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THE ANXIETY OF LEARNING DISABLED SCHOOL CHILDREN WITH REMEDIAL INSTRUCTION

A Dissertation

Presented to

The School of Graduate Studies

Department of Educational and School Psychology

Indiana State University

Terre Haute, Indiana

In Partial Fulfillment

of the Requirements for the Degree

Doctor of Philosophy

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by

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August 1995

APPROVAL SHEET

The dissertation of Marco A. Coronado V., Contribution to the School of Graduate Studies, Indiana State University, Series III, Number 592, under the title The Anxiety of Learning Disabled School Children with Remedial Instruction is approved as partial fulfillment of the requirements for the Doctor of Philosophy Degree.

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ABSTRACT

The purpose of the present study was to investigate the anxiety levels of elementary school learning disabled (LD) students provided with at least one semester of remedial instruction. It was hypothesized that there would be a significant difference in anxiety levels between LD and regular education (RE) students. The variables were anxiety, grade level, and gender for the LD and RE students.

A sample of 90 students from 3rd, 4th, and 5th grades were divided into the LD and RE groups. Students in the LD group had been provided with remedial instruction ranging from one to seven semesters with an average of three semesters. The students' anxiety was self-reported on the RCMAS. The LD and RE sets of scores were analyzed using a 3-way analysis of variance with the level of significance set at $p < .05$.

The results indicate that, compared to non-LD, the LD students displayed significantly higher levels of general anxiety, worry, oversensitivity, social concerns, and concentration difficulties. LD females displayed significantly higher levels of general anxiety, worry, and oversensitivity than LD male students. In addition, LD 5th-grade females showed significantly higher levels of anxiety than LD 3rd and 4th grade male and female students. Moreover, LD and RE lower grade students did lie significantly more than upper grade students.

ACKNOWLEDGEMENTS

Thanks to the support, assistance, and contribution of several people, it has been possible to complete this project. I would like to thank Dr. Liam Grimley, Dr. Richard Antes, Dr. Kenneth Walker, Dr. Karl Zucker, and Dr. James Jacobs, members of my doctoral committee for their expertise, assistance, encouragement, and support during the process of my dissertation. I would like to acknowledge the generous contribution of Dr. Marilyn Faris and Mr. Steve Runyon from Covered Bridge Special Education District, as well as Mrs. Adrianne Gideon, principal of Rosedale Elementary School, as it would not have been possible to collect the data for this study without their permission and cooperation. Special thanks must also go to Dr. William Littlejohn, Director of Blumberg Center for Interdisciplinary Studies in Special Education, Indiana State University, Indiana, for contributing funds to conduct this research.

I would also like to extend my appreciation to my friend Larry Gordon for his exceptional friendship, understanding, support, and helpful writing assistance especially during my doctoral coursework. Finally, I wish to dedicate this work and what it means to my beloved family, to Hilda, my wife, friend, and tireless supporter, and to my precious children, Yazmin and Nelson for their patient understanding, and continued encouragement.

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Chapter 1

INTRODUCTION

School children are frequently subjected to real and imaginary threats that may produce anxiety, and the effects of this anxiety may be seen in the children's affective, motor, cognitive, academic, and/or physiologic manifestations. Since school children display a wide range of individual differences, they may experience anxiety at different levels such as low, mild, and severe. Thus, a student with a very low level of anxiety may also experience a very low level of motivation and school performance is likely to be poor. In contrast, a very high anxious student may tend to experience excessive stimulation, but his school performance deteriorates because the student becomes overwhelmed and disorganized.

Children with LD manifest higher levels of anxiety than non-LD students (Margalit and Zak, 1984; Margalit and Shulman, 1986; Stein and Hoover, 1989). A review of research studies indicates that children with LD have high levels of anxiety combined with failure in school (Margalit and Zak, 1984). Besides low academic achievement they appear to have several related difficulties associated with

anxiety, such as self-perception of incompetence, low self-concept, and poor social interaction. It is often difficult for these children to feel good about themselves when they know they are far behind their classmates in academic achievement (Brand, 1989). As a consequence, they frequently perceive themselves as incapable learners. This may lessen their self-concept which, in turn, may increase their anxiety level (Bryan, Sonefeld, and Grabowski, 1983).

Statement of the Problem

The problem investigated in this study was to establish the level of anxiety of school children with learning disabilities (LD) who were provided with remedial instruction. Two groups of children were compared: LD Group and RE group. The LD group consisted of children with LD who did receive remedial instruction for at least one semester for their learning problems; and the RE Group was made up of children in regular education who had not been identified as LD. The anxiety level of the LD group was compared with that of the RE Group. The dependent variable selected for the study was self-reported anxiety, while the independent variables included: (a) classification of students; (b) grade level; and (c) gender.

Anxiety is a feeling of threat or danger that affects every child on certain occasions. Children with LD reveal their anxiety in behaviors such as being fatigued, inattentive, and showing concern about school or home. In addition, they appear to be unhappy and pessimistic, to make

derogatory comments about self, to be preoccupied, to fear mistakes, and to tend to develop physical symptoms (Cohen, 1986).

Bogdanowicz and Jacklewicz (1989) found that LD children's anxiety becomes more intense as the academic tasks increase in difficulty. In addition, Margalit and Jacklewicz (1989) report that academic achievement, social interaction, and medical disturbances such as muscular, motor, gastric and sleep disturbances were present in children with LD manifesting very high levels of anxiety. Therefore, high levels of anxiety appear to have detrimental effects on the LD student's adjustment including academic performance, social skills, physical functioning, and self-perception (Cohen, 1986; Mehring & Colson, 1990; Margalit & Shulman, 1986).

Mild levels of anxiety often have positive effects on a person's life and become a dynamic stimulus for constructive activity. It can, for example, help a student to cope positively with physical, academic, and social emergencies. In contrast, severe levels of anxiety can adversely affect a learner's physical, academic, social, and personal adjustment (Margalit & Raviv, 1984; Bogdanowicz & Jacklewicz, 1989). Manzo (1987) estimated that about 15% to 20% of dyslexic difficulties are rooted in emotional problems.

Severe anxiety affects many individuals at one time or another. The severity of its symptoms is reflected in the

fact that anti-anxiety drugs are prescribed for more than 80 million people in the United States each year (Taylor & Arnow, 1989). In its chronic level, anxiety can distort an individual's perception of a stimulus and compel him/her to mobilize for an emergency that is not real (Morris, 1990).

While an individual with severe levels of anxiety is seen as being maladjusted, a person with mild levels is regarded as being normal. According to Corsini and Wedding (1989), cognition and evaluation of the threatening stimulus and situations are important determinants of an individual's responses. Thus, individuals with normal anxiety often base their responses on an accurate evaluation of the risk and the magnitude of the danger, and correct their misperceptions using logic and evidence. In contrast, highly anxious people frequently base their responses on false assumptions that lead to misperceptions of danger. These people have difficulty recognizing cues of safety and additional sources of evidence that would minimize the threat of danger.

While there is no doubt that anxiety affects individuals' perception, thinking, and behavior, there is disagreement among professionals regarding the nature of anxiety. Anxiety can be understood from many different perspectives -- including the perspectives of psychoanalysts, learning theorists, scientists, geneticists, developmentalists, and existentialists -- as a harmful emotional disorder that (a) manifests conflict of

consciousness; (b) is learned and also can be unlearned; (c) results from chemical imbalances; (d) is inherited; (e) reveals problems of maturation; and (f) is the result of an inner struggle of being (Grist, Jefferson, & Marks, 1986).

Spielberger (1986), in his effort to study the duration of anxiety in an individual's life, presented a trait-state conception of anxiety, directed to differentiate between the "constant anxious person" (trait anxiety) and the person that is "temporarily anxious" (state anxiety). According to Sims and Snait (1988), anxiety is an emotional behavior that either occurs without stimulus, or is out of proportion to the degree of the stimulus, or persists for an unreasonable duration after the removal of the stimulus, or results in a consequent behavior response which is inappropriate for dealing with the threat of the stimulus.

The DSM-III-R defines anxiety as a maladaptive reaction that is indicated either by impairment in school functioning or in unusual social interaction or by symptoms that are in excess of a normal and expectable reaction to the threatening stimulus (DSM-III-R, 1987, P. 329).

Although these definitions are different from each other, there are several characteristics that appear to be common to most definitions of anxiety. Such characteristics include the following: (a) it is a subjective emotional state; (b) the emotion is unpleasant; (c) it is directed toward the future; (d) there is either no recognizable threat or the threat is quite out of proportion to the

emotion it seemingly evokes; (e) there are subjective body discomforts during the period of the anxiety; and (f) there are manifest bodily disturbances (Lewis, 1970).

This study specifically compared the levels of anxiety of children with LD who had received at least one semester of remedial instruction with the levels of anxiety of regular education students. It was believed that children with LD who had received remedial instruction would differ in their anxiety levels from those of non-LD children. But no research findings were found to support or refute this assumption.

It was anticipated that results of this research would contribute to: (a) increased knowledge about anxiety in school children with LD; (b) improved assessment of and planning for children with LD since attention will be given not only to their learning difficulties but also to their level of anxiety; and (c) improved attitude, tolerance, and teaching strategies for children with LD in both school and home.

Purpose of the Study

The major purpose of this study is to examine the anxiety levels of LD school children who had been provided with at least one semester of remedial instruction in the elementary school.

Definition of Terms

Anxiety. In this study, in which the Revised

Children's Manifest Anxiety Scale (Reynolds & Richmond, 1985) was used, anxiety is defined as "a frequent perception of threat, particularly where no real physical or psychological threat exists . . . that interferes seriously with the individual's effectiveness in daily activities and can disrupt normal thought processes" (p. 3).

Learning Disability (LD). Refers to severe specific deficits in perceptual, integrative, or expressive processes that seriously impair the learner's efficiency and involve a significant discrepancy between the student's academic achievement and learning potential.

The significant discrepancy must be manifested in one or more of the following seven academic areas: (a) listening comprehension; (b) basic reading skills (reading recognition); (c) reading comprehension; (d) expressive language; (e) written expression; (f) mathematical calculation; and (g) mathematical reasoning.

The term LD includes certain conditions and excludes others. It includes conditions such as perceptual disabilities, brain injury, minimal brain dysfunction, dyslexia, and developmental aphasia. These problems may be manifested in the student's disturbances of listening, thinking, talking, reading, writing, spelling, or arithmetic. The term LD excludes from its definition learning problems that are due primarily to visual, hearing, orthopedic, mental, or emotional disabilities, or to environmental, cultural, or economical disadvantages (Title

511 Indiana State Board of Education, 1992).

LD Group. Elementary students diagnosed as LD, placed, and provided with remedial instruction for at least one academic semester.

RCMAS. Revised Children's Manifest Anxiety Scale. The RCMAS is an instrument to measure anxiety. It consists of the following five factors: (a) Total Anxiety (TA), (b) Physiological Anxiety (PA), (c) Worry and Oversensitivity (WO), (d) Social Concerns and Concentration, and (e) Lie (LI) or Social Desirability. A description of these factors is found under the instrument section in Chapter 3.

RE Group. Elementary students receiving regular education who were never identified as LD.

Remedial Instruction (RI). Refers to the help provided by a learning disability specialist to students with LD whose academic deficiencies or disabilities appear so severe or specialized as to require more precise, intense, or individualized attention. The assistance usually is focused on skill remediation and/or ability remediation. Skill remediation tries to correct or strengthen specific academic skills such as decoding in reading, carrying in addition, or spelling in writing. In ability remediation, the assistance is directed to correct presumed deficits in cognitive processes such as perception, memory, and attention (Encyclopedia of Special Education V3, 1987).

