	System	8	3,5		
Total		227	100,0		

**[v36] Has difficulty following rules**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No problem	122	53,7	55,2	55,2
	Slight problem	45	19,8	20,4	75,6
	Average problem	24	10,6	10,9	86,4
	Serious problem	20	8,8	9,0	95,5
	Very serious problem	10	4,4	4,5	100,0
	Total	221	97,4	100,0	
Missing	System	6	2,6		
Total		227	100,0		

**[v37] At school his / her marks show a lack of uniformity**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No problem	156	68,7	71,9	71,9
	Slight problem	23	10,1	10,6	82,5
	Average problem	20	8,8	9,2	91,7
	Serious problem	17	7,5	7,8	99,5
	Very serious problem	1	,4	,5	100,0
	Total	217	95,6	100,0	
Missing	System	10	4,4		
Total		227	100,0		

**[v38] Impulsive**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No problem	101	44,5	45,9	45,9
	Slight problem	61	26,9	27,7	73,6
	Average problem	29	12,8	13,2	86,8
	Serious problem	19	8,4	8,6	95,5
	Very serious problem	10	4,4	4,5	100,0
	Total	220	96,9	100,0	
Missing	System	7	3,1		
Total		227	100,0		

**[v39] Restless**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No problem	80	35,2	37,0	37,0
	Slight problem	73	32,2	33,8	70,8
	Average problem	32	14,1	14,8	85,6
	Serious problem	19	8,4	8,8	94,4
	Very serious problem	12	5,3	5,6	100,0
	Total	216	95,2	100,0	
Missing	System	11	4,8		
Total		227	100,0		

**[v40] Acts without thinking**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No problem	105	46,3	47,3	47,3
	Slight problem	63	27,8	28,4	75,7
	Average problem	32	14,1	14,4	90,1
	Serious problem	18	7,9	8,1	98,2
	Very serious problem	4	1,8	1,8	100,0
	Total	222	97,8	100,0	
Missing	System	5	2,2		
Total		227	100,0		

**[v41] Does not wait for his / her turn**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No problem	124	54,6	56,9	56,9
	Slight problem	63	27,8	28,9	85,8
	Average problem	19	8,4	8,7	94,5
	Serious problem	9	4,0	4,1	98,6
	Very serious problem	3	1,3	1,4	100,0
	Total	218	96,0	100,0	
Missing	System	9	4,0		
Total		227	100,0		

**[v42] Interrupts the others**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No problem	86	37,9	39,6	39,6
	Slight problem	76	33,5	35,0	74,7
	Average problem	24	10,6	11,1	85,7
	Serious problem	21	9,3	9,7	95,4
	Very serious problem	10	4,4	4,6	100,0
	Total	217	95,6	100,0	
Missing	System	10	4,4		
Total		227	100,0		

## [v43] Answers before listening to the question

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No problem	118	52,0	53,6
	Slight problem	60	26,4	27,3
	Average problem	28	12,3	12,7
	Serious problem	12	5,3	5,5
	Very serious problem	2	,9	,9
	Total	220	96,9	100,0
Missing	System	7	3,1	
Total		227	100,0	

## [v44] Spontaneous

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No problem	59	26,0	55,1
	Slight problem	26	11,5	24,3
	Average problem	13	5,7	12,1
	Serious problem	6	2,6	5,6
	Very serious problem	3	1,3	2,8
	Total	107	47,1	100,0
Missing	System	120	52,9	
Total		227	100,0	

## [v45] Demands to fulfill immediately his / her every demand

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No problem	92	40,5	42,2
	Slight problem	65	28,6	29,8
	Average problem	35	15,4	16,1
	Serious problem	20	8,8	9,2
	Very serious problem	6	2,6	2,8
	Total	218	96,0	100,0
Missing	System	9	4,0	
Total		227	100,0	

## [v46] Reckless

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No problem	122	53,7	56,0
	Slight problem	56	24,7	25,7
	Average problem	20	8,8	9,2
	Serious problem	15	6,6	6,9
	Very serious problem	5	2,2	2,3
	Total	218	96,0	100,0
Missing	System	9	4,0	
Total		227	100,0	

**[v47] Accident prone**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No problem	153	67,4	69,9	69,9
	Slight problem	46	20,3	21,0	90,9
	Average problem	12	5,3	5,5	96,3
	Serious problem	5	2,2	2,3	98,6
	Very serious problem	3	1,3	1,4	100,0
	Total	219	96,5	100,0	
Missing	System	8	3,5		
Total		227	100,0		

**[v48] Acts in an unexpected way**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No problem	143	63,0	65,3	65,3
	Slight problem	40	17,6	18,3	83,6
	Average problem	19	8,4	8,7	92,2
	Serious problem	11	4,8	5,0	97,3
	Very serious problem	6	2,6	2,7	100,0
	Total	219	96,5	100,0	
Missing	System	8	3,5		
Total		227	100,0		

**[v49] Leaves everything for the last moment**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No problem	120	52,9	55,0	55,0
	Slight problem	40	17,6	18,3	73,4
	Average problem	24	10,6	11,0	84,4
	Serious problem	22	9,7	10,1	94,5
	Very serious problem	12	5,3	5,5	100,0
	Total	218	96,0	100,0	
Missing	System	9	4,0		
Total		227	100,0		

**[v50] Loses very easily his / her interest**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No problem	108	47,6	49,1	49,1
	Slight problem	48	21,1	21,8	70,9
	Average problem	32	14,1	14,5	85,5
	Serious problem	18	7,9	8,2	93,6
	Very serious problem	14	6,2	6,4	100,0
	Total	220	96,9	100,0	
Missing	System	7	3,1		
Total		227	100,0		



**[v51] Has breaks very often**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No problem	123	54,2	56,2	56,2
	Slight problem	44	19,4	20,1	76,3
	Average problem	33	14,5	15,1	91,3
	Serious problem	17	7,5	7,8	99,1
	Very serious problem	2	,9	,9	100,0
	Total	219	96,5	100,0	
Missing	System	8	3,5		
Total		227	100,0		

**[v52] Egoentric**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No problem	119	52,4	53,8	53,8
	Slight problem	54	23,8	24,4	78,3
	Average problem	19	8,4	8,6	86,9
	Serious problem	19	8,4	8,6	95,5
	Very serious problem	10	4,4	4,5	100,0
	Total	221	97,4	100,0	
Missing	System	6	2,6		
Total		227	100,0		

**[v53] Demanding**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No problem	97	42,7	44,3	44,3
	Slight problem	56	24,7	25,6	69,9
	Average problem	32	14,1	14,6	84,5
	Serious problem	22	9,7	10,0	94,5
	Very serious problem	12	5,3	5,5	100,0
	Total	219	96,5	100,0	
Missing	System	8	3,5		
Total		227	100,0		

**[v54] Insisting**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No problem	89	39,2	42,6	42,6
	Slight problem	57	25,1	27,3	69,9
	Average problem	33	14,5	15,8	85,6
	Serious problem	18	7,9	8,6	94,3
	Very serious problem	12	5,3	5,7	100,0
	Total	209	92,1	100,0	
Missing	System	18	7,9		
Total		227	100,0		

**[v55] Oppressive**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No problem	126	55,5	59,4	59,4
	Slight problem	50	22,0	23,6	83,0
	Average problem	15	6,6	7,1	90,1
	Serious problem	12	5,3	5,7	95,8
	Very serious problem	9	4,0	4,2	100,0
	Total	212	93,4	100,0	
Missing	System	15	6,6		
Total		227	100,0		

**[v56] Demands excessive attention**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No problem	105	46,3	50,0	50,0
	Slight problem	59	26,0	28,1	78,1
	Average problem	18	7,9	8,6	86,7
	Serious problem	17	7,5	8,1	94,8
	Very serious problem	11	4,8	5,2	100,0
	Total	210	92,5	100,0	
Missing	System	17	7,5		
Total		227	100,0		

**[v57] Feels that the others are not just with him / her**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No problem	100	44,1	45,5	45,5
	Slight problem	66	29,1	30,0	75,5
	Average problem	26	11,5	11,8	87,3
	Serious problem	22	9,7	10,0	97,3
	Very serious problem	6	2,6	2,7	100,0
	Total	220	96,9	100,0	
Missing	System	7	3,1		
Total		227	100,0		

**[v58] Has low tolerance limits**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No problem	128	56,4	58,7	58,7
	Slight problem	46	20,3	21,1	79,8
	Average problem	27	11,9	12,4	92,2
	Serious problem	11	4,8	5,0	97,2
	Very serious problem	6	2,6	2,8	100,0
	Total	218	96,0	100,0	
Missing	System	9	4,0		
Total		227	100,0		

**[v59] Likes to blame others**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No problem	111	48,9	50,7	50,7
	Slight problem	50	22,0	22,8	73,5
	Average problem	29	12,8	13,2	86,8
	Serious problem	21	9,3	9,6	96,3
	Very serious problem	8	3,5	3,7	100,0
	Total	219	96,5	100,0	
Missing	System	8	3,5		
Total		227	100,0		

**[v60] Pessimist**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No problem	143	63,0	63,3	63,3
	Slight problem	34	15,0	15,0	78,3
	Average problem	38	16,7	16,8	95,1
	Serious problem	4	1,8	1,8	96,9
	Very serious problem	7	3,1	3,1	100,0
	Total	226	99,6	100,0	
Missing	System	1	,4		
Total		227	100,0		

**[v61] Sentimental**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No problem	75	33,0	33,2	33,2
	Slight problem	54	23,8	23,9	57,1
	Average problem	84	37,0	37,2	94,2
	Serious problem	10	4,4	4,4	98,7
	Very serious problem	3	1,3	1,3	100,0
	Total	226	99,6	100,0	
Missing	System	1	,4		
Total		227	100,0		

**[v62] Immature**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No problem	144	63,4	65,8	65,8
	Slight problem	41	18,1	18,7	84,5
	Average problem	17	7,5	7,8	92,2
	Serious problem	9	4,0	4,1	96,3
	Very serious problem	8	3,5	3,7	100,0
	Total	219	96,5	100,0	
Missing	System	8	3,5		
Total		227	100,0		

**[v63] Gets hurt easily**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No problem	70	30,8	31,8	31,8
	Slight problem	78	34,4	35,5	67,3
	Average problem	39	17,2	17,7	85,0
	Serious problem	24	10,6	10,9	95,9
	Very serious problem	9	4,0	4,1	100,0
	Total	220	96,9	100,0	
Missing	System	7	3,1		
Total		227	100,0		

**[v64] Cries easily**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No problem	86	37,9	39,3	39,3
	Slight problem	71	31,3	32,4	71,7
	Average problem	35	15,4	16,0	87,7
	Serious problem	15	6,6	6,8	94,5
	Very serious problem	12	5,3	5,5	100,0
	Total	219	96,5	100,0	
Missing	System	8	3,5		
Total		227	100,0		

**[v65] His behaviour causes problems**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No problem	135	59,5	64,9	64,9
	Slight problem	48	21,1	23,1	88,0
	Average problem	11	4,8	5,3	93,3
	Serious problem	7	3,1	3,4	96,6
	Very serious problem	7	3,1	3,4	100,0
	Total	208	91,6	100,0	
Missing	System	19	8,4		
Total		227	100,0		

**[v66] Difficult character**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No problem	124	54,6	56,1	56,1
	Slight problem	43	18,9	19,5	75,6
	Average problem	27	11,9	12,2	87,8
	Serious problem	12	5,3	5,4	93,2
	Very serious problem	15	6,6	6,8	100,0
	Total	221	97,4	100,0	
Missing	System	6	2,6		
Total		227	100,0		

**[v67] Broods**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No problem	53	23,3	49,1	49,1
	Slight problem	28	12,3	25,9	75,0
	Average problem	13	5,7	12,0	87,0
	Serious problem	6	2,6	5,6	92,6
	Very serious problem	8	3,5	7,4	100,0
	Total	108	47,6	100,0	
Missing	System	119	52,4		
Total		227	100,0		

**[v68] Garrulous**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No problem	98	43,2	46,7	46,7
	Slight problem	51	22,5	24,3	71,0
	Average problem	37	16,3	17,6	88,6
	Serious problem	14	6,2	6,7	95,2
	Very serious problem	10	4,4	4,8	100,0
	Total	210	92,5	100,0	
Missing	System	17	7,5		
Total		227	100,0		

**[v69] Demands to lead**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No problem	113	49,8	51,4	51,4
	Slight problem	48	21,1	21,8	73,2
	Average problem	28	12,3	12,7	85,9
	Serious problem	17	7,5	7,7	93,6
	Very serious problem	14	6,2	6,4	100,0
	Total	220	96,9	100,0	
Missing	System	7	3,1		
Total		227	100,0		

**[v70] Rebellious**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No problem	128	56,4	60,7	60,7
	Slight problem	42	18,5	19,9	80,6
	Average problem	23	10,1	10,9	91,5
	Serious problem	11	4,8	5,2	96,7
	Very serious problem	6	2,6	2,8	99,5
	33	1	,4	,5	100,0
	Total	211	93,0	100,0	
Missing	System	16	7,0		
Total		227	100,0		

## [v71] Denies authority

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No problem	140	61,7	68,6	68,6
	Slight problem	31	13,7	15,2	83,8
	Average problem	19	8,4	9,3	93,1
	Serious problem	10	4,4	4,9	98,0
	Very serious problem	4	1,8	2,0	100,0
	Total	204	89,9	100,0	
Missing	System	23	10,1		
Total		227	100,0		

## [v72] Disobedient

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No problem	118	52,0	55,7	55,7
	Slight problem	61	26,9	28,8	84,4
	Average problem	17	7,5	8,0	92,5
	Serious problem	7	3,1	3,3	95,8
	Very serious problem	9	4,0	4,2	100,0
	Total	212	93,4	100,0	
Missing	System	15	6,6		
Total		227	100,0		

## [v73] Agressive

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No problem	149	65,6	67,4	67,4
	Slight problem	43	18,9	19,5	86,9
	Average problem	12	5,3	5,4	92,3
	Serious problem	10	4,4	4,5	96,8
	Very serious problem	7	3,1	3,2	100,0
	Total	221	97,4	100,0	
Missing	System	6	2,6		
Total		227	100,0		

## [v74] Ill-tempered

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No problem	140	61,7	63,9	63,9
	Slight problem	44	19,4	20,1	84,0
	Average problem	18	7,9	8,2	92,2
	Serious problem	9	4,0	4,1	96,3
	Very serious problem	8	3,5	3,7	100,0
	Total	219	96,5	100,0	
Missing	System	8	3,5		
Total		227	100,0		

[v75] Irritable

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No problem	118	52,0	53,4	53,4
	Slight problem	51	22,5	23,1	76,5
	Average problem	28	12,3	12,7	89,1
	Serious problem	13	5,7	5,9	95,0
	Very serious problem	11	4,8	5,0	100,0
	Total	221	97,4	100,0	
Missing	System	6	2,6		
Total		227	100,0		

[v76] Nervous

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No problem	105	46,3	47,3	47,3
	Slight problem	66	29,1	29,7	77,0
	Average problem	24	10,6	10,8	87,8
	Serious problem	16	7,0	7,2	95,0
	Very serious problem	11	4,8	5,0	100,0
	Total	222	97,8	100,0	
Missing	System	5	2,2		
Total		227	100,0		

[v77] Bad loser

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No problem	145	63,9	65,3	65,3
	Slight problem	28	12,3	12,6	77,9
	Average problem	30	13,2	13,5	91,4
	Serious problem	14	6,2	6,3	97,7
	Very serious problem	5	2,2	2,3	100,0
	Total	222	97,8	100,0	
Missing	System	5	2,2		
Total		227	100,0		

[v78] Low self-esteem

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No problem	135	59,5	59,7	59,7
	Slight problem	31	13,7	13,7	73,5
	Average problem	52	22,9	23,0	96,5
	Serious problem	4	1,8	1,8	98,2
	Very serious problem	4	1,8	1,8	100,0
	Total	226	99,6	100,0	
Missing	System	1	,4		
Total		227	100,0		

**[v79] Is afraid that the others don't like him**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No problem	143	63,0	65,3	65,3
	Slight problem	50	22,0	22,8	88,1
	Average problem	16	7,0	7,3	95,4
	Serious problem	8	3,5	3,7	99,1
	Very serious problem	2	,9	,9	100,0
	Total	219	96,5	100,0	
Missing	System	8	3,5		
Total		227	100,0		

**[v80] Has difficulties creating new friends**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No problem	144	63,4	65,5	65,5
	Slight problem	47	20,7	21,4	86,8
	Average problem	20	8,8	9,1	95,9
	Serious problem	7	3,1	3,2	99,1
	Very serious problem	2	,9	,9	100,0
	Total	220	96,9	100,0	
Missing	System	7	3,1		
Total		227	100,0		

**[v81] Plays with smaller children**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No problem	85	37,4	78,7	78,7
	Slight problem	9	4,0	8,3	87,0
	Average problem	5	2,2	4,6	91,7
	Serious problem	6	2,6	5,6	97,2
	Very serious problem	3	1,3	2,8	100,0
	Total	108	47,6	100,0	
Missing	System	119	52,4		
Total		227	100,0		

**[v82] Has difficulties keeping old friendships**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No problem	149	65,6	70,6	70,6
	Slight problem	25	11,0	11,8	82,5
	Average problem	18	7,9	8,5	91,0
	Serious problem	8	3,5	3,8	94,8
	Very serious problem	10	4,4	4,7	99,5
	33	1	,4	,5	100,0
Total	211	93,0	100,0		
Missing	System	16	7,0		
Total		227	100,0		



[v83] Is accepted by other children

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No problem	166	73,1	75,8	75,8
	Slight problem	25	11,0	11,4	87,2
	Average problem	13	5,7	5,9	93,2
	Serious problem	11	4,8	5,0	98,2
	Very serious problem	4	1,8	1,8	100,0
	Total	219	96,5	100,0	
Missing	System	8	3,5		
Total		227	100,0		

[v84] Teaser

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No problem	111	48,9	52,6	52,6
	Slight problem	38	16,7	18,0	70,6
	Average problem	34	15,0	16,1	86,7
	Serious problem	23	10,1	10,9	97,6
	Very serious problem	5	2,2	2,4	100,0
	Total	211	93,0	100,0	
Missing	System	16	7,0		
Total		227	100,0		

[v85] Anxious

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No problem	113	49,8	53,6	53,6
	Slight problem	42	18,5	19,9	73,5
	Average problem	24	10,6	11,4	84,8
	Serious problem	18	7,9	8,5	93,4
	Very serious problem	14	6,2	6,6	100,0
	Total	211	93,0	100,0	
Missing	System	16	7,0		
Total		227	100,0		

[v86] Teasing everyone

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No problem	107	47,1	50,5	50,5
	Slight problem	46	20,3	21,7	72,2
	Average problem	30	13,2	14,2	86,3
	Serious problem	24	10,6	11,3	97,6
	Very serious problem	5	2,2	2,4	100,0
	Total	212	93,4	100,0	
Missing	System	15	6,6		
Total		227	100,0		

**[v87] Doesn't have a sense of time**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No problem	115	50,7	54,5	54,5
	Slight problem	27	11,9	12,8	67,3
	Average problem	30	13,2	14,2	81,5
	Serious problem	16	7,0	7,6	89,1
	Very serious problem	23	10,1	10,9	100,0
	Total	211	93,0	100,0	
Missing	System	16	7,0		
Total		227	100,0		

**[v88] Unorganised**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No problem	120	52,9	54,1	54,1
	Slight problem	46	20,3	20,7	74,8
	Average problem	26	11,5	11,7	86,5
	Serious problem	17	7,5	7,7	94,1
	Very serious problem	13	5,7	5,9	100,0
	Total	222	97,8	100,0	
Missing	System	5	2,2		
Total		227	100,0		

**[v89] Has difficulty organising his / her time**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No problem	114	50,2	54,3	54,3
	Slight problem	31	13,7	14,8	69,0
	Average problem	30	13,2	14,3	83,3
	Serious problem	13	5,7	6,2	89,5
	Very serious problem	22	9,7	10,5	100,0
	Total	210	92,5	100,0	
Missing	System	17	7,5		
Total		227	100,0		

**[v90] Has difficulty organising his space**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No problem	77	33,9	71,3	71,3
	Slight problem	15	6,6	13,9	85,2
	Average problem	11	4,8	10,2	95,4
	Serious problem	5	2,2	4,6	100,0
	Total	108	47,6	100,0	
Missing	System	119	52,4		
Total		227	100,0		

[v91] Clumsy

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No problem	157	69,2	71,0	71,0
	Slight problem	32	14,1	14,5	85,5
	Average problem	19	8,4	8,6	94,1
	Serious problem	12	5,3	5,4	99,5
	Very serious problem	1	,4	,5	100,0
	Total	221	97,4	100,0	
Missing	System	6	2,6		
Total		227	100,0		

[v92] Uninates during his / her sleep

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No problem	96	42,3	88,9	88,9
	Slight problem	5	2,2	4,6	93,5
	Average problem	2	,9	1,9	95,4
	Serious problem	3	1,3	2,8	98,1
	Very serious problem	2	,9	1,9	100,0
	Total	108	47,6	100,0	
Missing	System	119	52,4		
Total		227	100,0		

[v93] Sleeps less hours than normal

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No problem	167	73,6	81,5	81,5
	Slight problem	26	11,5	12,7	94,1
	Average problem	8	3,5	3,9	98,0
	Serious problem	4	1,8	2,0	100,0
	Total	205	90,3	100,0	
Missing	System	22	9,7		
Total		227	100,0		

[v94] His / her mood changes very rapidly

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No problem	118	52,0	62,1	62,1
	Slight problem	52	22,9	27,4	89,5
	Average problem	11	4,8	5,8	95,3
	Serious problem	8	3,5	4,2	99,5
	Very serious problem	1	,4	,5	100,0
	Total	190	83,7	100,0	
Missing	System	37	16,3		
Total		227	100,0		

## [v95] Calm

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No problem	141	62,1	71,6	71,6
	Slight problem	40	17,6	20,3	91,9
	Average problem	14	6,2	7,1	99,0
	Serious problem	2	,9	1,0	100,0
	Total	197	86,8	100,0	
Missing	System	30	13,2		
Total		227	100,0		

## [v96] Dishonest

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No problem	168	74,0	91,3	91,3
	Slight problem	13	5,7	7,1	98,4
	Average problem	3	1,3	1,6	100,0
	Total	184	81,1	100,0	
Missing	System	43	18,9		
Total		227	100,0		

## [v97] Panics easily

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No problem	113	49,8	59,2	59,2
	Slight problem	60	26,4	31,4	90,6
	Average problem	14	6,2	7,3	97,9
	Serious problem	4	1,8	2,1	100,0
	Total	191	84,1	100,0	
Missing	System	36	15,9		
Total		227	100,0		

## [v98] Gets attached to adults

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No problem	109	48,0	56,8	56,8
	Slight problem	52	22,9	27,1	83,9
	Average problem	19	8,4	9,9	93,8
	Serious problem	11	4,8	5,7	99,5
	33	1	,4	,5	100,0
	Total	192	84,6	100,0	
Missing	System	35	15,4		
Total		227	100,0		

## [v99] Extrovert

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No problem	147	64,8	74,6	74,6
	Slight problem	17	7,5	8,6	83,2
	Average problem	30	13,2	15,2	98,5
	Serious problem	1	,4	,5	99,0
	Very serious problem	2	,9	1,0	100,0
	Total	197	86,8	100,0	
Missing	System	30	13,2		
Total		227	100,0		

## [v100] Introvert

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No problem	133	58,6	67,5	67,5
	Slight problem	38	16,7	19,3	86,8
	Average problem	25	11,0	12,7	99,5
	Very serious problem	1	,4	,5	100,0
	Total	197	86,8	100,0	
Missing	System	30	13,2		
Total		227	100,0		

## [v101] Sociable

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No problem	169	74,4	85,8	85,8
	Slight problem	10	4,4	5,1	90,9
	Average problem	14	6,2	7,1	98,0
	Serious problem	1	,4	,5	98,5
	Very serious problem	3	1,3	1,5	100,0
	Total	197	86,8	100,0	
Missing	System	30	13,2		
Total		227	100,0		

