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A COMPARISON OF ATTRIBUTIONAL PROCESSES AND SELF-CONCEPT
AMONG BEHAVIOURAL SUBTYPES OF LEARNING DISABLED CHILDREN

by

Joan Elaine Durrant, M.A.

A Dissertation
Submitted to the
Faculty of Graduate Studies and Research
through the Department of
Psychology in Partial Fulfillment
of the Requirements for the Degree
of Doctor of Philosophy at
the University of Windsor

Windsor, Ontario, Canada

1988

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ABSTRACT

A COMPARISON OF ATTRIBUTIONAL PROCESSES AND SELF-CONCEPT AMONG BEHAVIOURAL SUBTYPES OF LEARNING DISABLED CHILDREN

by

Joan Elaine Durrant

The purpose of the present study was to determine, using carefully-defined comparison groups, whether different behavioural subtypes of LD children form different beliefs regarding their academic and social successes and failures. The 60 subjects of the study comprised four groups of 15 children each: 1) non-LD, non-behaviour-disordered, 2) LD, non-behaviour-disordered, 3) LD demonstrating externalizing symptoms, and 4) LD exhibiting externalizing and internalizing symptoms.

The spontaneous attributions of these four groups for hypothetical successful and unsuccessful outcomes in both the academic and social domains were compared. The Children's Cognitive Error Questionnaire was employed to assess subjects' negative distortions of academic and social outcomes. Measures of academic, social, and general self-concept were also obtained using the Harter Perceived Competence Scale for Children, as self-concept has been demonstrated to be closely linked to attributional style.

Findings suggest that the presence of a learning disability by itself may not determine children's academic and social attributions or self-concepts. However, children who demonstrate behavioural difficulties in combination with learning difficulties do exhibit different attributional patterns and lower self-concepts than do LD or non-LD children without behaviour disorders. This support for the notion of heterogeneity of learning disabled children's beliefs helps to explain some of the inconsistencies in attributional and self-concept research and suggests that previous findings may have been confounded. The findings of the present study have implications for attribution retraining programs, assessment, and teacher expectations.

To the memories of my mother,

Evelyn Friesen Durrant,

and my father,

John William Durrant.

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TABLE OF CONTENTS

Abstract.....	11
Acknowledgments.....	v
List of Tables.....	xii
List of Figures.....	xiii
CHAPTER I: INTRODUCTION.....	1
Attribution Theory.....	3
Success and Failure Attributions in Children.....	9
Achievement Attributions.....	9
Social Attributions.....	18
Success and Failure Attributions of Learning Disabled Children.....	22
Academic Attributions.....	22
Social Attributions.....	28
Self-Concept of LD Children.....	30
Children's Cognitive Errors.....	34
The Issue of Heterogeneity.....	35
The Need for the Study of LD Subgroups.....	36
Broad-Band Approach to Social-Emotional Functioning.....	38
Personality Functioning of LD Children.....	40
Externalizing LD Children.....	43
Internalizing LD Children.....	44
The Present Investigation.....	45
Expectations.....	46
CHAPTER II: METHOD.....	51

Subjects.....	51
Investigator.....	54
Dependent Measures.....	54
Attribution Measure - Categories.....	55
Attribution Measure - Dimensions.....	58
Cognitive Error Measure.....	58
Self-Concept Measure.....	59
Design and Statistical Analyses.....	60
CHAPTER III: RESULTS.....	63
Descriptive Statistics.....	63
Attributional Categories - Academic Outcomes.....	65
Attributional Categories - Social Outcomes.....	77
Attributional Dimensions.....	92
Cognitive Errors.....	105
Self-Concept.....	110
CHAPTER IV: DISCUSSION.....	116
General Discussion.....	118
Effort Attributions.....	118
Advantages of an Open-Ended Questionnaire.....	119
Learning Disabled versus Normally-Achieving Children.....	121
Heterogeneity of the LD Population.....	124
The Relative Importance of Learning Disability versus Behaviour Disorder.....	131
Methodological Limitations.....	133
Implications and Future Research.....	136

APPENDICES.....	142
Appendix A: Definition of a Learning Disability.....	142
Appendix B: Clinic Control Groups.....	144
Appendix C: Measurement of Attributions.....	145
Appendix D: Attribution Measures.....	148
Appendix E: Children's Cognitive Error Questionnaire....	152
Appendix F: Perceived Competence Scale for Children....	159
REFERENCES.....	165
VITA AUCTORIS.....	183

LIST OF TABLES

TABLE		Page
1	Descriptive Statistics for Control Variables.....	64
2	Summary of ANOVA - Academic Categories.....	66
3	Outcome X Category Frequencies.....	68
4	Outcome X Category Frequencies by Group - Academic Outcomes.....	71
5	Summary of ANOVA - Social Categories.....	78
6	Outcome X Category Frequencies - Social Outcomes.....	81
7	Frequency of Category Use by Group - Social Outcomes.....	83
8	Outcome X Category Frequencies by Group - Social Outcomes.....	89
9	Summary of ANOVA - Attributional Dimensions.....	94
10	Mean Dimension Scores by Domain.....	98
11	Mean Dimension Scores by Outcome.....	100
12	Mean Dimension Scores by Domain and Outcome.....	104
13	Summary of ANOVA - Cognitive Errors (4 groups)..	106
14	Summary of ANOVA - Cognitive Errors (2 groups)..	107
15	Mean Error Domain Scores by Behaviour Type.....	109
16	Summary of ANOVA - Self-Concept.....	111
17	Group Means for Overall Self-Concept.....	112
18	Mean Self-Concept Scores by Domain.....	114
19	Mean Self-Concept Scores of Non-Behaviour- Disordered and Behaviour-Disordered Groups....	115