Assumptions

In the present study the following assumptions were

made:

1. The LD children in the sample were appropriately diagnosed as learning disabled and had no other reported disability.

2. The learning disability teachers provided LD students with similar remedial instruction.

3. None of the children in the RE Group were reported to have a learning disability problem.

Limitations

The design and sample of the study provided the following limitations:

1. The sample was small in that there were approximately 15 subjects per grade level.

2. The length of the remedial instruction provided to the LD group depended on when students were identified as LD. The range of remedial instruction was one to seven semesters, with an average of three semesters.

3. Generalizations to other groups of school children need to be made in relation to the particular characteristics of the sample for this study.

4. No knowledge was available about the cause of the development of anxiety in LD children outside of the traditional special education model.

Chapter 2

REVIEW OF RELATED LITERATURE AND RESEARCH

Students with LD have certain characteristics that differentiate them from non-LD learners. For instance, a severe discrepancy between achievement and learning potential is the feature that is common to every student diagnosed as having a learning disability (Gearteart, 1986, p. 16). In addition, there appear to be other characteristics that are more common to the students with LD than to the general population of learners. Such features may include: academic learning difficulty, language disorders, perceptual disorders, motor disorders, memory problems, attention problems and hyperactivity, and social and emotional difficulties. However, not all of these characteristics are shown by every student with a learning disability problem (Mercer, 1983).

Although social and emotional problems are not included as primary factors in the LD definition, they appear to be merged with other difficulties affecting students with LD in most learning and social situations, and anxiety is one type of emotional response to a learning condition. This chapter discusses the anxiety of LD children in relation to academic

achievement and social competence. It also discusses the remediation of LD children and the nature of the RCMAS as an anxiety measure.

Academic Achievement and Anxiety

Students with LD often display behaviors that manifest high levels of anxiety and low academic performance. Mehring and Colson (1990) report that highly anxious students: (a) respond similarly to students with learned helplessness, (b) tend to avoid failure because they fear negative evaluation results, (c) tend to avoid evaluative situations and select easy tasks, (d) attend poorly to task details, (e) appear to be constantly worried, (f) think about inadequacies that make learning material harder to grasp, (g) display poor short term memory and low processing speed, (h) have difficulty learning material that lacks organization, and (i) blame themselves for their learning failures.

In line with the Mehring and Colson (1990) study, Cohen (1986) in a comparative study about academic apprehension reported that students with LD consistently evidenced a variety of worries that were outside their awareness. They imagined that academic performance was a dangerous situation in which they would humiliate themselves, fail, and be helpless.

Academic anxiety typically develops when students believe that the learning demands exceed their abilities. It often appears to have a disruptive effect in learning and

testing situations, particularly in reading, mathematics, and science.

Review of research indicates that anxiety has debilitating effects on a variety of academic activities. For instance, high test-anxious students, when compared to low test-anxious learners, appear to be less competent in academic task performance. They are less rapid, less correct, and more prone to cheating in testing conditions (Bryan, Sonefeld, & Grabowski, 1983). Sarason (1984) reported that, compared to low anxious students, high anxious learners often exhibit thoughts that are irrelevant to task completion but show excessive concern about evaluation and self-criticism.

Fear of failure is a common characteristic of students with LD. Bryan, Sonefeld, and Grabowski (1983) compared 60 LD students, grades 3rd through 8th, with a non-LD group. Three anxiety scales were administered to the two groups to measure their anxiety in response to learning and school performance. The study results indicated that the LD group's anxiety was significantly higher than that of the non-LD subjects. In sum, this finding reveals that, in a learning situation, LD students are more likely to be anxious or motivated by the fear of failure than the non-LD learners.

Reading Anxiety. Forman and O'Malley (1984) define reading anxiety as "the extent to which a student feels anxious when engaging in or thinking about reading" (p.

165). For instance, Wark and Bennett (1981) found a negative relationship between test anxiety and reading comprehension. While low anxious readers scored at the 87th percentile, high anxious readers showed much poorer comprehension. They scored at the 50th percentile. The researchers also indicate that, compared to the low-anxious group, the high-anxious readers scored slightly higher in items that called for specific factual information, but significantly lower in items asking for interpretation of facts or calling for integration of material located in different parts in a paragraph.

Since children with reading difficulties usually have a history of failure in school testing situations, they may appear to be more likely than normal readers to have high evaluative anxiety. It can be speculated that the risk of being seen as stupid, may cause the poor anxious reader to systematically avoid practice and feedback (Johnson, 1985). The reading-anxious student is often identified by the teacher in oral reading activity in which the student may either show behavioral signs of anxiety such as stammering or quivering voice, or will attempt to avoid the reading activity.

Severe reading anxiety can adversely affect the students' academic progress as well as their physical and personal development. Bogdanowich and Jacklewicz (1989) in a 10 and 20 year follow-up study tested the hypothesis that school failure related to dyslexia and dysortographia result

in neurotic disorders that influence the learners' ulterior development. A 10-year-old, 4th grader dyslexic and dysortographic group was compared with normal peer readers. Ten years later the same measures were administered to the two groups. The results revealed that neurotic disorders were present in 76% of the dyslexic group while in 12% of the control group. Another 10 years later, when the subjects were 30 years old, the results showed neurotic disorders in 49% of the dyslexic group while in 8% of the control subjects.

The research outcomes confirmed the investigators' hypothesis. The findings in the preliminary study with 10-year-old children indicated that the dyslexic group suffered from medical disturbances in the muscular, motor, gastric, and urinary systems, with sleep disturbances being the most frequent. Moreover, the researchers pointed out that anxiety was the predominant symptom found in the dyslexic group in both the preliminary and the follow-up studies.

In addition to the medical disturbances, the results revealed that the two groups differed significantly in academic performance and schooling. Education was discontinued by 37% of the dyslexic group and by 4% of the control group. While retention for two or more years occurred for 59% of the dyslexics, 12% of the control subjects did so. Enrolment in higher education was observed in 2.4% of the dyslexics and in 30% of the control group.

The results of the follow-up study also indicated that

the experimental group was experiencing adjustment difficulties manifested in: (a) high levels of introversion; (b) loneliness; (c) inadequate ability to control emotions and behavior; (d) feelings of discouragement; (e) irritability and tendency to self-accusation; (f) emotional tension and inability to relax; (g) fear of criticism and distrust of the environment; (h) difficulty in social interaction; and (i) feelings of inferiority and lack of self-confidence.

In sum, the investigators stressed the idea that during childhood and adolescence, the dyslexic group experienced neurotic symptoms with anxiety being the most predominant, and that severe reading anxiety exerts a decisive adverse influence on the LD children's academic performance and personality development.

Mathematic Anxiety. Refers to the degree to which a student feels anxious when embarking on or thinking about the manipulation of numbers and solving mathematical problems (Forman & O'Malley, 1984). The experience of having mathematic anxiety has been shown to have a deleterious effect on academic performance. Often, mathematic-anxious students express anxiety about mathematic performance or attempt to avoid mathematical courses.

In addition to the students' learning difficulties it has been speculated that mathematics by itself is a threatening subject. For instance, Richardson and Woolfolk (1980) asserted that mathematics with its precision, linear

logics, and emphasis on problem solving, possesses certain characteristics that provoke anxiety in some students, especially in those with a mathematic learning disability. However, the level of mathematic anxiety may vary among students with math learning problems. A student's math anxiety may depend also on the value he/she attaches to mathematics. For example, a student doing poorly in math but wanting to do well may manifest high levels of math anxiety. In contrast, a student doing poorly in math but giving little importance to it may not be anxious about math (Wighfield & Meece, 1988).

Research findings suggest that math anxiety, like test anxiety, increases with age, and that females manifest higher math anxiety than males. Wighfield and Meece (1988) in a two-year study of students in grades 6 through 12, found significant differences in math-anxiety with 6th grade being the least and 9th grade the most math-worried. In addition, gender differences were also significant with females showing higher negative affective reactions to math than males.

Science Anxiety. Science learning has been of academic concern, especially during the last two decades. It appears that science anxiety may be one of the factors responsible for the science learning problem. In United States, for example, science anxiety has raised important educational issues such as (1) why students are turning away from the study of science in elementary and secondary schools, (2)

the declining in science enrollments in upper educational levels, (3) the reluctance individuals, in general, express in relation with science related problems, and (4) the decline of science test scores (Czerniak & Chiarelott, 1984).

According to Mallow (1981), science anxiety is defined as a general fear or aversion by learners toward science concepts, scientists, and science related activities. Mallow (1981) claims that students manifest their science anxiety physically and psychologically. Physically, learners may present sweaty palms, upset stomachs, headaches, and rashes. Psychologically, students may display tension and nervousness expressed in behaviors such as tapping feet, chewing nails, becoming distracted, and pulling at hair. Because of the diffuse or vague fear that arises in response to the prospect of learning science, students are likely to feel frustrated, deny competence in science, and dislike and avoid anything scientific and quantitative. This, in turn, affects their science academic achievement (Chiarelott and Czerniak, 1987).

In their study of science anxiety in relation to achievement, sex, and grade level, Czerniak and Chiarelott (1984) compared 119 4th graders, 129 6th graders, 182 8th graders, and 102 9th graders. The reported results indicate that (a) anxiety toward science is gender related. Females appeared to be more anxious than males; (b) females in grade 4th displayed significantly higher science anxiety than

males; (c) science anxiety did not increase with grade level; and (d) high levels of science anxiety correlated highly with low science achievement scores. This would suggest that high levels of science anxiety may limit the students' ability to achieve in science.

In addition to its link with gender and grade level, anxiety appears to be associated particularly with curricular areas such as mathematics and natural science including physics and chemistry. Natural science has been found to be the academic area that generates the highest level of evaluative anxiety, particularly in high school and college students. For instance, in their exploratory analysis of the role of subject matter in test anxiety production, Everson and collaborators (1991) studied the responses of 214 pre-college students to the Worry-Emotionality Scale in relation to courses such as English, mathematics, science, and social studies. The results reveal that the science course elicited the highest level of evaluative anxiety, followed by mathematics, English, and social studies. This finding would suggest that students may perceive science as being both the most difficult area of study and as a career filter. Therefore, many students may be prevented from choosing certain fields they fear have science courses as prerequisites.

Social Competence and Anxiety

Review of related research reveals that school children with LD often are anxious, display a low concept of self,

misperceive others' nonverbal expressions, and exhibit difficulty in social interaction.

Self-Perception. Self-perception refers to one's ideas or perceptions about oneself. The repetitions of those perceptions shape a self-concept which is one of the most important factors influencing a child's academic, social, and personal functioning (Mehring & Colson, 1990). It has been found that children with LD are anxious, and display a low self-concept as well as low level of personal independence. Margalit and Zak (1984) hypothesized that anxiety levels are inversely related to self-concept levels in children with LD. To verify this hypothesis, the researchers compared a group of 100 LD children attending LD classes against a group of 118 non-LD attending regular classes. Personality measures were administered to the two groups. The reported results indicate that the LD subjects had higher levels of anxiety related to their feelings of being victims of uncontrolled forces, and expressed lower levels of self-concept relating to their feelings of self-dissatisfaction.

In a study involving six and seven LD graders attending special school for LD students in Israel, Margalit and Shulman (1986) reported that, compared to non-LD children attending regular school, LD students expressed lower levels of autonomy and higher levels of anxiety. The LD subjects were more dependent and less able to resist pressure from other people such as parents and other children. The

investigators interpreted the LD's high levels of anxiety as a stable personality measure underlining the specific nature of their learning problems.

