

# University of Wollongong - Research Online

## Thesis Collection

Title: Exploring and enhancing the self-concept of students with learning difficulties, with and without attention deficit hyperactivity disorder

Author: Waheeda Tabassam

Year: 2001

Repository DOI:

### Copyright Warning

You may print or download ONE copy of this document for the purpose of your own research or study. The University does not authorise you to copy, communicate or otherwise make available electronically to any other person any copyright material contained on this site.

You are reminded of the following: This work is copyright. Apart from any use permitted under the Copyright Act 1968, no part of this work may be reproduced by any process, nor may any other exclusive right be exercised, without the permission of the author. Copyright owners are entitled to take legal action against persons who infringe their copyright. A reproduction of material that is protected by copyright may be a copyright infringement. A court may impose penalties and award damages in relation to offences and infringements relating to copyright material.

Higher penalties may apply, and higher damages may be awarded, for offences and infringements involving the conversion of material into digital or electronic form.

**Unless otherwise indicated, the views expressed in this thesis are those of the author and do not necessarily represent the views of the University of Wollongong.**

Research Online is the open access repository for the University of Wollongong. For further information contact the UOW Library: [research-pubs@uow.edu.au](mailto:research-pubs@uow.edu.au)

*University of Wollongong Thesis Collections*

*University of Wollongong Thesis Collection*

---

*University of Wollongong*

*Year 2001*

---

Exploring and enhancing the self-concept  
of students with learning difficulties, with  
and without attention deficit  
hyperactivity disorder

Waheeda Tabassam  
University of Wollongong

Tabassam, Waheeda, Exploring and enhancing the self-concept of students with learning difficulties, with and without attention deficit hyperactivity disorder, Doctor of Philosophy thesis, Department of Psychology - Faculty of Health and Behavioural Sciences, University of Wollongong, 2001. <http://ro.uow.edu.au/theses/1841>

This paper is posted at Research Online.

## **NOTE**

This online version of the thesis may have different page formatting and pagination from the paper copy held in the University of Wollongong Library.

## **UNIVERSITY OF WOLLONGONG**

### **COPYRIGHT WARNING**

You may print or download ONE copy of this document for the purpose of your own research or study. The University does not authorise you to copy, communicate or otherwise make available electronically to any other person any copyright material contained on this site. You are reminded of the following:

Copyright owners are entitled to take legal action against persons who infringe their copyright. A reproduction of material that is protected by copyright may be a copyright infringement. A court may impose penalties and award damages in relation to offences and infringements relating to copyright material. Higher penalties may apply, and higher damages may be awarded, for offences and infringements involving the conversion of material into digital or electronic form.

**EXPLORING AND ENHANCING THE SELF-CONCEPT OF  
STUDENTS WITH LEARNING DIFFICULTIES, WITH  
AND WITHOUT ATTENTION DEFICIT  
HYPERACTIVITY DISORDER.**

**A thesis submitted in fulfillment of the requirements  
for the award of the degree**

**DOCTOR OF PHILOSOPHY**

**from the**

**UNIVERSITY OF WOLLONGONG**

**By**

**Waheeda Tabassam**

**M.Sc Applied Psychology**

**Department of Psychology**

**2001**

## **DECLARATION**

I, Waheeda Tabassam, declare that this thesis, submitted in fulfilment of the requirements for the award of Doctor of Philosophy, in the Department of Psychology, University of Wollongong, is wholly my own work unless otherwise referenced or acknowledged. The document has not been submitted for qualifications at any other academic institution.

Waheeda Tabassam

7 March 2001.

## TABLE OF CONTENTS

|                              |      |
|------------------------------|------|
| <b>LIST OF TABLES</b> .....  | VI   |
| <b>ACKNOWLEDGEMENT</b> ..... | VIII |
| <b>ABSTRACT</b> .....        | IX   |
| <b>INTRODUCTION</b> .....    | 1    |

### **CHAPTER 1: LEARNING DIFFICULTIES AND ATTENTION DEFICIT HYPERACTIVITY DISORDER.**

|  |    |
|--|----|
| 1.1 Learning disabilities: definition and prevalence.....  | 12 |
| 1.2 Assessment of learning difficulties.....   | 16 |
| 1.3 Placement of students with learning difficulties.....  | 17 |
| 1.4 Types of learning difficulties.....  | 18 |
| 1.4.1 Reading difficulties.....  | 18 |
| 1.4.2 Mathematics difficulties .....   | 20 |
| 1.5 The links between learning difficulties and attention deficit<br>hyperactivity disorder..... | 21 |
| 1.6 The description of attention deficit hyperactivity disorder (ADHD) .....                     | 22 |
| 1.6.1 Prevalence of attention deficit hyperactivity disorder.....                                | 24 |
| 1.6.2 Etiologies of attention deficit hyperactivity disorder .....                               | 25 |
| 1.7 Comorbidity between LD and ADHD.....   | 25 |
| 1.8 The nature of relationship between LD and ADHD.....  | 27 |
| 1.9 Social and emotional characteristics of children with ADHD .....                             | 29 |
| 1.10 Social and emotional characteristics of children with LD.....                               | 30 |
| 1.11 The self-perceptions of students with LD.....   | 31 |

### **CHAPTER 2: SELF-CONCEPT, ATTRIBUTIONAL STYLE AND SELF-EFFICACY BELIEFS OF STUDENTS WITH LD AND STUDENTS WITH ADHD**

|   |    |
|---|----|
| 2.1 The significance of self-concept.....   | 36 |
| 2.2 The definition of self-concept.....   | 37 |
| 2.3 The multidimensional model of self-concept .....  | 40 |
| 2.4 Self-concept of students with learning difficulties .....                                   | 41 |
| 2.5 The literature on the self-concept of students with LD .....                                | 42 |
| 2.6 Self-concept of students with ADHD.....   | 45 |
| 2.7 Attributional Style .....   | 47 |
| 2.8 Attributional style of students with LD .....   | 49 |
| 2.9 Attributional style of students with ADHD .....   | 52 |
| 2.10 Students with comorbid LD and ADHD are at significant risk.....                            | 54 |
| 2.11. Learned helplessness as an attributional style in students with<br>LD and ADHD.....       | 56 |
| 2.12 Self-efficacy beliefs in students with LD and ADHD.....                                    | 58 |
| 2.13 The relationship between self-concept, self-attributions and<br>self-efficacy beliefs..... | 59 |

## **CHAPTER 3: SELF-CONCEPT ENHANCEMENT INTERVENTIONS.**

|   |    |
|---|----|
| 3.1 The importance of self-concept enhancement .....                                    | 67 |
| 3.2 Self-concept enhancement programs .....   | 67 |
| 3.3 Meta-analyses of the studies on self-concept enhancement .....                      | 71 |
| 3.4 The self-concept enhancement approaches .....                                       | 72 |
| 3.4.1 Direct enhancement approach .....   | 73 |
| 3.4.2 Indirect enhancement approach .....   | 75 |
| 3.5 Attributional retraining techniques .....   | 76 |
| 3.6 The relationship between attributions, self-efficacy beliefs and self-concept ..... | 80 |
| 3.7 Recent contributions to self-concept enhancement research .....                     | 82 |

## **CHAPTER 4: ASSESSMENT OF SELF-CONCEPT, ATTRIBUTIONAL STYLE AND SELF-EFFICACY BELIEFS**

|  |     |
|--|-----|
| 4.1 Assessment of self-concept .....   | 89  |
| 4.1.1 Unidimensional approach to measuring self-concept .....                                | 90  |
| 4.1.2 Multidimensional approach to measuring self-concept .....                              | 92  |
| 4.2 The structure and the dimensions of the Self-description Questionnaire-1 ....            | 93  |
| 4.2.1 The administration and scoring procedure for the SDQ-1 .....                           | 95  |
| 4.2.2 The reliability and validity of the SDQ-1 instrument .....                             | 97  |
| 4.2.3 Utilizing the SDQ-1 in the present investigation .....                                 | 97  |
| 4.3 Assessment of attributional style .....  | 99  |
| 4.4 Instruments for the assessment of children's attributions .....                          | 100 |
| 4.4.1 The Children's Attributional Style Questionnaire .....                                 | 101 |
| 4.4.2 The Sydney Attributions Scale .....  | 102 |
| 4.4.3 The Intellectual Achievement Responsibility Scale .....                                | 102 |
| 4.4.4 Development of an instrument for the academic attributional style of children .....    | 103 |
| 4.5 Assessment of self-efficacy beliefs .....  | 104 |
| 4.5.1 Measuring self-efficacy in the educational context .....                               | 105 |
| 4.5.2 The need to develop a measure for the academic self-efficacy beliefs of children ..... | 106 |

## **CHAPTER 5: SUMMARY OF THE MAJOR ISSUES IN THE PRESENT INVESTIGATION**

|   |     |
|---|-----|
| 5.1 An overview of the key issues in the present investigation .....  | 109 |
| 5.2 The organization of this thesis .....   | 113 |
| 5.2.1 Stage One: The development of the instruments .....   | 114 |
| 5.2.2 Stage Two: A comparison between LD, LD/ADHD and normally achieving students on self-perceptions ..... | 114 |
| 5.2.3 Stage Three: Self-concept enhancement of students with LD and with LD/ADHD .....                      | 115 |

**CHAPTER 6: STAGE ONE: DEVELOPMENT OF THE INSTRUMENTS  
FOR ACADEMIC ATTRIBUTIONAL STYLE AND ACADEMIC  
SELF-EFFICACY BELIEFS OF CHILDREN.**

6.1 Rationale ..... 117

6.2 Method..... 118

    6.2.1 Sample ..... 118

    6.2.2 Procedure ..... 119

6.3 Development of the Academic Attributional Style Questionnaire ..... 119

    6.3.1 Development of the items for the Academic Attributional  
        Style Questionnaire..... 121

    6.3.2 Scoring procedure for the Academic Attributional  
        Style Questionnaire..... 122

    6.3.3 Factor analysis of the Academic Attributional  
        Style Questionnaire..... 123

    6.3.4 Cluster Analysis of the Academic Attributional  
        Style Questionnaire..... 126

    6.3.5 Reliability of the Academic Attributional  
        Style Questionnaire ..... 126

    6.3.6 Construct Validity of the Academic Attributional Style  
        Questionnaire ..... 127

6.4 Development of the Academic Self-efficacy Beliefs Scale..... 129

    6.4.1 Development of the items for the Academic Self-efficacy  
        Beliefs Scale ..... 129

    6.4.2 The administration and scoring for the Academic  
        Self- efficacy Beliefs Scale..... 129

    6.4.3 Factor Analysis of the Academic Self-efficacy Beliefs Scale ..... 130

    6.4.4 Cluster analysis of the Academic Self-efficacy Scale ..... 131

    6.4.5 Reliability of the Academic Self-efficacy Beliefs Scale ..... 133

    6.4.6 Construct validity of the Academic Self-efficacy Beliefs Scale ... 134

6.5 Reliability of the SDQ-I measure employed in the present study ..... 134

**CHAPTER 7: STAGE TWO: COMPARISON OF STUDENTS WITH LD,  
STUDENTS WITH COMORBID LD/ADHD AND NORMALLY ACHIEVING  
PEERS ON SELF-CONCEPT, ATTRIBUTIONAL STYLE AND SELF-  
EFFICACY BELIEFS**

7.1 Rationale..... 138

7.2 Hypotheses..... 136

7.3 Method..... 142

    7.3.1 Sample ..... 145

    7.3.2 Characteristics of the sample..... 148

    7.3.3 Instruments ..... 151

    7.3.4 Procedure ..... 153

7.4 Results ..... 154

    7.4.1 Group differences on self-concept ..... 156

    7.4.2 Group differences on academic attributional style..... 163

    7.4.3 Group differences on academic self-efficacy beliefs ..... 165



- 7.4.4 The relationship between academic self-concept, academic attributional style and academic self-efficacy beliefs..... 167
- 7.4.5 Gender related and grade related differences..... 170
- 7.5 Discussion..... 174
  - 7.5.1 The academic self-concept of students with LD and LD/ADHD.. 175
  - 7.5.2 The academic attributional style of students with LD and LD/ADHD ..... 182
  - 7.5.3 The academic self-efficacy beliefs of students with LD and LD/ADHD ..... 184
  - 7.5.4 The relationship between academic self-concept, academic attributional style and academic self-efficacy beliefs..... 185
  - 7.5.5 Gender related and grade related differences in self-perceptions . 187

**CHAPTER 8: STAGE THREE: SELF-CONCEPT ENHANCEMENT OF STUDENTS WITH LEARNING DIFFICULTIES**

- 8.1 Rationale..... 191
- 8.2 Hypotheses ..... 194
- 8.3 Method..... 198
  - 8.3.1 Sample..... 198
  - 8.3.2 Instruments..... 198
  - 8.3.3 Procedure ..... 199
  - 8.3.4 Research design..... 199
  - 8.3.5 The intervention strategies ..... 200
- 8.4 Results ..... 203
  - 8.4.1 Pre-existing group differences on the dependent variables..... 203
  - 8.4.2 The intervention’s effects during the waitlist, experimental and follow-up periods..... 205
  - 8.4.3 Changes in the dependent variables during the waitlist control .... 208
  - 8.4.4 Changes in the dependent variables during the experimental ..... 209
  - 8.4.5 Changes in the dependent variables during the follow-up period . 209
  - 8.4.6 The intervention’s effects on the targeted and non-targeted areas of self-concept..... 210
  - 8.4.7 The intervention’s differential effects for the students with LD and LD/ADHD ..... 214
- 8.5 Discussion..... 216
  - 8.5.1 Changes in the dependent variables during experimental stages .. 218
  - 8.5.2 The intervention’s effects for the targeted areas of self-concept .. 219
  - 8.5.3 The intervention’s effects for students with LD and LD/ADHD. 224
  - 8.5.4 The effectiveness of attributional retraining in the enhancement of academic self-concept ..... 225
  - 8.5.5 The major findings of the study ..... 228

**CHAPTER 9: CONCLUSION..... 230**

- 9.1 The significance of the research ..... 239
- 9.2 Limitations of the research ..... 241
- 9.3 Suggestions for future research ..... 243

**REFERENCES .....246**

**APPENDICES.....275**

APPENDIX A- Instruments .....277

APPENDIX B- Instruments developed for this research .....282

APPENDIX C- Intervention program .....293

APPENDIX D- Reading and Mathematics Task- sheets.....298

APPENDIX E- Consent forms .....326

LIST OF TABLES

Table 6.1: Corrected item- total correlation, Means, Standard deviations and factor loading (unrotated factor matrix) for each of the 10-item Positive and Negative scales on the AASQ ..... 125

Table 6.2: Corrected item-total Correlation, Means, Standard Deviations and factor loading of items for each of the 7-item Reading Self-efficacy and Maths Self-efficacy scales on the ASEB-Scale ..... 132

Table 6.3: Internal consistency coefficients for the SDQ-1 (Marsh, 1990) with study sample. Normative sample values are reproduced from the manual for the SDQ-1..... 135

Table 7.1: Characteristics of the students in normally achieving, LD, and LD/ADHD groups ..... 148

Table 7.2: The percentage of male and female students in each Grade in the three groups ..... 149

Table 7.3: Means and Standard Deviations for the educational and occupational level of the parents of the participants in three groups..... 151

Table 7.4: Means and Standard Deviations of the three groups on self-concept, academic attributional style and academic self-efficacy beliefs..... 155

Table 7.5: Means and Standard Deviations on self-concept scales for the normally achieving, LD, and LD/ADHD groups ..... 157

Table 7.6: Means and Standard Deviations on sub-scales of academic and non-academic self-concept for normally achieving, LD, and LD/ADHD groups ..... 159

Table 7.7: Percentile scores on self-concept scales for normally achieving, LD and LD/ADHD groups..... 162

Table 7.8: Means and Standard Deviations for the normally achieving, LD, and LD/ADHD groups on the Positive and Negative attribution scales of the AASQ ..... 164

Table 7.9: Means and Standard Deviations for the normally achieving, LD and LD/ADHD groups on the Reading and Mathematics self-efficacy beliefs of the ASEB-scale..... 166

Table 7.10: Correlation between the facets of self-concept measured by the SDQ-1, dimensions of academic attributional style measured by the AASQ and the dimensions of academic self-efficacy beliefs measured by the ASEB-Scale, for the study sample ..... 169

Table 7.11: Means and Standard Deviations for girls and boys in three groups, on different scales of self-concept, academic self-efficacy belief and academic attributional style..... 171

Table 7.12: Means and Standard Deviations for the normally achieving, LD and LD/ADHD groups, on the dependent variables across all Grades ..... 172

Table 8.1: Means and Standard Deviations for Self-concept, Academic Attributional Styles and Academic Self-efficacy Beliefs assessed at pre waitlist, pre intervention, post intervention and follow-up for LD and LD/ADHD subjects .....204

Table 8.2: Means and Standard Deviations for the dimensions of self-concept, academic attributional style and academic self-efficacy beliefs, assessed at pre waitlist, pre intervention, post intervention and follow-up for the combined sample (n = 36) .....206

Table 8.3: Means and Standard Deviations for the dimensions of self-concept, assessed at pre waitlist, pre intervention, post intervention and follow-up for the combined sample (n = 36)..... 211

Table 8.4: The effect sizes for different dimensions of academic and non-academic self-concept for the combined sample (n = 36) .....213

Table 8.5: Means and Standard Deviations for the dimensions of self-concept assessed at pre waitlist, pre intervention, post intervention and follow-up for subjects with LD and with LD/ADHD .....215

Figure 8.1: Experimental stages identifying waitlist, intervention and follow up assessments .....201

## ACKNOWLEDGEMENTS

There are many people to whom I am exceedingly grateful. My thanks go firstly to all those children, their parents and teachers who participated in this research. I sincerely thank the Department of School Education, NSW, Australia, and the Principals of the participant schools for allowing me access to their schools.

I would like to express my sincere gratitude to my supervisor, Dr Jessica Grainger, for her academic support, critical reading, valuable suggestions and sincere encouragement throughout this four years period, that helped me greatly in bringing this research to completion.

I am particularly grateful to Dr. Nadia Crittenden for her kind and friendly demeanor, emotional support in many ways and valuable suggestions about the manuscript of the thesis.

My thanks also to Peter Caputi who always made himself readily available to help me with my data analysis, for his greatly valued statistical advice at every stage of the research.

I also wish to thank my friends, Joce, Jane, Fareeha and Dr. Naseem who encouraged me and appreciated my work. My special thanks go to Dr. Tariq Jamil, for providing the inspiration to complete this work.

My thanks to Neville Neasbey, for his skillful help in proof reading and editing the manuscript.

Heartfelt thanks go to my family, my husband Kalb-e-Abbas for his faithful support, sincere encouragement and care, and my children, Ammar, Palvisha, Mavra and Khush, for their love and help and sharing responsibilities at home with their little hands throughout these busy four years.

Thank you so much for everything.

## ABSTRACT

This thesis examines the self-concept, attributional style and self-efficacy beliefs of students with learning difficulties (LD) with and without attention deficit hyperactivity disorder (ADHD), compared to normally achieving peers. The thesis also examines the effectiveness of the attributional retraining technique in enhancing the academic self-perceptions of students with learning and attentional difficulties.

The thesis is developed in three stages: Stage-1 is concerned with the development of two instruments for the assessment of academic attributional style and academic self-efficacy beliefs for students in Grade 3 to 6. This stage examines the factor analysis, reliability and validity outcomes of these instruments. Stage-2 concerns itself with a comprehensive examination of the self-concept, attributional style and self-efficacy beliefs of students with LD, students with comorbid LD/ADHD and normally achieving peers. Based on the existing literature, a number of hypotheses concerning the directions of the difference in the self-perceptions of students with LD and with comorbid LD/ADHD were examined. Stage-3 is concerned with the implementation and assessment of the effectiveness of an intervention program that was designed for the enhancement of academic self-concept. Students with LD and students with comorbid LD/ADHD whose academic self-concept scores fell in the lowest quartile participated in this intervention program. The intervention utilized the attributional retraining technique and the effectiveness of attributional retraining in enhancing academic self-concept of students with LD and with comorbid LD/ADHD was examined.

The results obtained from Stage-2 revealed that students with LD and students with comorbid LD/ADHD possessed significantly lowered academic self-concept compared to normally achieving peers. However the three groups (LD, LD/ADHD and normally achieving peers) did not differ significantly on non-academic self-concepts. A comparison between students with LD and students with comorbid LD/ADHD indicated that the two groups did not differ significantly on self-concept, attributional style and self-efficacy beliefs. The results obtained from Stage-3 supported the effectiveness of a cognitive model in changing maladaptive attributions and indicated that academic self-concept of students with LD and with LD/ADHD can be enhanced indirectly using attributional retraining technique.

## INTRODUCTION

It is generally held that a positive self-concept is central to academic and interpersonal success (Chapman, 1988a; Marsh & Craven, 1997). Researchers have suggested that students who hold a positive self-concept tend to be academically successful, socially well adjusted, more readily accepted by their peers and usually try harder and persist longer when faced with difficult tasks. On the other hand, students who hold negative self-perceptions feel personally and socially inadequate and tend to reduce their efforts or give up altogether when a task is difficult (Bong & Clark, 1999; Byrne, 1986; Craven, Marsh & Debus, 1991). Such findings revealed the importance and role of positive self-perceptions in academic and social success.

The self-perception of students with learning difficulties has been a focus of research during the last three decades (Harter, Whitesell, & Junkin, 1998). There is mounting research evidence that students with learning difficulties (LD) have lower self-estimations compared to their normally achieving peers (Bender, 1985, 1986; Bender & Wall, 1994; Chapman, 1988a, Chapman & Boersma, 1979; Mercer, 1987; McInerney, 1999; Rogers & Saklofske, 1985). However, the findings of the previous studies on the self-concept of students with learning difficulties have been equivocal. Some studies have reported significant differences in the self-concept of students with LD and normally achieving peers (Rogers & Saklofske, 1985; Huntington & Bender, 1993), while others have reported no differences (Silverman & Zigmond, 1983; Tollefson, 1982). The use of different types of self-concept measures has been suggested as one of the causes of these inconsistent findings (Harter et al., 1998;

Marsh & Craven, 1997). A review of the literature on self-concept has indicated that in some studies researchers have used general measures of self-concept that examined the global self-perceptions while others have utilized the multidimensional instruments that provide scores for the different dimensions of self-concept such as academic self-concept and general self-concept.

Studies that examine the components or dimensions of self-concept generally conclude that students with LD hold lower academic self-concept, but their non-academic self-concept or general feelings of self-worth are equivalent to their peers without disabilities (Bender & Wall, 1994; Harter et al., 1998; Kloomok & Cosden, 1994). Studies that used a unidimensional measure of self-concept and have examined the global self-concept of students with LD have reported more equivocal results concerning the self-concept of students with LD (Matis, 1984, Patten, 1983; Sabornie, 1994). These inconsistent findings emphasized the importance of viewing self-concept as a multidimensional phenomenon and utilizing multidimensional instruments for the assessment of self-concept. Further research is needed to clarify these findings regarding the academic and general self-concept of students with learning difficulties.

Studies have also reported that students with LD generally hold a negative attributional style, as they tend to attribute their failure to internal causes (lack of ability and efforts) and their success to external causes (luck and chance) (Bryan, 1986; Cooley & Ayres, 1988; Pearl, 1982, 1992; McInerney, 1999; Rogers & Saklofske, 1985). As the performance of students with learning difficulties usually



varies significantly from their peers without LD, it is quite possible that students with LD would doubt their abilities and would attribute their successes to external causes and their failures to internal factors (Bryan, 1986; McInerney, 1999).

Researchers have also reported that students with learning difficulties generally have poor self-efficacy beliefs about achieving academic success (Schunk, 1984; Schunk & Hanson, 1985; Schunk & Swartz, 1993). Usually a cyclic process is suggested in which students with learning difficulties after repeated experiences of failures become less motivated and expend fewer efforts, which leads to further failure. They spent less time in learning and this lack of effort on their part prevents any further success. These repeated experiences of failures might be linked with poor self-efficacy beliefs and negative attributional style in students with learning difficulties (Grainger & Frazer, 1999; Licht, 1983; Schunk, 1990b).

Researchers have reported that self-concept is linked to attributional style in that the children with a positive academic self-concept take personal credit for their success. In contrast children with negative academic self-concept usually attribute their success to external and unstable factors and they do not feel the pride associated with their success (Marsh, 1986, 1988; McInerney, 1999). Thus a close relationship between self-concept and self-attributions has been suggested (Craven, et al., 1991; Marsh, Cairns, Relich, Barnes, & Debus, 1984). Researchers have reported that the lower the self-concept of students with LD, the more likely they were to attribute their failure to lack of ability (Cooley & Ayres, 1988). Attributions are also related to self-efficacy

beliefs. Schunk (1984, 1990b) and Schunk & Cox (1986), in a series of experiments have shown that student's self-efficacy about a particular task is influenced by the type of attributions used by the students to explain success and failure. The self-perception of personal efficacy is said to be a core aspect of an individual's self-concept (Brandtstadter, 1999). Individuals with enhanced self-efficacy usually exhibit increased intrinsic motivation, more favorable self-perceptions and more adaptive attributional patterns (Bong & Clark, 1999; Pajares, 1996).

These findings indicate that self-concept, self-efficacy beliefs and self-attribution are closely related to each other. In order to get a complete picture of self-perceptions of students with learning difficulties it is important to pull all these variables together. By examining all these variables, the present investigation has presented a comprehensive picture of self-perceptions of students with learning difficulties.

Researchers have reported a considerable comorbidity between learning difficulties and Attention Deficit Hyperactivity Disorder (ADHD) (Cantwell & Baker, 1991; Reason, 1999; Shaywitz & Shaywitz, 1991). Attention Deficit Hyperactivity Disorder (ADHD) is a diagnostic label employed by the American Psychiatric Association in the Diagnostic and Statistical Manual of Mental Disorder DSM-III-R (1987) and DSM-IV (1994). Children with this disorder may fail to give close attention to details, they are easily distracted and have poor concentration, their work is often messy and they may find it hard to persist with tasks until completion (Green & Chee, 1994).

A considerable comorbidity (40% to 80%) has been reported between LD and ADHD and almost one-third of the students with LD are thought to have attention deficit hyperactivity disorder (Hallahan, 1989; Robbins, 1992). According to the Australian National Health and Medical Research Council report (Carmichael, Adkins, Gaal, & Hutchins, 1997) the coexisting learning disabilities were reported in 10 to 90% of students diagnosed with ADHD, whereas coexisting ADHD was reported in 41 to 80% of students diagnosed with LD. When stringent identification criteria were applied for both ADHD and LD, McKinney, Montague and Hocutt (1993) found that comorbidity was present in at least 10 to 20% of all cases. If even the most conservative of these figures is accepted, there are many students with LD who are experiencing ADHD.

Many social, emotional and educational difficulties are also associated with attention deficit hyperactivity disorder (Hoza, Pelham, Milich, Pillow, & McBride, 1993). Research indicates that children with ADHD, due to their inattention and impulsive activities, experience frequent exposure to failures (Bender, 1997; Milich, Loney & Landau, 1982). They usually receive negative feedback from parents, teachers and peers (Cunningham, Siegal, & Offord, 1985) and have been found to experience significant problems with peer rejection and popularity (Cantwell & Baker, 1991; Hinshaw & Melnick, 1995; Mercer, 1997).

Studies have also reported that students with ADHD hold poor self-concept and negative attributional patterns (Hoza et. al., 1993; Hoza, Waschbusch, Pelham, Molina

& Milich, 2000; Huntington & Bender, 1993). It seems possible that the social, emotional and academic difficulties would be intensified for the students who have both problems: LD and ADHD rather than just LD. The risk factors associated with LD may increase markedly when there is co-occurrence of ADHD, and the interaction between LD and ADHD may, in consequence, cause further decrements in the self-perceptions of children with comorbid LD/ADHD.

Although a significant number of children with learning difficulties have an associated ADHD, little research has been undertaken to explore the self-concept and related constructs like attributional style and self-efficacy beliefs of students with comorbid LD/ADHD. In particular, most of the previous studies on the self-perceptions of students with LD have not specifically identified or broken down their samples into subgroups such as learning difficulties with ADHD and learning difficulties without ADHD. It is quite possible that some of the previous studies on the self-perceptions of students with LD are confounded by the use of unspecified LD and LD/ADHD subject samples. An investigation of the self-concept, attributional style and self-efficacy beliefs of students with comorbid LD/ADHD may provide a better understanding of the problems arising from the interaction of learning difficulties and ADHD.

Further, a comparison of students with LD and students with comorbid LD/ADHD may answer the question of whether or not the added problem of ADHD comorbidity contributes to the development of lowered academic self-concept of students with learning difficulties.

It is very important to deal with the issue of self-concept of students with learning difficulties because research indicates that the problems of negative self-concept of this population persist into adolescence and even into adulthood (Chapman, 1988a; Magg & Behrens, 1989; Ritter, 1989). Recent studies have also reported that adolescents with learning difficulties are much more likely to be victims of depression and suicide than normally achieving students (Huntington & Bender, 1993; Bender, Rosenkrans, & Crane, 1999). Early identification and intervention with the poor self-perceptions of students with learning and attentional problems could be an important consideration in order to provide a better emotional adjustment of this population. In view of the issues surrounding the psychological and emotional well being of children with learning difficulties, it is clearly important to examine the factors that influence their self-concept and also develop interventions for the enhancement of self-concept.

In view of the above mentioned issues the present investigation was conducted in three stages. The first stage was concerned with the development and standardization of two instruments: the academic attributional style questionnaire and the academic self-efficacy belief scale for children in Grades 3 to 6. The second stage of the present investigation has explored the nature of self-concept, attributional style and self-efficacy beliefs of students with LD and students with comorbid LD/ADHD compared to their normally achieving peers. Students with LD and students with comorbid LD/ADHD were also compared with each other, in order to assess the additional impact of ADHD on self-concept, attributional style and self-efficacy beliefs.

On the basis of the results obtained from this stage, a self-concept enhancement intervention was designed for students with learning and attentional difficulties. The third stage of the investigation utilizes and assesses the effectiveness of this intervention with samples of students with LD and students with comorbid LD/ADHD.

*Chapter one* gives a description of the basic concept, definition, prevalence and types of learning difficulties (LD). The concept and nature of attention deficit hyperactivity disorder (ADHD), the issues of comorbidity between LD and ADHD, and the social and emotional problems arising from the interaction of LD and ADHD have also been discussed.

*Chapter two* presents a review of the research on the self-concept, attributional style and self-efficacy beliefs of students with learning difficulties. The definitions and model of self-concept have been presented. The chapter also reviews the studies on the relationship between self-concept, self-attributions and self-efficacy beliefs and emphasizes the importance of enhancing self-concept for students with learning difficulties.

*Chapter three* provides an overview of the major approaches and interventions that have been used to enhance the self-concept of children. The related research and the results of meta-analytical studies on self-concept enhancement are described. The limitations of previous studies on self-concept enhancement are also discussed. The

theoretical bases of self-concept enhancement techniques and the implications for the development of an intervention program to improve academic self-concept of students with LD are identified.

*Chapter four* gives a description of the instruments which are commonly used to assess self-concept, attributional style and self-efficacy beliefs of children. The rationale for utilizing the Self-Description Questionnaire (SDQ-1) (Marsh, 1990) instrument in the present investigation is explained. The development, validity and reliability outcomes of the SDQ-1 are also described. In relation to this, two instruments to assess academic attributional style and academic self-efficacy beliefs of children are suggested as important. This chapter emphasizes the need and the rationale for the development of these two new instruments.

*Chapter five* presents an overview of all the key issues in this thesis and describes the rationale for the present investigation. A brief outline of each of the study stages and its objective has been presented in this chapter.

*Chapter six* is concerned with the first stage of the present investigation, which describes the development of two instruments. One instrument was developed to assess the academic attributional style and the other was designed to measure the academic self-efficacy beliefs of students in Grades 3 to 6. This chapter explains the rationale and the procedures for the development of these two instruments. The factor analysis, reliability and validity outcomes of the instruments have also been described.

*Chapter seven* presents the second stage of the investigation, which focuses on a comprehensive examination of self-concept, attributional style and self-efficacy beliefs of students with LD and students with comorbid LD/ADHD. The students in the two groups (LD and LD/ADHD) are compared with each other and with their normally achieving peers. Based on the existing literature, the study examines a number of hypotheses concerning the directions of the difference in self-concept, attributional style and self-efficacy beliefs of students with LD and students with comorbid LD/ADHD. This stage also provides a sample for the next stage of the present investigation.

*Chapter eight* is concerned with the third phase of the investigation in which an intervention for the enhancement of self-concept for students with LD and students with comorbid LD/ADHD is employed. Students with LD and students with comorbid LD/ADHD, whose academic self-concept scores on the SDQ-1 (Marsh, 1990) fell in the lowest quartile, participated in this intervention program. The intervention utilized an indirect self-concept enhancement approach, using attributional retraining techniques. A waitlist control pre-test post-test design was employed. The intervention was conducted for seven weeks with two sessions per week. A number of hypotheses concerning the intervention's effects on the targeted areas of self-concept were examined and the effectiveness of the intervention for the enhancement of academic self-concept for students with LD and with comorbid LD/ADHD was established.

*Chapter nine* concludes the findings of all the studies. The results are discussed,



limitations of the present investigation are considered and suggestions are made for future research. By examining the nature of self-concept, self-attributions and self-efficacy beliefs, the present research presents a comprehensive picture of the self-perceptions of students with learning difficulties with and without attention deficit hyperactivity disorder. The present research also develops and tests a treatment for changing maladaptive academic attributional beliefs.

## **CHAPTER ONE**

# **LEARNING DIFFICULTIES AND ATTENTION DEFICIT HYPERACTIVITY DISORDER**

The objective of this chapter is to describe the definition, prevalence and nature of learning difficulties (LD). Common types of learning difficulties are explained and comorbid features such as attention deficit hyperactivity disorder are also described. The concept and nature of attention deficit hyperactivity disorder (ADHD), the issues of comorbidity of LD with ADHD and the social and emotional problems arising from the interaction of LD and ADHD are discussed.

### **1.1 Learning disabilities: Definition and Prevalence.**

The field of learning disabilities deals with a heterogeneous group of individuals who display a variety of learning and behavioral characteristics (Mercer, 1997). Students with academic learning disabilities are those children or adolescents who are not achieving in one or more academic areas in school when compared with their peers. According to O'Shea, O'Shea and Algozzine (1998), students with learning disabilities have normal intelligence, but are not achieving at a level either anticipated in relation to their intellectual ability or commensurate with their typical peers. A person with learning disabilities may experience constant or periodic academic failures and low self-esteem.

To understand learning disabilities, first it is important to examine definition of learning disabilities.

### Definition of Learning Disabilities

The definition of learning disabilities (LD), identification procedures and characteristics of LD, has continued to be influenced by different theoretical orientations and varying levels of agreement or disagreement about what constitutes LD. The various definitions of LD have been a major source of controversy in the field and different conceptual components of LD have been included in all definitions from 1947 to 1990 (Siegel, 1989; Mercer, 1991). The most popular and accepted definition of learning disabilities was the one written by the National Joint Committee on Learning Disabilities NJCLD (1981). According to this definition

Learning disabilities is a generic term that refers to a heterogeneous group of disorders manifested by significant difficulties in the acquisition and use of listening, speaking, reading, writing, reasoning or mathematical abilities. These disorders are intrinsic to the individual and presumed to be due to central nervous system dysfunction. Even though a learning disability may occur concomitantly with other handicapping conditions (e.g., sensory impairment, mental retardation, social and emotional disturbance), or environmental influences (e.g., cultural differences, insufficient and inappropriate instructions, psychogenic factors), it is not the direct result of those conditions or influences. (Hammill, Leigh, McNutt, & Larsen, 1981, p.336)

In 1988, the NJCLD slightly modified its earlier definition to reflect current knowledge. The revised definition indicated that the disorder “may occur across the life span” and stated that a “problem in self-regulatory behaviors, social perception, and social interaction may exist with learning disabilities but do not by themselves constitute a learning disability” (NJCLD, 1988, p.1).

However the Association for Children with Learning Disability (ACLD) (1986) rejected the NJCLD definition and wrote the following definition

Specific Learning Disability is a chronic condition of presumed neurological origin, which selectively interferes with the development, integration, and/or demonstration of verbal and/or nonverbal abilities. Specific Learning Disabilities exist as a distinct handicapping condition and varies in its manifestation and in degree of severity. Throughout life, the condition can affect self-esteem, education, vocation, specialization, and/or daily living activities. (p. 15).

This definition stresses the lifelong nature of a learning disability and it also places emphasis on the social and emotional aspects. The definition reflects the fact that in view of the complications there is also a specific need to address issues of self-esteem and self-concept in this population.

In Australia, a national council called AUSPELD (Australian Council for Specific Learning Difficulties) has been working to increase public and government awareness of children who experience learning problems. As a result of AUSPELD's efforts, a bipartisan Select Committee of the Australian House of Representatives was formed in the mid-70s to investigate the problems of children and adults who experienced difficulties with literacy and numeracy. This committee used the term learning difficulties (instead of learning disabilities), arguing that most of the children who experienced problems in school were not demonstrably impaired or disabled. Following the recommendation of the House of Representatives Select Committee, the term *learning difficulties* was used in Australia and New Zealand (Ashman & Elkins, 1998).

*Therefore, the term learning difficulties (LD) will be used in this thesis, however it will be necessary to use the term learning disabilities when referring to American research.*

### Prevalence of learning difficulties

Individuals with learning difficulties (LD) comprise the most obvious category of special education and according to Algozzine, (1991), more than half of all children with disabilities have learning disabilities. Almost 5% of all school age students are identified currently as learning disabled (Smith & Luckasson, 1995). Prevalence estimate of LD ranges from 1% to 30% (Ashman & Elkins, 1998). According to the US Department of Education (1994) 50.1% of the students receiving special education during the 1992-1993 school year were students with learning disabilities. According to O'Shea et al., (1998), the prevalence of learning disabled students relative to all students with disabilities has ranged in recent years from 28% to 64%.

In Australia, the prevalence rate of children with LD ranges from 11% to 20% in primary schools and 6.25% to 11% at secondary level (Ashman & Elkins, 1998). In New Zealand, prevalence figures have indicated that about 7% of school age children have learning difficulties (Chapman, 1992). Learning problems have been found more among males than females. Smith (1994) reports a 2:1 to 6:1 male to female ratio in the LD population.

## **1.2 Assessment of learning difficulties.**

Learning difficulties involve a number of components including cognitive, attentional and behavioral deficits (Mercer, 1997). Many students are diagnosed with LD during the elementary and middle school years. School age LD children usually exhibit learning difficulties in academic areas like reading, mathematics, writing and spelling. Because LD is associated with academic problems it is identified as a discrepancy between potential and achievement. The discrepancy comparison is basic to the identification of LD. A discrepancy exists when the estimated ability and the academic performance of a student differ greatly. Ability achievement discrepancies are identified as a result of a student's difficulty in meeting increasingly more complex academic, social, and behavioral expectations (Mercer, 1997; O'Shea et al., 1998).

A discrepancy exists if a student's performance on achievement tests is significantly discrepant from his or her intelligence test scores. A severe discrepancy is defined as an individual's failure to achieve in one of the academic areas like reading, mathematics, writing or spelling commensurate with age and ability (Mercer, 1997). This discrepancy is usually determined by comparing intelligence (ability) with achievement (e.g., reading performance). Tests of intelligence such as the Wechsler Intelligence Scale for Children (WISC) (Wechsler, 1991) or the Stanford-Binet Intelligence Scale are used to assess the IQ level of the child. Achievement in different areas is assessed through the use of standardized achievement tests such as Wide Range Achievement Test (WRAT). The difference between the ability scores and

achievement scores is analyzed to determine whether a significant discrepancy exists (Mercer, 1997).

### **1.3 Placement of students with learning difficulties.**

In the past, students with learning difficulties were taken out of general classrooms and placed in self-contained classes. However it is generally agreed where possible that segregation in education should be avoided as it may be stigmatizing (Rothstein, 1995). According to the American Individuals with Disability Act (IDEA), (1990), students with disabilities should be educated alongside students without disabilities. In 1975, the US congress passed the Education of All Handicapped Children Act (also called Public law 94-142), which mandated that students with disabilities be provided with services in their least restrictive environment. "Restriction was interpreted in terms of the amount of time students were educated in classes with their peers without disabilities. The more time students with disabilities spent in settings with peers without disabilities, the less restrictive was the setting. The more time they spent in placements separated from their peers without disabilities, the more restrictive was the setting." (Mercer, 1997 p. 199-200). In an effort to prevent some of the problems caused by segregation there has been considerable emphasis on mainstreaming. The term mainstreaming is used to refer to the practice of integrating students with LD into general education as much as possible. Currently, most students with LD who attend public schools are placed in regular classes or in withdrawal settings as opposed to special education classes or placements (Mercer, 1997).

In Australia, specially trained remedial teachers are deployed to assist with in-class teaching and consultation with the classroom teacher. These teachers may work by withdrawing children with LD for regular small group or individual instructions (Ashman & Elkins, 1998). Thus mainstreaming or integration is an integral part of the education process in Australia.

## **1.4 Types of learning difficulties**

As already indicated, academic problems constitute the major characteristics of LD. Academic difficulties are usually noted in reading, mathematics, written language and oral language. However, reading difficulty and mathematics difficulty are the most common learning difficulties. Reading problems usually define the primary disability among individuals with LD and reading problems are regarded as the principal cause of failure in school (Lovitt, 1989).

### **1.4.1 Reading Difficulties**

Almost 10% to 15% of a school population experience difficulty in reading (Harris & Sipay, 1990). A number of factors may lead to reading difficulties. These factors may include a neurological dysfunction, visual and auditory problems, environmental factors (such as language or cultural differences) and poor instructions, psychological factors including attention and memory problems, and difficulties with the phonological skills etc (Ashman & Elkins, 1998).



Students with reading disability experience considerable difficulty acquiring phonological skills that are considered necessary for successful word recognition and comprehension (Torgesen & Bryant 1994). A substantial research (e.g., Bradley & Bryant, 1985; Torgesen, Wagner & Rashotte, 1994) provides strong evidence to support the belief that reading disabled children, in comparison to fluent readers, have considerable difficulty with the phonological aspects of language. Early difficulties in phonemic awareness also pose considerable problems for the reader in developing orthographic awareness. Orthography refers to knowledge regarding written or printed symbols that are used to represent sounds (Lyon, 1995). An alphabet is an orthographic code in which symbols (letters) represent separate sounds. Students with reading difficulties experience considerable problems with learning the sounds and representing the sounds heard with a conventional orthography. They have difficulty with oral reading fluency and comprehension skills. Reading disabilities reflect a persistent deficit rather than a developmental lag. According to Lyon (1995), longitudinal studies indicate that of those students who have reading difficulties in the third grade about 74% continue to have difficulties in the ninth grade.

A secondary feature of reading difficulty arises in relation to the development of learned helplessness and anxiety towards reading-related activities (Grainger & Frazer, 1999). Reading experiences strongly influence a student's self-image and feeling of competency. Reading failure can lead to poor self-concept, anxiety and lack of motivation. Research (Clever, Bear & Juvonen, 1992; Heyman, 1990) suggests that children with reading difficulties have a lower level of self-esteem than that of their

normally achieving peers. Children with reading difficulties after repeated experience of failure become less motivated and expend less effort and are less persistent, which leads to further failure. Stanovich (1986) identified a cyclic process termed the “Matthew Effect” which describes the behavior of ‘defeated’ and ‘discouraged’ children who stop trying any more. Stanovich draws upon a Biblical example found in the “Gospel of Matthew”. The story highlights the fact that more return occurs when more is invested. This can be related to time or effort in reading. The good reader gets richer (due to more practice in reading) whilst the poor reader gets progressively poorer. Stanovich suggests that the “Matthew effect” is in fact a major cause of continued academic failures.

#### **1.4.2 Mathematics difficulties**

Another common learning difficulty among students with LD is mathematics difficulties. Mathematics deficiencies emerge in the early years and continue throughout secondary school (Mercer, 1997). In the early years of schooling, children may have difficulties with computational skills. These difficulties may stem from slowness in operation execution (Kirby & Becker, 1988), developmental delays (Cawley, Fitzmaurice-Hayes, & Shaw, 1988), memory deficiencies (Bley & Thornton, 1995), language problems (Cawley, 1985), lack of effective cognitive and metacognitive strategies (Cherkes-Julkowski, 1985), difficulties with generalization (Rivera & Smith, 1988), and procedural error (Russell & Ginsburg, 1984). These difficulties can interfere with the successful acquisition of mathematical concepts and skills in areas such as computations, problem solving and mental calculations.

In some circumstances the social and emotional characteristics of students with learning difficulties predisposes them for mathematics disabilities. It has been found that repeated academic failures frequently results in low self-esteem and passivity in mathematics (Cherkes-Julkowski, 1985). Many of these students have histories of academic failure and have developed a learned helplessness about maths (Parmar & Cawley, 1991). It is postulated that learned helplessness in maths results from youngsters trying to solve problems when they have little or no understanding of mathematical concepts. This lack of understanding fosters the student's dependency on the teacher and thus promotes the notion that external help is needed to solve problems. Repetition of this scenario promotes and strengthens learned helplessness and once again the 'rich gets richer and the poor gets poorer' and children with mathematics difficulties experience something similar to the " Mathew effect" (Grainger & Frazer, 1999).

The emotional reaction of some individuals to maths is so negative that they develop a specific anxiety that is related to mathematics. This condition is believed to stem from a fear of school failure and low self-esteem and causes students to become so tense that their ability to solve, learn or apply mathematical concepts is impaired (Slavin, 1991). Although some students with LD have either a learning difficulty in reading or in mathematics, many have a combination of academic difficulties usually including difficulty in both reading and mathematics.

## **1.5 The links between learning difficulties (LD) and Attention Deficit Hyperactivity Disorder (ADHD).**

Since the early 1970s attention difficulties have been associated with learning difficulties. Many studies have demonstrated the presence of attention and behavioral problems in children with LD (Bender, 1986; McKinney & Feagans, 1983, 1984). Students with LD were described as children who appear unable to regulate the use of attention strategies in school tasks (Ashman & Elkins, 1998). When the term LD was first formulated, it was inclusive of children with hyperactivity, impulsiveness, and inattention problems, and those children were included in special education as “children with learning disability”. During the 1960s and early 1970s, children who were impulsive, inattentive and hyperactive were typically identified as “learning disabled” if they were a few years behind their grade placement in academic achievement (Bender, 1997, p. 15). There is now a well-established body of research that links attention deficit hyperactivity disorder (ADHD) to a range of learning and behavioral problems (Barkley, 1990; Edward & Barkley, 1997; Zentall, 1993). A brief overview of the development and current understanding of ADHD is provided at this point.

## **1.6 The description of Attention Deficit Hyperactivity Disorder.**

Attention Deficit Hyperactivity Disorder (ADHD) is a diagnostic condition described by the American Psychiatric Association in the Diagnostic and Statistical Manual of Mental Disorder DSM-III-R (APA, 1987) and DSM-IV (APA, 1994). This term has evolved through several stages. In the 1950s and 1960s the term minimal brain

dysfunction (MBD) was used and hyperactivity was a major characteristic. In 1968, the American Psychiatric Association (APA) presented the term 'hyperkinetic reaction to childhood' and described the criteria in the DSM-II. The term attention deficit disorder (ADD) appeared for the first time in the DSM-III (APA, 1980) and reflected the awareness that attention deficits could significantly interfere with learning processes. In the DSM-III (APA, 1980), two types of ADD were described, ADD with hyperactivity and ADD without hyperactivity. The diagnostic criteria for ADD with hyperactivity included inattention, impulsivity and hyperactivity. In ADD without hyperactivity, the hyperactive component was excluded. In 1987, the terminology was changed to that of attention deficit hyperactivity disorder (ADHD), and in the DSM-IV (APA, 1994) the subtypes, 'predominantly inattentive' 'predominantly hyperactive-impulsive' and 'combined type' were included (Mercer, 1997).

One of the main features of ADHD is a persistent pattern of inattention and/or hyperactivity /impulsivity that occurs more frequently and in more severe form than is observed in other individuals at a comparable level of development (DSM-IV, APA, 1994). Children labeled as hyperactive are a heterogeneous group, as some are overactive, some are inattentive, some are impulsive and some are a combination of these behaviors (Barkley, 1990). These symptoms typically arise in childhood, occur in a variety of situations, and remain chronic over time. However to be classed as ADHD, some symptoms must have been present before seven years of age and in at least two settings (eg. at home and at school or work) DSM-IV (APA, 1994).

By definition, ADHD children are believed to display marked inattention compared to normal children on tasks that require sustained attention or vigilance. Inattention may occur in academic, occupational or social situations. Children with this disorder may fail to give close attention to details, their work is often messy and is performed carelessly. They may find it hard to persist with tasks until completion and often move on to other tasks before the completion of a previous task. They experience difficulty in following instructions and organizing tasks and activities. These children are easily distracted, have poor concentration and frequently do not seem to be listening. Several studies have shown that ADHD children are more active, restless and fidgety than normal children are (Grainger, 1997; Green & Chee, 1994).

In social situations, inattention may be evident through frequent shifts in the topic of conversation, not listening to others and not following the rules of games or activities. Impulsivity and hyperactivity are manifested through different behaviors. Hyperactivity may manifest itself through fidgeting and restlessness, being always on the move, unable to sit still and squirming in one's seat. Hyperactivity varies with age and the diagnosis should be made cautiously in young children. Impulsivity displays itself as impatience, blurting out answers before questions are completed, difficulty in waiting for one's turn and interrupting others excessively (DSM-IV-APA, 1994).

### **1.6.1 Prevalence of attention deficit hyperactivity disorder**

According to the DSM-IV (APA, 1994) the problem of attention deficit hyperactivity disorder affects between 3% and 20% of school age children, with a ratio of 9:3 for

males compared to females. DeLong (1995) notes that up to 9.5% of school children meet the criteria for ADHD. Following a childhood diagnosis of ADHD, 70 to 80% of children continue to be impaired by ADHD symptoms during later adolescent years and 50 to 60% will continue to have difficulties as adults (Barkley, 1990).

### **1.6.2 Etiologies of attention deficit hyperactivity disorder**

It is generally assumed that the causes of ADHD reside primarily in a mixture of several possibilities such as biochemical factors, genetic predisposition and possible differences in brain cerebral structures (Barkley, 1990; Goldstein, 1995; Hynd, Hern, Voller & Marshall, 1991). The neurochemical explanation for ADHD proposes that the behaviors associated with ADHD occur because the central nervous system can not produce sufficient neurotransmitters. The impulsivity, restlessness and inattentiveness associated with ADHD is a result of dysfunction of neural pathways (Goldstein, 1995; Hynd et al., 1991). Neurobiological explanations of ADHD suggest that genetic factors may be important. Family history and twin studies provide evidence for this viewpoint (Barkley, 1990; Levy, Hay & McStephen, 1997; Parker, 1992).

Environmental toxins such as food additives and colorings, sugar and lead have also been proposed as causes of ADHD. The Feingold diet which controlled for certain additives was a popular response to this disorder in the seventies (Feingold, 1975). However research suggests a very small percentage (less than 5%) of children

diagnosed with ADHD may be affected by artificial dietary additives (Carmichael, Adkins & Gaal et al., 1997; Carroll, 1993).

## **1.7 Comorbidity between LD and ADHD**

A comorbidity between learning difficulties and attention deficit hyperactivity disorder is consistently reported in the literature (August & Garfinkel, 1990; Cantwell & Baker, 1991; Epstein et al., 1991; Reason, 1999; Shaywitz & Shaywitz, 1991). Attention deficit hyperactivity disorder and learning difficulties seem to occur together in a proportion of children diagnosed with either one or the other condition. There is a significant overlap between learning difficulties (LD) and attention deficit hyperactivity disorder (ADHD). The National Health and Medical Research Council Report (Carmichael et al., 1997) reviewed studies in which coexisting learning difficulties were reported in 10% to 90% of students diagnosed with ADHD. Dupaul and Stoner (1994) indicate that students diagnosed as having learning disabilities are seven times as likely to be diagnosed with ADHD than their counterparts without learning disabilities. According to Hallahan, (1989) almost one-third of students with LD are thought to have ADHD.