LIST OF FIGURES

FIGURE		Page
1	Outcome X Category Interaction - Academic Outcomes.....	69
2	Outcome X Category X Group Interaction - Group Cont.....	72
3	Outcome X Category X Group Interaction - Group LDNorm.....	73
4	Outcome X Category X Group Interaction - Group LDExt.....	74
5	Outcome X Category X Group Interaction - Group LDExt/Int.....	75
6	Outcome X Category Interaction - Social Outcomes.....	80
7	Group X Category Interaction - Social Outcomes.....	82
8	Group X Outcome X Category Interaction - Group Cont.....	85
9	Group X Outcome X Category Interaction - Group LDNorm.....	86
10	Group X Outcome X Category Interaction - Group LDExt.....	87
11	Group X Outcome X Category Interaction - Group LDExt/Int.....	88
12	Domain X Outcome Interaction - Attributional Dimensions.....	96
13	Outcome X Dimension Interaction - Attributional Dimensions.....	99
14	Domain X Outcome X Dimension Interaction - Controllability.....	101
15	Domain X Outcome X Dimension Interaction - Stability.....	102

16	Domain X Outcome X Dimension Interaction - Locus.....	103
17	Error Domain X Behaviour Type Interaction.....	108

CHAPTER I

INTRODUCTION

Research investigating attributions made by learning disabled (LD) children for their achievement-related successes and failures has suggested that these self-statements typify those associated with cognitive and behavioural patterns of learned helplessness (Pearl, Bryan, & Donahue, 1980). Only recently has the attributional paradigm been applied to social situations (Sobol, Earn, Bennett, & Humphries, 1983) and the findings suggest that LD children tend to view social successes, as well, as uncontrollable.

There is, however, a major methodological flaw in this body of literature which may be confounding the findings. Even though it has been demonstrated that LD children present with a broad range of socio-emotional skills and deficits (Porter & Rourke, 1985), they are often treated as a homogeneous group in research studies (Torgesen & Dice, 1980). Porter and Rourke (1985) demonstrated that there is a substantial group of LD children who do not exhibit socio-emotional difficulties and, in fact, are coping with their difficulties quite successfully. On the other hand,

there are also LD children who demonstrate significant degrees of anxiety and neuroticism, and still others who act out and behave aggressively. In other words, the results of studies in this area may be confounded by use of unspecified subject samples which may tend to be comprised of those children most likely to be referred to treatment, special education, or research programs - the behaviour-disordered LD subgroups.

The primary purpose of the present study, therefore, is to investigate, using carefully-defined comparison groups, the cognitive processes mediating the differential behaviour patterns associated with learning disability. Specifically, the goal of the present study is to determine whether those LD children who are not exhibiting behavioural difficulties are attributing their successes and failures in academic and social situations to different causes than are behaviour-disordered LD children. Such a study will help to clarify more precisely the nature of LD children's attributional patterns and may suggest means by which the cognitions of those children with socio-emotional difficulties may be restructured to resemble the cognitions of those children whose behaviour is more adaptive.

This chapter will present a brief overview of attribution theory, followed by a review of the literature regarding success and failure attributions of children. A review of studies which apply attribution theory to LD

children will be presented. The relevance of this research to the self-esteem of LD children will then be discussed. The methodological issue of heterogeneity of the LD population will be raised, and finally, an integration of this research will be proposed and the purposes of the present study outlined.

Attribution Theory

In 1958, Heider proposed the study of people's common-sense explanations of human behaviour and its effects. According to Heider, we seek to explain the causes of our own and others' behaviour through observation and inference. Most basically, we attribute causes to either environmental or personal forces. Environmental forces include non-social factors, such as task difficulty, and either interpersonal social forces, such as requests or commands, or objective social forces, such as values. Heider distinguished between two types of personal forces: 1) power and ability, that is, whether we can do something; and 2) motivation, that is, what we are trying to do and how hard we are trying. These factors are not viewed by Heider as completely independent of each other, however. Rather, performance will be determined both by what an individual can do and is motivated to do.

Heider's "everyday" analysis of behaviour has been an important influence upon more recent work on attribution

theory. Much of the current research in this area is based upon the contributions of Bernard Weiner and his colleagues. Weiner (1979, p.55) postulates that "future behavior is in part determined by the perceived causes of past events." His work has focused primarily upon thought and behaviour in achievement-related contexts, such as classrooms.

Weiner's research has led him to conclude that, in achievement-related contexts, one's own and others' successes and failures are primarily attributed to ability, effort, the difficulty of the task, and luck (Weiner, Frieze, Kukla, Reed, Rest & Rosenbaum, 1971). Of these, ability and effort are used most frequently (Weiner, 1985). A number of studies have provided evidence for the prominence of at least ability, effort, and task difficulty as perceived causes of success and failure (Bar-tal, 1979; Cooper & Burger, 1980; Elig & Frieze, 1975; Frieze, 1976; Frieze & Snyder, 1980).

These causes are further viewed along three dimensions: locus of causality, stability, and controllability. The first of these refers to the individual's identifying a cause as within (internal) or outside (external) him- or herself. Internal or personal causes may include ability, effort, mood, maturity and health. Among external causes may be teacher, task, and family. Weiner (1979) points out, however, that placement

of a cause along the internal/external dimension depends upon its subjective meaning to the individual.