When LD students are asked to evaluate themselves, they often see their learning problems as originating within themselves extending to all performances and lasting forever in their lives. This feeling of being incompetent learners may compel them to withdraw more and more, losing interest in many if not in all school activities (Rowley, 1981).

Self-perception of incompetence may also prevent LD students from being chosen as partners. For instance, Corkery (1984) report a positive relationship between perceived self-competence and peer ratings. The reported findings indicate that peers tend to choose as study partners those who perceive themselves as competent academically, as teammates those who perceive themselves as competent in sports, and as friends those who see themselves as socially competent. Corkery's report also content that students with a more positive self-concept tend to reflect a lower level of anxiety. Similar findings are reported by Sherbenou and Holub (1982). They indicate that poor academic records often make students ineligible for important extracurricular social experiences such as athletics, social interest groups, cheer leading, and so forth.

Social Perception. Daily communication includes both verbal and nonverbal information. It has been suggested

that between 70% and 90% of any social transaction is dominated by nonverbal information (Jackson, Enright, Murdock, 1987). Nonverbal communication includes signs such as facial expressions, tone of voice, body movement, body posture, and distance from others (Morris, 1990). A child must learn to interpret these emotional cues to be able to fit in any social situation. According to Bandura (1986), "the ability to read signs of emotions such as happiness, fear, and anger has considerable adaptive value in guiding actions toward others" (p. 309). Therefore, failing to perceive nonverbal cues may lead to a learner to respond inappropriately to emotional stimuli.

In addition to their low self-concept, children with LD often display inadequate social perception skills. Research findings support the hypothesis that children with LD are less accurate and slower than non-LD subjects to interpret facial signs of emotions. For instance, Axelrod (1982) in a comparative study noticed that students with LD were significantly less accurate in interpreting facial expressions than their non-LD peers.

Following this line of research, Holder and Kirpatrick (1991) designed a study to investigate the accuracy and reaction time of children with LD in relation to their perceptions of facial expressions of the primary emotions of fear, sadness, surprise, anger, happiness, and disgust. A sample of 96 children included LD and non-LD, male and female students ranging in age from 8 to 10 and from 11 to

15 years. The subjects were shown photographs and asked to label the six emotional expressions.

The reported results indicate that (a) compared to non-LD, the LD subjects were less accurate interpreters of emotions and spent a longer time identifying specific emotions, (b) younger subjects required more time to interpret the emotions of fear and anger, (c) males spent more time interpreting the emotion of happiness, (d) younger LD females revealed difficulty to interpret the six emotions, (e) older LD children were rapid but inaccurate interpreters of emotions, and (f) there were no significant gender differences in interpreting facial expressions of emotions. In short, results of this study support other findings indicating that compared to non-LD students, LD subjects are significantly less proficient interpreters of signs of emotions from facial expressions.

Pearl, Bryan, and Donahue (1983) reviewing several studies of social perception of children with LD encountered that LD students are prone to misunderstand and misread visual social stimuli. The reviewers concluded that compared to non-LD, the LD children (a) are less successful at identifying emotions depicted by individuals, (b) consistently make more incorrect inferences, (c) make more errors in guessing how other children would fell in different situations, (d) are less accurate in their understanding of others' thoughts, feelings, and perceptions when these conflict with their own, and (e) are

less tactful in communicating bad news to their peers in a painless way.

In the same wave, in a comparative study of social competence, Carlson (1987) examined 48 second through fifth grade boys. Four hypothetical social situations were shown to the boys and individual interviews about their goals and strategies were accomplished. The results revealed that the LD children performed with less social competence and at lower developmental levels than their non-LD peers. Compared to non-LD, the LD boys: (a) used less acceptable strategies for solving social conflicts, (b) displayed less ability to generate alternative solutions to a conflictual situation - they generate only unilateral resolutions such as a win-lose situation - and (c) were less likely to seek goals of compromise, but more likely to seek goals of accommodation, avoidance, or rule-orientation as goals for social interaction.

Pickering, Pickering, and Buchanan (1987) investigated the cartoon humor comprehension of 60 LD and non-LD school boys divided in two-age groups, eight and twelve years old. Emphasis was put on the cognitive incongruence of humor rather than in its content. Incongruity refers to the inharmoniousness of a graphic expression of a situation which must be cognitively perceived for humor to occur. Results of this research support the hypothesized cognitive structure. The LD boys were able to identify significantly less criterial incongruities than their non-LD peers. This

results suggests that, compared to non-LD students, LD subjects have lower ability to comprehend humor expressed in cartoon characters. In addition, the finding that old subjects identified significantly more criterial incongruities than younger boys reveals that comprehension of humor is developmental. Therefore, because of this lack of humor comprehension LD children pretending they understand humor, they may laugh inappropriately or they may tell a joke omitting the incongruity resulting in a distorted sense of humor which may weak their social acceptance.

Additionally, understanding verbal and nonverbal humor is another important aspect of social perception in which LD children also appear to have a lack of sense of such type of humor. In a comparative study using middle school children Bruno, Johnson, and Simon (1987) found that LD students exhibited significantly less comprehension of humor than their non-LD peers. The investigators also reported that although LDs could tell the same amount of jokes as non-LDs did, they appeared to be very weak when the humor was derived from slight changes of voice. Accordingly, LD subjects seems to lack the ability to discern sound information that is implied but not provided. Thus, an LD child may respond inappropriately in a non-explicit verbal social situation.

Misinterpretation of social situations, such as expressions of negative feedback from others, may be

disadjusting. According to Golman (1982), deficits in social perception may be even more devastating than perceptual problems in academic areas. Social perceptual problems often result in feelings of inadequacy and apprehension as well as in attitudes of alienation from peers, teachers, and parents. In severe cases, anxious and social imperceptive children have been found to be socially neglected, isolative, withdrawn, shy, and lonely (Strauss, 1990).

Age/Grade Level and Anxiety

Different fears and anxieties seems to be associated with developmental stages and/or grade levels. For instance, children with separation anxiety disorder are usually younger than children with other types of anxiety (Husain & Kashani, 1992). Last (1987) in a study of specific types of anxiety found that while children with separation anxiety were usually prepuberal, children with school phobia tended to be postpubertal.

Additionally, in a study of overanxious disorder, Strauss, Lease, and Last (1988) compared 55 children 5 to 11 years old with adolescents 12 to 19 years old. The results indicate that 66% of the older children met most of the diagnostic criteria for overanxious disorder compared to only 35% of the younger children. Moreover, the older children reported higher levels of anxiety on various self-report measures. In another study of anxiety in relation to age, Strauss (1988) compared 8, 12, and 17 year olds. The

results show that anxiety symptoms such as separation concerns decrease with age, while specific fears and social embarrassment increase with age.

Kashani and Orvaschel (1990), by analyzing the Strauss' 1988 sample, reported that while overall rates of anxiety remain stable during the developmental transitions, the focus of the anxiety changes. In early years the child's anxiety is family oriented. Then, the interpersonal and peer concerns as well as the social fears and anxiety about personal adequacy increase as the child ages. Furthermore, anxiety disorders appeared to be critical for interpersonal relations. While non-anxious subjects improved their peer relations as they grew older, anxious subjects did not improve their interpersonal relations by late adolescence.

Wigfield and Meece (1988) assessed math anxiety in 6th through 12th grade students. The results showed the highest math worry in 9th grade and the lowest in 6th grade students. The researchers interpret the 6th grade finding as due to the less pressure of elementary school in comparison with the junior high and high school emphasis on evaluation. Thus, in the researcher's view, the students' math anxiety is linked to evaluation in relation to the pass/fail idea that reveals the student's academic performance in math.

By the same token, Schneider and Coutts (1984) found a relationship between anxiety and lower academic orientation in female students. Their findings indicate that 12th grade

girls reported higher levels of anxiety and perceived less achievement emphasis in their school environment than 10th grade girls and 12th grade boys. Moreover, the investigators claim that the feelings of anxiety are likely to increase with the increases in the intensity of role conflicts and often less than satisfactory attempts to resolve them.

In addition to the Schneider and Coutts' research, Hembree (1988) examined the relationship between the need for achievement and test anxiety. The findings indicate that while in the elementary grades that relationship is inverse, suggesting that high test-anxious students have lower needs to achieve, in high school students the relationship appeared to be positive and significative. This indicates that high test-anxious high school students experience strong fears of negative evaluation and negative feelings toward tests. Following this line of research, Hembree (1988) reviewed 20,483 studies about test anxiety with first through 12th grade students. The analysis revels that early elementary grades have little test anxiety, its prevalence raises sharply in grades three to five, it appeared to stabilize near grade five, remain essentially constant through high school, and display a small decline in college.

Contrasting with the general findings that anxiety increases as students get older, other researchers have found that anxiety decreases as children age. To illustrate

this hypothesis, in their multicultural study including Canadian, American, and Mexican students, Richmond and Millar (1984) encountered that scores in social desirability (lie scale) decreased as children get older. In line with this study, Strauss (1990) reports a general decline of fears from young childhood to adolescence. However, certain specific fears and anxieties seems to peak at certain particular ages. For example, separation anxiety tends to have high prevalence in young children, overanxious and avoidant disorders appear to be equally prevalent in pre- and postpubertal children, while social phobias are more common in adolescent subjects.

Chiarelott and Czerniak (1987) in their science anxiety study with 4th, 6th, 8th, and 9th graders proclaim that 4th grade female students are significantly more anxious than female students at other grade levels. On the other hand, the researchers found that in males, science anxiety appeared to increase slightly by grade level, but it drops off considerably by 9th grade. Moreover, Chiarelott and Czerniak report that the period with less science anxiety appears to be 9th grade for males and 6th grade for females. Similarly, in a study of science anxiety, Wynstra and Cummings (1990) noticed that students in the first year of Chemistry had higher levels of science anxiety than those in the second year of Chemistry class.

Gender and Anxiety

Review of research indicates that anxiety is more

prevalent in females than in males. For instance, by reviewing several studies, Husain and Kashani (1992) found that while the anxiety prevalence for boys ranges from 3% to 36%, for girls that prevalence ranges from 5% to 50%. Also, Abe and Masui (1981) encountered that many fears were more prevalent in girls, except the fear of talking which appeared to be more prevalent in boys.

According to Czerniak and Chiarelott (1984), females consistently show higher levels of anxiety than males; and only females have been found to become more anxious over time (Husain and Kashani, 1992). By reviewing 526 test anxiety studies, Hembree (1988) found that females displayed somewhat more test anxiety than males through elementary, high school, and college. According to Hembree's findings, a small gender differences appeared in the first years of school, increased to a peak in 5th to 10th grades and declined through upper high school and college.

It appears that gender differences are related to some specific types of anxiety. For example, in a math anxiety study in 6th through 12th grade students, Wigfield and Meece (1984) reported no gender differences in worry, but significant differences in affective reactions. In each grade level girls reported higher levels of negative affective reactions toward math than did boys. Similarly, Wynstra and Cummings (1990) in their study of science anxiety and test anxiety reported that females in Chemistry classes were more science anxious than males, but there were

no gender differences in test anxiety.

Likewise, in a study of gender and test anxiety, Best and Stanford (1983) compared 20 male and 20 female students. The results indicate that females reported significantly more test anxiety than males. The researchers claim that these results also apply to both general anxiety and school anxiety.

Gender differences have also been reported in science anxiety. Consistently it is found that science anxiety has high incidence especially on high school and college female students. A case in point, Czerniak and Chiarelott (1984), in their science anxiety study at Loyola University of Chicago, reported that two-thirds of the applicants to a science anxiety clinic were females, and that gender differences were larger for high school students than for elementary children. In addition, the results of the study indicate that, overall, females displayed significantly higher science anxiety than males, and that high level of science anxiety correlates with low science achievement. This would suggest that high levels of science anxiety may limit a student's ability to achieve in science; and conversely, low achievers in science may become anxious toward science.