## [v102] Lonely

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No problem	155	68,3	79,1	79,1
	Slight problem	17	7,5	8,7	87,8
	Average problem	24	10,6	12,2	100,0
	Total	196	86,3	100,0	
Missing	System	31	13,7		
Total		227	100,0		

## [v103] Happy

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No problem	173	76,2	87,8	87,8
	Slight problem	12	5,3	6,1	93,9
	Average problem	6	2,6	3,0	97,0
	Serious problem	3	1,3	1,5	98,5
	Very serious problem	3	1,3	1,5	100,0
	Total	197	86,8	100,0	
Missing	System	30	13,2		
Total		227	100,0		

## [v104] Sad

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No problem	149	65,6	75,6	75,6
	Slight problem	25	11,0	12,7	88,3
	Average problem	23	10,1	11,7	100,0
	Total	197	86,8	100,0	
Missing	System	30	13,2		
Total		227	100,0		

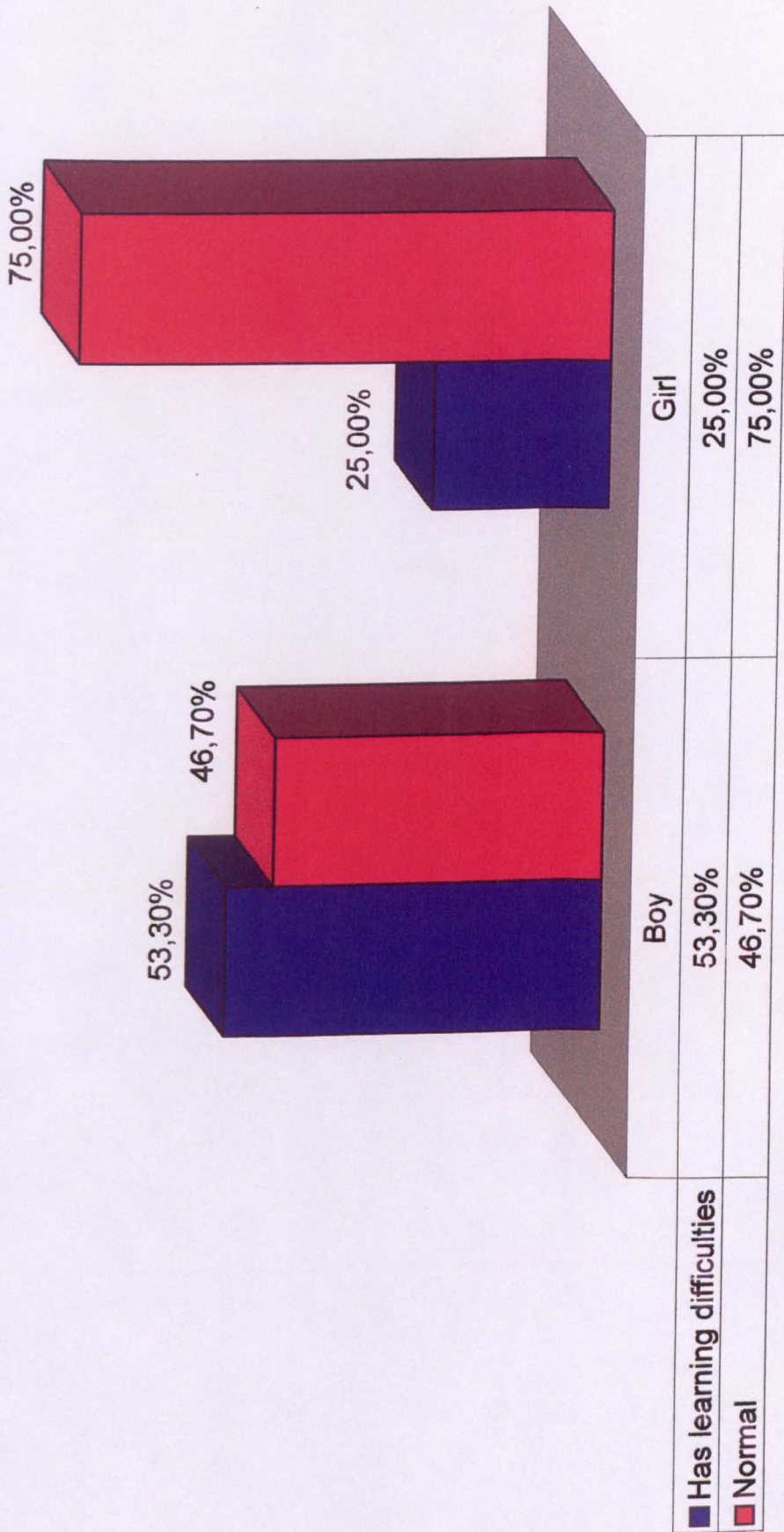
## [v105] Cooperative

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No problem	171	75,3	86,4	86,4
	Slight problem	19	8,4	9,6	96,0
	Average problem	3	1,3	1,5	97,5
	Serious problem	2	,9	1,0	98,5
	Very serious problem	3	1,3	1,5	100,0
	Total	198	87,2	100,0	
Missing	System	29	12,8		
Total		227	100,0		

## [v106] His / her parents are separated?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	77	33,9	100,0	100,0
Missing	System	150	66,1		
Total		227	100,0		

# Relationship % between Sex & Diagnosis



## APPENDIX II

Crosstab

			[v6] Reading					Total
			No problem	Slight problem	Average problem	Serious problem	Very serious problem	
Mother's education	Elementary school	Count	8	2	4	4		18
		Row %	44,4%	11,1%	22,2%	22,2%		100,0%
		Column %	7,6%	4,9%	12,9%	33,3%		8,8%
	Gymnasium	Count	9	8	2	3		22
		Row %	40,9%	36,4%	9,1%	13,6%		100,0%
		Column %	8,0%	19,5%	6,5%	25,0%		11,6%
	Lykeio	Count	42	20	18	1		81
		Row %	51,9%	24,7%	22,2%	1,2%		100,0%
		Column %	40,0%	48,8%	58,1%	8,3%		42,0%
	Technical school	Count	10	3				13
		Row %	76,9%	23,1%				100,0%
		Column %	9,5%	7,3%				6,8%
	BSc	Count	2	5	5	4		16
		Row %	12,5%	31,3%	31,3%	25,0%		100,0%
		Column %	1,9%	12,2%	16,1%	33,3%		8,4%
	MSc	Count	34	3	2		1	40
		Row %	85,0%	7,5%	5,0%		2,5%	100,0%
		Column %	32,4%	7,3%	6,5%		100,0%	21,1%
Total	Count	106	41	31	12	1	190	
	Row %	66,3%	21,6%	16,3%	6,3%	,5%	100,0%	
	Column %	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	

### Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	60,656 <sup>a</sup>	20	,000
Likelihood Ratio	63,106	20	,000
Linear-by-Linear Association	6,826	1	,009
N of Valid Cases	190		

a. 19 cells (63,3%) have expected count less than 5.  
The minimum expected count is ,07.



## Symmetric Measures

	Value	Asymp. Std. Error <sup>a</sup>	Approx. T <sup>b</sup>	Approx. Sig.
Ordinal by Ordinal Gamma	-,270	,090	-2,956	,003
N of Valid Cases	190			

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

974

Crosstab

			[v7] Spelling					Total
			No problem	Slight problem	Average problem	Serious problem	Very serious problem	
Mother's education	Elementary school	Count	6	4	3	5		18
		Row %	33,3%	22,2%	16,7%	27,8%		100,0%
		Column %	7,1%	9,3%	9,4%	18,5%		8,6%
	Gymnasium	Count	5	9	4	4		22
		Row %	22,7%	40,9%	18,2%	18,2%		100,0%
		Column %	5,9%	20,9%	12,5%	14,8%		11,6%
	Lykeo	Count	34	16	18	12		80
		Row %	42,5%	20,0%	22,5%	15,0%		100,0%
		Column %	40,0%	37,2%	56,3%	44,4%		42,3%
	Technical school	Count	9	3	1			13
		Row %	69,2%	23,1%	7,7%			100,0%
		Column %	10,6%	7,0%	3,1%			6,9%
	BSc	Count	1	3	5	6	1	16
		Row %	6,3%	18,8%	31,3%	37,5%	6,3%	100,0%
		Column %	1,2%	7,0%	15,6%	22,2%	50,0%	8,8%
	MSc	Count	30	8	1		1	40
		Row %	75,0%	20,0%	2,5%		2,5%	100,0%
		Column %	35,3%	18,6%	3,1%		50,0%	21,2%
Total	Count	88	43	32	27	2	189	
	Row %	45,0%	22,8%	16,9%	14,3%	1,1%	100,0%	
	Column %	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	

**Chi-Square Tests**

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	53,261 <sup>a</sup>	20	,000
Likelihood Ratio	61,387	20	,000
Linear-by-Linear Association	8,765	1	,003
N of Valid Cases	189		

a. 17 cells (56,7%) have expected count less than 5.  
The minimum expected count is ,14.

**Symmetric Measures**

	Value	Asymp. Std. Error <sup>a</sup>	Approx. T <sup>b</sup>	Approx. Sig.
Ordinal by Ordinal Gamma	-,278	,078	-3,532	,000
N of Valid Cases	189			

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

Crosstab

			[v10] Arithmetic					Total
			No problem	Slight problem	Average problem	Serious problem	Very serious problem	
Mother's education	Elementary school	Count	4	5	6	3		18
		Row %	22,2%	27,8%	33,3%	16,7%		100,0%
		Column %	3,9%	10,0%	26,1%	27,3%		8,6%
	Gymnasium	Count	9	9	2	1		21
		Row %	42,9%	42,9%	9,5%	4,8%		100,0%
		Column %	8,7%	18,0%	8,7%	9,1%		11,2%
	Lykeo	Count	42	22	11	5		80
		Row %	52,5%	27,5%	13,8%	6,3%		100,0%
		Column %	40,8%	44,0%	47,8%	45,5%		42,6%
	Technical school	Count	10	1	2			13
		Row %	76,9%	7,7%	15,4%			100,0%
		Column %	9,7%	2,0%	8,7%			6,8%
	BSc	Count	6	7	1	2		16
		Row %	37,5%	43,8%	6,3%	12,5%		100,0%
		Column %	5,8%	14,0%	4,3%	18,2%		8,6%
	MSc	Count	32	6	1		1	40
		Row %	80,0%	15,0%	2,5%		2,5%	100,0%
		Column %	31,1%	12,0%	4,3%		100,0%	21,3%
Total	Count	103	60	23	11	1	188	
	Row %	54,8%	26,6%	12,2%	5,8%	,6%	100,0%	
	Column %	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	

## Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	40,615 <sup>a</sup>	20	,004
Likelihood Ratio	42,007	20	,003
Linear-by-Linear Association	13,217	1	,000
N of Valid Cases	188		

- a. 20 cells (66,7%) have expected count less than 5.  
The minimum expected count is ,07.

## Symmetric Measures

		Value	Asymp. Std. Error <sup>a</sup>	Approx. T <sup>b</sup>	Approx. Sig.
Ordinal by Ordinal	Gamma	-,373	,083	-4,336	,000
N of Valid Cases		188			

- a. Not assuming the null hypothesis.  
b. Using the asymptotic standard error assuming the null hypothesis.

Crosstab

			[v58] Has low tolerance limits					
			No problem	Slight problem	Average problem	Serious problem	Very serious problem	Total
Mother's education	Elementary school	Count	7	5	2	3		17
		Row %	41,2%	29,4%	11,8%	17,6%		100,0%
		Column %	6,3%	12,2%	8,3%	42,9%		8,1%
	Gymnasium	Count	14	3	3			20
		Row %	70,0%	15,0%	15,0%			100,0%
		Column %	12,5%	7,3%	12,5%			10,8%
	Lykeo	Count	45	18	12	3	2	80
		Row %	56,3%	22,5%	15,0%	3,8%	2,5%	100,0%
		Column %	40,2%	43,9%	50,0%	42,9%	100,0%	43,0%
	Technical school	Count	9	4				13
		Row %	69,2%	30,8%				100,0%
		Column %	8,0%	9,8%				7,0%
	BSc	Count	5	6	5			16
		Row %	31,3%	37,5%	31,3%			100,0%
		Column %	4,5%	14,6%	20,8%			8,8%
MSc	Count	32	5	2	1		40	
	Row %	80,0%	12,5%	5,0%	2,5%		100,0%	
	Column %	28,6%	12,2%	8,3%	14,3%		21,5%	
Total	Count	112	41	24	7	2	186	
	Row %	60,2%	22,0%	12,9%	3,8%	1,1%	100,0%	
	Column %	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	32,784 <sup>a</sup>	20	,038
Likelihood Ratio	32,592	20	,037
Linear-by-Linear Association	4,838	1	,028
N of Valid Cases	186		

a. 20 cells (66,7%) have expected count less than 5.  
The minimum expected count is ,14.

Symmetric Measures

	Value	Asymp. Std. Error <sup>a</sup>	Approx. T <sup>b</sup>	Approx. Sig.
Ordinal by Ordinal Gamma	-,191	,093	-2,022	,043
N of Valid Cases	186			

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

Crosstab

			[v84] Teaser					Total
			No problem	Slight problem	Average problem	Serious problem	Very serious problem	
Father's education	Elementary school	Count	9	7	5	5		26
		Row %	34,6%	26,9%	19,2%	19,2%		100,0%
		Column %	9,6%	20,6%	17,9%	26,3%		14,8%
	Gymnasium	Count	11	10	6	4		31
		Row %	35,5%	32,3%	19,4%	12,9%		100,0%
		Column %	11,7%	29,4%	21,4%	21,1%		17,6%
	Lyceal	Count	35	11	9	5	1	61
		Row %	57,4%	18,0%	14,8%	8,2%	1,6%	100,0%
		Column %	37,2%	32,4%	32,1%	26,3%	100,0%	34,7%
	Technical school	Count	7	1	1			9
		Row %	77,8%	11,1%	11,1%			100,0%
		Column %	7,4%	2,9%	3,6%			5,1%
	BSc	Count	28	5	6	3		42
		Row %	66,7%	11,9%	14,3%	7,1%		100,0%
		Column %	29,8%	14,7%	21,4%	15,8%		23,9%
	MSc	Count	3		1	2		6
		Row %	50,0%		16,7%	33,3%		100,0%
		Column %	3,2%		3,6%	10,5%		3,4%
	PhD	Count	1					1
		Row %	100,0%					100,0%
		Column %	1,1%					,8%
	Total	Count	94	34	28	19	1	176
		Row %	63,4%	19,3%	16,9%	10,8%	,8%	100,0%
		Column %	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	22,299 <sup>a</sup>	24	,561
Likelihood Ratio	23,785	24	,475
Linear-by-Linear Association	4,934	1	,026
N of Valid Cases	176		

<sup>a</sup>. 24 cells (66,6%) have expected count less than 5. The minimum expected count is ,01.

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**Symmetric Measures**

		Value	Asymp. Std. Error <sup>a</sup>	Approx. $T^b$	Approx. Sig.
Ordinal by Ordinal	Gamma	-.254	.090	-2,810	.005
N of Valid Cases		176			

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

## Crosstab

			[v99] Demands to lead					Total
			No problem	Slight problem	Average problem	Serious problem	Very serious problem	
Mother's education	Elementary school	Count	7	1	4	4	1	17
		Row %	41,2%	5,9%	23,5%	23,5%	5,9%	100,0%
		Column %	7,1%	2,4%	15,4%	30,8%	10,0%	9,0%
	Gymnasium	Count	12	6	2		1	21
		Row %	57,1%	28,6%	9,5%		4,8%	100,0%
		Column %	12,1%	14,6%	7,7%		10,0%	11,1%
	Lykeio	Count	35	23	11	7	5	81
		Row %	43,2%	28,4%	13,6%	8,6%	6,2%	100,0%
		Column %	35,4%	56,1%	42,3%	53,8%	50,0%	42,9%
	Technical school	Count	6	4		1	2	13
		Row %	46,2%	30,8%		7,7%	15,4%	100,0%
		Column %	6,1%	9,8%		7,7%	20,0%	6,9%
	BSc	Count	11		5			16
		Row %	68,8%		31,3%			100,0%
		Column %	11,1%		19,2%			8,5%
	MSc	Count	27	7	4	1	1	40
		Row %	67,5%	17,5%	10,0%	2,5%	2,5%	100,0%
		Column %	27,3%	17,1%	15,4%	7,7%	10,0%	21,2%
	PhD	Count	1					1
		Row %	100,0%					100,0%
		Column %	1,0%					,5%
	Total	Count	99	41	26	13	10	189
		Row %	52,4%	21,7%	13,8%	6,9%	5,3%	100,0%
		Column %	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%

## Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	35,936 <sup>a</sup>	24	,056
Likelihood Ratio	41,304	24	,015
Linear-by-Linear Association	6,667	1	,010
N of Valid Cases	189		

a. 24 cells (68,6%) have expected count less than 5.  
The minimum expected count is ,05.

## Symmetric Measures

	Value	Asymp. Std. Error <sup>a</sup>	Approx. T <sup>b</sup>	Approx. Sig.
Ordinal by Ordinal Gamma	-.210	.087	-2.393	.017
N of Valid Cases	189			

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.



## Crosstab

			[v70] Rebellious					Total
			No problem	Slight problem	Average problem	Serious problem	Very serious problem	
Mother's education	Elementary school	Count	8	3	3	3		17
		Row %	47,1%	17,6%	17,6%	17,6%		100,0%
		Column %	7,5%	7,9%	14,3%	33,3%		9,5%
	Gymnasium	Count	12	4	4	1		21
		Row %	57,1%	19,0%	19,0%	4,8%		100,0%
		Column %	11,2%	10,5%	19,0%	11,1%		11,7%
	Lyceio	Count	45	20	7	4	2	78
		Row %	57,7%	25,6%	9,0%	5,1%	2,6%	100,0%
		Column %	42,1%	52,6%	33,3%	44,4%	50,0%	43,6%
	Technical school	Count	6	2	3		2	13
		Row %	46,2%	15,4%	23,1%		15,4%	100,0%
		Column %	5,6%	5,3%	14,3%		50,0%	7,3%
	BSc	Count	6	3	1			10
		Row %	80,0%	30,0%	10,0%			100,0%
		Column %	5,6%	7,9%	4,8%			5,6%
	MSc	Count	30	6	2	1		39
		Row %	76,9%	15,4%	5,1%	2,6%		100,0%
		Column %	28,0%	15,8%	9,5%	11,1%		21,8%
	PhD	Count			1			1
		Row %			100,0%			100,0%
		Column %			4,8%			,6%
	Total	Count	107	38	21	9	4	179
		Row %	89,8%	21,2%	11,7%	5,0%	2,2%	100,0%
		Column %	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%

## Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	36,381 <sup>a</sup>	24	,050
Likelihood Ratio	28,263	24	,249
Linear-by-Linear Association	4,549	1	,033
N of Valid Cases	179		

a. 26 cells (74,3%) have expected count less than 5.  
The minimum expected count is ,02.

**Symmetric Measures**

	Value	Asymp. Std. Error <sup>a</sup>	Approx. T <sup>b</sup>	Approx. Sig.
Ordinal by Ordinal Gamma	-,192	,096	-1,979	,048
N of Valid Cases	179			

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

### Discussion of statistically significant associations

(See Appendix II, related tables)

#### EDUCATION OF FATHER/MOTHER – EDUCATIONAL PROFILE

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Variables : Mother's Education [Mothedu] \* Reading [v6]  
 Dependent : EDUCATIONAL PROFILE (READING)  
 Independent : EDUCATION OF MOTHER

The value of coefficient “ $\gamma$ ” is not large (= -0.270). The validity of the association between the two variables is not strong. When the independent variable is known, our ability to evaluate the dependent value is improved (though not to a great extent).

The highest the educational level of the mother is, the less the children's reading difficulties are.

---

Variables : Mother's Education [Mothedu] \* Spelling [v7]  
 Dependent : EDUCATIONAL PROFILE (SPELLING)  
 Independent : EDUCATION OF MOTHER

The value of coefficient “ $\gamma$ ” is not large (= -0.270). The validity of the association between the two variables is not strong. When the independent variable is known, our ability to evaluate the dependent value is improved (though not to a great extent).

The highest the educational level of the mother is, the less the children's spelling difficulties are.

---

Variables : Mother's Education [Mothedu] \* Arithmetic [v10]  
 Dependent : EDUCATIONAL PROFILE (ARITHMETIC)  
 Independent : EDUCATION OF MOTHER

The value of coefficient " $\gamma$ " though is not large (= -0.373), but it can be claimed that the validity of the association between the two variables is relatively strong. When the independent variable is known, our ability to evaluate the dependent value is improved (to a relatively great extend).

The highest the educational level of the mother is, the less the children's arithmetical difficulties are.

#### EDUCATION OF FATHER/MOTHER – PERSONALITY

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Variables : Mother's Education [Mothedu] \* Low tolerance limits  
 [v58]  
 Dependent : EDUCATIONAL PROFILE (Low tolerance limits)  
 Independent : EDUCATION OF MOTHER  
 $\gamma$  : -0.191

The value of coefficient " $\gamma$ " is relatively low. Therefore, it can be claimed that the association between the two variables is weak. When the independent variable is known, our ability to evaluate the dependent value is not improved.

EDUCATION OF FATHER/MOTHER – BEHAVIOR PROBLEMS

---

Variables : Father's Education [Fathedu] \* Teaser [v84]  
 Dependent : BEHAVIOUR PROBLEMS (Teaser)  
 Independent : EDUCATION OF FATHER  
 $\gamma$  : -0.254

The value of coefficient “ $\gamma$ ” is not large. The association between the two variables is relatively weak. When the independent variable is known, our ability to evaluate the dependent value is improved to a small degree. When the father has a high educational level, the children encounter behaviour problems to a lesser degree (teaser).

---

Variables : Mother's Education [Mothedu] \* Demands to lead [v69]  
 Dependent : BEHAVIOUR PROBLEMS (Demands to lead)  
 Independent : EDUCATION OF MOTHER  
 $\gamma$  : -0.210

Variables : Mother's Education [Mothedu] \* Rebellious [v70]  
 Dependent : BEHAVIOUR PROBLEMS (Rebellious)  
 Independent : EDUCATION OF MOTHER  
 $\gamma$  : -0.192

Variables : Mother's Education [Mothedu] \* Teaser [v84]

Dependent : BEHAVIOR PROBLEMS (Teaser)  
 Independent : EDUCATION OF MOTHER  
 $\gamma$  : -0.292

The value of coefficient " $\gamma$ " is not large. The association between the two variables is relatively weak. When the independent variable is known, our ability to evaluate the dependent value is improved to a small degree. When the mother has a high educational level, the children encounter behavior problems to a lesser degree (Demands to lead / Rebellious / Teaser).

#### DIAGNOSIS – SOCIAL CHARACTERISTICS

---

Variables : Diagnosis [Diagnosis] \* Low self-esteem [v78]  
 Dependent : SOCIAL CHARACTERISTICS (Low self-esteem)  
 Independent : DIAGNOSIS  
 $\gamma$  : 0.735

The value of coefficient " $\gamma$ " is large. The association between the two variables is strong. When the independent variable is known, our ability to evaluate the dependent value is improved to a great extend. The problem "Low self-esteem" is greater in children with learning difficulties and dyslexia problems.

---

Variables : Diagnosis [Diagnosis] \* Is afraid that the others do not like him

[v79]

Dependent : SOCIAL CHARACTERISTICS (Is afraid that the others do not

like him)

Independent : DIAGNOSIS

$\gamma$  : 0.337

The value of coefficient “ $\gamma$ ” is relatively large. The association between the two variables is relatively strong. When the independent variable is known, our ability to evaluate the dependent value is improved to a great extent. The problem “Is afraid that the others do not like him” is greater in children with learning difficulties and dyslexia problems.