The incidence of learning problems within the population of children with attention deficit hyperactivity disorder (ADHD) has been estimated as ranging from 43% to 92% (Biederman et al., 1991). According to DeLong (1995) ADHD prevalence rates for students labeled as having learning disabilities range from 41% to 80%, and estimates of learning disabilities in the ADHD population range from 9% to 80%.



Holborow and Berry (1986) reported that 41% of school children with LD also had hyperactivity and up to 65% children with LD demonstrated difficulties with inattention. Shaywitz and Shaywitz (1988) found that around 50% of children who meet the DSM-III-R (1987) diagnostic criteria for ADHD had a specific learning disability.

Perhaps the most reliable data concerning the comorbidity issue emerged from the review of McKinney, Montague and Hocutt (1993). When stringent identification criteria were applied for both ADHD and LD, McKinney et al. found that comorbidity occurred in at least 10% to 20% of cases, although the prevalence of co-occurrence varied from 9% to 63% across the studies reviewed. This co-occurrence of LD and ADHD is an issue that still needs clarification.

However, if even the most conservative of these figures is accepted, there are many students with LD who are experiencing ADHD. Kupietz (1990) has noted that participants with either ADHD or LD made some kind of progress over time, while those children who experience both a LD and ADHD made no noticeable improvements. Thus the problems associated with LD or ADHD may increase markedly when there is co-occurrence of LD and ADHD.

## **1.8 The nature of relationship between LD and ADHD**

Although results of many investigations have revealed a relationship between a LD and ADHD (Cantwell & Baker, 1991; Epstein et al., 1991; Shaywitz & Shaywitz,

1991) the nature of this relationship has not been well defined. It is still unclear whether school failure in children with LD/ADHD is a result of ADHD, learning difficulties, or a combination of both ADHD and LD, or of other environmental factors. However it has been suggested (Riccio, Gonzalez & Hynd, 1994) that the comorbidity between LD and ADHD may be the result of various mechanisms. Riccio et al., (1994) report that generally three hypotheses are suggested regarding the attentional and behavioral problems of children with learning difficulties.

According to the first hypothesis LD leads to ADHD: it has been suggested that the basic problems of ADHD like inattention, increased hyperactivity, and self-control problems may be related to, and presumably be the result of difficulties with academic performance (Merrell, 1990; Torgesen, 1988). Therefore inattention may be a nonspecific behavior resulting from the child's reaction to learning difficulties over time (Weinberg & Emslie, 1991). However this hypothesis does not obtain much support in view of the fact that many students with LD do not demonstrate attentional deficits or hyperactivity in response to academic failures.

A second hypothesis assumes that ADHD leads to LD. It has been suggested that inattention and hyperactivity precede and impede academic performance (August & Garfinkel, 1990). Epstein, Shaywitz, Shaywitz and Woolston, (1991), however, have pointed out the fact that many children with ADHD do not have learning difficulties and there is, therefore, insufficient evidence to show that ADHD itself leads directly to learning problems.

The third hypothesis assumes that LD and ADHD are separate entities that may co-occur (August & Garfinkel, 1990; Silver, 1990; Torgesen, 1988). Silver (1990) has differentiated ADHD and LD by noting that a LD affects the brain's ability to learn, while ADHD appears to interfere with an individual's availability for learning. However it was suggested that both learning difficulties and ADHD might have a common origin in neurological dysfunction (Spren, 1989). Although the nature of the relationship between LD and ADHD has yet to be determined, the link has been well established between the two (LD and ADHD) (Epstein et al., 1991; Shaywitz & Shaywitz, 1991).

## **1.9 Social and emotional characteristics of children with ADHD**

Many social and emotional difficulties are associated with ADHD. Research indicates that the impulsive and poorly controlled behavior of ADHD children produces heightened levels of peer rejection (Hinshaw & Melnick, 1995; Milich, Loney & Landau, 1982). They may receive negative feedback from parents, teachers and peers (Cunningham, Siegal, & Offord, 1985) and have been found to experience significant problems with peer rejection and popularity (Cantwell & Baker, 1991). In addition, excessive verbal and motor activity in students with ADHD may divert energy from learning, and their impulsivity may produce errors in schoolwork (Mercer, 1997).

According to Bender (1997) children with ADHD experience frequent exposure to failure. They may demonstrate immature social skills and may not successfully fit into typical social situations. Self-esteem problems, which have been compounding over

the adolescent years, continue to cause problems for the adult with ADHD. These adults often have not experienced success in relationships and may be emotionally oversensitive. Thus it is apparent that ADHD children, given the nature of their problems, experience considerable social and academic problems. Studies (Barkley, 1990; Biederman, Newcom & Sprich, 1991; Taylor, 1990) suggest that early intervention is necessary for the students with ADHD to achieve success academically and socially. Bender (1997) also suggests that students with ADHD who receive early training and intervention have a better chance of completing school, maintaining relationships, and holding a job.

### **1.10 Social and emotional characteristics of children with LD**

Although learning difficulties have been recognized primarily as cognitive or academic difficulties, the non-cognitive aspects of learning disabilities such as social and emotional aspects deserve more attention (Mercer, 1997). Most common social and emotional problems of students with learning difficulties may include low self-esteem, poor peer-relations, negative self-concept, poor self-efficacy beliefs, maladaptive attributional style and even depression (Ashman & Elkins, 1998; Mercer, 1997). These secondary complications may have a severe impact on a student's overall adjustment and achievement behavior.

Many students with learning difficulties experience problems with social acceptance (Bender, 1997), social skills (Bender, 1994; Smith, 1994) and social competence (Bender & Wall, 1994). The social skill deficits of some students with learning

difficulties are caused by their inability to understand social cues. Bryan and Bryan, (1986) indicate that students with LD usually do not understand the significance of nonverbal communication like other's facial gestures, tone of voice or general mood. Problems with peer acceptance are also common among students with LD. This may occur across all grade levels and appears to be stable with time, continuing into adulthood (Bender, 1997; Ochoa & Olivarez, 1995). However, the problem of lower self-concept of students with LD is the most common problem that has been identified by a number of researchers (Bender, 1985, 1986; Chapman & Boersma, 1979; Mercer, 1987; Rogers & Saklofske, 1985).

### **1.11 The self-perceptions of students with LD.**

Often parents and teachers of students with learning difficulties remark that these students have poor self-concept or low self-esteem. A considerable amount of research conducted with LD student's self-perception has demonstrated that students with learning difficulties usually hold negative self-perceptions (Chapman, 1988a; Grainger & Frazer, 1999; Rogers & Saklofske, 1985; Schunk, 1990a). Researchers have presented several causes for the lower self-perceptions of students with learning difficulties. Because students with learning difficulties suffer repeated academic failures, disappointments and frustrations, it is not surprising that many of them have low feelings of self-worth (Pearl, 1992).

According to Mercer (1997) social rejection or social isolation and academic problems may be associated with poor self-concept in students with learning difficulties.

However there is limited empirical support for a cause-effect relationship between academic problems and poor self-perceptions. It has been suggested that lower self-concept can be both a cause and a result of social emotional and academic problems (Pearl, 1992). Mercer (1997), however, suggests that it is reasonable to consider that academic problems result in social and emotional problems and vice versa and that clearly there is an interactive model in which both primary and secondary factors impinge on each other in a reciprocal and interactive manner.

Research also indicates that not all students with learning difficulties show negative self-concept and many of them may express positive views about their overall self-worth (Kistner, Haskett, White & Robbins, 1987). Many of the students with LD are in fact as well liked as their non-LD peers (Bear & Mink, 1996). Then why do some students with LD experience more rejection and more emotional complications than other LD students do? One explanation given by researchers (Durrant, Cunningham & Voelker, 1990) is that there might be subgroups of students with learning difficulties who are overly negative or positive about their self-worth. For example Kistner et al. (1987) found a subgroup of students with LD who hold unrealistically negative or positive self-perceptions. Others studies have revealed a sub-group of LD students who did not exhibit socio-emotional difficulties, and in fact were not distinguishable from their normally achieving peers in respect to their self-concept (Durrant, et al., 1990; McKinney & Speece, 1986).

It is not possible to be certain at this stage which subgroups of children with learning difficulties may be at greater risk of developing negative self-perceptions. It is possible, however, that the negative self-perceptions experienced by children with learning difficulties may be intensified if there is an associated problem of attention deficit hyperactivity disorder. It is also possible that students with comorbid LD/ADHD experience more severe social and emotional problems as compared to those LD students who do not have a comorbid ADHD. Given the high comorbidity between LD and ADHD and the nature of the problems associated with both disorders, it could be expected that the students with co-morbid LD and ADHD might have a higher risk of developing negative self-concept. However, this hypothesis has not been examined in previous studies.

Up to this point a review of the literature on LD and ADHD has indicated that either alone or in combination these two disorders constitute significant social and emotional problems for individuals with LD and ADHD. Students with LD and ADHD may find themselves in situations in which they continually are frustrated with their academic work as well as their social relations. As a consequence of negative social, emotional and academic experiences students with LD and students with ADHD may develop negative self-concept.

Although a significant number of children with learning difficulties have comorbid ADHD, few studies have addressed the impact of interaction of LD and ADHD on self-perceptions of students with comorbid LD/ADHD. In order to understand the

nature of the relationship between LD and ADHD and the problems that may arise from this association, research may need to examine students with comorbid LD/ADHD.

### Summary of the Chapter.

An overview of the definition, prevalence and common types of learning difficulties has been presented in this chapter. The comorbidity between learning difficulties and attention deficit hyperactivity disorder and the social and emotional problems arising from the interaction of LD and ADHD have also been discussed. A review of the literature on social and emotional difficulties faced by children with learning difficulties and children with ADHD has been presented. A number of students with LD experience difficulties in psychosocial domains. They have to cope with academic problems as well as social and emotional problems like peer rejection, lowered self-esteem and even depression. Most of these difficulties may persist through adolescence into adulthood.

Many studies have indicated that students with learning difficulties differ from normally achieving students in terms of self-concept, locus of control and self-efficacy beliefs (Bender, 1985, 1986; Chapman & Boersma, 1979; Mercer, 1987; Rogers & Saklofske, 1985; Schunk, 1984, 1991). These problems of negative self-perceptions may, however, be intensified when children with LD have a comorbid ADHD. Given a high comorbidity between LD and ADHD and the nature of the problems associated



with both a LD and ADHD, it is possible that students with LD and a comorbid ADHD may experience more severe social and emotional problems.

In view of the issues surrounding the psychological and emotional well being of children with learning difficulties, it is clearly important to examine the way in which children's self-concept is formed and established in relation to their experiences of failures and difficulties in the learning and social environment. The nature of self-concept and related constructs such as attributional style and self-efficacy beliefs of students with LD and students with ADHD is the focus of the next chapter.

## **CHAPTER TWO**

### **SELF-CONCEPT, ATTRIBUTIONAL STYLE AND SELF-EFFICACY BELIEFS OF STUDENTS WITH LD AND STUDENTS WITH ADHD**

The purpose of this chapter is to describe the self-concept, attributional style and self-efficacy beliefs of students with learning difficulties. An overview of the definitions and model of self-concept are presented in the first part of this chapter. The second part of the chapter presents a review of literature on self-concept, attributional style and self-efficacy beliefs of students with LD and students with ADHD. The relationship between self-concept, attributional style and self-efficacy beliefs is explained. The last part of the chapter emphasizes the importance of and the need to enhance self-concept of students with learning difficulties. This chapter also intends to establish the rationale for investigating the self-concept, attributional style and self-efficacy beliefs of students with LD and students with comorbid LD/ADHD.

#### **2.1 The significance of Self-concept.**

Self-concept is the self-determination of our strengths and weaknesses based on past successes and failures (Hattie, 1992; Marsh & Craven, 1997). A positive self-concept is always valued because a positive and stable self-concept is central to academic and interpersonal success (Craven, Marsh & Debus, 1991; Marsh & Craven, 1997). It is generally held that students who hold a positive self-concept tend to be academically successful, socially well adjusted, more readily accepted by their peers and usually try

harder and persist longer when faced with difficult tasks. On the other hand, students who hold negative self-perceptions feel personally and socially inadequate and tend to reduce their efforts or give up altogether when a task is difficult (Bong & Clark, 1999; Byrne, 1986; Chapman, 1988a; Craven et al., 1991). Research shows that a low self-concept can be quite problematic in adulthood and may tremendously affect the lives of these adults (Wender, 1987; Weiss, 1992). As self-concept plays a significant role in the learning processes, the development of a positive self-concept has been one of the most important goals of education (Marsh & Craven, 1997).

Children with learning difficulties (LD) usually experience repeated failures and sometimes peer-rejection, and so may develop an identity or self-image linked to rejection or failure (Licht, 1983; Mercer, 1997; Pearl, 1992). Because self-concept plays an important role in the learning process and the self-concept of students with learning difficulties may be linked with failure experiences, so the nature of their self-concept must be determined in order to develop appropriate interventions for the improvement of their self-concept. Researchers (Mercer, 1997; Smith, 1994) have stressed that the self-concept concerns of students with learning difficulties should be addressed in just as intense a manner as their academic concerns, to ensure that these children grow up with enough personal strengths to undertake the challenges of life.

## **2.2 The definition of self-concept.**

Byrne (1986) suggests that self-concept is the perception of ourselves that involves our attitudes, feelings, and knowledge about our skills, abilities, appearance, and

social acceptability. Before the 1970s self-concept tended to be seen as a unidimensional construct referring to the general view one has of oneself (Harter, 1986). Most early studies on self-concept used instruments that measured a wide range of perceptions, which were then summarized as 'general self-concept'. As early as 1961, Wylie criticized the utility of 'general self-concept' for being too broad. She argued that self-concept research would be improved if it were more "molecular" in its approach.

In 1976 Shavelson and his colleagues Hubner and Stanton reviewed existing theory and research on self-concept and developed a definition of self-concept. They defined self-concept as a person's perception of self that is formed through experiences with the environment and interpretations of environmental factors. Shavelson et al., (1976) stated:

In very broad terms, self-concept is a person's perception of himself. These perceptions are formed through his experience with his environment...and are influenced especially by environmental reinforcements and significant others. We do not claim an entity within a person called "self-concept." Rather, we claim that the construct is potentially important and useful in explaining and predicting how one acts. One's perceptions of himself are thought to influence the ways in which he acts, and his acts in turn influence the ways in which he perceives himself (p. 411).

Shavelson et al. (1976) identified seven features critical to their definition of the self-concept construct. These features are summarized:

- a) Self-concept is organized and structured,

- b) It is multidimensional.
- c) It is hierarchical, with perceptions of personal behavior in specific situations at the base of the hierarchy and with global, general self-concept at the apex.
- d) The general self-concept at the apex is stable.
- e) Self-concept becomes increasingly multidimensional as the individual moves from infancy to adulthood.
- f) Self-concept can be differentiated from other constructs.
- g) Self-concept has both a descriptive and an evaluative aspect such that individuals may describe themselves (“I am happy”) and evaluate themselves (“I do well in reading”).

Recent investigators have also proposed similar conceptualizations of self-concept. For instance, Pajares (1996) suggests that self-concept includes competence judgements coupled with evaluative reactions and feelings of self-worth. Markus and Nurius (1986) defined self-concept as a system of affective-cognitive structures of an individual's self that develops from his/her self-relevant experiences. These definitions suggest that self-concept has both the descriptive and the evaluative components.

A common theme underlying Shavelson et al.'s (1976) definition and a number of other's definitions of self-concept appears to be that self-concept is one's perception of the self that is continually reinforced by evaluative inferences and that it reflects both cognitive and affective responses (Bong & Clark, 1999).

### **2.3 The multidimensional model of self-concept.**

In 1976 Shavelson and his colleagues developed a multidimensional, hierarchical model of self-concept. This multidimensional model of self-concept asserts that self-concept can be broken into parts that reflect various components of the person's overall self-concept. In Shavelson's model the general self-concept appeared at the apex of the hierarchy and was divided into two components: academic self-concept and non-academic self-concept. Academic self-concept was further divided into specific subject areas like mathematics self-concept and reading self-concept. Non-academic self-concept was also divided into three components: social self-concept, emotional self-concept and physical self-concept.

According to Marsh and Craven (1997) the multidimensional approach to measuring self-concept allows for accurate measurement of specific areas of self-concept, like academic, non-academic and general self-concept. The academic self-concept refers to one's perception of himself or herself as a student. Non-academic self-concept refers to one's perception of his/her abilities in social and physical situations. General self-concept refers to one's perception of himself or herself as an affective capable individual, who is proud of and satisfied with the way he or she is (Marsh, 1990). This multidimensional self-concept approach has important implications for the assessment, measurement and enhancement of self-concept (Marsh & Craven, 1997).

The multidimensional model of self-concept developed by Shavelson et al., (1976) has significant value in self-concept research because it provided a blueprint for new

multidimensional self-concept instruments. Marsh (1990) and Harter (1985) have attempted to design instruments that support a multidimensional model of self-concept. The self-description questionnaires (SDQ) developed by Marsh (1990) and the self-perception profile for children (SPPC) developed by Harter (1985) are multidimensional self-concept instruments which identify specific domains of self-concept.

The following section of this chapter presents an overview of self-concept and the related constructs like attributional style and self-efficacy beliefs of students with learning difficulties.

## **2.4 Self-concept of students with learning difficulties.**

It is generally held that due to academic problems, students with learning difficulties have lower self-estimations as compared to their normally achieving peers (Bender, 1987, 1986; Chapman & Boersma, 1979; Mercer, 1997; Rogers & Saklofske, 1985). Bender and Wall (1994), after reviewing 27 studies, concluded that students with learning difficulties exhibited lower academic self-concept and lower perceived academic competence than that of their peers without disabilities.

Licht (1983) draws a picture of how students with learning difficulties develop an overall negative self-concept. She explains that LD children, as a result of repeated failures, come to doubt their intellectual abilities. They believe that whatever they do will not help them overcome their difficulties and “...as a consequence of these

beliefs, the children lessen their achievement efforts, particularly when confronted with difficult tasks. This in turn increases the likelihood of continued failure, which, in turn, strengthens the children's belief that they lack the ability to overcome their difficulties. As this belief becomes strengthened, their other academic experiences come to be interpreted in the light of early experiences. Thus, even if the child does experience some success (e.g., as a result of some remedial programs for LD children), she/he is not likely to take credit for them. Instead these successes are likely to be attributed to "external" factors such as the ease of the task, the teacher's help, or luck" (p. 483).

Students with learning difficulties may, therefore, develop a set of negative beliefs about their capabilities, which impact negatively on their motivation to learn. Research has supported this view and many researchers have found the self-perceptions of LD students more negative in comparison to non-LD students (Bender & Wall, 1994; Chapman, 1988a; Chapman & Boersma, 1979; Rogers & Saklofsky, 1985).

## **2.5 The literature on the self-concept of students with LD.**

A review of the literature on the self-concept of students with learning difficulties indicated that previous studies in this area have reported equivocal results. Some studies have revealed significant differences between the self-concept of students with LD and that of their normally achieving peers, (Huntington & Bender, 1993; Omizo, Amerikaner, & Michael, 1985; Rogers & Saklofske, 1985), while other researchers have reported no differences (Matis, 1984; Silverman & Zigmond, 1983; Tollefson,



1982). Harter, Whitesel & Junkin (1998) suggest that self-concept measurement problems are responsible for these equivocal findings. Most of the previous studies on LD student's self-concept have used the single score or general measures of self-concept that gave an overall evaluation of general self-concept or self-esteem. Harter et al. (1998) argue that the use of general measure of self-esteem such as Coopersmith's Self-esteem Inventory (Coopersmith, 1967) or the Piers-Harris's Children's Self-concept Scale (Piers-Harris, 1984) provide an overall evaluation of self-worth and the domain-specific inadequacies may not be assessed accurately by the use of such measures.

Studies that used general measures of self-concept and examined the overall self-concept or global self-concept of students with learning difficulties have reported more inconsistent findings. Some studies have concluded that students with learning difficulties exhibit lower global self-concept than normally achieving peers (Patten, 1983) whereas others have reported no difference between students with and without LD on global self-concept (Matis, 1984; Sabornie, 1994). However studies that use multidimensional measures of self-concept and examine the components or dimensions of self-concept largely conclude that the students with learning disabilities hold lower self-concept about their academic skills, but their non-academic self-concept or general feelings of self-worth are equivalent to that of their peers without disabilities (Bear & Mink, 1996; Hagborg, 1996; Kloomok & Cosden, 1994; Montgomery, 1994).

These researchers have reported that students with learning difficulties exhibited equivalent self-concept to students without disabilities in nonacademic areas but had significantly more negative self-concept in the area of academic abilities and general competence. Chapman (1988a), therefore, suggests that when examining the self-concept of students with learning difficulties, it is important to consider the distinction between academic, non-academic and general self-concept. Such findings also revealed the importance of using multidimensional measures of self-concept when assessing children's self-concept.

Another reason that may possibly explain the inconsistent findings on the self-concept of students with LD is the heterogeneous nature of the samples of LD children that were studied. Researchers (Durrant, Cunningham & Voelker 1990; McKinney & Speece, 1986) have suggested that there are sub-groups of LD students and some LD students are not distinguishable from their normally achieving peers in respect to their self-concept, whereas other LD students have significantly poor self-perceptions than normally achieving peers.

For instance, Durrant, Cunningham & Voelker (1990) compared four groups of children on academic, social and general self-concepts. These groups included children with (1) LD with behavior disorder, (2) LD with no behavior disorder, (3) non-LD with no behavior disorder and (4) LD with externalizing and internalizing symptoms. Durrant and colleagues found that LD students with behavior disorder obtained the lowest self-concept scores than the other three groups.

The researchers argued that not all students with learning difficulties have low self-concepts and those LD students who have emotional and behavioral problems are more likely to exhibit poor self-concepts. Durrant, Cunningham & Voelker (1990) suggest that it is important to acknowledge the heterogeneity of the LD population and the multidimensionality of self-concept in order to gain a complete understanding of the self-perceptions of children with learning difficulties.

## **2.6 Self-concept of students with ADHD**

Students with ADHD experience a variety of difficulties that could impact on their self-concept. The specific primary complications associated with ADHD, like inattentiveness, excessive motor activity and impulsivity, have been found to impair the social, emotional and academic development of children with ADHD (Barkley, 1990; Cantwell & Baker 1991). Horn and Ialongo (1986) identify four characteristics often observed in children with ADHD: poor peer-relationship, poor school performance, aggressive conduct problems and clumsy and poor coordination. In a parent survey conducted by Baker (1994), parents identified low self-esteem as a major concern with children with ADHD.

Biederman and Steingard (1989) suggest that the assessment of the self-perception of children and intervention at elementary school level is very important since 30% to 50% of children with LD and ADHD also appear to face continued difficulties throughout adolescence and adulthood. Studies cited by Biederman and Steingard (1989) also suggest that children with ADHD may even develop other more serious

disorders, including antisocial personality disorder, substance abuse, and depression. In addition, the risk of diminished self-esteem increases as attentional symptoms persist throughout the life span.

Research (Weiss & Hechtman, 1993) provides evidence that low self-esteem is a typical problem for adolescents whose ADHD symptoms endure. Weiss and Hechtman (1993) reported that adults with ADHD scored significantly lower than controls on two of the three measures administered to assess self-esteem. Adults who still had problems with concentration, social interactions, emotional disturbance and impulsivity also exhibited poor self-concept.

Individuals who have been diagnosed as hyperactive in childhood report lower self-esteem in adolescence. At a 15-year follow up, a large number of adults with ADHD complained of low self-esteem and interpersonal difficulties (Hechtman, 1989; Slomkowski, Klein, & Mannuzza 1995; Weiss & Hechtman, 1986). Low self-esteem can become a risk factor for ongoing problems and may intensify other symptoms. Adults with ADHD may begin to feel incompetent and frustrated. These feelings of inferiority are often due to a series of failures, unfinished projects and battles with peers or relatives (Bender, 1997).

Bender concludes that the symptoms and problems related to ADHD persist into adolescence and even into adulthood and cause frustrations and problems in many aspects of the adult's life.

## 2.7 Attributional Style.

Abramson, Seligman and Teasdale (1978) postulated that people develop characteristic causal explanations for unpredictable life events, which they termed “explanatory style” or attributional style. Attributional style, therefore, is a specific way to explain the causes of one’s successes and failures. Seligman (1991) proposes two types of explanatory style: (1) the pessimistic explanatory style (or the negative attributional style) and (2) the optimistic explanatory style (or the positive attributional style).

According to Peterson, Buchanan and Seligman (1995) the tendency to attribute negative outcomes to causes that are internal, stable and global reflects a negative attributional style. Alternatively, the tendency to attribute negative outcomes to causes that are external, unstable and specific characterizes an optimistic or positive attributional style.

Peterson et al. (1995) identified three dimensions of explanatory style: internal/external, stable/unstable and global/specific. Peterson et al. (1995) suggest that individuals who explain or attribute their successes to causes that are internal (ability and efforts), stable (it will last forever) and global (it will influence every thing that happens to me) demonstrate a positive attributional style. In contrast the individual who attributes their success to causes that are external (luck or chance), unstable (it is short-lived) and specific (it is going to influence only this situation) demonstrate a negative attributional style.

According to Peterson et al. (1995), individuals who possess internal, stable and global attributions for their successes and/or possess external, unstable and specific attributions for their failures will demonstrate a positive attributional style. In contrast the individuals with external, unstable and specific attributions for success outcomes and/or internal, stable and global attributions for failure outcomes would demonstrates a negative attributional style. In other words an individual with a positive attributional style tends to internalize responsibility in success situations and externalize responsibility in failure situations, whereas an individual with a negative attributional style tends to internalize responsibility in failure situations and to externalize responsibility in success situations.

An individual's attributional style may be associated with his/her self-concept. McInerney, (1999) suggests that children with high academic self-concept attribute their success to internal and stable factors (ability and efforts). These feelings contribute to further satisfaction with their performance and therefore lead to higher academic self-concept and further striving for achievement. In contrast children with lowered academic self-concept attribute their success to external and unstable factors and they do not feel the pride associated with their success. McInerney (1999) further suggests that a child's sense of self and self-worth, which include beliefs about personal ability or self-efficacy, and the child's interpretation of prior successful and unsuccessful experiences influence his/her motivation to learn. Thus a negative attributional style may reduce the individual's motivation to strive for further achievement.

Wiener's attribution theory (Weiner 1974, 1984, 1986) suggests that attributions play an important role in achievement motivations. According to this theory four causes are perceived as mostly responsible for success and failure in achievement related contexts: ability, effort, task difficulty and luck. Ability and effort describes characteristics that are internal to the person whereas luck and task difficulty are states external to the person. Research (Weiner, 1985) shows that individuals high in achievement motivation attribute their success to internal causes (ability and efforts) and their failure to external causes (task difficulty and luck).

In 1978, Diener and Dweck observed that children who attribute failure to lack of ability display decreased performance after the experience of failure, while the children who attribute their failure to lack of effort do not show deterioration in performance and often show improvement. Children with LD usually experience failures in academic and social situations, and they may develop specific attributional patterns.

## **2.8 Attributional Style of students with LD.**

Generally people tend to attribute success to internal causes and failure to external causes (Marsh, 1990; Marsh, Cairns, Relich, Barnes & Debus, 1984; McInerney, 1999). However for students with learning difficulties this rather simplistic formula is not accurate. Students with learning difficulties usually have a history of poor performance and academic failures. They appear to take less personal credit for success (Chapman, 1988b; Rogers & Saklofske, 1985), and attribute their success less

to ability and more to luck and easiness of task (Jacobson, Lowery, & DuCette, 1986). In a failure situation students with learning difficulties usually attribute their failures to a lack of ability and are less likely to attribute them to a lack of efforts (Jacobson et al., 1986; Kistner, Osborne, & LeVerrier, 1988).

Other researchers (Kistner et. al, 1988; Licht et. al, 1985, Pearl, 1982) have also reported similar findings for the LD student's attributional patterns. According to Huntington & Bender (1993), the internal attributions for failure among students with learning difficulties may lead them towards severe self-criticism which may affect the individual's feelings of self-esteem. Huntington & Bender (1993) suggest that these negative self-evaluations of students with LD extend broadly across performance-related activities as well as into social self-efficacy, and the individual becomes less optimistic about future improvements in performance and social competence.

McInerney (1999) emphasizes the fact that the performance of others relative to our own is important. For example, if students perform more or less the same as others they are more likely to attribute their success or failure to external causes (such as task difficulty). On the other hand, if a student's performance varies from others, and is significantly better or worse, the student is likely to attribute it to internal factors (such as ability or effort). McInerney suggests that the performance of students with LD usually varies significantly from their peers and that those students are inclined to attribute their failures to internal factors and their successes to external factors.



According to McInerney (1999), the outcomes that are consistent with previous performances are likely to be attributed to stable causes ("I always fail in reading"). Outcomes that run counter to previous patterns are likely to be attributed to unstable causes such as chance or luck ("I got it because I was lucky that day"). Individuals who believe that they are competent and also perform well have this competence confirmed and are likely to attribute their success to stable causes (such as ability and effort). On the other hand, students who believe they are competent but fail to perform well are likely to question the causes of their failure in terms of unstable causes (such as less efforts or bad luck). Conversely, students who believe that they lack competence (such as students with learning difficulties) are likely to attribute their successes to unstable causes (Luck or chance), which is consistent with their perception of self as incompetent (McInerney, 1999).

Students with LD who usually believe that they lack competence are likely to attribute their successes to unstable and external causes. They are also likely to attribute their failures to stable and internal causes. It is possible therefore to conclude that students with learning difficulties appear to be at considerable risk for developing an overall negative attributional style.

This negative attributional style of students with learning difficulties may also persist into adolescence. Many studies have found significant attributional differences between adolescents with learning difficulties and non-LD adolescents (Jacobson et al., 1986; Kistner et al., 1988; Tollefson, 1982).

For example Jacobson et al. (1986) using a dispositional measure compared attributions of adolescents with learning difficulties and normally achieving peers. The normally achieving peers in this study followed the expected pattern of attributing success more internally and failure more externally. However adolescents with learning difficulties attributed success more externally and attributed failure more internally in terms of their own lack of ability. The researchers concluded that the attributional patterns of adolescents with learning difficulties indicated that they were not experiencing the expected positive self-esteem associated with success that other students would normally experience. This indicates that an overall negative attributional style may lead to more serious problems of severe self-criticism.

## **2.9 Attributional style of students with ADHD.**

In the same way that LD students can experience significant social and emotional problems, students with ADHD may also experience frequent failures in social and classroom settings. However the studies on attributions of students with ADHD have reported equivocal findings. Some studies have reported that students with ADHD hold negative attributional patterns (Hoza, Waschbusch, Pelham, Molina & Milich, 2000; Huntington & Bender, 1993), while others have reported no difference of attributional patterns of students with ADHD and control group (Hoza, Pelham, Milich, Pillow, & McBride 1993).

Hoza, et al. (1993) compared self-perception and attributions of ADHD boys and control boys. Self-perceptions were assessed by the Self-perception Profile for

Children (SPPC; Harter, 1985). Attributional Style was assessed by the Children Attributional Style Questionnaire (CASQ; Kaslow, Tannenbaum & Seligman, 1978). The ADHD boys in their study were more likely than controls to attribute social success to personal qualities and less likely to take personal responsibility for social failures. Hoza et al. (1993) suggest that children with ADHD see themselves as similar to non-ADHD children in terms of self-perceived competence and global self-worth. Thus children with ADHD, in this study, demonstrated a positive attributional style.

However, contrary to these findings, Slomkowski, Klein and Mannuzza (1995) reported that children with ADHD, in their study, had lower self-esteem and lower levels of overall adjustment in adolescence and lower educational achievement and occupational rank in adulthood as compared to non-ADHD controls.

In a recent study Hoza, Waschbusch, Pelham and Milich (2000) compared behavioral, self-evaluative and attributional responses of boys with ADHD and control boys, to social success and failures. Hoza et al. (2000) concluded that ADHD boys were more likely than controls to attribute their success to external and uncontrollable factors such as task ease and being lucky (a negative attributional style). On the other hand control boys were more likely than ADHD boys to attribute failures to not having tried hard enough. Hoza et al. (2000) suggest that their findings are at odds with Hoza et al. (1993) who reported a positive attributional pattern of ADHD boys. Further research is needed to examine attributional style of ADHD children.

Although research has been conducted on attributions of children with learning difficulties and also on attributions of children with ADHD, the attributional patterns of students with comorbid LD/ADHD have not been studied extensively. Thus further research is also needed to compare attributional style of students with LD and students with LD/ADHD.

### **2.10 Students with comorbid LD and ADHD are at significant risk**

As described in Chapter One, learning difficulties and attention deficit hyperactivity disorder seem to occur together in a proportion of children diagnosed with either one or the other condition. Almost one third of students with LD are thought to have ADHD (Hallahan, 1989). Given a high comorbidity between LD and ADHD and the nature of the problems associated with each, it is quite possible that the risk factors associated with learning difficulties would increase markedly when LD is combined with ADHD. Thus the problems related to self-concept might be intensified when a child has both an LD and an ADHD and the children with comorbid LD/ADHD could be at higher risk of developing poor self-concepts.

ADHD is a relatively new area and it is quite possible that early researchers might have not clearly distinguished between LD and LD/ADHD samples. Most of the previous studies on the self-perceptions of LD children have not specifically identified and broken down their samples into the subgroups of LD children, such as learning disabled with ADHD and learning disabled without ADHD. It is therefore quite

possible that most of the previous studies on the self-perceptions of children with LD are confounded by the use of unspecified LD and LD/ADHD subject samples.

It also seems possible that the risk factors associated with either LD or ADHD may increase markedly when there is co-occurrence of LD and ADHD and this interaction of LD and ADHD may cause further decrements in self-concept of these children. Although a large number of studies have been conducted on the self-concept of children with learning difficulties and also on the self-concept of children with ADHD, the self-concept of children with LD/ADHD has not been extensively studied. Hence studies in this line may offer better understanding of the nature of problems arising from the interaction of LD and ADHD.

It is very important to deal effectively with the issues of self-concept for students with learning difficulties because the problem of negative self-perception in this population may persist into adolescence and even into adulthood. Research evidence has suggested that adolescents with learning difficulties exhibit more problems related to negative self-perceptions and internal locus of control than that of the adolescents without disabilities (Chapman, 1988a; Huntington & Bender, 1993; Magg & Behrens, 1989; Ritter, 1989).

In a longitudinal study by Chapman (1988b) adolescents with learning difficulties scored significantly lower than normally achieving adolescents in terms of academic self-concept. Furthermore there was no significant change in the academic self-

concept of the adolescents with learning difficulties over time. Because a child's self-concept may affect his or her behavior, interpersonal relationships, and academic achievement (Wylie, 1979), it is important to be able to identify specific aspects of self-concept and intervene where appropriate. Early identification and intervention for students with learning difficulties is necessary for the overall emotional well being of this population.

## **2.11 Learned helplessness as an attributional style in students with LD and ADHD.**

Seligman postulated initial learned helplessness theory in 1975. Abramson, Seligman and Teasdale introduced the reformulated model of learned helplessness in 1978. According to this model when outcomes are not perceived to be under personal control a state of helplessness is produced in which the individual reduces efforts and lowers self-efficacy (Abramson et al. 1978). This perception is associated with a specific attributional style of the individual in which the individual attributes his/her failure to uncontrollable, invariant factors such as lack of ability, rather than to controllable factors such as effort. The individuals may then use self-defeating statements after failure. Through continual repetition of negative self-statements, the individuals convince themselves of their personal inadequacy and their lack of ability to achieve success.

Abramson et al. (1978) also postulated that persons who are prone to depression have a tendency to attribute failure to internal, stable and global causes. Seligman and

Schulman (1986) theorized that individuals who habitually construe the causes of bad events as internal, stable and global would be more susceptible to helplessness than those with the opposite style. Further these individuals will blame themselves and expect failure to recur over a longer period of time and in more situations, consequently suffering from more self-esteem deficits. Peterson et al. (1995) suggest that an internal, stable and global attributional style for failure outcomes is also associated with low self-concept while an internal stable and global attributional style for success outcomes may enhance positive self-concept.

Studies that examine learned helplessness in LD and ADHD children (Grainger & Frazer, 1999; Milich & Okazaki, 1991; Milich, Carlson, Pelham & Licht, 1991) suggest that children with LD and ADHD attribute failure to own lack of ability. With this attributional style such children minimize their efforts when they encounter difficult tasks. It was suggested that when students expect failure they might intentionally reduce their efforts on tasks to maintain their perceived disability. These minimized efforts produce further failure that reinforces their maladaptive attributional style (McInerney, 1999).

Grainger and Frazer (1999) suggest that a vicious cycle of learned helplessness ensues in the lives of children with LD, in which children after repeated failure experiences become less persistent because they don't believe that success is related to effort. These children may spend less time in learning and this lack of effort on their part prevents any further success and they come to doubt their intellectual abilities. These

repeated experiences of failures lead them to believe that whatever they do will not help them overcome their difficulties. Thus students with LD may develop poor self-efficacy beliefs about achieving success in academic tasks.

## **2.12 Self-efficacy beliefs in students with LD and ADHD.**

Self-efficacy is the personal belief about one's capabilities to organize and implement actions necessary to attain designated levels of performance (Bandura, 1982, 1997). Self-efficacy is considered to affect task choice, persistence on tasks and effort expended (Bandura, 1986; Schunk, 1990b). According to Bandura (1997), students who have high self-efficacy beliefs about a task feel that they are capable of completing it and they attempt the tasks readily, whereas those who believe they are incapable of completing the task may avoid it. In other words one's successes raise self-efficacy and failures lower it. In addition students with high self-efficacy persist longer on tasks and expend more effort on difficult tasks than students who doubt their capabilities (Bandura, 1997).

Perceived self-efficacy or efficacy beliefs play an influential mediational role in academic attainment (Bandura, 1997; Schunk, 1990a). Bandura (1997) has reported that regardless of ability levels students with higher self-efficacy beliefs perform well in all situations. Bandura suggests that students may perform poorly either because they lack the skills or because they have the skills but lack the perceived self-efficacy to complete the task successfully. Thus a strong sense of self-efficacy plays a positive role in the achievement process.



Schunk (1990a) suggests that once a strong sense of efficacy is developed occasional failure may not have much impact on it. A strong sense of efficacy contributes to the accomplishment of tasks in academic as well as non-academic situations.

Grainger & Frazer (1999) reported that students with LD and ADHD after repeated experiences of failures, become less motivated and expend less effort and are less persistent, which leads to further failure. They spent less time in learning and this lack of effort on their part prevents any further success. The repeated experiences of failures may be associated with poor self-efficacy beliefs to achieve success in academic tasks. Academic self-efficacy is more often related to a mediating process in academic achievement. Studies on self-efficacy beliefs of students with learning difficulties (e.g., Schunk, 1984; Schunk & Hanson, 1985; Schunk & Swartz, 1993) have established the causal role of efficacy beliefs in enhancing student's achievement-related behaviors.

## **2.13 The relationship between self-concept, self-attributions and self-efficacy beliefs.**

### Links between Self-concept and Self-attributions

Researchers (Cooley & Ayres, 1988; Marsh, 1984a; Marsh et al., 1984; Schunk, 1984) have shown a close relationship between self-concept and other related constructs like self-attributions and self-efficacy beliefs. In 1982, Shavelson and Bolus proposed that self-concept is formed in part by “one's attributions for one's own behavior” (p. 3).

The development of self-concept is said to be reliant on the environmental reinforcements and attributions made for one's own behavior (Marsh, 1988, 1990).

In 1988, Cooley and Ayres compared students with LD and normally achieving peers on self-concept and attributions for academic success and failures. Cooley and Ayres demonstrated a significant positive correlation between self-concept scores and ability/effort attributions for success of pre-adolescents with learning disabilities. Researchers reported that the lower the self-concept of students with LD, the more likely they were to attribute their failure to lack of ability.

Marsh (1986) has also reported that students with lower academic self-concept were more likely to use ability attributions to explain their failure (a negative attributional style) compared to students with higher self-concept.

Other researchers have also demonstrated a close relationship between academic self-concept and attributions for academic success and failure (e.g., Craven, Marsh & Debus, 1991; Marsh, 1984a; Marsh, 1988; Weiner, 1986). Marsh (1988) correlated a multidimensional self-concept measure (SDQ) with a multidimensional attribution scale (Sydney Attributional Scale) and found a consistent pattern of relationship between multidimensional self-concept and multidimensional attributions.

McInerney (1999) has also suggested a link between self-concept and attributional patterns. McInerney suggests that children with high academic self-concept attribute their success to internal and stable factors that may then contribute to further

satisfaction with their performance and therefore lead to higher academic self-concept. In contrast children with poor academic self-concept usually attribute their success to external and unstable factors and they do not feel the pride associated with their success.

### Links between Attributions and Self-efficacy beliefs

Attributions are also related to self-efficacy beliefs. Schunk (1984, 1990b) and Bandura (1982) have explored some of the linkages between self-efficacy and self-attribution. According to Schunk (1984) attributions are a source of efficacy information. People's internal attributions for success (ability and effort) suggest that they are capable and can achieve results through hard work. This promotes their perceived self-efficacy.

Attributions influence performance through their intervening effects on self-efficacy. Schunk (1984, 1990b) and Schunk & Cox (1986), in a series of experiments, have shown that a student's self-efficacy about a particular task is influenced by the type of attributions used by the students to explain success and failure. Schunk (1990b), however, explains that the relationship between self-efficacy and attributions does not imply that one causes the other, which in turn directly impacts on performance. However, both variables have been associated with achievement enhanced outcomes. Efficacy beliefs play an influential mediational role in academic attainment and regardless of ability levels students with higher self-efficacy beliefs perform well in all situations (Bandura, 1997).

Schunk and his colleagues (Schunk, 1984b; Schunk & Hanson, 1985; Schunk & Swartz, 1993) have successfully established the causal role of efficacy beliefs in enhancing a student's achievement-related behaviors. In a study by Schunk and Swartz (1993), students with various academic deficits participated in instructional programs that were designed to enhance their competence by resorting to one or more of the diverse instructional strategies, such as modeling, strategy training, goal setting, providing rewards and attributional feedback to students. After successful completion of the programs participants demonstrated significantly enhanced self-efficacy towards the tasks of interest, which, in turn, resulted in improved performance on similar tasks.

Attributions and self-efficacy also influence self-concept. Recent studies that compare self-concept and self-efficacy beliefs in academic context suggest that perception of one's academic self-concept is strongly influenced by one's efficacy beliefs (Bong & Clark, 1999; Pajares, 1996). The self-perception of personal efficacy is said to be a core aspect of an individual's self-concept (Brandtstadter, 1999). The individuals with enhanced self-efficacy also exhibit increased intrinsic motivation, more favorable self-perceptions and more adaptive attributional patterns (Bong & Clark, 1999).

These studies indicate that self-concept, attributional style and self-efficacy beliefs are closely related to each other. Therefore, as suggested by Marsh (1984a), the true relationship between self-concept, self-attributions, and achievement outcomes (and perhaps self-efficacy beliefs) may be a network of relationships, whereby change in

one variable may result in changes in the others. These findings have important implications for the enhancement of self-concept of students with learning difficulties (Marsh & Craven, 1997).

### Summary of the Chapter

- A positive self-concept is central to academic and interpersonal success. Students who hold a positive self-concept tend to be academically successful and socially well adjusted, whereas students who hold negative self-perceptions feel inadequate and give up when the task is difficult (Marsh & Craven, 1997; Chapman, 1988a). Research shows that students with learning difficulties generally experience prolonged failure in academic and social situations, and therefore may hold lowered self-worth and negative self-concept.
- The literature on the self-concept of students with LD has shown inconsistent findings. Some studies have revealed significant differences in the self-concept of students with LD and normally achieving peers while others studies have reported no differences. Studies that examine the global self-concept of students with LD largely conclude that students with learning disabilities exhibit lower self-concept than normally achieving peers. Studies that examine the components or dimensions of self-concept generally conclude that the students with LD hold lower academic self-concept, but their non-academic self-concept or general feelings of self-worth are equivalent to their peers without disabilities. These findings emphasized the importance of viewing self-concept as a multidimensional

phenomenon and utilizing multidimensional instruments for the assessment of self-concept. Further research is also needed to clarify the inconsistent findings in the field of self-perceptions of students with LD.

- Research has also indicated that most students with LD appear to have a negative attributional style for academic success and failure. Students with LD take less personal credit for success, and attribute their success less to ability and more to luck and easiness of task. In failure situations they attribute their failures to a lack of ability (Chapman, 1988b; Jacobson et al., 1986; Kistner, Osborne, & LeVerrier, 1988). These negative attributional patterns in students with LD may closely be linked to the lowered self-concept and poor self-efficacy beliefs for achieving academic success. Research has demonstrated a close relationship between self-concept and attributional patterns. Individuals with enhanced self-efficacy also exhibit increased intrinsic motivation, positive self-perceptions and more adaptive attributional patterns (Bong & Clark, 1999; Pajares, 1996). Therefore in order to get a complete understanding of one's self-concept, it is important to explore one's self-efficacy beliefs and also self-attributions.
- A significant comorbidity between learning difficulties (LD) and attention deficit hyperactivity disorder (ADHD) has been reported in the literature (Hinshaw, 1992; McGee & Share, 1988; Reason, 1999; Silver, 1992). The risk factors associated with LD or with ADHD may, therefore, increase markedly when there is co-occurrence of LD and ADHD. Although a significant number of children with LD

have an associated ADHD diagnosis, little research has been undertaken to explore the self-concept and related constructs like attributional style and self-efficacy beliefs of students with comorbid LD/ADHD. It seems possible that students with comorbid LD/ADHD would develop a more negative self-concept in comparison to LD students who do not have a comorbid ADHD. Thus one objective of the present study, which flows from the awareness of literature discussed in this chapter, is the need to further explore the self-concept of students with LD/ADHD in comparison to LD and normally achieving students.

- It is very important to deal with the issue of self-concept of students with learning difficulties because the problems of negative self-perceptions of this population persist into adolescence and even into adulthood. Research evidence has suggested that adolescents with learning difficulties exhibit more problems related to negative self-perceptions and internal locus of control than that of the adolescents without learning disabilities, and these negative self-perceptions do not change over time (Chapman, 1988a; Magg & Behrens, 1989; Ritter, 1989). Adolescents with learning difficulties are much more likely to be victims of depression and suicide than normally achieving students (Huntington & Bender, 1993; Bender, Rosenkrans, & Crane, 1999). An early identification and intervention may be warranted for an overall emotional well being of this population. Another objective of the present investigation, therefore, was to implement and assess the effectiveness of an intervention designed to enhance self-concept of students with learning difficulties. These issues are discussed in the next chapter.

## **CHAPTER THREE**

### **SELF-CONCEPT ENHANCEMENT INTERVENTIONS**

The review of literature in Chapter Two has identified the fact that self-concept plays an important role in the social and emotional adjustment of individuals. Most researchers contend that a low self-concept can be quite problematic in adulthood and may tremendously affect the individual's life (Bender, 1987; Chapman, 1988a). Therefore the enhancement of self-concept is considered to be a desirable educational goal and it has been an important aim of psychotherapy and educational programs (Marsh & Craven, 1997).

As indicated in the earlier chapters, students with learning difficulties often hold a negative self-concept and they may feel personally and socially inadequate. It is very important to deal with these issues because research shows that the problems of negative self-perceptions of children with LD persist into adolescence and even into adulthood (Bender et al., 1999; Harter, 1993, 1998). It is, therefore, important to examine ways to assist students with LD to develop a more adequate and positive self-concept.

This chapter provides an overview of the major approaches that have been used to improve self-concept. The chapter also summarizes the related research and meta-analytic studies on self-concept enhancement, with a view to examining the theoretical basis of self-concept enhancement as well as the limitations of previous studies. This



discussion of previous intervention studies can clearly assist in identifying the possible implications for the development of a successful program to improve the self-concept of students with learning difficulties.

### **3.1 The importance of Self-concept enhancement.**

Self-concept plays a significant role in the learning process (Chapman, 1988a). Students with a positive self-concept feel good about themselves and their abilities. In addition a positive academic self-concept can have a significant impact on academic behavior, educational aspirations and academic achievement (Marsh & Craven, 1997). Therefore, according to Marsh and Craven (1997) “the enhancement of self-concept is considered to be a desirable educational goal.”(p. 132). Numerous intervention programs have been designed to enhance the self-concept of students. A brief description of these programs and their particular orientation is contained in the following section.

### **3.2 Self-concept enhancement programs.**

Numerous self-concept enhancement programs exist. Some of these programs are associated with specific theoretical approaches, whereas others do not appear to identify with any particular intervention framework or strategy. According to Hattie (1992), to provide some direction to these numerous self-concept enhancement programs a continuum of programs is proposed. For example, as mentioned by Hattie Patterson (1966) grouped existing theories into five categories ranging from cognitive to affective. At the cognitive end of his continuum are a number of cognitively

oriented approaches, in the middle are psychoanalytical approaches and towards the other end are the phenomenological and affective approaches.

Cognitive oriented and affectively oriented programs are usually applied in psychotherapy settings. Cognitive oriented programs may contain elements drawn from cognitive therapy, cognitive behavior therapy, rational-emotive therapy (RET), communication skills, transactional analysis, and a personal development framework. Since it is assumed that negative-thoughts are self-defeating and can lead to lower self-concept as well as anxiety or depression, cognitively oriented programs attempt to systematically change negative thoughts and self-defeating statements. These programs are based on the premise that clients can change themselves provided they learn to rethink their self-defeating ideas and irrational beliefs (Hattie, 1992).

Cognitive oriented programs are intended to replace maladaptive thoughts and irrational beliefs with realistic and rational thoughts. Intervention is typically broken down into small manageable steps with positive feedback or reinforcement given at each step. It is assumed that positive feedback or reinforcement then results in the development of a positive self-concept and enhanced self-esteem (Hattie, 1992; Hattie & Marsh, 1996).

Affectively oriented programs emphasize the interaction between client and therapist. The therapist helps the client to clarify and gain insights into his or her feelings. It is believed that by the process of redefining the perceptions, the client gains in self-

acceptance and self-esteem, learns to accept others and is more able to become a more fully functioning person (Hattie, 1992). The affective approaches or phenomenological approaches include Client-centered, Gestalt, and Self-awareness Groups.

According to Hattie (1992), if the cognitively and affectively oriented programs are placed at either end of a continuum then it is possible to locate some programs in the middle of the continuum because they seem to have a mixture of cognitive and affective input such as Outward Bound Courses. These programs also include academic programs, physical fitness programs, and environmental programs. Hattie (1992) criticizes the fact that most of the programs in this category are neither cognitive nor affective. These programs do not appear to identify with any particular intervention framework or strategy and they are not targeted specifically at enhancing self-concept. Such programs are usually found to be relatively less effective in enhancing self-concept (Hattie, 1992).

Another common form of intervention is an educational program used to enhance the self-concept of students in classroom settings. According to Hattie, it is commonly believed that educational programs are effective in enhancing achievement and resolving a number of problems in school situations. However it has been suggested that educational programs are usually oriented to enhance achievement rather than academic self-perceptions, and in view of the fact that there is little relationship between achievement and self-concept these programs are less effective in enhancing self-concept (Hattie, 1992).

The results of the meta-analysis studies of self-concept enhancement intervention reported by Hattie and Marsh (1996) indicated that the effects of most educational interventions were relatively small (mean effect size = .19) compared to the effects derived from psychotherapy (mean effect size = .47) and out of classroom settings programs (mean effect size = .26).