In contrast with the above reports, Richmond and Millar (1984), by using the RCMAS with multicultural school children grades first to 12th, found females' anxiety substantially decreased with advancing in grade level, while

males' anxiety appeared slightly increased.

Remediation of LD

It has been said that students with LD display processing, academic, social, and emotional difficulties. Bines (1986), reviewing research and interviewing many content teachers, found that LD students experience a variety of problems which may include: poor attention, retention, and imagination; low vocabulary and limitations of general knowledge; lack of understanding; poor abstract thinking and problem-solving skills; lack of ability to deal with new situations; lack of listening skills and inability to follow instructions; lack of skills in one or more academic areas; poor social perception and adjustment; poor self-management skills; and lack of achievement motivation. According to Bines (1986), most regular classroom teachers agreed that LD students need extra-attention in relation to their learning, social, and emotional difficulties.

In order to help LD students to overcome their school difficulties, remedial educators and researchers have targeted two main different areas of student's deficits: processing and academic. Thus, remedial instruction has been provided to LD children for processing deficits, or for academic deficits, or for both processing and academic deficits.

Processing deficits refers to a low development of cognitive skills such as attention, perception, memory, and abstracting, which prevent LD students from developing

learning strategies. On the other hand, academic deficits are referred to a low development of academic skills such as decoding, word recognition accuracy, acquisition of math facts, computation, spelling, writing, and so forth. Because of these deficits, LD children do not know how to learn, they may approach academic and social situations at random, in a disorganized and haphazardous way, without thinking about the results of what they are doing or how others would react to them (Wallace & Kauffman, 1986).

While in process remediation LD students are taught how to learn and in academic remediation what to learn, in process-academic intervention students are taught simultaneously what and how to learn. In addition, remediations are performed usually following the cognitive approach or the behavioral emphasis, or the blended cognitive-behavioral orientation.

The research concerned with remediation of school problems of children with LD has been focused mainly on testing the effectiveness of different learning strategies. For instance, it has been hypothesized that specific instruction, mnemonic instruction, and free study improve the students' memory ability and academic performance.

To test this hypothesis, Chain, Cole, and Barffet (1987), using a cross-referencing technique, designed a comparative study to remediate LDs deficits in comprehension monitoring and reading comprehension. A sample of 64 subjects was divided in two groups. Group one contained 32,

11-year-old, LD students receiving special classes. Group two was made up of 32, 8-year-old regular class children. The two groups, having the same reading age, were randomly assigned to either a general or a specific instruction condition (cross-referencing technique). The reported results show that the LD students receiving specific instruction displayed significantly higher performance levels in both comprehension monitoring and reading comprehension than the subjects in the general instruction condition. These findings reveal that clear and specific instruction about how to apply appropriate strategies to task requests improves the LD children's performance.

To assess a mnemonic technique, Elliott and Gentile (1986) taught visually and phonetically the peg-word rhyme - "one-bun, two shoe . . . ten-hen" - to a group of 30 LD and non-LD students. The control group, containing also 30 LD and non-LD children, only practiced the target lists of words in the way the students chose. Results indicate that the peg-word mnemonic technique increased the memorability of paired associate words in both LD and non-LD subjects. The fact that the LD children performed similar as to the non-LD control group suggests that the peg-word rhyme mnemonic technique can be used to help LD children to memorize, for example, vocabulary and probable other content materials.

Mastropieri, Scruggs, McLoone, and Levin (1985) using LD, seventh and eighth graders, studied the efficacy of

direct instruction, mnemonic instruction, and free study strategies to learn science material such as mineral classifications. Thirty-six subjects were randomly assigned to the three experimental conditions to learn three dichotomous classifications for each of eight minerals. In the direct instruction method the students were provided with teaching, repeated practice, and reinforcement. In the mnemonic instruction the subjects were shown thematic illustrations. Finally, in the free study condition, the students were instructed to learn the minerals using a method chosen by their own. The study results strongly favor the mnemonic strategy as an effective remedial devise to improve memory skills. While free study appeared second in learning efficacy, the direct instruction method appeared to be the less effective learning strategy, which contrasts with other findings (Dale and Cole, 1988) indicating that it significantly increases the learner's academic skills.

The effectiveness of mnemonic strategies as to learning vocabulary is supported by other studies. For instance, Mastropieri, Scruggs, Levin, Gaffney, and McLoone (1985) designed two experimental studies with LD students to learn the definitions of 14 vocabulary words either using a mnemonic strategy or via the principles of direct instruction. Thirty-two LDs seventh, eighth, and ninth graders participated in the studies. Results show that the subjects that learned the definitions via mnemonic instruction outperformed their counterparts in the direct

instruction condition.

Learning in direct instruction tends to rely on attention, verbalization, repetition, feedback and practice. On the other hand, learning via mnemonic strategies tends to rely on associations using, for example, familiar words or names to learn new ones. While direct instruction is devised to teach usually content, mnemonic strategies are formal schemas designed to improve memory. The superiority of mnemonic strategies over direct instruction to learn vocabulary and science classifications suggests that association may be a potent learning-element to be included in the remediation of LD students.

Another important learning strategy to be considered is the critical thinking map. Idol (1987) carried out an experimental study directed to evaluate the "Critical Thinking Map" (CTM) as remedial strategy to create a learning-schema in the learner. The CTM strategy consists of five elements: (a) the important points, events, or steps that conduct to the main idea/lesson, (b) the main idea lesson, (c) the other view points/opinions of the reader, (d) the reader's conclusion upon of the read passage, and (e) any relevancy to today situations. The experimenter used the CTM strategy to remediate reading comprehension problems of a group of six high school students. The students were required to read, think, and complete all five points of the strategy.

The subjects included in the sample are described as

having adequate word recognition skills but exhibiting a reading comprehension from 1.2 to 3.0 or more years below grade level. Prior to the experiment, four subjects with average IQ were receiving remedial reading instruction, and the other two students with IQ below average were receiving special education services in a self-contained class.

For the experiment, the subjects were randomly assigned to either remedial reading or special education programs. During the intervention, the teacher initially modeled the use of the CTM, then lead the student to continue completing the map, and finally asked the student to complete the map independently. The findings show that (a) all six subjects significantly improved their daily reading comprehension skills, their ability to generalize to other similar content readings, and their scores in a standardized test of reading vocabulary; (b) the remedial reading students maintained their reading improvement over time; and (c) four students transferred their improved reading ability to a different content area. The results of this experiment show that reading comprehension problems may be successfully remediated using the CTM strategy.

Identifying individual words constitutes a major problem for many reading disabled students. Such difficulty is reflected in both the lack of skills to decode unfamiliar words and the slow speed in recognizing familiar words. Cohen, Torgesen, and Torgesen (1988) carried out a pretest postest study to assess the efficacy of the software "Words"

designed to remediate decoding problems. "Words" was used with nine LD elementary children. The student's performance was measured under three conditions after identifying the words on the screen: typing, no-typing, and no-practice.

Results of this study reveal that the typing and no-typing versions of "Words" produced large positive effects in terms of accuracy and speed of word recognition. In addition, the researchers indicate that although the typing version did produce higher improvement in spelling than the no-typing version, the no-typing version appears to be more motivating for the learners. However, the duration of the learned words in programs like the one used in this study depends on the frequency of those words in other reading materials the students are required to use.

Simultaneous remediation of both processing deficits and academic deficits have been found to produce higher results than remediating only one area of deficits at a time. Wade and Kass (1987) carried out an interesting experimental study to compare the effects of remediation of the hypothesized "component deficits" and remediation of known academic deficiencies alone. Two groups of 38 LD children, each with ages between eight and eleven years, were compared on the bases of their recognition function. Group I received 3 weeks of remediation for their hypothesized recognition deficit, then 6 weeks of academic deficit remediation. Group II was provided with 9 weeks of academic remediation only. The remediation in the two

groups was accomplished individually, and the tasks were concentrated on remediating deficits of haptic discrimination, visualization, figure-ground, and on completing and returning homework.

The reported results indicate that the two groups obtained significant improvement, but that the group receiving component deficit remediation plus academic deficit remediation improved approximately one-half standard deviation more than the average of those provided with academic deficit remediation only. In sum, this study reveals that remediation provided for both psychological process deficits and academic deficits produces high learning improvement in LD students.

The Revised Children's Manifest Anxiety Scale (RCMAS)

Development of the RCMAS. The RCMAS is a revision of the original - 42 items - "Children's Manifest Anxiety Scale" (CMAS) developed by Castaneda, McCandless, and Palermo in 1956. The CMAS was a downward extension of a scale designed by Taylor in 1951 to measure general or chronic states of anxiety in adults (Reynolds & Kamphaus, 1990). Taylor based his instrument on the Minnesota Multifacic Personality Inventory (MMPI).

The CMAS consisted of 42 items and received several criticisms such as too long to administer, lack of item clarity, reading level not appropriate for young children, and that some of its items were not good test-item. In attention to these criticisms, Reynolds and Richmond (1978)

revised the scale and as a result, several items were changed from the original scale and new items were introduced. In addition, a standardization procedure and psychometric analysis were accomplished to produce the current RCMAS in 1978. Reynolds and Richmond referred to the scale as the "What I Think and Feel," which is the title that appears on the questionnaire administered to the children. But the instrument is widely known in the psychological literature by its complete name: Revised Children's Manifest Anxiety Scale.

Since its publication, the RCMAS has been translated into various languages and used for research in different countries (Richmond & Millar, 1984; Boehnke, Silberesen, Reynolds, & Richmond, 1986). Crosscultural research using the RCMAS supports the hypothesis that human anxiety is a universal and multidimensional phenomenon (Ginter, Trotzki, Lufi, & Richmond, 1989). Similar and contrasting anxiety factors have been found in children of different countries.

In a cross-cultural study of anxiety using the RCMAS with the United States, Mexican, and Canadian 5th and 6th grade school children, Richmond and Miller (1984) reported that anxiety exists among the children selected in those three countries. In addition, the researchers indicated that males and females did not differ significantly in the total and the three subscales of anxiety. However, on the lie scale, the U. S. and Mexican children were found to manifest a higher need for social desirability than were

Canadian students.

Pela and Reynolds (1982), using the RCMAS in Nigeria, did not find significant sex differences in anxiety among elementary school children. In contrast, Boehnki, Silbereisen, Reynolds, and Richmond (1986) reported that on the RCMAS boys scored significantly higher than girls in a German sample of school children. But, in the U. S. females repeatedly score significantly higher than boys on the same scale.

Richmond, Rodrigo, and de Rodrigo (1988) utilizing a Spanish version of the RCMAS did a study of anxiety in Uruguay. The researchers reported similar anxiety factors to those found by Reynolds and Richmond in U. S. in 1979, which in turn are similar to those uncovered with the original CMAS.

Reynolds and Richmond (1984) compared the anxiety levels of LD and non-LD students as measured by the RCMAS. The results show specific significant differences in total anxiety, worry, concentration, and lie between LD and non-LD students. The means for the LDs were significantly higher than those for non-LD children. These findings suggest that LD students experience higher levels of anxiety than their non-LD peers, and that their anxiety is manifested in worry and concentration difficulties related to school and social performance. Moreover, it can be speculated that the LDs' higher lie score may indicate a tendency to elicit desirable responses, perhaps to compensate for their self-perceived

inadequacies.