The stability dimension places sources of causality along a stable (invariant) versus unstable (variant) continuum. Dispositional and relatively fixed factors, such as ability, typical effort and family, are seen as stable, while fluctuating factors, such as immediate effort, attention, mood, and luck are viewed as more unstable.

The third dimension defines causes as controllable or uncontrollable. Controllable causes include effort, help from others, and bias of a teacher or supervisor. Ability, difficulty of the task, illness and fatigue are specified as uncontrollable causes.

Studies employing factor analytic (Meyer, 1980; Meyer & Koelbl, 1982) and multidimensional scaling (Michela, Peplau, & Weeks, 1982) procedures have provided support for the dimensions of locus, stability, and controllability. A dimension of globality had originally been proposed (Weiner, 1979) which distinguished between causes that generalize across situations, such as intelligence, and causes specific to a given situation, such as difficulty with mathematics. This dimension, however, has not emerged in empirical investigations (Weiner, 1985) and hence it is unknown whether or not the layperson perceives this distinction.

The locus of causality dimension is viewed by Weiner as closely connected to self-esteem and the affective consequences of outcomes, such as pride, shame, gratitude, and hostility. For example, attributions of success to one's effort or ability produce more pride than those to task ease or luck. Similarly, failure ascribed to one's lack of ability or lack of effort leads to greater feelings of shame than failure attributed to task difficulty or bad luck (Weiner, 1976).

Covington and Omelich (1979a; 1981; 1984) have argued, however, that this attribution-affect linkage is more complex than Weiner's model assumes. Whereas Weiner has stated that failure attributions to low effort increase feelings of shame, their research has indicated that failure following high effort results in feelings of shame, as inferences of low ability are drawn under these conditions. Covington and Omelich (1984) suggest that high effort preceding failure increases shame, but decrease guilt feelings. As a result, students must avoid feelings of incompetence when risking failure by not trying too hard, while avoiding the feelings of guilt which accompany low effort.

The stability of a cause determines expectancy shifts (Weiner, Nierenberg & Goldstein, 1976; Weiner, 1979). Thus, attributions of outcomes to stable factors are seen as increasing the expectancy of future success following a

success, and decreasing the expectancy of success following a failure. These shifts in expectancy are greater when the outcome is ascribed to stable causes than when it is attributed to unstable causes. In other words, if the cause of an outcome is believed to be invariant, then that outcome will be expected to recur with an increased degree of certainty. On the other hand, if conditions are seen as variable, doubt is raised as to whether or not the prior outcome will be repeated (Weiner, Russell, & Lerman, 1979).

Covington and Omelich (1979a) have found that only effort attributions significantly affect expectancy directly. Further, they have demonstrated that it is low-effort failure attributions which lower expectations of future success - a finding opposite of that which Weiner's model would predict. These researchers have suggested that the reason for low effort may be critical to the expectations that an individual forms (Covington & Omelich, 1984). For example, a person who believes that failure is likely no matter how hard he or she tries is likely to exert little effort and have low expectations of future success.

In Weiner's scheme, the perception of having or lacking control over the causes of outcomes affects one's behaviours, such as the use of strategies, and states, such as motivation (Weiner, 1976). For example, attribution of successful outcomes to one's own effort will result in

volitional future expenditure of effort and increased motivation to put forth that effort. Ascription of success to an uncontrollable cause, such as luck, produces decreased expenditure of effort as well as motivational deficits, since the outcome is perceived as being independent of the individual's control. A weakness in Weiner's formulation of the role of attributions in motivation, however, is that, in his approach, cognitive attributions are assessed following failure and may therefore be affected by self-serving biases (Covington & Omelich, 1984).

In terms of other-perception, attribution theory proposes that perceived controllability is related to interpersonal activities and judgments. For example, help is less likely to be provided when the cause of the need is perceived as internal and controllable, as opposed to internal and uncontrollable or external to the person in need (Weiner, 1979). Further, high effort is rewarded more than high ability following success, while lack of effort is punished more than lack of ability following failure (Covington & Omelich, 1979b; Weiner, 1979). Thus, evaluation is related to the perception of the recipient as having volitional control over outcomes. Finally, liking has been linked to perceptions of controllability. For example, individuals who are believed to be lonely for reasons under their control are liked less than people who

are lonely for what are believed to be uncontrollable reasons (Weiner, 1979).

In summary, although there are a vast number of perceived causes of achievement outcomes, Weiner postulates that main causes are repeatedly selected from a list of four: ability, effort, difficulty of the task, and luck. These causes may be further classified as internal/external, stable/unstable, and controllable/uncontrollable. The placement of a cause along these dimensions has important implications for self-esteem, affect, expectancy of future achievement, and interpersonal judgments. Weiner's formulation has received considerable empirical support, but some weaknesses and unforeseen complexities have raised suggestions for modification and further investigation of the model.

Success and Failure Attributions in Children

Achievement Attributions

A rapidly growing body of literature exists which has investigated the relevance of attribution theory for children in achievement-related settings, primarily classrooms. The question which these studies have addressed is whether there is a relationship between children's attributions for their past successes and failures and their current motivation to achieve. It has been repeatedly concluded that there is indeed such a

relationship and that it has an important bearing upon students' self-concepts, persistence, and learning (Ames, 1978; Aponik & Dembo, 1983; Diener & Dweck, 1978, 1980; Dweck, 1975; Dweck & Repucci, 1973).