An example of an out of classroom program is the Australian Outward Bound Program (Marsh & Richards, 1988; Marsh, Richards & Barens, 1986a). According to Marsh and Craven (1997) "Outward Bound courses provide a setting for individuals to recognize and understand their own weaknesses, strengths and resources and thus find within themselves the wherewithal to master the difficult and unfamiliar" (p. 180). The Australian Outward Bound Standard Course was a 26-day residential program that comprised physically and mentally demanding outdoor activities for high school students. The program's goals were non-academic and it was found that the program had a significant impact on non-academic self-concept and had less effect on academic self-concept (Marsh & Richards, 1988a; Marsh et al., 1986a). A meta-analysis based on the Australian Outward Bound Programs indicated that the overall mean effect for self-esteem change was .32 (Hattie & Marsh, 1996). Hattie and Marsh (1996) concluded that the Australian Outward Bound Program was effective in enhancing general self-concept or self-esteem.

Another program known as "the Outward Bound Bridging Course" was a six week residential program for underachieving adolescent males. This course was conducted

in an isolated environment away from school. The course's goals were academic. It was designed to produce significant gains in language and mathematics. The Outward Bound Bridging Course had a significantly larger effect on academic self-concept and less effect on non-academic self-concept, as measured by the SDQ-1 (Marsh, 1988). The course also resulted in significant gains in academic achievement of the participants (Marsh & Richards, 1988).

### **3.3 Meta-analyses of the studies on self-concept enhancement.**

The literature on self-concept enhancement is somewhat difficult to interpret, as many of the previous studies appeared to use poor designs that were not based on any clearly articulated theory or model. Hattie (1987) performed a meta-analysis of self-concept enhancement studies that were conducted prior to 1983. Most research on self-concept enhancement during that period was of poor quality leading Hattie to refer to that period (from the 1970s to the early 1980s) as a "dust bowl of empirical relationships." (p. 226).

Hattie (1992) conducted a meta-analysis of studies on self-concept enhancement. From a total of 650 studies, only 89 studies were selected for the meta-analysis. Hattie noted that "the rejection of so many studies reflected that most of the research conducted in the area of self-concept change was of poor quality" (Hattie, 1992, p.227). From the selected 89 articles, 485 effect sizes were calculated with the average effect-size being .37 (SD = .12).

From the results of the 1992 meta-analysis, Hattie reported that effect sizes (Es) were higher for adults ( $Es = .87$ ) than children ( $Es = .31$ ), and for groups with previously diagnosed problems ( $Es = .55$ ) compared to groups without diagnosed problems ( $Es = .26$ ). Effect sizes were higher for studies completed in non- educational settings ( $Es = .50$ ) compared to educational settings ( $Es = .36$ ). The highest average effect-size of the total sample ( $Es = .87$ ) was found for adults with previously diagnosed problems.

Academic programs were found to have a very low effect on self-concept ( $Es = .18$ ) and the effectiveness of teachers as self-concept change agents was considerably lower than the studies where the agent of change was a psychologist ( $Es = .26$ ). Most of the studies did not use a delayed posttest. A significant difference was present between the studies that were followed up ( $Es = .16$ ) and those without follow-up ( $Es = .40$ ). The results of this meta-analysis also indicated that only 10% of those subjects who participated in an intervention program had enhanced their perception of self, compared with the control group who received no intervention.

In examining treatment approaches Hattie (1992, p. 233) found an average effect size of .48 for cognitively oriented interventions, .12 for affective approaches, and .23 for the approaches that tended to be neither cognitive nor affective programs. Hattie concluded that cognitively oriented interventions appeared to be the most effective because they had more definable goals than affective programs. Academic programs that claimed to enhance self-concept by increasing achievement appeared to be less effective as compared to cognitively oriented programs. From the results of this meta-

analysis, it can be concluded that cognitively oriented techniques (e.g., cognitive restructuring or attributional retraining programs) appeared to be most effective.

### **3.4 The self-concept enhancement approaches.**

Studies designed to enhance self-concept have generally incorporated two types of approaches, namely direct enhancement and indirect enhancement. The direct enhancement approach targets self-concept directly by utilizing praise and performance feedback. Positive feedback or reinforcement has tended to be the most important and widely used technique in this approach. The indirect enhancement method on the other hand attempts to impact on self-concept indirectly by targeting a related construct, such as attributional style or the self-efficacy beliefs of the participants (Craven, et al., 1991). A brief description of direct and indirect enhancement approaches are presented in the following section.

#### **3.4.1 Direct enhancement approach**

The direct enhancement approach usually employs performance feedback as a component of the treatment. The underlying assumption in this approach is that the provision of performance feedback will encourage students to generate feelings of competency that should directly enhance self-concept (Kulik & Kulik, 1988; Marsh & Craven, 1997). According to Kulik and Kulik (1988), feedback is effective when it is both positive and immediate. Positive feedback also has an impact on self-efficacy. Schunk (1985) suggests that performance feedback influences self-efficacy by

informing students that they are acquiring skills and knowledge, which sustains their motivation and enhances learning efficacy.

Recent studies also suggest that the perception of one's self-concept is strongly influenced by one's efficacy beliefs (Bong & Clark, 1999; Pajares, 1996). Individuals with enhanced self-efficacy also exhibit increased intrinsic motivation, more favorable self-perceptions and more adaptive attributional patterns (Bong & Clark, 1999). Praise, which is a component of positive feedback, is recommended as a desirable form of reinforcement because it is thought to build self-esteem and encourage a pupil's efforts. Almost twenty years ago Brophy (1981) presented some guidelines for praising effectively. According to these guidelines effective praise would include

- a) specifying the accomplishment of the student,
- b) ensuring that praise is credible,
- c) providing information to students about their competence,
- d) attributing students' success to effort and ability, and
- e) ensuring praise is delivered contingently and infrequently.

By following the guidelines given by Brophy, children can be taught to attribute positive outcomes to their own efforts or ability. Craven, Marsh and Debus, (1991) and Marsh and Craven (1997), however, have suggested that the praise or performance feedback will enhance self-concept only if the feedback is internalized by the child. Marsh and Craven (1997) explain that “ feedback that informs a child he/she has done



well on a specific mathematics task does not mean the child will think he/she is in general good at mathematics. An internal mediating process needs to be involved in transferring the feedback to self-concept internalization in order that the child:

- receives performance feedback (e.g. you have done that maths task well),
- perceives his/her efforts as competent (e.g. I did well on that task),
- generalizes the feedback to a subject area (e.g. I am good at mathematics),
- internalizes this feedback as a positive feeling or self-concept internalization (e.g. I feel good about my abilities in mathematics)” (p. 188).

Previous research suggests that children with a high self-concept reinforce themselves more than children with a low self-concept (Ames, 1978; Ames & Felker, 1979). Such children maintain their high self-concept through this self-reinforcement process. Consistent with this view, Marsh and Craven (1997) suggest that intervention techniques that focus on generating an internal mediating process or self-reinforcement process in children would be more successful in raising their self-concept than the techniques which do not focus on generating self-reinforcement.

### **3.4.2 Indirect enhancement approach.**

Indirect intervention approach to enhance self-concept are based on the assumption that self-concept is linked to other variables like attributions, self-efficacy and achievement (Craven, et al., 1991; Marsh, 1984a; Marsh & Craven, 1997, Schunk, 1985, 1990b). Therefore, according to this conceptualization self-concept can be enhanced indirectly by targeting these related constructs.

Marsh (1988b) has demonstrated a consistent pattern of relationship between multidimensional features of self-concept and multidimensional attributions for the causes of success and failures. Previous studies have also shown a close relationship between attributional patterns, self-concept, self-efficacy and academic behavior (Covington, 1984; Marsh, et al., 1984; Schunk, 1985; Weiner, 1986). In 1988, Cooley and Ayres demonstrated a positive correlation between self-concept scores and ability/effort attributions of pre-adolescents with learning disabilities. They reported that the lower the self-concept of students with LD, the more likely they were to attribute their failure to lack of ability.

In a recent study, Kinderman and Bentall (2000) investigated the relationship between causal attributions and self-representations of 120 undergraduate students. Their results indicated that negative attributions for success were associated with negative consequences for the self-concept. Marsh (1984a) and Marsh et al. (1984) proposed that attributions, academic self-concept and academic achievement form a network of reciprocal relationships whereby change in any one will lead to further changes in the others. This reciprocal relationship between attributions, academic self-concept and academic achievement suggests that self-concept can be enhanced indirectly via the improvement of attributional patterns or enhancing academic achievement level. The indirect enhancement approaches, therefore, utilize attributional retraining techniques to enhance self-concept. A detailed description of attributional retraining techniques is given below.

### **3.5 Attributional retraining techniques.**

Attributional retraining strategies attempt to teach participants how to increase desirable causal attributions about behavioral outcomes (i.e., success and failure) and attempt to reduce undesirable or maladaptive causal attributions (Buchanan & Seligman, 1995). In academic contexts these interventions are based on the attributional theory of achievement motivation (Weiner, 1984, 1985, 1994). Weiner's attribution theory assumes that individuals high in achievement motivation attribute their success to internal causes (ability and efforts) and their failure to external causes (task difficulty and luck). McInerney (1999) suggests that children with high academic self-concept attribute their success to internal and stable factors that may, then, contribute to further satisfaction with their performance and therefore lead to higher academic self-concept and further striving for achievement. In contrast children with poor academic self-concept usually attribute their success to external and unstable factors and they do not feel the pride associated with their success.

As mentioned earlier, according to Peterson, et al. (1995) individuals who attribute successes to causes that are internal, stable and global reflect a positive attributional style whereas individuals who attribute failures to causes that are internal, stable and global reflect a negative attributional style. Seligman (1994) suggests a relationship between attributional style and self-concept. According to Seligman an internal, stable and global attributional style for failure outcomes is associated with low self-concept while an internal stable and global attributional style for success outcomes is linked with positive self-concept.

Other researchers have also demonstrated a close relationship between academic self-concept and attributions for academic success and failure (e.g., Craven, Marsh & Debus, 1991; Marsh, 1984a; Marsh, 1988). Weiner (1986), therefore, suggested that in self-concept enhancement programs the perceived causes of performance (attributions) must be changed in order to change self-concept.

Marsh (1986) suggests that people in general attribute their successes to internal causes such as ability and effort and their failures to external causes. This pattern of attributions has been termed the *self-serving bias*, and it is interpreted as an attempt to protect self-esteem (Covington, 1985). “By taking credit for successes and denying blame for failures, individual may be able to protect their self-concept” (Marsh, 1986). Marsh, (1986) used an alternative term *self-serving effect* instead of *self-serving bias*. He noted that denial of responsibility for failure was a reasonable response for children who had a high academic self-concept, were academically able and were seen as academically able by their teachers. Marsh (1986) further suggests that the *self-serving effect* is an internal mediating process that helps to protect self-esteem. Children with high self-concept usually maintained their self-concept through this naturally occurring process of self-reinforcement or self-serving effect.

Marsh and Craven (1997), therefore, suggest that “encouraging children with a low self-concept to increase self-reinforcement by emulating naturally occurring self-reinforcing processes, utilized by children with a high self-concept, would seem to be

a useful component of an intervention to enhance self-concept indirectly via changes in patterns of self-attributions.”( p. 190).

After reviewing fifteen attributional retraining studies, Forsterling (1985) concluded that attributional retraining methods were consistently successful in increasing performance and persistence in students. More recent studies have also verified the effectiveness of attributional retraining techniques in enhancing performance and reducing learned helplessness.

For example, Chan (1996) examined the effects of combined strategy and attributional training in a specific reading task. Forty poor and 56 average readers were randomly divided into four groups involving different combinations of strategy instruction and attributional training. Her results indicated that teaching poor readers effective reading strategies, while convincing them that reading successes and failures were attributable to the use of effective or ineffective strategies, not only improved their comprehension and performance but also reduced their perceptions of learned helplessness.

Attributional retraining combined with strategy training has been found to be successful in improving the learning behavior of students with LD (Borkowski, Weyhing & Turner, 1986; Borkowski, Weyhing & Carr, 1988; Reid & Borkowski, 1987). For instance, Borkowski et al. (1988) administered attributional retraining and strategy training on reading tasks to students with LD in different experimental settings. Their results revealed that teaching reading strategies alone or providing

attributional retraining in isolation did not generally improve learning behavior for students with LD but a combination of attributional retraining and strategy training was more effective.

Attributional retraining in non-academic settings has also been found successful in enhancing the skills of the participants. For instance, Miserandino (1998) split 11 players of a university basketball team into experimental and control groups. She conducted four weeks training where half the subjects received feedback about their shooting techniques and were encouraged to attribute any performance deficits to lack of effort, rather than to lack of ability. The remaining team members, as the control group, only received feedback on their shooting technique. At the end of the intervention the researcher found that subjects in the attributional retraining group showed more mastery-oriented attributions and greater improvement in their shooting than did the control group.

Attributions influence performance through their intervening effects on self-efficacy (Bandura & Schunk, 1981). Schunk (1992, 1994) has demonstrated that attributional retraining regarding strategy approaches can enhance self-efficacy and performance of students. Schunk, (1986) and Schunk & Cox (1986) have shown in a series of experiments that a student's self-efficacy about a particular task is influenced by the type of attributions used by the student to explain success and failure. Thus attributions are also linked to self-efficacy beliefs.

### **3.6 The relationship between attributions, self-efficacy beliefs and self- concept.**

Perceived self-efficacy or efficacy beliefs play an influential mediating role in academic attainment (Bong & Clark, 1999). Self-efficacy theory (Bandura, 1978, 1997) assumes that success attributed to ability and effort will enhance efficacy and when success is attributed to ability or effort, pride is experienced. This experience of pride enhances self-concept. It has been found that regardless of ability levels students with higher self-efficacy beliefs perform well in all situations (Bandura, 1997). Harter (1998) suggests that providing the child with realistic expectancies that are somewhat higher than the individual's actual level of accomplishment may lead to achievement that in turn will enhance the domain-relevant sense of efficacy.

Self-efficacy beliefs also influence self-concept. Recent studies that examine self-concept and self-efficacy beliefs in academic context have suggested that the perception of one's academic self-concept is strongly influenced by one's efficacy beliefs (Bong & Clark, 1999; Pajares, 1996). The self-perception of personal efficacy is a core aspect of an individual's self-concept (Brandtstadter, 1999). Individuals with enhanced self-efficacy also exhibit increased intrinsic motivation, more favorable self-perceptions and more adaptive attributional patterns (Bong & Clark, 1999). Therefore as suggested by Marsh (1984a) the true relationship between self-concept, self-attributions, and achievement outcomes (and also self-efficacy beliefs) may be perceived as an interrelated network where change in one variable may result in changes in the others.

In summary, all the above-mentioned studies have indicated that both self-attributions and self-efficacy beliefs are closely linked to each other and to self-concept. The relationship between these three constructs is of a reciprocal nature. It is possible, therefore, that more promising strategy to enhance the self-perception of students with LD may occur by improving their self-efficacy beliefs and/or changing their maladaptive attributional patterns.

### **3.7 Recent contributions to self-concept enhancement research**

Results of meta-analysis studies on self-concept enhancement (e.g., Hattie, 1987, 1992) suggested that most of the previous research on self-concept enhancement was not able to produce a significant change in self-concept. Marsh and Craven (1997, p. 177) have pointed out some methodological flaws and limitations in previous studies on self-concept enhancement. These limitations include:

- the use of weak interventions, or
- the use of potentially powerful interventions with such small sample sizes, or
- weak designs resulting in effects that are unlikely to be statistically significant, and
- a poor fit between the intended goals of the intervention and the specific dimensions of self-concept used to evaluate the interventions.

Marsh, Richards and Barnes (1986a, 1986b) have suggested that some previous studies on self-concept enhancement that were not able to produce a change in self-concept were based on ill-defined measures of self-concept, where none of the facets of self-concept were relevant to the aims of the interventions. They argued that if none



of the facets of self-concept used in an evaluation match the intended outcomes of the intervention, then significant effects are unlikely to be found.

Marsh, Richards and Barnes (1986a, 1986b) presented a construct validity approach to the study of intervention effects. They suggested that the specific dimensions of self-concept most relevant to the intervention should be affected most. Less relevant dimensions would be affected less and serve as a control for response biases. Craven et al. (1991) and Craven's (1996) studies have supported this argument. Their studies have shown that the intervention techniques focused on the enhancement of academic self-concept had substantial effects on the academic components of the self-concept (i.e., reading and maths self-concepts) but little effect on non-academic components (physical ability and physical appearance self-concepts). Thus, using a construct validity approach, recent studies have been more successful in producing changes in the specific domains of self-concept.

Recent contributions to the research on self-concept enhancement suggest that there is a greater probability of the intervention's success if specific facets, rather than global aspects, of self-concept are targeted, and the targeted areas of self-concept are logically related to the goals of the intervention (Craven et al., 1991; Craven, 1996; Harter, 1998; Hattie & Marsh, 1996; Marsh & Craven, 1997).

Craven et al. (1991) and Craven (1996) implemented self-concept enhancement interventions, which were based on both direct and indirect enhancement approaches.

Participants were primary school students who had low academic self-concept. The primary purpose of the study was to enhance the reading and mathematics self-concepts of the participants. The intervention employed a combination of performance feedback and attributional feedback. In order to enable students to generate an appropriate system of self-reinforcement that would assist the enhancement of academic self-concept by a direct means, ability attributional statements (Schunk, 1981, 1983a, 1985) were coupled with performance feedback. The researchers referred to this type of feedback as '*internally focused feedback*'. It was devised to train students to directly change low self-concept attributions to high self-concept attributions.

Internally focused feedback, as explained by Craven (1996), encourages students to perceive that they are competent in specific subject areas. This leads to the development of positive self-perception in those specific subject areas (e.g. reading and mathematics). In Craven's studies the internally focused feedback was delivered contingently, infrequently and for appropriate gains in performance only. It was also tried to avoid random praise and global positive reactions. This approach ensured the feedback was credible. Attributional feedback was used to enhance self-concept by indirect means. The studies assumed the relationship between self-concept and self-attributions were largely reciprocal. It was expected that change in attributions would be associated with changes in academic self-concept as has been suggested by Marsh (1984a).

The results from Craven et al. (1991) and Craven (1996) indicated significant effects for the targeted areas of self-concept (reading and maths self-concepts), smaller effects for the related areas of self-concept (school and general self-concepts) and no significant effects for areas of self-concept unrelated to the intervention (non-academic self-concept). The results also demonstrated that the researcher-administered intervention was more successful than a teacher-administered intervention. Based on these findings Craven (1996) suggests that an intervention designed to enhance self-concept would be more effective and successful when:

- a) specific facets rather than a global aspect of self-concept are targeted,
- b) targeted areas of self-concept are logically related to the goals of the intervention,
- c) multidimensional measures of self-concept are utilized, and
- d) Researchers instead of teachers administer intervention.

The Craven et al (1991) and Craven (1996) studies are important as they are based on a multidimensional model of self-concept and they provide guidelines to enhance some facets of self-concept specific to the goals of intervention. Further, the results of these studies indicate that a combination of direct and indirect self-concept enhancement approaches may result in a potentially stronger and more successful intervention. These techniques have been found to be successful in enhancing the academic self-concept of normally achieving students. It might be possible that similar techniques would also be effective in enhancing the academic self-concept of students with learning difficulties.

Harter (1998, p. 596) has also listed some suggestions for an adequate self-concept enhancement intervention program. She suggests that we should:

- Select the instruments that specifically tap the constructs that are the targets of the intervention and that have sound psychometric properties,
- Attempt to specify a pattern of prediction, including what outcomes should be affected and what outcomes should not be affected,
- Include measures of the actual processes thought to be responsible for self-concept change,
- Be aware that rather than expecting overall mean gains it is necessary to identify subgroups who may and may not profit from the intervention,
- In addition we should attempt to identify the factors leading to these different outcomes.

There is a need to implement a similar goal specific intervention program, based on multidimensional models of self-concept for students with LD and LD/ADHD. It will also be vital to assess the effectiveness of such techniques for students with learning difficulties. The current literature on self-concept enhancement has a number of studies that were conducted with normally achieving students, but there is a paucity of self-concept enhancement intervention studies for students with LD and with LD/ADHD. In view of these concerns this thesis also examines the effectiveness of an intervention program focused to enhance self-concept for students with LD and students with comorbid LD/ADHD.

### Summary of the Chapter.

A positive self-concept can contribute to the social and learning processes. Research over the last two decades has revealed that self-concept can be enhanced by using the right strategies (Hattie, 1992). In the past, different programs and techniques have been utilized for the enhancement of self-concept. The major categories of programs designed to enhance self-concept are the programs that are cognitively oriented, and those that are affectively oriented. Cognitively oriented programs are intended to systematically change negative thoughts and self-defeating statements. Meta-analysis studies on self-concept enhancement (Hattie, 1992) have indicated that cognitively oriented programs appear to be more effective than other programs.

Self-concept enhancement studies also typically used two types of approaches to changing self-concept. The first is a direct enhancement approach and the second is an indirect enhancement approach. The direct enhancement approach targets self-concept directly by utilizing praise and performance feedback. The indirect enhancement approach seeks to enhance self-concept indirectly by targeting a related construct, such as attributional style or the self-efficacy beliefs of the participants. Attributional retraining methods have been found to be generally more successful in increasing performance and persistence in students (Schunk, 1984). Over the last two decades research has also indicated that students can be trained to attribute their success positively (i.e., to their own efforts) and such training may benefit both motivation and continued persistence on academic tasks (Bender, 1994). Bender criticized that most interventions designed to enhance the self-perceptions of students with learning

difficulties have not utilized attributional retraining. Thus attribution retraining should be a main component of an intervention program designed to enhance the self-concept of students with learning difficulties.

Recent studies have provided further guidelines for successful self-concept enhancement intervention (Craven, 1996; Harter, 1998). According to these guidelines self-concept enhancement intervention would be more successful when specific facets of self-concept are targeted, the targeted areas of self-concept are logically related to the goals of the intervention and the instruments that specifically tap the constructs that are the targets of the intervention are utilized (Harter, 1998; Marsh & Craven, 1997). Based on these guidelines, a self-concept enhancement intervention for students with learning difficulties was implemented in this research. A detailed description concerning the intervention program and its procedure and result is presented in Chapter 8.

## **CHAPTER FOUR**

### **ASSESSMENT OF SELF-CONCEPT, ATTRIBUTIONAL STYLE AND SELF-EFFICACY BELIEFS**

The aim of this chapter is to discuss the issues related to the assessment of self-concept, self-attributions and self-efficacy beliefs of children. The instruments that are commonly used to assess self-concept, attributional style and self-efficacy beliefs of children are described in this chapter. The Self-Description Questionnaire-1 (SDQ-1) (Marsh, 1990), which is a multidimensional measure of a child's self-concept, was used in the present investigation. The rationale for utilizing the SDQ-1 instrument in the present investigation is explained. The development, validity and reliability outcomes of the SDQ-1 are also described. The methods and the measures commonly used to assess attributional style and self-efficacy beliefs of children are discussed. Instruments to assess academic attributional style and academic self-efficacy beliefs of children were specifically developed for the present investigation. The last part of the chapter emphasizes the need and the rationale for the development of these two instruments.

#### **4.1 Assessment of self-concept**

Different approaches have been used for the assessment of self-concept. Harter (1990) reviewed the literature on the assessment of self-concept in children. She identified two major approaches associated with the assessment of self-concept: the unidimensional approach and the multidimensional approach.

#### **4.1.1 Unidimensional approach to measuring self-concept**

Many of the initial studies addressing the self-concept of children have utilized a unidimensional approach to measure self-concept (e.g., Matis, 1984; Ribner, 1978). This approach assumes that self-concept is a unidimensional construct and a single score of self-perception provides an assessment of one's overall self-concept (Harter, 1990).

Instruments designed to measure a child's self-concept within a unidimensional framework usually look at a wide range of variables in the child's life. For example they assess the child's self-perception as it is in school, at home, with peers, and with relatives. However, a total score for this wide range of variables is taken as an overall self-concept score. Some commonly used instruments of children's self-concept, such as the Coppersmith's Self-Esteem Inventory (Coppersmith, 1967), the Piers-Harris Children's Self-Concept Scale (Piers & Harris, 1967) and the Rosenberg's Self-Esteem Scale (Rosenberg, 1967) are considered to be associated with the unidimensional approach. In these instruments a total score, made up of items across all sub-scales, is usually used to determine one's overall self-esteem or self-concept.

The Coppersmith Self-Esteem Inventory (Coppersmith, 1967) was designed for children age eight to fifteen. Although this instrument was originally intended to calculate four separate scores (school-academic, social-peers, home-parents and general self), factor analysis revealed that the four domains were not in fact discrete (Wylie, 1979). Further it was revealed that the sub-scales of the Coppersmith Self-



Esteem Inventory were not reliable enough to differentiate among the specific domains of self-concept and the discriminant validity of the instrument was weak (Harter, 1990; Marsh, 1990).

The Piers-Harris Children's Self-Concept Scale (Piers & Harris, 1969) was developed for children in grades 4 through 12. The instrument provides scores for specific factors embedded in self-concept, including behavior, intellectual and school status, physical appearance and attributes, anxiety, popularity, happiness and satisfaction. However, Benson and Rentsch (1988) assert that even though there are a number of sub-scales, the Piers-Harris Children's Self-concept Scale is "unidimensional in terms of its content" (p. 623).

The third instrument, Rosenberg's Self-Esteem Scale (Rosenberg, 1965) is a brief 10-item direct measure which provides a single score assessment of self-esteem. It is a unidimensional measure, which assesses global self-concept without looking at the domain specific elements underlying the nature of global self-concept.

A number of investigators have criticized single-score or unidimensional approaches to assessing self-concept (Harter, 1990, 1998; Marsh, 1990; Shavelson et al., 1976; Wylie, 1979). They have argued that the specific dimensions of self-concept in which children perceive themselves to be less or more competent than their peers cannot be assessed by an overall or single-score approach. They also pointed out that the single-score approach to measuring self-concept might overlook the variation in a child's

self-evaluations for specific areas (e. g., academic and non-academic self-concept). Instead, they argued that a multidimensional approach to measurement would provide a more comprehensive picture of self-concept.

#### **4.1.2 Multidimensional Approach to measuring self-concept.**

In considering the limitations of a unidimensional approach to self-concept assessment, Shavelson et al. (1976) proposed a multifaceted, hierarchical model of self-concept. This model asserts that self-concept is multidimensional and can be broken into parts that reflect various components of the person's overall self-concept (see Chapter 2).

According to Marsh and Craven (1997), the multidimensional model of self-concept developed by Shavelson et al. (1976) has significant value in self-concept research because it provided a blueprint for new multidimensional self-concept instruments.

A multidimensional approach breaks self-concept into parts that reflect its various components. With a multidimensional approach, it is possible to differentiate between separate domains of self-concept such as academic and non-academic self-concept. By utilizing a multidimensional approach, the self is depicted as a profile of evaluations across different domains of self-perception. According to Harter (1986), assessing global self-concept independently, as well as domain specific factors can provide a comprehensive evaluation of the person's sense of self.

More recently researchers have developed multidimensional instruments that are designed to measure specific facets of self-concept. Harter (1985) developed a Self-Perception Profile for Children, and Marsh (1988) developed the Self-Description Questionnaires (SDQ) for children. Both instruments support a multidimensional model and identify specific domains of self-concept. In addition, factor analysis has been applied to both measures and the results have revealed separate and independent domains of self-concept.

Based on the Shavelson et al. (1976) model, Marsh developed Self-Description Questionnaires for preadolescent primary school students (SDQ-1), adolescent high school students (SDQ-11), and late adolescents and young adults (SDQ-111) (Marsh, 1988, 1990, 1992a, 1992b). These three SDQ instruments have an empirical foundation and are based on a strong theoretical rationale.

The SDQ instruments have been identified as valid and reliable multidimensional instruments in terms of their psychometric properties and in relation to construct validation (Marsh & Craven, 1997). They have been utilized in many self-concept enhancement studies to assess self-concept (e.g., Craven et al. 1991; Craven, 1996; Marsh & Peart, 1988; Marsh & Richards, 1988a). The SDQ-1 has been utilized in a number of studies on normally achieving children's self-concept, and it has also been used with special children (e.g., Bajuk, 1995; Tracey & Marsh, 2000).

## 4. 2 The structure and the dimensions of the Self-Description

### Questionnaire–1 (SDQ-1).

The 76-item SDQ-1 is designed to measure specific facets of the self-concept of preadolescents from grades 2 to 6. The SDQ-1 consists of eight scales that reflect a child's self-rating in various areas of self-concept. On the basis of these scales the instrument provides scores for academic, non-academic and general self-concepts.

The academic self-concept score is the average of the sum of scores for the reading, mathematics, and general school self-concept scales. The nonacademic self-concept score is the average of the sum of the physical ability, physical appearance, peer relations and parent relations self-concept scales. The total self-concept score is the average of the sum of scores on the academic and nonacademic scales. A separate scale provides a score for general self-concept. The definition and details of these scales as described in the Manual for SDQ-1 (Marsh, 1990) is as follows.

#### Academic Self-concept Scales

The academic self-concept scales of the SDQ-1 include:

- A Reading self-concept scale, which measures a child's self-concept regarding ability, enjoyment and interest in reading.
- A Mathematics self-concept scale that reflects a child's self-concept regarding his/her ability, enjoyment and interest in mathematics.
- A General-School self-concept scale, which measures a child's self-concept concerned with ability, interest and enjoyment in school subjects.

The average of the sum of the scores of these three scales provides a total academic self-concept score.

#### Non-academic Self-concept Scales.

The non-academic self-concept scales of the SDQ-1 include:

- A Physical Ability scale that measures a child's self-concept regarding his/her abilities in physical activity sports and games.
- A Physical Appearance scale, which reflects a child's self-concept regarding physical attractiveness as compared with others and the perception of how others think he or she looks.
- A Peer Relation scale, which measures children's self-concept regarding popularity with peers, how easily they make friends, and whether others want him or her as a friend.
- A Parent Relation scale, which reflects how well a child thinks he/she gets along with and likes their parents and the extent to which they experiences parental acceptance and approval.

The average of the sum of the scores on these four scales provides a total non-academic self-concept score.

#### The General-Self-concept scale

General self-concept reflects the child's perception of himself or herself as an effective capable individual, proud of and satisfied with the way he or she is.

#### **4.2.1 The administration and scoring procedure for the SDQ-1**

The SDQ-1 is a pencil-and-paper test. It can be administered individually or in small groups. It is suitable for children from grade 2 to 6 (ages 7 to 12 years). The SDQ-1 is not a time test and children can complete it in approximately 20 minutes. Children are asked to respond to 76 simple declarative sentences (e.g. “ I like reading) with one of five responses: false; mostly false; sometimes true/sometimes false; mostly true; true. Each response can receive a score of 1 to 5. A score of 1 is assigned if a positively worded statement on self-concept is answered as ‘false’. This usually indicates that child does not have a high self-concept. A score of 5 is assigned to participants who respond to a positively worded statement on self-concept as ‘true’. Scores 2, 3 and 4 are assigned for responses reported as mostly false, sometimes false/sometimes true and mostly true respectively.

The SDQ-1 has 8 scales and each scale has 8 statements. Raw scores are obtained for each of the eight scales. The lowest possible raw score is 8, and the highest possible raw score is 40. A total of 64 items are included in the scoring of the SDQ-1. The remaining 12 items are negatively worded in order to disrupt response biases and so are not included in the scoring of the SDQ-I.

Scores for the total academic self-concept, total non-academic self-concept, general self and total self-concept are computed. These scores may be converted to midpoint percentile ranks and standard T-scores (Marsh, 1990).

A unique feature of the scoring procedure is the optional inclusion of six control scores, which are calculated and then replaced for inappropriate responses. When the responses are omitted or tendered in a manner, which makes them meaningless, the computation of control scores is suggested. Marsh (1990) suggests that if four or more responses are omitted from the questionnaire, the responses either should not be scored at all or should be interpreted cautiously. If there are fewer than four missing responses, the mean response for the missing item or items is entered. The procedure to calculate the six control scores has been described in the manual for the SDQ-1 (Marsh, 1990).

#### **4.2.2 The reliability and Validity of the SDQ-I instrument**

The SDQ-1 (Marsh, 1990) has strong psychometric properties. Reliability of the SDQ-1 has been investigated by examining the internal consistency of items in each of its scales. Coefficient alphas for the eight scales varied from .80 to .90, and for the combined scores from .91 to .94 (Marsh, 1990). Norms based on the responses of 3,562 students from grades 2 to 6 are given in the Manual for the SDQ-1 (Marsh, 1990). Marsh (1990) conducted an exploratory factor analysis on the normative SDQ-1 archive. Results clearly identified each of the SDQ-1 factors. Target loadings were substantial (from .46 to .85, median = .73) and the non-target loading were much smaller (from -.02 to .19, median = .03). Correlations among the factors were modest, (from .03 to .47, median = .12) and were much smaller than coefficient alpha estimates of reliability (from .80 to .91). These statistics underline the strong psychometric properties of this instrument.

#### **4.2.3 Utilizing the SDQ-1 in the present investigation.**

The Self-Description Questionnaire-1 (SDQ-I) (Marsh, 1990) was utilized in the present investigation to assess different dimensions of self-concept for students with LD, with LD/ADHD and their normally achieving classmates. Some of the scales from the SDQ-1 were also utilized to establish the construct validity of the two other instruments, namely the academic attributional style questionnaire and academic self-efficacy beliefs scale, which were developed as a part of the present investigation. The SDQ-1 instrument was also utilized as a pre-test and a post-test measure of subject's self-concept during the stage 3 of the present investigation.

*The SDQ-1 was selected in the present investigation for the following reasons.*

1. The SDQ-1 is a multidimensional measure of children's self-concept. It provides scores for different facets of academic and non-academic self-concept and for a general self-concept.
2. This instrument has been standardized for the Australian population with norms based on the responses of 3,562 students between grades two and six enrolled in metropolitan Sydney primary schools.
3. The development of this instrument is a result of extensive research and it has a strong theoretical rationale developed by Marsh and Shavelson (1985).
4. The item format uses simple declarative sentences (e.g. "I like reading"), and this format is appropriate to the understanding of children with learning difficulties.



5. This instrument has been used successfully in intervention research seeking to enhance students' self-concept (Craven et al., 1991; Craven, 1996; Marsh & Richards, 1988).
6. The SDQ-1 has also been utilized to measure the self-concept of special children (Bajuk, 1995; Tracey & Marsh, 2000).

### **4.3 Assessment of Attributional Style.**

Attributional style refers to the way that people explain the causes of bad or good events involving themselves (Peterson, Buchanan & Seligman 1995). Peterson et al. (1995) identified three dimensions of explanatory style, namely internal/external, stable/unstable and global/specific. Individuals who attribute their successes to causes that are internal (e.g., success is due to my own ability and efforts), stable (e.g., success will last forever), and global (e.g., success will influence every thing that happens to me), demonstrate a positive attributional style. Such individuals also tend to attribute their failures to causes that are external (e.g., it is due to task difficulty or luck), unstable (e.g., it is short-lived) and specific (e.g., it is only going to influence this situation). In contrast an individual who attributes his/her successes to external, unstable and specific causes and his/her failures to internal, stable and global causes demonstrates a negative attributional style (Peterson et al.1995).

An individual's attributional style for academic successes and failures may have a strong impact on academic achievement (Weiner, 1974). Attribution theory (Weiner, 1974, 1984, 1986) argues that the motivation to achieve is influenced by attributional

style. Individuals high in achievement motivation usually hold a positive attributional style, while individuals low in achievement motivation hold a negative attributional style. Attributional style also impacts on the individual's self-concept. Marsh et al. (1984) have demonstrated a positive relationship between self-attributions and self-concept. Individuals with a positive attributional style generally hold a positive self-concept. Therefore, in order to understand a child's self-concept, the assessment of attributions is important.

There are two basic methods or approaches associated with the measurement of attributional style. The first is referred to as the dispositional method and the second as the situational method. In a dispositional method students are asked a series of questions concerning their attributions in a number of hypothetical situations. In a situational method the students are involved in one or more actual achievement situations, such as a brief spelling task or a series of maths' problems. Before and/or after the task the students are questioned about their attributions specific to that task. Both methods have been used successfully to assess student's attributions (Cooley & Ayres, 1988; Huntington & Bender, 1993).

#### **4.4 Instruments for the assessment of children's attributions.**

Some of the instruments commonly used to assess children's attributions include the Children's Attributional Styles Questionnaire (Kaslow, Tannenbaum, & Seligman, 1978 - also referred to as KASTAN), the Sydney Attribution Scale (SAS; Marsh, Cairns, Relich, Debus & Barnes, 1984), and the Intellectual Achievement

Responsibility Scale (Crandall, Katkovsky & Crandall, 1965). The nature and structure of these instruments and their suitability or unsuitability for the use in present investigation is described in the following pages.

#### **4.4.1 The Children's Attributional Style Questionnaire (CASQ)**

The Children's Attributional Style Questionnaire or CASQ (Kaslow, Tannenbaum, & Seligman, 1978) is a dispositional measure of children's attributions. The CASQ contains 48 items, each of which consists of a hypothetical positive or negative event involving the child and two possible causes of the event. Half of the items concern bad events and half concern good events about social situations. For each event respondents are asked to vividly imagine it happening to them and to decide what they believe would be the one major cause of the event. Respondents are instructed to choose the cause (from the given two causes) that best describes why the event occurred. Attributional style is assessed along three dimensions: internal/external, stable/unstable and global/specific explanations for bad or good events. Respondents who provide internal, stable, and global explanations for good events demonstrate a positive attributional style. Conversely, respondents who provide internal, stable, and global explanations for bad events demonstrate a negative attributional style (Peterson et al., 1995).

In view of the fact that the participants in the present investigation were students with LD and with comorbid LD/ADHD who had academic problems, it was important to assess their academic attributions. While the simple item format of the CASQ was

suitable for the students with learning difficulties, the items content was not appropriate, since it addressed social situations, family, peers and other activities in the general environment rather than academic situations. Due to these limitations this instrument was deemed to be inappropriate for the use in the present research.

#### **4.4.2 The Sydney Attribution Scale (SAS)**

The Sydney Attributional Scale (SAS) (Marsh et al., 1984a) is designed to assess a student's perceptions of the causes of their academic successes and failures in reading, mathematics and general school subjects. The instrument is composed of 18 scales, consisting of a series of scenarios in which students imagine themselves to be in an academic success or failure situation. Students are advised to respond to each scenario by rating three plausible causes for the outcome along a five-point response scale, which varies from false to true (Marsh, 1990).

The SAS seemed relevant to the purposes of the present investigation in that it measured attributions for reading, mathematics and general school. However, in view of the length of the scales and the complexity of item content and format of the instrument, this measure was deemed to be too difficult for the target group that had significant learning and attentional difficulties.

#### **4.4.3 The Intellectual Achievement Responsibility Scale (IAR-Scale)**

The Intellectual Achievement Responsibility Scale or the IAR Scale was developed in 1965 by Crandall, Katkovsky, & Crandall. This scale was intended to assess children's

beliefs that they, rather than other people, are responsible for their intellectual-academic successes and failures. The IAR scale, which was developed for students in Grades 3 to 12, is composed of 34 forced-choice items. Each item stem describes either a positive or a negative achievement experience, which routinely occurs in children's daily lives. The initial item stem is followed by one alternative stating that the event was caused by the child and the other stating that the event occurred because of the behavior of someone else in the child's immediate environment. (Crandall et al., 1965).

The simple format and contents of the IAR scale seemed suitable for students with learning difficulties. However, according to Crandall et al. (1965 p. 98), "the preliminary research indicated that children of average intelligence in the elementary grades often had difficulties in responding to the format of IAR scale". In view of this limitation and especially in view of the fact that the population to be studied had learning difficulties and possible problems in verbal concept formation, the IAR scale was also deemed to be inappropriate for use in the current investigation. .

#### **4.4.4 Development of an instrument for the academic attributional style of children.**

The above mentioned instruments for the assessment of attributional patterns have a complex item structure, inappropriate format and irrelevant content in relation to the needs of the present investigation. None of these instruments, therefore, was deemed to be appropriate for students with learning difficulties. In view of these considerations

it was decided to develop an academic attributional style questionnaire for the present investigation.

#### **4.5 Assessment of self-efficacy beliefs.**

The concept of self-efficacy was originally developed within therapeutic settings with fearful clients, to help them overcome their anxiety and cope with the threatening activities (Bandura, 1982). Recent studies have identified the role that self-efficacy has in academic achievements, career choices, athletic performance and health behaviors. According to Self-efficacy theory all forms of psychotherapy and behavioural change operate through a common mechanism of the alteration of an individual's expectations of personal mastery and success (Bandura, 1982, 1987, 1997). An individual's level of motivation, affective state, and actions are based more on what is believed than on what is objectively true. Self-efficacy beliefs are, therefore, a major basis for action (Bandura, 1997).

Perceived self-efficacy or efficacy beliefs play an influential mediational role in academic attainment. Ability is positively related to skillful performance but it has been found that regardless of ability levels students with higher self-efficacy beliefs perform well in all situations (Bandura, 1997; Collins, 1982).

For example Collins (1982) selected children who judged themselves to be of high or low efficacy at each of three levels of mathematical ability. They were then given the difficult mathematical problems to solve. Within each level of ability, students who

had stronger self-efficacy beliefs solved more problems, chose to rework more of those problems they failed and worked more accurately than children of equal ability who doubted their efficacy. Efficacy beliefs predicted interest in, and positive attitudes towards mathematics, whereas actual mathematical ability did not. Perceived self-efficacy, therefore, is a better predictor of performance and motivation than skills alone (Bandura, 1997).

The self-perception of personal efficacy is a core aspect of an individual's self-concept (Brandtstadter, 1999). Researchers have identified a close relationship between self-concept, self-attributions and self-efficacy beliefs (Marsh, 1990; Marsh et al. 1984; Schunk, 1984), and have found that change in one variable can lead to change in the other (see Chapter 3). In view of the reciprocal nature of the relationship, it is important to consider the nature of self-efficacy beliefs and their possible influence on self-concept.

#### **4.5.1 Measuring self-efficacy in the educational context**

Different techniques have been used to assess a student's levels of efficacy in an academic context. For instance, in one technique the experimenter shows samples of academic tasks (i.e., maths problems or reading passages) to the subjects. For each sample, subjects are asked to judge their own capabilities (self-efficacy) in relation to the academic skills needed to complete that task. The efficacy level of the subjects is assessed by a scale, which usually ranges from 10 to 100 in 10-unit intervals. The higher the scale value the higher the perceived self-efficacy (Schunk, 1990b).

According to Hampton (1998), the assessment of academic self-efficacy beliefs involves asking students to rate their confidence to perform the academic tasks such as solving specific maths problems or performing particular reading or writing tasks.

#### **4.5.2 The need to develop a measure for the academic self-efficacy beliefs of children**

The participants in the present investigation were students with LD and students with comorbid LD/ADHD who had difficulties in reading and mathematics. It was, therefore, important to assess their self-efficacy beliefs in reading and mathematics. For this purpose an instrument was required with specifically worded items about reading and mathematics self-efficacy beliefs, appropriate to the understanding of children with learning difficulties. A search of the literature failed to find any suitable instrument for the assessment of self-efficacy in reading and mathematics for students with learning difficulties. Most of the previous studies have used self-efficacy scales that were specifically designed according to the requirement of their studies. For example, Tipton and Worthington (1984) developed a scale to measure generalized self-efficacy. This scale was designed to measure efficacy beliefs in a broad range of situations related to physical and emotional adversity.

Some other researchers (Sherer & Adams, 1983; Sherer & Maddux, 1982) have also developed measures of generalized self-efficacy for adults. Recently, Hampton (1998) developed a 46-item scale to measure sources of self-efficacy for people with learning difficulties. This scale was designed for adults with learning difficulties.



There was, however, no suitable questionnaire or scale available which would assess the academic self-efficacy beliefs of primary school students with learning difficulties, yet present an equal difficulty level for both LD and non-LD students. In view of these considerations a measure of academic self-efficacy beliefs was especially designed for use in the present investigation. The measure was intended to assess the student's self-efficacy beliefs in achieving success in specific subjects (e.g., reading and mathematics). Chapter Six is concerned with the development of the academic attributional style questionnaire and academic self-efficacy belief scale.

#### Summary of the Chapter.

A review of the methods and instruments that are commonly used for the assessment of self-concept, self-attributions and self-efficacy beliefs of children is presented in this chapter. Different approaches to self-concept assessment are discussed. In contrast to a unidimensional approach, the multidimensional approach to self-concept is considered to be a more valid and reliable approach. Utilizing a multidimensional approach, it is possible to differentiate between separate domains of self-concept. Multidimensional instruments can be helpful in determining the specific aspects of the self in which a child perceives himself or herself to be more or less competent.

The SDQ-1 (Marsh, 1990) is a multidimensional instrument of self-concept for children, which has strong psychometric properties and has been extensively used in many studies (Bajuk, 1995; Craven et al., 1991; Craven, 1996; Tracey & Marsh, 2000). Further, the instrument has been standardized for an Australian population, and its format is appropriate to the understanding of children with learning difficulties.

Therefore, the SDQ-1 (Marsh, 1990) was selected in the present research to assess the self-concept of subjects.

The instruments that are commonly used for the assessment of attributions and self-efficacy beliefs of children were also discussed in this chapter. The instruments considered have complex item structure, inappropriate format or irrelevant item contents and were deemed to be inappropriate for use of students with learning difficulties. In view of these considerations it was decided to develop measures for the academic attributional style and academic self-efficacy beliefs of children in the present investigation. The development of these instruments, their structure, reliability and validity results are described in Stage One of this research.

## **CHAPTER FIVE**

### **SUMMARY OF THE MAJOR ISSUES IN THE PRESENT INVESTIGATION**

In previous chapters, a review of literature on the self-perceptions of children with learning difficulties has identified various unresolved issues. The purpose of this chapter is to present an overview of these key issues and describe the rationale for the present investigation. The last part of the chapter moves towards the establishment of the studies in this thesis. A brief outline of each of the studies and its objectives is also presented in this chapter.

#### **5.1 An Overview of the key issues in the present investigation.**

- A review of the literature on the self-concept of students with LD has indicated the equivocal findings of previous studies in this field. Some researchers have reported that students with LD differ significantly from their normally achieving peers on their self-perceptions (Huntington & Bender, 1993; Omizo, Ammerikaner & Michael, 1985; Rogers & Saklofske, 1985) while others have reported no differences (Matis, 1984; Silverman & Zigmond, 1983; Tollefson, 1982). A review of the literature has also indicated that some studies have used general measures of self-concept that examined the global self-perceptions while others have utilized the multidimensional instruments that provide scores for the different dimensions of self-concept like academic self-concept and general self-concept. Studies that examine the components or dimensions of self-concept generally conclude that

students with LD hold lower academic self-concept, but their non-academic self-concept or general feelings of self-worth are equivalent to their peers without disabilities. However, studies that examine the global self-concept of students with LD have reported equivocal results concerning the general self-concept of students with LD. Thus further research is needed to clarify these inconsistent findings regarding the self-perceptions of students with LD.

- Research has indicated that most of the students with LD appear to take less personal credit for success, and attribute their success less to ability and more to luck and easiness of task. In failure situation students with LD attribute their failures to a lack of ability and are less likely to attribute them to a lack of effort (Chapman, 1988b; Jacobson et al., 1986; Kistner, Osborne & LeVerrier, 1988). These negative attributional patterns are linked to poor self-efficacy beliefs and a negative self-image or lowered self-concept in students with LD. Researchers have also reported that individuals with enhanced self-efficacy usually exhibit increased intrinsic motivation, positive self-perceptions and more adaptive attributional patterns (Bong & Clark, 1999; Pajares, 1996). Because self-concept, attributional patterns and self-efficacy beliefs appear to be interrelated, it would be important to explore the self-efficacy beliefs and self-attributions in order to get a complete understanding of one's self-concept.
- A review of the literature has suggested that there is a considerable comorbidity between LD and ADHD (McGee & Share, 1988; Hinshaw, 1992; Reason, 1999;

Silver, 1992). Almost one-third of students with LD are thought to have ADHD (Hallahan, 1989). Students with ADHD exhibit impulsive and hyperactive behaviors and may present with a similar pattern of psychosocial problems as do students with learning difficulties. Given a high comorbidity between LD and ADHD and the nature of the problems associated with both disorders it is possible that the risk factors associated either with LD or ADHD may increase markedly when there is co-occurrence of LD and ADHD. The interaction of LD and ADHD may cause further decrements in self-concept of these children. Although a significant number of children with LD have an associated ADHD, little research has explored the self-concept and related constructs like attributional style and self-efficacy beliefs of students with comorbid LD/ADHD. Although there have been a number of previous studies examining the self-perception of children with LD, these studies have not specifically identified and broken down their samples into subgroups including LD children with ADHD and LD children without ADHD. A study that examines the self-perceptions of students with comorbid LD/ADHD may provide a better understanding of the problems arising from the interaction of learning difficulties and ADHD.

- A review of self-concept instruments has indicated that the multidimensional measures of self-concept, in contrast to unidimensional measures, are more helpful in determining in which specific aspects of the self a child perceives himself or herself to be more or less competent. The SDQ-1 (Marsh, 1990) is a multidimensional measure of self-concept, which has been standardized for the

Australian population and has strong psychometric properties. This measure was utilized in the present investigation. The instruments that are commonly used for the assessment of the attributions and the self-efficacy beliefs of children were also reviewed. Most of these instruments, however, were found to be inappropriate for students with learning difficulties. It was decided, therefore, to develop instruments for the assessment of academic attributional style and academic self-efficacy belief for the subjects in the present investigation.

- As mentioned earlier, researchers (Craven et al. 1991; Marsh et al. 1984; Marsh & Craven, 1997; Schunk, 1991) have suggested a consistent relationship between self-concept, attributional style and self-efficacy beliefs, which implies that self-concept can be changed by changing attributional style and/or self-efficacy beliefs. Thus attributional retraining may need to be considered as a possible intervention technique to change negative self-concept. Although research has indicated a close relationship between attributional style and self-concept, few studies have been conducted that examine the use of attributional retraining in self-concept enhancement of students with learning difficulties. It is very important to deal with the issue of the self-concept of students with LD, because research shows that the problems of negative self-perceptions of children with LD persist into adolescence and even into adulthood (Bender et al., 1999; Harter, 1993, 1998; Huntington & Bender, 1993). One objective of the present investigation, therefore, was to implement an intervention for the enhancement of self-concept of students with learning difficulties.

Considering the above mentioned issues the present investigation was conducted in three stages. The main objectives of this investigation and an outline of each of the three stages are described below.

## **5.2 The organization of this thesis.**

This thesis has explored the nature of self-perceptions of students with LD and students with comorbid LD/ADHD compared to their normally achieving peers. The students in three groups (LD, LD/ADHD and normally achieving peers) were compared on their academic, non-academic and general self-concepts. The three groups were also compared on academic attributional style and academic self-efficacy beliefs.

Previous studies have indicated that self-attributions and self-efficacy beliefs are closely linked to each other and to self-concept. It should therefore be possible to improve the self-perception of students with LD by improving their self-efficacy beliefs and/or by changing their maladaptive attributional patterns. Based on the suggested reciprocal link between self-concept and self-attributions (Marsh, et al., 1984), the present investigation also sought to assess the effectiveness of an intervention designed to enhance the academic self-concept of students with LD and students with comorbid LD/ADHD. In order to pursue these aims the investigation was conducted in the following three stages.

### **5.2.1 Stage One: The development of the instruments.**

The first stage concerned with the development of two instruments examining academic attributional style and academic self-efficacy beliefs of children in grades 3

to 6. This development was necessary since none of the existing instruments were regarded as being particularly suitable for students with learning difficulties. The two new instruments: an Academic Attributional Style Questionnaire (AASQ) and an Academic Self-efficacy Belief Scale (ASEB-Scale) have simple items appropriate to the understanding of children with learning difficulties. The rationale, theoretical background and the procedures for the development of the AASQ and the ASEB-Scale, along with their item structure, factor analysis, reliability and validity outcomes have been described in the first stage of this investigation.