Reliability and Validity. The RCMAS appears to be somewhat a reliable and valid instrument to measure anxiety in school children. For instance, Reynolds and Richmond (1979), using the Kuder-Richardson formula with a sample of 329 students from first through 12th grade, reported a coefficient of reliability of .65 for physiological anxiety, .64 for worry and oversensitivity, and .60 for social fear and concentration. In addition, Reynolds (1981) utilizing the test-retest method with 4th, 5th, and 6th grade levels, reported a reliability of .68 for the total anxiety and .58 for the lie scale with 9-month interval between the two tests. In the same vein, Pela and Reynolds (1982) found alpha reliability ranging from .81 to .84 and 3-week temporal stability ranging from .90 to .98 for Nigerian elementary school population.

In a study addressed to investigate the invariance of the RCMAS with normal children compared to children with LD, Paget and Reynolds (1984) administered the scale to a sample of 106 students ranging in age from six to 17 years and from first to 12th grade levels. The results presented coefficients of reliability ranging from .77 to .83 for the total anxiety scale. These coefficients compare well with those in the range of .79 to .85 reported by Reynolds and Richmond in 1979 for the RCMAS total scale.

In another study of the RCMAS reliability Wisniewski, Mulick, and Coury (1987) reported Pearson correlation

coefficients ranging from .63 to .88 for 1-week stability, from .60 to .78 for 5-week stability, and .83 for internal consistency. In addition to the above reported findings, Rodrigo and Luciardo (1989) in a study of the RCMAS with Uruguayan population reported reliability coefficients of .76 for the total anxiety scale, .61 for the physiological scale, .66 for worry and oversensitivity, and .58 for school concerns. Most of the reviewed information indicates that the RCMAS is a consistent and stable instrument to measure anxiety in both LD and non-LD school children.

In addition to the reliability studies, the RCMAS validity has been investigated. The RCMAS was developed based on the trait theory of general anxiety. Thus, "if the scale measures chronic, manifest anxiety, a substantial correlation should be noted with other measures of trait anxiety but little or no correlation with measures of state or situational anxiety" (Reynolds, 1985, p. 402). The RCMAS has been found to correlate significantly well with the Trait Anxiety Scale. In fact, correlations of .85 with regular school children and .78 with gifted subjects have been reported (Reynolds, 1980, 1985). Reynolds argues that these data are evidence supporting the concurrent and construct validity of the RCMAS as a measure of chronic, generalized anxiety.

On the other hand, the RCMAS scores have been found to correlate very low with scores of other measures of anxiety. For instance, Reynolds (1982) reported a correlation of .08

with the State Anxiety Scale and .31 with the teachers' ratings of the anxiety-related behaviors of withdrawal and distractibility.

Chapter 3

METHOD

This chapter presents a description of the sample, instrument, hypotheses, data collection, and data analysis. Procedures are described which were utilized to investigate the problem regarding the anxiety levels of LD elementary children who had been provided with remedial instruction.

Sample

The sample for this study was from 3rd, 4th, and 5th grade elementary students from 18 public schools included in the Covered Bridge Special Education Cooperative, and the Southwest Park Community School Corporation, Indiana. Permission to use elementary children was requested (Appendixes A & B) and obtained from these two agencies. The participants were LD and RE, male and female students. The average ages were 10.6 for the LD group and 9.8 for the RE group. The LD group had received remedial instruction ranging from one to seven semesters, with an average of three academic semesters. The total sample consisted of 90 children. From these, 45 were in the LD group (29 males and 16 females) and 45 in the RE group (22 males and 23 females). Table 1 provides a breakdown of the sample by

group, grade level, and gender.

Table 1. Sample Composition

Group	Gender	Grade level			Total
		3rd	4th	5th	
LD Group	Males (M)	9	11	9	29
	Females (F)	6	4	6	16
	M + F	15	15	15	45
RE Group	Males	5	9	8	22
	Females	10	6	7	23
	M + F	15	15	15	45

LD = Learning Disabled
RE = Regular Education

A systematic procedure was used to select the students for the LD and RE groups. Each name was selected from a computerized list containing 309 LD children in 3rd, 4th, and 5th grade who had received at least one semester of remedial instruction. For the RE group, the procedure was similar except that the subjects were selected from the Rosedale Elementary School. Letters of consent (Appendix C) were mailed to the parents of each child selected (with a return envelope) to obtain parent/guardian signatures granting permission to be included in the sample. Signatures were obtained in much lower proportion for the LD than for the RE children.

Instrument

The Revised Children's Manifest Anxiety Scale (RCMAS) was administered to measure the anxiety of the LD children and the non-LD children included in the sample. The RCMAS

is a 37-item self-report questionnaire designed to assess the level and nature of trait anxiety of children and adolescents between the ages of six and 17 years. Each item is answered YES or NO in a written form. The total scale consists of the following factors: (1) Total Anxiety; (2) three anxiety subscales that measure (a) Physiological Anxiety, (b) Worry/Oversensitivity, and (c) Social Concerns/Concentration; and (3) Lie subscale or the need for social desirability. These factors are defined as follows.

Total Anxiety (TA). The TA scale is made up of 28 items. Its purpose is to gain some general insight into the child' feelings in a variety of situations in order to detect the fears and self-doubts that may be interfering with his/her academic, emotional, and social growth.

Physiological Anxiety (PA). This subscale contains 10 items which reveal physical manifestations of anxiety such as sweaty palms, upset stomach, headaches, rashes, elevated blood pressure and heart rate, dizziness, nausea, shortness of breath, and gastrointestinal distress.

Worry and Oversensitivity (WO). The WO subscale consists of 11 items. Worry is the cognitive content of anxiety that is manifested as self-deprecatory thoughts about the child's performance. Oversensitivity is the affective component that is expressed as automatic reactions to the environmental pressures. Such reactions may include unpleasant feelings of tension and nervousness (Wigfield & Meece, 1988). Therefore, the anxious child usually worries

about events that may happen in the future such as examinations, inclusion in peer group activities, possible injuries, or meeting expectations such as deadlines or performing chores. In short, the anxious child frequently experiences high self-doubts and performance worries (Hughes, 1988).

Social Concerns and Concentration (SC). The SC consists of seven items that explore the child's anxiety about social relationships and concentration. Socially anxious children value social interaction but they usually have serious self-doubts about how to deal with others. Thus, they fear that they are not as good, effective, and capable as others. This anxious self-preoccupation may, in turn, interfere with the student's ability to concentrate on academics or other assigned chores (Reynolds & Richmond, 1985).

Lie (LI). The LI subscale consists of 9 items which reveal the accuracy/inaccuracy level of the self-reported anxiety. Scores on this subscale indicate the child's need-level for social desirability or acceptance, and this need-level may be related to emotional problems, inadequate peer relationships, academic difficulties, and/or stressful home environment (Reynolds & Richmond, 1985).

The scale norms are presented in two different types of units: T-scores and Percentile ranks. Temporal stability and internal consistency reliability coefficients range between .58 and .98 for children in the United States as well as in another countries. In addition, correlations up

to .85 with the Trait Anxiety Scale support the RCMAS as a valid measure of children's trait anxiety.

The scale can be administered individually or in groups to children from first to 12th grade. It is recommended that the items be read for first and second graders. For primary school children it takes approximately 15 minutes to answer the entire questionnaire.

Hypotheses

Research Hypotheses. It was hypothesized that there exists a significant difference in anxiety levels between the LD students with at least one semester of remedial instruction and the RE students. This hypothesis was broken down into the following five specific hypotheses:

1. There is a significant difference in total anxiety (TA) (a) between LD and RE groups; (b) between 3rd, 4th, and 5th graders; and (c) between males and females.

2. There is a significant difference in physiological anxiety (PA) (a) between LD and RE groups; (b) between 3rd, 4th, and 5th graders; and (c) between males and females.

3. There is a significant difference in worry and oversensitivity (WO) (a) between LD and RE groups; (b) between 3rd, 4th, and 5th graders; and (c) between males and females.

4. There is a significant difference in social concerns and concentration (SC) (a) between LD and RE groups; (b) between 3rd, 4th, and 5th graders; and (c) between males and females.

5. There a significant difference in lie (LI) or social desirability (a) between LD and RE groups; (b) between 3rd, 4th, and 5th graders; and (c) between males and females.

Null Hypotheses. It was hypothesized that there is no significant difference in anxiety levels as measured by the RCMAS between the LD students with at least one semester of remedial instruction and the RE students. This hypothesis was broken down into the following five testing hypotheses:

1. There is no significant difference in total anxiety (PA) as measured by the RCMAS (a) between LD and RE groups; (b) between 3rd, 4th, and 5th graders; and (c) between males and females.

2. There is no significant difference in physiological anxiety (PA) as measured by the RCMAS (a) between LD and RE groups; (b) between 3rd, 4th, and 5th graders; and (c) between males and females.

3. There is no significant difference in worry and oversensitivity (WO) as measured by the RCMAS (a) between LD and RE groups; (b) between 3rd, 4th, and 5th graders; and (c) between males and females.

4. There is no significant difference in social concerns and concentration (SC) as measured by the RCMAS (a) between LD and RE groups; (b) between 3rd, 4th, and 5th graders; and (c) between males and females.

5. There is no significant difference in lie (LI) or social desirability as measured by the RCMAS (a) between LD

and RE groups; (b) between 3rd, 4th, and 5th graders; and (c) between males and females.

Data Collection

The Revised Children's Manifest Anxiety Scale (RCMAS) was administered to each participant during regular school hours. Each participant was drawn from his/her classroom, usually by the school principal, and placed in a different room for testing. Students were tested individually or in small groups varying in size from two to six. Once the testing instructions were presented, each child had as many minutes as needed to complete the entire questionnaire. Assistance was provided to any child who had questions concerning the meaning of an item. After the questionnaires were completed, five factor scores were derived for each subject according to instructions contained in the RCMAS manual.

Data Analysis

An ex post facto, post-test design was utilized and the RCMAS was administered to the LD Group who had at least one semester of remedial instruction, and the RE Group of regular classroom students. A factorial analysis of variance was employed to determine if a statistically significant difference existed between the LD and the RE scores. A 2x3x2 factorial design incorporated the two groups, the three grade levels (3rd, 4th, and 5th), and gender (male and female) in data analysis to determine if

differences existed among groups, grade levels, and gender. Appropriate summary of descriptive information is presented in the next chapter.

Chapter 4

RESULTS

The purpose of this study was to examine the anxiety levels of LD school children with at least one semester of remedial instruction. The variables selected for study were anxiety, grade level, and gender for LD and RE students. It was hypothesized that there would be a significant difference in anxiety levels between LD and RE students. The anxiety level was self-reported on the RCMAS, which provided five factor scores. A 3-way analysis of variance was used to test the null hypotheses, with the level of significance set at $p < .05$. Tables summarizing statistical information, as well as interpretation and discussion of results, are presented in this chapter.

Null Hypotheses

The following five hypotheses were tested.

Null Hypothesis 1. It was hypothesized that there would be no significant difference in total anxiety (TA) level as measured by the RCMAS (a) between LD and RE groups; (b) between 3rd, 4th, and 5th graders; and (c) between males and females. A summary of the data used to test this hypothesis is presented in Table 2.

As can be seen from the data in Table 2, the ANOVA yielded a significant F value (df = 1) of 10.22 (p = .002) for main effect of group. This value was sufficient to reject the null hypothesis 1a of no difference in TA between the LD and RE groups. The rejection of the null hypothesis 1a and observation of the means and standard deviations in Table 3 indicates that LD students reported higher levels of TA than RE students. The mean (Table 3) for all subjects in the LD group was 13.07 (SD = 7.32) and the RE group mean was 8.49 (SD = 6.82).

Table 2. ANOVA Source Table for the Total Anxiety (TA) Factor as a Function of Group, Grade Level, and Gender.