The theoretical framework underlying much of this research states that children's attributions regarding their success and failure generate a set of beliefs regarding the control of reinforcement in achievement situations (Dweck & Repucci, 1973). The "combined effects of the generalized expectancies that the individual brings to the situation based on previous experience in similar situations and the expectancies he forms as a result of his experiences in the situation" exert a powerful influence upon performance (Dweck & Repucci, 1973, p.109). Further, even in situations in which the objective reward conditions have been held constant across subjects, differences in performance may occur, due to differences in generalized expectancies (Dweck & Repucci, 1973).

Dweck and Repucci have based their conclusions on a study in which 40 fifth-grade children were exposed to two conditions in which they were required to attempt a task similar to the Block Design subtest of the WISC-R. Under one condition with a first (Success) experimenter, all of the designs were soluble, while under a second condition with a second (Failure) experimenter, no designs were soluble. During a post-test in which the subjects were

given two soluble designs by the Failure experimenter, the children took significantly longer to solve the problems and 17 of the subjects failed to solve one or both of the designs - despite the fact that they had successfully solved similar problems administered by the Success experimenter shortly before and continued to do so.

Perhaps the most important finding of this literature for the purposes of the present study is the relevance of the concept of learned helplessness (Seligman, 1975).

In Seligman's terms, learned helplessness refers to "the learning or perception of independence between the emitted response of the organism and the presentation and/or withdrawal of aversive events" (Seligman, Maier, & Geer, 1968, p.258). Dweck and her colleagues have postulated that children who give up, rather than persist, following failure may be demonstrating a perception of independence between their own behaviour and outcome. In other words, they may be attributing failure to external, rather than internal, causes.

Dweck and Repucci (1973) stated that, despite adequate motivation and ability to succeed, a certain group of children do not perform the response required. They labelled these children as "helpless." Helpless children, according to their findings, take less responsibility for their successes and failures than do more persistent or "mastery-oriented" children. Further, to the extent that

they do take responsibility, they make more attributions to ability than to effort. Therefore, these children are less likely to view aversive events as controllable or surmountable.

In this study, (Dweck & Repucci, 1973), the Intellectual Achievement Responsibility (IAR) Scale (Crandall, Katkovsky, & Crandall, 1965) had been administered to the subjects one month prior to the experiment. The IAR assesses the degree to which subjects attribute academic outcomes to internal and external causes. Dweck and Repucci found a highly significant difference between the IAR scores of the children who persisted in solving the post-test designs and those who did not ($p < .01$). The persistent subjects took more responsibility for their successes and failures, as measured by the IAR, than did the children who gave up.

Dweck and Repucci selected their subjects at random from four different elementary schools. They have not specified the characteristics of their sample in any way. Therefore, it may be that their helpless group contained a number of children with learning difficulties - children who have much different success and failure histories from those of children who are successful academically. If so, the groups may not have been matched on ability and motivation as Dweck and Repucci had claimed. Nonetheless, their findings do indicate a relationship between failure

experiences, cognitions, and task performance.

The effects of children's self-statements regarding causality have been investigated in studies which have attempted to alter their cognitions and assess effects on performance. Dweck (1975) trained a group of extremely helpless children, who had been identified as such by their school psychologist, principal, and classroom teacher, to attribute failure on a math task to insufficient effort. A second group of helpless children who did not receive the attribution retraining continued to attribute failure to stable, uncontrollable factors, such as lack of ability, and demonstrated deterioration in performance following failure, as measured by the number of problems correctly solved per minute. The children who had been trained to attribute their failures to lack of effort did not show such a performance decrement and often showed improvement (Dweck, 1975). Moreover, following failure, helpless children have been found to make many solution-irrelevant statements, attributions for their failure, and statements of negative affect (Diener & Dweck, 1978). Persistent children, on the other hand, rather than attempting to find explanations for their failures, monitor their own performance, instruct themselves in possible solutions, and maintain positive affect and prognoses for success (Diener & Dweck, 1978). These differences were highly significant statistically. Therefore, while helpless

children tend to ruminate about their failures, mastery-oriented children use impending failure as a discriminative stimulus to search for a solution.

Helpless and persistent children also differ in the ways in which they process success. Diener and Dweck (1980) presented helpless and mastery-oriented children with a task on which they experienced both success and failure. Half of the children were then questioned about their performance following success and half were questioned after failure. In comparison to mastery-oriented children, helpless children underestimated the number of their successes and the success that they did acknowledge was not perceived as being "as successful" as that perceived by the persistent children (Diener & Dweck, 1980).

In estimating how well most children would do on the same task they had performed, helpless children expected most children to do significantly better than persistent children expected most children would do (Diener & Dweck, 1980). Therefore, helpless children are either viewing other children as having more ability than themselves or are using an above-average group to compare themselves with. Moreover, unlike persistent children, helpless children did not perceive present success as predictive of future success, attributed their successes more to ease of the task and less to their own ability than did persistent

children, and lowered their evaluation of prior success following failure and overestimated their failures more than did mastery-oriented children (Diener & Dweck, 1980).

Unfortunately, Diener and Dweck (1980) did not specify the intellectual or achievement levels of their groups nor do they appear to have matched the helpless and persistent children on these variables. Therefore, it is possible that helplessness has been confounded by deficits in ability and/or achievement. If so, the helpless group may be making at least partially accurate comparisons of their own and others' abilities. Further, the persistent group may be overestimating their abilities, in terms of comparisons with other children and expectations of future success. Leitenberg, Yost, and Carroll-Wilson (1986) have suggested that children who do not display symptoms of evaluation anxiety may overgeneralize predictions of positive outcomes.