---

Variables : Diagnosis [Diagnosis] \* Has difficulties in creating new friends

[v80]

Dependent : SOCIAL CHARACTERISTICS (Has difficulties in creating new friends)

Independent : DIAGNOSIS

$\gamma$  : 0.404

The value of coefficient “ $\gamma$ ” is relatively large. The association between the two variables is relatively strong. When the independent variable is known, our ability to evaluate the dependent value is improved to a great extent. The problem “Has difficulties creating new friends” is greater in children with learning difficulties and dyslexia problems.

---

Variables : Diagnosis [Diagnosis] \* Has difficulties in keeping old friends

[v82]

Dependent : SOCIAL CHARACTERISTICS (Has difficulties in keeping old friends)

Independent : DIAGNOSIS

$\gamma$  : 0.379

Variables : Diagnosis [Diagnosis] \* Introvert [100]

Dependent : SOCIAL CHARACTERISTICS (Introvert)

Independent : DIAGNOSIS

$\gamma$  : 0.360

The value of coefficient “ $\gamma$ ” is relatively large. The association between the two variables is relatively strong. When the independent variable is known, our ability to evaluate the dependent value is improved to a great extent. The problem “Has difficulties in keeping old friends”/ “Introvert” is greater in children with learning difficulties and dyslexia problems.



Variables : Reading [v6] \* Emotional [v61]  
Dependent : EDUCATIONAL PROFILE (Reading)  
Independent : EMOTIONAL PROBLEMS (Emotional)  
 $\gamma$  : 0.593

Variables : Reading [v6] \* Emotionally immature for his age [v62]  
Dependent : EDUCATIONAL PROFILE (Reading)  
Independent : EMOTIONAL PROBLEMS (Emotionally immature for  
his age)  
 $\gamma$  : 0.620

Variables : Reading [v6] \* Easily hurt [v63]  
Dependent : EDUCATIONAL PROFILE (Reading)  
Independent : EMOTIONAL PROBLEMS (Easily hurt)  
 $\gamma$  : 0.480

The value of coefficient " $\gamma$ " allow us (for each of the above three cases) to claim that the association between the two variables is relatively strong. When the independent variable is known, our ability to evaluate the dependent value is improved to a great extend. The greater each and every of the following problems is: "Emotional"/ "Emotionally immature for his age"/ "Easily hurt", the more enhanced the "Reading" problem is.

---

## EDUCATIONAL PROFILE (SPELLING) - EMOTIONAL PROBLEMS

Variables : Spelling [v7] \* Emotional [v61]  
Dependent : EDUCATIONAL PROFILE (Spelling)  
Independent : EMOTIONAL PROBLEMS (Emotional)  
 $\gamma$  : 0.520

Variables : Spelling [v7] \* Emotionally immature for his age [v62]  
Dependent : EDUCATIONAL PROFILE (Spelling)  
Independent : EMOTIONAL PROBLEMS (Emotionally immature for his age)  
 $\gamma$  : 0.641

Variables : Spelling [v7] \* Easily hurt [v63]  
Dependent : EDUCATIONAL PROFILE (Spelling)  
Independent : EMOTIONAL PROBLEMS (Easily hurt)  
 $\gamma$  : 0.465

The value of coefficient “ $\gamma$ ” allow us (for each of the above three cases) to claim that the association between the two variables is relatively strong. When the independent variable is known, our ability to evaluate the dependent variable is improved to a great extend. The greater each and every of the following problems is:

“Emotional”/ “Emotionally immature for his age”/ “Easily hurt”, the more enhanced the “Spelling” problem appears.

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#### EDUCATIONAL PROFILE (ARITHMETIC) - EMOTIONAL PROBLEMS

Variables : Arithmetic [v10] \* Emotional [v61]

Dependent : EDUCATIONAL PROFILE (Arithmetic)

Independent : EMOTIONAL PROBLEMS (Emotional)

$\gamma$  : 0.380

Variables : Arithmetic [v10] \* Emotionally immature for his age  
[v62]

Dependent : EDUCATIONAL PROFILE (Arithmetic)

Independent : EMOTIONAL PROBLEMS (Emotionally immature for  
his age)

$\gamma$  : 0.618

Variables : Arithmetic [v10] \* Easily hurt [v63]

Dependent : EDUCATIONAL PROFILE (Arithmetic)

Independent : EMOTIONAL PROBLEMS (Easily hurt)

$\gamma$  : 0.433

Variables : Arithmetic [v10] \* Cries easily [v64]

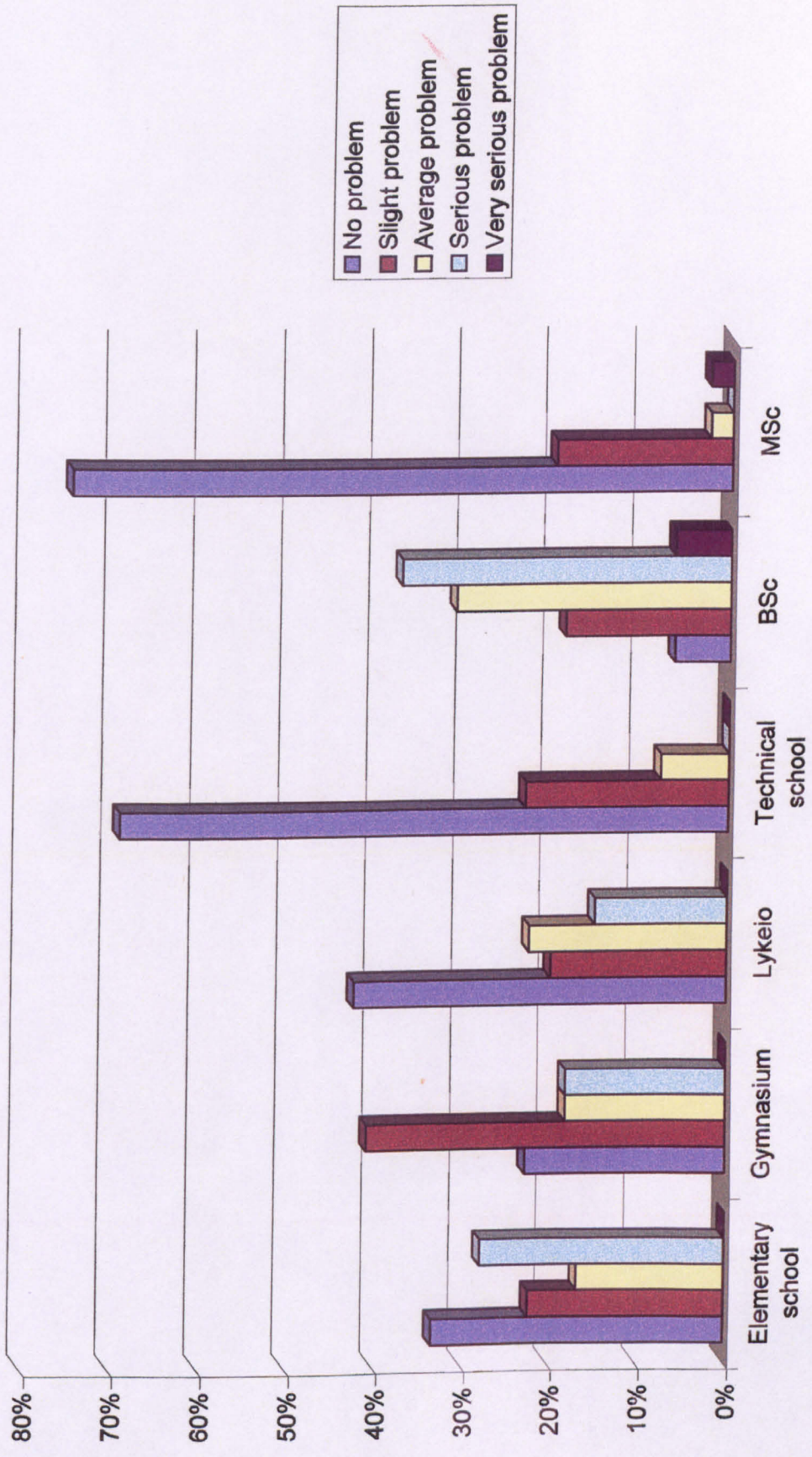
Dependent : EDUCATIONAL PROFILE (Arithmetic)

Independent :           EMOTIONAL PROBLEMS (Cries easily)

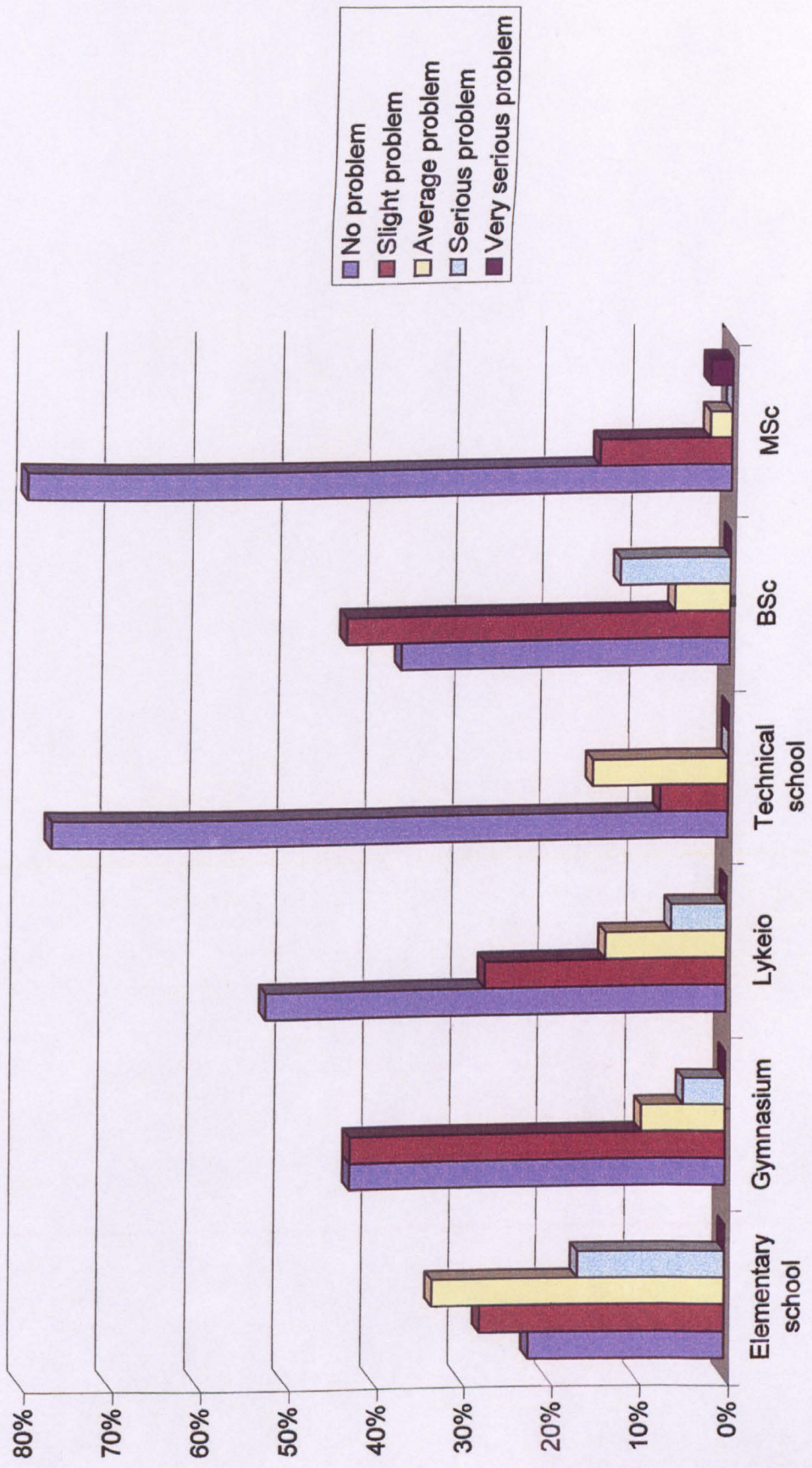
$\gamma$  :                       0.211

The value of coefficient " $\gamma$ " allow us (for each of the above three cases) to claim that the association between the two variables is relatively strong (except from the last case "Cries easily", where the relation is weak). When the independent variable is known, our ability to evaluate the dependent variable is improved to a great extend. The greater each and every of the following problems is: "Emotional"/ "Emotionally immature for his age"/ "Easily hurt", the more enhanced the "Arithmetic" problem appears.

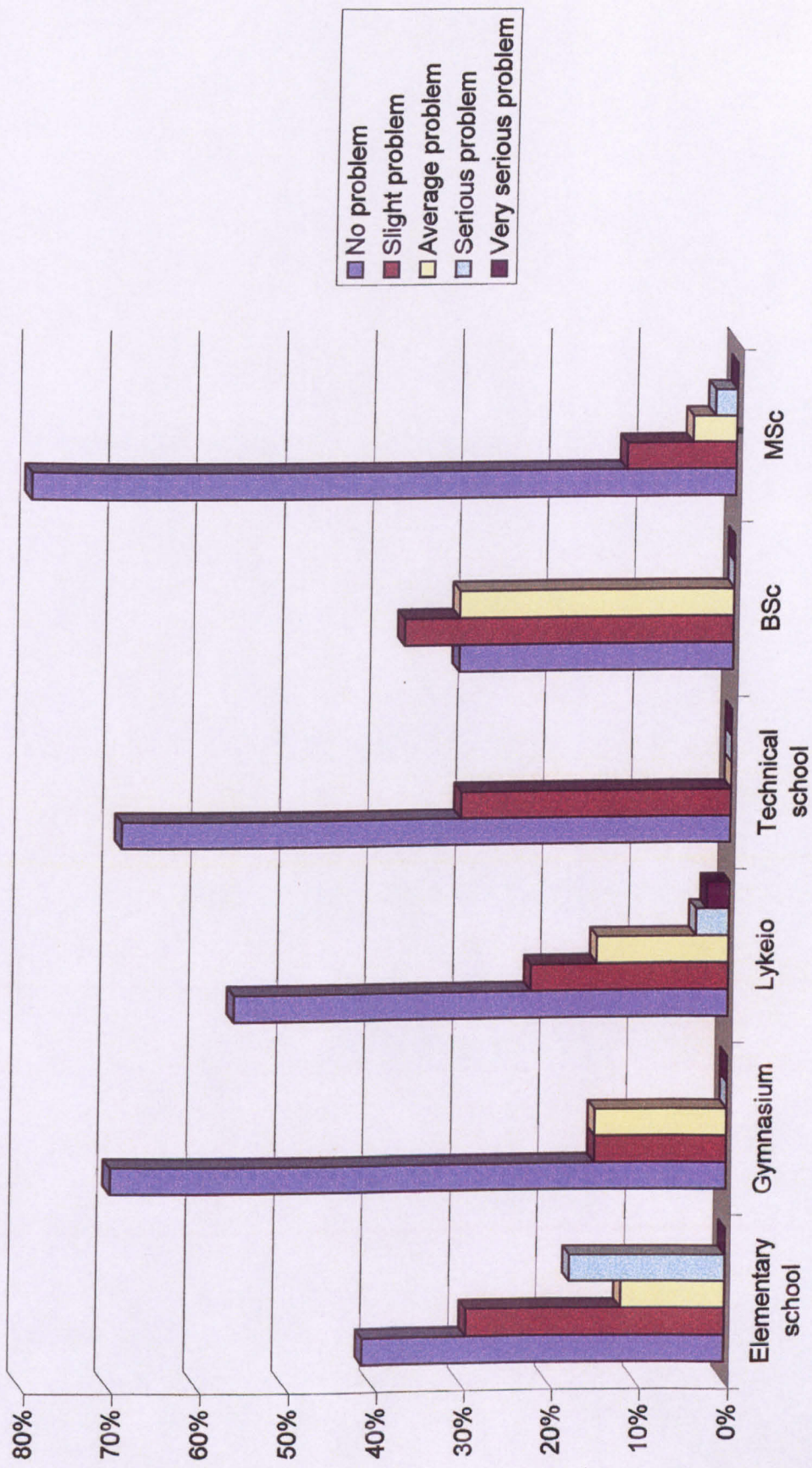
### Relationship between Mother's Education & Spelling



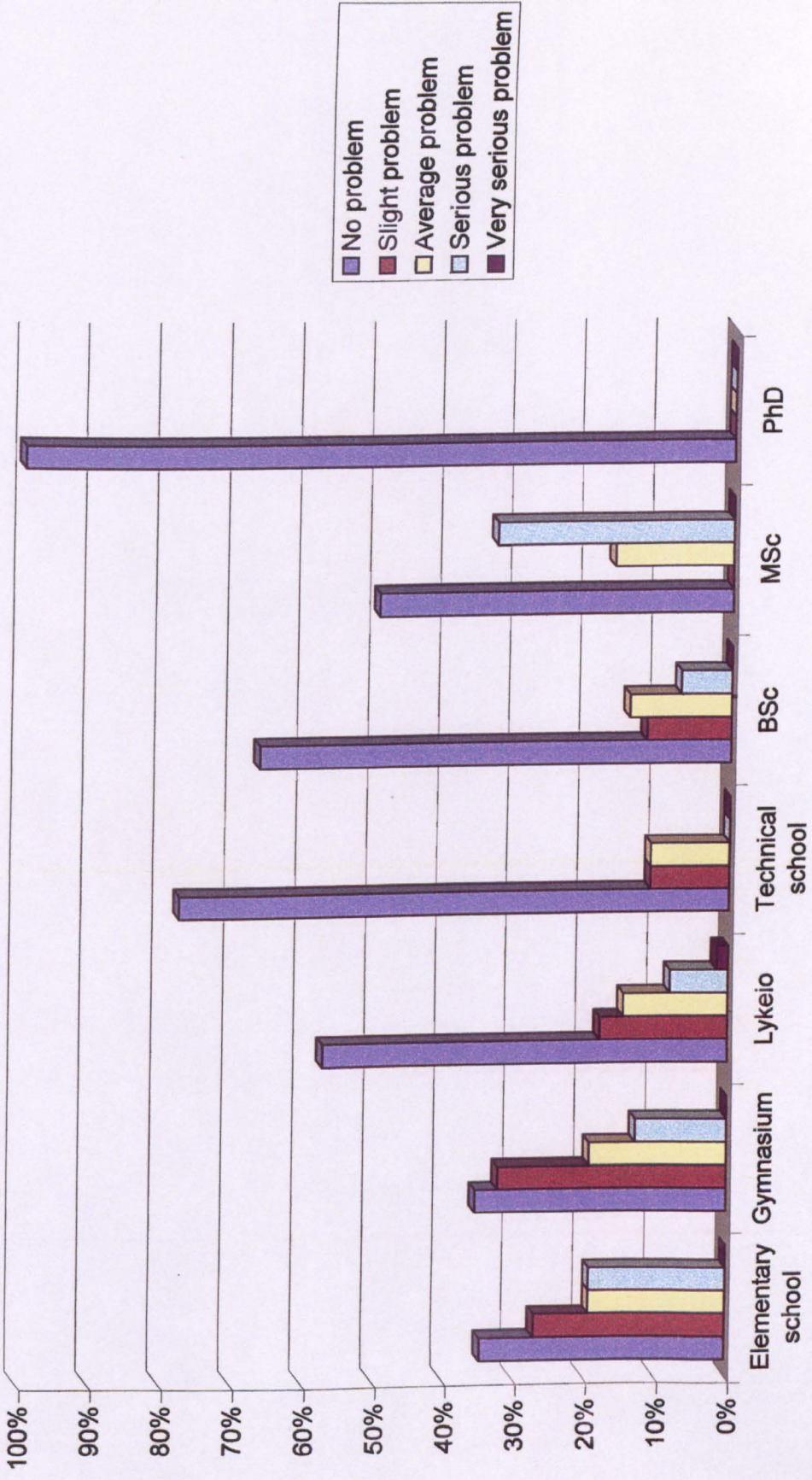
### Relationship between Mother's Education & Arithmetic



Relationship between Mother's Education & Has low tolerance limits



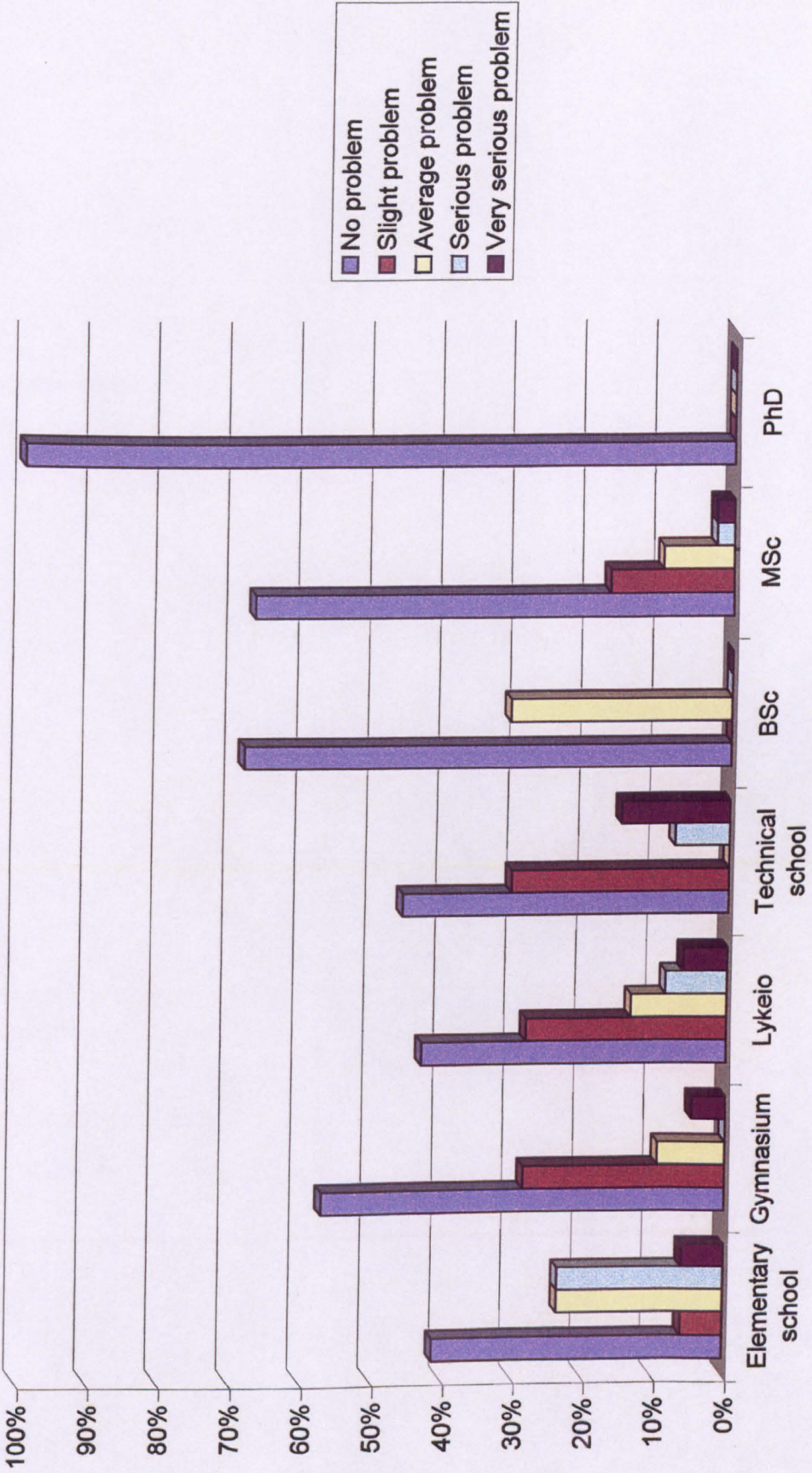
Relationship between Father's Education & Teaser