Source	SS	DF	MS	F	P
Main Effects	554.937	4	138.734	2.798	.032
Group (A)	506.657	1	506.657	10.217	.002*
Grade (B)	39.443	2	19.721	.398	.673
Gender (C)	39.937	1	39.937	.805	.372
2-way Interact	76.971	5	15.394	.310	.905
A x B	35.214	2	17.607	.355	.702
A x C	13.118	1	13.118	.265	.608
B x C	30.867	2	15.433	.311	.733
3-way interact					
A x B x C	377.721	2	188.861	3.809	.026*
Residual	3867.927	78	49.589		
Total	4877.556	89	54.804		

Source = Source of Variation
SS = Sum of Squares
DF = Degrees of freedom
F = F Ratio
P = Probability

Note: These descriptors, under Table 2, will be used for the other ANOVA Tables (Tables 6, 7, 9, 11), but will not be listed.

Table 3. Total LD and RE Means and Standard Deviations (SD) for each of the RCMAS Factors.

RCMAS Factors	Mean		Std Deviation		N	
	LD	RE	LD	RE	LD	RE
TA	13.07	8.49	7.32	6.82	45	45
PA	4.91	3.38	2.87	2.80	45	45
WO	4.96	3.38	3.27	3.24	45	45
SC	3.20	1.64	2.05	1.62	45	45
LI	2.89	3.47	2.54	2.81	45	45

TA = Total Anxiety
PA = Physiological Anxiety
WO = Worry and Oversensitivity
SC = Social Concerns and Concentration
LI = Lie or Social Desirability

Note: These descriptors will be used again in Tables 4, 5, 13, and 14, but not listed.

For the 3-way interaction (Table 2), the ANOVA yielded a significant F value (df = 2) of 3.809 (p = .026). This value was sufficient to reject the null hypothesis of no difference in TA between group, grade level, and gender. The rejection of the null hypothesis and observation of means and standard deviations revealed that the LD group reported higher TA level than the RE group (Table 3); the LD 5th graders reported a higher TA level than both LD 3rd and 4th graders (Table 5); and that LD females reported higher TA level than LD males (Table 4).

Table 4. Total Male and Female Means and Standard Deviations for the RCMAS Factors.

RCMAS Factors	Gender	Mean		Std Deviation		N	
		LD	RE	LD	RE	LD	RE
TA	Males	12.43	7.83	7.72	6.83	31	23
	Females	14.22	8.61	7.29	6.61	14	22
PA	Males	4.78	3.17	2.83	2.66	31	23
	Females	5.28	3.29	3.16	2.28	14	22
WO	Males	4.67	3.21	2.83	3.35	31	23
	Females	5.89	3.41	3.24	3.32	14	22
SC	Males	3.01	1.48	1.95	1.29	31	23
	Females	3.67	1.69	1.83	1.57	14	22
LI	Males	2.49	3.01	2.03	2.46	31	23
	Females	7.78	3.64	3.27	2.71	14	22

Table 5. Grade Level Means and Standard Deviations for the Total Anxiety (TA) Factor.

Grade Level	Gender	Mean		Std Deviation		N	
		LD	RE	LD	RE	LD	RE
	Male	12.56	5.80	5.10	4.87	9	5
3rd	Female	12.17	11.00	8.54	6.68	6	10
	Tot 3rd	12.40	9.27	6.40	6.47	15	15
	Male	12.72	7.30	8.00	6.62	11	10
4th	Female	10.50	8.40	8.35	8.35	4	5
	Tot 4th	12.13	7.67	7.85	6.96	15	15
	Male	12.00	10.38	7.06	8.99	11	8
5th	Female	22.00	6.43	4.97	4.79	4	7
	Tot 5th	14.67	8.53	7.38	7.38	15	15

Null Hypothesis 2. There is no significant difference in physiological anxiety (PA) level as measured by the RCMAS (a) between LD and RE groups; (b) between 3rd, 4th, and 5th graders; and (c) between males and females. A summary of data used to test this hypothesis is presented in table 6.

Table 6. ANOVA Source Table for the Physiological Anxiety (PA) Factor as a Function of Group, Grade Level, and Gender.

Source	SS	DF	MS	F	P
Main effects	93.526	4	23.381	2.971	.024
Group (A)	54.493	1	54.493	6.925	.010*
Grade (B)	36.806	2	18.403	2.339	.103
Gender (C)	1.604	1	1.604	.204	.653
2-way Interact	15.259	5	3.052	.388	.856
A x B	4.445	2	2.223	.282	.755
A x C	.579	1	.579	.074	.787
B x C	8.202	2	4.101	.521	.596
3-way Interact					
A x B x C	38.531	2	19.265	2.448	.093
Residual	613.807	78	7.869		
Total	761.122	89	8.552		

In Table 6, it can be observed that the ANOVA yielded a significant F value (df =1) of 6.925 (p = .010) for main effect of group. This value was sufficient to reject the null hypothesis 2a of no difference in PA between LD and RE groups. The rejection of this hypothesis and observation of means and standard deviations (Table 3) indicates that LD students have higher levels of PA than RE students. The mean (Table 3) for the total LD group was 4.91 (SD = 2.87) while for the total RE group was 3.38 (SD = 2.80).

For PA, the data in the ANOVA (Table 6) indicate that there was no significant interaction between the variables grade level and gender. Neither there was a significant interaction between the variables group, grade level, and gender. Therefore, null hypotheses 2b and 2c were retained.

Null Hypothesis 3. There is no significant difference in worry and oversensitivity level as measured by the RCMAS (a) between LD and RE groups; (b) between 3rd, 4th, and 5th graders; and (c) between males and females. A summary of data used to test this hypothesis is presented in Table 7.

Table 7. ANOVA Source Table for the Worry and Oversensitivity (WO) Factor as a Function of Group, Grade Level, and Gender.

Source	SS	DF	MS	F	P
Main Effects	59.387	4	14.847	4.498	.003
Group (A)	57.043	1	57.043	17.283	.000*
Grade (B)	3.206	2	1.603	.486	.617
Gender (C)	2.653	1	2.653	.804	.373
2-way Interact	15.412	5	3.082	.934	.464
A x B	10.362	2	5.181	1.570	.215
A x C	1.045	1	1.045	.317	.575
B x C	4.506	2	2.253	.683	.508
3-way Interact					
A x B x C	23.709	2	11.855	3.592	.032*
Residual	257.448	78	3.301		
Total	355.956	89	4.000		

The data in Table 7 show that the ANOVA elicited a significant F value (df = 1) of 5.788 (p =.019) for main effect of group. This F value was sufficient to reject the null hypothesis 3a of no difference in WO between LD and RE groups. The rejection of this hypothesis and observation of means and standard deviations (Table 3) indicates that LD students have higher levels of WO than RE students. The mean for the total LD group was 4.96 (SD = 3.27) and the mean for the total RE group was 3.38 (DS = 3.24).

The data in the ANOVA (Table 7) also indicate that there was a significant interaction between the variables group, grade level, and gender. The ANOVA yielded a significant F value (df = 2) of 3.593 (p = .032). This F value was sufficient to reject the null hypothesis of no difference in worry and oversensitivity (WO) between group, grade level, and gender. The rejection of this null hypothesis and observation of means and standard deviations (Tables 3, 4, 8) indicate that LD students reported higher levels of WO than RE students; LD 5th graders reported higher levels of WO than LD 3rd and 4th graders; and that LD 5th grade females reported higher levels of WO than LD 3rd and 4th grade males and females.

Table 8. Grade Level Means and Standard Deviations for the Worry and Oversensitivity (WO) Factor.

Grade Level	Gender	Mean		Std Deviation		N	
		LD	RE	LD	RE	LD	RE
	Males	5.00	2.60	2.06	2.41	9	5
3rd	Females	4.87	4.00	3.87	2.83	6	10
	Tot 3rd	4.67	3.53	2.82	2.69	15	15
	Males	5.09	3.40	3.39	3.37	11	10
4th	Females	4.25	3.80	4.35	4.14	4	5
	Tot 4th	4.86	3.53	3.52	3.50	15	15
	Males	3.91	3.62	3.05	4.27	11	8
5th	Females	9.25	2.43	1.50	2.99	4	7
	Tot 5th	5.33	3.07	3.62	3.65	15	15

For the WO factor, the data in the ANOVA (Table 7) show that there was no significant interaction between grade and gender. Therefore, null hypotheses 3b and 3c were retained.

Null Hypothesis 4. There is no significant difference in social concerns and concentration (SC) level as measured by the RCMAS (a) between LD and RE groups; (b) between 3rd, 4th, and 5th graders; and (c) between males and females. A summary of the data used to test this hypothesis is presented in Table 9.

Table 9. ANOVA Source Table for the Social Concerns and Concentration (SC) Factor as Function of Group, Grade Level, and Gender.

Source	SS	DF	MS	F	P
Main Effects	59.387	4	14.847	4.498	.003
Group (A)	57.043	1	57.043	17.283	.000*
Grade (B)	3.206	2	1.603	.486	.617
Gender (C)	2.653	1	2.653	.804	.373
2-way Interact	15.412	5	3.082	.934	.464
A x B	10.362	2	5.181	1.570	.215
A x C	1.045	1	1.045	.317	.575
B x C	4.506	2	2.253	.683	.508
3-way Interact					
A x B x C	23.709	2	11.855	3.592	.032*
Residual	257.448	78	3.301		
Total	355.956	89	4.000		

In Table 9, the ANOVA shows that there was a significant F value (df = 1) of 17.283 (p = .000) for main effect of group. This value was sufficient to reject the null hypothesis of no difference in social concerns and concentration (SC) between LD and RE groups. The rejection of this null hypothesis and observation of means and standard deviations (Table 3) reveal that LD students reported higher levels of SC than RE students. The mean for

the total LD group was 3.20 (SD = 2.05) and the mean for the RE group was 1.64 (SD = 1.62).

The data in the ANOVA (Table 9) also indicate that there was a significant 3-way interactions between the variables group, grade level, and gender. The ANOVA yielded a significant F value (df = 2) of 3. 592 (p = .032). This value was sufficient to reject the null hypothesis of no difference in SC between group, grade level,and gender. The rejection of null hypothesis 4 and examination of means and standard deviations revealed that LD students reported higher levels of SC than RE students (Table 3). LD female students reported higher levels of SC than RE female students (Table 4); and that LD 5th grade female students reported higher levels of SC than LD 3rd and 4th graders (Table 10).

Table 10. Grade Level Means and Standard Deviations for the Worry and Oversensitivity (WO) Factor.

Grade Level	Gender	Mean		Std Deviation		N	
		LD	RE	LD	RE	LD	RE
3rd	Males	2.67	.80	1.58	.83	9	5
	Females	3.00	2.00	2.19	1.88	6	10
	Tot 3rd	2.80	1.60	1.78	1.68	15	15
4th	Males	3.27	1.90	2.24	1.73	11	10
	Females	2.25	2.20	2.06	1.92	4	5
	Tot 4th	3.00	2.00	2.17	1.73	15	15
5th	Males	3.09	1.75	2.02	1.83	11	8
	Females	5.75	.86	1.23	.90	4	7
	Tot 5th	3.80	1.33	2.17	1.45	15	15

Null Hypothesis 5. There is no significant difference

in lie (LI) level as measured by the RCMAS (a) between LD and RE groups; (b) between 3rd, 4th, and 5th graders; and (c) between males and females. A summary of the data used to test this hypothesis is presented in Table 11.

Table 11. ANOVA Source Table for the Lie (LI) Factor as a Function of Group, Grade Level, and Gender.