As predicted by Weiner (1979), differences in social perception and attributional and self-evaluational processes are strongly related to differences in self-concept and affective outcomes, that is, degree of positive or negative affect following performance. Ames (1978) demonstrated a relationship between self-concept and beliefs regarding the role of ability in achievement outcomes. She found that children high in self-concept rated their ability higher following success and lower

following failure than did low self-concept children. It was concluded that while children high in self-concept tended to perceive an "ability-outcome covariation" and viewed themselves as more capable following success than failure, low self-concept children perceived little or no relationship between the outcome of their performance and their own sense of personal causation (Ames, 1978). However, Ames does not report group differences in attributional categories other than that of ability. Further, these group differences were evident only under competitive reward conditions and not in a non-competitive reward structure.

High self-concept children responded to their successes with positive affect (i.e., self-congratulatory behaviour) more than did children low in self-concept (Ames, 1978). The latter engaged in more self-punitive behaviour in non-competitive conditions than did high self-concept children. No difference in self-criticism was evident under competitive conditions.

Fielstein et al. (1985) found that attribution differences between high and low self-concept children were greatest in the social domain and least in the academic domain. Children high in self-concept were more likely to make ability attributions for success, and effort or luck attributions for failure than were low self-concept children. The latter used luck to explain successes and

lack of ability to explain failures more than did children high in self-concept. Effort, however, was employed more by low self-concept children than by high self-concept children in explaining social successes. Thus, it appears that there are differences in the attributions and affect of high and low self-concept children, but that these differences vary according to situational variables.

In summary, the literature investigating children's attributions regarding success and failure indicates that children who attribute the outcomes of their performance to effort are more persistent than those who attribute outcomes to ability. Children who attribute failure to lack of ability are less persistent than those who ascribe failure to insufficient effort. Helpless children take less personal responsibility for success and failure than do persistent children. To the extent that they do take responsibility, helpless children attribute outcomes to ability, rather than effort. Helpless children place less emphasis upon the amount of effort required for success. Persistent children search for solutions, while helpless children ruminate about failure. Helpless children overestimate their failures and underestimate their successes. And helpless children have lower self-concepts and less positive affect than do mastery-oriented children.

A weakness of this literature, however, is its failure to specify subject characteristics in terms of strengths

and deficits in intellectual ability and/or achievement. Helpless children may be attributing their failures to insufficient ability because this is an accurate assessment of the conditions of their performance. Lack of effort may indeed be an inadequate explanation for their failures. The question which the literature related to attributions in the general population of children has failed to address concerns the nature of the relationship between actual ability, attribution, and task performance.

Social Attributions

In general, it has been found that children tend to attribute social failure to external causes and success to internal factors (Ames, Ames, & Garrison, 1977; Earn & Sobol, 1984). Contrary to findings in the area of achievement attributions, however, they do not tend to mention effort as a possible cause (Earn & Sobol, 1984; Goetz & Dweck, 1980). According to Goetz and Dweck (1980), children have generally "assumed that they would always try their hardest to make or keep friends" (p.247).

Several studies have investigated the relationship between social status and social attribution (Ames, Ames, & Garrison, 1977; Goetz & Dweck, 1980). In general, less popular children make more external success attributions and internal failure attributions than do more popular children. The latter group tends to attribute successes internally and failures externally. Further, these

attributional patterns appear to be quite stable among lonely children (Hymel, Franke, & Freigang, 1985).

In examining causal ascriptions of different sociometric groups, Sobol and Earn (1985a) found that popular children analyzed social situations in a more "sophisticated" manner (p.4) than did neglected, rejected, or controversial children. For example, the former group made more outcome attributions to others' motives and fewer to luck than did the other three groups. Further, when children were asked to place various causes along the dimensions of locus, stability, and controllability, it was found that their placements were related to their membership in the various sociometric groups (Sobol & Earn, 1985b). For example, popular children tended to view more causes as external than did children in the other groups. Sobol and Earn concluded that different social experiences lead to different dimensional evaluations of the same cause. However, it is also possible that different dimensional evaluations of causes lead to differential behaviour patterns which, in turn, would lead to different social experiences.

The literature on children's social attributions has also demonstrated linkages between the stability dimension and expectations of future success, as predicted by Weiner (1979), and between the dimension of controllability and self-concept (Earn & Sobol, 1984). Moreover, in examining

the relationship between children's social attributions and their behaviour following actual rejection, Goetz and Dweck (1980) found that incompetence attributions were associated with severe disruption in goal-directed behaviour, regardless of the child's sociometric status. Further, less popular children were more likely to make incompetence attributions than were more popular children.

In their study, Goetz and Dweck (1980) asked popular and unpopular children (determined by sociometric ratings) to send messages individually to a (non-existent) pen-pal via a one-way radio. The child's message received a mild rejection, after which he or she could try again. Only 17% of the total sample emphasized incompetence attributions following the initial rejection. However, 64% of the subjects whose goal-directed behaviour in producing a second message^f was severely disrupted, in terms of withdrawal or perseveration (offering the first message again), made primarily incompetence attributions.

Goetz and Dweck (1980) considered the hypothesis that the children making the incompetence attributions actually were less competent than the more popular children. To assess this, they examined the children's pre-rejection messages and found no relationship between message length or content and attribution category. However, this measure of social competence may not be an adequate one by which to address this hypothesis - particularly since all children

were provided with a list of points they might include, a variety of questions they might ask, and types of information they could provide about themselves. In addition, each child was allowed to practice his or her message with the recorder and was given up to four minutes to mentally prepare the message. Such conditions certainly do not reflect conditions of spontaneous social interaction. Thus, the issue of subject characteristics and their relationship to attribution needs to be addressed in more detail.