### **5.2.2 Stage Two: A comparison between LD, LD/ADHD and normally achieving students on self-perceptions.**

In order to explore how the children with comorbid LD/ADHD differed from children with LD and normally achieving peers in their self-concept, academic self-efficacy beliefs and academic attributional style, a comprehensive study was conducted. A number of hypotheses were examined in this study. The study also attempted to investigate if the additional problem of ADHD comorbidity would contribute more negatively to the self-concept, attributional style, and the self-efficacy beliefs of students with a diagnosis of LD/ADHD. The relationships between academic self-concept, academic self-efficacy beliefs and academic attributional style were also explored. Differences related to gender and grades in self-concept, attributional patterns and self-efficacy beliefs of students in the three groups were also discussed. A small group of students, including students with LD and students with comorbid



LD/ADHD, whose self-concept score fell in the lowest quartile, were drawn from the sample of this study and this group participated in the next stage of the investigation.

### **5.2.3 Stage Three: Self-concept enhancement of students with LD and with LD/ADHD.**

This study-stage was conducted to assess the effectiveness of an intervention for the enhancement of self-concept of students with learning difficulties. The students selected as outlined above, participated in an intervention program that was designed to enhance their self-concept. These students had reported significantly poor academic self-concept and exhibited negative attributional style and poor self-efficacy beliefs in academic contexts. Therefore, the intervention was specifically designed to enhance their academic self-concept.

The intervention was based on attributional retraining techniques, which had been successfully employed in previous studies (Craven et al., 1991; Craven, 1996) in order to enhance the academic self-concept of the students. The intervention was focused on retraining the participants to attribute success (in reading and mathematics) to internal causes (their own ability and effort) and failure to external causes (task difficulty and not having the right strategy to successfully complete the task). A waitlist control period, pre-test post-test design was employed. First 8-week period was a waitlist control period during which no intervention was given. The second period of seven weeks was the experimental period during which the intervention was administered. The intervention was delivered for two 30-minute sessions each week. After a further

ten week period follow-up was conducted. It was predicted that the changes in self-concept scores during the experimental period would be significantly larger than changes during the control period, and that these changes would be maintained during the follow-up period. Further, it was expected that the changes would be larger for the targeted areas of self-concept (academic self-concept) than non-targeted areas (non-academic self-concept), and that the changes would be higher for the LD group as compared to the LD/ADHD group.

## **STAGE ONE**

### **CHAPTER SIX**

#### **DEVELOPMENT OF THE INSTRUMENTS FOR ACADEMIC ATTRIBUTIONAL STYLE AND ACADEMIC SELF- EFFICACY BELIEFS OF CHILDREN.**

This chapter is concerned with the development of two instruments. One instrument was designed for the assessment of academic attributional style and the other was patterned for the assessment of academic self-efficacy beliefs of students in Grades 3 to 6. The purpose of this chapter is to explain the rationale and the procedures for the development of these two instruments. The factor analysis, reliability and validity outcomes of these instruments are also described in this chapter.

##### **6.1 Rationale**

This thesis was concerned with exploring and enhancing academic self-concept of students with LD and students with comorbid LD/ADHD. Previous studies have described a close relationship between self-concept, self-attributions and self-efficacy beliefs (Craven et al. 1991; Marsh, 1984a; Marsh, et al., 1984; Schunk, 1984). As self-concept is a multidimensional construct, researchers have argued that self-attributions are also multidimensional and domain specific (Craven, 1996; Marsh, 1984a). Academic self-concept is related to the academic attributions and the academic self-efficacy beliefs. In order to understand academic self-concept, it was, therefore, important to find out the nature of the academic attributional style and the academic self-efficacy beliefs of the participants.

As indicated in the previous chapters, there were no suitable measures available that could be used to assess academic attributional style and academic self-efficacy beliefs of students with learning difficulties. Some instruments that were initially considered for use in the present investigation were deemed to be inappropriate, mainly due to the complexity of the item content, the length of the scales and the format of the instruments. (A detailed discussion of these issues was presented in Chapter 4).

Further, parallel to the measurement of academic self-concept, it was also important to assess the academic attributions and academic self-efficacy beliefs of the participants. Since the participants in the present investigation had difficulties in reading and mathematics, it was important to assess their self-attributions and self-efficacy beliefs in these areas. This required that the instruments contain specifically worded items about their efficacy beliefs, particularly about achieving success in reading and mathematics. The instruments should also be appropriate for children with learning difficulties. This study explains the procedure employed in the development of these two instruments.

## **6. 2 Method**

### **6.2.1 Sample**

The participants in this study were students in grades 3 to 6 ( $n = 107$ ). The sample included 55 boys and 52 girls having a mean age of 10.2 years ( $SD = 1.14$ , range 8 to 12 years) from two primary schools situated in the suburbs of Sydney, Australia. The

sample included seven students with learning difficulties (LD) in reading and mathematics, five students with LD/ADHD and 95 normally achieving students. According to the American Psychological Association the ratio of students with LD in normal population is almost 5% to 9% (APA, 1994). The ratio of children with LD and non-LD in the sample for this study was consistent with the ratio identified by the APA (1994) in relation to LD children in normal population.

### **6.2.2 Procedure**

The participants completed the initial versions of the Academic Attributional Style Questionnaire (AASQ) and the Academic Self-efficacy Beliefs Scale (ASEB-Scale), which were designed by this researcher. The subjects also completed a measure of multidimensional self-concept, the Self-Description Questionnaire SDQ-1 (Marsh, 1990). The subjects were administered these instruments in the groups of eight to ten students. Since it was possible that the subjects might have difficulty in reading the test material, the researcher read each of the items from the test booklets twice, aloud and slowly, while each child marked their answers on their own copy of the booklet.

The data obtained from the SDQ-1 was compared to the AASQ and the ASEB-Scale. This permitted an evaluation of external validity for the Scales. The results obtained allowed for validation against an already empirically sound and well-constructed Scales. The development procedure for the AASQ and the ASEB-Scale is explained in the following section.

### **6.3 Development of the Academic Attributional Style Questionnaire.**

The Academic Attributional Style Questionnaire (AASQ) was developed by patterning it after the Children's Attributional Style Questionnaire (CASQ) (Kaslow et al. 1978), since the simple format of the CASQ was deemed to be suitable for students with learning difficulties. The CASQ is a 48-item dispositional measure of children's attributions. Each item of the CASQ consists of a hypothetical positive or negative event and two possible causes for the event. Respondents are instructed to choose the cause that they believe best applies to the event. Attributional style for bad events and for good events is assessed separately along three dimensions, namely internal/external, stable/unstable and global/specific dimension. Respondents, who provide internal, stable, and global explanations for good events demonstrate a positive attributional style. Conversely, respondents who provide internal, stable, and global explanations for bad events demonstrate a negative attributional style (Peterson, et al., 1995).

A similar format was used for the Academic Attributional Style Questionnaire (AASQ). However, in contrast to the CASQ (which mostly addresses a child's attributions for social situations) the AASQ was designed to assess a child's attributions for academic successes and failures. Similar to the CASQ, the attributional style in the AASQ was assessed along three dimensions, internal/external, stable/unstable and global/specific. Subjects who provided internal, stable, and global explanations for success events demonstrated a positive academic attributional style.

Conversely, subjects who provided internal, stable, and global explanations for failure events demonstrated a negative academic attributional style.

### **6.3.1 Development of the items for the Academic Attributional Style Questionnaire.**

The initial Academic Attributional Style Questionnaire (AASQ) contained 24 items, which were written about success and failure events in academic situations. Four items were taken from the CASQ (Kaslow et al., 1978) and after slight modification were included in the AASQ. The remaining 20 items were generated on the basis of *a priori* reasoning by constructing a set of hypothetical events related to a child's success or failure in reading, mathematics or general academic achievements. All items were presented in a simple format. They were designed to measure internal/external, stable/unstable or global/specific attributions for success and failure in reading, mathematics and general academic situations.

This initial 24-item Academic Attributional Style Questionnaire was consisted of 12 items about success events (or positive events) and 12 items about failure events (or negative events). For each of the items two possible causes (A and B) were given that enabled assessment of the dimensions of either internality vs. externality, stability vs. unstability or globality vs. specificity. An example measuring internal vs. external attribution for success was;

Suppose you get an 'A' on a maths test, it would be because

A- that test was simple.    or    B- you are good in maths.

For each item, subjects were asked to vividly imagine the event actually happening to them. They were instructed to decide what they believed would be the major cause of possible success or failure, described in the item. The initial 24-item AASQ was intended to have two scales with 12 items each. The positive attributional style scale consisted of 4 items each for internal, stable and global explanations for success events. Similarly the negative attributional style scale consisted of 4 items each for internal, stable and global explanations for failure events.

In order to examine the readability and comprehensiveness of the items of the AASQ, the 24-item questionnaire was initially administered to ten students in grades 3 to 6 (four students with LD and six without LD). The students were asked if they had any difficulty in understanding the meaning of statements or words of the Questionnaire. No significant difficulties were reported so the questionnaire was administered to all 107 subjects.

### **6.3.2 Scoring procedure for the Academic Attributional Style Questionnaire.**

The Academic Attributional Style Questionnaire used the similar scoring procedure that has been used for the CASQ (Kaslow et al., 1978). Items were scored separately for success and failure events. The items in the AASQ were assigned a value of +1 for each internal, stable or global response for a success event and a value of -1 for each internal, stable or global response for a failure event. All the external, unstable and specific responses were assigned a value of 0.



The sum of the scores on internal, stable, and global explanations for success events provided a score for positive academic attributional style and sum of the scores on internal, stable, and global explanations for failure events provided a score for negative academic attributional style. An overall or composite academic attributional style was reflected by the difference between the scores for positive attributional style and negative attributional style. Scores for the positive attributional style, negative attributional style, and overall academic attributional style were obtained for the total sample. A high positive score for overall attributional style was indicative of an adaptive or positive academic attributional style. A high negative score for overall attributional style was indicative of an overall negative academic attributional style. A copy of the complete instrument and the scoring key is included in Appendix B.

### **6.3.3 Factor analysis of the Academic Attributional Style Questionnaire**

In order to identify the underlying factor structure embedded in the Academic Attributional Style Questionnaire, a Principal Component Factor analysis of the 24-item AASQ was performed on the responses obtained from the 107 subjects. Seven factors were extracted from the analysis. The first two factors had eigenvalues of 4.16 and 2.26. The remaining five factors had eigenvalues of 1.58, 1.51, 1.30, 1.22, and 1.13 each. The scree plot identified two prominent factors with eigenvalues 4.16 and 2.26 respectively. These first two factors together accounted for 35 % of the total variance. The remaining five factors contributed considerably less (i.e., 4 % to 9 %) to the explained variance. In addition these remaining five factors, identified by the principal component factor analysis, did not provide any meaningful or useful

interpretation of their independent structure. The most prominent and acceptable component structure, therefore, was the two-factor structure with eigenvalues of 4.16 and 2.26. The first factor identified the 10 items that were constructed to assess positive attributions (i.e., internal, stable and global attributions for success events). The second factor contained the other 10 items that originally were designed to assess negative attributions (i.e., internal, stable and global attribution for failure events). This two-factor structure, identified by the principal component analysis, provided support for the earlier *a priori* logic that had guided construction in developing two dimensions of academic attributional style (i.e., a positive attributional style and a negative attributional style).

The principal component analysis could not clearly identify the separate structures within each sub-scale in terms of internality, stability, and globality dimensions of attributional style. Therefore it was not possible to establish the viability of separate sub-scales for internality, stability and globality. The principal component analysis of the AASQ did however provide good support for the two scales of the AASQ: a 10-item scale for measuring attributions for success situations and a 10-item scale for measuring attributions for failure situations. A summary of the psychometric analysis of the Academic Attributional Style Questionnaire is included in Table 6.1.

Factor Analysis procedures usually require quite large samples (ideally samples of several hundred) although this is dependent also on the magnitude of population correlation and number of factors used.

Table 6.1: Corrected item- total correlation, Means, Standard Deviations and factor loading (unrotated factor matrix) for each of the 10-item Positive and Negative scales on the AASQ.

| *Items on the two scales of the Academic attributional Style Questionnaire. | Corrected Item-total correlation | Means & Standard Deviation | Factor Loading  |
|---|----------------------------------|----------------------------|-----------------|
| <u>Positive Scale (success situations)</u>                                  |                                  |                            | <u>Factor1</u>  |
| 1. You get an “ A” on a test...   | .34                              | .49 (.50)                  | .38             |
| 2. You read a story well....  | .41                              | .83 (.37)                  | .49             |
| 3. You get very good grade in school.....                                   | .39                              | .93 (.24)                  | .33             |
| 4. Teacher tells you that your reading is                                   | .42                              | .82 (.38)                  | .49             |
| 9. Teacher awarded a gold star for today’s                                  | .40                              | .62 (.48)                  | .43             |
| 10. You get an “A” on maths’ test...  | .53                              | .75 (.43)                  | .54             |
| 15. You finish your homework quickly...                                     | .38                              | .55 (.49)                  | .45             |
| 18. Teacher likes you.....  | .42                              | .70 (.46)                  | .43             |
| 19. Teacher says your math work is good....                                 | .47                              | .69 (.46)                  | .67             |
| 20. You get very good grade in class test....                               | .48                              | .75 (.43)                  | .68             |
| <u>Negative scale (failure situations)</u>                                  |                                  |                            | <u>Factor 2</u> |
| 5. You find it hard to understand your ..                                   | .35                              | .18 (.27)                  | .53             |
| 6. You did not understand teacher’s lesson..                                | .36                              | .25 (.43)                  | .54             |
| 7. Teacher says you are doing badly in..                                    | .45                              | .22 (.41)                  | .74             |
| 8. You fail a class test....  | .26                              | .23 (.42)                  | .43             |
| 11. You fail a math’s test...   | .40                              | .16 (.24)                  | .34             |
| 12. You get a bad grade in school....                                       | .24                              | .39 (.49)                  | .37             |
| 13. You get a maths question wrong in ..                                    | .32                              | .22 (.41)                  | .51             |
| 14. You get a bad grade in reading...                                       | .34                              | .20 (.11)                  | .35             |
| 16. You give wrong answer..   | .21                              | .34 (.47)                  | .32             |
| 17. You get a bad grade in a class test.....                                | .41                              | .19 (.39)                  | .52             |

\*A copy of the complete items is included in Appendix B.

If there are few factors and strong correlation, even a small sample size may be adequate (Tabachnick & Fidell, 1989). In view of the relatively small sample size used in this study ( $n = 107$ ) with a 20-item questionnaire, it was decided to further examine the structure of the AASQ by using cluster analysis.

#### **6.3.4 Cluster Analysis of the Academic Attributional Style Questionnaire**

Cluster analysis attempts to identify relatively homogeneous groups of variables based on selected characteristics. It identifies which subsets of variables measure the same or similar combinations of factors. The number of clusters may exceed the number of factors but usually the two numbers are the same (Tabachnick & Fidell, 1989).

A hierarchical cluster analysis of the 20-item AASQ was conducted. Using Ward's method for binary measures a dendrogram was obtained. Results clearly identified the partitioning of two clusters of items. Cluster 1 consisted of 10 items that were designed to measure positive attributional style (i.e., items 1,2,3,4,9,10,15, 18, 19, 20) and cluster 2 consisted of other 10 items that were intended to measure negative attributional style (i.e., items 5,6,7,8,11,12,13,14,16,17) for academic successes and failures. The resultant dendrogram clearly supported the factor analytic results and provided a convincing argument for accepting the presence of two dimensions within the Academic Attributional Style Questionnaire. Results of the cluster analysis and the dendrogram for the final 20-item questionnaire are presented in Appendix B.

### 6.3.5 Reliability of the Academic Attributional Style Questionnaire

Cronbach's alpha was calculated to assess the internal consistency for each of the scales of the AASQ. A standardized item alpha coefficient for the 10-item positive attributional style scale was calculated as .71. For the 10-item negative attributional style scale it was .63. For the total 20-item scale the internal consistency was .79.

The positive attributional style scale and the negative attributional style scale were also analyzed in terms of internality, stability, and globality dimensions of attributions to determine if it was possible to establish reliable sub-scales. However, for each of these dimensions relatively low reliability coefficients were found (ranging from .27 to .48), therefore it was deemed not desirable to examine these separate attributional dimensions using this instrument.

The test-retest reliability coefficients over an eight-week interval were also calculated with the same sample. The test-retest correlation coefficient for the positive attributional style was recorded at .95 and for the negative attributional style it was .94. For overall attributional style it was .88.

The AASQ was found to be a reliable measure for assessing academic attributional styles of children in grades 3 to 6. Means, standard deviations, corrected item-total correlation and factors loading for the items of the AASQ are reported in Table 6.1.

### **6.3.6 Construct Validity of the Academic Attributional Style Questionnaire.**

Research has demonstrated a positive relationship between academic attributions and academic self-concept. It has been found that positive attributions are positively related with academic self-concept and negative attributions are negatively related with the academic self-concept (Marsh et al., 1984). Thus a child who has a higher academic self-concept may also demonstrate a positive academic attributional style.

Similarly, a child with a negative academic attributional style may also have a poor academic self-concept.

Construct validity of an instrument can be obtained by correlating each factor of the instrument with other constructs to which it is logically related (Marsh, 1990). In order to assess the construct validity of the AASQ, scores obtained on the AASQ were correlated with the scores of academic self-concept obtained on the SDQ-1 (Marsh, 1990). The 107 students who provided data for the AASQ also completed the SDQ-1. Their scores for positive attributional style and for negative attributional style, obtained on the AASQ, were correlated with their scores for academic self-concept, reading self-concept, mathematics self-concept, and general school self-concept, obtained on the SDQ-1.

Results indicated that positive attributional style was positively correlated with academic self-concept (.55), school self-concept (.52), reading self-concept (.38) and maths self-concept (.28). Negative attributional style was negatively correlated with academic self-concept (-.39), school self-concept (-.31), reading self-concept (-.46)

and maths self-concept (-.08). These results demonstrated the predicted conceptual relationship between self-concept and self-attributions and provided support for the construct validity of the AASQ.

## **6.4 Development of the Academic Self-efficacy Beliefs Scale**

The Academic Self-efficacy Beliefs Scale (ASEB-Scale) was designed to assess a student's efficacy beliefs for obtaining success in reading and mathematics. The literature shows that assessment of academic self-efficacy usually involves asking students to rate their confidence to perform the academic tasks such as solving specific maths problems or performing particular reading or writing tasks (Hackett & Betz, 1989; Shell, Colvin, & Brunning, 1995).

### **6.4.1 Development of the items for the Academic Self-efficacy Beliefs Scale**

The ASEB-Scale was developed from a set of 18 items that included nine items for reading efficacy beliefs and nine items for mathematics efficacy beliefs. These items examined student's beliefs or confidence in areas such as obtaining good marks in the subject, ability to learn new tasks and completing the given tasks successfully etc.

The readability and comprehensiveness of this initial 18-item ASEB-Scale was assessed by administering it to ten students in Grades 3 to 6 (four students with LD and six without LD). No student reported any significant difficulty in understanding the meaning of the statements or words of the ASEB-Scale.

#### **6.4.2 The administration and scoring procedure for the Academic Self-efficacy Beliefs Scale.**

The 18-item Academic Self-efficacy Beliefs Scale was administered to the students ( $n = 107$ ) in Grades 3 to 6. The subjects were asked to assess their efficacy level by rating their agreement with each item on five-point scale ranging from “never” to “always”. Each of the items of the scale could receive a score of 1 to 5 from “never” to “always”. A score of 1 was assigned if a positively worded statement on the self-efficacy scale was answered as “never”, indicating the child did not have strong self-efficacy beliefs. A score of 5 was assigned if a positively worded statement on the scale was answered as “always” indicating the child had strong self-efficacy beliefs. Scores 2, 3 and 4 were assigned for responses reported as “rarely”, “sometimes” and “often” respectively. The scoring was reversed for negatively worded items.

The Reading Self-efficacy score was the sum of the scores obtained on the items about reading efficacy beliefs. The Mathematics Self-efficacy score was the sum of the scores obtained on the items about mathematics efficacy beliefs. The Composite Academic Self-efficacy score was the average of the sum of the scores for Reading Self-efficacy and Mathematics Self-efficacy. A high composite self-efficacy score was indicative of a higher level of self-efficacy.

#### **6.4.3 Factor Analysis of the Academic Self-efficacy Beliefs Scale.**

The ASEB-Scale was originally designed as having a two-factor structure, measuring reading self-efficacy and maths self-efficacy beliefs. In order to establish if the  $\alpha$



*priori* structure developed by the researcher could be confirmed statistically, a Principal Component Factor Analysis was carried out with the 18-item ASEB-Scale. Results suggested a well-defined two-factor structure for this scale with eigenvalues of 4.45 and 3.4 respectively. The scree plot of the scale also confirmed the dominance of the two factors. Factor 1 comprised seven items with factor loading ranging from .61 to .86 and this factor accounted for 32.1 % of the total variance. Items loading on this factor reflected self-efficacy in mathematics. Factor 2 comprised seven items with factor loading ranging from .60 to .79 and this second factor accounted for 24.3 % of the total variance. Items loading on this second factor measured self-efficacy in reading. The two factors together accounted for 56.44% of the total variance and confirmed the earlier *a priori* construction developed by the researcher to assess two areas (reading and mathematics) of academic self-efficacy.

These results provide convincing support for the proposed two-factor structure of the ASEB-Scale. A summary table for the Principal Component Factoring of the ASEB-Scale is presented in Table 6.2. A copy of the complete instrument is included in Appendix B.

**6.4.4 Cluster analysis of the Academic Self-efficacy Beliefs Scale**

Since the sample size (n = 107) was considered rather small for conducting factor analysis, a hierarchical cluster analysis of the ASEB-Scale was carried out and a dendrogram was obtained using Ward’s method. Results clearly identified the successful partitioning of the total 14 items into two clusters. Cluster 1 consisted of 7

Table 6.2: Corrected item-total Correlation, Means, Standard Deviations and factor loading of items for each of the 7-item Reading Self-efficacy and Maths Self-efficacy scales on the ASEB-Scale.

| *Items number on the Academic Self-efficacy Beliefs Scale. | Corrected Item-total correlation | Means and Standard deviations | Factor Loading |
|--|----------------------------------|-------------------------------|----------------|
| <u>Items for the Maths Self-Efficacy Beliefs</u>           |                                  |                               |                |
| 1. I can get good marks on a maths test                    | .79                              | 3.85 (0.85)                   | .85            |
| 2. I can complete all the maths work.....                  | .63                              | 4.07 (0.79)                   | .74            |
| 5. I can do as many maths problems as.....                 | .60                              | 3.97 (1.02)                   | .79            |
| 8. I can learn to solve new maths problem...               | .62                              | 4.01 (0.89)                   | .76            |
| 9. It is difficult for me to do maths..... (R).            | .66                              | 3.83 (1.03)                   | .61            |
| 11. I can answer all the questions on .....                | .66                              | 3.81 (0.94)                   | .68            |
| 12. It is difficult for me to get good.....(R).            | .57                              | 3.92 (0.98)                   | .45            |
| <u>Items for the Reading Self-efficacy Beliefs</u>         |                                  |                               |                |
| 3. I can finish the reading given to me.                   | .60                              | 4.07 (0.79)                   | .70            |
| 4. I can get good marks on a reading test.                 | .63                              | 4.38 (0.74)                   | .71            |
| 6. It is difficult for me to read correctly (R).           | .66                              | 4.10 (0.97)                   | .77            |
| 7. I can read as many pages as the other.....              | .66                              | 4.32 (0.87)                   | .75            |
| 10. I can read new words and stories....                   | .48                              | 3.93 (0.81)                   | .60            |
| 13. I can understand what I have read....                  | .68                              | 4.42 (0.71)                   | .79            |
| 14. Reading is difficult for me (R)...                     | .63                              | 4.32 (0.88)                   | .78            |

\* A copy of the complete items is included in Appendix B.

(R) Denotes items reversed for scoring in direction of high self-efficacy.

items seeking to measure Reading Self-efficacy beliefs and cluster 2 consisted of 7 items seeking to measure Mathematics Self-efficacy beliefs. The resultant dendrogram indicated a clear interpretation of the two dimensions of the ASEB-Scale. Thus the cluster analysis identified the same factor-structure that were already identified by the Principal Component factor analysis. It provided added confirmation to the validity of both methods used to produce a similar structure. The results of the cluster analysis and the dendrogram for the final 14-item ASEB-Scale are presented in Appendix B.

#### **6.4.5 Reliability of the Academic Self-efficacy Beliefs Scale**

In order to assess the response homogeneity and the internal consistency of the items, item-total correlations were calculated for the ASEB-Scale. The items with low item-total correlation or items with little discriminatory power were removed. The 18-item ASEB-Scale was reduced to 14 items with two subscales: a reading efficacy scale and a mathematics efficacy scale with 7 items each. The factor analysis confirmed these sub-scales.

Reliability analyses (Cronbach's alpha) were conducted separately for each of the reading self-efficacy and mathematics self-efficacy scales. An internal consistency coefficient of .87 for the mathematics self-efficacy scale, .85 for the reading self-efficacy scale and .83 for the total 14-item scale was obtained.

The test-retest reliability coefficients over an eight-week interval for the ASEB-Scale were also calculated (sample size,  $n = 84$ ). A correlation coefficient for the reading

self-efficacy beliefs was recorded at .97 and for the mathematics self-efficacy beliefs it was .98. For the total academic self-efficacy beliefs it was .98. The means, standard deviations and corrected item-total correlations are reported in Table 6.2.

#### **6.4.6 Construct validity of the Academic Self-efficacy Beliefs Scale.**

Schunk (1984, 1990b) suggests that the students who have high self-efficacy beliefs about a task feel more capable of task completion, more readily attempt the task and may have a positive academic self-concept, whereas the students with poor self-efficacy beliefs usually feel incapable of task completion and may avoid the task. Such students may also have a negative academic self-concept. Thus a logical relationship seems to exist between academic self-efficacy beliefs and academic self-concept.

The construct validity of the ASEB-Scale was determined by confirming the predicted relationships between academic self-efficacy and academic self-concept. The scores of 107 subjects on the reading self-efficacy scale were correlated with the scores on reading self-concept. The scores on the mathematics self-efficacy scale were correlated with the scores on mathematics self-concept as measured by the SDQ-1 (Marsh, 1990). A correlation coefficient of .68 was found between maths self-efficacy and maths self-concept and a correlation of .67 was found between reading self-efficacy and reading self-concept. These correlation coefficients demonstrate the predicted conceptual relationship between self-concept and self-efficacy. The results provide strong support for the construct validity of the Academic Self-efficacy Beliefs Scale.

**6.5 Reliability of the SDQ-I measure employed in the present study.**

The SDQ-1 (Marsh, 1990) is a 76-item multidimensional measure of self-concept for children. There is a substantial volume of literature on its reliability and validity properties. This instrument has eight different scales that assess three areas of academic self-concept, four areas of nonacademic self-concept and a general self-concept. The SDQ-1 has been standardized for the Australian population with norms based on the responses of 3,562 students between Grades 2 to 6 (see Chapter 4). This instrument has shown strong psychometric properties.

Table 6.3:  
Internal consistency coefficients for the SDQ-1 (Marsh, 1990) with study sample. Normative sample values are reproduced from the manual for the SDQ-1.

| Self-concept scales on<br>The SDQ-1 | Study Sample<br>(N = 107) | Normative sample<br>(N = 3,562) |
|-------------------------------------|---------------------------|---------------------------------|
| Physical ability                    | .83                       | .83                             |
| Physical appearance                 | .86                       | .90                             |
| Peer relations                      | .83                       | .85                             |
| Parent relation                     | .79                       | .80                             |
| Reading scale                       | .88                       | .89                             |
| Mathematics scale                   | .91                       | .89                             |
| General school scale                | .86                       | .86                             |
| General self-concept                | .82                       | .81                             |
| Total non-academic                  | .89                       | .91                             |
| Total academic                      | .88                       | .92                             |
| Total self                          | .93                       | .94                             |

The internal consistency (Cronbach's alpha) for the eight scales varied from .80 to .90, and for the combined scores from .91 to .94. The test-retest reliability over a six-month interval for individual scales varied from .74 to .87 (Marsh, 1990).

In this study, the SDQ-I was administered to 107 subjects along with the Academic Attributional Style Questionnaire and the Academic Self-efficacy Beliefs Scale. Internal consistency coefficients for the eight scales of the SDQ-1 were calculated on the responses of 107 students. The results are given in Table 6.3.

Correlations coefficients in Table 6.3 indicate that the internal consistency of the 8 scales of the SDQ-1 obtained for the study sample ( $n = 107$ ) vary from .82 to .91 and for the three total scores vary from .88 to .93. These figures agree with the previous estimates of internal consistency of the SDQ-1 obtained from the responses of 3,562 students between Grades 2 to 6, (as given in the manual of the SDQ-1, Marsh, 1990). These results suggested that the study sample ( $n = 107$ ) was representing the population.

### Summary of the Chapter

The Academic Attributional Style Questionnaire and the Academic Self-efficacy Beliefs Scale were developed for the present investigation. The Academic Attributional Style Questionnaire assesses a child's positive attributional style and negative attributional style for academic situations. The Academic Self-efficacy Beliefs Scale provides scores for reading self-efficacy beliefs and mathematics self-

efficacy beliefs. The two instruments along with the SDQ-1 (Marsh, 1990) were administered to a sample of 107 students. The factor analysis, reliability and validity outcomes indicated that the two instruments had reasonable psychometric properties. They were considered reliable and valid instruments for the assessment of academic attributional style and academic self-efficacy beliefs of students in Grades 3 to 6. The simple item format of these two instruments was also found to be suitable for the understanding of students with learning difficulties, in Grades 3 to 6. Hence these instruments can be administered confidently to assess the academic attributional style and the academic self-efficacy beliefs (in reading and mathematics) of students with and without learning difficulties in Grades 3 to 6.

## **STAGE TWO**

### **CHAPTER SEVEN**

#### **COMPARISON OF SELF-PERCEPTIONS OF STUDENTS WITH LD, STUDENTS WITH COMORBID LD/ADHD AND NORMALLY ACHIEVING PEERS.**

##### **7.1 Rationale**

This study was concerned with the following issues:

1. A review of the literature had indicated that students with learning difficulties (LD) differ from normally achieving students in terms of self-concept (Bender & Wall, 1994; Chapman, 1988a; Harter et al., 1998; Kistner, Haskett, White & Robins, 1987), attributions for success and failure (Jacobson, Lowery, & DuCette, 1986; Pearl, 1992; Rogers & Saklofske, 1985) and self-efficacy beliefs (Schunk, 1985, 1990b). However the literature on the self-concept of students with LD has shown inconsistent findings (Harter et al., 1998). Some studies have revealed significant differences in the self-concept of students with LD and normally achieving peers (Rogers & Saklofske, 1985; Huntington & Bender, 1993), while others studies have reported no differences (Silverman & Zigmond, 1983; Tollefson, 1982). The studies that examine the components or dimensions of self-concept generally conclude that students with LD hold lower academic self-concept but their non-academic self-concept or general feelings of self-worth are equivalent to that of their peers without disabilities (Bender & Wall, 1994; Harter et al., 1998; Kloomok & Cosden, 1994). However, the studies that used a general



measure of self-concept have generally concluded that there are no differences between students with and without LD (Patten, 1983; Sabornie, 1994). These findings emphasized the importance of viewing self-concept as a multidimensional phenomenon and utilizing multidimensional instruments for the assessment of self-concept. Further research is needed to clarify these issues in the field of self-perceptions of students with LD.

2. A significant comorbidity (almost 40% to 80%) between learning difficulties (LD) and attention deficit hyperactivity disorder (ADHD) has been reported in the literature (McGee & Share, 1988; Hinshaw, 1992; Reason, 1999; Silver, 1992). Almost one-third of students with LD are thought to have ADHD (Hallahan, 1989). Many social, emotional and educational difficulties are also associated with ADHD (Hoza, Pelham, Milich, Pillow & McBride, 1993). Students with LD usually hold negative self-perceptions and these negative self-perceptions may be intensified if there is an associated problem of ADHD. The risk factors associated with LD or with ADHD may, therefore, increase markedly when there is co-occurrence of LD and ADHD. Most of the previous studies on the self-perceptions of students with LD have not specifically identified or broken down their samples into subgroups such as LD with ADHD and LD without ADHD. Thus it is quite possible that some of the previous studies on the self-perceptions of students with LD are confounded by the use of unspecified LD and LD/ADHD subject samples. Although a significant number of children with LD have an associated ADHD diagnosis, little research has been undertaken to explore the self-concept and

related constructs such as attributional style and self-efficacy beliefs of students with comorbid LD/ADHD. The literature appears lacking in providing a comparative profile concerning the self-perception of students with LD and students with comorbid LD/ADHD. Further research is, therefore, needed to investigate these issues.

3. Research has also indicated that many students with LD appear to have a negative attributional style and poor self-efficacy beliefs for academic achievements (Chapman, 1988b; Jacobson et al., 1986; Kistner, et al., 1987; Schunk, 1990a). Studies have also demonstrated a close relationship between academic self-concept, and attributional patterns for academic successes and failures (Craven, et al., 1991; Marsh et al., 1984; Marsh, 1988). It has been found that students with higher academic self-concept attribute their success to internal and stable factors, whereas students with poor academic self-concept usually attribute their success to external and unstable factors (Cooley & Ayres, 1988; McInerney, 1999). Attributions and self-efficacy beliefs are related to each other and individuals with enhanced self-efficacy exhibit positive self-perceptions and more adaptive attributional patterns (Bong & Clark, 1999; Pajares, 1996; Schunk, 1984, 1990b). These findings lead to the prediction that students with LD who usually hold lowered academic self-concept would also demonstrate poor self-efficacy beliefs and a negative attributional style in academic context. Therefore in order to get a complete understanding of one's self-concept, it is important to explore one's self-efficacy beliefs and also self-attributions. This study would also examine the

nature of relationships between academic self-concept, academic attributional style and academic self-efficacy beliefs for students with LD and students with comorbid LD/ADHD.

4. Some studies have reported that the self-concept of students with LD declines over time as failures accumulate and that by the time LD students reach adolescence they would invariably have poor self-concept (Huntington & Bender, 1993; Silverman & Zigmond, 1983). Others have reported that the decrements in the LD student's self-concept occur at least by age 8 or 9 (around Grade 3) and remain relatively stable through to at least grade 10 (Chapman, 1987, 1988a). In relation to gender differences regarding the self-perceptions of students with LD, research has generally reported that boys with LD hold lower academic self-concept than girls with LD (Burns, 1982; Chapman, 1988a). However gender differences of children with LD, in relation to self-attributions and self-efficacy beliefs have not been examined extensively. The possible age-related and gender-related differences in self-concept attributional style and self-efficacy beliefs of students with LD and students with LD/ADHD have also been explored in this study.

This stage of the present investigation is concerned with the above mentioned issues. The results obtained from this study could be of value in understanding the nature of self-perceptions for students with LD and students with LD/ADHD. This information would then be utilized to design an intervention program for the enhancement of self-concept for students with LD and students with comorbid LD/ADHD.

## 7.2 Hypotheses

The following hypotheses were examined in this study.

### Hypothesis 1

Consistent with the findings of previous studies on self-concept of students with LD (Harter et al., 1998; Kloomok & Cosden, 1994) it was expected that:

- 1a). Students with LD and students with comorbid LD/ADHD, in comparison to normally achieving students, would report significantly lower scores on all dimensions of academic self-concept.
- 1b). The non-academic self-concept of students with LD and students with LD/ADHD would not be significantly different from that of normally achieving peers.
- 1c). The general self-concept of students with LD and students with LD/ADHD would not be significantly different from that of normally achieving peers.
- 1d). Students with comorbid LD/ADHD, in comparison to students with LD, would report lower scores on academic self-concept as well as on non-academic self-concept and general self-concept.

### Hypothesis 2

According to researchers (Cooley & Ayres, 1988; Kistner et. al., 1988; McInerney, 1999) students with LD are inclined to have a negative attributional style because they

usually attribute their failures to internal and stable factors and their success to external and unstable factors. It was, therefore, anticipated that:

2a). Both the students with LD and students with comorbid LD/ADHD, in comparison to normally achieving peers, would report significantly negative academic attributional style.

2b). The students with comorbid LD/ADHD would report more negative academic attributional style than would the students with LD.

### Hypothesis 3

Previous research indicates that as students with LD usually experience repeated failures in academic context, they become less motivated and expend fewer efforts, which leads to further failures. These negative academic experiences are associated with lowered self-efficacy beliefs in students with LD (Bandura, 1997; Grainger & Frazer, 1999; Schunk, 1984). Consistent with these findings it was hypothesized that:

3a). Both the students with LD and students with comorbid LD/ADHD, in comparison to normally achieving peers, would report significantly lower scores on the academic self-efficacy beliefs scales.

3b). Students with comorbid LD/ADHD would report lower scores on the academic self- efficacy beliefs scales than would the students with LD.

#### Hypothesis 4

Previous studies have demonstrated a positive relationship between academic self-concept and attributional patterns for academic success and failures (Cooley & Ayres, 1988; Craven et al., 1991; Marsh, 1984a, 1988; Marsh, et al., 1984; McInerney, 1999), and between attributions and self-efficacy beliefs (Schunk, 1984, 1990b; Schunk & Cox, 1986). A close relationship, between self-efficacy beliefs, self-perceptions and attributional patterns has also been suggested by recent researchers (e.g., Bong & Clark, 1999).

Based on these findings it was assumed that:

- 4). The students who report lower academic self-concept would also demonstrate poor academic self-efficacy beliefs and a negative academic attributional style. Hence a positive correlation was expected between the scores of academic self-concept, academic self-efficacy beliefs and academic attributional style.

#### Hypothesis 5

In relation to gender differences in self-perceptions of students with LD, studies have reported that boys with LD hold lower academic self-concept than girls with LD (Burns, 1982; Chapman, 1988a). It has also been reported that the self-concept of students with LD declines over time (Silverman & Zigmond, 1983; Russell, 1974). Based on these findings the following hypotheses were formulated in order to examine the possible gender-related and grade-related differences in self-perceptions of students with LD and with LD/ADHD.

- 5a) It was expected that boys, in comparison to girls in LD and LD/ADHD groups would obtain lower scores on the measures of self-concept, academic attributional style and academic self-efficacy beliefs.
- 5b) It was predicted that the students with LD and with comorbid LD/ADHD in higher Grades (Grades 5 and 6) would report lower scores on academic self-concept, academic attributional style and academic self-efficacy beliefs than would students in smaller Grades (Grades 3 and 4).

## **7.3 Method**

### **7.3.1 Sample**

The original sample for this study consisted of 188 primary school students in Grades 3 to 6, was drawn from nine public schools in the Eastern suburbs of Sydney, Australia. Twelve cases were dropped due to missing data. The remaining 176 subjects were included in the final analysis. These subjects were grouped as follows:

1. Group 1: consisted of 44 students with learning difficulties (LD) in reading and mathematics,
2. Group 2: consisted of 42 students with learning difficulties and comorbid attention deficit hyperactivity disorder (LD/ADHD), having learning difficulties in reading and mathematics.
3. Group 3: consisted of 86 matched control normally achieving (NA) students with no LD or ADHD problems.

All participants were students of regular classes. The participants with LD and with comorbid LD/ADHD had also been placed in a special education withdrawal class for reading and mathematics at their schools. They spent 1-2 hours a day in a resource room program, receiving academic assistance from an educational specialist. For the remainder of the day they attended regular education classes. All participants spoke English as their main language.

#### Selection criteria for the participants with LD and with comorbid LD/ADHD

The participants with LD and with LD/ADHD were previously classified by their schools as having reading and mathematics learning difficulties, using a criteria of a significant discrepancy between students' intellectual ability and their achievement level. Each student in the LD and LD/ADHD groups demonstrated a full-scale intelligence score greater than 79 on the Wechsler Intelligent Scale for Children (Wechsler, 1991). Academic achievement was assessed with the Wide Range Achievement Test- Revised (WRAT-R) (Jastak & Wilkinson, 1984).

Additional inclusion criteria for the students with LD/ADHD consisted of a score of 70 or more on the Conners Teacher Rating Scale-Revised (CTRS-R) (Conners, 1985) and a score greater than 1.5 standard deviation above the mean for age and sex on the ADHD-Teacher Rating Scale (DuPaul, 1990) (see Appendix A). Students with LD and with LD/ADHD in the study sample were performing almost two years behind their chronological age and expected ability levels. Students with a learning disability due to physical or sensory handicap were not included in the sample.



### Selection criteria for normally achieving participants.

Based on the same gender and Grade placement, the subjects with LD and with LD/ADHD were matched one to one with normally achieving classmates. Selecting the normally achieving students from the same classes as the subjects with LD and with LD/ADHD, controlled for the possible effects of variability of teaching style and classroom and school environment. The normally achieving students in the final sample were free from any identified psychological and learning disorder.

The Raven's Coloured Progressive Matrices RCPM (Raven & Raven, 1995) were administered to the participants in all the three groups to ensure that the children in each group had a matching intellectual ability level and were free from intellectual disability. The range of scores for the 'intellectually average' group, (given in the RCPM manual) lies between the 25<sup>th</sup> and 75<sup>th</sup> percentiles (Raven & Raven, 1995). Subjects with a score above the 25<sup>th</sup> percentile on the RCPM were included in the final sample.

### **7.3.2 Characteristics of the Sample**

The age of the subjects ranged from 8 years to 12 years. Table 7.1 presents the means and standard deviations for age and RCPM percentile scores of the participants. The average age in months for the LD/ADHD group was 125.14 months (SD = 12.47), for the LD group was 122.18 (SD = 13.45) and for the normally achieving group the mean age was 119.58 years (SD = 13,45). 18.42 % of the NA students, 12.34 % of the students with LD and 15.65 % of the students LD/ADHD were from single parent families.

Table 7.1  
Characteristics of the students in normally achieving, LD, and LD/ADHD groups.

| Groups               | N  | Age in months  | Percentiles on RPCM <sup>c</sup> |
|----------------------|----|----------------|----------------------------------|
|                      |    | Mean (SD)      | Mean (SD)                        |
| Normally achieving   |    |                |                                  |
| Boys                 | 63 | 119.24 (13.44) | 69.44 (15.97)                    |
| Girls                | 23 | 120.25 (13.77) | 72.61 (16.57)                    |
| Total                | 86 | 119.58 (13.45) | 70.29 (10.09)                    |
| LD <sup>a</sup>      |    |                |                                  |
| Boys                 | 33 | 122.55 (12.28) | 64.39 (17.04)                    |
| Girls                | 11 | 121.09 (12.53) | 68.18 (26.20)                    |
| Total                | 44 | 122.18 (13.45) | 65.34 (19.45)                    |
| LD/ADHD <sup>b</sup> |    |                |                                  |
| Boys                 | 30 | 124.40 (12.40) | 64.17 (17.47)                    |
| Girls                | 12 | 127.00 (13.00) | 60.00 (23.55)                    |
| Total                | 42 | 125.14 (12.47) | 62.98 (19.19)                    |

<sup>a</sup> LD = Students with learning disabilities  
<sup>b</sup> LD/ADHD = Students with LD and comorbid attention deficit hyperactivity disorder.  
<sup>c</sup> RPCM = The Raven’s Coloured Progressive Matrices

In order to test whether the three groups were matched for age and intellectual ability, a multivariate analyses of variance (MANOVA) with 3 (groups) by 2 (gender), for participants’ age and intellectual ability scores (scores on the RCPM) was computed. No significant difference was found between the three groups for intellectual ability,  $F(2, 166) = 2.27$   $p > .05$ , neither for age in months,  $F(2, 65) = 0.06$   $p > .05$ .

Table 7.2.

The percentage of male and female students in each Grade in the three groups.

| Grade level | Normally Achieving |                 |                | LD            |                 |                | LD/ADHD       |                 |                |
|-------------|--------------------|-----------------|----------------|---------------|-----------------|----------------|---------------|-----------------|----------------|
|             | Male<br>n (%)      | Female<br>n (%) | Total<br>n (%) | Male<br>n (%) | Female<br>n (%) | Total<br>n (%) | Male<br>n (%) | Female<br>n (%) | Total<br>n (%) |
| 3           | 25 (39.7)          | 7(30.4)         | 32(37.2)       | 14(42.4)      | 4 (36.4)        | 8(40.9)        | 11(36.7)      | 3 (25.0)        | 14(33.3)       |
| 4           | 16 (25.4)          | 6(26.1)         | 22(25.6)       | 8 (24.2)      | 2 (18.2)        | 10(22.7)       | 8 (26.7)      | 4 (33.3)        | 12(28.6)       |
| 5           | 11 (17.5)          | 5(21.7)         | 16(18.6)       | 5 (15.2)      | 2 (18.2)        | 7(15.9)        | 6 (20.2)      | 3 (25.0)        | 9 (21.4)       |
| 6           | 11 (17.5)          | 5(21.7)         | 16(18.6)       | 6 (18.2)      | 3 (27.3)        | 9(20.5)        | 5 (16.6)      | 2 (27.3)        | 7 (16.7)       |
| Total       | 63 (100)           | 23(100)         | 86(100)        | 33(100)*      | 11(100)*        | 44(100)        | 30*(100)      | 12*(100)        | 42 (100)       |

\*The ratio of male to female students in LD and LD/ADHD sample is approximately 3:1  
NA = Normally Achieving Students. N = 86  
LD = Students with learning difficulties. N = 44  
LD/ADHD = Students with Learning difficulties and Attention Deficit Hyperactivity Disorder. N = 42.

Descriptive statistics for gender and grades for the three groups are presented in Table 7.2. Of the 172 participants who provided complete data for this study, 126 (73%) were boys and 46 (27%) were girls. Consistent with the typical male to female ratio 3:1 in the LD and ADHD population (APA, 1994) the study sample consisted of more LD boys (75%) than LD girls (25%) as well as more LD/ADHD boys (71.2%) than LD/ADHD girls (28.6%). The matched normally achieving group had a similar ratio of boys (73%) to girls (27%).

#### Social status of the participants

Table 7.3 presents the mean scores for parent's educational and occupational level. In order to determine the social status of the subjects, a questionnaire asking about the occupational and educational levels of the father and mother was sent to the parents of the participants (see Appendix A).

The score for the educational factor was calculated according to the number of years of school completed and was ranked on a seven-point scale. The score for the occupational factor was obtained by ranking the parent's occupations from 1 (*managers and administrators*) to 9 (*laborers and related workers*) according to the occupational titles and the codes given in the Australian Standard Classification of Occupation (Australian Bureau of Statistics, 1996). The majority of the subjects were from middle to upper middle class background.

Table 7.3:

Means and Standard Deviations for the educational and occupational level of the parents of the participants in three groups.

| Parent's Status                   | Normally Achieving<br>(n = 86) | LD<br>(n = 44) | LD/ADHD<br>(n = 42) |
|-----------------------------------|--------------------------------|----------------|---------------------|
| Parent's education and occupation | Mean (SD)                      | Mean (SD)      | Mean (SD)           |
| Father's Education                | 3.29 (1.40)                    | 3.64 (1.38)    | 3.22 (1.36)         |
| Mother's Education                | 3.20 (1.42)                    | 3.50 (1.43)    | 3.18 (1.41)         |
| Father's occupation               | 5.56 (2.37)                    | 4.97 (2.40)    | 5.74 (2.42)         |
| Mother's occupation.              | 5.16 (2.09)                    | 4.22 (2.40)    | 4.44 92.93)         |

An analysis of variance revealed no significant group difference for the father's educational level,  $F(2, 131) = 1.38, p > .05$ , mother's educational level,  $F(2, 131) = 0.95, p > .05$ , father's occupation,  $F(2, 131) = 1.37, p > .05$  and mother's occupation,  $F(2, 131) = 2.23, p > .05$  were found.

7.3.3 Instruments

Three measures were used in this study.

1. The Self-Description Questionnaire-1 (SDQ-1).

This instrument was utilized to assess the self-concept of the participants. The SDQ-

1 is a 76-item multidimensional measure of self-concept for children from Grades 2 to 6. The SDQ-1 has eight different scales that assess three areas of academic self-concept (reading, mathematics and general school self-concept), four areas of nonacademic self-concept (physical ability, physical appearance, peer relations, and parent relations self-concept), and a general self-concept. Internal consistency for the eight scales of the SDQ-1 varies from .80 to .90, and for the combined scores from .91 to .94 (Marsh, 1990). A detailed description of the SDQ-1 has been given in Chapter 4.

## **2. The Academic Attributional Style Questionnaire (AASQ)**

The AASQ was used to assess subjects' academic attributional style. This questionnaire was specifically designed for the present investigation. The AASQ is a 20-item instrument that provides scores for positive and negative academic attributional styles and composite attributional style for academic successes and failures. Internal consistency for the 10-item positive attribution scale was recorded at .71, for the 10-item negative attribution scale it is .63, and for the total 20-item scale it is .79. The test-retest reliability correlation coefficients range from .88 to .95. A detailed description of the AASQ has been presented in Chapter 6.

## **3. The Academic Self-efficacy Scale (ASEB-Scale)**

The ASEB-Scale was used to assess the academic self-efficacy beliefs of the participants. This instrument was also developed for the present investigation. The ASEB-Scale is a 14-item scale that provides scores for reading self-efficacy and

mathematics self-efficacy beliefs. Cronbach's alpha for the ASEB-Scale was recorded at .87 for the mathematics self-efficacy scale, .85 for the reading self-efficacy scale and .83 for the total 14-item scale. Test retest reliability coefficient for the reading self-efficacy beliefs was recorded at .97 and for the mathematics self-efficacy beliefs it was .98. For the total academic self-efficacy beliefs it was .98. A detailed description of the ASEB-Scale has been presented in Chapter 6.

Copies of these instruments are included in Appendix B

#### **7.3.4 Procedure**

Approval to conduct this study was obtained from the appropriate Research Ethics Committees at the University of Wollongong, The New South Wales, Department of School Education, Australia, principals of the schools and parents of the participants (see Appendix E). Nine schools gave permission to conduct this study. The schools provided the information about the students who were already diagnosed for LD and LD/ADHD categories.

The three instruments: the Self-Description Questionnaire-1, the Academic Attributional Style Questionnaire and the Academic Self-efficacy beliefs Scale were administered in a 50 minute session to each group on the days nominated by the principals of the schools. The measures were administered to students with LD and with LD/ADHD in small groups (3 or 4 students at a time), however normally achieving (NA) students completed the questionnaires in larger groups (8 to 12 students at a time). Since it was possible that the students might have difficulty in

reading the test material, the researcher read aloud each of the items from the test booklets twice, after which each child marked the answer in their booklets. The same method was used for each of the three groups. All of the testing was carried out at the schools' premises.

## **7.4 Results**

The independent variables in this study were identified as group status (LD, LD/ADHD and normally achieving (NA) groups). The dependent variables were scores obtained by the subjects on each of the scales of the SDQ-1, the Academic Attributional Style Questionnaire and the Academic Self-efficacy Beliefs Scale. In order to examine the hypotheses regarding differences between three groups (LD, LD/ADHD and NA) on dependent variables, a series of Multivariate Analyses of Variance (MANOVA) were computed for self-concept, academic self-efficacy beliefs and academic attributional style. These analyses were followed by group, gender and grade contrasts within each variable to determine if specific group, gender and grade differences were significant. In post hoc analysis Bonferroni tests were used to determine which group differed from one another significantly.

Before analysis all the assumptions underlying the use of the MANOVA were examined. The data were explored to test the univariate and multivariate normality for the dependent variables in each group. The homogeneity of variance-covariance matrices was tested using Box's M test. No significant violation of the assumptions was found.



To control for Type 1 errors associated with multiple comparison, a Bonferroni adjusted-test or Bonferroni correction (Bird & Hall, 1986) was applied to probability levels required for significance on the studied variables. Thus for the seven dimensions of self-concept the required probability level for  $p < .05$  is .007 or for  $p < .01$  is .001 (i.e.,  $.01/7 = .001$ ). Thus all hypotheses were tested at minimum a .001 probability level.