Source	SS	DF	MS	F	P
Main Effects	105.149	4	26.287	4.089	.005
Group (A)	3.648	1	3.648	.568	.463
Grade (B)	73.855	2	36.928	5.745	.005*
Gender (C)	17.883	1	17.883	2.782	.099
2-way Interact	8.817	5	1.763	.274	.926
A x B	4.020	2	2.010	.313	.732
A x C	1.696	1	1.696	.264	.609
B x C	2.770	2	1.385	.215	.807
3-way Interact					
A x B x C	23.800	2	11.900	1.851	.164
Residual	501.389	78	6.428		
Total	639.156	89	7.182		

The data in Table 11 show that there was a significant main effect of grade. The ANOVA brought in a significant F value (df = 2) of 5.745 (p = .005) for main effect of grade. This value was sufficient to reject the null subhypothesis 5b of no difference in LI between 3rd, 4th, and 5th grade levels. The rejection of this hypothesis and examination of means and standard deviations (Table 12) reveal that, in the LD group, 3rd graders reported significantly higher levels of LI than 5th graders. In addition, the RE group, 3rd and 4th graders reported higher levels of LI than 5th graders.

Table 12. Grade Level Means and Standard Deviations for the Lie (LI) Factor.

Grade Level	Gender	Mean		Std Deviation		N	
		LD	RE	LD	RE	LD	RE
	Males	3.11	3.40	2.67	2.96	9	5
3rd	Females	4.33	5.00	3.50	2.67	6	10
	Tot 3rd	3.60	4.47	2.97	2.77	15	15
	Males	2.55	4.50	1.81	2.88	11	10
4th	Females	5.00	3.20	2.94	2.78	4	5
	Tot 4th	3.20	4.07	2.33	2.81	15	15
	Males	1.82	1.12	1.60	1.55	11	8
5th	Females	2.00	2.71	3.37	2.69	4	7
	Tot 5th	1.97	1.87	2.06	2.23	15	15

For the LI factor, the data in the ANOVA (Table 11) indicate no significant main effects for group and gender. Neither was there a 2-way or 3-way significant interaction between the variables group, grade level, and gender. Therefore, null subhypotheses 5a and 5c were retained.

Descriptive Information Concerning Levels of Anxiety

A summary of percentages of LD and RE groups of children for each level of anxiety is presented in Table 13. Anxiety levels are reported as: low, average, and high. These levels were established based on the RCMAS standard score norms reported on the RCMAS manual. Percentages of LD and RE children were obtained for each anxiety level. For each RCMAS factor, scores lower than minus one standard deviation were placed in the low range of anxiety; scores between one standard deviation below or above the mean were

place in the average range; and scores higher than one standard deviation above the mean were assigned to the high range of anxiety.

Table 13. Percentage of LD and RE Groups of Children for each RCMAS Factor and Anxiety Level.

RCMAS Factors	Anxiety Level	LD Group N	LD Group %	RE Group N	RE Group %
	Low	8	17.78	17	37.78
TA	Average	23	51.11	22	48.89
	High	14	31.11	6	13.33
	Low	12	26.67	19	42.22
PA	Average	22	48.89	19	42.22
	High	11	24.44	7	15.56
	Low	12	26.67	17	37.78
WO	Average	25	55.56	23	51.11
	High	8	17.77	5	11.11
	Low	9	20.00	25	55.56
SC	Average	27	60.00	20	44.44
	High	9	20.00	0	0.00
	Low	9	20.00	9	20.00
LI	Average	30	66.67	22	48.89
	High	6	13.33	14	31.11

N = Number of cases
% = Percent
TA = Total Anxiety
PA = Physiological Anxiety
WO = Worry and Oversensitivity
SC = Social Concerns and Concentration
LI = Lie

As can be seen in Table 13, there were differences between the percentages of LD and RE children for each subscale and level of anxiety. For instance, compared with RE children, a smaller percentage of LD children scored in the low range in all subscales, except in LI in which

similar percentage of LD and RE children scored in that low range of anxiety. Overall, this indicates that a smaller number of LD than RE children reported experiencing feelings of being relaxed. Contrary to the percent on the low range, a higher percent of LD than RE children scored on the average range of anxiety in all five RCMAS factors. Moreover, differences in percent between LD and RE children are wider for the SC and LI factors, compared with the percent for the TA, PA, and WO factors. This suggests that a higher proportion of LD than RE children experience an average anxiety level.

For the high level of anxiety, the differences in percent of LD and RE children are more notable. A larger percent of LD than RE children scored in the high range of anxiety in all RCMAS factors, except in the LI factor for which the percent of RE children was larger than that of the LD children. This reveals that more LD than RE schoolers experience higher levels of anxiety. A case in point, 20% of the LD children reported having high SC, while RE children reported 0.00% for high SC. However, higher percent of RE than LD children have social desirability concerns. A higher percent of RE than LD children scored on the high level of the LI factor.

Gender differences in anxiety levels based on the percents were found in both LD and RE groups. Table 14 presents percent of males and females for each of the RCMAS subscales and for each level of anxiety.

Table 14. Percent of LD and RE Males and Females for each RCMAS Factor and Anxiety Level.

RCMAS Factor	Anxiety Level	LD Males N	LD Males %	LD Females N	LD Females %	RE Males N	RE Males %	RE Females N	RE Females %
	Low	5	16.13	3	21.43	9	40.91	8	34.78
TA	Avg	17	54.84	6	42.86	10	45.45	12	52.17
	High	9	29.03	5	35.71	3	13.64	3	13.05
	Low	4	12.90	4	28.57	11	50.00	10	43.48
PA	Avg	18	58.07	5	35.71	6	27.27	10	43.48
	High	9	29.03	5	35.72	5	22.73	3	13.04
	Low	7	22.58	4	28.57	10	45.45	11	47.83
WO	Avg	18	50.06	6	42.86	9	40.91	10	43.48
	High	6	19.36	4	28.57	3	13.64	2	8.69
	Low	5	16.13	3	21.43	12	54.54	13	56.52
SC	Avg	20	65.52	7	50.00	8	36.36	10	43.48
	High	6	19.35	4	28.57	2	9.10	0	0.00
	Low	13	41.94	4	28.56	6	27.27	3	13.04
LI	Avg	15	48.39	5	35.72	11	50.00	11	47.83
	High	3	9.67	5	35.72	5	22.72	9	39.13

The data in table 14 show that a larger percent of LD males than females scored in the average range of anxiety on all five RCMAS factors. It can also be observed that for LD males and females the largest percent in the average range was located in the SC factor.

In contrast to males, a larger percent of LD females scored low and high on levels of anxiety in all five RCMAS factors. Moreover, on the high level of the LI factor the LD gender differences was wider than in the other four factors. The ratio of female-male frequency for LI high level was about 4:1. This ratio reveals that LD females reported experiencing more intense concerns for social desirability than males.

For the RE group, as can be observed in Table 14, the results were opposed to those of the LD group. On the average range of anxiety, the RE female percent was slightly larger than that of the males for all RCMAS factors, except in the LI factor for which the male percent was slightly larger than that of the females.

In contrast, for the low and high levels of anxiety, the RE male percents were larger than that of the females for all RCMAS factors, except for the high level of LI in which the female-male ratio was about 2:1.

Discussion

The purpose of this investigation was to examine if there were significant differences in anxiety levels between learning disabled (LD) students with remedial instruction (RE) and regular education (RE) students in 3rd, 4th, and 5th grade. The statistical results based on the ANOVAs indicate that there were group differences. Compared to RE students, LD students displayed significantly higher levels of total anxiety, physiological anxiety, worry and oversensitivity, and social concerns and concentration.

These findings support several previous studies. For instance, Bryan, Sonefeld, and Grabouski (1983) and Margalit and Shulman (1986) reported that LD students' general anxiety was significantly higher than that of the non-LD students. In addition, the finding that physiological anxiety appeared significantly higher in LD students, compared to the RE students, supports the

Bogdanowich and Jacklewicz (1989) finding in which anxiety was the predominant symptom in a high dyslexic and dysortographic group of school children. These high anxious children tended to display some medical disturbances such as headaches, elevated blood pressure, shortness of breath, gastrointestinal distress, and sleep problems.

Furthermore, the result that worry and concentration were significantly higher in LD than in RE children was supported by other studies (Paget and Reynolds, 1984; Hughes, 1988) which reported that, compared to non-LD, LD children obtained a significantly higher mean in worry and concentration. These persistent worry and concentration difficulties, according to Paget and Reynolds (1984), were more directly related to academic stress in the LD children. Worry appears to be the cognitive aspect of anxiety that compels anxious students to have, for example, self-deprecatory thoughts about performance. In addition to their worries and concentration difficulties, LD students are found to experience other problems such as fear of failure, self-criticism, and feelings of incompetence.

The result that LD children presented significantly higher social concerns than non-LD students is in line with studies by Margalit and Shulman (1986), Holder and Kirpatric 1991), and Korkery (1984), in which it was found that LD students displayed significantly more and deeper social problems than non-LD students. LD students appeared to have high levels of anxiety, low self-concept, low level of

independence, and a lack of skills to interpret facial/emotional expressions and nonverbal language. Thus, an LD child may respond inappropriately in a nonexplicit verbal social situation.

In contrast, for the RCMAS lie factor there was no significant differences between LD and RE groups of students. This result failed to support findings by Paget and Reynolds (1984) in which it was encountered that, compared to non-LD, the LD children's lie-mean was significantly higher. The investigators claim that this finding may reflect the LD's tendency to elicit socially desirable responses in an attempt to present a positive picture of themselves to either compensate for their feelings of inadequacy or to try to cope with such feelings by denying them.

One possible reason for this finding of no difference in lie between LD and RE students could be that LD students are aware of their inadequate feelings and accept them as part of their problems. Thus, they do not need to lie. Another possible explanation could be that the LD students in the present study were influenced by the special education teachers' encouragement, and may have a better picture of themselves than that described in other studies.

Significant differences in anxiety factors, such as total anxiety, worry and oversensitivity, and social concerns and concentration, were observed between grade levels interacting with group and gender. In general, these

results indicate that LD children are more anxious than RE children; anxiety level increases as students advance in age/grade level; and females were more anxious than males. The result that LD children as a group were more anxious than RE children was discussed in previous pages.

The finding that anxiety increases with age/grade level is in line with the Strauss, Lease, and Last (1988) finding indicating that, on various self-report measures, older children reported higher levels of anxiety than did younger children. In the same direction, Kashani and Orvaschel (1990) reported that the interpersonal and peer concerns as well as the social fears and anxiety about personal inadequacy increase as children age. Moreover, Wigfield and Meece (1988) in their 6th to 12th grade math anxiety study found the highest math worry in 9th grade and the lowest math worry in 6th grade.

Additionally, the finding that, in both LD and RE students, younger children lie more than older children was also found by Richmond and Millar (1984). In their multicultural study of anxiety, using RCMAS, they reported that scores on the lie factor were inversely related to age/grade level: lower graders scored higher than upper graders. This reveals that, compared to older children, younger/lower elementary graders appear to show more defensiveness. They display high social desirability or the need for peers, teachers, and parents acceptance.

Contrasting with these reports, Chiarelott and Czerniak

(1987), in their study of science anxiety in grades 4th through 9th, found the highest science anxiety in 4th graders and lowest in 9th graders.

The finding revealing that female students are more anxious than male students was also supported in previous studies (Czerniak and Chiarelott, 1984; Husain and Kashani, 1992; Hembree, 1988). These studies reported that compared with males, females consistently displayed higher levels of anxiety, and that females become more anxious over time. Richmond and Millar 1983, in their multicultural study RCMAS, found that anxiety substantially decreased in females but slightly increased in males as they advanced in grade level.