In summary, a number of important findings have emerged from this body of literature. In general, social failure tends to be ascribed to external factors and success to internal ones. Further, both the categories selected and dimensional evaluations made in explaining social outcomes vary according to sociometric status. Finally, evidence has been provided of linkages between the stability dimension and behaviour, as well as expectations of future outcomes, and between the controllability dimension and self-concept.

Recently, a number of investigators have applied the research strategies employed in studies of attributions and learned helplessness in children to examine more specifically the implications of failure experienced by learning disabled children. In the following section, a review of these investigations will be presented.

Success and Failure Attributions of Learning Disabled Children

The subgroup of children generally referred to as learning disabled (LD) are those who are unable to perform academically at a level commensurate with their intellectual ability and educational opportunity in the absence of mental retardation, emotional disturbance, and cultural disadvantage as primary handicapping conditions (Barkley, 1981; Ross, 1977). These children, by definition, experience frequent academic failure. They also may, simultaneously with or in response to repeated school failures, develop behavioural difficulties and impaired social relationships (Barkley, 1981). In this section, the literature pertaining to learning disabled children's cognitions regarding their academic and social experiences will be reviewed and implications for LD children's self-concepts will be discussed.

Academic Attributions

One of the most commonly reported characteristics of learning disabled (LD) children is their relative lack of motivation to improve their skill deficiencies (Adelman & Taylor, 1983; Bryan, 1974a; Butkowski & Willows, 1980; McKinney, McClure & Feagans, 1982). The body of literature previously reviewed has led a number of researchers to employ the learned helplessness model and attribution theory to explain such motivational problems (Thomas, 1979;

Thomas & Pashley, 1982). In general, there are seen to be three components of the attributional model as applied to LD children (Licht, 1983).

First, as a result of the large number of failures experienced by these children from their earliest school years, they come to perceive themselves as lacking in ability and, therefore, lower their expectations of success. Second, their beliefs about their abilities and about the stability and uncontrollability of the causes of their difficulties lead them to decrease their achievement efforts. Thus, the probability of failure is increased and their beliefs in their lack of ability to overcome their difficulties are strengthened. Finally, their beliefs can foster a maladaptive pattern of achievement-related behaviours, such as avoidance of academic tasks (Adelman & Taylor, 1983), an external locus of control, and lowered self-esteem (Black, 1974).

Moreover, LD children's maladaptive achievement-related beliefs have been found to generalize to tasks on which failure is not likely to occur (Butkowski, 1982; Pearl, Bryan & Donahue, 1980). Thus, "to the extent that learning disabled children hold such maladaptive beliefs, their performance may not only fail to reflect the abilities they do possess, but may even deteriorate over time as they face new challenges unconvinced that any effort they expend will have an influence on the outcome"

(Pearl, Bryan & Donahue, 1980, p.3).

The simplicity of a linear relationship between attributions and performance has been questioned, however. Covington and Omelich (1979a, 1984) conducted a path analysis to investigate the relationships between variables that are proposed by this model. The majority of investigations have focused on two-variable relationships, excluding others in the network. Following subjects' failures on one of two test-taking opportunities in a mastery-oriented learning situation, Covington and Omelich obtained measures of need for achievement (nAch), causal attribution categories, shame, expectancy of success, and subsequent test performance. Their analysis indicated that subjects' failure attributions did not directly influence later performance. Nor did they act upon performance indirectly via affect and expectancy. Further, negative affect and expectancy, in some cases, were found to affect attribution - a reversal of the linkage presumed by the model. The most important influence on performance was found to be nAch which, along with expectancy and shame, accounted for 90% of the explained variance.

Therefore, more caution is needed in making causal interpretations involving attribution and performance. It would seem that although numerous findings have emerged from the literature on LD children's beliefs that suggest that they are, at least in some ways, different from those

of normally-achieving children, causal linkages and generalizations which may not be empirically-based are sometimes suggested.

LD children are more likely to believe that their successes occur because tasks are easy than that their failures occur because tasks are difficult (Pearl, Bryan & Donahue, 1980; Jacobsen, Lowery, & DuCette, 1986). Further, LD children consider luck to be more of a factor in their successes and bad luck less of a factor in their failures than do non-LD children (Aponik & Dembo, 1983; Pearl, 1982; Jacobsen, Lowery, & DuCette, 1986). Thus, LD children tend to be more pessimistic about their ability to influence outcomes than are non-LD children.

In general, non-LD children have been described as more mastery-oriented than LD children. Pearl, Bryan, and Herzog (1983) concluded from their research that non-LD students demonstrate a tendency to respond to failure by specifically analyzing their unsuccessful strategies, while LD children are more likely to name vague or uncontrollable factors as the causes of their successes and failures. It is important to note, however, that these group differences in strategy use following failure were only marginally significant statistically. The findings of this study did indicate that LD children experiencing a high degree of success are more likely to attribute outcomes to effort than are LD children experiencing a low degree of success.

No difference in frequency of effort attributions under the two conditions was evident among non-LD children. Further, LD children were found to make more outcome attributions to luck and task difficulty under conditions of low success than they were following a high degree of success. Again, no differences were seen among the non-LD group in their use of these categories.