Table 7.4  
Means and Standard Deviations of the three groups on self-concept, academic attributional style and academic self-efficacy beliefs.

| Measures      | Normally Achieving<br>(n = 86) | LD<br>(n = 44) | LD/ADHD<br>(n = 42) |
|---------------|--------------------------------|----------------|---------------------|
|               | Mean (SD)                      | Mean (SD)      | Mean (SD)           |
| 1. SDQ-1      | 31.37 (3.50)                   | 28.54 (4.64)   | 28.17 (5.34)        |
| 2. AASQ       | 4.01 (2.13)                    | -1.48 (2.14)   | -.79 (2.55)         |
| 3. ASEB-Scale | 28.47 (3.54)                   | 21.93 (3.42)   | 21.61 (4.51)        |

SDQ-1 = Self Description Questionnaire –1  
AASQ = Academic Attributional Style Questionnaire  
ASEB-Scale = Academic Self-efficacy Belief Scale

Table 7.4 presents means and standard deviations of the three groups on the dependent variables. Difference between the three groups for the combination of dependent

variables (self-concept, academic attributional style and academic self-efficacy beliefs) was examined by using 3 x 2 (group by gender) MANOVA. A significant group effect was found for the combination of three dependent variables, multivariate (Wilks' Lambda)  $F(6, 328) = 35.01$   $p < .001$ . Gender effect and group by gender interaction effect was not significant.

The results revealed that the three groups differ significantly on overall self-concept, attributional style and self-efficacy beliefs, while male and female students in each group did not differ significantly on these dependent variables. Subsequent analyses for each dependent variable are described below.

#### **7.4.1 Group differences on Self-concept.**

The means and standard deviations for the academic, non-academic and general self-concepts for three groups (LD, LD/ADHD and NA), presented in Table 7.5, indicated that the participants with LD and with LD/ADHD, in comparison to NA classmates, had obtained lower scores on academic, non-academic and general self-concepts.

In order to test the group's differences for the self-concept dimension, an initial MANOVA 3 (groups) by 2 (gender) for three main dimensions of self-concept (academic self-concept, non-academic self-concept and general self-concept) was conducted. Results revealed a significant group effect: multivariate (Wilks' Lambda),  $F(6, 294) = 6.08$ ,  $p < .001$ , whereas the gender effect was not significant.

Table 7.5

Means and Standard Deviations on self-concept scales for the normally achieving, LD, and LD/ADHD groups.

| Self-concept scales       | Normally Achieving<br>(n = 86) | LD<br>(n = 44) | LD/ADHD<br>(n = 42) |
|---------------------------|--------------------------------|----------------|---------------------|
|                           | Mean (SD)                      | Mean (SD)      | Mean (SD)           |
| Academic Self-concept     | 30.97 (4.09)                   | 25.95 (6.84)   | 25.02 (7.36)        |
| Non-academic Self-concept | 31.77 (4.03)                   | 31.12 (3.86)   | 31.32 (4.68)        |
| General self-concept      | 33.92 (4.96)                   | 30.89 (6.15)   | 30.10 (6.39)        |

Hypotheses 1a, 1b and 1c: Comparison between three groups on academic, non-academic and general self-concepts.

Means scores in table 7.5 indicated that the students with LD and with LD/ADHD had reported significantly lowered academic self-concept than normally achieving peers. The Univariate analysis, derived from the multivariate procedure revealed significant group differences for academic self-concept,  $F(2, 148) = 14.81, p < .001$ . These results, therefore, supported hypothesis 1a.

The Univariate analysis revealed no significant group difference for the non-academic self-concept,  $F(2, 148) = 1.50, p > .05$ . These results supported hypothesis 1b, which assumed that the non-academic self-concept of students with LD and students with LD/ADHD would not be significantly different from that of the normally achieving peers.

Hypothesis 1c assumed that the general self-concept of students with LD and students with LD/ADHD would not be significantly different from that of normally achieving peers. Contrary to this hypothesis the results revealed a significant group effect for the general self-concept,  $F(2, 148) = 6.90, p < .001$ . The results, therefore, negated the proposition of hypothesis 1c.

Table 7.6 presents mean scores and standard deviations for the seven dimensions of self-concept for three groups. In order to continue to fully address hypotheses 1a and 1b, the three groups were compared on the various dimensions of academic and non-academic self-concept.

The mean scores in Table 7.6 indicated that both the students with LD and with LD/ADHD reported lower scores on all of the three facets of academic self-concept (reading self-concept, mathematics self-concept and school self-concept) compared to normally achieving peers. In non-academic self-concept facets both groups (LD and LD/ADHD) reported lower scores on parent-relation and peer-relation self-concepts compared to normally achieving peers.

Table 7.6

Means and Standard Deviations on sub-scales of academic and non-academic self-concept for normally achieving, LD, and LD/ADHD groups.

| Self-concept<br>Dimensions measured<br>by SDQ-1 | Normally<br>Achieving<br>(n = 86) | LD<br>(n = 44) | LD/ADHD<br>(n = 42) |
|---|-----------------------------------|----------------|---------------------|
|   | Mean (SD)                         | Mean (SD)      | Mean (SD)           |
| Academic self-concept                           |                                   |                |                     |
| Reading   | 33.46 (5.91)                      | 26.61 (8.24)   | 26.23 (9.11)        |
| Math  | 29.23 (7.00)                      | 24.61 (7.55)   | 23.61 (7.99)        |
| General-school                                  | 30.20 (5.07)                      | 26.63 (6.92)   | 25.19 (7.70)        |
| Non-academic self-concept                       |                                   |                |                     |
| Parent-relation                                 | 36.19 (4.31)                      | 33.77 (5.44)   | 33.88 (5.19)        |
| Peer-relation                                   | 32.56 (5.34)                      | 29.89 (5.19)   | 27.00 (5.90)        |
| Physical-ability                                | 31.62 (6.14)                      | 32.18 (5.18)   | 33.64 (5.04)        |
| Physical-appearance                             | 26.68 (6.94)                      | 28.36 (6.20)   | 29.26 (7.75)        |

To determine the group differences for the dimensions of academic and non-academic self-concept a MANOVA was conducted for the scores on seven sub-scales of self-concept (three sub-scales for academic self-concept and four for non-academic self-concept) for the three groups.

Results indicated a significant group effect: multivariate (Wilk's criterion)  $F(14, 320) = 8.05, p < .001$ . The gender effect and group by gender interaction effect were not significant. Univariate results indicated that in academic self-concept domains the three groups were significantly different on reading self-concept  $F(2, 169) = 13.69, p < .001$ , maths self-concept,  $F(2, 169) = 8.55, p < .001$  and school self-concept,  $F(2, 169) = 8.05, p < .001$ . In non-academic self-concept domains significant group differences were found for parent-relations self-concept,  $F(2, 169) = 5.49, p < .001$ , and peer-relations self-concept,  $F(2, 169) = 14.55, p < .001$ . Whereas the three groups did not differ significantly on physical ability self-concept,  $F(2, 169) = 1.97, p > .05$ , and physical appearance self-concept,  $F(2, 169) = 2.09, p > .05$ .

Hypothesis 1d: The LD/ADHD group would report lower scores on academic self-concept than the other two groups.

It was predicted that the students with comorbid LD/ADHD would report the lowest scores on all sub-scales of academic self-concept compared to the other two groups. The post hoc Bonferroni tests revealed no significant difference between the students with LD and students with LD/ADHD on reading self-concept, maths self-concept and school self-concept (means differences .37, .99 and 1.44 respectively,  $p > .05$ ).

The post hoc analysis also revealed no significant differences between the two groups on physical ability self-concept, physical appearance self-concept and parent relation self-concept (means differences 1.46, .89 and .10 respectively,  $p > .05$ ). The only significant difference between LD and LD/ADHD groups was found on peer-relation

self-concept. The LD/ADHD group, compared to other two groups reported significantly lower scores on peer-relations self-concept, (means difference 2.89.  $p < .01$ ). Thus, both the LD and LD/ADHD groups in this study reported significantly poorer academic self-concept compared to their normally achieving peers but they did not differ significantly from each other.

The percentile scores for the normally achieving, LD and LD/ADHD groups on different sub scales of self-concept are shown in Table 7.7. The average academic self-concept score of the LD group fell at the 27<sup>th</sup> percentile and that of the LD/ADHD group at the 23<sup>rd</sup> percentile as compared to the 50<sup>th</sup> percentile for the normally achieving group.

The percentile scores given in Table 7 clearly indicated that students with LD and with comorbid LD/ADHD, in comparison to normally achieving group, had significantly lower percentile scores in various facets of self-concept. The LD/ADHD group reported the lowest scores in most of the facets of self-concept as compared to the other two groups.

However, as mentioned earlier, a comparison of the LD and the LD/ADHD groups revealed that the two groups did not differ significantly on most of the facets of self-concept, and the only significant difference between the LD and LD/ADHD groups emerged on peer-relation self-concept. The results, therefore, negate the proposition of

Hypothesis 2, that LD/ADHD students would report lower academic self-concept than the LD and normally achieving groups.

Table 7.7  
Percentile scores on self-concept scales for normally achieving, LD and LD/ADHD groups.

| Self-concept Scales       | Normally Achieving<br>(n = 86) | LD<br>(n = 44) | LD/ADHD<br>(n = 42) |
|---------------------------|--------------------------------|----------------|---------------------|
|                           | Percentiles                    | Percentiles    | Percentiles         |
| Reading                   | 51                             | 27             | 24                  |
| Mathematics               | 50                             | 33             | 29                  |
| General-school            | 54                             | 39             | 30                  |
| Parent-relation           | 50                             | 29             | 29                  |
| Peer-relation             | 50                             | 38             | 25                  |
| Physical-ability          | 39                             | 39             | 45                  |
| Physical-appearance       | 46                             | 46             | 53                  |
| General-self              | 50                             | 31             | 25                  |
| Academic self-concept     | 50                             | 27             | 23                  |
| Non-academic self-concept | 48                             | 41             | 41                  |
| Total Self-concept        | 50                             | 33             | 26                  |



**7.4.2 Group differences on academic attributional style.**

Hypothesis 2a: students with LD and students with LD/ADHD would report significantly lower scores for academic attributional style than normally achieving peers.

Table 7.8 identifies the mean scores and the standard deviations for positive attributional style, negative attributional style and overall attributional style for three groups. The academic attributional style of the subjects was assessed with the Academic Attributional Style Questionnaire. A high score for positive attributional style was indicative of a more adaptive academic attributional style, whereas a high score for negative attributional style indicated a maladaptive academic attributional style. An overall attributional style was the difference of scores for the positive attributional style and the negative attributional style. If this difference resulted in a positive score it indicated an overall positive academic attributional style. However, when the difference resulted in a negative score, this indicated an overall negative academic attributional style.

The students with LD and with LD/ADHD, compared to normally achieving students, reported lower scores for positive academic attributional style and higher scores for negative attributional style (see Table 7.8). Thus they seemed to have an overall negative academic attributional style.

In order to test whether the three groups differed significantly on academic attributional style, a MANOVA for group (3) by gender (2) for the two dimensions of

attributional style (positive attributional style and negative attributional style) was conducted. Results revealed a significant group effect: multivariate (Wilks' Lambda)  $F(4, 330) = 29.45, p < .001$ , while overall gender effect was not significant.

Table 7.8  
Means and Standard Deviations for the normally achieving, LD, and LD/ADHD groups on the Positive and Negative attribution scales of the AASQ.

| Dimensions of Academic Attributional Style | Normally achieving (n = 86) | LD (n = 44)  | LD/ADHD (n = 42) |
|--|-----------------------------|--------------|------------------|
|  | Mean (SD)                   | Mean (SD)    | Mean (SD)        |
| Positive attributional style               | 7.42 (1.80)                 | 4.91 (1.88)  | 5.19 (1.90)      |
| Negative attributional style               | 3.41 (1.59)                 | 6.39 (1.79)  | 5.98 (1.94)      |
| Overall attributional style                | 4.01 (2.13)                 | -1.48 (2.14) | -0.79 (2.55)     |

The Univariate analysis revealed that the three groups differed significantly on positive attributional style,  $F(2, 166) = 31.90, p < .001$ , negative attributional style,  $F(2, 166) = 41.06, p < .001$  and overall attributional style,  $F(2, 166) = 97.26, p < .001$ . The results revealed that the students with LD and with comorbid LD/ADHD, in contrast to the normally achieving students, had high-negative and low-positive academic attributional style. From these results it can be seen that the students with

LD and students with comorbid LD/ADHD demonstrated an overall negative attributional style whereas normally achieving students reported an overall positive attributional style for academic success and failures. These results supported hypothesis 2a.

Hypothesis 2b: Students with comorbid LD/ADHD would report more negative attributional style than would students with LD.

In the post hoc analysis the Bonferroni test was used to determine which groups differed from one another significantly. Post-hoc analysis revealed that students with LD and students with comorbid LD/ADHD did not differ significantly from each other on positive attributional style (mean difference 1.23,  $p > .05$ ), and negative attributional style (mean difference .49,  $p > .05$ ). The results, therefore, could not support hypothesis 2b.

#### **7.4.3 Group differences on academic self-efficacy beliefs.**

Hypothesis 3a: Students with LD and students with LD/ADHD, in comparison to normally achieving peers, would report significantly lower scores on the academic self-efficacy beliefs scale.

Table 7.9 identifies the means and the standard deviations for reading self-efficacy, maths self-efficacy and overall academic self-efficacy beliefs, for the three groups. The mean scores in Table 7.9 suggest that students with LD and students with comorbid LD/ADHD, compared to normally achieving students, had lower scores on reading self-efficacy and maths self-efficacy beliefs scales.

Table 7.9

Means and Standard Deviations on for the normally achieving, LD and LD/ADHD groups on the Reading and Mathematics self-efficacy beliefs of the ASEB-scale

| Academic<br>Self-efficacy<br>Beliefs        | Normally<br>achieving | LD           | LD/ADHD      |
|---|-----------------------|--------------|--------------|
|   | (n = 86)              | ( n = 44)    | (n = 42)     |
|   | Mean (SD)             | Mean (SD)    | Mean (SD)    |
| Self-efficacy beliefs<br>for Reading        | 29.53 (4.33)          | 22.20 (4.03) | 22.24 (5.19) |
| Self-efficacy beliefs<br>for Mathematics    | 27.41 (5.03)          | 21.66 (3.77) | 20.98 (4.66) |
| Composite academic<br>self-efficacy beliefs | 28.47 (3.54)          | 21.93 (3.42) | 21.61 (4.51) |

In order to examine whether the three groups differed significantly on academic self-efficacy beliefs, a MANOVA, for group (3) by gender (2) for the two dimensions of academic self-efficacy (reading self-efficacy and mathematics self-efficacy beliefs) was conducted. Using Wilks' criterion, the results revealed a significant group effect: multivariate  $F(4, 332) = 18.43, p < .001$ . Gender differences were not significant.

Univariate analysis revealed a significant group effect for reading self-efficacy beliefs,  $F(2, 166) = 37.12, p < .001$ , mathematics self-efficacy beliefs,  $F(2, 166) = 24.11, p < .001$ .

.001, and composite self-efficacy beliefs,  $F(2, 166) = 28.47, p < .001$ . These results provide support for hypothesis 3a.

Hypothesis 3b: Students with LD/ADHD would report lower scores on the academic self-efficacy belief scale compared to the students with LD.

Post-hoc analysis with a Bonferroni test was computed to compare the three groups (LD, LD/ADHD and NA) on academic self-efficacy beliefs. Results revealed that students with LD and with comorbid LD/ADHD did not differ significantly on reading self-efficacy beliefs (mean difference .04,  $p > .05$ ) and mathematics self-efficacy beliefs (mean difference .68,  $p > .05$ ). However both the LD and the LD/ADHD groups, compared to normally achieving peers, had significantly lower scores for reading and maths self-efficacy beliefs. The results negated the proposition of hypothesis 3b.

#### **7.4.4 The relationship between academic self-concept, academic attributional style and academic self-efficacy beliefs.**

Hypothesis 4 assumed that the students with lower academic self-concept would also demonstrate poor academic self-efficacy beliefs and a negative academic attributional style. Hence a positive correlation was expected between the scores of academic self-concept, academic self-efficacy beliefs and academic attributional style.

To examine the relationship between academic self-concept, academic attributional style and academic self-efficacy beliefs, Pearson correlation coefficients were computed

between the scores of these three dependent variables. Results, presented in Table 7.10, indicate that positive attributions were significantly and positively correlated with academic self-concept (.46), reading self-concept (.40), mathematics self-concept (.39) and school self-concept (.38). Positive attributions were less correlated with non-academic self-concept (.18) and general self-concept (.18).

Negative attributions were significantly and negatively correlated with academic self-concept (- .27), reading self-concept (- .29) and general self-concept (- .26). While negative attributions were negatively (but not significantly) correlated with mathematics self-concept (- .22), school self-concept (- .16) and non-academic self-concept (- .07).

Reading self-efficacy beliefs were significantly and positively correlated with reading self-concept (.65), academic self-concept (.63), and school self-concept (.54), while they were not significantly correlated with non-academic self-concept (.21). Self-efficacy beliefs for mathematics was positively and significantly correlated with mathematics self-concept (.66), academic self-concept (.63) and school self-concept (.59).

Composite academic self-efficacy was significantly and positively correlated with academic self-concept (.64), reading self-concept (.64), mathematics self-concept (.53) and school self-concept (.55). It was not significantly correlated with non-academic self-concept (.22).

Table 7.10

Correlation between the facets of self-concept measured by the SDQ-1, dimensions of academic attributional style measured by the AASQ and the dimensions of academic self-efficacy beliefs measured by the ASEB-Scale, for the study sample.

| Academic attributions and<br>academic self-efficacy | Academic<br>self-concept | Non-academic<br>self-concept | Reading<br>self-concept | Mathematics<br>self-concept | School<br>self-concept | General<br>self-concept |
|---|--------------------------|------------------------------|-------------------------|-----------------------------|------------------------|-------------------------|
| Positive attributions                               | 0.46**                   | 0.18                         | 0.40**                  | 0.39**                      | 0.38**                 | 0.18                    |
| Negative attributions.                              | -0.27*                   | -0.07                        | -0.29*                  | -0.22                       | -0.16                  | -0.26*                  |
| Overall Attributional style                         | 0.47**                   | 0.16                         | 0.45**                  | 0.39**                      | 0.35**                 | 0.28*                   |
| Self-efficacy Maths.                                | 0.63**                   | 0.22                         | 0.38**                  | 0.66**                      | 0.59**                 | 0.46**                  |
| Self-efficacy Reading                               | 0.63**                   | 0.21                         | 0.65**                  | 0.30**                      | 0.54**                 | 0.44**                  |
| Composite Self-efficacy                             | 0.64**                   | 0.22                         | 0.64**                  | 0.53**                      | 0.55**                 | 0.51**                  |

\*P < .01, \*\*p < .00

These results are in the predicted directions. They indicate that students with poor academic self-concept also demonstrated lowered academic self-efficacy beliefs and a negative academic attributional style. The results do support the proposition of hypothesis 4, that there would be a positive relationship between the scores of academic self-concept, academic self-efficacy beliefs and academic attributional style.

#### **7.4.5 Gender related and Grade related differences on the dependent variables**

Table 7.11 presents mean scores and standard deviations of girls and boys in the three groups on the dependent variables. Table 7.12 presents means and standard deviations of students in Grade 3 to 6 in the three groups on the dependent variables.

In order to test gender differences and grade differences within each group on the dependent variables three separate MANOVAs were carried out. The first MANOVA was computed for 3 (groups) by 2 (genders) by 4 (grades) for three dimensions of self-concept (academic self-concept, non-academic self-concept and general self-concept).

Results revealed no significant gender effect, multivariate (Wilk's criterion)  $F(3, 146) = 1.86$   $p > .05$ , and no significant group by gender interaction effect, multivariate (Wilk's criterion)  $F(6, 294) = 0.56$ ,  $p > .05$ , for the self-concept dimensions. Thus there was no statistically significant difference in the self-concept of girls and boys within each group.



Table 7.11

Means and Standard Deviations for girls and boys in three groups, on different scales of self-concept, academic self-efficacy beliefs and academic attributional style.

| Self-concept, Self-efficacy<br>And Attributional Style. | Normally<br>Achieving |             | LD          |             | LD/ADHD     |             |
|---|-----------------------|-------------|-------------|-------------|-------------|-------------|
|   | Male                  | Female      | Male        | Female      | Male        | Female      |
|   | (n = 63)              | (n = 23)    | (n = 33)    | (n = 11)    | (n = 30)    | (n = 12)    |
|   | Mean(SD)              | Mean(SD)    | Mean(SD)    | Mean(SD)    | Mean(SD)    | Mean(SD)    |
| Academic Self-concept                                   | 31.08(3.81)           | 30.67(4.86) | 26.24(7.11) | 25.09(6.19) | 24.81(7.67) | 25.53(6.87) |
| Non-academic Self-concept                               | 31.45(3.82)           | 32.64(4.54) | 31.12(3.24) | 30.84(5.24) | 30.56(4.54) | 31.92(3.58) |
| General self-concept                                    | 33.86(4.64)           | 34.09(5.85) | 31.64(6.13) | 28.64(5.90) | 29.40(6.53) | 31.83(5.92) |
| Self-efficacy Math                                      | 27.35(4.58)           | 27.57(6.20) | 21.33(3.81) | 22.64(3.64) | 20.67(4.92) | 21.75(4.03) |
| Self-efficacy Reading                                   | 29.59(4.53)           | 29.39(3.82) | 21.82(4.28) | 23.36(3.04) | 21.63(5.66) | 23.75(3.55) |
| Positive attributions                                   | 7.25 (1.86)           | 7.87 (1.60) | 5.03 (2.07) | 4.55 (1.13) | 5.10 (1.86) | 5.42 (2.07) |
| Negative attributions                                   | 3.48 (1.67)           | 3.22 (1.35) | 6.27 (1.88) | 6.73 (1.56) | 6.13 (2.11) | 5.58 (1.44) |

Table 7.12: Means and Standard Deviations for the normally achieving, LD and LD/ADHD groups, on the dependent variables across all Grades levels.

| Student's Category                 | Grade 3      | Grade 4      | Grade 5      | Grade 6      |
|------------------------------------|--------------|--------------|--------------|--------------|
|                                    | Mean (SD)    | Mean (SD)    | Mean (SD)    | Mean (SD)    |
| <b>Normally Achieving (n = 86)</b> |              |              |              |              |
| Academic self-concept              | 32.99 (3.48) | 29.47 (4.52) | 31.17 (3.50) | 28.79 (3.46) |
| Non-academic self-concept          | 32.83 (3.90) | 30.50 (3.58) | 32.23 (4.86) | 30.92 (3.68) |
| General self-concept               | 34.78 (4.47) | 32.73 (5.10) | 34.13 (6.11) | 33.63 (4.53) |
| Self-efficacy maths                | 29.16 (4.93) | 27.05 (5.14) | 26.63 (5.29) | 25.19 (3.29) |
| Self-efficacy reading              | 30.66 (4.33) | 28.82 (4.53) | 29.25 (4.02) | 28.56 (4.24) |
| Positive attributions              | 7.75 (1.90)  | 6.73 (1.75)  | 6.73 (1.75)  | 7.56 (1.63)  |
| Negative attributions              | 3.63 (1.72)  | 3.82 (1.68)  | 3.06 (1.18)  | 2.75 (1.39)  |
| <b>LD group ( n = 44)</b>          |              |              |              |              |
| Academic self-concept              | 25.89 (7.06) | 24.07 (7.97) | 26.05 (3.46) | 25.78 (7.23) |
| Non-academic self-concept          | 31.03 (3.28) | 31.15 (3.34) | 31.86 (4.55) | 30.36 (4.95) |
| General self-concept               | 30.11 (6.63) | 32.40 (4.97) | 32.86 (6.67) | 29.22 (6.16) |
| Self-efficacy maths                | 22.28 (4.66) | 21.60 (3.92) | 20.86 (2.79) | 21.11 (2.32) |
| Self-efficacy reading              | 21.89 (5.07) | 22.20 (3.99) | 23.86 (3.13) | 21.56 (2.01) |
| Positive attributions              | 5.11 (2.25)  | 4.60 (1.96)  | 4.71 (0.95)  | 5.00 (1.73)  |
| Negative attributions              | 6.50 (2.15)  | 6.20 (1.87)  | 6.00 (1.15)  | 6.67 (1.50)  |
| <b>LD/ADHD group ( n = 42)</b>     |              |              |              |              |
| Academic self-concept              | 22.48 (6.27) | 25.03 (5.42) | 27.48 (7.22) | 25.76 (9.32) |
| Non-academic self-concept          | 29.82 (4.94) | 30.92 (4.11) | 33.39 (3.68) | 30.11 (3.33) |
| General self-concept               | 29.21 (7.20) | 30.75 (6.38) | 30.33 (4.80) | 30.43 (7.61) |
| Self-efficacy maths                | 18.21 (5.39) | 22.33 (3.60) | 22.67 (3.87) | 22.00 (3.83) |
| Self-efficacy reading              | 18.86 (5.53) | 23.17 (2.92) | 22.89 (3.98) | 26.57 (5.50) |
| Positive attributions              | 4.29 (1.44)  | 5.92 (1.93)  | 5.56 (1.59)  | 5.29 (2.63)  |
| Negative attributions              | 6.36 (2.10)  | 5.92 (1.83)  | 5.57 (1.94)  | 5.86 (2.12)  |

The results also indicated no significant grade effect, multivariate (Wilk's criterion)  $\underline{F}$  (9, 355) = 1.85,  $p > .05$ , and no significant group by grade interaction effect for the self-concept dimensions: multivariate (Wilk's criterion)  $\underline{F}$  (18, 444) = 1.67,  $p > .05$ . It shows that the students in Grades 3 to 6 (within each group) did not differ significantly on their self-concept scores.

The second MANOVA was computed for 3 groups by 2 genders by 4 grades for the two dimensions of academic attributional style. Results revealed no significant gender differences within each group: multivariate (Wilk's criterion)  $F$  (4, 296) = 0.97,  $p > .05$ , and no significant grade differences within each group: multivariate (Wilk's criterion)  $F$  (12, 296) = 1.01,  $p > .05$ , for the two dimension of academic attributional style. The results therefore suggest no significant difference in attributional style between girls and boys within each group and between students in Grades 3 to 6 within each group.

A third MANOVA was computed for 3 groups by 2 genders by 4 grades for the two dimensions of academic self-efficacy beliefs. Results revealed no significant group by gender effect, multivariate (Wilk's criterion)  $F$  (4, 296) = 0.14,  $p > .05$ . Thus girl and boy students within each group did not differ significantly on academic self-efficacy beliefs. The results also indicated no significant group by grade effect: multivariate (Wilk's criterion)  $F$  (12, 296) = 1.66,  $p > .05$ . Thus students in Grades 3 to 6, within each group, did not differ significantly on their academic self-efficacy beliefs.

Previous studies have reported that boys with LD hold lower academic self-concept than girls with LD (Burns, 1982; Chapman, 1988a). However the result of the present study on gender differences revealed that the self-perceptions of boys and girls within each group did not differ significantly. Both girls and boys in each group reported almost similar patterns of self-concept, academic attributional style and academic self-efficacy beliefs. These results negated the proposition of Hypothesis 5a, which assumed that boys would obtain lower scores than girls on the measures of self-concept, academic attributional style and academic self-efficacy beliefs.

Results also indicated that there were no significant differences between the students in Grade 3 to 6, for the dependent variables. These results negate hypothesis 5b, which assumed that students with LD and LD/ADHD in higher grades would report poorer scores in self-concept, academic attributional style and academic self-efficacy beliefs than that of students in lower grades.

## **7.5 Discussion**

This study was an attempt to characterize the extent to which students with LD and students with comorbid LD/ADHD differ from each other and from normally achieving peers, on self-concept, attributional style and self-efficacy beliefs. Results indicated that students with LD and with comorbid LD/ADHD differed significantly from normally achieving students, but not from each other, on academic self-concept, general self-concept, academic attributional style and academic self-efficacy beliefs. The results also

revealed that the three groups did not differ significantly on non-academic self-concept. No significant differences were found between male and female students within each group for any of the dependent variables. Grade comparison within each group revealed no significant difference between students in the higher Grades and in the lower Grades, for any of the dependent variables.

#### 7.5.1 The academic self-concept of students with LD and LD/ADHD.

Most of the previous studies that examined the dimensions of self-concept of students with LD have reported that these students have a poor academic self-concept but their non-academic self-perceptions are almost equivalent to that of normally achieving peers (Chapman, 1988a; Kloomok & Cosden, 1994; Smith & Nagal, 1995). The results obtained in the present study are consistent with the findings of the previous studies. As predicted, the students in both groups LD and LD/ADHD reported significantly lower scores on all facets of academic self-concept than normally achieving peers. Thus the hypothesis that students with LD and students with comorbid LD/ADHD, in comparison to normally achieving students, would report significantly lower scores on all dimensions of academic self-concept was supported.

The hypothesis that the non-academic self-concept of students with LD and students with LD/ADHD would not be significantly different from that of normally achieving peers was also supported by the results. However the hypothesis that the general self-concept of students with LD and students with LD/ADHD would not be significantly different from that of normally achieving peers was not supported. The results revealed

that students in both groups (LD and LD/ADHD) had significantly poor general self-concept than normally achieving peers.

The hypothesis that students with comorbid LD/ADHD, in comparison to students with LD, would report lower scores on academic self-concept as well as on non-academic self-concept and general self-concept was not supported. A comparison of the two groups indicated no significant differences between the students with LD and students with comorbid LD/ADHD on academic, non-academic and general self-concepts.

Chapman, (1988a), in a review of research on the self-concept of students with LD, reported that 81% of students with LD had lower academic self-concept than the average normally achieving student and that the average LD student had an academic self-concept score that was around the 19<sup>th</sup> percentile. The results of the present study are in line with those reported by Chapman (1988a). In the present study, the average academic self-concept score of students with LD lies at the 27<sup>th</sup> percentile and that of students with LD/ADHD at the 23<sup>rd</sup> percentile as compared to the 50<sup>th</sup> percentile for normally achieving peers.

Many factors are responsible for the lowered academic self-perceptions in students with learning difficulties (Mercer, 1997). Academic self-concept has been found to be strongly related to academic intrinsic motivation in students with LD (Grolnick & Ryan, 1990; Schunk, 1991). In a review of research on self-concept in adolescents with LD, McPhail and Stone (1995) examined the factors said to be related to the formation of

self-concept. They also examined the relationship between self-concept and the motivation to learn. The researchers suggested that motivation to learn was greater in those adolescents with LD who had higher levels of self-concept. Students with LD generally possess low academic motivation and frequently demonstrate unfavorable attitudes towards school learning (Wilson & David, 1994), this may result in a lowered academic self-concept.

Another factor, which might have contributed to the lowered academic self-concept of students with LD and with LD/ADHD in the present study, could be the frame of reference effect. Marsh (1984b) and Marsh and Parker (1984) proposed a frame of reference model called the big fish, little pond effect (BFLPE). In this model, it is suggested that “students compare their own academic ability with the academic abilities of their peers and use this social comparison impression as one basis for forming their own academic self-concept.” (Marsh & Craven, 1997, pp. 160-161). Students with LD and LD/ADHD in the present study were integrated into regular classes and they tend to compare their academic performance to their regular classmates. As a result, the students with LD and with LD/ADHD were likely to feel academically less competent.

Other researchers have also reported the effects of social comparison in the formation of academic self-concept of students with LD. For example, Harter (1986) suggested that students with LD routinely compare their scholastic performance to the regular classroom students. As a result LD children’s academic self-perceptions are considerably lower than the mean for normally achieving children.

It suggests that the LD children's placement in regular classes may have a negative impact on their self-concept. In a meta-analysis of studies on the self-concept of students with LD, Chapman (1988a) compared the studies examining the impact of segregation on students with LD in different settings (completely segregated in special classes, partially integrated into regular classes, completely integrated "unplaced" in regular classes). The researcher found the LD children in all three settings had poorer self-concept compared to non-LD children. However the LD children in a completely integrated setting had the lowest academic self-concept of all the LD children. Fully segregated children had higher academic self-concept than the partially integrated children. These results indicate that the LD children's placement in regular classes may have a negative impact on their self-concept.

Marsh and Johnston (1993) also reported that moving LD children from special classes (fully segregated) into regular classes was likely to result in lower academic self-concept for LD children. Thus students with LD in regular classes may be likely to feel less academically able in comparison to normally achieving classmates.

When comparing LD students with LD/ADHD students, no significant differences emerged between the two groups for academic self-concept, non-academic self-concept and general self-concept. Although the LD/ADHD group reported the lower mean scores and percentile scores for most of the facets of self-concept compared to the LD group, the differences between the two groups were not statistically significant.



One explanation for these findings could be that ADHD comorbidity did not have a significant negative impact on the self-perceptions of students with LD/ADHD. This finding, however, runs contrary to the assumptions made in the hypotheses in this study. In a recent study, Tirosh, Berger, Cohen-Ophir, Davidovitch, and Cohen (1998) have reported almost similar findings. In the Tirosh et al.'s study, the academic, behavioral and emotional aspects of students with LD and students with comorbid LD/ADHD were assessed. No significant differences for academic self-perceptions, between students with LD and with comorbid LD/ADHD, were reported. They concluded that academic self-perception of LD/ADHD children was not significantly influenced by their comorbidity with ADHD. Results of the present study also indicate that the presence of ADHD may not have a significant negative impact on the academic self-perceptions of students with LD/ADHD but the presence of learning difficulties does have a significant negative influence on their academic self-perceptions.

Although students with comorbid LD/ADHD compared to students with LD in the present study reported lower percentile scores for different facets of academic self-concept (see Table 7.7), the differences between the two groups were not statistically significant. Perhaps a larger sample would have made more conclusive results concerning the additional impact of ADHD comorbidity in the academic self-perceptions of children with LD/ADHD. In spite of the fact that the present study includes comparative data on the self-perceptions of all three groups of students (LD, LD/ADHD and NA) the results are, however, limited by not including a group of children who have ADHD without LD. The addition of a group of students with ADHD

but with no LD might be needed to further clarify the role of ADHD comorbidity in the self-perception of students with LD/ADHD.

The only statistically significant difference between the students with LD and with comorbid LD/ADHD, in the present study, was found on peer-relation self-concept. The students with LD/ADHD reported the lowest peer-relation self-concept scores of either of the LD and the NA groups. These results indicate that ADHD comorbidity may affect the non-academic areas like social relations or peer relations of students with comorbid LD/ADHD.

Studies have reported that students with learning and behavioral problems usually have poor peer relationships (Harter, 1998; Hinshaw & Melnick, 1995). For instance Hinshaw and Melnick (1995) reported that children with ADHD display a number of annoying and intrusive interpersonal behaviors with peers and “the peer domain is decidedly problematic for this population” (p. 629). Harter (1998) suggests that students with learning and behavioral difficulties may experience some social isolation and that they view themselves as different from the others, thus they are expected to report lower peer likability as compared to the normally achieving peers.

In the present study, the finding that peer-relation self-concept of the LD/ADHD group is quite low suggests that ADHD related problems like impulsivity and hyperactivity may reduce social acceptance for children with LD/ADHD. This in turn may have a negative impact on their peer-relation self-concept. However in view of

the fact that in the present study the only significant difference between students with LD and with LD/ADHD existed in relation to peer-relation self-concept, it would not appear that the main features of their academic self-concept are significantly affected by the presence of ADHD.

In terms of general self-concept, the findings in previous studies are equivocal about whether students with LD differ or not from normally achieving children (Ashman & Elkins, 1998). The results of the present study indicated that the students with LD and with LD/ADHD held significantly lower general self-concept than did the normally achieving classmates. The general self-concept as measured by the SDQ-1 (Marsh, 1990) reflects the child's '*self-esteem*' or perception of himself or herself as an effective capable individual, proud of and satisfied with the way he or she is (Marsh, 1990). In the present study the average general-self-concept of students with LD lies at the 31<sup>st</sup> percentile and that of the LD/ADHD at the 25<sup>th</sup> percentile as compared to the 50<sup>th</sup> percentile for normally achieving group. Although students with LD reported lower general self-concept, the findings revealed that students with comorbid LD/ADHD hold the lowest general self-concept compared to their LD and normally achieving peers.

Researchers have suggested some reasons for the lowered general self-concept or self-worth of students with LD. For instance, Harter et al. (1998) suggest that 'discounting' is a potential mechanism for protecting one's self-worth. Students with LD who discount the importance of academic weaknesses in order to build their self-confidence may have high general self-concept, whereas students who feel difficulty in discounting

their weaknesses may have lower self-worth. After examining the domain specific and global self-evaluation of adolescents with LD, Harter et al. (1998) found that students with LD had difficulty in discounting the importance of the particular domains in which they feel they are less competent. As a result students with LD experience lowered self-worth. Similar reasons can also account for the lower general self-perceptions reported by the students with LD and LD/ADHD in the present study. Given that the students with LD and LD/ADHD in the present study had significant difficulties in academic areas like reading and mathematics, were attending regular schools, and were comparing themselves with normally achieving peers, it might be difficult for them to discount their academic difficulties within the environment in which they perceived themselves. Students with LD and with comorbid LD/ADHD in the present study, therefore, had significantly poorer general self-concept compared to normally achieving classmates.

#### 7.5.2 The academic attributional style of students with LD and LD/ADHD.

The hypothesis that the students with LD and students with comorbid LD/ADHD, in comparison to normally achieving peers, would report significantly negative academic attributional style was supported. However, the hypothesis that the students with comorbid LD/ADHD would report more negative academic attributional style than would the students with LD was not supported. The results revealed that both the LD and the LD/ADHD groups reported significantly lower scores for positive attributions than normally achieving peers. Both groups (LD and LD/ADHD) demonstrated an overall negative attributional style whereas normally achieving students reported an overall positive attributional style for academic success and failures.

These findings suggest that both the LD and LD/ADHD students differ from normally achieving classmates in their explanations for success and failure. In success situations they may believe that this success is due to external factors rather than their own talents or abilities. And in failure situations both the students with LD and with comorbid LD/ADHD may believe that this failure is related to their own lack of capabilities. The results shows that LD and comorbid LD/ADHD students are less likely than their normally achieving classmates to interpret success as an indication of their ability but do in fact take personal responsibility for failure.

These findings regarding attributions of students with LD are in line with those reported in other studies (Bryan, 1986; Chapman & Boersma, 1979; Cooley & Ayres, 1988; Pearl, 1982, 1992; McInerney, 1999). Previous studies have also reported that students with ADHD hold negative attributional patterns (Hoza et al., 1993; Hoza, Waschbusch, Pelham, Molina & Milich, 2000; Milich, et al., 1991). In a recent study, Hoza, et al. (2000) compared the attributional responses of boys with ADHD and control boys to social success and failure. The boys with ADHD, as compared to controls, were more likely to attribute their success to external and uncontrollable factors such as the task being easy or their being lucky. However the attributional patterns of students with comorbid LD/ADHD have not been studied extensively.

Results from the present investigation indicate that both the students with LD and students with comorbid LD/ADHD have an overall negative attributional style for academic success and failure. These maladaptive attributional patterns may prevent

LD and LD/ADHD children from taking credit for any positive outcomes related to their efforts. Negative attributions may hinder LD children from developing self-worth even when they experience success (Bryan, 1986). Therefore it is very important to identify and intervene with the maladaptive attributional patterns of students with LD and with LD/ADHD.

### 7.5.3 The academic self-efficacy beliefs of students with LD and LD/ADHD.

The hypothesis that the students with LD and students with LD/ADHD, in comparison to normally achieving peers, would report significantly lower scores on the academic self-efficacy belief scales was supported by the results. However the hypothesis that the students with LD/ADHD would report lower scores on the academic self-efficacy beliefs scales than would the students with LD was not supported. When comparing the LD group with the LD/ADHD group, no significant differences for overall academic self-efficacy beliefs were found between the two groups. Both the LD and the LD/ADHD groups reported significantly lower academic self-efficacy beliefs than normally achieving group.

On the basis of these results, it can be argued that the academic self-efficacy beliefs of LD/ADHD children were not significantly influenced by their ADHD comorbidity.

As mentioned in the previous chapters, the self-efficacy beliefs and the specific attributional patterns of students are usually related to their self-perceptions. Recent studies (Bandura, 1997; Bong & Clark, 1999; Pajares, 1996) have also suggested a positive relationship between self-efficacy beliefs and self-concept. Bandura (1997)

suggests that feelings of self-worth may be strongly influenced by one's efficacy beliefs. According to Bandura, children's beliefs about themselves, in spite of their actual abilities, have a strong impact on how well they perform. Academic attributions influence academic self-efficacy and academic self-concept. Thus self-efficacy beliefs, attributional style and self-concept seem to influence each other.

According to Bong and Clark (1999), a higher level of self-efficacy is always accompanied by enhanced intrinsic motivation, more favorable self-reaction and more adaptive attributional patterns. These relationships imply that students whose academic self-efficacy beliefs are stronger and/or whose academic attributional patterns are positive are more likely to demonstrate a positive academic self-concept. Thus the nature of a student's academic self-concept can not be explored fully without exploring their academic self-efficacy beliefs and academic attributional patterns.

#### 7.5.4 The relationship between academic self-concept, academic attributional style and academic self-efficacy beliefs

The study also explored the relationship between academic self-concept, academic attributional style and academic self-efficacy beliefs. The hypothesis that the students who would report lower scores on academic self-concept would also demonstrate lowered academic self-efficacy beliefs and a negative academic attributional style was supported. As predicted students with poor academic self-concept (both the LD and LD/ADHD groups) reported a negative academic attributional style and poor academic self-efficacy beliefs than normally achieving students. These results supported the

assumption that academic self-concept, academic self-efficacy beliefs and academic self-attributions are closely related to each other.

Studies conducted by Schunk (1984a, 1990a) and Bandura (1982) have also verified some linkage between self-efficacy and self-attributions. According to Schunk (1990) attributions are a source of efficacy information. Students with a positive attributional style usually believe that they are capable and can achieve results through hard work. This belief promotes their perceived self-efficacy. Thus positive attributions influence performance through their intervening effects on self-efficacy beliefs.

Marsh in 1984a and Marsh et al in 1984 have demonstrated a positive link between self-concept and self-attributions. Marsh, therefore, argued that changes in self-attributions would be associated with changes in self-concept. In the present investigation, both the magnitude and the patterns of correlation between academic self-concept and academic attributional style supported Marsh's (1984a) postulation that self-concept is closely linked with self-attributions.

The results of the present investigation have shown that self-concept is closely related to self-attributions and self-efficacy beliefs. This finding has important implications for self-concept enhancement intervention as it suggests that the poor academic self-concept of students with LD and students with comorbid LD/ADHD may be able to be changed by changing their maladaptive attributional style and improving their self-efficacy beliefs.



#### 7.5.5 Gender related and Grades related differences in self-perceptions

The hypothesis that boys, in comparison to girls in LD and LD/ADHD groups would obtain lower scores on the measures of self-concept, academic attributional style and academic self-efficacy beliefs was not supported. The result of the present study on gender differences revealed that the self-perceptions of boys and girls within each group (NA, LD and LD/ADHD) did not differ significantly. Both girls and boys in each group reported almost similar patterns of self-concept, academic attributional style and academic self-efficacy beliefs.

The hypothesis that the students with LD and with comorbid LD/ADHD in higher grades would report more decrements in academic self-concept, academic attributional style and academic self-efficacy beliefs than would students in lower grades was not supported. The results revealed that the students with LD and with comorbid LD/ADHD in higher grades (Grade 5 and 6) as well as in lower grades (Grade 3 and 4) reported significantly lower scores on academic self-concept and general self-concept as compared to normally achieving classmates. These results may suggest that the academic self-perceptions of students with LD and with LD/ADHD do not improve over time.

Contrary to the findings of some earlier studies (Silverman & Zigmond, 1983; Russell, 1974) the results of present study could not provide any evidence that the self-concept of students with LD decline over time. However consistent with the findings of other studies (Kistner et al., 1987; Bear, Juvonen & McInerney, 1993), our results suggest

that the lowered self-perceptions of LD and LD/ADHD students remained stable over time. Whilst this finding suggests that the lowered levels of self-perceptions do not worsen, the converse of this conclusion is that they also do not improve during the elementary years.

Previous research (Magg & Behrens, 1989; Ritter, 1989) has shown that the negative self-perceptions of students with learning difficulties do not change over time and these perceptions persist into adolescence and even into adulthood. Studies on the self-perceptions of adolescents with LD have also reported that these adolescents have negative self-perceptions and are much more likely to be victims of depression and suicide than normally achieving students (Huntington & Bender, 1993; Bender et al. 1999). It is, therefore, very important to deal effectively with the issue of negative self-perceptions of students with LD and students with comorbid LD/ADHD. It is also imperative that appropriate interventions are made as soon as possible, in order to improve their overall self-perceptions.

When the findings of this study are drawn together, the following picture emerged.

The students with LD and with comorbid LD/ADHD, in comparison to normally achieving students, have a different set of characteristics in relation to their self-perceptions. These characteristics are marked by low academic self-concept that is reflected in poor self-perception of ability and an overall negative attributional style for academic success, along with poor self-efficacy beliefs for achieving success in

academic areas. These findings do suggest that students with LD usually have little confidence in their abilities and such negative characteristics may even impede their attempts to overcome their failures when asked to work on remediation exercises or when engaged in regular learning tasks. Further the negative self-perceptions of students with LD and with LD/ADHD do not change over time thus appropriate interventions are needed at an early stage.

### Summary of the Chapter

This study contributes to the literature on the self-concept of students with LD and results clearly demonstrate that students with LD differ from their normally achieving peers on many factors like academic self-concept, academic attributional style and academic self-efficacy beliefs. These factors are usually considered to be important for a successful learning. By including a sample of students with comorbid LD/ADHD this study also provides a wider picture of self-perceptions of LD children who have a comorbid condition such as ADHD.

The significance of this study also lies in the findings of a positive correlation between academic self-concept, academic attributional style and academic self-efficacy beliefs. These results provide further support to the argument presented by some researchers (Cooley & Ayres, 1988; Craven et al., 1991; Marsh, 1984a; Marsh et al., 1984) in relation to a reciprocal relationship between self-concept and self-attributions. The present investigation has shown that self-concept is closely related to self-attributions and also to self-efficacy beliefs. Thus the lowered academic self-perceptions of

students with LD and with comorbid LD/ADHD may be able to be improved by changing their maladaptive attributional style and/or enhancing their self-efficacy beliefs. On the basis of these findings an intervention program for the enhancement of academic self-concept for students with LD and students with comorbid LD/ADHD was implemented. This program and its outcomes are presented in the next chapter.

## **STAGE-THREE**

### **CHAPTER EIGHT**

#### **SELF-CONCEPT ENHANCEMENT FOR STUDENTS WITH LD AND STUDENTS WITH COMORBID LD/ADHD.**

##### **8.1 Rationale**

This stage of the present research aimed to investigate the effectiveness of attributional retraining for the enhancement of academic self-concept of students with LD and with comorbid LD/ADHD. As mentioned in the earlier chapters, researchers have suggested a close relationship between self-concept, attributional style, and self-efficacy beliefs (Cooley & Ayres, 1988; Craven et al., 1991; Marsh et al., 1984; Schunk, 1984, 1991). Results obtained from Stage Two of this thesis have also verified that the nature of the relationship between these three variables appears to be largely reciprocal. It is possible therefore, as suggested by Marsh et al. (1984), that changes in one variable may result in changes in the others. This finding implies that self-concept can be changed by changing attributional style and/or modifying self-efficacy beliefs. Thus attributional retraining could be an effective technique in enhancing self-concept.

Attributional retraining techniques have been found successful in enhancing the academic self-concept of normally achieving students (Craven et al., 1991; Craven, 1996). It might be possible that similar techniques would also be effective in enhancing the academic self-concept of students with learning difficulties. The literature on self-concept enhancement has a number of studies that were conducted with normally

achieving students, but there is a paucity of self-concept enhancement studies for students with LD and with comorbid LD/ADHD. It was, therefore, considered important to examine the effectiveness of the attributional retraining technique in enhancing the academic self-concept of students with learning and attentional difficulties.

### Aims of the study

As mentioned in Chapter 3, researchers (Harter, 1998; Marsh & Craven, 1997) have suggested that a self-concept enhancement intervention program might be more successful when specific facets of self-concept are targeted and the targeted areas of self-concept are logically related to the goals of the intervention. They also suggested the use of appropriate instruments that specifically measure the constructs that are the target of the intervention and also include the instruments that measure the actual processes thought to be responsible for self-concept change. Based on these guidelines the present investigation sought to enhance the academic self-concept of students with LD and with LD/ADHD, utilizing attributional retraining techniques.

The basic concept in the present intervention program was derived from the suggested reciprocal links between self-concept and self-attributions (Craven, 1996; Craven et al., 1991; Marsh et al., 1984; Weiner, 1986). It was assumed that a positive change in academic attributions would be associated with a positive change in academic self-concept. Self-efficacy beliefs of the participants were not targeted directly in this intervention. However, considering a positive relationship between attributions and

self-efficacy beliefs (Bandura, 1982; Schunk, 1990b) it was expected that as a result of this intervention the students would also experience a positive change in their academic self-efficacy beliefs.

The participants in this study were students with LD and with comorbid LD/ADHD who reported significantly poor academic self-concept but whose non-academic self-concept was not significantly different from that of normally achieving peers. Thus the intervention was designed to enhance their academic self-concept. More specifically the intervention was focused on enhancing reading and mathematics self-concept. The SDQ-1 (Marsh, 1990) was utilized to assess self-concept change in the targeted areas (reading and mathematics). The Academic Attributional Style Questionnaire and the Academic Self-efficacy Belief Scale were also utilized to assess the internal processes of change (change in attributions and change in self-efficacy beliefs) that were assumed to be supporting the changes in academic self-concept.

In order to examine the effects of the intervention a quasi-experimental research design was used in which a waitlist control period was employed. Changes in academic and non-academic self-concept, academic attributional patterns and academic self-efficacy beliefs were compared between the three consecutive periods. The first 8-weeks period was the waitlist control period. No intervention was administered to the participants during this period. The second period of 7-weeks was the experimental period during which attributional retraining sessions were carried out. The third period of 10-weeks was a follow-up period and again no treatment was given during this period.

It was predicted that the changes in the dependent variables (academic self-concept, academic attributional style and academic self-efficacy beliefs) during the experimental period would be significantly larger than changes during the control period, and these changes would be maintained during the follow-up period.

Further, it was expected that the changes would be larger for the targeted areas of self-concept (reading self-concept and mathematics self-concept) than non-targeted areas (non-academic self-concept), and that changes would be higher for the LD group as compared to the LD/ADHD group.

Based on these assumptions the following sets of hypotheses were examined in this study.

## **8.2 Hypotheses**

*Hypotheses about the changes in the dependent variables during the waitlist control period.*

During the waitlist control period no intervention was employed. The first hypothesis examines the changes during this period. Once it can be shown that no changes took place during this period more confidence is established in the effects of the intervention.

Therefore, it was hypothesized that:



### Hypothesis 1

During the waitlist control period (Time 1 - Time 2) no significant changes would occur in the participant's:

- a) Academic self-concept,
- b) Academic attributional style and
- c) Academic self-efficacy beliefs.

*Hypotheses regarding the changes in the dependent variables during the experimental period.*

The intervention was administered for seven weeks during the experimental period (Time 2 – Time 3). It was expected that the intervention would bring a positive change in self-concept, attributional style and self-efficacy beliefs of the participants, therefore it was hypothesized that:

### Hypothesis 2

Following the experimental period (Time 2 - Time 3) significant positive changes would have occurred as a result of the intervention, in relation to participant's:

- a) Academic self-concept,
- b) Academic attributional style and
- c) Academic self-efficacy beliefs.

*Hypotheses about the durability of the intervention's effects.*

The gains in the dependent variables established in the intervention were not expected to fade over time, therefore it was hypothesized that:

### Hypothesis 3

During the follow-up period there would be evidence of the intervention's durability of effects such that no significant changes would occur between Time 3 and Time 4 in the participant's

- a) Academic self-concept,
- b) Academic attributional style and
- c) Academic self-efficacy beliefs.