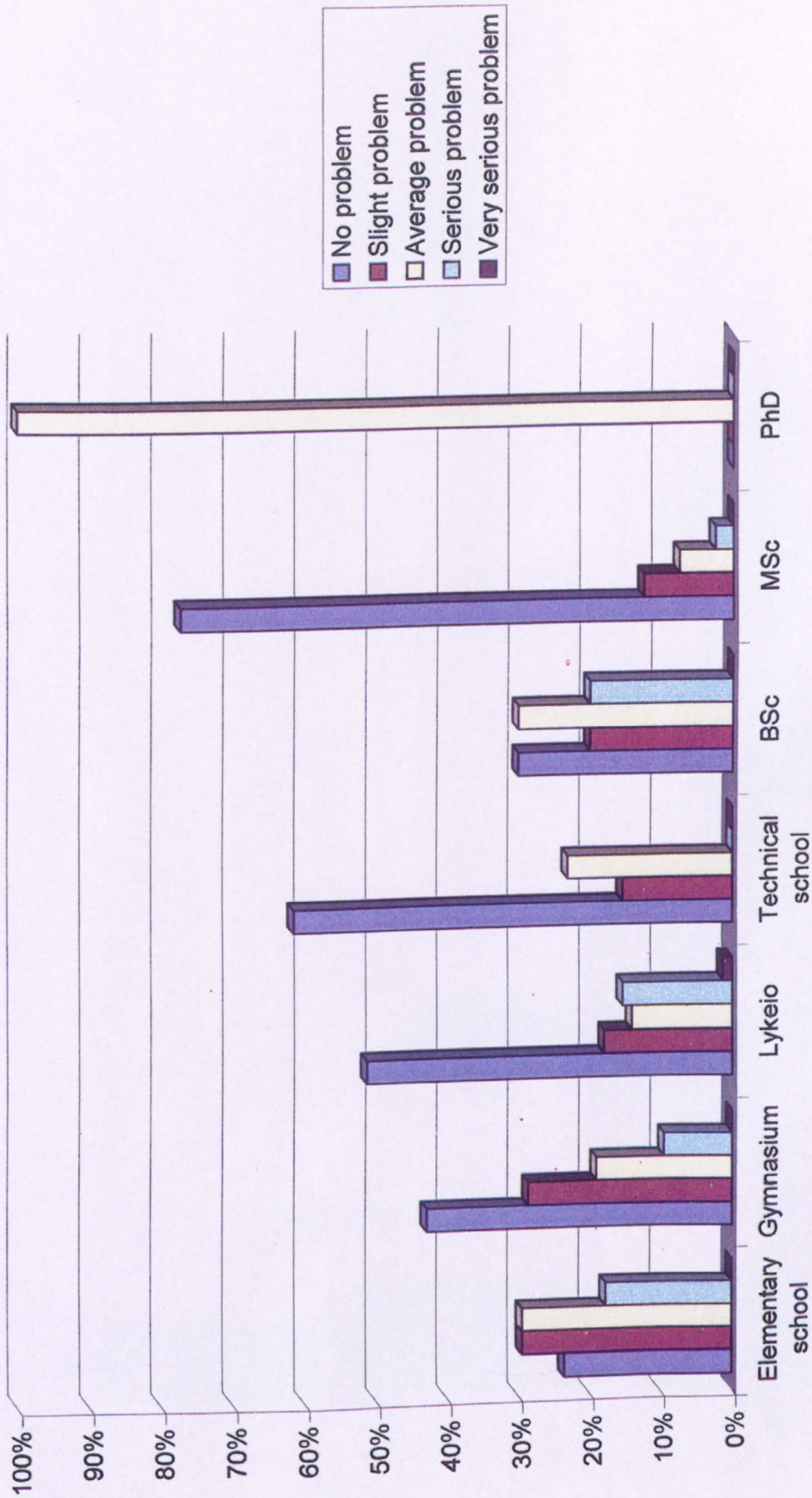


# Relationship between Mother's Education & Demands to lead

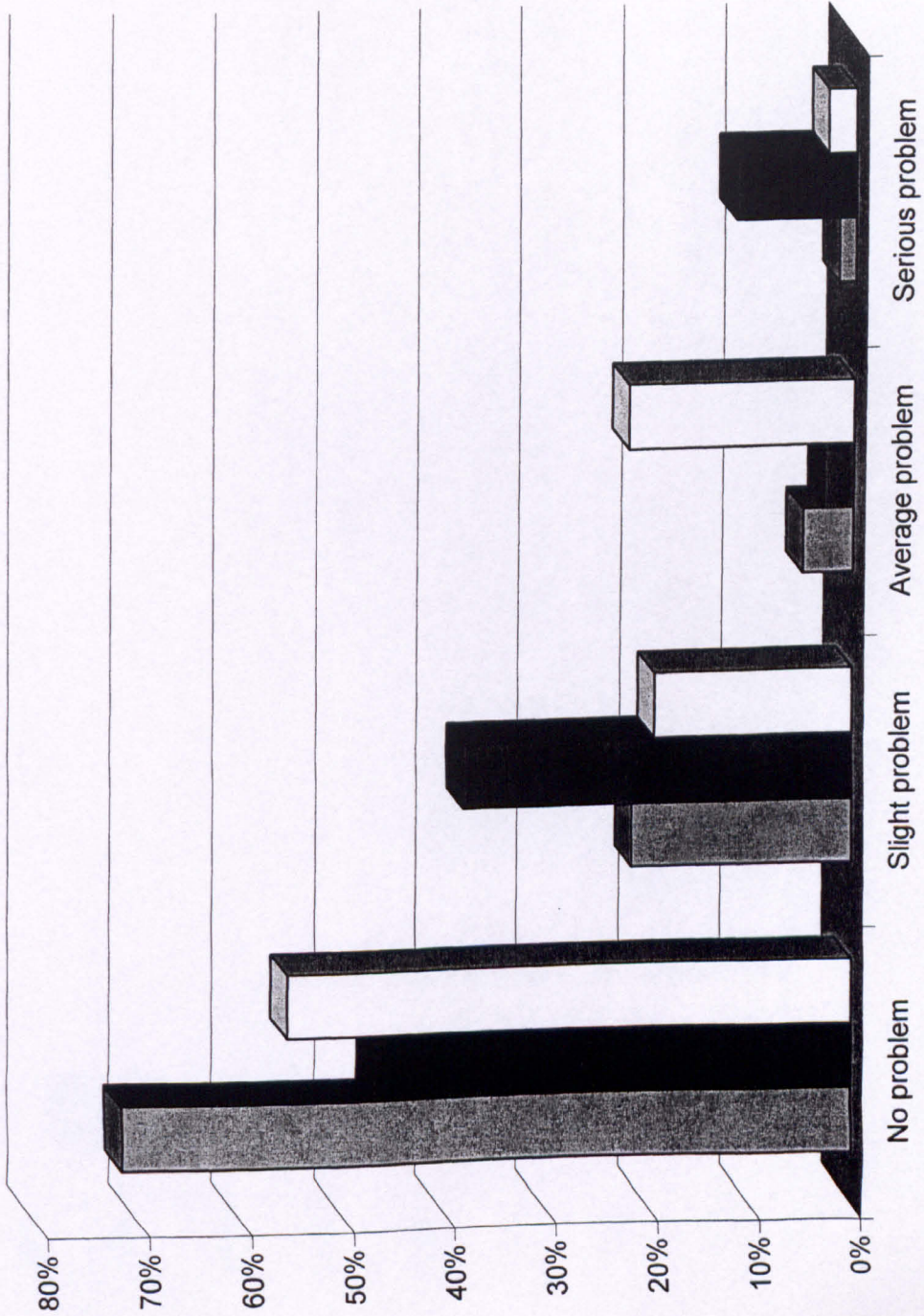
997



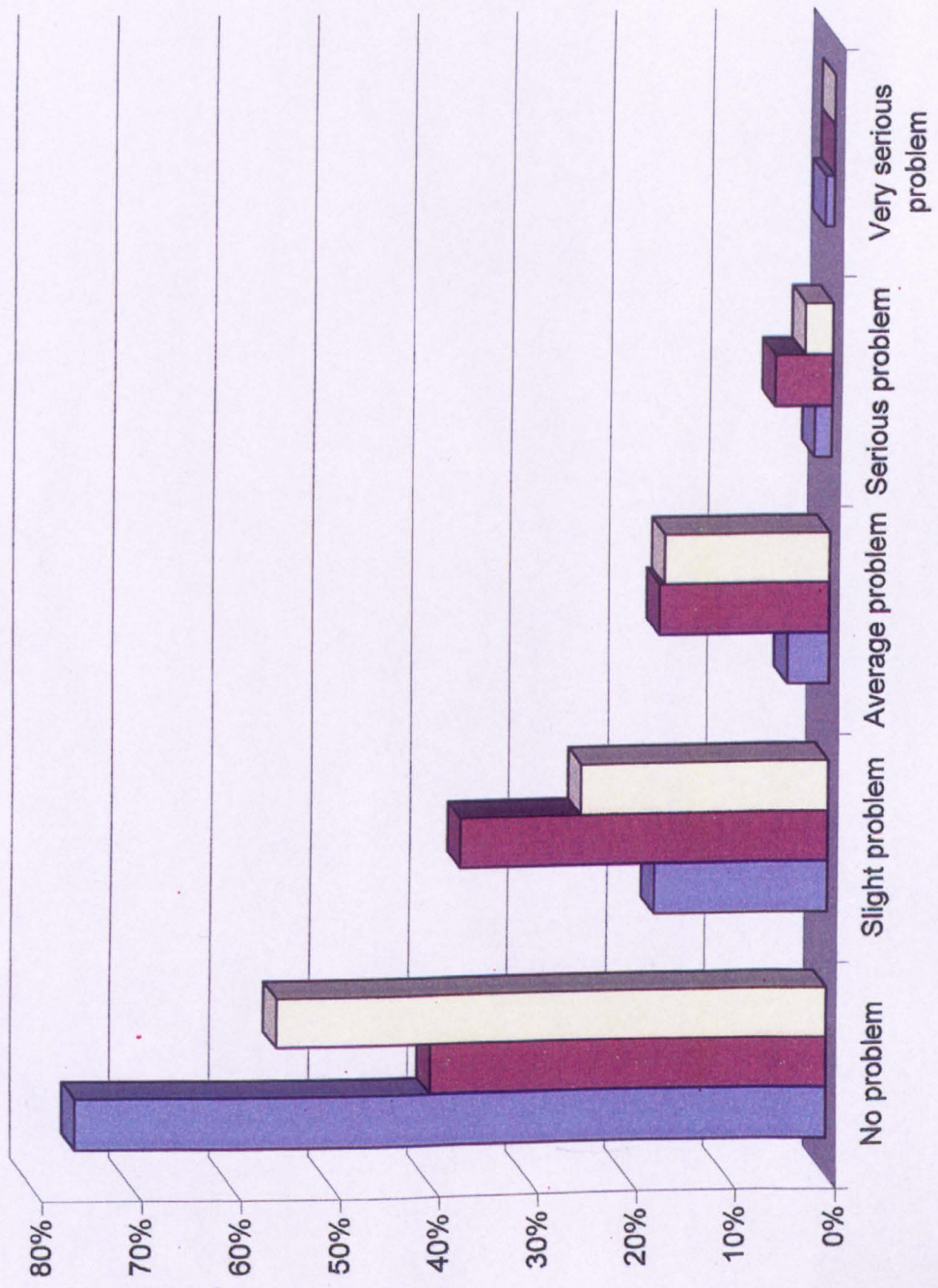
### Relationship between Mother's Education & Teaser



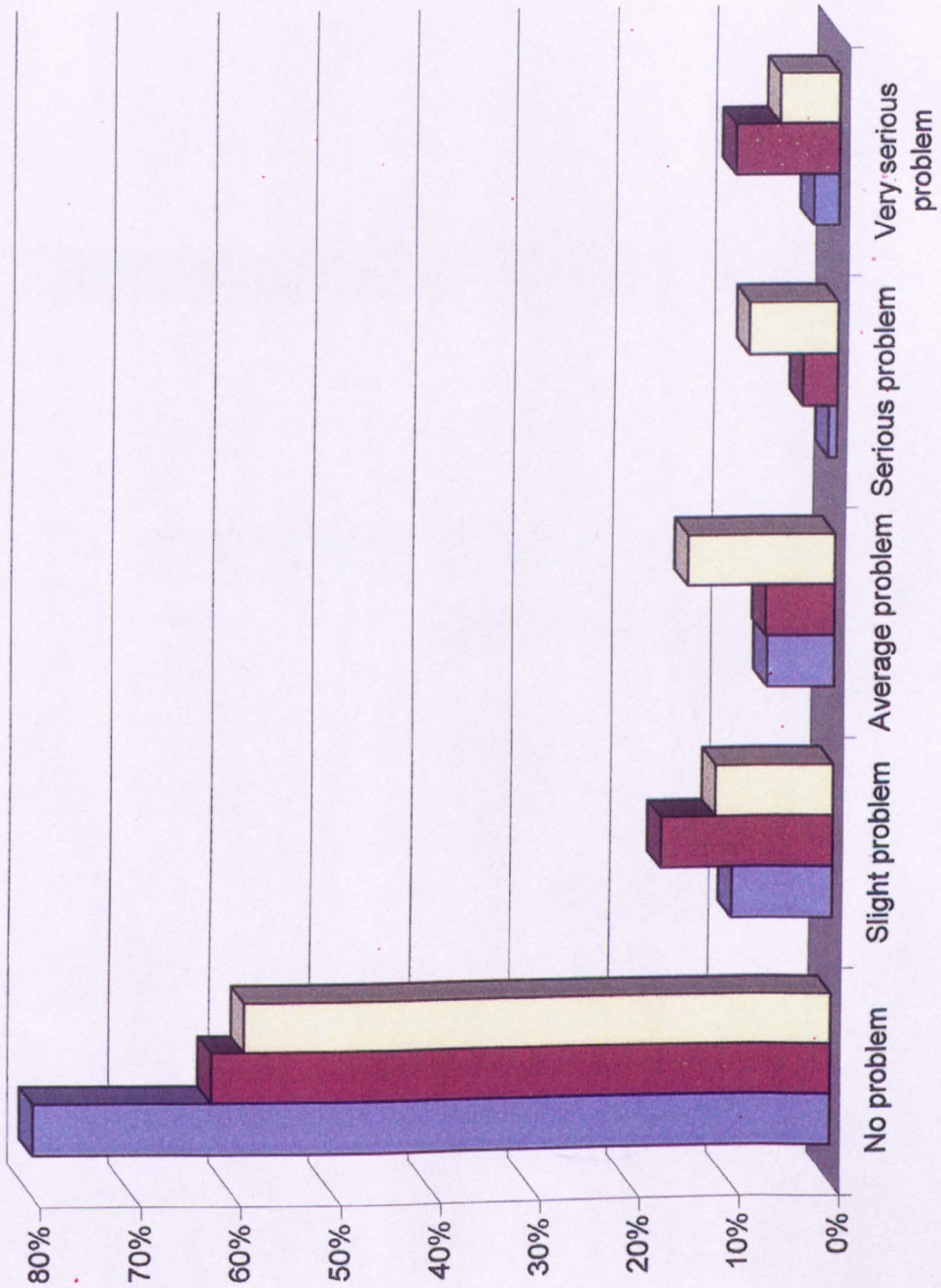
Relationship between Diagnosis - Is afraid that the others don't like him



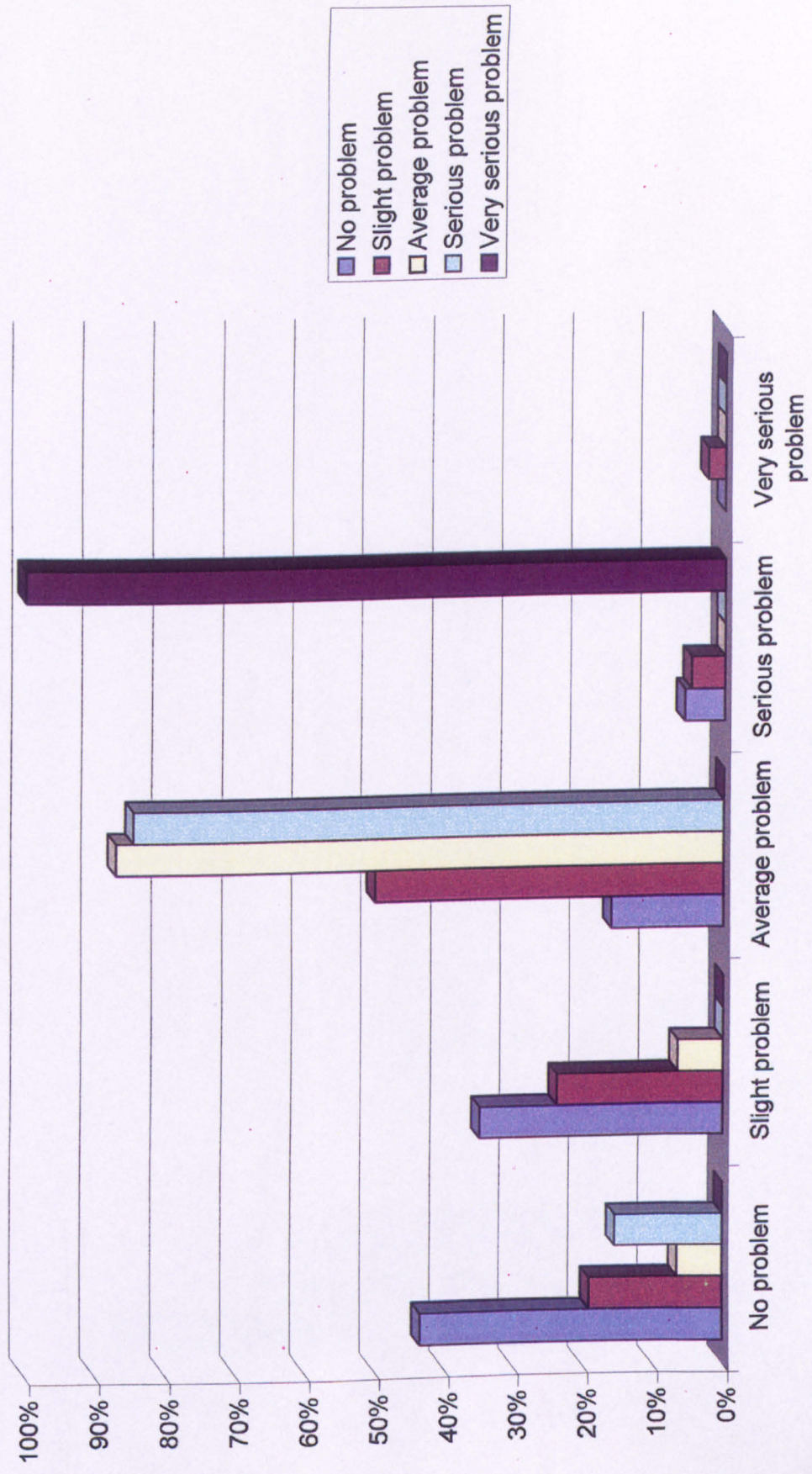
Relationship between Diagnosis - Has difficulties creating new friends



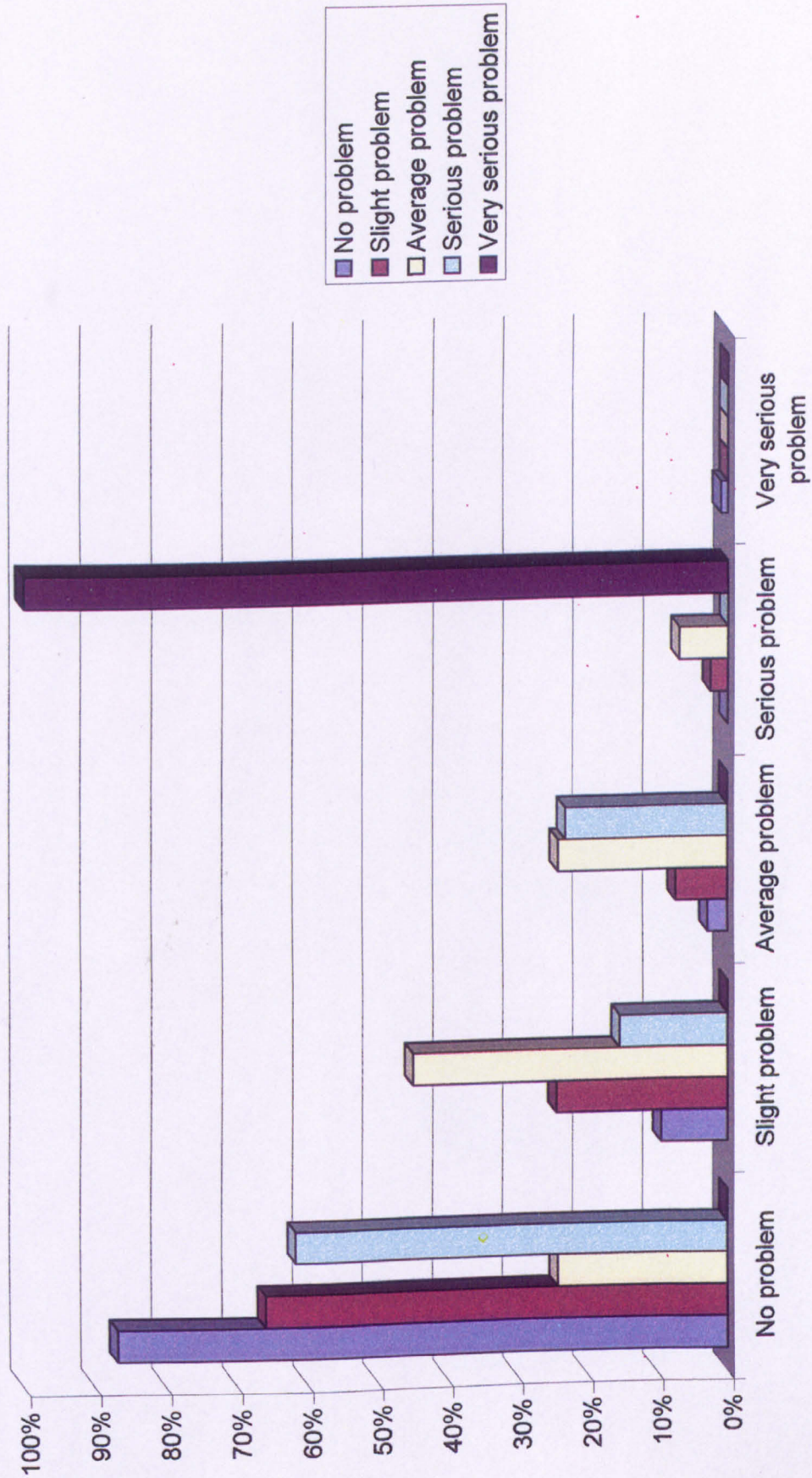
### Relationship between Diagnosis - Has difficulties Keeping old friends