It is noteworthy that although the LD sample in this study did make more of what are generally considered to be maladaptive attributions under conditions of low success than did the non-LD sample, they actually made more effort attributions following high success than did the non-LD group (although it is not known whether this difference is statistically significant). Further, there were no significant differences in the frequencies with which the LD and non-LD children attributed failure to ability, regardless of conditions of high or low success on the task. Finally, fewer LD than non-LD children in the high success condition attributed successes or failures to task difficulty and luck. Again, it is not known whether these differences are statistically significant, as the analyses were not reported. In any case, it is clear that differences between LD and non-LD groups are not clearly defined, although LD children do appear more likely to make maladaptive attributions of particular types under particular conditions.

A recent study by Jacobsen, Lowery, and DuCette (1986) supports these observations. These investigators found that LD and non-LD students did not differ in their effort attributions for success, but the LD group made more effort attributions for failure than the non-LD group did. In fact, across academic, social, and random situations, the LD students attributed more events to effort than did the non-LD group. Ability attributions were less frequent for success situations but more frequent for failure situations among the LD group than among the non-LD group.

In a second study, Jacobsen, Lowery, and DuCette (1986) demonstrated that self-perceptions of success are positively related to internality of attributions. This was true of both their LD and non-LD samples. Within both groups, ability attributions and success estimates increased together, but effort attributions increased only among the LD group. It is clear that the relationship between attributions and academic achievement is a complex one that varies according to conditions of actual and perceived success. Although some of the findings of this literature indicate that LD children exhibit a more typically helpless attributional pattern than non-LD children do, others suggest that there are more similarities between LD and non-LD children than may frequently be assumed.

Social Attributions

The social difficulties frequently experienced by LD children have been well-documented. They tend to have lower social status than their non-disabled peers (Bruininks, 1978; Bryan, 1974b, 1976, 1978; Perlmutter, Crocker, Cordray, & Garstecki, 1983; Siperstein, Bopp, & Bak, 1978), are frequently rejected or ignored by classmates and teachers (Bryan, 1974b, 1976, 1978), and tend to maintain their lower level of popularity over time and across classrooms (Bryan, 1976). Although the LD label does not invariably lead to social isolation and while possession of nonacademic talents or physical attractiveness can increase an LD child's popularity, even these children rarely, if ever, occupy the most popular social positions (Siperstein, et al., 1978). Despite these documented social difficulties, however, researchers have virtually neglected the study of LD children's social attributions and their implications for the self-concepts, behavioural adjustment, and treatment of this group. To date, only one study has addressed this issue within an LD population.

Sobol, Earn, Bennett, and Humphries (1983) found that their sample of LD children most frequently attributed self-initiated social successes to luck. Therefore, these children held low expectations of social success. Their social attributions were more concrete and less

interactional (fewer attributions to others' motives and responsibilities of friendship, for example) than those of non-LD children of low social acceptance. Non-LD subjects of both high and low social acceptance more often attributed outcomes to others' personalities and personality interaction. Sobol et al. (1983) conclude that the differences in social attributions between the LD children and the other two groups indicate that the former group's causal ascriptions are related more to the learning disability itself than to sociometric status.

Although the LD group was obtained from a clinic which treats children who are not progressing academically at an appropriate rate but who are not of low intelligence, Sobol et al. have not specified that the groups were matched on IQ. Therefore, it is possible that their LD group had a lower, albeit average, mean IQ which contributed to the more concrete beliefs of these children.

The implications of the findings related to LD children's academic and social attributions for the self-concepts of these children seem obvious. It is clear that the consequences of success and failure, in terms of affect, expectancy, and future performance, depend to a large extent upon what children perceive to be the causes of their successes and failures. Children who view their social and academic successes as due to external, uncontrollable factors and ascribe their failures to

internal, uncontrollable causes would seem to possess much less confidence and lower self-concepts than children who take responsibility for their successes and attribute their failures to external factors. Such a linkage has been predicted by Weiner (1979) and supported by Fielstein, et al. (1985). The following section will review the literature pertaining to the self-concepts of LD children and its relationship to this group's typical attributional style.

Self-Concept of LD Children

Ames (1978, p.345) has defined self-concept as "a set of beliefs about the self that are presumed to be a dominant feature in social perception and resulting attributional and self-evaluational processes." The relationship between attributional tendencies and self-concept has been empirically demonstrated. In general, children with low self-concepts are more likely to take personal responsibility (i.e., make internal attributions) for failure than are children with high self-concepts (Ames & Felker, 1979; Bar-Tal, 1982). Ability and effort attributions following success have been found to be those most highly correlated with self-concept, followed by effort attributions for failure and, lastly, by ability attributions for failure (Marsh, Relich, & Smith, 1983). As LD children are more likely to internalize

failure than are non-LD children, it could be hypothesized that LD children generally possess lower self-concepts than do non-LD children.

The literature strongly supports this hypothesis. It has been repeatedly demonstrated that the self-perceptions of LD children are likely to be more negative than those of non-LD children (Black, 1974; Bruininks, 1978; Chapman & Boersma, 1979; Chovan & Morrison, 1984; Margalit & Zak, 1984; Ribner, 1978; Winne, Woodlands, & Wong, 1982). Larsen, Parker, and Jorjorian (1973) found that discrepancies between real- and ideal-self are greater among LD than non-LD children. Chapman and Boersma (1979) demonstrated that LD children have less confidence in approaching academic tasks than do their non-disabled peers.