*Hypotheses about the intervention's effects on the targeted and non-targeted areas of self-concept.*

The intervention program in this study was specifically focused on enhancing reading and mathematics self-concepts of the participants. Non-academic self-concept was not targeted. Therefore significant changes were expected to occur in the targeted areas of self-concept and no changes in the non-targeted areas of self-concept. However, it was possible that due to a transfer effect, some positive changes would also occur in the areas of self-concept related to academic self-concept (i.e., school self-concept). It was, therefore, expected that:

### Hypothesis 4

As a result of this intervention,

- a) Significant positive changes would occur in the targeted areas of self-concept  
(i.e., reading self-concept and maths self-concept),

- b) A smaller positive change would also occur in the related areas of self-concept (i.e., school self-concept) and
- c) No significant change would occur in the areas of self-concept that were not targeted (i.e., non-academic self-concept).

*Hypotheses about the differential effects of the intervention on students with LD and students with comorbid LD/ADHD.*

The participants in this study were students with LD and students with comorbid LD/ADHD. As students with comorbid LD/ADHD may exhibit specific problems related to inattention and restlessness (Green & Chee, 1994), it was possible that as a result of this intervention, the students with comorbid LD/ADHD compared to students with LD would experience less improvement in their self-concept, attributional style and self-efficacy beliefs.

It was, therefore, expected that:

#### Hypothesis 5

The positive changes in academic self-concept, academic attributional style and academic self-efficacy beliefs would be greater for the LD group as compared to the LD/ADHD group.

## 8.3 Method

### 8.3.1 Sample

On the basis of the results obtained from Stage-Two, initially 54 students (32 with LD and 22 with LD/ADHD) whose academic self-concept scores fell at or below the 25<sup>th</sup> percentile were asked if they would participate in the intervention program. However, only 38 students (20 students with LD and 18 students with comorbid LD/ADHD) from four different schools in Sydney, Australia, agreed to participate. These 38 students were predominately male (78.9 %). Female students' involvement was at 21.1 %. The participants were in grades 3 to 6 (mean grades = 4.15, SD = 1.09), and aged from 8 years to 11.6 years (mean age = 9.47 years, SD = 1.13). These students were previously diagnosed for reading and mathematics learning difficulties and they exhibited a significant negative academic attributional style and poor academic self-efficacy beliefs in comparison to normally achieving peers (as already mentioned in Stage-2). No significant difference in socioeconomic status, age or intellectual ability was found between the two participant groups. For further information on selection procedures and characteristics of the subjects in the two groups refer to sections 7.3.1 and 7.3.2 of Chapter Seven.

### 8.3.2 Instruments

The Self-Description Questionnaire-1 (SDQ-1, Marsh, 1990) was used to assess the self-concept of the participants. This instrument has been previously used in self-concept enhancement intervention studies and has demonstrated good reliability and validity (see Chapter 4). The academic attributional style and the academic self-efficacy

beliefs of the participants were assessed with the Academic Attributional Style Questionnaire (the AASQ) and the Academic Self-efficacy Beliefs Scale (the ASEB-Scale) respectively. These two instruments were developed for the present investigation. The development, standardization procedures, reliability and validity of the AASQ and the ASEB-Scale are described in Chapter 6 of the thesis.

### **8.3.3 Procedure**

Approval to conduct this study was obtained from the appropriate Research Ethics Committees at the University of Wollongong, from the New South Wales Department of School Education, from the principals of the schools and from the parents of the participants (see Appendix E). The study was carried out in schools premises. The results previously obtained from Stage-2 indicated that the students in two groups (LD and LD/ADHD) did not differ significantly from each other on their academic self-concept, academic attributional style and academic self-efficacy beliefs. (Although they did differ significantly from normally achieving peers on these variables). The two participant groups (LD and LD/ADHD) also did not differ significantly on age, intellectual ability and social status. Therefore the students in the two groups were combined and were given the same intervention for the enhancement of self-concept.

### **8.3.4 Research Design**

A waitlist control period, pretest posttest design was employed in order to test whether the given intervention was effective. The assessment of self-concept, academic attributional style and academic self-efficacy beliefs were carried out at four different

occasions. At Time 1 (at the beginning of the waitlist control period) the three measures (the SDQ-1, the AASQ and the ASEB- Scale) were administered to the 38 students. No intervention was given during the waitlist period. After an eight-week interval from the first assessment the second assessment (Time 2) was administered to note if any changes in self-concept, attributional style and self-efficacy beliefs had occurred during the waitlist period. The intervention was then conducted for seven weeks during 30 minutes sessions, for two days a week. After the completion of the intervention a third assessment (Time 3) was conducted to note if any changes had occurred during this period. In order to assess whether the overall gains in the self-concept of the participants were maintained over time, a fourth assessment (Time 4) of self-concept, attributional style and self-efficacy beliefs was conducted ten weeks from the third assessment. A visual representation of the research design is given in Figure 8.1.

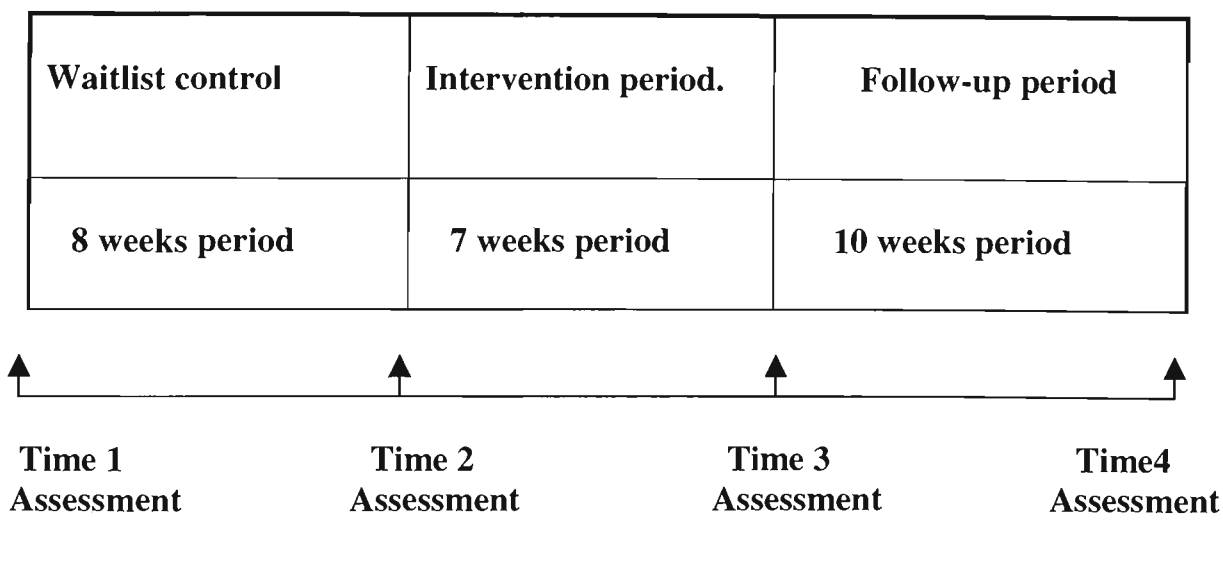


Figure 8.1  
Experimental stages identifying waitlist, intervention and follow up assessments.

### **8.3.5 The intervention strategies**

The intervention employed in the present study was designed to enhance academic self-concept by utilizing an indirect self-concept enhancement approach. Attributional retraining was the main component of the intervention. This attempted to train the students to attribute success (in reading and mathematics) to internal causes (their own ability and effort) and to attribute failure to external causes (task difficulty and/or not using the right strategy to successfully complete the task). Academic self-efficacy beliefs of the participants were not targeted directly.

In the present study attributional training was delivered for reading and mathematics tasks only. These tasks were prepared with the help of the class teachers of the participants and were set according to the grades and ability levels of the students. The tasks were arranged into low and high difficulty level so that feedback could be provided appropriately for each difficulty level. Attributional feedback was given for each reading and mathematics task separately and individually, as soon as student completed the given task.

Consistent with the previous studies (Craven, 1996; Craven et al., 1991) the attributional training involved the following key elements:

- (1) Identifying the fact that child had competently completed the task (“you have done your maths problem well”),

- (2) Attributing success on the task to the child's ability in the subject area ("you obviously have the ability to do well in mathematics"),
- (3) Attributing success on the task to the child's efforts in using the right strategy (you have done that maths task well as you put in effort and used the right strategy").
- (4) Attributing failure on the task to task difficulty and the need to learn the correct strategy coupled with ability attributional statements ("It is a bit of a difficult task but as you have the ability you will be able to work it out by using the correct method"). (Craven, 1996).

The intervention was administered to groups of five students at a time comprising three students with LD and two students with LD/ADHD. Each group received 14 sessions comprising seven sessions for reading attributional retraining and seven sessions for mathematics attributional retraining. During each session attributional feedback was delivered to each of the students individually for each reading and mathematics activity. The groups of students worked in quiet classrooms away from the general classrooms. Posttest assessments were administered at the end of the seven weeks intervention program and the follow up assessment was conducted ten weeks after the completion of the intervention program.

A detailed description of the intervention program and the copies of the reading and mathematics tasks are included in Appendices C and D.



## 8.4 Results

In order to test the hypotheses regarding the intervention's effects on the dependent variables Repeated Measures Multivariate Analysis of Variance (MANOVA) were computed with the scores obtained on four assessments (Time 1, Time 2, Time 3 and Time 4) of the dependent variables for the two groups.

Before analysis the data were explored to test the normality and sphericity assumptions for Repeated Measures MANOVA for the dependent variables in each group as mentioned by Coakes and Steed, (1996). No significant violation of the assumptions was found. Two cases were dropped due to missing data. The remaining 36 subjects were included in the final analysis.

### 8.4.1 Pre-existing group-differences on the dependent variables.

The dependent variables were the scores on the dimensions of self-concept, academic attributional style and academic self-efficacy beliefs. Table 8.1 presents mean scores and standard deviations for the dependent variables for the two groups (LD and LD/ADHD) at Time1, Time 2, Time 3 and Time 4.

In order to test for pre-existing group differences on the dependent variables, the two groups were compared on their scores for the scales of self-concept, academic attributional styles and academic self-efficacy beliefs at Time 2 (at the end of the waitlist period and before the intervention). A 6 x 2 (MANOVA) was computed with the scores of the six dependent variables for the two groups at Time 2.

Table 8.1. Means and Standard Deviations for Self-concept, Academic Attributional Styles and Academic Self-efficacy Beliefs assessed at pre waitlist, pre intervention, post intervention and follow-up for LD and LD/ADHD subjects.

| SUBJECTS WITH LD (n = 18) |                        |                            |                             |                              | SUBJECTS WITH LD/ADHD (n = 18) |                            |                             |                             |  |
|---------------------------|------------------------|----------------------------|-----------------------------|------------------------------|--------------------------------|----------------------------|-----------------------------|-----------------------------|--|
| The dependent variables   | Time 1<br>Pre waitlist | Time 2<br>Pre-intervention | Time 3<br>Post intervention | Time 4<br>10 weeks Follow-up | Time1<br>Pre waitlist          | Time 2<br>Pre-intervention | Time 3<br>Post-intervention | Time4<br>10 weeks Follow-up |  |
|                           | Mean (SD)              | Mean (SD)                  | Mean (SD)                   | Mean (SD)                    | Mean (SD)                      | Mean (SD)                  | Mean (SD)                   | Mean (SD)                   |  |
| Academic self-concept     | 23.18 (4.18)           | 22.81 (4.10)               | 25.29 (4.07)                | 24.76 (4.15)                 | 21.91 (6.98)                   | 21.74 (6.96)               | 23.89 (8.13)                | 23.74 (7.95)                |  |
| Non academic self-concept | 31.16 (4.58)           | 31.19 (4.57)               | 31.08 (3.85)                | 31.13 (4.23)                 | 29.96 (5.69)                   | 30.14 (5.95)               | 30.88 (5.93)                | 30.68 (5.71)                |  |
| Positive Attributions.    | 5.33 (1.90)            | 5.44 (1.97)                | 6.42 (2.00)                 | 6.77 (1.86)                  | 5.16 (1.79)                    | 5.33 (1.78)                | 6.50 (1.81)                 | 6.21 (1.92)                 |  |
| Negative Attributions     | 6.33 (2.27)            | 6.61 (2.20)                | 4.94 (1.58)                 | 5.16 (1.72)                  | 6.61 (1.75)                    | 6.88 (1.71)                | 4.77 (1.55)                 | 5.05 (1.73)                 |  |
| Reading efficacy beliefs  | 20.05 (4.20)           | 20.33 (4.18)               | 22.22 (3.73)                | 22.50 (3.69)                 | 20.50 (4.69)                   | 20.50 (4.55)               | 21.83 (4.23)                | 22.33 (4.41)                |  |
| Maths efficacy Beliefs    | 19.61 (4.04)           | 19.55 (4.00)               | 20.66 (4.13)                | 20.72 (4.32)                 | 19.00 (4.04)                   | 19.22 (4.15)               | 20.21 (4.16)                | 20.22 (4.26)                |  |

Note: Negative attributions show a decrease in scores at T3 which should be noted as a positive trend whereas all the other scales show increase in scores at T3 as indicative of a positive change. LD = students with learning difficulties, LD/ADHD = students with learning difficulties and co-morbid attention deficit hyperactivity disorder.

The results indicated no significant group effect for the combination of the dependent variables at Time 2, multivariate (Wilk's Lambda),  $F(6, 31) = 1.77, p > .05$ . Univariate tests revealed no significant group differences for academic self-concept,  $F(1, 36) = 3.33, p > .05$ , non-academic self-concept,  $F(1, 36) = 0.43, p > .05$ , positive attributions,  $F(1, 36) = 0.76, p > .05$ , negative attributions,  $F(1, 36) = 1.00, p > .05$ , reading self-efficacy beliefs,  $F(1, 36) = 1.00, p > .05$ , and maths self-efficacy beliefs,  $F(1, 36) = 1.95, p > .05$ .

Thus at pre-intervention, the participants with LD and the participants with comorbid LD/ADHD did not differ significantly on their self-concept, academic attributional style and academic self-efficacy beliefs.

#### 8.4.2 The intervention's effects during the waitlist, experimental and follow-up periods.

Mean scores and standard deviations for the dimensions of self-concept, academic attributional styles and academic self-efficacy beliefs for the two groups (LD and LD/ADHD) and for the combined sample at Time1, Time 2, Time 3 and Time 4 are presented in Table 8.1 and Table 8.2 respectively. It appears from the mean scores given in Table 8.1 and Table 8.2 that there are no changes in the dependent variables during the waitlist control period (Time1 - Time 2) but there appears to be changes during the intervention period (Time 2 - Time 3), which although relatively small do

Table 8.2.  
Means and Standard Deviations for the dimensions of self-concept, academic attributional style and academic self-efficacy beliefs, assessed at pre waitlist, pre intervention, post intervention and follow-up for the combined sample (n = 36).

| Dimensions of self-concept, academic attributional style and academic self-efficacy beliefs. | Time 1       | Time 2                            | Time 3            | Time 4             |
|--|--------------|-----------------------------------|-------------------|--------------------|
|  | Pre waitlist | End waitlist and Pre-intervention | Post-intervention | 10-weeks follow up |
|  | Mean (SD)    | Mean (SD)                         | Mean (SD)         | Mean (SD)          |
| Academic self-concept  | 22.47 (5.77) | 22.27 (5.73)                      | 24.59 (6.44)      | 24.25 (6.27)       |
| Non-academic self-concept  | 30.52 (5.23) | 30.63 (5.37)                      | 31.04 (5.00)      | 30.90 (4.95)       |
| Positive attributions  | 5.25 (1.82)  | 5.38 (1.85)                       | 6.47 (1.88)       | 6.86 (1.86)        |
| Negative attributions  | 6.47 (2.00)  | 6.75 (1.94)                       | 4.86 (1.55)       | 5.11 (1.70)        |
| Reading self-efficacy  | 20.27 (4.39) | 20.41 (4.31)                      | 22.02 (3.92)      | 22.41 (4.01)       |
| Maths self-efficacy  | 19.30 (3.99) | 19.38 (4.02)                      | 20.44 (4.09)      | 20.47 (4.23)       |

suggest that the intervention has had an impact. It also appears that once these changes had occurred they were maintained during the follow-up period (Time 3 – Time 4).

In order to test if these observed changes in the dependent variables were significant, a Repeated Measures Multivariate Analyses of Variance (MANOVA) was computed with the scores of the six dependent variables over the four assessments as the within subject factor and the two groups (LD and LD/ADHD) as the between-subject factor. The Wilks' criterion yielded a significant within-subject effect for the combination of all the dependent variables,  $F(18, 266) = 13.68, p < .001$ , whereas the between-subject effect was not significant,  $F(18, 266) = 0.83, p > .05$ .

Univariate statistics derived from the Repeated Measures MANOVA indicated an overall significant positive change for all participant's academic self-concept,  $F(3, 99) = 24.96, p < .001$ , but no significant change for non-academic self-concept,  $F(3, 99) = 2.75, p < .05$ . The Univariate results also indicated a significant increase for participants' positive attributions,  $F(3, 99) = 38.92, p < .001$ , whereas a significant decrease was found in their negative attributions,  $F(3, 99) = 47.63, p < .001$ . There was also a significant increase in scores for participants' reading self-efficacy beliefs,  $F(3, 99) = 43.22, p < .001$ , as well as for mathematics self-efficacy beliefs,  $F(3, 99) = 41.62, p < .001$ .

These results suggest that the intervention had produced significant changes in the dependent variables. The between subject effect was not significant and this indicates

that the two groups (LD and LD/ADHD) did not differ significantly after intervention. Thus the intervention has had a similar impact on the participants with LD and with comorbid LD/ADHD.

The hypotheses regarding the changes in the dependent variables during the waitlist control period, experimental period and follow-up period were examined using the tests of repeated measures within-subjects contrast over the three periods. The results are described below for each period according to the study hypotheses.

#### **8.4.3 Changes in the dependent variables during the waitlist control period.**

As no intervention was administered during the waitlist control period the first hypothesis assumed that there would be no significant changes in the dependent variables during this period. Table 8.2 presents mean scores and standard deviations for all the dependent variables at pre waitlist, pre intervention, post intervention and follow-up for the combined sample.

A Repeated Measures MANOVA was conducted using the scores of the six dependent variables for the complete sample. The results for within-subjects contrast during the waitlist control period indicated that there were no significant changes in the participants' academic self-concept,  $F(1, 33) = 3.55, p > .05$ , non-academic self-concept,  $F(1, 33) = 1.59, p > .05$ , positive academic attributions,  $F(1, 33) = 2.27, p > .05$ , negative academic attributions,  $F(1, 33) = 3.49, p > .05$ , reading self-efficacy

beliefs,  $F(1, 33) = 1.06$ ,  $p > .05$ , and maths self-efficacy beliefs,  $F(1, 33) = 0.63$ ,  $p > .05$ . These findings, therefore, provided support for hypotheses 1a, 1b and 1c.

#### **8.4.4 Changes in the dependent variables during the experimental period.**

Hypothesis 2 assumed that, as a function of the intervention, there would be significant changes in the dependent variables during the experimental period. The results from within-subjects contrast revealed that during the experimental period there was a significant change for the participants' academic self-concept,  $F(1, 33) = 34.70$ ,  $p < .001$ , while no significant change was found for the non-academic self-concept,  $F(1, 33) = 3.61$ ,  $p > .05$ .

The results also indicated that during the experimental period there was a significant increase in the scores for positive academic attributions,  $F(1, 33) = 38.33$ ,  $p < .001$ , and a significant decrease in the scores for negative academic attributions,  $F(1, 33) = 43.49$ ,  $p < .001$ . There were also a significant increase in the scores for participants' reading self-efficacy beliefs,  $F(1, 33) = 46.88$ ,  $p < .001$ , and maths self-efficacy beliefs,  $F(1, 33) = 49.44$ ,  $p < .001$ , during the experimental period. These findings, therefore, supported the assumptions in hypothesis 2a, 2b and 2c.

#### **8.4.5 Durability of the intervention's effects: Changes in the dependent variables during the follow-up period.**

It was expected that the intervention would be effective and that the gains in the dependent variables would not fade out over time. The third hypothesis assumed that

during the follow-up period no significant changes would occur in the dependent variables. The results from the repeated measures contrasts for within-subjects indicated that during the follow-up period no statistically significant change was present for the participants' academic self-concept,  $F(1, 33) = 2.45, p > .05$ , or for non-academic self-concept,  $F(1, 33) = 0.98, p > .05$ .

The results of the test of within-subject contrast also revealed that during the follow-up period a small increase was present for positive academic attributions,  $F(1, 33) = 6.08, p < .01$ , whereas no significant change was present for negative academic attributions,  $F(1, 33) = 3.03, p > .05$ . During the follow-up period there was also a small but statistically significant increase in the scores for reading self-efficacy beliefs,  $F(1, 33) = 6.17, p < .01$ , but no significant change was present for maths self-efficacy beliefs,  $F(1, 33) = 0.60, p > .05$ . Thus hypothesis 3 was partly supported.

#### **8.4.6 The intervention's effects on the targeted and non-targeted areas of self-concept.**

Table 8.3 presents mean scores and standard deviations over four assessments for the eight scales of self-concept for the combined sample. In order to identify the intervention's effects on the targeted and non-targeted areas of self-concept, a Repeated Measures MANOVA was computed over the four assessments of the eight dimensions of self-concept for the total sample ( $n = 36$ ). The results revealed a significant within subjects main effect for the combination of all dimensions of self-concept, multivariate (Wilk's Lambda),  $F(24, 276) = 3.70, p < .001$ .



Table 8.3. Means and Standard Deviations for the dimensions of self-concept, assessed at pre waitlist, pre intervention, post intervention and follow-up for the combined sample (n = 36).

| Self-concept Scales on the SDQ-1 | Time 1       | Time 2                            | Time 3            | Time 4             |
|----------------------------------|--------------|-----------------------------------|-------------------|--------------------|
|                                  | Pre waitlist | End waitlist and Pre-intervention | Post-intervention | 10-weeks follow up |
|                                  | Mean (SD)    | Mean (SD)                         | Mean (SD)         | Mean (SD)          |
| Academic self-concept            |              |                                   |                   |                    |
| Reading self-concept             | 22.08 (6.50) | 21.97 (6.60)                      | 24.50 (8.15)      | 24.02 (8.05)       |
| Mathematics self-concept         | 21.11 (5.75) | 20.88 (5.59)                      | 23.19 (6.46)      | 22.97 (6.29)       |
| School self-concept              | 24.22 (6.74) | 23.97 (6.71)                      | 26.08 (7.33)      | 25.75 (7.23)       |
| Non-academic self-concept        |              |                                   |                   |                    |
| Parent-relation self-concept     | 33.55 (5.38) | 33.91 (5.59)                      | 33.86 (6.58)      | 33.50 (6.39)       |
| Peer-relations self-concept      | 29.52 (7.08) | 29.41 (7.14)                      | 31.27 (5.79)      | 31.36 (5.91)       |
| Phys. Ability self-concept       | 30.88 (6.11) | 31.02 (6.18)                      | 31.13 (6.52)      | 30.80 (6.21)       |
| Appearance self-concept          | 28.11 (7.18) | 28.16 (7.23)                      | 27.91 (6.22)      | 27.86 (6.04)       |
| General self-concept             | 31.63 (6.36) | 31.52 (6.89)                      | 32.63 (6.50)      | 32.25 (6.43)       |

Univariate F values were significant for the targeted areas of self-concept that is for reading self-concept,  $F(3, 102) = 15.19, p < .001$ , and mathematics self-concept,  $F(3, 102) = 15.73, p < .001$ . Univariate F-value was also significant for the area related to academic self-concept. A significant positive change was present for school self-concept,  $F(3, 102) = 10.58, p < .001$ .

There was no significant change for non-targeted areas of self-concept, physical ability self-concept,  $F(3, 102) = 0.14, p > .05$ , physical appearance self-concept,  $F(3, 102) = 0.24, p > .05$  and parent relation self-concept,  $F(3, 102) = 0.60, p > .05$ . However, a small but significant increase was observed for the scores regarding peer relation self-concept,  $F(3, 102) = 5.98, p < .01$ .

These results provided substantial support for the hypotheses 4a, 4b and 4c, which assumed that significant changes would occur in the targeted areas of self-concept, smaller changes would occur in the related areas of self-concept and no significant changes would occur in non-targeted areas of self-concept.

*The Effect sizes for the targeted and the non-targeted areas of self-concept*

Table 8.4 presents the effect sizes for the changes in the areas of academic and non-academic self-concept for the total sample. There is clear evidence, which indicates that moderate effect sizes (.3 to .5) were established for the targeted areas of self-concept.

Table 8.4

The effect sizes for different dimensions of academic and non-academic self-concept for the combined sample (n = 36).

| Academic self-concept       | Effect Sizes | Non-academic self-concept        | Effect Sizes |
|-----------------------------|--------------|----------------------------------|--------------|
| Reading self-concept        | .41          | Physical ability self-concept    | .01          |
| Mathematics self-concept    | .35          | Physical appearance self-concept | .06          |
| School self-concept         | .31          | Parent-relation self-concept     | .01          |
|                             |              | Peer-relations self-concept      | .13          |
| Total academic self-concept | .51          | Total non-academic self-concept  | .08          |
|                             |              | General self-concept             | .03          |

In support of the predictions in hypothesis 4, larger effect sizes were found for the targeted areas of self-concept (i.e., academic self-concept) and very small effects sizes were found for the non- targeted areas (i.e., non-academic self-concept).

According to previous studies (Craven, 1996; Craven et al., 1991) academic self-concept enhancement intervention may have a positive impact on the participant’s general self-concept. However, the results of the present study indicated that the intervention had no significant impact on the general self-concept of the participants, Univariate  $F(3, 102) = 1.03, p > .05$ . These findings were contrary to that reported by Craven et al. (1991).

#### **8.4.7 The intervention's differential effects for students with LD and students with comorbid LD/ADHD**

The mean scores and standard deviations for different scales of self-concept, academic attributions and academic self-efficacy beliefs over four assessments, for the two groups (LD and LD/ADHD) are presented in Table 8.1 and Table 8.5. Hypothesis 5 assumed that as a result of this intervention, students with comorbid LD/ADHD, as compared to the students with LD only, would experience less positive changes in their academic self-concept, academic attributional style and academic self-efficacy beliefs.

As mentioned earlier, a comparison of students with LD and with comorbid LD/ADHD before intervention (at Time 2) indicated no pre-existing differences on the dependent variables between the two groups. The results obtained from the Repeated Measures MANOVA for between-subject differences revealed that after the intervention the two groups (LD and LD/ADHD) did not differ significantly on the dependent variables.

According to the results there were no significant between-group differences at Time 3 (post intervention) for academic self-concept,  $F(3, 99) = 1.66, p > .05$ , non academic self-concept,  $F(3, 99) = 1.25, p > .05$ , for positive attributions,  $F(3, 99) = 0.37, p > .05$ , negative attributions,  $F(3, 99) = 0.78, p > .05$ , for reading self-efficacy beliefs,  $F(3, 99) = 0.96, p > .05$ , and for maths self-efficacy beliefs,  $F(6, 202) = 0.34, p > .05$ .

Table 8.5. Means and Standard Deviations for the dimensions of self-concept assessed at pre waitlist, pre intervention, post intervention and follow-up for subjects with LD and with LD/ADHD.

| SUBJECTS WITH LD (N = 18) |                        |                                |                                |                                 | SUBJECTS WITH LD/ADHD (N = 18) |                                |                                 |                                |  |
|---------------------------|------------------------|--------------------------------|--------------------------------|---------------------------------|--------------------------------|--------------------------------|---------------------------------|--------------------------------|--|
| Sub-scales on the SDQ-1   | Time 1<br>Pre waitlist | Time 2<br>Pre-<br>intervention | Time 3<br>Post<br>intervention | Time 4<br>10 weeks<br>Follow-up | Time1<br>Pre waitlist          | Time 2<br>Pre-<br>intervention | Time 3<br>Post-<br>intervention | Time4<br>10 weeks<br>Follow-up |  |
|                           | Mean (SD)              | Mean (SD)                      | Mean (SD)                      | Mean (SD)                       | Mean (SD)                      | Mean (SD)                      | Mean (SD)                       | Mean (SD)                      |  |
| Reading                   | 23.05 (5.15)           | 22.88 (5.38)                   | 25.38 (6.43)                   | 24.66 (6.12)                    | 21.33 (7.70)                   | 21.05 (7.67)                   | 23.61 (8.67)                    | 23.38 (8.97)                   |  |
| Maths.                    | 21.27 (5.09)           | 21.00 (4.75)                   | 23.66 (5.16)                   | 23.44 (5.59)                    | 20.94 (6.49)                   | 20.77 (6.47)                   | 22.72 (7.66)                    | 22.50 (7.06)                   |  |
| School                    | 25.00 (4.67)           | 24.55 (4.48)                   | 26.83 (4.90)                   | 26.16 (4.68)                    | 23.44 (8.40)                   | 23.38 (8.47)                   | 25.33 (9.20)                    | 25.33 (9.24)                   |  |
| Parent                    | 34.05 (5.06)           | 34.27 (5.09)                   | 33.88 (5.31)                   | 33.27 (5.17)                    | 33.05 (5.78)                   | 33.55 (6.17)                   | 33.83 (7.81)                    | 33.72 (7.57)                   |  |
| Peer                      | 29.66 (5.57)           | 29.55 (5.85)                   | 31.33 (5.02)                   | 31.22 (5.05)                    | 29.38 (8.49)                   | 29.27 (8.41)                   | 31.22 (6.62)                    | 31.50 (6.81)                   |  |
| Phy. Ability              | 32.16 (6.79)           | 32.05 (6.67)                   | 32.44 (5.03)                   | 32.61 (5.29)                    | 29.61 (5.23)                   | 30.00 (5.64)                   | 29.83 (7.65)                    | 29.16 (6.73)                   |  |
| Phy. Apppear              | 28.44 (6.17)           | 28.61 (6.37)                   | 27.22 (5.10)                   | 27.38 (5.31)                    | 27.77 (8.24)                   | 27.72 (8.16)                   | 28.61 (7.25)                    | 28.33 (6.82)                   |  |
| General self-concept      | 30.77 (5.24)           | 30.55 (4.48)                   | 31.16 (6.33)                   | 31.25 (6.23)                    | 29.50 (6.80)                   | 29.16 (7.27)                   | 31.00 (8.15)                    | 31.38 (7.91)                   |  |

Note: Reading = Reading Self-concept, Maths = Mathematics self-concept, School = School self-concept, Parent = Parent-relation self-concept, Peer = Peer-relation self-concept, Phy. Ability = Physical Ability self-concept, Phy. appear = Physical Appearance self-concept. LD = students with learning difficulties, LD/ADHD = students with learning difficulties and co-morbid attention deficit hyperactivity disorder.

These results suggest that the participants with LD and the participants with comorbid LD/ADHD had benefited almost equally from the intervention administered to them. These findings negate the proposition of hypothesis 5, which assumed that the positive changes in the dependent variables would be higher for the LD group as compared to the LD/ADHD group.

## **8.5 Discussion**

The third stage of the present research has examined the effectiveness of a self-concept enhancement intervention program for students with LD and students with comorbid LD/ADHD. The participants had learning difficulties in reading and mathematics and they had reported significantly lower scores on academic self-concept, academic attributional style and academic self-efficacy beliefs when compared to normally achieving peers (as reported in Stage Two). The intervention was, therefore, specifically designed to enhance their academic self-concept.

A number of researchers have indicated a reciprocal link between self-concept and self-attributions (Cooley & Ayres, 1988; Craven et al., 1991; Marsh et al., 1984; Pearl, 1982; Weiner, 1986). Based on this suggested link between self-concept and self-attributions, the intervention utilized an indirect self-concept enhancement approach that targeted attributional training. More specifically the intervention was employed to increase participants' self-attributions in success situations in the targeted areas (reading self-concept and mathematics self-concept) to internal causes (their own efforts and ability),

and in failure situations in the targeted areas to external causes (task difficulty or not using the right strategy to complete the task successfully). It was expected that as a result of this intervention a positive change would occur in participants' academic attributional beliefs and that this positive change would be associated with positive changes in academic self-concept.

Researchers have also suggested a close link between attributional beliefs and self-efficacy beliefs. Self-efficacy is said to be a mediating variable in academic attainments (Bandura, 1997; Schunk, 1984,1990a). Academic self-efficacy beliefs of the participants were not targeted directly in this intervention program. However, considering a close relationship between attributional beliefs and self-efficacy beliefs, a positive change was also expected to occur in participants' academic self-efficacy beliefs, as a result of the intervention.

Consistent with the goals of the intervention the results indicated that significant positive changes had occurred in the participant's academic attributional style and academic self-efficacy beliefs, which had translated into improvements in their academic self-concept. Significant positive changes were found in the targeted areas of self-concept (reading and mathematics self-concepts) during the experimental period. However no significant changes were noticed in the non-targeted areas of self-concept. The results have provided evidence that the intervention is effective in enhancing targeted areas of academic self-concept.

#### 8.5.1 Changes in the dependent variables during the experimental stages.

The hypotheses regarding the changes in the dependent variables during waitlist control, experimental and follow-up periods were supported. Significant positive changes in participants' academic attributional style, academic self-efficacy beliefs and academic self-concept were observed during the experimental period and no significant changes were found during the waitlist control period.

These results demonstrate that the positive changes in the targeted areas of academic self-concept took place because of the intervention that was employed. This finding has confirmed the validity of the intervention technique in enhancing academic self-concept and more importantly it has added weight to the belief that academic self-concept is directly related to academic attributional style and academic self-efficacy beliefs.

The hypotheses regarding the durability of the intervention's effects over time were partly supported. After the ten-week follow-up period (at Time 4) a small decrease was observed in the scores of participants' academic self-concept that were established after the intervention (see Table 8.2). A small increase was present for the participants' positive academic attributions, whereas no significant change was present for negative attributions. At follow up a small increase was also observed for participants' reading self-efficacy beliefs but no change was present for their maths self-efficacy beliefs.



A possible explanation for the decline in the academic self-concept scores of the participants after follow-up could be the role of what has been termed the “euphoric effect”. Researchers (Marsh, Richard & Barnes, 1986a, 1986b) have suggested that participants usually experience a momentary feeling of elation as a result of an intervention. This euphoric effect quickly dissipates and it results in a decrease in effect sizes after follow-up. Further, Marsh (1990) has found that academic self-concept is slow to change simply because it is based upon previous academic achievements as well as present performance.

However, it should be noted that in the present study, the decrease in the scores of academic self-concept after the follow-up was very small (means difference = 0.34,  $p > .05$ ). There was no decrease in the scores of other dependent variables after the follow-up. These results provide a support for the stability of the intervention’s effects over time.

#### 8.5.2 The intervention’s effects for the targeted areas of self-concept

An important aspect of the intervention was that it focused on some specific dimensions of self-concept rather than on overall self-perceptions. The importance and logic of targeting specific dimensions of self-concept instead of targeting global self-concept has been suggested in previous studies (Harter, 1998; Craven et al., 1991; Marsh & Craven, 1997). Dietz (1998) suggests that the self-concept enhancement studies, which do not focus on specific dimensions of self-concept, generally produce

less significant changes in self-concept. Marsh and Craven (1997) suggest that “if a child has a low reading self-concept the most direct mean of enhancing this facet of self-concept is by directly targeting it rather than general self-concept” (p. 192). The results obtained from the present study have confirmed that targeting specific dimensions of self-concept appears to be an effective procedure for enhancing academic self-concept.

The hypothesis that changes in self-concept would be significant for the targeted areas of self-concept (academic self-concept) rather than non-targeted areas (non-academic self-concept) was supported. The results indicated higher effect sizes for the targeted areas of self-concept (reading self-concept and maths self-concept). Lower effect sizes were found for the non-targeted area (non-academic self-concept). Thus the change in the targeted areas does appear to have taken place as a result of the intervention that was employed. This finding provided further support for the validity of the intervention in enhancing academic self-concept and more specifically in targeting discrete and identifiable focus areas.

The intervention was not intended to enhance the non-academic self-concept of the participants and the results revealed there were no significant changes in non-academic domains of self-concept such as physical ability self-concept, physical appearance self-concept and parent-relation self-concept. However, contrary to expectations, some positive changes were found in peer-relation self-concept.

It is difficult to determine why peer-relation self-concept increased whilst other aspects of non-academic self-concept did not. Perhaps, as suggested by Tabassam and Grainger (2000), when students feel more positive about themselves this may flow across to peer relations, or perhaps changes in peer-relation self-concept might have occurred as a result of some positive social interactions among participants during the intervention period.

The hypothesis regarding the intervention's effect on the related areas of academic self-concept was also supported. The results indicated that during the experimental period a small positive change had occurred in the participants' school self-concept (effect size = .31). School self-concept was not targeted in the intervention program, however the enhanced level of school self-concept that occurred as a result of the intervention revealed a subsequent transfer effect for the intervention towards related areas.

No specific predictions were made about the intervention's effects on the general self-concept of the participants. Consistent with the results of previous studies (Craven, 1996; Craven et al., 1991) it was hoped that the intervention might have a positive impact on general self-concept. The results of this study, however, failed to show any significant impact on general self-concept. Perhaps, as suggested by some researchers (Shavelson et al., 1976; Marsh, 1990; Marsh & Craven, 1997), general self-concept is relatively stable and is difficult to change with short term interventions.

Previous research has suggested that people with high self-esteem evaluate their performance more positively than those with low self-esteem even when their performance is equivalent (Taylor & Brown, 1988). It was also suggested that children with a high self-concept reinforce themselves more than children with a low self-concept (Ames, 1978; Marsh & Craven, 1997) and they maintain their high self-concept through this self-reinforcement process. Consistent with this view, Marsh and Craven (1997) suggest that intervention techniques that focus on generating a self-reinforcement process in children would be more successful in raising self-concept than the techniques which do not focus on generating a self reinforcement process.

The present intervention was aimed to enhance academic self-concept through targeting the academic attributional beliefs of the participants. As individuals with a positive attributional style attribute their success to their own abilities and efforts, they usually feel good about their abilities and they utilize a self-reinforcement process to enhance their self-perceptions (Marsh & Craven, 1997; McInerney, 1999). It is hoped that the present intervention would instill a self-reinforcement system in the participants by changing their attributional patterns.

The results have demonstrated that the intervention was effective in changing participants' academic attributional beliefs, which impacted positively on their self-efficacy beliefs and hence academic self-concept.

The present study has utilized a uni-model intervention approach. Some of the previous studies have used a combination of different treatment approaches in a single intervention program for the enhancement of self-perception. For example Craven et al. (1991) utilized a combination of attributional retraining and *internally focused* performance feedback to enhance the academic self-concept of normally achieving students. Miranda, Villaescusa and Vidal-Abarca (1997) used a combination of attributional retraining and self-regulation procedures with students with learning disabilities. Similarly in 1995 Rawson and Cassady utilized a combination of behavior modification and group interactions to improve the self-perceptions of students with learning disabilities. However, with a combination of different intervention techniques in one program it would be difficult to draw definite conclusion about the intervention's effects related to a particular technique. Combination of different approaches does not allow the researcher to clearly delineate the effects associated with a particular intervention strategy. In contrast to these previous studies the present study utilized a single technique (attributional retraining only) to enhance academic self-concept. Thus the uni-model intervention approach in this study has provided important data that enables a more direct explanation of this particular approach in enhancing academic self-concept.

### 8.5.3 The intervention's effects for students with LD and with LD/ADHD.

The results of this study provide support for the effectiveness of the attributional retraining technique in enhancing the academic self-concept of students with learning

difficulties with and without comorbid ADHD. Given that the problems of students with comorbid LD/ADHD would appear to be more serious and complicated than that of students with LD only, it was expected that the positive change in academic self-concept would be higher for the LD group as compared to the LD/ADHD group. The results indicated that the two groups did not differ significantly for the intervention's effects. The results, therefore, suggested that the intervention was effective for participants with comorbid LD/ADHD as well as with LD.

A possible reason for the lack of difference between the two participant groups regarding the intervention's effects seems to be linked to the fact that the intervention was focused on the enhancement of academic self-perceptions only. It did not focus on the behavioral aspects. A common feature of the participants with LD and with comorbid LD/ADHD was the presence of learning difficulties and both groups reported significantly poorer academic self-concept than that of normally achieving peers. However, due to the nature of the difficulties associated with ADHD the participants with comorbid LD/ADHD would be expected to experience academic as well as behavioral problems.

Perhaps the group differences for the intervention's effects might have been significant had the intervention focused on participants' behavioral as well as academic aspects of self-perceptions.

#### 8.5.4 The effectiveness of attributional retraining in the enhancement of academic self-concept.

The findings of this study suggest that academic self-concept can be enhanced indirectly through attributional retraining techniques by targeting specific facets of academic self-concept. The results also support the effectiveness of a cognitive model in changing maladaptive attributions.

Cognitive approaches to psychotherapy assume that maladaptive behavioral and emotional reactions can be modified by changing intervening cognitions or beliefs, an assumption that also underlies attributional retraining (Forsterling, 1985). The findings of this study have shown that as a result of the intervention a significant positive change had occurred in the academic attributional style and the academic self-efficacy beliefs of the participants. The attributional modification techniques utilized in this study appear to have had an impact on the individual's beliefs of efficacy, which in turn appears linked to positive feelings of self-perception in the participants. Thus a mediating process of change in self-efficacy beliefs seems to be a plausible explanation, which has apparently led to positive changes in the academic self-perceptions of the participants.

These results provide further support for the argument presented by researchers (Marsh, 1984a, 1986b; Marsh et al., 1984; Pajares, 1996; Schunk, 1984) in relation to close links between self-concept, self-attributions and self-efficacy beliefs.

Research has consistently reported that students with LD have attributional patterns different from those of normally achieving students. As students with LD have complicated histories of academic failures that continually influence their learning experiences (Licht, 1983; Grainger & Frazer, 1999), these students also have long-standing maladaptive beliefs regarding academic success and failure. Such negative beliefs may hinder their ability to profit fully from their learning environment.

Borkowsky, Weyhing and Carr (1988) have suggested that training the LD students in learning skills alone would not be effective and sufficient. The maladaptive attributional beliefs of students with LD, which are usually linked to specific subject matter, need also to be systematically manipulated in order to enhance the acquisition and generalization of the study skills being taught to them. A systematic and positive change in subject-specific beliefs may eventually influence LD student's long-standing attributional beliefs about the inevitability of failure, freeing them to be more productive and active learners.

An important feature of attributional change can be linked to enhanced achievement level. Many studies have shown that altered academic attributional beliefs influence academic achievement directly (Marsh, 1984a; Pearl, 1982; Schunk, 1981, 1983a, 1984b) and also indirectly through the mediating variable of self-efficacy beliefs (Schunk, 1984a, 1990b, 1991). Although exploring the effects of attributional change and enhanced academic self-concept on the subject's achievement level was not the



focus of the present study, it does appear possible that the positive changes in academic attributions and academic self-efficacy beliefs of the participants, that occurred as a result of the intervention, may have the potential to positively influence academic achievement.

Craven et al. (1991) have suggested that after the completion of a self-concept enhancement intervention, a time lag is necessary to allow the changes in self-concept to increase desirable academic striving behaviour and subsequent achievement. Thus it is hoped that in the long run the enhanced academic self-concept of the participants in this study would also have a positive impact on their academic achievement level. Moreover, researchers have suggested that a positive self-concept is central to academic and interpersonal success (Chapman, 1988a; Marsh & Craven, 1997). It is hoped that enhanced self-perception would perpetuate a positive cycle of academic and social adjustment in students with learning difficulties. However, further research is definitely needed to explore the effects of enhanced self-concept on academic achievement and to ascertain the role of important mediating variables.

#### 8.5.5 The major findings of the study

This study was conducted on a target group that had significant problems in academic self-concept. The results have demonstrated successfully that a brief intervention can have some positive impact on their academic self-concept. The findings indicated the effectiveness of an attributional retraining technique in producing some positive

changes in the targeted areas of academic self-concept. The results support the effectiveness of a cognitive model in changing maladaptive attributions.

Perhaps one of the most important findings from this study is the demonstrated interrelationship, which exists between changed academic attributional patterns, academic self-efficacy beliefs and academic self-concept. By demonstrating that the academic self-concept can be changed by changing academic attributions, the study has added to the work of other researchers (e.g., Craven et al., 1991; Marsh, 1984a, 1986b; Marsh et al., 1984; Pajares, 1996; Schunk, 1984) who suggested a close relationship between self-attributions, self-efficacy and self-concept.

The importance of this study also lies in the fact that it utilizes a specific intervention program that:

- Targeted self-concepts in specific subject areas (reading and mathematics) rather than targeting global self-concept.
- Used a single intervention technique (attributional retraining only), rather than a combination of different techniques.
- Utilized measures of multidimensional self-concept (the SDQ-1) and specifically developed instruments to assess the changes in academic attributions and academic self-efficacy belief.
- Used a robust research design that employed a waitlist control period and pretest posttest assessments.
- Provided a follow up to assess the durability of the intervention.

### Summary of the Chapter

This study has provided some directions for a successful intervention for the enhancement of academic self-concept for students with LD, with and without ADHD. The results obtained from this study have provided a support for the effectiveness of attributional retraining technique in the enhancement of academic self-concept. The results have also verified that there is a close link between academic attributional beliefs and academic self-perceptions. It appeared that positive changes in attributional beliefs have impacted on academic self-perception through a mediating effect that involved the subject's self-efficacy beliefs. Thus a positive change in the attributional beliefs and a mediating change in the self-efficacy beliefs of the participants seems a plausible explanation for the participants' enhanced academic self-concept.

## **CHAPTER NINE**

### **CONCLUSION**

This research has explored the academic self-perceptions of students with learning difficulties (LD) with and without attention deficit hyperactivity disorder (ADHD). The research has also examined the effectiveness of attributional retraining techniques in enhancing academic self-perceptions of students with learning and attentional problems.

The results demonstrated that compared to normally achieving peers, students with LD and students with comorbid LD/ADHD held poor academic self-perceptions. These students differed from normally achieving peers on many factors including academic self-concept, academic attributional style and academic self-efficacy beliefs. By examining all these factors the study has provided a wider picture of the academic self-perceptions of students with learning difficulties.

The present research has contributed to an understanding of academic self-perceptions of students with LD and students with comorbid LD/ADHD in many ways:

The results of this research have indicated that students with LD and students with comorbid LD/ADHD, compared to normally achieving students, hold significantly lower academic self-concept, whereas no significant decrements were found in their non-academic self-perceptions. These findings are important as they add to the

findings regarding the self-concept of students with LD. In particular these findings may help to further delineate the nature of self-concept in a research area where there is some degree of inconsistency.

The results obtained from Stage-2 of the present research have provided further support for a number of previous studies (Chapman, 1988a; Kloomok & Cosden, 1994; Smith & Nagal, 1995) which have reported that students with LD have poor academic self-concept but their non-academic self-perceptions are almost equivalent to that of normally achieving peers. However, the results negated the findings of some earlier studies (Silverman & Zigmond, 1983; Tollefson, 1982) that reported no differences on self-perceptions between students with LD and normally achieving students. The findings of this research also suggest the belief that self-concept is a multidimensional construct and that it is very important to differentiate between academic and non-academic self-concept dimensions when assessing self-concept. Further, it is also important to utilize multidimensional instruments for the assessment of self-concept.

Concerning the academic attributional patterns of students with LD and with comorbid LD/ADHD, the results revealed that both groups (LD and LD/ADHD) demonstrated a negative attributional style whereas normally achieving students reported a positive attributional style for academic successes and failures. Both, the students with LD and students with LD/ADHD also reported significantly lower academic self-efficacy beliefs in comparison to normally achieving students. These results indicated that LD

and LD/ADHD students in this study differed from normally achieving classmates in their beliefs and explanations about academic success and failure. In success situations they believed that success was due to some external factors rather than their own talents or abilities and in failure situations they believed that failure was related to their own lack of capabilities. Their negative attributional beliefs were related to their poor self-efficacy beliefs. Both groups reported significantly lower scores for reading and mathematics self-efficacy compared to normally achieving peers. These findings strongly suggest that students with learning difficulties are quite different from normally achieving peers in relation to academic beliefs and academic self-perceptions. However there are no differences between LD and normally achieving students on non-academic self-perceptions.

Several explanations exist for poor academic self-perceptions of students with learning difficulties. One possible explanation is that as a consequence of learning difficulties, students with LD often develop inaccurate perceptions of their abilities. Many students with LD have to cope with academic problems as well as social and emotional problems. These complications are usually reflected in their poor self-evaluations.

Another factor that is widely debated relates to the placement of LD students in regular classes. It is possible that the LD student's placement with achieving peers may have a negative impact on their academic self-concept. Harter (1986) suggested that students with LD routinely compare their scholastic performance to the regular classroom students. Other researchers (Marsh, 1984b; Marsh & Parker 1984) have also

proposed a frame of reference model which suggest that students compare their own academic ability with the academic abilities of their peers and this comparison provides the basis for forming their own academic self-concept. Students with LD and students with LD/ADHD in the present study were integrated into regular classrooms and it was most likely that they compared their academic performance to their regular classmates. Thus the students with LD and with LD/ADHD were likely to feel academically less competent.

Whilst this issue of placement may be relevant, it is clearly important in the wider picture to be aware of the negative aspects of segregated placement which socially could be even more stigmatizing. It would seem that for the struggling learner low self-esteem might be a possible feature of the problem. It may also be important to understand that given the level of lower self-concept in students with LD there is a need to address this problem not with placement issues but with programs that focus on changing negative attributional beliefs.

Academic self-perception is usually considered to be an important factor for successful learning. A positive change in academic self-concept may eventually help LD students to become more productive and active learners. The findings that students with LD hold significantly poor academic self-concept and not non-academic self-concept suggest the importance and the need for interventions that should focus on the enhancement of their academic self-perceptions.

Another important finding of this research is related to the comparison between students with LD and students with comorbid LD/ADHD on academic self-perceptions. According to the results, no significant differences were found between the two groups on academic self-concept, academic attributional style and academic self-efficacy beliefs. Although students in both groups reported significantly poorer academic self-perceptions than that of normally achieving peers, the results indicated that differences between the two groups (LD and LD/ADHD) were not statistically significant. This finding suggest that there might be no additional impact of ADHD comorbidity on the academic self-perceptions of students with LD/ADHD. In other words, according to these results, the presence of ADHD did not significantly impair the academic self-perceptions of students with LD/ADHD. However the presence of learning difficulties may have had a significant negative impact on the academic self-perceptions of students with LD/ADHD. It seems possible to conclude that the most significant aspect of lowered academic self-perception is tied to poor academic achievement rather than other factors.

One possible explanation of the results of no difference between LD and LD/ADHD on academic self-perceptions is that the present research has explored academic self-perceptions only and the behavioral problems of the subjects related to ADHD were not examined in this investigation. The differences between the two groups (LD and LD/ADHD) might have been significant if their behavioral problems had also been examined. Therefore it may be too premature to conclude that the students with comorbid LD/ADHD do not have added problems in their self-concept but in view of



the discrete nature of self-concept the current research did not explore it in relation to their behavioral difficulties. Further research may be needed to clarify what role problems of hyperactivity, attentional difficulties and poor impulse control have on wider aspects of self-concept.

When the two groups (LD and LD/ADHD) were compared on non-academic self-concept dimensions no significant differences were found between the two groups on physical ability, physical appearance and parent relation self-concepts. However, students with LD/ADHD reported the lowest scores on peer-relation self-concept than either of the LD and the normally achieving students. These results are consistent with the findings of previous studies, which have reported that students with learning and behavioral problems have significantly poor peer relationships (Harter, 1998; Hinshaw & Melnick, 1995). It is obvious that ADHD related behaviors such as impulsivity and hyperactivity may reduce social acceptance for children with LD/ADHD. Children with a diagnosis of ADHD display a number of annoying and intrusive interpersonal behaviors with peers, which reduce peer acceptance of them. They feel social isolation and view themselves as different from the others (Harter, 1998). Thus children with LD/ADHD are more likely to have a lowered peer-relations self-perception as compared to typically achieving students.