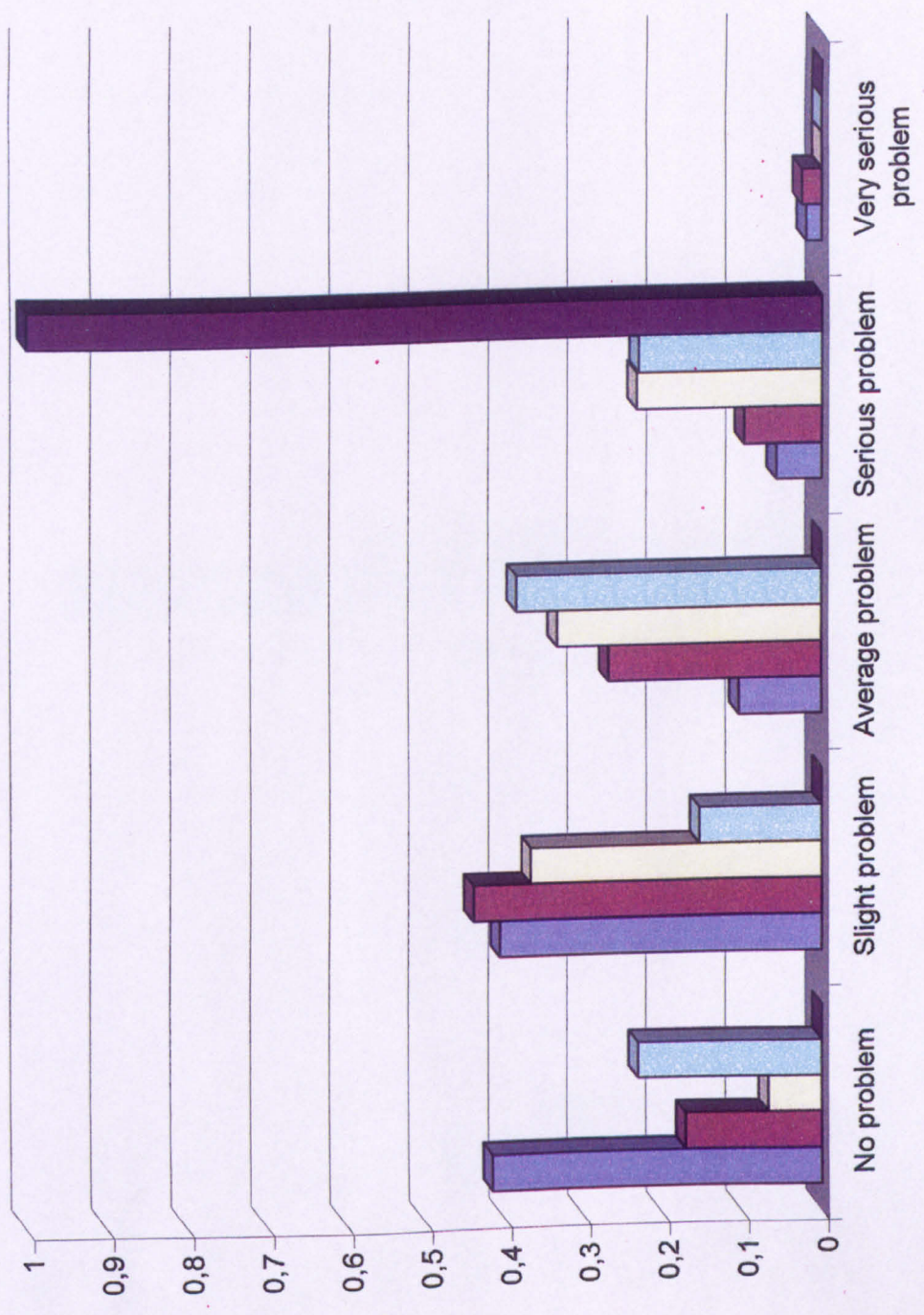
### Relationship between Reading - Emotional



### Relationship between Reading - Emotionally immature



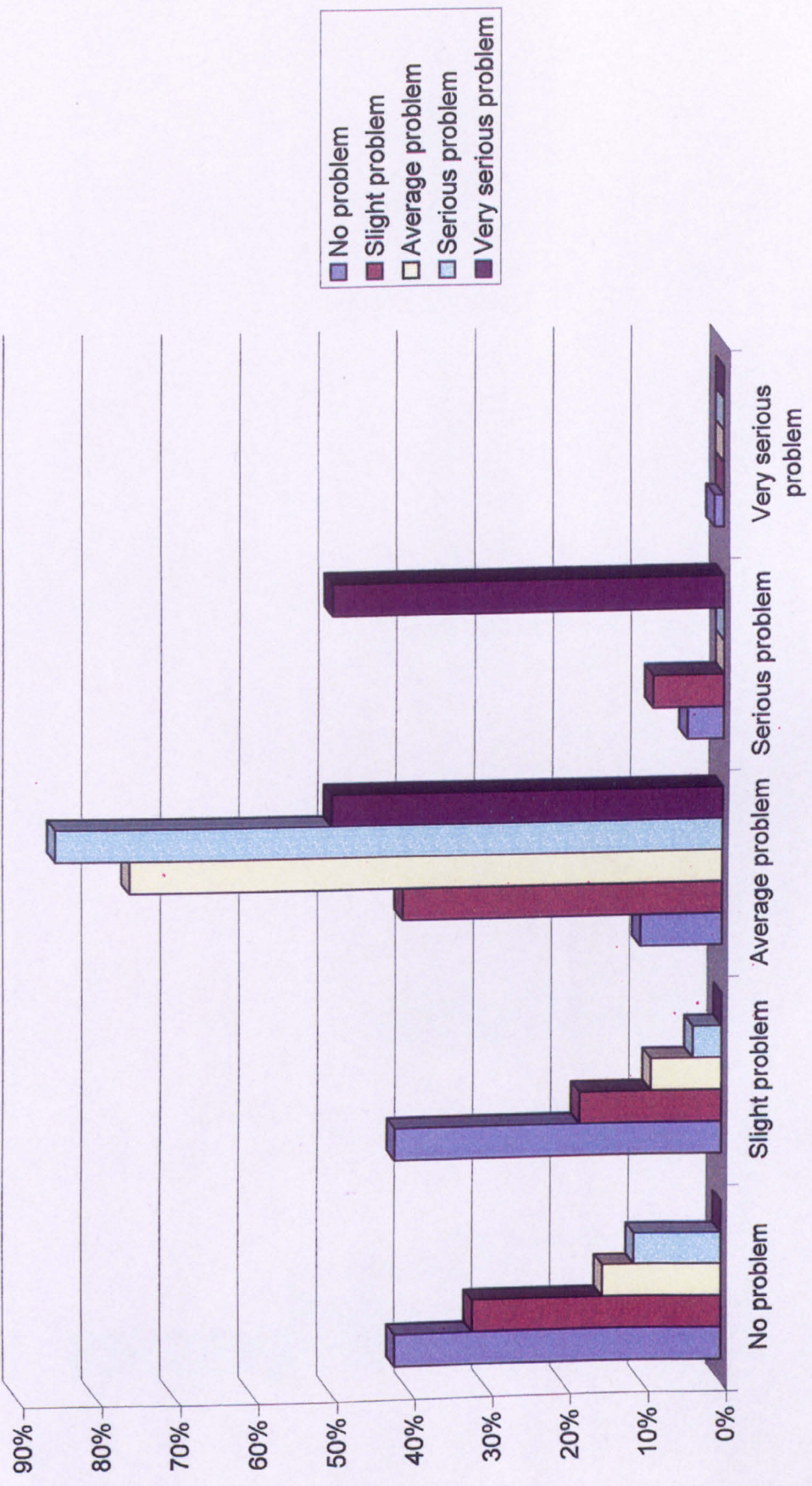
### Relationship between Reading - Easily hurt



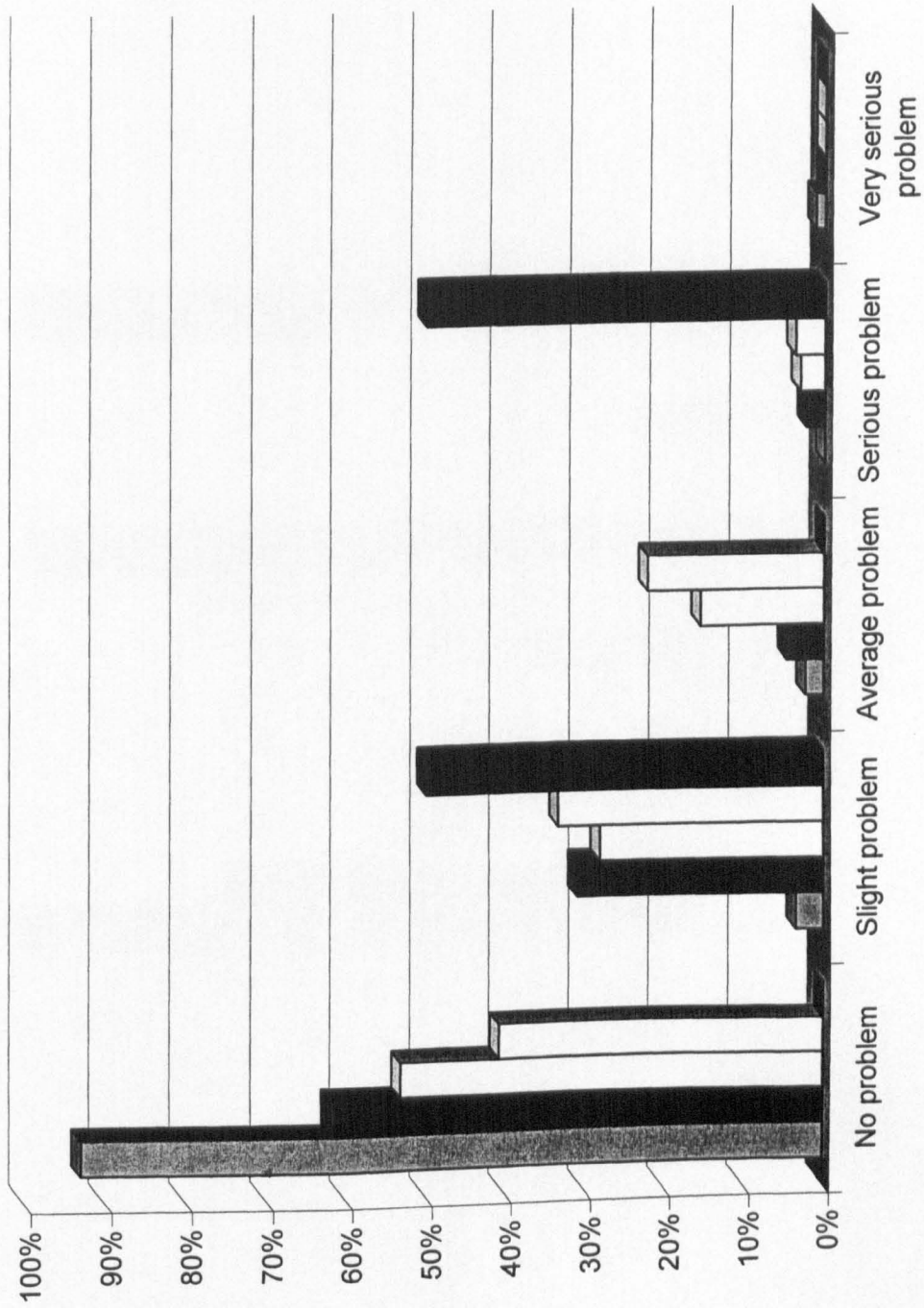
- No problem
- Slight problem
- Average problem
- Serious problem
- Very serious problem



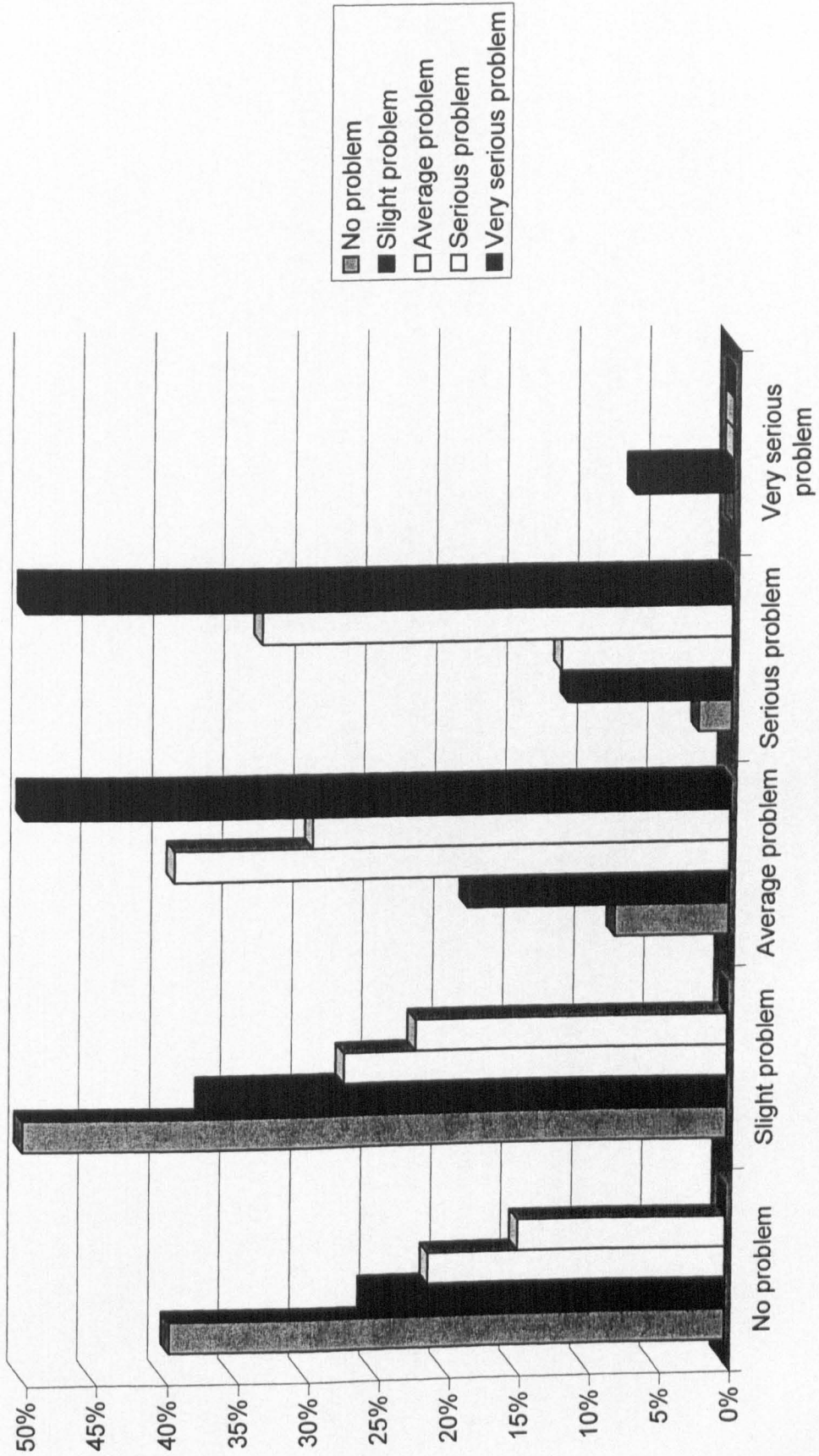
### Relationship between Spelling - Emotional



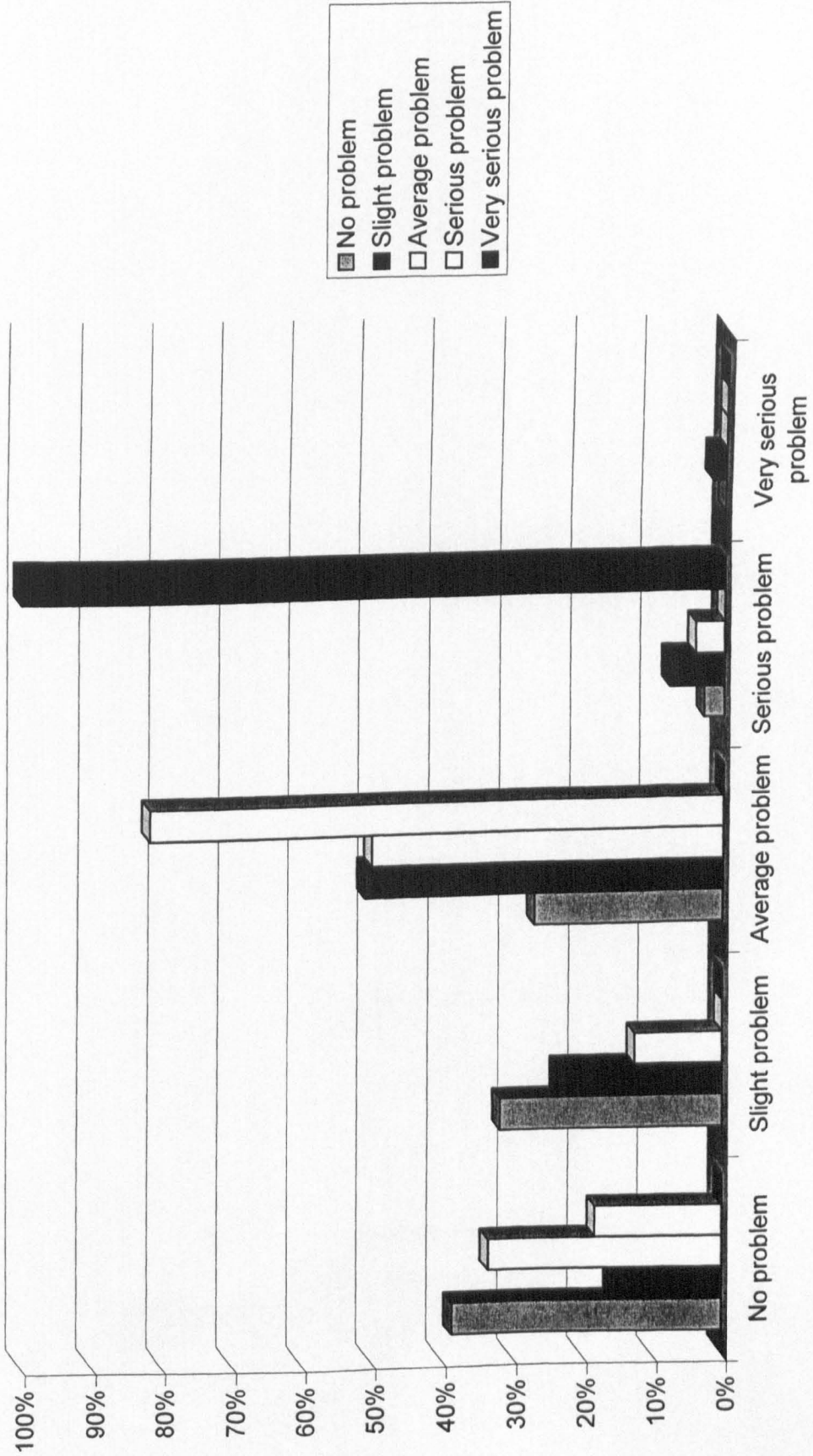
# Relationship between Spelling - Emotionally immature



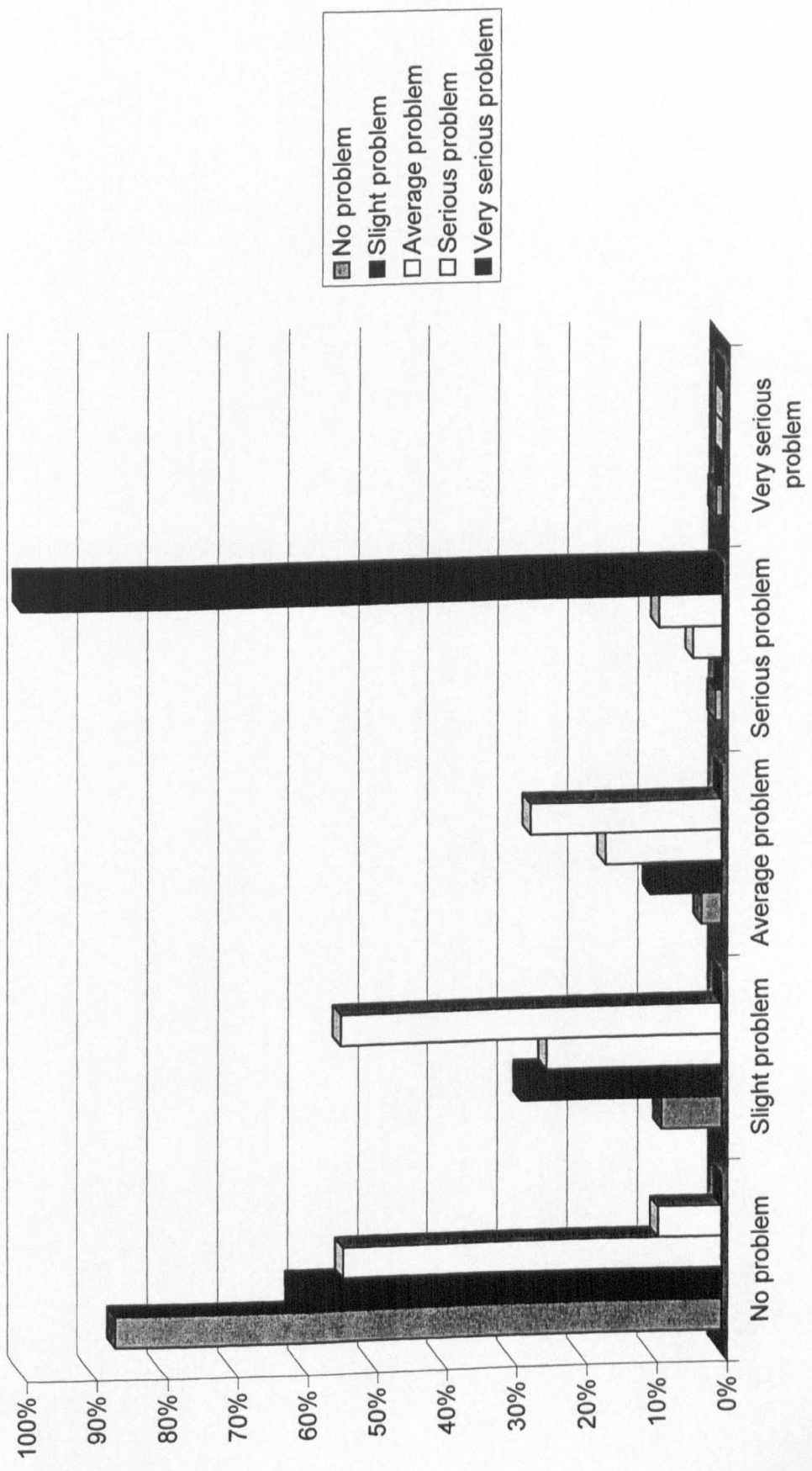
### Relationship between Spelling - Easily hurt



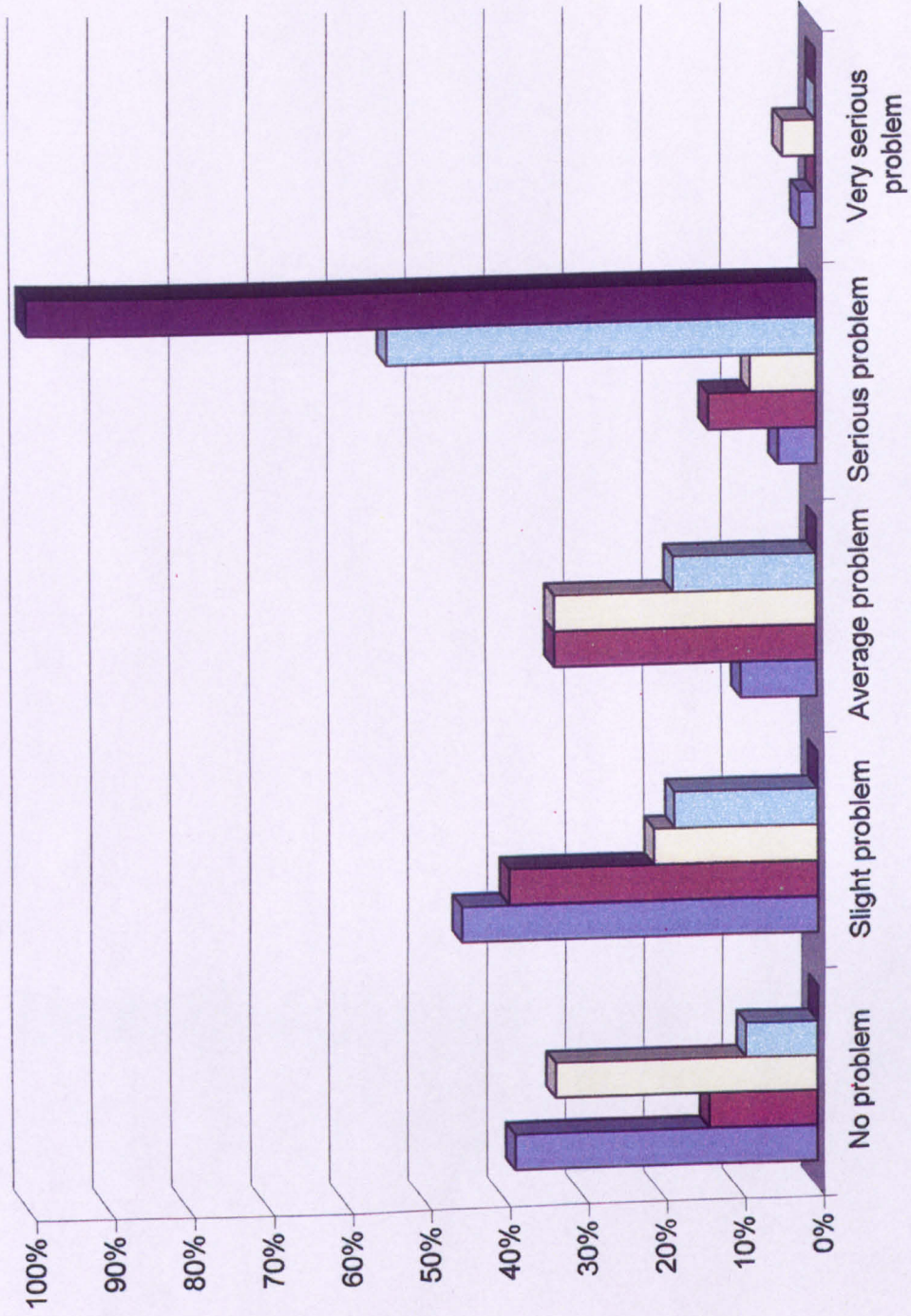
### Relationship between Arithmetic - Emotional