The controversial findings on anxiety and gender would raise the question whether high levels of anxiety are a cultural characteristic of LD female students.

Chapter 5

SUMMARY, CONCLUSIONS, IMPLICATIONS, AND RECOMMENDATIONS

This final chapter presents a summary of the study, conclusions drawn from the study, implications for practice, and recommendations for future research concerning the problem of the anxiety of students with learning disabilities.

Summary

This study was designed to investigate whether elementary students with LD provided with at least one semester of remedial instruction differed in anxiety levels from their non-LD peers. There is considerable agreement in the literature indicating that, in addition to their learning problems, children with LD display higher levels of anxiety than non-LD students. But little or nothing was known in relation to the anxiety levels of LD students provided with special services for their learning difficulties.

High levels of anxiety appear to have detrimental effects on the LD students' academic performance, physical/physiological functioning, and social and emotional adjustment. Fear of failure and worry are common

characteristics of high anxious LD students. They often exhibit thoughts that are irrelevant to task completion but show excessive worry about evaluation. Their anxiety appears to be especially associated with academic areas such as reading/writing, mathematics, and science, and with the social situations involved in academics. Students manifest their academic and social anxieties physically and psychologically. Physically, students may display sweaty palms, upset stomachs, headaches, and rashes. Psychologically, learners may show tension, worry, and nervousness. Moreover, it has been found that high academic anxiety correlates highly with low academic achievement. The literature reviewed indicates that anxiety is gender and grade level related. Females outnumber and display higher levels of anxiety than males. For instance, math and science anxieties are frequently found to be higher in female than in male students. Moreover, some specific anxieties increase while others decrease as students age. Although not consistently, it has been found that while school phobia decrease with age, academic and social anxieties increase as students advance in age/grade level.

It was hypothesized that there would be no significant difference in anxiety levels between LD students with at least one semester of remedial instruction and regular education (RE) students. The variables chosen for the study included anxiety, grade level, and gender for the LD and RE students. Using an ex post facto post-test design, a sample

of 45-LD and 45-RE students from 3rd, 4th and 5th grade self-reported their feelings of anxiety on the RCMAS questionnaire which yielded five different scores. An analysis of variance was used to test the five null hypotheses corresponding to the following five RCMAS factors: Total anxiety (TA) physiological anxiety (PA), worry and oversensitivity (WO), social concerns and concentration (SC), and lie (LI). Differences for all tests were determine significant if the probability level was < .05.

The major findings indicate that for TA, PA, WO, and SC the differences between LD and RE groups of students were significant at the probability level < .05. These results revealed that for four factors LD students reported significantly higher levels of anxiety than RE students. In addition, LD females reported significantly higher levels of TA and WO than males. Similarly, LD 5th graders reported significantly higher levels of TA, WO and SC than LD 3rd, and 4th graders.

Contrasting with the previous results, on the LI scale RE students scored significantly higher than LD students. RE 3rd and 4th graders scored significantly higher than RE 5th graders. These results concerning the LI scale revealed that regular education students did lie more than students with learning disabilities; and RE lower graders did lie more than RE upper graders.

Conclusions

Statistical analysis of the data gathered for this research provides the following conclusions:

1. LD children displayed higher levels of general anxiety than RE children.

2. LD children displayed higher levels of physiological anxiety than RE children.

3. LD children displayed higher levels of worry and oversensitivity.

4. LD children displayed higher levels of social concerns and concentration.

5. Fifth grade LD females displayed higher levels of anxiety than third and fourth grade males and females.

6. LD females displayed higher levels of total anxiety, and worry and oversensitivity than RE students.

7. In both LD and RE groups Younger children displayed higher levels of social desirability than older/upper grader children.

Implications

Based on the findings of the present study the following implications are proposed:

1. The assessment of school children for special needs attention should be widened to routinely explore anxiety levels.

2. Anxiety reduction treatment should be incorporated into the LD remediation program to better enable anxious students to adjust academically, emotionally, and socially.

3. Training and practice of school psychologists and special education teachers in the area of learning disabilities should include an emphasis on anxiety theory.

4. Interventions directed at school children should involve the child's regular teacher, special learning disabilities teacher, school psychologist, and his/her family to increase effectiveness in controlling the anxiety production factors in the child's environment.

5. School psychologists, and regular and special education teachers need to remain sensitive to the individual differences of each LD and RE child.

Recommendations

The following suggestions are provided in regard to future research concerning the anxiety of LD students.

1. This study should be replicated, using a larger sample size, with school children of same age and grade level as well as with other groups to determine whether results are unique to elementary school children or applicable to other age/grade level groups.

2. A study of the anxiety levels of LD students with different durations of remedial instruction should be conducted. In addition to the variables age/grade level, gender, the variables of academic achievement, and intellectual ability should be investigated.

3. School psychologists and special education teachers in the area of LD should be informed consumers of research and study focused on strategies to decrease anxiety

levels in children.

4. Research concerning the causes, development, and types of anxiety that affect LD students should be undertaken.

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APPENDIXES

APPENDIX A

Letter to Covered Bridge

October 1, 1992

Dr. Marilyn L. Faris
Executive Director
Covered Bridge Special Education District

Dear Dr. Faris:

I am a doctoral candidate in School Psychology at Indiana State University. For my dissertation, I am planning a research study to examine the anxiety of learning disabled school children with remedial instruction.

I would like to request permission to conduct this study with 3rd, 4th, and 5th grade children in Covered Bridge Special Education District and Vigo County School Corporation. A self-report anxiety scale, which takes approximately 15 minutes, will be administered to each child. I enclose a copy of the approved dissertation proposal as well as a 2-page summary of my proposed research study.

If you have any questions regarding this research, please contact me. I look forward to hearing from you.

Sincerely,

Marco Coronado
School Psychology
Doctoral Candidate
Indiana State University

APPENDIX B

Letter to Rosedale Elementary School Principal

January 26, 1993

Ms. Adrianne Gideon
Principal Rosedale Elementary School
Rosedale, In 47874

Dear Ms. Gideon:

I am a doctoral candidate in School Psychology at Indiana State University (ISU). For my dissertation I have designed a study to examine the anxiety levels of children with learning disabilities provided with remedial instruction. The study will include 3rd, 4th, and 5th grade children from Covered Bridge Special education District and Southwest Park Community School Corporation. The project is approved by ISU and permission from Covered Bridge has already been obtained.

For the control group, I would like to request your permission to collect data from approximately 45 Rosedale Elementary School Students who have not been identified as LD - 15 from 3rd grade, 15 from 4th grade, and 15 from 5th grade -. The "Revised Children's Manifest Anxiety Scale" (RCMAS) will be administered to the children. This self-report questionnaire takes approximately 15 minutes to be completed by each student.

Enclosed are a summary of the proposed research study and the parent permission letter. If you have any question regarding this research, please contact me. I look forward to hearing from you.

Thank you for your attention and consideration.

Sincerely,

Marco Coronado
School Psychology
Doctoral Candidate
Indiana State University

APPENDIX C

Parent Informed Consent Form

January 20, 1993

Dear Parent/Guardian:

I am a doctoral student in School Psychology at Indiana State University (ISU). I have received approval from ISU and Covered Bridge to conduct a study about the anxiety of 3rd, 4th, and 5th grade learning disabled (LD) students. With this letter I am requesting your cooperation for your son/daughter to participate in this study.

It will take only 15 minutes for a child to respond to a questionnaire. All information from this research will be completely confidential. By allowing your child to participate in the study, you will be helping to increase our understanding about the anxiety levels of children with LD.

If you have any question about the study, please contact me at the given address. Thank you for your cooperation.

Sincerely,

Marco Coronado
School of Education, Room 622
Indiana State University
Terre Haute, IN 47809

Please complete the attached form and return it immediately to me in the enclosed envelope.

For students with learning disabilities (LD) only.

Student _____

Sex (Circle) Male Female

School _____

Grade (Circle) 3rd 4th 5th

I give my permission for the above child to participate in the study.

_____ _____

Parent/Guardian Signature Date

APPENDIX D

Letter to Blumberg Center

December 11, 1992

William Littlejohn, Ph. D.
Blumberg Center
Indiana State University
School of Education
Terre Haute, Indiana

Dear Dr. Littlejohn:

I am writing to you to request funds through the Blumberg Center to assist in completing my dissertation in the area of learning disabilities (LD) and anxiety. Research findings consistently indicate that students with LD display higher levels of anxiety than non-LD students. The purpose of the this study is to examine the levels of anxiety of 3rd, 4th, and 5th grade elementary school children with (LD) provided with remedial instruction. It is hypothesized that children with LD who have received remedial instruction will exhibit levels of anxiety similar to those of the non-LD students.

The funds are being requested to purchase/pay necessary materials and services such as test manuals and protocols, scoring guides, postage, and clerical assistance. Enclosed are copies of completed research application form, a summary of the proposed study, and a copy of the approved dissertation proposal.

Please contact me if you have any questions or require additional information.

Thank you for your consideration.

Sincerely,

Marco Coronado
Doctoral candidate
School Psychology
Indiana State University

APPENDIX E

"What I Think and Feel"
(RCMAS)

Name_____
Date_____

Age_____ Sex (circle) Girl Boy Grade_____

School _____
Teacher_____

Directions

Here are some sentences that tell you how some people think and feel about themselves. Read each sentence carefully. Circle the word "Yes" if you think it is true about you. Circle the word "No" if you think it is not true about you. Answer every question even if some are hard to decide. Do not circle both "Yes" and "No" for the same sentence.

There are no wright or wrong answers. Only you can tell as how you think and feel about yourself. Remember, after you read each sentence, ask yourself "Is it true about me?" If it is, circle "Yes." If it is not, circle "No."

1.	I have trouble making up my mind	Yes	No
2.	I get nervous when things do not go the right way for me	Yes	No
3.	Others seem to do things easier than I can .	Yes	No
4.	I like everyone I know	Yes	No
5.	Often I have trouble getting my breath	Yes	No
6.	I worry a lot of the time	Yes	No
7.	I am afraid of a lot of things	Yes	No
8.	I am always kind	Yes	No
9.	I get mud easily	Yes	No
10.	I worry about what my parents will say to me	Yes	No

11. I feel that others do not like the way I do things . . . . . Yes No

12. I always have good manners . . . . . Yes No

13. It is hard for me to get to sleep at night . . Yes No

14. I worry about what other people think about me . . . . . Yes No

15. I feel alone even when there are people with me . . . . . Yes No

16. I am always good . . . . . Yes No

17. Often I feel sick in my stomach . . . . . Yes No

18. My feelings get hurt easily . . . . . Yes No

19. My hands feel sweaty . . . . . Yes No

20. I am always nice to everyone . . . . . Yes No

21. I am tired a lot . . . . . Yes No

22. I worry about what is going to happen . . . . Yes No

23. Other people are happier than I . . . . . Yes No

24. I tell the truth every single time . . . . . Yes No

25. I have bad dreams . . . . . Yes No

26. My feelings get hurt easily when I am fussed at . . . . . Yes No

27. I feel someone will tell me I do things the wrong way . . . . . Yes No

28. I never get angry . . . . . Yes No

29. I wake up scared some of the time . . . . . Yes No

30. I worry when go to bed at night . . . . . Yes No

31. It is hard for me to keep my mind in my school work . . . . . Yes No

32. I never say things I shouldn't . . . . . Yes No

33. I wiggle in my seat a lot . . . . . Yes No

34. I am nervous . . . . . Yes No

35. A lot of people are against me . . . . . Yes No

36. I never lie . . . . . Yes No

37. I often worry about something bad happening to me . . . . . Yes No