This study has also identified a positive correlation between academic self-concept, academic attritional style and academic self-efficacy beliefs of students. These results provide further support for the argument presented by some researchers regarding a

close link between self-concept and self-attributions (Cooley & Ayres, 1988; Craven et al., 1991; Marsh, 1984; Marsh et al., 1984). The pattern of correlation between the dependent variables does suggest that self-concept is closely related to self-attributions and also to self-efficacy beliefs. These were important findings as they support the logic of enhancing academic self-perceptions of students with learning difficulties by changing their attributional patterns and/or enhancing their self-efficacy beliefs. The findings, therefore, suggest that attributional retraining could be an effective technique in changing self-perceptions.

The significance of this study also lies in the fact that it provides strong support for the effectiveness of attributional retraining in the enhancement of academic self-perceptions of students with LD and students with comorbid LD/ADHD. The attributional retraining program was conducted to enhance the subject's positive attributions and reduce their negative attributions in the targeted areas (reading and mathematics). Considering the close link between attributional beliefs, self-efficacy beliefs, and self-concept, a positive change was also expected to occur in the academic self-efficacy beliefs and academic self-concept of the subjects.

The effectiveness of the intervention was verified by the results, which indicated that there were significant changes in the subjects' academic attributions, academic self-efficacy beliefs and academic self-concept during the experimental period. No significant changes were found during the waitlist control period and follow up period. The results also revealed a significant increase in the scores of the targeted areas of

self-concept (reading and mathematics self-concepts) and no significant change in the non-targeted areas (non-academic self-concept). Further the effect sizes were higher for the targeted areas of self-concept and lower for the non-targeted areas. These results have demonstrated that positive changes in the academic self-perceptions of the subjects' were a result of the intervention employed. This result confirmed the validity of the intervention (attributional retraining) in enhancing academic self-concept.

As a result of the intervention, significant positive changes were found in subjects' school self-concept. This indicates a transfer effect of the treatment to related areas of academic self-concept. Significant positive changes were found in subjects' composite academic self-concept. The findings provided support for Shavelson et al.'s hierarchical model of self-concept (1976) in that changes in lower order facets of self-concept (reading, mathematics and school self-concepts) were found to be associated with changes in the higher order area of self-concept (i.e., composite academic self-concept).

As a result of the treatment an increase was noticed in the scores for positive attributions and a decrease was found in the scores for negative attributions of the participants during the experimental period. A positive change was also found in reading self-efficacy and maths self-efficacy beliefs during the experimental period. Thus the attributional modification technique utilized in this study appears to have had an impact on self-efficacy beliefs, which appears to be linked to positive feelings of self-perception in the subjects. These results supported a cognitive model of

intervention and indicated that maladaptive self-perception can be changed indirectly through changing maladaptive attributional beliefs.

Whilst a close relationship between self-concept and attributional style has been speculated, the intervention study actually allowed this relationship to be tested empirically. Given that the intervention was designed to enhance academic attributions and that the pattern of change in academic attributions was found to be parallel to the changes in academic self-concept, this result support the validity of the interpretation of the relationship between self-attributions and self-concept.

Another important aspect of the intervention program is related to its follow up results. The positive changes in the academic attributions, academic self-efficacy beliefs and academic self-concept of the participants were found to be maintained over a ten-week period. The results revealed durability of effects of treatment over time.

Although it was expected that the intervention would have a less positive impact on the students with comorbid LD/ADHD as compared to the students with LD. The results, however, indicated that the two groups did not differ significantly for the intervention's effects and that the intervention was almost equally effective for the subjects with LD and the subjects with comorbid LD/ADHD. As mentioned earlier, the intervention was focused on the enhancement of academic self-perceptions only. Since the behavioral aspects of the participants were not targeted it is not surprising that the two groups did not differ significantly for the intervention's effects.

Another important outcome of this research is that it provides two instruments: one for the assessment of academic attributional style and the other for the assessment of academic self-efficacy beliefs for children in Grades 3 to 6. The factor analysis, reliability and validity data indicated that the two instruments had reasonably good psychometric properties. The simple item format of the two instruments was also found to be suitable for the understanding of students with learning difficulties in Grades 3 to 6. Hence these instruments can be used in future research in relevant areas.

### **9.1 The significance of the research**

The present research has contributed to the steadily growing area of knowledge regarding the academic self-perceptions of students with learning difficulties. In particular the research has:

- Provided a comparison of self-perceptions between students with LD and students with comorbid LD/ADHD. A significant comorbidity between LD and ADHD has been reported in literature but the academic self-perceptions of students with comorbid LD/ADHD has not been studied extensively. An important feature of the present research is that it explored the self-perception of students with comorbid LD/ADHD.
- Examined the most important variables related to academic self-perception such as academic self-concept, academic attributional style and academic self-efficacy

beliefs. By examining all of these related constructs the research has provided a wider picture and more details of the academic self-perceptions of students with learning difficulties with and without concurrent ADHD.

- Developed measures for examining domain specific facets of academic self-efficacy beliefs and academic explanatory style for children in Grades 3 to 6, in the form of an Academic Self-efficacy Beliefs Scale and Academic Attributional Style Questionnaire.
- Provided empirical support for the positive relationships that appear to exist between academic self-concept, academic attributional style and academic self-efficacy beliefs. The observed pattern of correlation between these constructs revealed the logic for enhancing academic self-perceptions by changing attributional patterns. The results provided support for an indirect self-concept enhancement approach.
- Provided a successful intervention program for the enhancement of academic self-concept for students with learning and attentional problems. The intervention program that utilized attributional retraining in the targeted areas of academic self-concept was based on a logical link between the targeted variables and the intended effects of the intervention. The results have revealed that targeting self-concepts in specific subject areas is an effective procedure for enhancing academic self-concept.

- Used a strong research design that employed a waitlist control, pretest and posttest assessments and a 10-week follow up to assess the maintenance of gains in the targeted areas of self-concepts. The presence of significant changes in the dependent variables during the experimental period and no significant changes during the waitlist control period verified the validity of the intervention.

## **9.2 Limitations of the research**

Several limitations of this research need to be considered when interpreting its findings.

- A major limitation of the present study is related to the fact that there were only a small number of students in LD and LD/ADHD samples. Although students with LD/ADHD compared to student with LD reported lower mean scores at Stage-2 for the various facets of academic self-concept, academic attributional style and academic self-efficacy beliefs, the difference between the two groups did not reach statistical significance. Similarly the results from Stage-3 indicated that students with comorbid LD/ADHD, compared to students with LD, had lower mean scores on the dependent variables at Time 3 (post treatment). The difference between the two groups, however, may not have been large enough to reach statistical significance due to a small sample size in each group. Perhaps a larger sample would have provided a more conclusive result concerning the additional impact of ADHD comorbidity in the academic self-perceptions of children with LD/ADHD.

- Although the present research compared self-perceptions of all three groups (students with LD, students with LD/ADHD and their normally achieving peers) the results are limited by not including a group of children who have ADHD without LD. The addition of a group of student with only ADHD into the research design might be needed to further clarify the role of ADHD comorbidity.
- Another limitation is the absence of an external control group in the intervention study. However it should be noted that it was quite difficult to obtain a large number of students with a diagnosis of comorbid LD/ADHD. It was even more difficult to obtain a sufficient number of students with LD/ADHD for an external control group. There are also clear ethical issues that add to the complexity of obtaining a no treatment control group. Steps were taken to compensate for this limitation by employing a waitlist control pre-test post-test research design that provided a quasi experimental level of research integrity.
- Caution is also needed in interpreting the findings as the present research has examined academic self-perceptions only and it did not examine the subjects' perceptions of behavioral problems related to ADHD. Given that children with LD/ADHD may also encounter frequent failures in social situations, it is equally important to examine their behavioral and social self-perceptions.
- One last limitation of the present research is that all the data were collected through self-reporting measures and the results were based solely on these



measures. However, given that it was a time bound study, a detailed interview with the participants or the application of other objective means of assessment was not possible. Due to similar reasons of time bound work a small number of intervention-sessions were delivered and the intervention yielded moderate effect sizes. Perhaps more effective results could be achieved by increasing the frequency of the attributional retraining sessions or by increasing the duration of the program.

### **9.3 Suggestions for future research**

This research could be enhanced in a number of ways:

- Previous research indicates that enhanced academic self-perceptions have a positive influence on academic achievement (Marsh, 1984; Pearl, 1982). More meaningful information regarding the interventions' long-term effects might be achieved by exploring the effects of attributional change and enhanced academic self-concept on the subject's academic achievement level.
- As indicated previously, the findings of the present research relate to the LD and LD/ADHD samples only. Therefore inclusion of additional samples with diagnoses of ADHD only as well as ADHD/LD and LD may provide a better understanding of the impact of ADHD comorbidity on self-perception.
- The earlier comments regarding limitations also could be revisited and future research could explore the students' self-perceptions concerning academic as well as

non-academic and social situations. It might also be valuable to increase the frequency and duration of the intervention program.

- The results of the present investigation have demonstrated that it is very important to consider the multidimensional nature of the self-concept construct. Future research needs to account for the multidimensionality of self-concept in intervention programs and evaluations. Self-concept research could utilize measures that clearly differentiate between the different dimensions of self-concept. Future research also needs to examine the multiple-domain interventions that focus on academic and non-academic self-perceptions. A comparison of single-domain and multiple-domain intervention effects would also be worthy of further investigation.
- Previous studies suggest that early intervention is necessary for the students with LD and with ADHD and that students who receive early intervention have a better chance of completing school, maintaining relationships, and holding a job (Barkley, 1990; Bender, 1997; Biederman, et. al. 1991; Taylor, 1990). Research also indicates that enhanced self-concept may help students to achieve their full potential. Considering this important role of positive self-perceptions the enhancement of self-concept should be an important goal of schooling. The present research offers directions for successful strategies for the enhancement of academic self-concept of students with learning and attentional difficulties. Attributional retraining focusing on specific dimensions of self-concept seems to

be a promising intervention strategy to use when working with students with learning difficulties. A positive academic self-concept is always related to happier and more effective functioning. This research has shown that with appropriate strategies it is possible to change the negative academic self-perceptions of students with learning difficulties. Utilizing these strategies effectively and making them a part of classroom activities remains a challenge for teachers and school counselors.

## REFERENCES

- Abramson, L. L., Seligman, M. E. P. & Teasdale, J. D. (1978). Learned helplessness in humans: Critique and reformulation. *Journal of Abnormal Psychology*, 87, 49-74.
- Algozzine, B. (1991). Decision-making and curriculum based assessment. In B. Y. L. Wong (Ed.), *Learning about learning disabilities* (pp. 39-58). NY: Academic Press.
- American Psychiatric Association. (1980). *Diagnostic and Statistical Manual of Mental Disorders* (3<sup>rd</sup> Ed.). Washington, DC: Author.
- American Psychiatric Association. (1987). *Diagnostic and Statistical Manual of Mental Disorders* (3rd Ed. revised). Washington, DC: Author.
- American Psychiatric Association. (1994). *Diagnostic and Statistical Manual of Mental Disorders* (4<sup>th</sup> Ed.). Washington, DC: Author.
- Ames, C. (1978). Children's achievement attributions and self-reinforcement: Effects of self-concept and competitive reward structure. *Journal of Educational Psychology*, 70, 345-355.
- Ames, C., & Felker, D. W. (1979). Effects of self-concept on children's causal attributions and self-reinforcement. *Journal of Educational Psychology*, 71, 613-619.
- Arnold, E. (1996). Sex differences in ADHD: Conference summary. *Journal of Abnormal Child Psychology*, 24(5), 555-569.

- Ashman, A. & Elkins, J. (1998). *Educating children with special needs*. Prentice Hall, Australia Ltd.
- Association for Children with Learning Disabilities. (1986, September- October). ACLD description: Specific learning disabilities, *ACLD Newsbriefs*, pp. 15-16.
- Australian Bureau of Statistics. (1996). The Australian Standard Classification of Occupations. July 1996. *Information paper Catalog* No. 1221.0
- Bajuk, K. J. (1995). Self-concept and anxiety in behaviour disordered middle school children: discrepancy between self-report and observer ratings. Unpublished doctoral manuscript. University of Western Sydney.
- Baker, D. B. (1994). Parenting stress and ADHD: A comparison of mothers and fathers. *Journal of Educational and Behavioral Disorders*, 2(1), 46-50.
- Bandura, A. (1978). The self-system in reciprocal determinism. *American Psychologist*, 33, 344-358.
- Bandura, A. (1982). Self-efficacy mechanism in human agency. *American Psychologist*, 37, 122-147.
- Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Englewood Cliffs, NJ: Prentice-Hall.
- Bandura, A. (1997). *The exercise of control*. W. H. Freeman & Company, New York.
- Bandura, A. & Schunk, D. H. (1981). Cultivating competence, self-efficacy and intrinsic interest through proximal self-motivation. *Journal of Personality and Social Psychology*, 41, 586-598.

- Barkley, R. A. (1990). *Attention Deficit Hyperactivity Disorder: A handbook for diagnosis and treatment*. New York; Guilford Press.
- Barkley, R. A., Grodzinsky, G. & DuPaul, G. J. (1992). Frontal lobe functions in attention-deficit disorder with and without hyperactivity: A review and research report. *Journal of Abnormal Child Psychology*, 20(2), 163-185.
- Bear, G. G., & Mink, K. M. (1996). Positive bias in maintenance of self-worth among children with LD. *Learning Disability Quarterly*, 19, 23-32.
- Bear, G. G., Juvonen, J. & McInerney, F. (1993). Self-perceptions and peer-relations of boys with and boys without learning disabilities in an integrated setting: A longitudinal study. *Learning Disability Quarterly*. 16, Spring, 127-136.
- Bender, W. N. (1986). Teachability and behavior of learning disabled children. *Psychological Reports*, 59, 471-476.
- Bender, W. N. (1987). Behavioral indicators of temperament and personality in the inactive learner. *Journal of Learning Disabilities*, 20, 301-305.
- Bender, W. N. (1994). Social-emotional development; the task and the challenge. *Learning Disability Quarterly*. 17, 250-252.
- Bender, W. N. (1997). *Understanding ADHD: a practical guide for teachers and parents*. Prentice-Hall, inc. Upper Saddle River, New Jersey.
- Bender, W. N., Rosenkrans, C. B. & Crane, M. (1999). Stress, depression and suicide among students with learning disabilities: Assessing the risk. *Learning Disability Quarterly*. 22, 143-155.

- Bender, W. N. & Wall, M. E. (1994). Social-emotional development of students with learning disabilities. *Learning Disability Quarterly*, 17, 323-341.
- Benson, J. & Rentsch, J. (1988). Testing the dimensionality of the Piers-Harris Children's Self-concept Scale. *Educational and Psychological Measurement*, 48, 615-626.
- Biederman, J., Newcom, J., & Sprich, S. (1991). Comorbidity of attention deficit hyperactivity disorder with conduct, depressive, anxiety, and other disorders. *American Journal of Psychiatry*, 148, 564-577.
- Biederman, J. & Steingard, R. (1989). Attention-deficit hyperactivity disorder in adolescents. *Psychiatric Annals*, 19(11), 587-596.
- Bird, K. K., & Hall, W. (1986). Psychiatric Research: Statistical power in psychiatric research. *Australian and New Zealand Journal of Psychiatry*, 20, 189-200.
- Bley, N. S., & Thornton, C. A. (1995). *Teaching mathematics to students with learning disabilities* (3<sup>rd</sup> ed.). Austin, TX: PRO-ED.
- Bong, M. & Clark, R. E. (1999). Comparison between self-concept and self-efficacy in academic motivation research. *Educational Psychologist*, 34(3), 139-153.
- Borkowski, J. G., Weyhing, R. S., & Carr, M. (1988). Effects of attributional retraining on strategy-based reading comprehension in learning-disabled students. *Journal of Educational Psychology*, 80(1), 46-53.
- Borkowski, J. G., Weyhing, R. S., & Turner, L. A. (1986). Attribution retraining and the teaching of strategies. *Exceptional Children*, 53 (2), 130-137.

- Bradley, L., & Bryant, P. E. (1985). *Rhyme & reasoning in reading and spelling*. Ann Arbor: University of Michigan Press.
- Brandtstadter, J. (1999). The self in action and development. In J. Brandtstadter & R. M. Learner (Ed), *Action and Self-development*, (pp. 37-65). Thousand Oaks, CA: Sage.
- Brophy, J. (1981). Teacher praise: A functional analysis. *Review of Educational Research*, 51, 5-32.
- Bryan, T. (1986). Self-concept and attributions of the learning disabled. *Learning Disabilities Focus*, 1 (2), 82-89.
- Bryan, T. H. & Bryan, J. H. (1986). *Understanding learning disabilities* (3<sup>rd</sup> ed.). Palo Alto, CA: Mayfield.
- Buchanan, G. M. & Seligman, M. E. P. (1995). *Explanatory Style* (Eds.). Hillsdale, New Jersey.
- Burns, R. (1982). *Self-concept development and education*. London: Holt, Reinhart & Winston.
- Byrne, B. M. (1986). Self-concept and academic achievement relations: An investigation of dimensionality, stability and causality. *Canadian Journal of Behavioral Sciences*, 18, 173-186.
- Cantwell, D. P., & Baker, L. (1991). Association between attention deficit hyperactivity disorder and learning disorder. *Journal of Learning Disabilities*, 24, 88-95.



- Carlyon, W. D. (1997). Attribution retraining: Implications for its integration into prescriptive social skill training. *School Psychology Review* 26 (1), 61-73.
- Carmichael, P., Adkins, Gaal, I., Hutchins, P., Levey, F., McCormack, J., Oberklaid, F., Pearson, C. & Storm, V. (1997). *Attention Deficit Hyperactivity Disorder*: National Health and Medical Research Council. Australia.
- Carroll, A. (1993). Current perspectives on attention deficit hyperactivity disorder: A review of the literature. *Australian Journal of Special Education*, 18(1), 15-24.
- Cawley, J. (1985). *Cognitive strategies and mathematics for the learning disabled*. Austin, TX: PRO-ED.
- Cawley, J., Fitzmaurice-Hayes, A., & Shaw, R. (1988). *Mathematics for the mildly handicapped-A guide to curriculum and instruction*. Boston: Allyn and Bacon.
- Chan, L. K. S. (1996). Combined strategy and attributional training for seventh grade average and poor readers. *Journal of Research in Reading*, 19, 111-127.
- Chapman, J. W. (1987). *The self-concept of learning disabled children*. Paper presented at the joint meeting of the Australian Association for Research in Education and the New Zealand Association for Research in Education, Christchurch, New Zealand.
- Chapman, J. W. (1988a). Learning disabled children's self-concepts. *Review of Educational Research*, 58 (93), 347-371.
- Chapman, J. W. (1988b). Cognitive motivational characteristics and academic achievement of learning disabled children: A longitudinal study. *Journal of Educational Psychology*, 80 (3), 357-365.

- Chapman, J. W. (1992). Learning disabilities in New Zealand: Where Kiwis and kids with LD can't fly. *Journal of Learning Disabilities*, 25, 362-370.
- Chapman, J. W. & Boersma, F. J. (1979). Learning disabilities, locus of control and mother attitudes. *Journal of Educational Psychology*, 71, 250-258.
- Cherkes-Julkowski, M. (1985). Information processing: A cognitive view. In J. Cawley (Ed), *Cognitive strategies and mathematics for the learning disabled* (pp. 117-138). Austin, TX: PRO-ED.
- Clever, A., Bear, G., & Juvonen, J. (1992). Discrepancies between competence and importance in self-perception of children in integrated classes. *The Journal of Special Education*, 26(2), 125-138.
- Coakes, S. J. & Steed, L. G. (1996). *SPSS for Windows*. Analysis without anguish. John Willey & Sons, New York.
- Collins, J. L. (1982, March). *Self-efficacy and ability in achievement behavior*. Paper presented at the annual meeting of the American Educational Research Association, New York.
- Conners, C. K. (1985). *The Conners Rating Scales*: Instruments for the assessment of childhood psychopathology. Unpublished manuscript, Children's Hospital National Medical Center, Washington, DC.
- Cooley, E. J. & Ayres, R. R. (1988). Self-concept and success-failure attributions of non-handicapped students and students with learning disabilities. *Journal of Learning Disabilities*, 21, 174-178.
- Coopersmith, S. (1967). *The antecedents of self-esteem*. San Francisco: Freeman

- Covington, M. V. (1984). The motive for self-worth. In R. Ames & C. Ames (Ed.). *Research in motivation in education*. Vol. 1 Student motivation (pp. 77-113), Orlando, FL: Academic Press.
- Crandall, V. C., Katkovsky, W. & Crandall, V. J. (1965). Children's beliefs in their own control of reinforcements in intellectual academic achievement situations. *Child Development*, 91-110.
- Craven, R. G. (1996). *Enhancing self-concept: A large scale longitudinal study in an educational setting*. Unpublished doctoral manuscript. University of Sydney.
- Craven, R. G., Marsh, H. W. & Debus, R. L. (1991). Effects of internally focused feedback and attributional feedback on enhancement of academic self-concept. *Journal of Educational Psychology*, 83(1), 17-27.
- Cunningham, C. E., Siegal, L. S. & Offord, D. R. (1985). A developmental dose response analysis of the effects of methylphenidate on the peer interactions of attention deficit disordered boys. *Journal of Child Psychology and Psychiatry*, 26. 955-971.
- DeLong, R. (1995). Medical and pharmacological treatment of learning disabilities. *Journal of Child Neurology*, 10(Suppl. 1). 92-95.
- Diener, C. I. & Dweck, C. S. (1978). An analysis of learned helplessness: Continuous changes in performance, strategy and achievement cognitions following failure. *Journal of Personality and Social Psychology*, 36, 451-462.
- Dietz, D. J. (1998). A test of a multi-session model of an attributional retraining program. *Dissertation Abstracts International*, 58(10-A), 3844.

- DuPaul, G. J. (1990). *The ADHD Rating Scale*: Normative data, reliability and validity. Unpublished manuscript, University of Massachusetts Medical Center, Worcester, MA.
- DuPaul, G. J. & Stoner, G. (1994). *ADHD in the Schools*: Assessment and practice. New York: Guilford Press.
- Durrant, J. E., Cunningham, C. E. & Voelker, S. (1990). Academic, social and general self-concepts of behavioral sub-groups of learning disabled children. *Journal of Educational Psychology*, 82(4), 657-663.
- Edwards, G. H., & Barkley, R. A. (1997). Attention deficit/ hyperactivity disorder: History, diagnosis and current concepts. In J. Bailey & D. Rice (Eds.), *Attention deficit/hyperactivity disorder: Medical, psychological and educational perspectives* (pp. 1-18). Sefton, NSW: *The Australian Association of Special Education*.
- Epstein, M. A., Shaywitz, S. E., Shaywitz, B. A. & Woolston, J. L. (1991). The boundaries of attention deficit disorder. *Journal of Learning Disabilities*, 24, 78-86.
- Feingold, B. F. (1975). *Why Your Child is Hyperactive*. New York: Rendon House.
- Forsterling, F. (1985). Attributional retraining: A review. *Psychological Bulletin*, 98, 495-512.
- Goldstein, S. (1995). *Attention deficit hyperactivity disorder*. New York: John Wiley & Sons.
- Grainger, J. (1997). *Children's behaviour, attention and reading problems*. The Australian Council for Educational Research Ltd. Victoria, 3124.

- Grainger, J. & Frazer, T. (1999). Using private speech to overcome learned helplessness. In A. J. Watson and L. R. Giorcelli (Ed.). *Accepting the literacy challenge* (pp. 116-130). Scholastic Sydney.
- Green, C. & Chee, K. (1994). Management of attention-deficit disorder: A personal perspective. *A Modern Medicine Reprint*, 37, 38-53.
- Grolnick, W. S., & Ryan, R. M. (1990). Self-perception, motivation and adjustment in children with learning disabilities: A multiple group comparison study. *Journal of Learning Disabilities*, 23, 177-184.
- Hackett, G. & Betz, N. E. (1989). An exploration of the mathematics self-efficacy/mathematics performance correspondence. *Journal for Research in Mathematics Education*, 20, 261-273.
- Hagborg, W. J. (1996). Self-concept and middle school students with learning disabilities: A comparison of scholastic competence subgroups. *Learning Disability Quarterly*, 19, 117-126.
- Hallahan, D. P. (1989). Attention disorders: specific learning disabilities. In T. Husen & Postlethwait (Eds.), *The International Encyclopedia of Education: Research and Studies* (suppl. Vol. 1, 98-99). NY: Pergamon.
- Hammill, D. D., Leigh, J. E., McNutt, G., & Larson, S. G. (1981). A new definition of learning disabilities. *Learning Disability Quarterly*, 4, 336-342.
- Hampton, N. Z. (1998). Sources of academic self-efficacy scale: An assessment tool for rehabilitation counselors. *Rehabilitation Counseling Bulletin*, 41 (4), 260-277.

- Harris, A. J., & Sipay, E. R. (1990). *How to increase reading ability*. A guide to developmental and remedial methods (9<sup>th</sup> ed.). New York: Longman.
- Harter, S. (1985). *Manual for the Self-perception Profile for Children*. University of Denver, Denver CO.
- Harter, S. (1986). Process underlying the construction, maintenance, and enhancement of the self-concept in children. In J. Suls & A. G. Greenwald (Ed.), *Psychological perspectives on the self*, Vol 3 (pp. 137-181). Hillsdale, NJ: Erlbaum.
- Harter, S. (1990). Issues in the assessment of the self-concept of children and adolescents. In La Greca (Eds), *Through the eyes of the child*. Allyn and Bacon.
- Harter, S. (1993). Causes and consequences of low self-esteem in children and adolescents. In R. F. Baumeister (Eds), *Self-esteem: the puzzle of low self-regard*. (pp. 87-116). Plenum Press, New York
- Harter, S. (1998). The development of self-representations. In W. Damon (Eds), *Handbook of Child Psychology* (Vol. 3, pp. 553-617). John Wiley & Sons, Inc.
- Harter, S., Whitesell, N. R., & Junkin, L. J. (1998). Similarities and differences in domain specific and global self-evaluations of learning disabled, behaviorally disordered, and normally achieving adolescents. *American Educational Research Journal*. 35(4), 653-680.
- Hattie, J. A. (1987). Identifying the salient facets of a model of student learning: A synthesis of meta-analysis. *International Journal of Educational Research*, 11, 187-212.

- Hattie, J. C. (1992). Enhancing self-concept. In J. A. Hattie (Ed.). *Self-concept* (pp. 221-240).
- Hattie, J. A., & Marsh, H. W. (1996). Future Directions in Self-concept Research. In B. A. Braken (Ed.). *Handbook of Self-concept*. John Wiley & Sons, Inc.
- Hechtman, L. (1989). Attention-deficit hyperactivity disorder in adolescence and adulthood: An up dated follow up. *Psychiatric Annals*, 19 (11), 597-603.
- Heyman, W. B. (1990). The self-perception of a learning disability and its relationship to academic self-concept and self-esteem. *Journal of Learning Disabilities*, 23(8), 472-475.
- Hinshaw, S. P. (1992). Academic underachievement, attention deficits and aggression: Comorbidity and implications for intervention. *Journal of Consulting and Clinical Psychology*, 60(6), 893-903.
- Hinshaw, S. P. & Melnick, S. M. (1995). Peer relationships in boys with attention-deficit hyperactivity disorder with and without comorbid aggression. *Development and Psychopathology*, 7, 627-647.
- Holborow, P. L., & Berry, P. J. (1986a). Hyperactivity and learning difficulties. *Journal of Learning Disabilities*, 19, 426-435.
- Horn, W. F., & Ialongo, N. (1986). Multimodel treatment of attention deficit hyperactivity disorder in children. In H. E. Fitzgerald, B. M. Lester, M. W. Yogman (Eds.). *Theory and Research in Behavioral Pediatrics*. (pp. 175-220). New York: Plenum Press.

- Hoza, B., Waschbusch, D. A., Pelham, W. E., Molina, B. S. G. & Milich, R. (2000). Attention-Deficit/Hyperactivity Disorder and control boys' responses to social success and failure. *Child Development*, 71(2), 432-446.
- Hoza, B., Pelham, W. E. Milich, R., Pillow, D. & McBride, K. (1993). The self-perception and attributions of attention deficit hyperactivity disordered boys. *Journal of Abnormal Child Psychology*. 21(3), 271-284.
- Huntington, D. D. & Bender, W. N. (1993). Adolescents with learning disabilities at risk? Emotional well-being, depression, suicide. *Journal of Learning Disabilities*. 26, 159-166.
- Hynd, G. W., Hern, K. L., Voller, K. K. & Marshall, R. M. (1991). Neurobiological basis of attention deficit hyperactivity disorder (ADHD). *School Psychology Review*, 20(2), 174-186.
- Jacobson, B., Lowery, B. & DuCette, J. (1986). Attributions of learning disabled children. *Journal of Educational Psychology*, 78(1), 59-64.
- Jastak, S., & Wilkinson, N. (1984). *Wide range achievement test-Revised*. Wilmington, DE: Jastak Associates.
- Kaslow, N. J., Tannenbaum, R. L., & Seligman, M. E. P. (1978). *The KASTAN: A children's attributional style questionnaire*. Unpublished manuscript, University of Pennsylvania.
- Kinderman, P. & Bentall, R. P. (2000). Self-discrepancies and causal attributions: Studies of hypothesized relationships. *British Journal of Clinical Psychology*, 39, 255-273.



- Kirby, J. R., & Becker, L. D. (1988). Cognitive components of learning problems in arithmetic. *Remedial and Special Education*, 9(5), 7-15. 27.
- Kistner, J., Haskett, M., White, K. & Robbins, F. (1987). Perceived competence of self-worth of learning disabled and normally achieving children. *Learning Disability Quarterly*, 12, 133-140.
- Kistner, J., Osborne, M. & LeVerier, L. (1988). Causal attributions of learning disabled children: developmental patterns and relation to academic progress. *Journal of Educational Psychology*, 80, 82-89.
- Kloomok, S. & Cosden, S. (1994). Self-concept in children with learning disabilities: The relationship between global self-concept, academic "discounting" non-academic self-concept and perceived social support. *Learning Disability Quarterly*, 17, 140-153.
- Kulik, J. A. & Kulik, C. C. (1988). Timing of feedback and verbal learning. *Review of Educational Research*, 58, 79-97.
- Kupietz, S. S. (1990). Sustained attention in normal and in reading disabled youngsters with and without ADHD. *Journal of Abnormal Child Psychology*, 18, 357-372.
- Levy, F. Hay, D. & McStephen, M. (1997). *Attention deficit hyperactivity disorder: a category or a continuum?* Genetic analysis of a large-scale twin study. Paper presented at the Conference of the NSW Institute of Educational Research. University of New South Wales, Australia.
- Licht, B. G. (1983). Cognitive Motivational factors that contribute to the achievement of learning disabled children. *Journal of Learning Disabilities*, 16 (8), 483-490.

- Licht, B. G., Kistner, J. A., Ozkarago, T. Shapiro, S., & Clausen, L. (1985). Causal attributions of learning disabled children: Individual differences and their implications for persistence. *Journal of Educational Psychology*, 77(2), 208-216.
- Lovitt, T. C. (1989). *Introduction to learning disabilities*, Boston: Allyn and Bacon.
- Lyon, G. R.. (1995). Research initiatives in learning disabilities. Contributions from scientists supported by the National Institute of Child Health and Human Development. *Journal of Child Neurology*, 10(Supple. No.1), 120-126.
- Magg, J. W. & Behrens, J. T. (1989). Depression and cognitive self-statements of learning disabled and seriously emotionally disturbed adolescents. *The Journal of Special Education*, 23, 17-27.
- Markus, H. W. & Nurius, P. (1986). Possible selves. *American Psychologists*, 41, 954-968.
- Marsh, H. W. (1984a). Relationships among dimensions of self-attributions, dimensions of self-concept, and academic achievements. *Journal of Educational Psychology*, 76, 1291-1308.
- Marsh, H. W. (1984b). Self-concept: The application of a frame of reference model to explain paradoxical results. *Australian Journal of Educational Psychology*, 28, 165-181.
- Marsh, H. W. (1986). Self-serving effect (bias?) in academic attributions: its relation to academic achievement and self-concept. *Journal of Educational Psychology*, 78, 190-200.
- Marsh, H. W. (1988). *Self-Description Questionnaire*: A theoretical and empirical basis for the Measurement of multiple dimensions of preadolescent self-concept:

A test manual and a research monograph. San Antonio, TX: The Psychological Corporation.

Marsh, H. W. (1990). *The Self-Description Questionnaire-I*: SDQ-1 manual. Sydney. University of Western Sydney.

Marsh, H. W. (1992a). *The Self-Description Questionnaire-II*: SDQ-11 manual. Sydney. University of Western Sydney.

Marsh, H. W. (1992b). *The Self-Description Questionnaire-III*: SDQ-111 manual. Sydney. University of Western Sydney.

Marsh, H. W. & Craven, R. G. (1997). Academic Self-concept: Beyond the dustbowl. In G. Phye (Ed.). *Handbook of classroom assessment: Learning, achievement and adjustment*. US: Academic Press, 131-198.

Marsh, H. W. & Johnston, C. F. (1993). Multidimensional self-concepts and frames of reference: Relevance to the exceptional learner. In F. E. Obiakor & S. Stile (Eds.) *Self-concept of Exceptional Learners: Current perspectives for educators* (pp. 72-112). Dubuque, IA: Kendall/Hunt.

Marsh, H. W. & Parker, J. W. (1984). Determinants of student's self-concept: Is it better to be a relatively large fish in a small pond even if you don't learn to swim as well? *Journal of Personality and Social Psychology*, 46, 213-231

Marsh, H. W. & Peart, N. (1988). Competitive and cooperative physical fitness training programs for girls: Effects on physical fitness and on multidimensional self-concepts. *Journal of Sport and Exercise Psychology*, 10, 390-407.

- Marsh, H. W., & Richards, G. E. (1988). The Outward-Bound bridging course for low-achieving high school males: Effect on academic achievement and multidimensional self-concepts. *Australian Journal of Psychology*, 40, 281-298.
- Marsh, H. W., Richards, G. E., & Barnes, J. (1986a). Multidimensional self-concept: The effect of participation in an Outward Bound program. *Journal of Personality and Social Psychology*, 50, 195-204.
- Marsh, H. W., Richards, G. E., & Barnes, J. (1986b). Multidimensional self-concept: A long-term follow-up of the effect of participation in an Outward Bound Program. *Personality and Social Psychology Bulletin*, 12, 475-492.
- Marsh, H. W., & Shavelson, R. J. (1985). Self-concept: Its multifaceted, hierarchical structure. *Educational Psychologist*, 20, 107-125.
- Marsh, H. W., Cairns, L., Relich, J., Barnes, J., & Debus, R. L. (1984). The relationship between dimensions of self-attribution and dimensions of self-concept. *Journal of Educational Psychology*, 76, 3-32.
- Matis, A. F. (1984). The social acceptance and self-esteem of learning disabled adolescents. *Dissertation Abstract International*, 45, 6-A, 1717.
- McBurnett, K., Lahey, B. B. & Pfiffner, L. J. (1993). Diagnosis of attention deficit disorder in DSM-IV: Scientific basis and implications for education. *Exceptional Children*, 60, 108-117.
- McConaughty, S. H. & Ritter, D. R. (1985). Social competence and behavioural problems of learning disabled boys aged 6-11. *Journal of Learning Disabilities*, 18, 547-553.

- McGee, R. & Share, D. L. (1988). Attention deficit disorder-hyperactivity and academic failure; which comes first and what should be treated? *Journal of The American Academy of Child and Adolescent Psychiatry*, 27(3), 318-325.
- McKinney, J. D., & Feagans, L. (1983). Adaptive classroom behavior of learning disabled students. *Journal of Learning Disabilities*, 16, 360-367.
- McKinney, J. D., & Feagans, L. (1984). Academic and behavioral characteristics: Longitudinal studies of learning disabled children and average achievers. *Learning Disability Quarterly*, 7, 251-265.
- McKinney, J. D., & Speece, D. L. (1986). Academic consequences and longitudinal stability of behavioural subtypes of learning disabled children. *Journal of Educational Psychology*, 78, 365-372.
- McKinney, J. D., Montague, M. & Hocutt, A. M. (1993). Educational assessment of students with attention deficit disorder. *Exceptional Children*, 60(2), 125-131.
- McInerney, D. M. (1999). What should teachers do to get children to want to read and write? Motivation for literacy acquisition. In A. J. Watson & L. R. Giorcelli (Eds.), *Accepting the Literacy Challenge*. 95-115. Scholastic Sydney.
- McPhail, J. C., & Stone, C. A. (1995). The self-concept of adolescents with learning disabilities. A review of literature and a call for theoretical elaboration. *Advances in Learning and Behavioral Disabilities*, 9, 193-226.
- Mercer, C. D. (1991). *Students with learning disabilities (4<sup>th</sup> ed.)*, NY: Merrill.
- Mercer, C. D. (1997). *Students with learning disabilities (5<sup>th</sup> ed.)* Upper Saddle River, New Jersey. Prentice-Hall.

- Mercer, C. D., King-Sears, P., & Mercer, A. R. (1990). Learning disabilities: definitions and criteria used by state education departments. *Learning Disability Quarterly*, 13, 141-152.
- Merrell, K. W. (1990). Hyperactivity and behavioural self-control in LD boys. In C. A. Riccio, J. J. Gonzalez, and G. W. Hynd, (1994). Attention-deficit hyperactivity disorder (ADHD) and learning disabilities. *Learning Disability Quarterly*, 17 (Fall), 311-322.
- Milich, R., Loney, J. & Landau, S. (1982). Independent dimensions of hyperactivity and aggression: A validation with playroom observation data. *Journal of Abnormal Child Psychology*, 19, 607-623.
- Milich, R. & Okazaki, M. (1991) An examination of learned helplessness among attention deficit hyperactivity disorder boys. *Journal of Abnormal Child Psychology*, 19, 607-623.
- Milich, R., Carlson, C. L., Pelham, W. E. & Licht, B. G. (1991). Effects of methylphenidate on the persistence of ADHD boys following failure experiences. *Journal of Abnormal Child Psychology*, 19, 519-536.
- Miranda, A., Villaescusa, I. M. & Vidal-Abarca, E. (1997). Is attribution retraining necessary? Use of self-regulation procedures for enhancing the comprehension strategies of children with learning disabilities. *Journal of Learning Disabilities*, 30 (5), 503-512.
- Miserandino, M. (1998). Attributional retaining as a method of improving athletic performance. *Journal of Sport Behavior*. 21, 286-297.

- Montgomery, M. S. (1994). Self-concept and children with learning disabilities: Observer –child concordance across six context-dependent domains. *Journal of Learning Disabilities*, 27, 254-262.
- National Joint Committee on Learning Disabilities. (1981). *Journal of Learning Disabilities*, 20, 107-108.
- Ochoa, S. H. & Olivarez, A., Jr. (1995). A meta-analysis of peer rating sociometric studies of pupils with learning disabilities. *The Journal of Special Education*, 29, 1-19.
- Omizo, M. M., Amerikaner, M. J. & Michael, W. B. (1985). The Coopersmith Self-Esteem Inventory as a predictor of feelings and communication satisfaction towards parents among learning disabled, emotionally disturbed and normal adolescents. *Educational and Psychological Measurement*, 45, 389-395.
- O'Shea, L. J, O'Shea, D. J, & Algozzine, B. (1998). *Learning disabilities: from theory towards practice*. Prentice-Hall, inc. Upper Saddle River, New Jersey.
- Pajares, F. (1996). Self-efficacy beliefs in academic settings. *Review of Educational Research*, 66, 543-578.
- Parker, H. C. (1992). *The ADD Hyperactivity Handbook for Schools*. Plantation, FL: Impact.
- Parmar, R. S., & Cawley, J. F. (1991). Challenging the routine and passivity that characterise arithmetic instruction for children with mild handicaps. *Remedial and Special Education*. 12 (5), 23-32, 43.
- Patten, M. (1983). Relationships between self-esteem, anxiety and achievement in young learning disabled students. *Journal of Learning Disabilities*, 16, 43-45.

- Pearl, R. (1982). LD children's attributions for success and failure. A replication with a labeled LD sample. *Learning Disability Quarterly*, 5, 173-176.
- Pearl, R. (1992). Psychosocial characteristics of learning disabled students. In N. N. Singh & I. L. Beale (Eds.), *Learning disabilities: nature, theory and treatment*, 96-125. Springer-Verlag New York, Inc
- Peterson, C., Buchanan, G. M. & Seligman, M. E. P. (1995). Explanatory Style: History and evolution of the field. In G. M. Buchanan & M. E. P. Seligman (Eds), *Explanatory Style*, Hillsdale, New Jersey.
- Piers, E. V. (1984). *Revised Manual for the Piers-Harris Children's Self-concept Scale*. Los Angeles: Western Psychological Services.
- Piers, E. & Harris, D. (1969). *The Piers-Harris Children's Self-concept Scale*. Nashville, TN. Counselor's Recordings and Tests.
- Raven, J. C., Court, J. H., & Raven, J. (1995). *Coloured Progressive Matrices* (Eds). Oxford Psychologists Press.
- Rawson, E. H. & Cassady, C. J. (1995). Effects of therapeutic intervention on self-concepts of children with learning disabilities. *Child and Adolescents Social-Work Journal*, 12 (1), 19-31.
- Reason, R. (1999). ADHD: A psychological response to an evolving concept (Report of the working party of the British Psychological Society). *Journal of Learning Disabilities*, 32(1), 85-91.
- Reid, M. K., & Borkowski, J. G. (1987). Causal attributions of hyperactive children: implications for training strategies and self-control. *Journal of Educational Psychology*, 79, 296-307.



- Relich, J. D., Debus, R. L. & Walker, R. (1986). The mediating role of attribution and self-efficacy variables for treatment effects on achievement outcomes. *Contemporary Educational Psychology*, 11, 195-216.
- Ribner, S. (1978). The effects of special class placement on the self-concept of exceptional children. *Journal of Learning Disabilities*, 11, 319-323.
- Riccio, C. A., Gonzalez, J. J., & Hynd, G. W. (1994). Attention-deficit hyperactivity disorder (ADHD) and learning disabilities. *Learning Disability Quarterly*, 17 (Fall), 311-322.
- Ritter, D. R. (1989). Social competence and problem behaviour of adolescents girls with learning disabilities. *Journal of Learning Disabilities*, 22, 460-461.
- Robins, P. M. (1992). A comparison of behavioural and attentional functioning in children diagnosed as hyperactive or learning disabled. *Journal of Abnormal Child Psychology*, 20, 65-82.
- Rogers, H. & Saklofske, D. E. (1985). Self-concept, locus of control and performance expectations of learning disabled children. *Journal of Learning Disabilities*, 18, 273-278.
- Rosenberg, M. (1965). *Society and the adolescent self-image*. Princeton, NJ: Princeton University Press.
- Rothstein, L. F. (1995). *Special education law*. New York: Longman.
- Russell, R. W. (1974). The dilemma of the handicapped adolescents. In R. E. Weber (Ed.), *Handbook of Learning Disabilities*. Englewood Cliffs, NJ: Prentice-Hall.

- Russell, R., & Ginsburg, H. (1984). Cognitive analysis of children's mathematical difficulties. *Cognitive and Instructions*, 1, 217-244.
- Sabornie, E. J. (1994). Social-affective characteristics in early adolescents identified as learning disabled and non-disabled. *Learning Disability Quarterly*, 17, 268-279.
- Schunk, D. H. (1981). Modeling and attributional effects on children's achievement: A self-efficacy analysis. *Journal of Educational Psychology*, 73, 93-105.
- Schunk, D. H. (1983a). Ability versus effort attributional feedback on children's perceived efficacy and achievement. *Journal of Educational Psychology*, 75, 848-856.
- Schunk, D. H. (1984a). Self-efficacy perspective on achievement behavior. *Educational Psychologist*, 19, 48-58.
- Schunk, D. H. (1984b). Sequential attributional feedback and children's achievement behaviour. *Journal of Educational Psychology*, 76, 1159-1169.
- Schunk, D. H. (1985). Self-efficacy and classroom learning. *Psychology in the Schools*, 22, 208-223.
- Schunk, D. H. (1990a). *Socialization and the development of self-regulated learning: The role of attributions*. Paper presented at the annual meeting of the American Educational Research Association, Boston. April, 16-20.
- Schunk, D. H. (1990b). Self-efficacy and cognitive achievement: Implications for students with learning problems. In K. J. Torgesen. *Cognitive and behavioural characteristics of children with learning disabilities*. (pp. 139-158). Austin, Texas.

- Schunk, D. H. (1991). Self-efficacy and academic motivation. *Educational Psychologist*, 26, 207-231.
- Schunk, D. H. (1992). Influence of reading comprehension strategy information on children's achievement outcomes. *Learning Disability Quarterly*, 15, 51-64.
- Schunk, D. H. (1994). *Motivating self-regulation of learning: The role of performance attributions*. Paper presented at the annual meeting of the American Educational Research Association, New Orleans, April.
- Schunk, D. H., & Hanson, A. R. (1985). Peer models: influence on children's self-efficacy and achievement. *Journal of Educational Psychology*, 77, 313-322.
- Schunk, D. H. & Cox, P. D. (1986). Strategy training and attributional feedback with learning disabled students. *Journal of Educational Psychology*, 78, 201-209.
- Schunk, D. H. & Swartz, C. W. (1993). Goals and progress feedback: effects on self-efficacy and writing achievement. *Contemporary Educational Psychology*, 18, 337-354.
- Seligman, M. E. P. (1975). *Helplessness: On Depression, Development and Death*. San Francisco: Freeman.
- Seligman, M. E. P. (1994). *What you can change and what you can't*. Random House Australia.
- Seligman, M. E. P. (1991). *Learned Optimism*. Random House, Australia.
- Seligman, M.E.P.& Schulman, P. (1986). Explanatory style as a predictor of productivity and quitting among life insurance sales agents. *Journal of Personality and Social Psychology*, 50, 832-838.

- Shavelson, R. J., & Bolus, R. (1982). Self-concept: The interplay of theory and methods. *Journal of Educational Psychology*, 74, 3-17.
- Shavelson, R. J., Hubner, J. J. & Stanton, G. C. (1976). Validation of construct interpretations. *Review of Educational Research*, 46, 407-441.
- Shaywitz, S. E., & Shaywitz, B. A. (1988). Attention deficit disorder: Current perspectives. *Proceedings of the Learning Disabilities National Conference*, Parkton, MD.
- Shaywitz, B. A., & Shaywitz, S. E. (1991). Comorbidity: A critical issue in attention deficit disorder. *Journal of Child Neurology*, 6(supplement), S13-18.
- Shaywitz, B. A., Fletcher, J. M., & Shaywitz, S. E. (1992). Interrelationships between reading disability and attention deficit hyperactivity disorder. In A. J. Capute, P. J. Accardo, & B. K. Shapiro (Eds.), *Learning Disabilities Spectrum*. Baltimore: York Press, Inc.
- Shell, D. F., Colvin, C., & Brunning, R. H. (1995). Self-efficacy, attributions and outcome expectancy mechanisms in reading and writing achievement. *Journal of Educational Psychology*, 87, 386-398.
- Sherer, M. & Adam, C. H. (1983). Construct validity of the Self-efficacy Scale. *Psychological Reports*, 53, 899-902.
- Sherer, M. & Maddux, J. E. (1982). The Self-Efficacy Scale: construction and validation. *Psychological Reports*, 51, 663-671.
- Siegel, L. S. (1989). Why we do not need intelligence test scores in the definition and analysis of learning disabilities. *Journal of Learning Disabilities*, 22(8), 514-518.

- Silver, L. B. (1990). Attention Deficit-Hyperactivity Disorder: Is it a learning disability or a related disorder? *Journal of Learning Disabilities*, 23(7), 394-397.
- Silver, L. B. (1992). *The misunderstood child: A guide for parents of children with learning disabilities*. Blue Ridge Summit, PA: Tab Book.
- Silverman, R. G. & Zigmond, N. (1983). Self-concept in LD adolescents. *Journal of Learning Disabilities*, 16, 478-482.
- Slavin, R. (1991). *Educational Psychology*. Upper Saddle River, NJ: Prentice-Hall
- Slomkowski, C., Klein, R. G. & Mannuzza, S. (1995). Is self-esteem an important outcome in hyperactive children. *Journal of Abnormal Child Psychology*, 23(3), 303-314.
- Smith, C. R. (1994). *Learning disabilities: The interaction of learner, task, and setting* (3<sup>rd</sup> Ed.) Boston: Allyn and Bacon.
- Smith, D. D., & Luckasson, R. (1995). *Introduction to special education: Teaching in an age of challenge* (2<sup>nd</sup> ed.). Boston: Allyn and Bacon.
- Smith, D. S., & Nagal, R. J. (1995). Self-perceptions and social comparisons among children with LD. *Journal of Learning Disabilities*, 28(6), 364-371.
- Spreen, O. (1989). Relationship between learning disability, emotional disorders, and neuropsychology: Some results and observations. *Journal of Clinical and Experimental Neuropsychology*, 11, 117-140.
- Stanovich, K. E. (1986). Matthew effects in reading: Some consequences of individual differences in the acquisition of literacy. *Reading Research Quarterly*, 21, 360-407.

- Tabachnick, B. G. & Fidell, L. S. (1989). *Using Multivariate Statistics*. New York: Harper and Row.
- Tabassam, W. & Grainger, J. (2000). *Evaluation of effectiveness of a self-concept enhancement intervention for students with LD and LD/ADHD*. Paper presented at the Inaugural Self-concept Enhancement and Learning Facilitation (SELF) Research Centre International Conference, Sydney, Australia, Oct 5-6, 2000.
- Taylor, J. E. (1990). *Helping your hyperactive child*. New York: Prima.
- Taylor, S. E. & Brown, J. D. (1988). Illusion and well being: A social psychological perspective on mental health. *Psychological Bulletin*, 103, 193-210.
- Tipton, R. M. & Worthington, E. L. (1984). The measurement of generalized self-efficacy: A study of construct validity. *Journal of Personality Assessment*. 48 (5), 545-548.
- Tirosh, E., Berger, J., Cohen-Ophir, M., Davidovitch, M. & Cohen, A. (1998). Learning disabilities with and without attention-deficit hyperactivity disorder: Parents and teachers perspectives. *Journal of Child Neurology*, 13 (6), 270-276.
- Tollefson, N. (1982). Attribution patterns of learning-disabled adolescents. *Learning Disability Quarterly*, 5, 14-20.
- Torgesen, J. K. (1988). The cognitive and behavioural characteristics of children with learning disabilities. *Journal of Learning Disabilities*, 21, 587-589.
- Torgesen, J. K. & Bryant, B. R. (1994). *Phonological awareness training for reading*. Austin, TX: PRO-ED.

- Tracey, D. K. & Marsh, H. W. (2000). *Self-concepts of primary students with mild intellectual disabilities: Issues of measurement and educational placement*. Paper presented at the Inaugural Self-concept Enhancement and Learning Facilitation (SELF) Research Centre International Conference, Sydney, Australia, Oct 5-6, 2000.
- Trogesen, J. K., Wagner, R. K., & Rashotte, C. A. (1994). Longitudinal studies of phonological processing and reading. *Journal of Learning Disabilities*. 27, 276-286.
- U.S. Department of Education. (1994). Sixteenth annual report to Congress on the implementation of the individuals with *Disabilities Education Act*. In C. D.
- U.S. Office of Education. (1977). Assistance to states for Education of handicapped children: procedure for evaluating specific learning disabilities Federal register, 42, 65082-65085. In D. Mercer, *Students with learning disabilities*. Prentice-Hall, Inc.
- Wechsler, D. (1991). *Manual for the Wechsler Intelligent Scale for Children*. 3<sup>rd</sup> Ed. New York: Psychological Corp.
- Weinberg, W. A., & Emslie, G. J. (1991). Attention-deficit hyperactivity disorder: The differential diagnosis, *Journal of Child Neurology*, 6(S), S23-S37.
- Weiner, B. (1974). *Achievement motivation and attribution theory*. Morristown, N. J.; General Learning Press.
- Weiner, B. (1984). Principles for a theory of students motivation and their application within an attributional framework. In R. E. Ames, and L. Ames, *Research on Motivation in Education*. London: Academic Press.