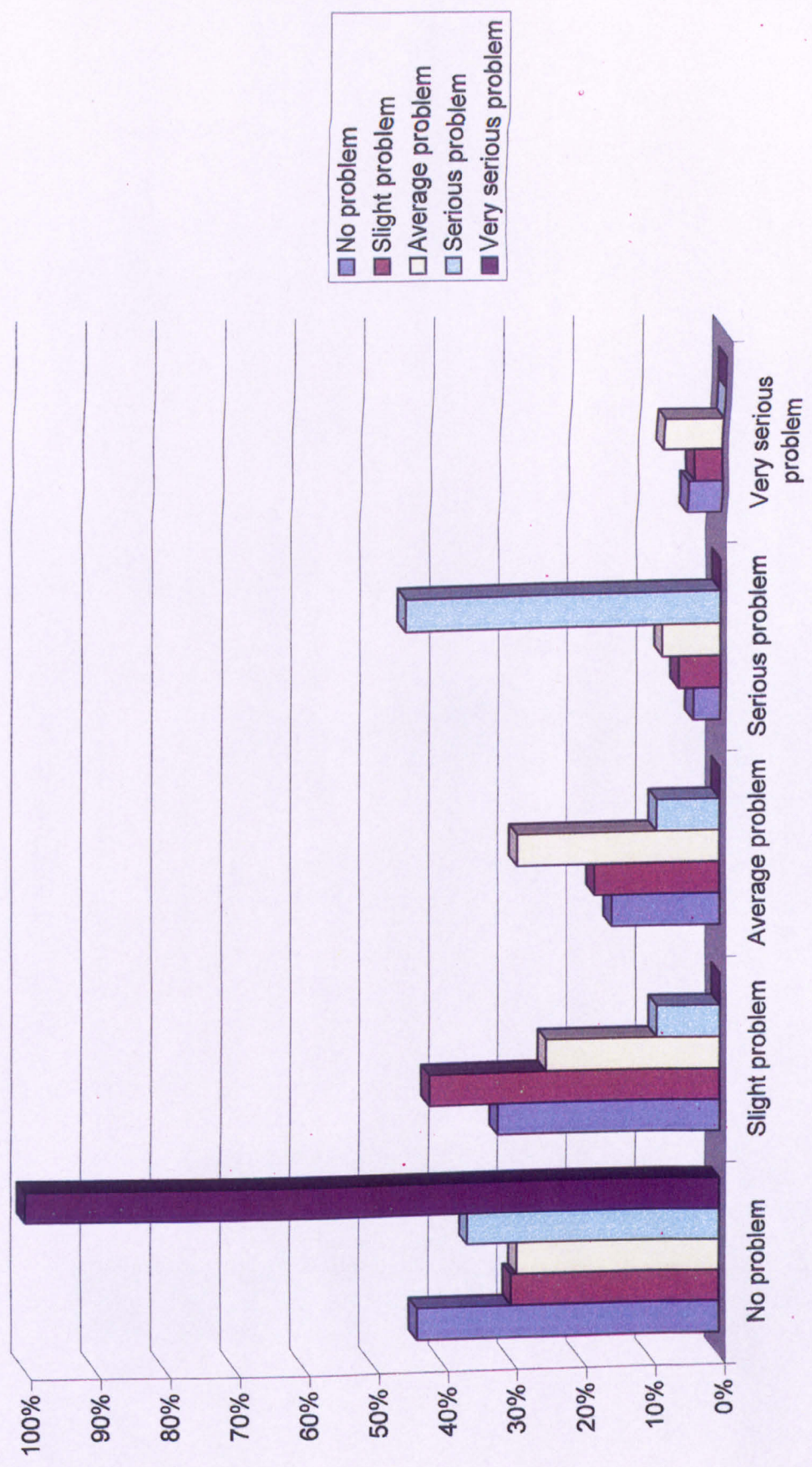
### Relationship between Arithmetic - Emotionally immature



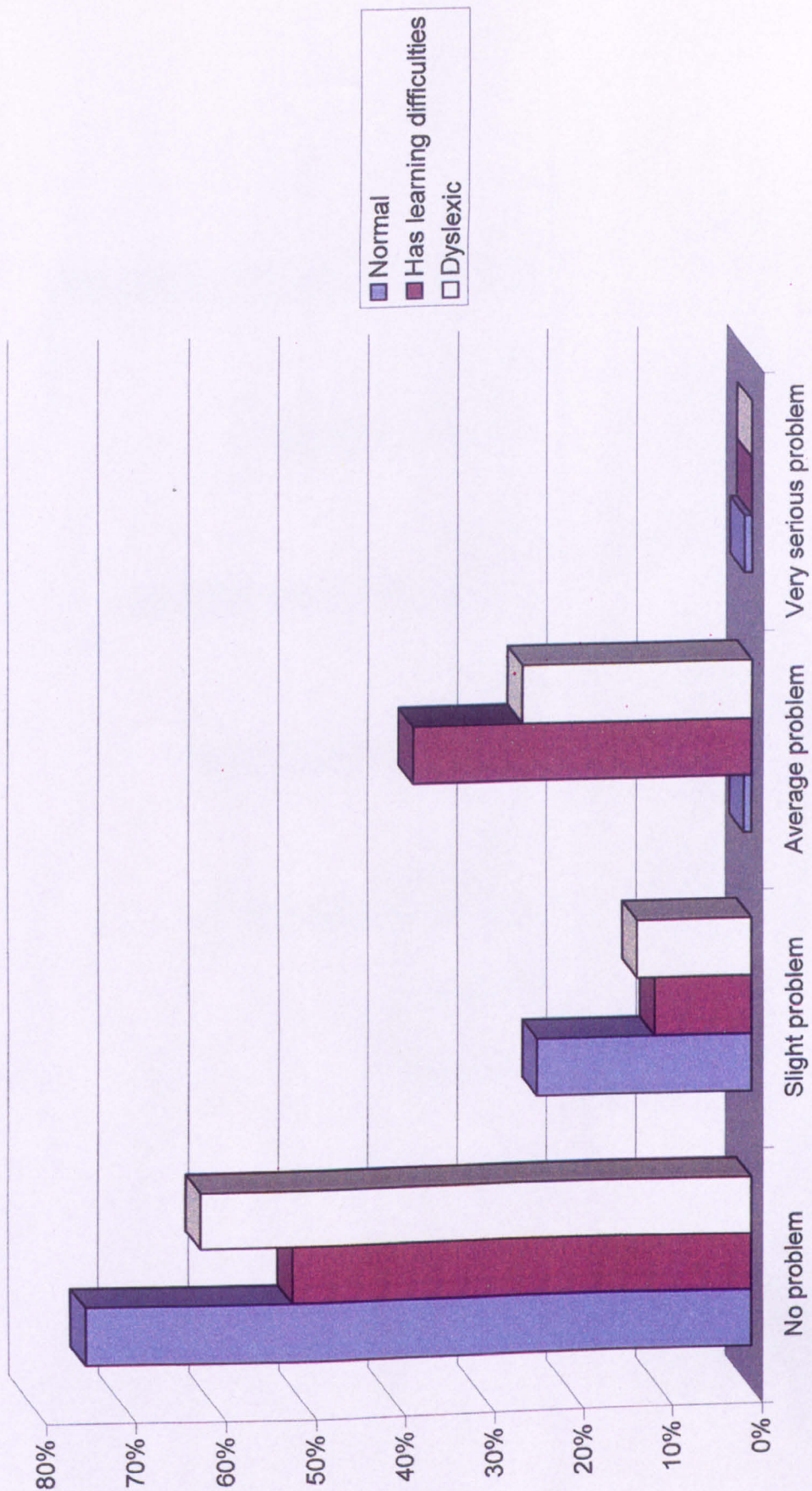
### Relationship between Arithmetic - Easily hurt



### Relationship between Arithmetic - Cries easily



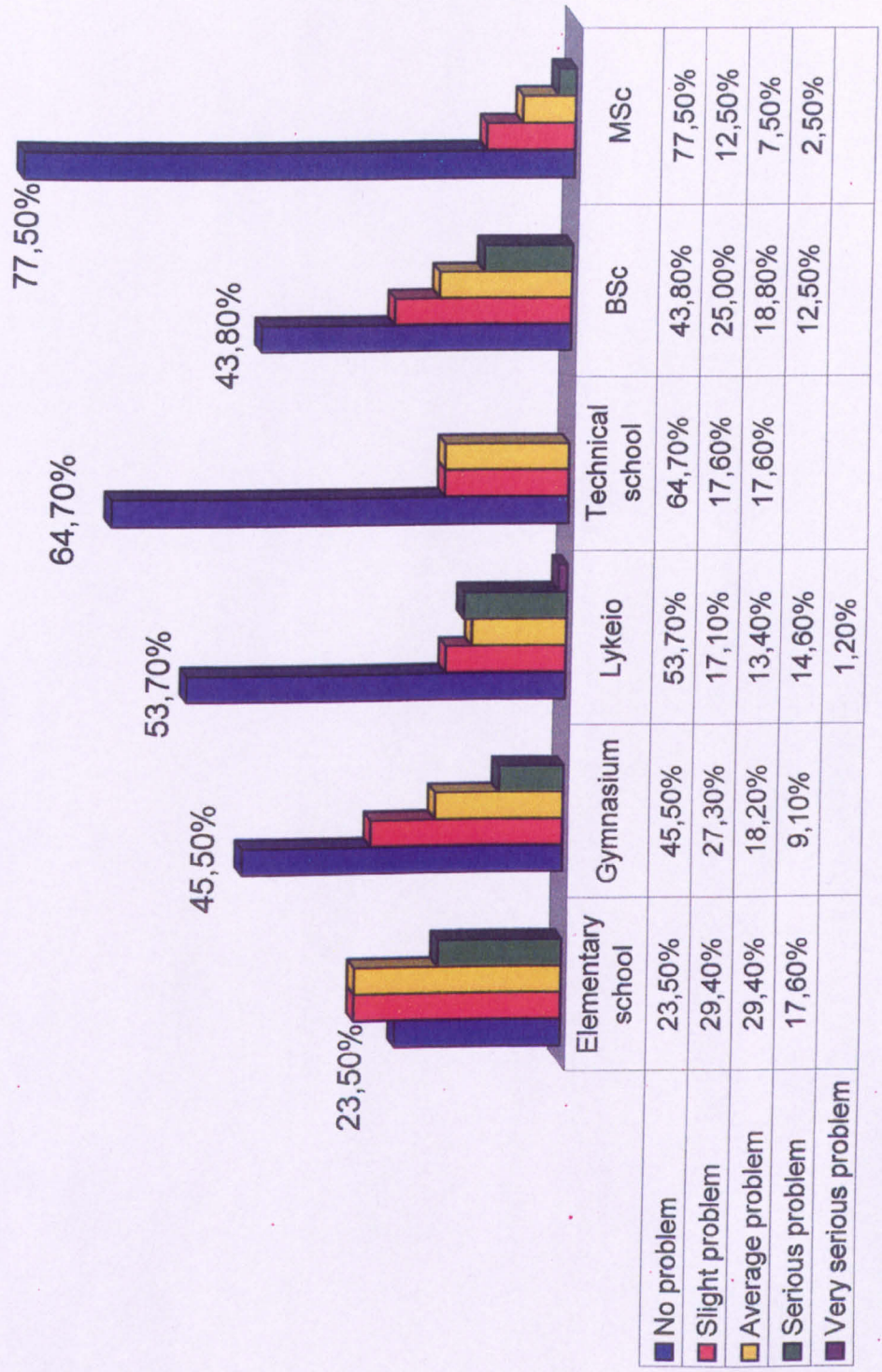
# Relationship between Diagnosis - Introvert



Normal  
Has learning difficulties  
Dyslexic



### Relationship % between Mother's Education & Behaviour Problem (Teaser)





## APPENDIX III

### Tests of Equality of Group Means

	Wilks' Lambda	F	df1	df2	Sig.
[v6] Reading	,584	118,081	1	166	,000
[v7] Spelling	,474	184,116	1	166	,000
[v10] Arithmetic	,861	26,809	1	166	,000
Mother's education	,909	16,529	1	166	,000
[v52] Egocentric	,846	30,239	1	166	,000
[v53] Demanding	,899	18,885	1	166	,000
[v54] Insisting	,812	38,518	1	166	,000
[v58] Has low tolerance limits	,799	41,843	1	166	,000
[v60] Pessimist	,902	18,123	1	166	,000
[v66] Difficult character	,889	20,633	1	166	,000
[v69] Demands to lead	,898	18,784	1	166	,000
[v70] Rebellious	,930	12,578	1	166	,001
[v71] Denies authority	,897	19,125	1	166	,000
[v72] Disobedient	,931	12,309	1	166	,001
[v73] Agressive	,920	14,366	1	166	,000
[v74] Ill-tempered	,928	12,931	1	166	,000
[v75] Irritable	,793	43,419	1	166	,000
[v78] Nervous	,807	39,582	1	166	,000
[v77] Bad loser	,935	11,524	1	166	,001
[v84] Teaser	,770	49,446	1	166	,000
[v91] Clumcy	,826	35,020	1	166	,000

### Log Determinants

Diagnosis (Normal - With learning difficulties)	Rank	Log Determinant
Normal	21	-23,859
Has learning difficulties	21	-10,053
Pooled within-groups	21	-16,283

The ranks and natural logarithms of determinants printed are those of the group covariance matrices.

**Test Results**

Box's M		705,466
F	Approx.	2,427
	df1	231
	df2	18032,723
	Sig.	,000

Tests null hypothesis of equal population covariance matrices.

**Eigenvalues**

Function	Eigenvalue	% of Variance	Cumulative %	Canonical Correlation
1	2,040 <sup>a</sup>	100,0	100,0	,819

a. First 1 canonical discriminant functions were used in the analysis.

**Wilks' Lambda**

Test of Function(s)	Wilks' Lambda	Chi-square	df	Sig.
1	,329	172,896	21	,000

## Standardized Canonical Discriminant Function Coefficients

	Function
	1
[v6] Reading	,308
[v7] Spelling	,588
[v10] Arithmetic	-,136
Mother's education	-,193
[v52] Egocentric	,065
[v53] Demanding	-,044
[v54] Insisting	-,007
[v58] Has low tolerance limits	,193
[v60] Pessimist	,248
[v66] Difficult character	,081
[v69] Demands to lead	,083
[v70] Rebellious	-,413
[v71] Denies authority	-,059
[v72] Disobedient	-,258
[v73] Agressive	,014
[v74] Ill-tempered	,114
[v75] Iritable	,340
[v76] Nervous	,092
[v77] Bad loser	-,346
[v84] Teaser	,425
[v91] Clumcy	,231

## Structure Matrix

	Function
	1
[v7] Spelling	,737
[v6] Reading	,590
[v84] Teaser	,382
[v75] Irritable	,358
[v58] Has low tolerance limits	,352
[v76] Nervous	,342
[v54] Insisting	,337
[v91] Clumcy	,322
[v52] Egocentric	,299
[v10] Arithmetic	,281
[v66] Difficult character	,247
[v71] Denies authority	,238
[v69] Demands to lead	,236
[v53] Demanding	,235
[v60] Pessimist	,231
Mother's education	-.221
[v73] Agressive	,206
[v74] Ill-tempered	,195
[v70] Rebellious	,193
[v72] Disobedient	,191
[v77] Bad loser	,184

Pooled within-groups correlations between discriminating variables and standardized canonical discriminant functions  
 Variables ordered by absolute size of correlation within function.

### Canonical Discriminant Function Coefficients

	Function
	1
[v6] Reading	,460
[v7] Spelling	,850
[v10] Arithmetic	-,163
Mother's education	-,127
[v52] Egocentric	,068
[v53] Demanding	-,043
[v54] Insisting	-,007
[v58] Has low tolerance limits	,252
[v60] Pessimist	,328
[v66] Difficult character	,077
[v69] Demands to lead	,079
[v70] Rebellious	-,452
[v71] Denies authority	-,074
[v72] Disobedient	-,278
[v73] Agressive	,018
[v74] Ill-tempered	,144
[v75] Irritable	,357
[v76] Nervous	,096
[v77] Bad loser	-,379
[v84] Teaser	,490
[v91] Clumcy	,340
(Constant)	-3,084

Unstandardized coefficients

### Functions at Group Centroids

Diagnosis (Normal - With learning difficulties)	Function
Normal	-,807
Has learning difficulties	2,499

Unstandardized canonical discriminant  
functions evaluated at group means

### Classification Processing Summary

Processed		227
Excluded	Missing or out-of-range group codes	0
	At least one missing discriminating variable	59
Used in Output		168

**Prior Probabilities for Groups**

Diagnosis (Normal - With learning difficulties)	Prior	Cases Used in Analysis	
		Unweighted	Weighted
Normal	,500	127	127,000
Has learning difficulties	,500	41	41,000
Total	1,000	168	168,000

**Classification Function Coefficients**

	Diagnosis (Normal - With learning difficulties)	
	Normal	Has learning difficulties
[v6] Reading	,741	2,261
[v7] Spelling	1,617	4,427
[v10] Arithmetic	1,507	,969
Mother's education	2,186	1,764
[v52] Egocentric	-.158	,068
[v53] Demanding	1,206	1,064
[v54] Insisting	-.446	-.470
[v58] Has low tolerance limits	1,045	1,879
[v60] Pessimist	1,887	2,971
[v66] Difficult character	-.841	-.587
[v69] Demands to lead	,595	,855
[v70] Rebellious	-.489	-1,983
[v71] Denies authority	-.674	-.920
[v72] Disobedient	-.671	-1,591
[v73] Agressive	1,515	1,574
[v74] Ill-tempered	,681	1,155
[v75] Irritable	-.725	,456
[v76] Nervous	,451	,770
[v77] Bad loser	-.424	-1,678
[v84] Teaser	1,842	3,463
[v91] Clumcy	2,082	3,206
(Constant)	-12,102	-25,092

Fisher's linear discriminant functions



Classification Results<sup>a</sup>

		Diagnosis (Normal - With learning difficulties)	Predicted Group Membership		Total
			Normal	Has learning difficulties	
Original	Count	Normal	119	8	127
		Has learning difficulties	1	40	41
	%	Normal	93,7	6,3	100,0
		Has learning difficulties	2,4	97,6	100,0

a. 94,6% of original grouped cases correctly classified.

Casewise Statistics

Case Number	Actual Group	Predicted Group	Highest Group		P(G=g   D=d)	Squared Mahalanobis Distance to Centroid	Second Highest Group		Function 1
			P(D>d   G=g)	df			P(G=g   D=d)	Squared Mahalanobis Distance to Centroid	
1	1	1	.788	1	.990	.072	.010	9.222	-.538
2	1	1	.504	1	1.000	.447	.000	15.791	-1.475
3	1	1	.503	1	1.000	.449	.000	15.804	-1.477
4	1	1	.434	1	1.000	.612	.000	16.711	-1.589
5	1	2**	.616	1	.999	.252	.001	14.495	3.001
6	1	1	.460	1	1.000	.545	.000	16.353	-1.545
7	1	1	.590	1	.999	.290	.001	14.779	-1.346
8	1	1	.620	1	.999	.246	.001	14.454	-1.303
9	1	1	.536	1	.968	.384	.032	7.215	-.187
10	1	1	.235	1	.823	1.413	.177	4.480	.382
11	1	1	.921	1	.997	.010	.003	11.592	-.906
12	1	1	.132	1	.618	2.272	.382	3.234	.701
13	1	1	.627	1	.999	.236	.001	14.370	-1.292
14	1	2**	.332	1	.905	.940	.095	5.457	1.529
15	1	1	.229	1	.815	1.450	.185	4.416	.397
16	1	1	.244	1	1.000	1.360	.000	19.995	-1.973
17	1	1	.375	1	.926	.789	.074	5.844	.081
18	1	1	.473	1	1.000	.514	.000	16.181	-1.524
19	1	1	.962	1	.996	.002	.004	11.247	-.855
20	1	1	.212	1	.793	1.556	.207	4.236	.441
21	1	1	.543	1	.969	.370	.031	7.273	-.198
22	1	1	.118	1	.572	2.448	.428	3.030	.758
23	1	1	.787	1	.998	.073	.002	12.787	-1.077
24	1	1	.668	1	.999	.183	.001	13.941	-1.235
25	1	1	.380	1	1.000	.772	.000	17.508	-1.685
26	1	1	.282	1	.871	1.158	.129	4.971	.269
27	1	1	.474	1	1.000	.513	.000	16.174	-1.523
28	1	1	.533	1	.999	.389	.001	15.440	-1.431
29	1	1	.767	1	.989	.088	.011	9.058	-.511
30	1	1	.268	1	.858	1.228	.142	4.829	.301
31	1	2**	.191	1	.758	1.711	.242	3.990	1.191

270

Casewise Statistics

Case Number	Actual Group	Predicted Group	Highest Group		P(G=g   D=d)	Squared Mahalanobis Distance to Centroid	Second Highest Group		Function 1
			P(D>d   G=g)	df			P(G=g   D=d)	Squared Mahalanobis Distance to Centroid	
Original									
32	1	2**	.272	1	.862	1.205	1.38	4.875	1.401
33	1	1	.533	1	.968	.389	.032	7.190	-183
34	1	1	.341	1	1.000	.906	.000	18.127	-1.759
35	1	1	.514	1	1.000	.425	.000	15.661	-1.459
36	1	1	.281	1	.870	1.160	.130	4.966	.270
37	1	1	.750	1	.988	.102	.012	8.921	-.488
38	1	1	.620	1	.999	.246	.001	14.454	-1.303
39	1	1	.712	1	.999	.136	.001	13.502	-1.176
40	1	1	.708	1	.986	.140	.014	8.593	-.433
42	1	1	.761	1	.989	.092	.011	9.012	-.503
43	1	1	.311	1	1.000	1.027	.000	18.655	-1.820
44	1	1	.533	1	.999	.389	.001	15.440	-1.431
45	1	1	.426	1	1.000	.635	.000	16.829	-1.604
46	1	1	.380	1	1.000	.772	.000	17.508	-1.685
47	1	1	.807	1	.998	.060	.002	12.599	-1.051
48	1	1	.328	1	1.000	.959	.000	18.357	-1.786
49	1	1	.914	1	.994	.012	.006	10.220	-.698
50	1	1	.420	1	.943	.649	.057	6.250	-.001
51	1	1	.111	1	1.000	2.538	.000	23.996	-2.400
52	1	1	.893	1	.993	.018	.007	10.057	-.673
53	1	1	.649	1	.999	.207	.001	14.138	-1.261
54	1	1	.480	1	.958	.498	.042	6.758	-.101
55	1	1	.909	1	.997	.013	.003	11.692	-.921
56	1	1	.533	1	.999	.389	.001	15.440	-1.431
57	1	1	.245	1	1.000	1.349	.000	19.956	-1.968
58	1	1	.658	1	.999	.196	.001	14.046	-1.249
59	1	1	.862	1	.998	.030	.002	12.106	-.981
60	1	2**	.166	1	.708	1.916	.292	3.691	1.114
61	1	1	.528	1	.999	.398	.001	15.495	-1.438
62	1	2**	.103	1	.517	2.666	.483	2.798	.866
63	1	1	.558	1	.999	.343	.001	15.140	-1.392

Casewise Statistics

Case Number	Actual Group	Predicted Group	Highest Group				Second Highest Group				Discriminant Scores	
			P(D>d   G=g)		P(G=g   D=d)	Squared Mahalanobis Distance to Centroid	Group	P(G=g   D=d)	Squared Mahalanobis Distance to Centroid			
			p	df								
Original												
64	1	1	.527	1	.999	.401	2	.001	15.512	-1.440		
65	1	1	.138	1	.638	2.196	2	.362	3.326	.675		
66	1	1	.775	1	.998	.081	2	.002	12.895	-1.092		
67	1	1	.305	1	1.000	1.053	2	.000	18.762	-1.833		
68	1	1	.597	1	.975	.296	2	.025	7.626	-.263		
69	1	1	.885	1	.997	.021	2	.003	11.901	-.951		
70	1	1	.473	1	1.000	.516	2	.000	16.190	-1.525		
71	1	1	.338	1	1.000	.916	2	.000	18.171	-1.764		
72	1	1	.391	1	.933	.735	2	.067	5.994	.051		
73	1	1	.580	1	.974	.306	2	.026	7.577	-.254		
74	1	1	.390	1	1.000	.772	2	.000	17.508	-1.685		
75	1	1	.840	1	.992	.041	2	.008	9.634	-.605		
76	1	1	.585	1	.999	.298	2	.001	14.833	-1.353		
77	1	1	.286	1	1.000	1.140	2	.000	19.127	-1.875		
78	1	1	.288	1	.875	1.131	2	.125	5.027	.257		
79	1	1	.127	1	.604	2.325	2	.396	3.171	.718		
80	1	1	.676	1	.999	.174	2	.001	13.861	-1.224		
81	1	1	.276	1	1.000	1.186	2	.000	19.311	-1.896		
82	1	1	.629	1	.999	.234	2	.001	14.359	-1.290		
83	1	1	.689	1	.999	.160	2	.001	13.728	-1.206		
85	1	2**	.354	1	.917	.857	1	.083	5.662	1.573		
86	1	1	.360	1	1.000	.837	2	.000	17.812	-1.722		
87	1	1	.115	1	.563	2.486	2	.437	2.989	.770		
89	1	2**	.688	1	.984	.162	1	.016	8.430	2.097		
90	1	1	.294	1	.880	1.099	2	.120	5.094	.242		
91	1	1	.939	1	.997	.006	2	.003	11.436	-.883		
94	1	1	.825	1	.991	.049	2	.009	9.517	-.586		
95	1	1	.856	1	.998	.033	2	.002	12.163	-.989		
96	1	1	.831	1	.998	.046	2	.002	12.383	-1.020		
97	1	1	.876	1	.997	.025	2	.003	11.986	-.963		
98	1	1	.620	1	.999	.246	2	.001	14.454	-1.303		



Casewise Statistics

Original	Case Number	Actual Group	Highest Group				Second Highest Group				Discriminant Scores
			Predicted Group	P(D>d   G=g)		P(G=g   D=d)	Squared Mahalanobis Distance to Centroid	Group	P(G=g   D=d)	Squared Mahalanobis Distance to Centroid	
				p	df						
149	149	2	2	.705	1	.985	.143	1	.015	8.567	2.120
150	150	2	2	.955	1	.996	.003	1	.004	11.303	2.555
151	151	2	2	.240	1	1.000	1.382	1	.000	20.079	3.674
152	152	2	2	.093	1	1.000	2.828	1	.000	24.872	4.181
156	156	2	2	1.000	1	.996	.000	1	.004	10.920	2.498
157	157	2	2	.145	1	.657	2.120	1	.343	3.420	1.043
158	158	2	2	.705	1	.999	.143	1	.001	13.573	2.877
159	159	2	2	.710	1	.986	.138	1	.014	8.605	2.127
163	163	2	2	.069	1	1.000	3.296	1	.000	26.223	4.314
165	165	2	2	.115	1	.562	2.489	1	.438	2.985	.921
166	166	2	2	.335	1	.907	.928	1	.093	5.487	1.536
168	168	2	2	.250	1	.840	1.323	1	.160	4.646	1.349
170	170	2	2	.509	1	1.000	.436	1	.000	15.725	3.159
173	173	2	2	.602	1	.999	.272	1	.001	14.648	3.021
179	179	2	2	.648	1	.981	.208	1	.019	8.119	2.043
180	180	2	2	.655	1	.982	.199	1	.018	8.174	2.052
182	182	2	2	.774	1	.989	.083	1	.011	9.109	2.211
183	183	2	2	.879	1	.993	.023	1	.007	9.946	2.347
185	185	2	2	.109	1	1.000	2.570	1	.000	24.095	4.102
186	186	2	2	.246	1	.836	1.345	1	.164	4.604	1.339
187	187	2	2	.346	1	1.000	.886	1	.000	18.036	3.440
188	188	2	2	.037	1	1.000	4.337	1	.000	29.031	4.581
189	189	2	2	.546	1	.970	.365	1	.030	7.297	1.896
190	190	2	2	.858	1	.998	.032	1	.002	12.140	2.678
191	191	2	2	.196	1	.767	1.669	1	.233	4.054	1.207
192	192	2	2	.772	1	.989	.084	1	.011	9.093	2.209
193	193	2	2	.126	1	.601	2.336	1	.399	3.158	.970
194	194	2	2	.119	1	.576	2.435	1	.424	3.045	.938
196	196	2	2	.503	1	.963	.449	1	.037	6.944	1.828
198	198	1	1	.777	1	.989	.081	2	.011	9.130	-.523
199	199	1	1	.848	1	.992	.037	2	.008	9.699	-.616

Case Number	Actual Group	Highest Group			Second Highest Group			Discriminant Scores		
		Predicted Group	P(D>d   G=g)		P(G=g   D=d)	Squared Mahalanobis Distance to Centroid	Group		P(G=g   D=d)	Squared Mahalanobis Distance to Centroid
			p	df						
200	1	1	.652	1	.999	2	.001	14,107	-1,257	
201	1	1	.510	1	1.000	2	.000	15,717	-1,466	
202	1	1	.731	1	.999	2	.001	13,322	-1,151	
203	1	1	.736	1	.999	2	.001	13,271	-1,144	
204	1	1	.978	1	.996	2	.004	11,108	-.834	
205	1	1	.533	1	.999	2	.001	15,440	-1,431	
206	1	1	.620	1	.999	2	.001	14,454	-1,303	
207	1	1	.850	1	.992	2	.008	9,709	-.617	
208	1	1	.630	1	.999	2	.001	14,346	-1,289	
209	1	1	.674	1	.999	2	.001	13,883	-1,227	
210	1	1	.772	1	.989	2	.011	9,093	-.517	
211	1	1	.533	1	.999	2	.001	15,440	-1,431	
212	1	1	.432	1	1.000	2	.000	16,744	-1,593	

\*\* Misclassified case

Classification Results<sup>a</sup>

Diagnosis (Normal - With learning difficulties)	Original	Count	Predicted Group Membership		Total
			Normal	Has learning difficulties	
Normal		119	8		127
Has learning difficulties		1	40		41
Normal	%	93.7	6.3		100.0
Has learning difficulties		2.4	97.6		100.0

a. 94.6% of original grouped cases correctly classified.





## Discriminant Analysis

### Educational variables: out

**Tests of Equality of Group Means**

	Wilks' Lambda	F	df1	df2	Sig.
Mother's education	,908	17,052	1	168	,000
[v52] Egocentric	,862	26,942	1	168	,000
[v53] Demanding	,901	18,395	1	168	,000
[v54] Insisting	,826	35,428	1	168	,000
[v58] Has low tolerance limits	,808	40,035	1	168	,000
[v60] Pessimist	,905	17,652	1	168	,000
[v66] Difficult character	,891	20,604	1	168	,000
[v69] Demands to lead	,906	17,502	1	168	,000
[v70] Rebellious	,927	13,193	1	168	,000
[v71] Denies authority	,893	20,035	1	168	,000
[v72] Disobedient	,920	14,606	1	168	,000
[v73] Agressive	,922	14,191	1	168	,000
[v74] Ill-tempered	,936	11,403	1	168	,001
[v75] Irritable	,803	41,144	1	168	,000
[v76] Nervous	,803	41,164	1	168	,000
[v77] Bad loser	,933	12,061	1	168	,001
[v84] Teaser	,782	46,715	1	168	,000
[v91] Clumsy	,819	37,104	1	168	,000

## Log Determinants

Diagnosis (Normal - With learning difficulties)	Rank	Log Determinant
Has learning difficulties	18	-7,133
Normal	18	-19,969
Pooled within-groups	18	-13,248

The ranks and natural logarithms of determinants printed are those of the group covariance matrices.

## Test Results

Box's M		589,927
F	Approx.	2,874
	df1	171
	df2	20283,878
	Sig.	,000

Tests null hypothesis of equal population covariance matrices.

## Eigenvalues

Function	Eigenvalue	% of Variance	Cumulative %	Canonical Correlation
1	1,002 <sup>a</sup>	100,0	100,0	,708

a. First 1 canonical discriminant functions were used in the analysis.

## Wilks' Lambda

Test of Function(s)	Wilks' Lambda	Chi-square	df	Sig.
1	,499	110,405	18	,000

## Standardized Canonical Discriminant Function Coefficients

	Function
	1
Mother's education	-.300
[v52] Egocentric	-.049
[v53] Demanding	-.238
[v54] Insisting	.263
[v58] Has low tolerance limits	.202
[v60] Pessimist	.446
[v66] Difficult character	-.130
[v69] Demands to lead	.050
[v70] Rebellious	-.456
[v71] Denies authority	-.035
[v72] Disobedient	-.263
[v73] Agressive	.003
[v74] Ill-tempered	.038
[v75] Irritable	.390
[v76] Nervous	.387
[v77] Bad loser	-.268
[v84] Teaser	.523
[v91] Clumsy	.612

## Structure Matrix

	Function
	1
[v84] Teaser	,527
[v76] Nervous	,494
[v75] Irritable	,494
[v58] Has low tolerance limits	,488
[v91] Clumsy	,469
[v54] Insisting	,459
[v52] Egocentric	,400
[v66] Difficult character	,350
[v71] Denies authority	,345
[v53] Demanding	,330
[v60] Pessimist	,324
[v69] Demands to lead	,322
Mother's education	-,318
[v72] Disobedient	,295
[v73] Agressive	,290
[v70] Rebellious	,280
[v77] Bad loser	,268
[v74] Ill-tempered	,260

Pooled within-groups correlations between discriminating variables and standardized canonical discriminant functions  
Variables ordered by absolute size of correlation within function.

**Canonical Discriminant Function Coefficients**

	Function
	1
Mother's education	-.199
[v52] Egocentric	-.051
[v53] Demanding	-.236
[v54] Insisting	.248
[v58] Has low tolerance limits	.263
[v60] Pessimist	.589
[v66] Difficult character	-.123
[v69] Demands to lead	.048
[v70] Rebellious	-.501
[v71] Denies authority	-.044
[v72] Disobedient	-.282
[v73] Agressive	.003
[v74] Ill-tempered	.047
[v75] Irritable	.409
[v76] Nervous	.407
[v77] Bad loser	-.294
[v84] Teaser	.601
[v91] Clumsy	.878
(Constant)	-2.322

Unstandardized coefficients

**Functions at Group Centroids**

Diagnosis (Normal - With learning difficulties)	Function
Has learning difficulties	1,711
Normal	-,579

Unstandardized canonical discriminant functions evaluated at group means

**Classification Processing Summary**

Processed		227
Excluded	Missing or out-of-range group codes	0
	At least one missing discriminating variable	57
Used in Output		170

**Prior Probabilities for Groups**

Diagnosis (Normal - With learning difficulties)	Prior	Cases Used in Analysis	
		Unweighted	Weighted
Has learning difficulties	,500	43	43,000
Normal	,500	127	127,000
Total	1,000	170	170,000

### Classification Function Coefficients

	Diagnosis (Normal - With learning difficulties)	
	Has learning difficulties	Normal
Mother's education	1,511	1,966
[v52] Egocentric	-,176	-,060
[v53] Demanding	,195	,735
[v54] Insisting	,321	-,247
[v58] Has low tolerance limits	1,586	,983
[v60] Pessimist	3,971	2,622
[v66] Difficult character	-1,459	-1,177
[v69] Demands to lead	,799	,688
[v70] Rebellious	-1,672	-,524
[v71] Denies authority	-,595	-,494
[v72] Disobedient	-,959	-,313
[v73] Agressive	1,747	1,739
[v74] Ill-tempered	,523	,415
[v75] Irritable	,108	-,830
[v76] Nervous	1,719	,788
[v77] Bad loser	-,863	-,191
[v84] Teaser	3,052	1,675
[v91] Clumsy	4,904	2,894
(Constant)	-16,794	-10,183

Fisher's linear discriminant functions

### Classification Results<sup>a</sup>

			Predicted Group Membership		Total
			Has learning difficulties	Normal	
Original	Count	Has learning difficulties	36	7	43
		Normal	12	115	127
	%	Has learning difficulties	83,7	16,3	100,0
		Normal	9,4	90,6	100,0

a. 88,8% of original grouped cases correctly classified.

## Arithmetic (v10): in

## Tests of Equality of Group Means

	Wilks' Lambda	F	df1	df2	Sig.
[v10] Arithmetic	,861	26,809	1	166	,000
Mother's education	,909	16,529	1	166	,000
[v52] Egocentric	,846	30,239	1	166	,000
[v53] Demanding	,899	18,685	1	166	,000
[v54] Insisting	,812	38,518	1	166	,000
[v58] Has low tolerance limits	,799	41,843	1	166	,000
[v60] Pessimist	,902	18,123	1	166	,000
[v66] Difficult character	,889	20,633	1	166	,000
[v69] Demands to lead	,898	18,784	1	166	,001
[v70] Rebellious	,930	12,578	1	166	,000
[v71] Denies authority	,897	19,125	1	166	,001
[v72] Disobedient	,931	12,309	1	166	,000
[v73] Agressive	,920	14,366	1	166	,000
[v74] Ill-tempered	,928	12,931	1	166	,000
[v75] Irritable	,793	43,419	1	166	,000
[v76] Nervous	,807	39,582	1	166	,001
[v77] Bad loser	,935	11,524	1	166	,000
[v84] Teaser	,770	49,446	1	166	,000
[v91] Clumsy	,826	35,020	1	166	,000

## Log Determinants

Diagnosis (Normal - With learning difficulties)	Rank	Log Determinant
Has learning difficulties	19	-7,732
Normal	19	-20,780
Pooled within-groups	19	-14,007

The ranks and natural logarithms of determinants printed are those of the group covariance matrices.

## Test Results

Box's M		602,333
F	Approx.	2,584
	df1	190
	df2	18091,046
	Sig.	,000

Tests null hypothesis of equal population covariance matrices.



## Eigenvalues

Function	Eigenvalue	% of Variance	Cumulative %	Canonical Correlation
1	1,119 <sup>a</sup>	100,0	100,0	,727

a. First 1 canonical discriminant functions were used in the analysis.

## Wilks' Lambda

Test of Function(s)	Wilks' Lambda	Chi-square	df	Sig.
1	,472	117,497	19	,000

## Standardized Canonical Discriminant Function Coefficients

	Function
	1
[v10] Arithmetic	,215
Mother's education	-,247
[v52] Egocentric	-,023
[v53] Demanding	-,238
[v54] Insisting	,330
[v58] Has low tolerance limits	,213
[v60] Pessimist	,393
[v66] Difficult character	-,072
[v69] Demands to lead	,004
[v70] Rebellious	-,447
[v71] Denies authority	-,121
[v72] Disobedient	-,416
[v73] Agressive	-,039
[v74] Ill-tempered	,148
[v75] Irritable	,472
[v76] Nervous	,331
[v77] Bad loser	-,299
[v84] Teaser	,580
[v91] Clumsy	,475

**Structure Matrix**

	Function
	1
[v64] Teaser	,516
[v75] Irritable	,484
[v58] Has low tolerance limits	,475
[v76] Nervous	,462
[v54] Insisting	,455
[v91] Clumsy	,434
[v52] Egocentric	,404
[v10] Arithmetic	,380
[v66] Difficult character	,333
[v71] Denies authority	,321
[v69] Demands to lead	,318
[v53] Demanding	,317
[v60] Pessimist	,312
Mother's education	-,298
[v73] Agressive	,278
[v74] Ill-tempered	,264
[v70] Rebellious	,260
[v72] Disobedient	,257
[v77] Bad loser	,249

Pooled within-groups correlations between discriminating variables and standardized canonical discriminant functions  
 Variables ordered by absolute size of correlation within function.

**Canonical Discriminant Function Coefficients**

	Function
	1
[v10] Arithmetic	,257
Mother's education	-,163
[v52] Egocentric	-,024
[v53] Demanding	-,235
[v54] Insisting	,312
[v58] Has low tolerance limits	,278
[v60] Pessimist	,518
[v66] Difficult character	-,068
[v69] Demands to lead	,004
[v70] Rebellious	-,489
[v71] Denies authority	-,153
[v72] Disobedient	-,449
[v73] Agressive	-,049
[v74] Ill-tempered	,185
[v75] Irritable	,496
[v76] Nervous	,346
[v77] Bad loser	-,327
[v84] Teaser	,669
[v91] Clumsy	,700
(Constant)	-2,560

Unstandardized coefficients

**Functions at Group Centroids**

Diagnosis (Normal - With learning difficulties)	Function
	1
Has learning difficulties	1,850
Normal	-,597

Unstandardized canonical discriminant functions evaluated at group means

**Classification Processing Summary**

Processed		227
Excluded	Missing or out-of-range group codes	0
	At least one missing discriminating variable	59
Used in Output		168

**Prior Probabilities for Groups**

Diagnosis (Normal - With learning difficulties)	Prior	Cases Used in Analysis	
		Unweight ed	Weighted
Has learning difficulties	,500	41	41,000
Normal	,500	127	127,000
Total	1,000	168	168,000

**Classification Function Coefficients**

	Diagnosis (Normal - With learning difficulties)	
	Has learning difficulties	Normal
[v10] Arithmetic	2,762	2,132
Mother's education	1,795	2,194
[v52] Egocentric	-,379	-,319
[v53] Demanding	,398	,974
[v54] Insisting	,748	-,016
[v58] Has low tolerance limits	1,637	,957
[v60] Pessimist	3,263	1,995
[v66] Difficult character	-1,238	-1,072
[v69] Demands to lead	,475	,466
[v70] Rebellious	-1,521	-,324
[v71] Denies authority	-1,113	-,737
[v72] Disobedient	-1,867	-,767
[v73] Agressive	1,301	1,422
[v74] Ill-tempered	1,118	,664
[v75] Irritable	,496	-,717
[v76] Nervous	1,582	,735
[v77] Bad loser	-,967	-,186
[v84] Teaser	3,487	1,849
[v91] Clumsy	4,136	2,422
(Constant)	-19,148	-11,349

Fisher's linear discriminant functions

Classification Results<sup>a</sup>

			Predicted Group Membership		Total
			Has learning difficulties	Normal	
		Diagnosis (Normal - With learning difficulties)			
Original	Count	Has learning difficulties	36	5	41
		Normal	12	115	127
	%	Has learning difficulties	87,8	12,2	100,0
		Normal	9,4	90,6	100,0

a. 89,9% of original grouped cases correctly classified.

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### CLASSIFYING NEW CASES USING DISCRIMINANT ANALYSIS :

#### Introduction

We are often asked how to classify new cases based on a discriminant analysis. The first section of this note describes the way SYSTAT classifies cases into classes internally. This is the way it is done in a file saved from a discriminant analysis and it is how the columns GROUP and PREDICT are calculated. The second section discusses how to use the discriminant function classification coefficients to classify a new observation. The third section discusses a trick which will make SYSTAT automatically classify new observations. People who just wish to classify some new cases should go directly to section 3.

#### Classification in a Discriminant Analysis

When SYSTAT uses discriminant analysis, it classifies cases into classes in the 'standard' way. Here is how that works in a little more detail.

First, suppose there are no prior probabilities specified and there are n possible classes. To classify a case, SYSTAT first calculates D(1),...D(n), the Mahalanobis distances of that case to the centroid of each of the classes. It then calculates the probability of the case being in class j in two steps. First it calculates:

$$R(j) = \exp(-.5 * D(j)^2).$$

Then it calculates:

$$P(j) = R(j) / (R(1) + \dots + R(n))$$

Finally, the program classifies a case into the class with the highest probability.

For example, if there is a case for which the Mahalanobis distances are .5 from the first group and 3 from the second, we calculate:

$$R(1) = \exp(-.5 * D(1)^2) = \exp(-.5*(.5)^2) = .88250$$

$$R(2) = \exp(-.5 * D(2)^2) = \exp(-.5*3^2) = .01111$$

Then P(1), the probability of this case being in the first group, is:

$$P(1) = R(1) / (R(1) + R(2)) = .88250 / (.88250 + .01111) = .98757$$

and

$$P(2) = R(2) / (R(1) + R(2)) = .01111 / (.88250 + .01111) = .01243$$

Since the higher probability is for the first group, the discriminant analysis classifies this case as being in group 1.

The above is the case for equal prior probabilities. Sometimes it is known that the classes do not occur with uniform frequency and it is worthwhile to specify a prior probability distribution in the analysis. That is to say, we know that the classes occur with relative frequencies Q(1), Q(2), ... , Q(n) and these frequencies may not be equal. In this case, the above formula is modified to be:

$$P(j) = Q(j)R(j) / (Q(1)R(1) + \dots + Q(n)R(n))$$

For example, in the case above, suppose we know that the two classes have prior probabilities of .2 and .8 respectively. Then, we have:

$$\begin{aligned}
 P(1) &= .2^*R(1) / (.2^*R(1) + .8^*R(2)) \\
 &= (.2^*.88250) / (.2^*.88250 + .8^*.01111) \\
 &= .95206
 \end{aligned}$$

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and

$$\begin{aligned}
 P(2) &= .8^*R(1) / (.2^*R(1) + .8^*R(2)) \\
 &= (.8^*.01111) / (.2^*.88250 + .8^*.01111) \\
 &= .04794
 \end{aligned}$$

Thus, the case is still classified in the first class. Conceivably, however, it is possible that, with different prior probabilities, the classification could change.

You can find the theoretical basis behind this classification procedure in section 6.2 of Anderson's book.

### Group Classification Function Coefficients

Group classification function coefficients in discriminant analysis are used to classify new cases. The idea is this. Suppose you have a case that has not been classified. It will have observations on all of the continuous variables of the discriminant analysis and, from those observations, it should be possible to classify it in one of the given classes. So, pick one of the group classification functions and its associated constant. Multiply each of the observations by its associated coefficient, add up the products and add the constant. Do this for each of the discriminant functions. Then classify the new observation in the class that has the highest value.

The above is fairly complicated and an example might help. Below is an example from page 295 of Seber's book on multivariate analysis. It concerns two species of 'flea beetles' - *Haltica oleracea* L. and *Haltica carduorum* Guer.