- Weiner, B. (1986). *An attributional theory of motivation and emotion*. New York: Springer-Verlag.
- Weiner, B. (1994). Integrating social and personal theories of achievement striving. *Review of Educational Research*, 64, 557-573.
- Weiss, G & Hechtman, L. (1993). *Hyperactive children grown-up: Empirical findings and theoretical considerations*. New York: Guilford Press.
- Wender, Paul H. (1987). *The hyperactive child. Adolescent and adult: Attention deficit disorder through the life span*. New York: Oxford University Press.
- Wilson, D. R. & David, W. J. (1994). Academic intrinsic motivation and attitudes towards school and learning of learning disabled students. *Learning Disabilities Research and Practice*, 9, 148-156.
- Wylie, R. C. (1979). *The Self-Concept* (vol.2). Lincoln: University of Nebraska Press.
- Zentall, S. S. (1993). Research on the educational implications of attention deficit hyperactivity disorder. *Exceptional Children*, 60(2), 143-153.



**APPENDICES**

## APPENDIX A- Instruments

- The Self-Description Questionnaire-1 (SDQ-1)
- ADHD- Rating Scale

## APPENDIX B- Instruments developed for this research

- The Academic Attributional Style Questionnaire (AASQ)
- The Academic Self-efficacy Beliefs Scale (ASEB-Scale)
- Cluster analysis of the AASQ
- Cluster analysis of the ASEB-Scale
- Parents' educational and occupational information

## APPENDIX C- The Intervention program

## APPENDIX D- Reading and Mathematics Task- sheets

## APPENDIX E- Consent forms

SDQ-1

Child's Number .....Circle one:   Boy    Girl

School.....Age.....Grade.....

This is not a test. There is no right or wrong answer and every one will have different answers. Please read each sentence and choose an answer. There are five possible answers for each question. These are written at the top of the boxes. Choose your answer to a sentence and make a tick in the box under the answer you choose. Be sure that your answer show how you feel about yourself.

Please do not talk about your answers with anyone else. We will keep your answers private and not show them to anyone.

Before you start, below is an example of a student Bob:

|                                       | FALSE                    | MOSTLY FALSE             | SOME-TIMES FALSE/<br>SOME-TIMES TRUE | MOSTLY TRUE              | TRUE                     |
|---------------------------------------|--------------------------|--------------------------|--------------------------------------|--------------------------|--------------------------|
| 1- In general I am neat and tidy..... | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/>  | <input type="checkbox"/> | <input type="checkbox"/> |

Bob answered “SOMETIMES FALSE, SOMETIMES TRUE” because he is not very neat, but he is not very messy either.

2- I like to watch T.V.....☐ ☒ ☐ ☐ ☐

Bob watched a little bit of T.V, so he marked “MOSTLY FALSE”.  
For each statement you should find the answer that fits best and put a tick in the box under that answer.

If you want to change an answer you have marked you should cross out the tick and put a new tick in the box on the same line. For all the sentences be sure that your tick is on the same line as the sentence you are answering. You should have one answer and only one answer for each sentence. Do not leave out any of the sentences.

\_\_\_\_\_ your hand.

|  |    | FALSE                    | MOSTLY FALSE             | SOME-TIMES FALSE/<br>SOME-TIMES TRUE | MOSTLY TRUE              | TRUE                     |    |
|--|----|--------------------------|--------------------------|--------------------------------------|--------------------------|--------------------------|----|
| 1. I am good looking .....   | 1  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>             | <input type="checkbox"/> | <input type="checkbox"/> | 1  |
| 2. I'm good at all <b>SCHOOL SUBJECTS</b> .....                            | 2  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>             | <input type="checkbox"/> | <input type="checkbox"/> | 2  |
| 3. I can run fast .....  | 3  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>             | <input type="checkbox"/> | <input type="checkbox"/> | 3  |
| 4. I get good marks in <b>READING</b> .....                                | 4  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>             | <input type="checkbox"/> | <input type="checkbox"/> | 4  |
| 5. My parents understand me .....  | 5  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>             | <input type="checkbox"/> | <input type="checkbox"/> | 5  |
| 6. I hate <b>MATHEMATICS</b> .....   | 6  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>             | <input type="checkbox"/> | <input type="checkbox"/> | 6  |
| 7. I have lots of friends .....  | 7  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>             | <input type="checkbox"/> | <input type="checkbox"/> | 7  |
| 8. I like the way I look .....   | 8  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>             | <input type="checkbox"/> | <input type="checkbox"/> | 8  |
| 9. I enjoy doing work in all <b>SCHOOL SUBJECTS</b> .....                  | 9  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>             | <input type="checkbox"/> | <input type="checkbox"/> | 9  |
| 10. I like to run and play hard .....                                      | 10 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>             | <input type="checkbox"/> | <input type="checkbox"/> | 10 |
| 11. I like <b>READING</b> .....  | 11 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>             | <input type="checkbox"/> | <input type="checkbox"/> | 11 |
| 12. My parents are usually unhappy or<br>disappointed with what I do ..... | 12 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>             | <input type="checkbox"/> | <input type="checkbox"/> | 12 |
| 13. Work in mathematics is easy for me .....                               | 13 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>             | <input type="checkbox"/> | <input type="checkbox"/> | 13 |

|  |    | FALSE                    | MOSTLY FALSE             | SOME-TIMES FALSE/<br>SOME-TIMES TRUE | MOSTLY TRUE              | TRUE                     |    |
|--|----|--------------------------|--------------------------|--------------------------------------|--------------------------|--------------------------|----|
| 14. I make friends easily .....                          | 14 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>             | <input type="checkbox"/> | <input type="checkbox"/> | 14 |
| 15. I have a pleasant looking face .....                 | 15 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>             | <input type="checkbox"/> | <input type="checkbox"/> | 15 |
| 16. I get good marks in all <b>SCHOOL SUBJECTS</b> ..... | 16 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>             | <input type="checkbox"/> | <input type="checkbox"/> | 16 |
| 17. I hate sports and games .....                        | 17 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>             | <input type="checkbox"/> | <input type="checkbox"/> | 17 |
| 18. I'm good at <b>READING</b> .....                     | 18 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>             | <input type="checkbox"/> | <input type="checkbox"/> | 18 |
| 19. I like my parents .....                              | 19 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>             | <input type="checkbox"/> | <input type="checkbox"/> | 19 |
| 20. I look forward to <b>MATHEMATICS</b> .....           | 20 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>             | <input type="checkbox"/> | <input type="checkbox"/> | 20 |
| 21. Most kids have more friends than I do .....          | 21 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>             | <input type="checkbox"/> | <input type="checkbox"/> | 21 |
| 22. I am a nice looking person .....                     | 22 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>             | <input type="checkbox"/> | <input type="checkbox"/> | 22 |
| 23. I hate all <b>SCHOOL SUBJECTS</b> .....              | 23 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>             | <input type="checkbox"/> | <input type="checkbox"/> | 23 |
| 24. I enjoy sports and games .....                       | 24 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>             | <input type="checkbox"/> | <input type="checkbox"/> | 24 |
| 25. I am interested in <b>READING</b> .....              | 25 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>             | <input type="checkbox"/> | <input type="checkbox"/> | 25 |
| 26. My parents like me .....                             | 26 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>             | <input type="checkbox"/> | <input type="checkbox"/> | 26 |

SOME-  
TIMES  
FALSE/  
SOME-  
TIMES  
TRUE

FALSE MOSTLY FALSE MOSTLY TRUE TRUE

27. I get good marks in **MATHEMATICS** ..... 27 ☐ ☐ ☐ ☐ ☐ 27
28. I get along with kids easily ..... 28 ☐ ☐ ☐ ☐ ☐ 28
29. I do lots of important things ..... 29 ☐ ☐ ☐ ☐ ☐ 29
30. I am ugly ..... 30 ☐ ☐ ☐ ☐ ☐ 30
31. I learn things quickly in all **SCHOOL SUBJECTS** .. 31 ☐ ☐ ☐ ☐ ☐ 31
32. I have good muscles ..... 32 ☐ ☐ ☐ ☐ ☐ 32
33. I am dumb at reading ..... 33 ☐ ☐ ☐ ☐ ☐ 33
34. If I have children of my own, I want to  
bring them up like my parents raised me ..... 34 ☐ ☐ ☐ ☐ ☐ 34
35. I am interested in **MATHEMATICS** ..... 35 ☐ ☐ ☐ ☐ ☐ 35
36. I am easy to like ..... 36 ☐ ☐ ☐ ☐ ☐ 36
37. Overall, I am no good ..... 37 ☐ ☐ ☐ ☐ ☐ 37
38. Other kids think I am good looking ..... 38 ☐ ☐ ☐ ☐ ☐ 38
39. I am interested in all **SCHOOL SUBJECTS** ..... 39 ☐ ☐ ☐ ☐ ☐ 39

SOME-  
TIMES  
FALSE/  
SOME-  
TIMES  
TRUE

FALSE MOSTLY FALSE MOSTLY TRUE TRUE

40. I am good at sports ..... 40 ☐ ☐ ☐ ☐ ☐ 40
41. I enjoy doing work in **READING** ..... 41 ☐ ☐ ☐ ☐ ☐ 41
42. My parents and I spend a lot of time together ..... 42 ☐ ☐ ☐ ☐ ☐ 42
43. I learn things quickly in **MATHEMATICS** ..... 43 ☐ ☐ ☐ ☐ ☐ 43
44. Other kids want me to be their friend ..... 44 ☐ ☐ ☐ ☐ ☐ 44
45. In general, I like being the way I am ..... 45 ☐ ☐ ☐ ☐ ☐ 45
46. I have a good looking body ..... 46 ☐ ☐ ☐ ☐ ☐ 46
47. I am dumb in all **SCHOOL SUBJECTS** ..... 47 ☐ ☐ ☐ ☐ ☐ 47
48. I can run a long way without stopping ..... 48 ☐ ☐ ☐ ☐ ☐ 48
49. Work in **READING** is easy for me ..... 49 ☐ ☐ ☐ ☐ ☐ 49
50. My parents are easy to talk to ..... 50 ☐ ☐ ☐ ☐ ☐ 50
51. I like **MATHEMATICS** ..... 51 ☐ ☐ ☐ ☐ ☐ 51
52. I am not as good as other kids ..... 52 ☐ ☐ ☐ ☐ ☐ 52

|   |    | FALSE                    | MOSTLY<br>FALSE          | SOME-<br>TIMES<br>FALSE/<br>SOME-<br>TIMES<br>TRUE | MOSTLY<br>TRUE           | TRUE                     |    |
|---|----|--------------------------|--------------------------|--|--------------------------|--------------------------|----|
| 53. Overall I have a lot to be proud of .....             | 53 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>                           | <input type="checkbox"/> | <input type="checkbox"/> | 53 |
| 54. I'm better looking than most of my friends .....      | 54 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>                           | <input type="checkbox"/> | <input type="checkbox"/> | 54 |
| 55. I look forward to all <b>SCHOOL SUBJECTS</b> .....    | 55 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>                           | <input type="checkbox"/> | <input type="checkbox"/> | 55 |
| 56. I am a good athlete .....                             | 56 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>                           | <input type="checkbox"/> | <input type="checkbox"/> | 56 |
| 57. I look forward to <b>READING</b> .....                | 57 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>                           | <input type="checkbox"/> | <input type="checkbox"/> | 57 |
| 58. I get along well with my parents .....                | 58 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>                           | <input type="checkbox"/> | <input type="checkbox"/> | 58 |
| 59. I'm good at <b>MATHEMATICS</b> .....                  | 59 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>                           | <input type="checkbox"/> | <input type="checkbox"/> | 59 |
| 60. I am popular with kids of my own age .....            | 60 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>                           | <input type="checkbox"/> | <input type="checkbox"/> | 60 |
| 61. I can't do anything right .....                       | 61 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>                           | <input type="checkbox"/> | <input type="checkbox"/> | 61 |
| 62. I have nice features like nose, and eyes, and hair .. | 62 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>                           | <input type="checkbox"/> | <input type="checkbox"/> | 62 |
| 63. Work in all <b>SCHOOL SUBJECTS</b> is easy for me ... | 63 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>                           | <input type="checkbox"/> | <input type="checkbox"/> | 63 |
| 64. I'm good at throwing a ball .....                     | 64 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>                           | <input type="checkbox"/> | <input type="checkbox"/> | 64 |

|  |    | FALSE                    | MOSTLY<br>FALSE          | SOME-<br>TIMES<br>FALSE/<br>SOME-<br>TIMES<br>TRUE | MOSTLY<br>TRUE           | TRUE                     |    |
|--|----|--------------------------|--------------------------|--|--------------------------|--------------------------|----|
| 65. I hate <b>READING</b> .....                        | 65 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>                           | <input type="checkbox"/> | <input type="checkbox"/> | 65 |
| 66. My parents and I have a lot of fun together .....  | 66 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>                           | <input type="checkbox"/> | <input type="checkbox"/> | 66 |
| 67. I can do things as well as most other people ..... | 67 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>                           | <input type="checkbox"/> | <input type="checkbox"/> | 67 |
| 68. I enjoy doing work in <b>MATHEMATICS</b> .....     | 68 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>                           | <input type="checkbox"/> | <input type="checkbox"/> | 68 |
| 69. Most other kids like me .....                      | 69 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>                           | <input type="checkbox"/> | <input type="checkbox"/> | 69 |
| 70. Other people think I am a good person .....        | 70 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>                           | <input type="checkbox"/> | <input type="checkbox"/> | 70 |
| 71. I like all <b>SCHOOL SUBJECTS</b> .....            | 71 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>                           | <input type="checkbox"/> | <input type="checkbox"/> | 71 |
| 72. A lot of things about me are good .....            | 72 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>                           | <input type="checkbox"/> | <input type="checkbox"/> | 72 |
| 73. I learn things quickly in <b>READING</b> .....     | 73 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>                           | <input type="checkbox"/> | <input type="checkbox"/> | 73 |
| 74. I'm as good as most other people .....             | 74 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>                           | <input type="checkbox"/> | <input type="checkbox"/> | 74 |
| 75. I am dumb at <b>MATHEMATICS</b> .....              | 75 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>                           | <input type="checkbox"/> | <input type="checkbox"/> | 75 |
| 76. When I do something, I do it well .....            | 76 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>                           | <input type="checkbox"/> | <input type="checkbox"/> | 76 |

**ADHD RATING SCALE**

Please see print copy for image



---

*Note.* From *The ADHD Rating Scale: Normative Data, Reliability, and Validity* by G. J. DuPaul, 1990, unpublished manuscript, University of Massachusetts Medical Center, Worcester. Reprinted by permission of the author. This form may be reproduced for personal use.

APPENDIX B

Academic Attributional Style Questionnaire

Code Number.....Age.....Sex.....

Here are some little situations listed that could happen in school or at home. Imagine that each of these little things happened to you, then choose the ‘A’ answer or the ‘B’ answer the one that best describes the way you think you would feel in this situation. The great thing about this is that it is not a test, so there are no right or wrong answers.

-----

- 1. Suppose you get an ‘A’ on a test, it would be because
  - A. You are smart
  - B. You are good in the subject that the test was in.
- 2. Suppose you read a story well in front of your class, it would be because
  - A. You are good at reading.
  - B. That story was easy to read.
- 3. Suppose you get very good grades in school, it would be because
  - A. Your school-work is simple.
  - B. You are a hard worker.
- 4. Suppose your teacher tells you that your reading is good, it would be because
  - A. Your teacher was in a good mood that day.
  - B. You teacher usually praises your work.
- 5. Suppose you start a new story in reading and you find it hard to understand straight away, it would be because
  - A. This story was very difficult.
  - B. Your reading is poor.



6. Suppose you didn't understand your teacher's lesson, it would be because
  - A. You didn't pay attention when your teacher was talking.
  - B. Your teacher didn't explain it properly
7. Suppose your teacher says you that you are doing badly in reading work, it would be because
  - A. Usually you don't do well at reading work.
  - B. The past few weeks you have been doing badly in reading.
8. Suppose you fail a test, it would be because
  - A. Your teacher always makes hard tests.
  - B. The past few weeks your teacher has made hard tests.
9. Suppose teacher awarded a gold star for today's reading work and you got it, it would be because
  - A. That day you read well.
  - B. You usually read well.
10. Suppose you get an 'A' on a maths test, it would be because
  - A. That test was simple.
  - B. You are good at maths.
11. Suppose you failed a math test, it would be because
  - A. You do not do well on any exam.
  - B. You failed the test because you didn't do well on that test.
12. Suppose you get a bad grade in school, it would be because
  - A. Your teachers mark too hard.
  - B. You didn't try hard to get good grade.
13. Suppose you got a maths question wrong in class, it would be because
  - A. That question was hard.
  - B. You often have trouble in maths.
14. Suppose you get a bad grade on a reading test, it would be because
  - A. You are no good at reading.
  - B. There was so much noise, you couldn't concentrate.

15. Suppose you finish your homework quickly, it would be because
  - A. You usually do every thing quickly.
  - B. That day you did your school work quickly.
16. Suppose your teacher asks you a question and you give the wrong answer, it would be because
  - A. That day you got nervous when you had to answer the question.
  - B. You get nervous when you have to answer questions.
17. Suppose you get a bad grade on a class test, it would be because
  - A. You don't do well on tests.
  - B. You did not feel well that day.
18. Suppose you had a substitute teacher and she liked you, it would be because
  - A. You were well behaved during class that day.
  - B. You are almost always well behaved during class.
19. Suppose your teacher says to you that your math work is good, it would be because
  - A. You always do well on maths work.
  - B. Sometimes you do well in maths.
20. Suppose you get a very good grade on a class test, it would be because
  - A. You usually get good grades on tests.
  - B. That day you were lucky to get good grade.

**SCORING KEY FOR THE AASQ**

Below are listed the item’s number comprising of positive events and negative events of the Academic Attributional Style Questionnaire. The choice A or B will lead to a score of 1 for that item.

| Positive attributions Scale | Negative attributions Scale |
|-----------------------------|-----------------------------|
| <u>Item No----Choice</u>    | <u>Item No----Choice</u>    |
| 1 -----A                    | 5-----B                     |
| 2-----A                     | 6-----A                     |
| 3-----B                     | 7-----A                     |
| 4-----B                     | 8-----A                     |
| 9 -----B                    | 11-----A                    |
| 10-----B                    | 12-----B                    |
| 15-----A                    | 13-----B                    |
| 18-----B                    | 14-----A                    |
| 19-----A                    | 16-----B                    |
| 20-----A                    | 17-----A                    |

- ◆ Positive Attributional Style = the sum of the scores on the Positive attributions scale.
- ◆ Negative Attributional Style = the sum of the scores on the Negative attributions scale.
- ◆ Overall Attributional Style = the difference of scores on positive attributions scale and negative attributions scale.

Academic Self-efficacy Beliefs Scale

This is not a test. There is no right or wrong answer. I would like to ask you how well, do you think, you can do the following things. Please read the following statements and choose an answer. There are five possible choices for each question. These are written at the top of the boxes. Choose your answer to a sentence and make a tick in the box under the answer you choose. For each item please tick one choice only. Thank you for helping me.

|   | Never                    | Rarely                   | Some times               | Often                    | Always                   |    |
|---|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|----|
| 1- I can get good marks on a maths test.                              | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | -1 |
| 2- I can complete all the maths work given to me.                     | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | -2 |
| 3- I can finish the reading given to me.                              | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | -3 |
| 4- I can get good marks on a reading test.                            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | -4 |
| 5- I can do as many maths problems as the other children in my class. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | -5 |
| 6- It is difficult for me to read correctly.                          | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | -6 |
| 7- I can read as many pages as the other children in my class.        | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | -7 |

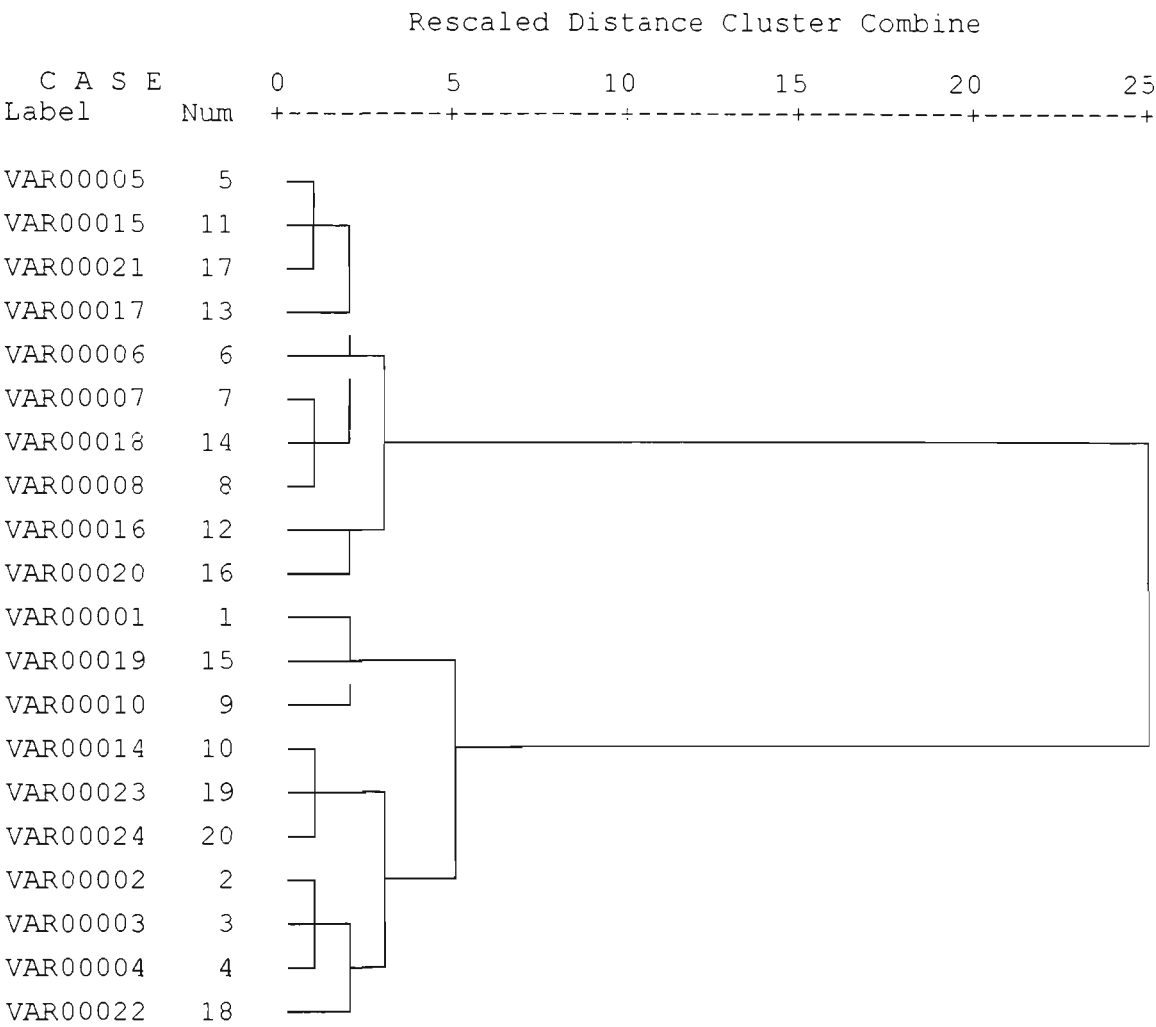
|  | Never                | Rarely               | Some<br>times        | Often                | Always               |     |
|--|----------------------|----------------------|----------------------|----------------------|----------------------|-----|
| 8- I can learn to solve new maths problems.                        | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | -8  |
| 9- It is difficult for me to do maths correctly.                   | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | -9  |
| 10- I can read new words and stories without making many mistakes. | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | -10 |
| 11- I can answer all the questions on a maths test.                | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | -11 |
| 12- It is difficult for me to get good marks on maths.             | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | -12 |
| 13- I can understand what I have read.                             | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | -13 |
| 14- Reading is difficult for me.                                   | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | -14 |

This Page is Blank

Dendrogram for 20-item Academic attributional Style Questionnaire

\*\*\*\*\* H I E R A R C H I C A L C L U S T E R A N A L Y S I S \*\*\*\*\*

Dendrogram using Ward Method



Hierarchical Cluster Analysis of Academic Self-Efficacy Beliefs Scale

Method: Ward Linkage

Case Processing Summary<sup>a</sup>

| Cases |         |         |         |       |         |
|-------|---------|---------|---------|-------|---------|
| Valid |         | Missing |         | Total |         |
| N     | Percent | N       | Percent | N     | Percent |
| 107   | 100.0%  | 0       | .0%     | 107   | 100.0%  |

a. Squared Euclidean Distance used

Agglomeration Schedule

| Stage | Cluster Combined |           | Coefficients | Stage Cluster First Appears |           | Next Stage |
|-------|------------------|-----------|--------------|-----------------------------|-----------|------------|
|       | Cluster 1        | Cluster 2 |              | Cluster 1                   | Cluster 2 |            |
| 1     | 13               | 14        | 29.000       | 0                           | 0         | 8          |
| 2     | 1                | 5         | 59.000       | 0                           | 0         | 7          |
| 3     | 3                | 7         | 94.000       | 0                           | 0         | 4          |
| 4     | 3                | 4         | 131.667      | 3                           | 0         | 10         |
| 5     | 2                | 8         | 170.667      | 0                           | 0         | 9          |
| 6     | 9                | 12        | 214.667      | 0                           | 0         | 12         |
| 7     | 1                | 11        | 262.667      | 2                           | 0         | 9          |
| 8     | 6                | 13        | 311.000      | 0                           | 1         | 10         |
| 9     | 1                | 2         | 362.400      | 7                           | 5         | 12         |
| 10    | 3                | 6         | 414.400      | 4                           | 8         | 11         |
| 11    | 3                | 10        | 477.829      | 10                          | 0         | 13         |
| 12    | 1                | 9         | 556.571      | 9                           | 6         | 13         |
| 13    | 1                | 3         | 868.071      | 12                          | 11        | 0          |

Cluster Membership

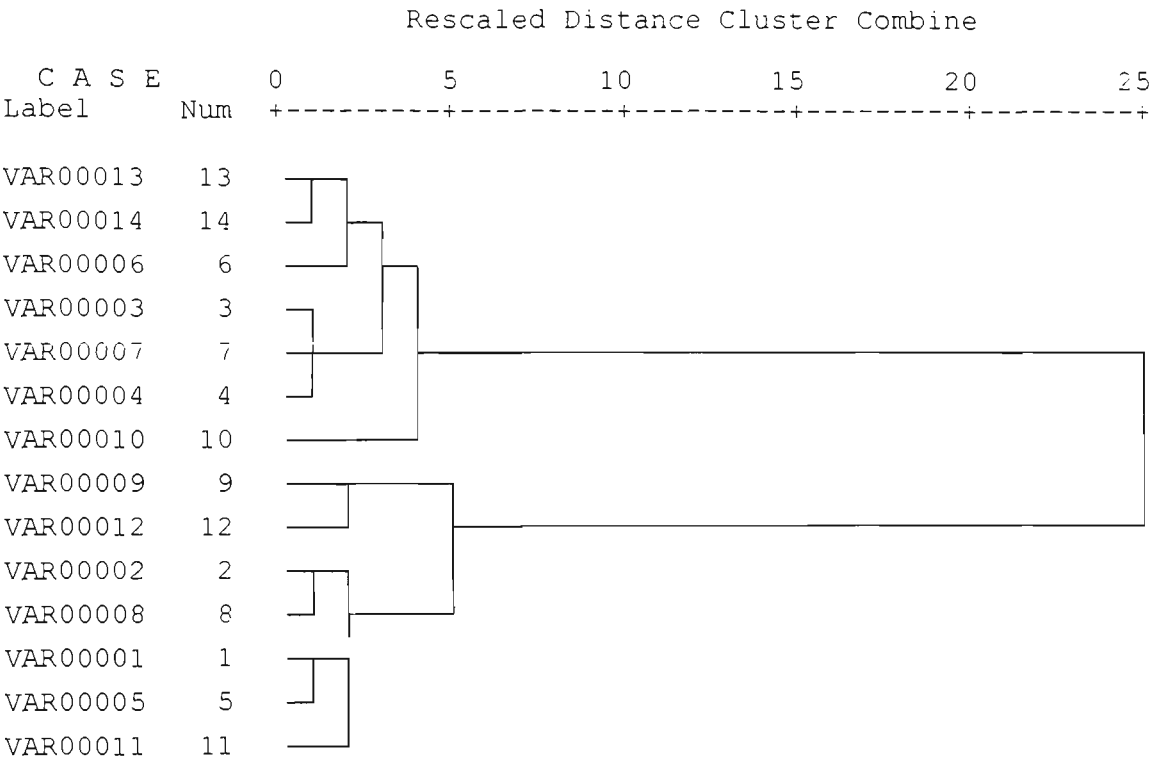
| Case     | 2 Clusters |
|----------|------------|
| VAR00001 | 1          |
| VAR00002 | 1          |
| VAR00003 | 2          |
| VAR00004 | 2          |
| VAR00005 | 1          |
| VAR00006 | 2          |
| VAR00007 | 2          |
| VAR00008 | 1          |
| VAR00009 | 1          |
| VAR00010 | 2          |
| VAR00011 | 1          |
| VAR00012 | 1          |
| VAR00013 | 2          |
| VAR00014 | 2          |



Dendrogram for the 14-item Academic Self-efficacy Beliefs Scale

\*\*\*\*\* H I E R A R C H I C A L   C L U S T E R   A N A L Y S I S \*\*\*\*\*

Dendrogram using Ward Method



This Page is Blank

## APPENDIX C

### THE INTERVENTION PROGRAM

This intervention program was designed for the enhancement of academic self-concept of students with LD and students with comorbid LD/ADHD. The program utilized an indirect self-concept enhancement approach and is based on the assumption that there is a reciprocal link between self-attributions and self-concept. According to this logic, self-concept can be changed indirectly by targeting self-attributions (Craven et al., 1991; Marsh, 1984; Marsh & Craven, 1997).

The indirect enhancement approach is derived from the cognitive model of psychotherapy. Cognitive approaches to psychotherapy assume that maladaptive beliefs can be modified by changing the intervening cognitions. A similar assumption also underlies attributional retraining (Forsterling, 1985). Based on this conceptualization the present intervention used attributional retraining technique to enhance academic attributional beliefs and academic self-concept. It was expected that as a result of the attributional retraining, positive changes would occur in the participants' academic attributional style, which in turn would impact on their academic efficacy beliefs and also on academic self-concept.

The participants were students with LD and with comorbid LD/ADHD in Grades 3 to 6, who reported significantly poor academic self-concept, specifically in the areas

of reading and mathematics. They also reported a negative academic attributional style and poor self-efficacy beliefs in reading and mathematics. The intervention was focused on the enhancement of academic self-concept targeting reading and maths self-concepts.

More specifically the intervention was employed to increase their self-attributions in success situations (in the targeted subjects) to internal causes (e. g., their own efforts, ability and use of right strategy) and in failure situations to external causes (task difficulty and not using the right strategy to complete the task successfully). As a result of this intervention positive changes were expected to occur in participants' academic attributional beliefs and self-efficacy beliefs. It was assumed that a change in the participants' attributional beliefs and a mediating change in self-efficacy beliefs would result in positive changes in the participant's academic self-concept.

### **The intervention procedure**

The intervention was administered to the participants in small groups during 30-minute sessions for two days a week for seven weeks. Each group received a total of 14 sessions, comprising 7 sessions for reading attributional retraining and 7 sessions for mathematics attributional retraining. Each group comprised of four students: two students with LD and two students with LD/ADHD. Where possible, students in the same Grade were grouped. Due to small numbers, it was sometimes necessary to combine students from Grades 3 and 4, and students from Grades 5 and 6. Different reading and mathematics tasks were utilized during the intervention sessions.

### **Reading and Mathematics task-sheets**

With the help of the class teachers, the reading and maths tasks were selected according to the participant's grades and general ability levels. They included a mixture of low and high difficulty tasks. Consistent with the previous studies (Craven et al., 1991), the tasks with a low difficulty level were based on minimum levels of achievement already achieved by these students in the previous years. The tasks with a high difficulty level were based on the maximum expected level of their achievement in the present school year. The reading tasks sheets included reading some words and sentences, completing sentences and answering vocabulary questions by choosing from a list of appropriate words. The mathematics tasks included calculating simple mental calculations, identifying the place values of numbers and stating the next number in a given number sequence.

Each task-sheet consisted of five tasks. A practice example was completed before the commencement of each session to ensure that the participants understood the nature of the task. A total of 28 task-sheets, included 14 sheets for reading tasks and 14 sheets for mathematics tasks, were utilized that included following.

- Seven mathematics task-sheets for students in grade 3 and 4
- Seven mathematics task-sheets for students in grade 5 and 6
- Seven reading task-sheets for students in grade 3 and 4
- Seven reading task-sheets for students in grade 5 and 6

### **Attributional retraining sessions**

The attributional training was given separately for each reading and mathematics task-sheet on alternate days in each week. Subjects were asked to attempt to answer all questions on the given task-sheet. During each session attributional feedback was delivered to each of the students individually, as soon as he/she completed the task-sheet. Attributional feedback involved the researcher attributing the child's success to internal causes such as the child's effort, ability and using the correct strategy and attributing the child's failure to external causes such as chance and lack of adequate strategy. No skill training was delivered during the intervention period. Based on the previous studies (Craven et al., 1991; Craven, 1996) the following key elements of the attributional feedback were delivered to the student on each success or failure occasion when the subject completed the task.

### **Attributional training in success situations**

When a child completed the given task successfully, the researcher:

- identified this success to his/her efforts ("You have done that maths task well"),
- attributed this success to the child's competency in that subject area ("You obviously have the ability to do well in mathematics"),
- attributed the success to the child's ability to use the right strategy ("You have done that maths task well as you have the ability to use the right strategy"), and
- provided positive expectations for future success ("You can learn many things in mathematics").

### **Attributional training in failure situations**

When a child could not complete the given task successfully the researcher

- identified the child's failure ("No that is not right"),
- attributed the child's failure to the task difficulty ("You could not solve it because it is a bit difficult task") and the use of incorrect strategy ("You need to use the right method"),
- asserted that the child has the ability to do it correctly ("You have the ability to do well in mathematics"),
- attributed future success to the child's efforts in using correct strategy ("You will do it by using correct method"), and
- convinced the child that that failure can lead to success (" This is good chance to learn").

All treatment sessions were conducted by the researcher. The researcher stated the key elements of attributional feedback spontaneously and convincingly as soon as the child completed the given task. The week following the conclusion of the intervention program all posttests were administered. Ten weeks after the completion of the intervention program follow up assessment was carried out. Copies of the reading and mathematics task-sheets are included in Appendix D.

**APPENDIX D****Year 3 and 4****Mathematics Tasks**

Follow the pattern to fill in the blanks.

Example: 2, 4, 6 \_\_ 8\_\_

1. 9, 7, 5, \_\_\_\_

2. 10, 15, \_\_\_\_, 25

3. 30, 60, \_\_\_\_, 120

4. 25, 50, \_\_\_\_, 100

5. 80, 60, 40, \_\_\_\_



## Year 5 and 6

### Mathematics Tasks

Choose whether the answer is true or false.

Example:  $4 + 6 = 10$  True / False

1.  $30 \times 10 = 300$  True/False

2.  $8 + 3 - 10 = 11$  True/False

3.  $2 \times 8 - 3 = 10$  True/False

4.  $3 + 3 - 3 = 3$  True/False

5.  $3 \times 3 + 1 = 7$  True/False

## Year 5 and 6

### Mathematics Tasks

Choose and circle the correct answer.

Example:  $4 \times 5 = 15, 20, 25, 30$

1.  $5 \times 5 =$  25, 55, 10, 20

2.  $6 + 4 =$  64, 14, 10, 24

3.  $5 \times 5 - 5 =$  15, 20, 25, 30

4.  $10 \times 10 =$  20, 50, 1000, 100

5.  $2 \times 9 - 8 =$  10, 11, 18, 16

## Year 5 and 6

### Mathematics Tasks

I 'll read each question given below. Please use your scrap paper to work out the answer and tell me the answer.

1. John had 25 cows, 15 died, how many left?

2. I left home at 2:00. Came back at 6:00.

How long did I take?

3. There are 9 rows of mangoes with 2 mangoes in each row. How many mangoes altogether?

4. There are 3 rows of stones with 3 stones in each row. How many stones altogether?

## Year 3 and 4

### Reading Tasks

Please read and complete the following

1. 1 minute has \_\_\_\_\_ seconds.
2. 1 hour has \_\_\_\_\_ minutes
3. 1 week has \_\_\_\_\_ days.
4. 1 year has \_\_\_\_\_ months
5. 1 year has \_\_\_\_\_ days.

## Year 5 and 6

### Mathematics Tasks

Please circle the correct answer.

1. Which is the biggest  $5 \times 5$ ,  $5 + 5$ ,  $55$

2. Order these from biggest to smallest.

$6 \times 8$ ,  $3 + 3$ ,  $9 + 10$ ,  $9 \times 9$

3. Which is the smallest  $9 + 3$ ,  $15$ ,  $2 \times 8$

4. Order these from smallest to biggest

$11 \times 0$ ,  $99$ ,  $5 + 8$ ,  $68$

## Year 5 and 6

### Mathematics Tasks

I 'll read each problem given below. Please use your scrap paper to work out the answer and please tell me the answer.

1. 50 apples at \$2 each. How much do I pay?\_\_
2. 4 stamps at 50c each. How much do I pay? \_
3. What time is it 2 hours after 3:30? \_\_ : \_\_\_\_
4. How many 20c coins make up \$1 \_\_\_\_\_
5. How much change do I get from \$2, if I buy a cup for \$1.50? \_\_\_\_\_

## **Year 5 and 6**

### **Reading Tasks**

Circle the correct answer.

1. My aunt and I (was/were) not happy to see our dog covered in mud.
2. I wrote a poem (for/four) my mum on her birthday.
3. Everyone wanted to go (too, to, two) Sandy's party.
4. At the party I (was/were) asked to sing a song for my best friend.
5. I (do / done) my homework everybody.

## Year 5 and 6

### Reading Tasks

Fill in the blanks.

1. Everyone has a mum and a \_ \_ \_.
2. The 2000 Olympic games will be held in Australia in \_\_\_\_\_
3. Every 4<sup>th</sup> year is called a \_ \_ \_ \_ year.
4. Australia is the \_ \_ \_ \_ \_ \_ \_ \_ continent.
5. On my 12th birthday I'll be \_\_\_\_\_ years old.



## Year 5 and 6

### Reading Tasks

Fill in the blanks by using the words in the word box given at the bottom of the page.

1. A week is made up of \_\_\_\_\_ days.
2. Monday to Fridays are \_\_\_\_\_ and Saturday and \_\_\_\_\_ are weekends.
3. There are \_\_\_\_\_ hours in a day and 60 \_\_\_\_\_ in an hour.
3. We sleep at \_\_\_\_\_ and work in the day

|   |
|---|
| Sunday, 7, weekdays, minutes, 24, night |
|---|

## **Year 5 and 6**

### **Reading Tasks**

Punctuate the passage below using capital letters, full stops and commas. The passage needs 3 full stops 6 capital letters and 2 commas.

on wednesday i went to the shopping mall with  
my parents my mum bought a new pair of white  
leather shoes my dad bought a new black shiny  
coat and i got to buy a pretty pink dress

Year 5 and 6

Reading Tasks

Draw a line to match the right word with its right color

| Group A      | Group B   |
|--------------|-----------|
| 1. Sky       | 1. Orange |
| 2. Grass     | 2. White  |
| 3. Orange    | 3. Blue   |
| 4. Chocolate | 4. Green  |
| 5. Milk      | 5. Brown  |

## Year 3 and 4

### Mathematics Tasks

How many sides does

1. A Square has? \_\_\_\_
2. A Triangle has? \_\_\_\_
3. A Circle has? \_\_\_\_
4. A Rectangle has? \_\_\_\_
5. A Pentagon has? \_\_\_\_

## Year 3 and 4

### Mathematics Tasks

Fill in the blanks with the number that works out the answer.

1.  $\underline{\hspace{2cm}} + 2 = 6$

2.  $3 + \underline{\hspace{2cm}} = 7$

3.  $9 + \underline{\hspace{2cm}} = 11$

4.  $10 + 5 = \underline{\hspace{2cm}}$

5.  $9 + 7 = \underline{\hspace{2cm}}$

# Year 5 and 6

## Reading Tasks

Un-jumble the following words by reading the clue and then write the answer in the space given.

| Words     | Clue                                       | Answers  |
|-----------|--|----------|
| 1. plpea  | 1. I'm red and a fruit.                    | 1. _____ |
| 2. lcock  | 2. I'm used to tell time                   | 2. _____ |
| 3. obok   | 3. You can read me.                        | 3. _____ |
| 4. skco   | 4. You wear me on<br>your foot.            | 4. _____ |
| 5. rplupe | 5. I'm a colour made<br>with red and blue. | 5. _____ |

Year 5 and 6

Reading Tasks

Use the clues to find out what words to look for.

CLUES

- 1. I teach children at school
- 2. I am used to sit on
- 3. Opposite of left
- 4. You live in this
- 5. You go here to learn

|   |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|---|
| P | T | E | A | C | H | E | R | S |
| A | O | L | V | H | O | I | I | H |
| A | P | Z | Q | A | U | N | G | G |
| H | X | B | F | I | S | J | H | K |
| W | A | W | K | R | E | P | T | Z |
| S | C | H | O | O | L | R | Q | Z |

## **Year 3 and 4**

### **Mathematics Tasks**

Read the following numbers

1. 23, 85, 98
2. 120, 140, 210
3. 222, 345, 400
4. 745, 880, 985
5. 876, 1678, 2876



## Year 3 and 4

### Mathematics Tasks

What number comes next in the given number pattern?

1. 77, 87, 97, \_\_

2. 10, 30, 50, \_\_

3. 100, 150, 200, \_\_

4. 80, 60, 40, \_\_

5. 90, 190, 290, \_\_

## Year 3 and 4

### Mathematics Tasks

What number comes next in the number pattern?

Example: 10, 20, 30, 40

1. 20, 30, 40, \_\_\_\_\_

2. 50, 55, 60, 65, \_\_\_\_\_

3. 100, 150, 200, \_\_\_\_\_

4. 70, 72, 76, \_\_\_\_\_

5. 200, 300, 400, \_\_\_\_\_

## Year 3 and 4

### Mathematics Tasks

Work out the answers to these problems.

Example:  $8 \times 4 = 12$

1.  $9 \times 2 = \underline{\quad}$

2.  $5 \times 8 = \underline{\quad}$

3.  $3 \times 8 = \underline{\quad}$

4.  $7 \times 8 = \underline{\quad}$

5.  $5 \times 6 = \underline{\quad}$

## Year 3 and 4

### Reading Tasks

Read and answer the following questions

1. How many seconds in a minute? \_\_\_\_\_
2. How many minutes in an hour? \_\_\_\_\_
3. How many hours in a day? \_\_\_\_\_
4. How many days in a week? \_\_\_\_\_
5. How many weeks in a month? \_\_\_\_\_

## Year 3 and 4

### Reading Tasks

Choose the words carefully from the word Box and fill in the blanks.

1. I get lots of \_\_\_\_\_ on Christmas.
2. I have lots of \_\_\_\_\_ at school.
3. I like to \_\_\_\_\_ books.
4. My mum gave me milk and \_\_\_\_\_
5. \_\_\_\_\_ visits me on Christmas.

|   |
|---|
| Read, Presents, Friends, Santa, Cookies |
|---|

**Year 3 and 4**

**Reading Tasks**

Match the words on the left side with the words on the right side.

- |             |        |
|-------------|--------|
| 1. Dog      | Kitten |
| 2. Cat      | Joey   |
| 3. Pig      | Puppy  |
| 4. Lion     | Piglet |
| 5. Kangaroo | Cub    |

## Year 3 and 4

### Reading Tasks

Choose the words from the Box and complete the sentences given below.

1. The weather in Summer is \_\_\_\_\_
2. The weather in Winter is \_\_\_\_\_
3. Trees need water to \_\_\_\_\_
4. The sky colour is usually \_\_\_\_\_
5. Chocolate's colour is \_\_\_\_\_

|                              |
|------------------------------|
| Hot, Grow, Blue, Brown, Cold |
|------------------------------|

## Year 5 and 6

### Reading Tasks

Read the passage and then answer the Questions.

On Saturday, Timmy and his mum went to the park. Timmy went on the slippery slide first. There were lots of green trees at the park. He saw kids playing tips. He played too. Timmy's mum bought him an ice-block. Timmy loves the swings. Timmy had a great time.

#### Questions

1. Timmy went on the swings first. True/False
2. There were lots of green trees. True/False
3. Timmy ate an ice-cream cone. True/False
4. Timmy loves the slippery slide. True/False
5. Timmy played tips. True/False



## **Year 3 and 4**

### **Reading Tasks**

Read the following words.

1. Ride, Run , Kite
2. Draw, Jump, Floor
3. Think, Colour, Paper
4. Reading, Problems, Happy
5. Playing, Flower, match

## **Year 3 and 4**

### **Reading Tasks**

Read carefully and add '?' or '.' (Question mark or a Full stop) to the following sentences.

1. I'm going to the park
2. Do you like to draw
3. What's your name
4. Let's go to the pool
5. Can you come to my house

## Year 3 and 4

### Reading Tasks

Fill in the blanks from the words given in the word box.

1. \_\_\_\_\_ are full of knowledge.
2. \_\_\_\_\_ have four wheels.
3. \_\_\_\_\_ are in the sky at night.
4. People go swimming at the swimming \_\_\_\_\_
5. The colour of a plant is usually \_\_\_\_\_

|      |       |       |       |      |
|------|-------|-------|-------|------|
| Pool | Books | Stars | Green | Cars |
|------|-------|-------|-------|------|

**APPENDIX E**

Waheeda Tabassam

Please see print copy for image

Terry Palmer  
Director, Research and Development  
9th February 1998



# University of Wollongong

Department of Psychology

University of Wollongong  
NSW 2522 Australia

Tel (042) 21 3742  
Fax (042) 21 4163  
International 61 42+

Email PsycSec@uow.edu.au  
<http://www.uow.edu.au>

Dear Sir/Madam,

I am currently a student in the degree of Ph.D Psychology at the University of Wollongong and am investigating the area of self-perception of the students with learning difficulties. Specifically the study will focus on the academic self-perception of ADHD (Attention Deficit Hyperactivity Disorder) and LD (Learning disabled) students.

Our aim is to collect detailed information in this area and design a program for enhancing academic self-perception in students with learning difficulties. The Department of School Education NSW and the Human Ethics Committee at the University of Wollongong have approved this study and permission has been granted to conduct this research in NSW government schools.

Briefly the study involves ADHD, LD and normally achieving students in grade three to six, filling in a simple questionnaire about their academic self-perceptions, and cognitive functioning. (Please see the copy attached).

The information gathered in this project will be treated as strictly confidential. The results of the study will be in the form of group summary data and there would be no identification of any student in any publication of the results in future. The data will be collected after getting parent's consent for their children's participation in this study. Participation of students in this research would be entirely voluntary and they would be free to withdraw at any time.

On completion of the testing, you will be provided with full report outlining the relevant information obtained by the researcher.

I would appreciate the opportunity to collect data for this study from your school and would like to make an appointment with you to discuss this opportunity.

Thank you for your cooperation.

Yours Sincerely,

Waheeda Tabassam

Supervisor: Dr. Jessica Grainger  
(Senior lecturer) Department of Psychology

Dated: 5-5-98



# University of Wollongong

**Department of Psychology**

University of Wollongong  
NSW 2522 Australia

Tel (02) 4221 3742

Fax (02) 4221 4163

International +61 2

Email [PsycSec@uow.edu.au](mailto:PsycSec@uow.edu.au)

<http://www.uow.edu.au>

Dear parent,

I am writing to you to request your permission for your child to participate in a research project regarding academic self-perceptions of children.

We are currently investigating how children feel about their academic achievements. Our aim is to collect information in this area and design a program for developing favourable academic self-perceptions in students. This study has been approved by the Human Ethics Committee and it involves information gathering only.

Briefly the study involves students filling in some simple questionnaires about children's self-perceptions regarding academic achievements. I would be very grateful if you allow your child to take part in this study.

The information gathered in this project will be treated as strictly confidential. The results of the study will be in the form of group summary data and there would be no identification of you or your child in any publication of the results in future.

If you have any question about the research, please feel free to contact me on 9662-8507. If you have any enquires regarding the conduct of the research please contact the Secretary of the University of Wollongong Human Research Ethics Committee on (042) 214457.

Participation in this research is entirely voluntary and you can withdraw at any time. We would appreciate your cooperation in this project. If you would be willing for your child to take part in this research please sign the attached consent form and return it as early as possible.

Thanking you for your cooperation,

Yours Sincerely,

Waheeda Tabassam

Supervisor: Dr. Jessica Grainger

(Seneior Lecturer and Clinical Psychologist)



# University of Wollongong

Department of Psychology

University of Wollongong  
NSW 2522 Australia

Tel (02) 4221 3742  
Fax (02) 4221 4163  
International +61 2

Email [PsycSec@uow.edu.au](mailto:PsycSec@uow.edu.au)  
<http://www.uow.edu.au>

Dear parent,

I am writing to you to request your permission for your child to participate in a research project regarding academic self-perceptions of children.

We are currently investigating how children feel about their academic achievements. Our aim is to collect information in this area and design a program for developing favourable academic self-perceptions in students. This study has been approved by the Human Ethics Committee and it involves information gathering only.

Briefly the study involves students filling in some simple questionnaires about children's self-perceptions regarding academic achievements. I would be very grateful if you allow your child to take part in this study.

The information gathered in this project will be treated as strictly confidential. The results of the study will be in the form of group summary data and there would be no identification of you or your child in any publication of the results in future.

If you have any question about the research, please feel free to contact me on 9662-8507. If you have any enquires regarding the conduct of the research please contact the Secretary of the University of Wollongong Human Research Ethics Committee on (042) 214457.

Participation in this research is entirely voluntary and you can withdraw at any time. We would appreciate your cooperation in this project. If you would be willing for your child to take part in this research please sign the attached consent form and return it as early as possible.

Thanking you for your cooperation,

Yours Sincerely,

Waheeda Tabassam  
Supervisor: Dr. Jessica Grainger  
(Seneior Lecturer and Clinical Psychologist)



Department of Psychology

University of Wollongong  
NSW 2522 Australia

Tel (042) 21 3742

Fax (042) 21 4163

International 61 42+

Email [PsycSec@uow.edu.au](mailto:PsycSec@uow.edu.au)

<http://www.uow.edu.au>

*Dated : 29.1.98*

**Prof. H.W. Marsh**  
**Faculty of Education**  
**University of Western Sydney, Macarthur**  
**Campbell Town.**

**Subject: Permission to use SDQ-1 in a Ph.D. research project;**

Dear Sir,

I am a ph.D (Psychology) student at the University of Wollongong. Currently I am conducting research investigating internal speech and self-perceptions of children who have been diagnosed as ADHD/LD (attention deficit and hyperactivity disorder with learning disabilities) and LD (learning disabled without ADHD). The aim is to compare such students with that of normally achieving students on their self-talk, academic self-perceptions and attributional style. This research has been approved by the Human research Ethics Committee at the University of Wollongong.

The sample of the study will be consisted of three groups- ADHD/LD, LD and normally achieving students, in grade three to six, from different government schools in Wollongong and Sydney. Each group will consist of 40 to 50 students. SDQ-1 Questionnaire would be used to assess academic self-concept of the children in the three groups. For this purpose my department has already purchased this questionnaire from the SDQ publication unit.

I request you for your permission to use SDQ-1 in this study. I would appreciate your cooperation in this research.

Thankyou

*I am happy for you to use the SDQ  
as part of your PhD research*

Your's sincerely

Waheeda Tabassam

Supervisor: Dr Jessica Grainger  
Senior lecturer,  
University of Wollongong.