Run the following command sequence to create the data file for the example:

```

BASIC
NEW
SAVE haltica
INPUT X1 X2 X3 X4 BUG
RUN
189 245 137 163 1
192 260 132 217 1
217 276 141 192 1
221 299 142 213 1
171 239 128 158 1
192 262 147 173 1
213 278 136 201 1
192 255 128 185 1
170 244 128 192 1
201 276 146 186 1
195 242 128 192 1
205 263 147 192 1
180 252 121 167 1
192 283 138 183 1
200 294 138 188 1
192 277 150 177 1
200 287 136 173 1
181 255 146 183 1
192 287 141 198 1
181 305 184 209 2
158 237 133 188 2
184 300 166 231 2
171 273 162 213 2
181 297 163 224 2
181 308 160 223 2
177 301 166 221 2
198 308 141 197 2
180 286 146 214 2
177 299 171 192 2
176 317 166 213 2
192 312 166 209 2
176 285 141 200 2
169 287 162 214 2
164 265 147 192 2
181 308 157 204 2
192 276 154 209 2
181 278 149 235 2
175 271 140 192 2

```



Run a discriminant analysis on these data:

```
DISCRIM
MODEL BUG = X1 X2 X3 X4
PRINT NONE / FMATRIX FSTATS EIGEN CMEANS SUM MEANS WILKS CFUNC TRACES CDFUNC,
SCDFUNC CLASS JCLASS
ESTIMATE
```

(You can, of course, use the Statistics->Classification->Discriminant Analysis dialog box to estimate the model. If you do, be sure to use the Statistics button in the dialog to request the results listed in the PRINT command above.) Among the results, you will see the following constants and coefficients for the group classification functions:

```
Classification functions
1 2
CONSTANT -178.309 -194.114
```

```
X1 0.956 0.610
X2 -0.021 0.110
X3 0.684 0.791
X4 0.435 0.579
```

Now, suppose we have a new bug that has measurements:

```
X1: 200 X2:260 X3:140 X4:170
```

Calculate:

For group 1:  $(0.956)*200 + (-0.021)*260 + (0.684)*140 + (0.435)*170 - 178.309 = 177.141$

For group 2:  $(0.610)*200 + (0.110)*260 + (0.791)*140 + (0.579)*170 - 194.114 = 165.656$

The new observation should be classified in group 1, since that function has the larger value.

Sometimes people want 'Fisher's linear discriminant function.' You get that by subtracting column 2 from column 1 and constant 2 from constant 1. That will get you coefficients for a linear function. If you plug the values from a new observation into this function, then you should classify the new observation into group 1 if the value is greater than zero and into group 2 if it is less than zero. If you think about it for a second, this rule is the same as the rule illustrated above. In the case from Seber, if you subtract column 2 from column 1 and constant 2 from constant 1, you will get the linear discriminant function on page 296 of his book.

The output from the example above includes the canonical discriminant functions. These values can be used in a manner similar to the Fisher coefficients to derive a linear classification function.

If you look at Mardia, Kent and Bibby's book, on page 311 they have an example of discriminant analysis that uses a slight variation on the IRIS discriminant analysis of the SYSTAT manual. They have a slightly different viewpoint on classification functions, but, in the end, the classification functions they use agree with SYSTAT's.

### Automatically Classifying New Cases

Suppose you have a discriminant analysis that you have run successfully and you wish to classify some new cases that were not part of the original data set. There is a way to use the SYSTAT DISCRIM procedure to classify a number of cases automatically.

First, add a new variable to your data file, called COUNT. Set COUNT to 1 for all cases, using the LET command or the Data->Transform->Let dialog box. Second, add the new cases to the end of your data file. You won't necessarily know in which category to put the new cases, so you can enter an arbitrary classification or none at all. If you choose to enter an arbitrary classification, just make sure it is one of the classifications or categories of your original data. Third, the important thing to do is to set the variable COUNT to 0 for all the new cases. You will use COUNT as a FREQUENCY variable that will, in effect, tell SYSTAT which cases to use in estimating the classification coefficients. Finally, run a discriminant analysis, but save the results to a file and request the table of Mahalanobis distances and posterior probabilities for each case.

Once you've added the variable COUNT, added the new cases and set their COUNT value to 0, use the following commands to run the discriminant analysis and save the results to a file:

```
FREQUENCY=COUNT
DISCRIM
```

SAVE DISCRIM.SYD / SCORES,DATA  
MODEL BUG = X1 X2 X3 X4  
PRINT NONE / MANUAL  
ESTIMATE

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After the command `FREQUENCY=COUNT`, those cases (your original cases) that have `COUNT=1` are used to estimate the model, but a predicted class is saved for all cases in the file `DISCRIM.SYD`. As a result, your new cases, where `COUNT=0`, will now have a predicted class in that file. If you examine the statistical output from the discriminant analysis, the table will show a posterior probability for membership in each class for each case. In the file `DISCRIM.SYD`, SYSTAT has assigned each case a predicted class, in the variable `PREDICTD`, that matches the class for which the case shows the highest probability.

#### References:

Anderson, T. W., *An Introduction to Multivariate Analysis*, (Second Edition), John Wiley and Sons, New York, 1984, ISBN 0 471-88987-3

Mardia, K.V., Kent, J.T. and Bibby, J.M., *Multivariate Analysis*, Academic Press, New York, 1979

Seber, G.A.F., *Multivariate Observations*, John Wiley and Sons, New York, 1984

#### More Examples

A list of all white papers on Systat Software Products.



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## Appendix IV

### Overview of the Logistic Regression Analysis model I

Logistic regression is used to predict a categorical (usually dichotomous) variable from a set of predictor variables. With a categorical dependent variable, discriminant function analysis is usually employed if all of the predictors are continuous and nicely distributed; logistic regression is often chosen if the predictor variables are a mix of continuous and categorical variables and/or if they are not nicely distributed (logistic regression makes no assumptions about the distributions of the predictor variables). Logistic regression is especially popular with medical research in testing whether or not a patient has a disease.

For a logistic regression, the predicted dependent variable is a function of the probability that a particular subject will be in one of the categories (for example, the probability that a child is normal, given his set of scores on a series of predictor variables).

In our case the dichotomous predictor variable is the diagnosis coded with 0=Has learning difficulties and 1=Normal.

Our regression model will be predicting the logit, that is, the natural log of the odds of belonging to one or the other group of children. That is:

$$\ln(ODDS) = \ln\left(\frac{\hat{Y}}{1-\hat{Y}}\right) = a + b_1x_1 + b_2x_2 + \dots, \text{ where } \hat{Y} \text{ is the predicted}$$

probability of the event which is coded with 1 (Normal) rather than with 0 (Has learning difficulties),  $1-\hat{Y}$  is the predicted probability of having learning difficulties, and  $x_1, x_2, \dots$  are the predictor variables used in the model.

Looking at the statistical **Output Block 0** we see that 164 cases were used in the analysis. In the **Block 0** output the model used includes only the intercept term (which SPSS calls the constant). Given the base rates of the two group options ( $124/164 = 75.6\%$  belong to the "Normal" group and  $24.4\%$  to the "Has learning difficulties" group). With no other information, the best strategy is to predict, for

every case, that a child is Normal. Using that strategy, we will be correct 75.6% of the time.

Under **Variables in the Equation** we see that the intercept-only model is  $\ln(\text{odds}) = 1.131$ . If we take the exponential of both sides of this expression we find that our predicted odds = 3.1. That is, the predicted odds of belonging to the Normal group is 3.1 (since 128 of our subjects are Normal and 40 have learning difficulties, our observed odds are  $128/40 = 3.1$ ).

## Block 0 Output

## Case Processing Summary

Unweighted Cases <sup>a</sup>		N	Percent
Selected Cases	Included in Analysis	164	72,2
	Missing Cases	63	27,8
	Total	227	100,0
Unselected Cases		0	,0
Total		227	100,0

a. If weight is in effect, see classification table for the total number of cases.

## Dependent Variable Encoding

Original Value	Internal Value
Has learning difficulties	0
Normal	1

Classification Table<sup>a,b</sup>

Observed			Predicted		
			Diagnosis (Normal - With learning difficulties)		Percentage Correct
			Has learning difficulties	Normal	
Step 0	Diagnosis (Normal - With learning difficulties)	Has learning difficulties	0	40	,0
		Normal	0	124	100,0
Overall Percentage					75,6

a. Constant is included in the model.

b. The cut value is ,500

## Variables in the Equation

	B	S.E.	Wald	df	Sig.	Exp(B)
Step 0 Constant	1,131	,182	38,714	1	,000	3,100

At **Block 1** output below we have added as predictor variables the ones listed below:

<b>Social Level</b>	Education level of the father (fathedu)
	Education level of the mother (mothedu)
<b>Educational Level</b>	Reading (v6)
	Spelling (v7)
	Arithmetic (v10)
<b>Personality</b>	Egocentric (v52)
	Demanding (v53)
	Insisting (v54)
	Low tolerance limits (v58)
	Pessimist (v60)
<b>Behaviour Problems</b>	Difficult character (v66)
	Garrulous (v68)
	Demands to lead (v69)
	Rebellious (v70)
	Denies authority (v71)
	Disobedient (v72)
	Aggressive (v73)
	Ill tempered (v74)
	Irritable (v75)
	Nervous (v76)
	Bad loser (v77)
	Teaser (v84)
	Clumsy (v91)

1. To see whether the independent variables, as a whole, affect significantly the dependent variable we apply the **Omnibus Tests of Model Coefficients**. This test gives us a Chi-Square of 150.815 with 23 df, significant beyond .000. This is a test of the null hypothesis that adding the predictor variables to the model has not significantly increased our ability to predict the group where our subjects belong to (Normal / with difficulties).

2. Under **Model Summary** we see that the **-2 Log Likelihood** statistic is 31.401. This statistic measures how poorly the model predicts the decisions - the smaller the statistic the better the model. This statistic for the model that had only the intercept is 182.216 (not reported by SPSS) (adding the other variables reduced the -2 Log Likelihood statistic by  $182.216 - 31.401 = 150.815$ , the  $\chi^2$  statistic we just discussed in the previous paragraph).

The Cox & Snell  $R^2$  can be interpreted like  $R^2$  in a multiple regression, but cannot reach a maximum value of 1. The Nagelkerke  $R^2$  can reach a maximum of 1.

The Hosmer and Lemeshow Test (alongside the Contingency Table for Hosmer and Lemeshow Test) express the goodness of fit of the model (i.e. checks how well one can classify children into groups from a knowledge of the independent variables) (the Significance of the test has to be  $> 0.05$ ).



3. The Variables in the Equation output shows us that the regression equation is:

$$\begin{aligned} \ln(\text{ODDS}) = & 23.679 - 1.772 \text{ fathedu} + 1.707 \text{ mothedu} - 1.102 \text{ v6} - 5.349 \text{ v7} \\ & + 2.767 \text{ v10} + 0.399 \text{ v52} - 0.033 \text{ v53} + 0.810 \text{ v54} - 1.716 \text{ v58} - 2.532 \text{ v60} - 0.061 \text{ v66} \\ & + 1.920 \text{ v68} - 2.693 \text{ v69} + 3.145 \text{ v70} - 0.357 \text{ v71} + 0.427 \text{ v72} - 0.650 \text{ v73} + 0.656 \text{ v74} - \\ & 3.125 \text{ v75} - 0.859 \text{ v76} + 3.054 \text{ v77} - 2.714 \text{ v84} - 2.451 \text{ v91} \end{aligned}$$

We can use this model to **predict the odds** that a subject with a given set of score in the variables used in the model will be Normal:  $\text{ODDS} = e^{a+b_1x_1+b_2x_2+\dots}$

We can easily convert odds to probabilities:

The predicted probability of the child being Normal =  $\text{ODDS} / (1+\text{ODDS})$

Before we can use this information to classify subjects, we need to have a decision rule. Our **decision rule** will take the following form: If the probability of the event is greater than or equal to some threshold, we shall predict that the event will take place. By default, SPSS sets this threshold to 0.5. While that seems reasonable, in many cases we may want to set it higher or lower than 0.5. Using the default threshold, SPSS will classify a subject into the “Normal” category if the estimated probability is 0.5 or more. SPSS will classify a subject into the “Has learning difficulties” category if the estimated probability is less than 0.5.

The B values express the increase in the log-odds for a one-unit increase in  $x_i$  with all the other  $x_i$ s held constant. At the same time they measure the association between the relative  $x_i$  and the log-odds adjusted for all other  $x_i$ .

We can use the B values to identify the best variables to use in a prediction. The Wald statistic<sup>1</sup>, and the corresponding significance level in the same table, can be used to determine the variables that have significant effect on the dependent variable

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<sup>1</sup> The Wald statistic is similar to the t-statistic. Tests the null hypothesis that  $B=0$ . The calculation used is:  $\text{Wald}^2 = (B/S.E.)^2$

(we want the significance level to be  $< 0.05$ ). For example, v7 (Spelling) is significant. To interpret its  $\text{Exp}(B)$  value<sup>2</sup>: a one unit increase of the score (in the 1=No problem, 2=Slight problem, 3=Average problem, 4=Serious problem, 5=Very serious problem scale) of the v7 variable, with all other variables held constant, will multiply the odds of a child being Normal by 0.005, which constitutes a 99.5% ( $1 - 0.005 = 0.995$ ) decrease. At the same time, with all other variables held constant, the odds that the dependent variable takes the value 1 (ie. the child is Normal) rise by a factor of 15.918 if the score on Arithmetic (v10) increases one unit, that is the probability changes to  $15.918 / (1 + 15.918) = 0.940$ .

4. The **Classification Table** shows us that this rule allows us to correctly classify  $120 / 124 = 96.8\%$  of the subjects where the predicted event (Normal) was observed. This is known as the **sensitivity** of prediction, the  $P(\text{correct} \mid \text{event did occur})$ , that is, the percentage of occurrences correctly predicted.

We also see that this rule allows us to correctly classify  $36 / 40 = 90\%$  of the subjects where the predicted event was not observed. This is known as the **specificity** of prediction, the  $P(\text{correct} \mid \text{event did not occur})$ , that is, the percentage of non-occurrences correctly predicted. Overall our predictions were correct 156 out of 164 times, for an **overall success rate** of 95.1%. Recall that it was only 75.6% for the model with intercept only.

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<sup>2</sup>

- a) For each variable:  $\text{Exp}(B) = e^B$ .
- b) If the value of  $\text{Exp}(B)$  is  $> 1$  then it indicates that as the explanatory variable increases, the odds of the outcome occurring increase.  
If the value of  $\text{Exp}(B)$  is  $< 1$  then it indicates that as the explanatory variable increases, the odds of the outcome occurring decrease.
- c) When  $|B|$  becomes too large, the Wald statistic is too small leading one to reject the null hypothesis (that is why one can not rely on it always)

**Block 1 Output****Omnibus Tests of Model Coefficients**

		Chi-square	df	Sig.
Step 1	Step	150,815	23	,000
	Block	150,815	23	,000
	Model	150,815	23	,000

**Model Summary**

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	31,401	,601	,896

**Hosmer and Lemeshow Test**

Step	Chi-square	df	Sig.
1	,975	8	,998

**Contingency Table for Hosmer and Lemeshow Test**

		Diagnosis (Normal - With learning difficulties) = Has learning difficulties		Diagnosis (Normal - With learning difficulties) = Normal		Total
		Observed	Expected	Observed	Expected	
Step 1	1	16	15,994	0	,006	16
	2	16	15,257	0	,743	16
	3	7	7,827	9	8,173	16
	4	1	,912	15	15,088	16
	5	0	,010	16	15,990	16
	6	0	,000	16	16,000	16
	7	0	,000	16	16,000	16
	8	0	,000	16	16,000	16
	9	0	,000	16	16,000	16
	10	0	,000	20	20,000	20

Classification Table<sup>a</sup>

Observed		Predicted			
		Diagnosis (Normal - With learning difficulties)		Percentage Correct	
		Has learning difficulties	Normal		
Step 1	Diagnosis (Normal - With learning difficulties)	Has learning difficulties	36	4	90,0
		Normal	4	120	96,8
	Overall Percentage				95,1

a. The cut value is ,500

Variables in the Equation

Step		B	S.E.	Wald	df	Sig.	Exp(B)
1	FATHEDU	-1,772	1,163	2,322	1	,128	,170
	MOTHEDU	1,707	1,054	2,622	1	,105	5,513
	V6	-1,102	1,143	,928	1	,335	,332
	V7	-5,349	2,156	6,154	1	,013	,005
	V10	2,767	1,375	4,050	1	,044	15,918
	V52	,399	,778	,262	1	,609	1,490
	V53	-,033	1,013	,001	1	,974	,967
	V54	,810	,755	1,149	1	,284	2,248
	V58	-1,716	1,183	2,104	1	,147	,180
	V60	-2,532	1,305	3,763	1	,052	,079
	V66	-,061	1,065	,003	1	,955	,941
	V68	1,920	1,182	2,640	1	,104	6,820
	V69	-2,693	1,340	4,042	1	,044	,068
	V70	3,145	1,308	5,781	1	,016	23,227
	V71	-,357	1,397	,065	1	,798	,700
	V72	,427	1,103	,150	1	,699	1,533
	V73	-,650	1,321	,242	1	,623	,522
	V74	,656	1,103	,354	1	,552	1,928
	V75	-3,125	1,487	4,418	1	,036	,044
	V76	-,859	1,256	,467	1	,494	,424
V77	3,054	1,829	2,790	1	,095	21,204	
V84	-2,714	1,306	4,318	1	,038	,068	
V91	-2,451	1,260	3,766	1	,052	,086	
	Constant	23,679	9,480	6,238	1	,013	1,9E+10

a. Variable(s) entered on step 1: FATHEDU, MOTHEDU, V6, V7, V10, V52, V53, V54, V58, V60, V66, V68, V69, V70, V71, V72, V73, V74, V75, V76, V77, V84, V91.



**ΚΕΝΤΡΟ ΔΥΣΛΕΞΙΑΣ & ΕΥΦΥΪΑΣ**

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Πανεπιστήμιο Brunel, Αγγλία

Πανεπιστήμιο Penn State, ΗΠΑ

**Θέμα: Έγκριση Συμμετοχής στην Έρευνα:**

**«Η Σύγκριση της Ψυχο-Κοινωνικής Προσαρμογής Παιδιών  
με και χωρίς  
Μαθησιακές Δυσκολίες - Δυσλεξία»**

Ονοματεπώνυμο Παιδιού: .....

Πατρώνυμο..... Πόλη.....

Σχολείο: ..... Τάξη: .....

Ο/ Η κάτωθι υπογράφων /ουσα κ. .... έχω διαβάσει  
την περιγραφή της έρευνας με τίτλο: «Η Σύγκριση της Ψυχο-Κοινωνικής Προσαρμογής  
Παιδιών με και χωρίς Μαθησιακές Δυσκολίες-Δυσλεξία».

Με την σύμφωνη γνώμη του παιδιού μου, δέχομαι να συμμετάσχει στην έρευνα αυτή με την  
προϋπόθεση ότι θα απασχοληθεί ελάχιστες εκπαιδευτικές ώρες και ότι θα έχει το δικαίωμα  
ελεύθερα να αποσυρθεί από την έρευνα όποτε θελήσει, χωρίς καμία προειδοποίηση. Τα  
αποτελέσματα της έρευνας θα είναι απολύτως εμπιστευτικά και ανώνυμα.

Εγκρίνω να δοθούν τα αποτελέσματα στο δάσκαλο ώστε αν χρειαστεί να βοηθηθεί το  
παιδί μου: **ΝΑΙ..... ΟΧΙ.....**

Υπογραφή γονέα ή κηδεμόνα

.....

Ημερομηνία: ...../...../2009

**Συμμετοχή στην Έρευνα:****«Η Σύγκριση της Ψυχο – Κοινωνικής Προσαρμογής Παιδιών  
με και χωρίς  
Μαθησιακές Δυσκολίες - Δυσλεξία»****Αγαπητέ Γονέα,**

**Σκοπός της έρευνας** είναι η σύγκριση της ψυχο-κοινωνικής προσαρμογής παιδιών με και χωρίς μαθησιακές δυσκολίες–δυσλεξία. (βλ. το εσωκλειστο έντυπο-ενημερωτικό φυλλάδιο). Δηλαδή, συγκρίνονται ως προς τα κοινωνικά προβλήματα, φιλία, επιθετικότητα, μοναξιά, κοινωνικό αποκλεισμό καθώς και ως προς την πρόσβασή τους στα ουσιαώδη κοινωνικά αγαθά (εκπαίδευση, εργασία, κλπ) σε συνδυασμό με την κοινωνική προσαρμογή τους.

Η παρούσα έρευνα αποτελεί μέρος των γενικότερων ερευνών μας στις μαθησιακές δυσκολίες-δυσλεξία και επίσης θα αποτελέσει τη βάση της διδακτορικής έρευνας της Κας Ξύστρου Μαρίας.

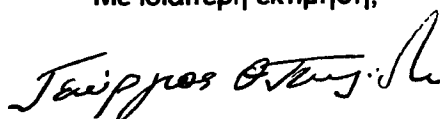
**Περιγραφή της έρευνας:** Θα αξιολογηθούν στην ορθογραφία, ανάγνωση, αριθμητική καθώς και σε ένα απλό ομαδικό τεστ αντιληπτικής ευφυΐας (RAVEN). Επίσης ερωτηματολόγια θα συμπληρωθούν από τους γονείς τους. Ο μέσος χρόνος που θα απασχοληθεί το παιδί θα είναι περίπου μια ώρα. Όλα τα τεστ θα γίνουν μέσα στο σχολείο και **μόνο με την έγκριση του παιδιού.**

**Χρησιμότητα της έρευνας:** 1. Για το παιδί σας: Τα αποτελέσματα των τεστς θα βοηθήσουν τόσο τον δάσκαλο όσο και την οικογένεια στον εντοπισμό τυχόν αδυναμιών και στην επιλογή των σωστών στόχων για το παιδί. 2. Για την κοινωνία: Στην κοινωνία μας, κάθε παρέκκλιση από το ιδανικό άτομο, συχνά απορρίπτεται ή αποκλείεται. Τα άτομα που αντιμετωπίζουν μαθησιακές δυσκολίες και δυσλεξία, συνήθως δεν αντιμετωπίζονται σωστά και δίκαια. Λόγω άγνοιας, δεν έχουν την υποστήριξη που χρειάζονται τόσο στο σπίτι, όσο και στο σχολείο. Ο σκοπός της έρευνάς μας είναι να συμπληρώσουμε τη γνώση για τα δυσλεξικά άτομα έτσι ώστε να αντιμετωπίζονται δίκαια και αποτελεσματικά. Η σωστή και έγκυρη διάγνωσή τους θα οδηγήσει στην ανάπτυξη προγραμμάτων τα οποία θα τους βελτιώσουν τόσο στο κοινωνικό, ψυχολογικό όσο και στον εκπαιδευτικό τομέα μέσω της εξατομικευμένης αντιμετώπισης. Η ευτυχία των παιδιών μας, ευτυχεί την κοινωνία.

**Τα αποτελέσματα της έρευνας είναι εμπιστευτικά.** Προς όφελος του παιδιού σας, μπορούν να κοινοποιηθούν στο δάσκαλο **μόνο εφ' όσον εσείς το εγκρίνετε γραπτά.** Το παιδί έχει το δικαίωμα ελεύθερα να αποσυρθεί από την έρευνα όποτε το θελήσει, χωρίς καμία προειδοποίηση.

**Σας ευχαριστούμε θερμά για την καλοπροαίρετη συνεργασία σας.**

Με ιδιαίτερη εκτίμηση,



**Καθηγητής Γεώργιος Θ. Παυλίδης**

**Αντιπρόεδρος της Διεθνούς Ακαδημίας Ερευνών Προβλημάτων Μάθησης**

**Υ.Γ. Σας παρακαλούμε,** αφού σήμερα συμπληρώσετε το ερωτηματολόγιο, να το επιστρέψετε μέσα στον εσωκλειόμενο φάκελο (με το παιδί σας) στο δάσκαλο.