Self-concept in LD children has been found to be predicted not by IQ, but by academic performance (multiple $R = .290$, $p < .005$) (Smith, 1979). Further, degree of underachievement is inversely related to self-concept (r ranged from .526 to .566, $p < .01$) and, among LD but not among normal children, self-concept tends to decrease as age ($r = -.584$, $p < .01$) and grade ($r = -.161$, $p < .01$) increase (Black, 1974). Johnson (1981) found that high self-concept in children is related to high academic achievement, internal attributions for success, and

external attributions for failure. Low self-concept, on the other hand, is predicted significantly by school failure, internal attributions for failure, and external attributions for success ($R^2 = .48$) (Johnson, 1981).

An issue not addressed by these studies is the heterogeneity of both LD and non-LD samples. The question that remains is whether the self-concepts of LD children are invariably low or whether there are subgroups of these children who possess higher levels of self-concepts. If the latter was found to be true, it would be important to investigate the characteristics of these children, including their attributional patterns, in order to shed further light on the complex relationships between beliefs, self-perceptions, and achievement. The present study seeks to address this issue.

Recently, the "structure" of self-concept has been investigated empirically and the multidimensionality of this construct has been demonstrated (Harter, 1979; Marsh & Parker, 1984; Marsh, Relich, & Smith, 1983; Shavelson & Bolus, 1982). The findings of this research have led to the following formulation:

Self-concept is an individual's perception of self formed through experience with the environment, interactions with significant others, and attributions of his or her own behavior. It is both evaluative and descriptive ... and is multidimensional and hierarchically organized, with perceptions moving from inferences about self in sub-

areas (e.g., academic - reading and mathematics) to broader areas (academic and non-academic) and finally to general self-concept (Marsh, Relich, & Smith, 1983, p.173).

The two primary dimensions of self-concept have been demonstrated to be academic and nonacademic. The latter area includes physical ability, appearance, and interpersonal relationships. Research has revealed that academic achievement is correlated with general self-concept, but not with non-academic self-concept (Marsh & Parker, 1984; Marsh, Relich, & Smith, 1983; Marsh, Smith, & Barnes, 1985). Thus, the two dimensions appear to be independent and need to be investigated as such to clarify more fully the relationship between learning disability and self-concept.

Most of the research investigating self-concept in LD children has either focused on academic self-concept or has employed a measure of general self-concept and correlated it with achievement. Thus, the nonacademic or social dimension has generally been ignored. One of the exceptions to this tendency is a study conducted by Sobol et al. (1983), which revealed that LD children obtained scores on a measure of social self-concept which were similar to those of a group of non-LD children of low social acceptance. Both of these groups obtained lower social self-concept scores than did non-LD children of high social acceptance. These findings indicate that LD

children perceive themselves as being relatively unsuccessful in terms of interpersonal relationships.

Children's Cognitive Errors

Leitenberg, Yost, and Carroll-Wilson (1986) have recently examined a somewhat different aspect of outcome attributions - that is, the cognitive distortions children make when evaluating situational outcomes. Their findings suggest that "the more failure one has experienced in an area, and/or the more inadequate one feels about one's competence in an area, the more one is likely to distort negative aspects of experience in that area" (p.19). This research has investigated the following types of cognitive errors made by children: catastrophizing (anticipating or misinterpreting an event as a catastrophe), overgeneralization (assuming that the outcome of one experience applies to the same or similar future experiences), personalization (taking excessive responsibility for failure), and selective abstraction (attending only to negative aspects of a situation).

In general, Leitenberg et al. (1986) have found that anxious, depressed, and low self-esteem children endorse each type of negative cognitive error significantly more strongly than do non-anxious, non-depressed, and high self-esteem children. This was found to be true across sexes and age groups. Among the low self-esteem,

depressed, and anxious children, overgeneralization was the cognitive error which was most strongly endorsed. This particular type of error is "exemplified by global, and characterological causal self-blame attributions such as, 'I'm no good or bad'" or "I'm a total failure" (p.20).

These findings raise questions regarding the types of cognitive errors LD children may typically make and their relationship to the attributional styles and self-esteem of these children. Given their repeated academic failures, frequent social failures, and generally low self-esteem, it might be predicted that LD children would demonstrate frequent cognitive distortions of their negative experiences. This issue has not been addressed by the existing literature, but will be explored by the present study.

The Issue of Heterogeneity

A further issue which needs to be addressed in research pertaining to attributions and self-concept in LD children is that of subject characteristics. Most of the research in this area to date has treated LD children as a homogeneous group, despite a great deal of evidence to the contrary (Torgesen & Dice, 1980). Such an approach may conceal important within-group differences (Porter & Rourke, 1985). Evidence for the utility of subgrouping LD children in investigations of self-concept has been

provided by Stevenson and Romney (1984), who compared the self-concepts of depressed and non-depressed LD children. Their findings indicated that the former group obtained scores in the low range, indicating low self-concept, while those of the latter group fell in the high to very high range. Such investigations may help to specify more clearly the relationships between learning disability, self-concept, and attributional processes and may have important implications for treatment.

This section will address the issue of the heterogeneity of LD children in further detail. It will present a rationale for selection of subgroups according to social-emotional functioning through an overview of the findings of broad-band approaches to the study of the general population of children. Such approaches search for general patterns of behaviour and attempt to classify symptoms into two or three broad categories. This discussion will be followed by a review of the studies which have addressed this issue within an LD population. Finally, the purposes of the present study, which will integrate the areas of learning disability, attributions, self-concept, and subject characteristics, will be outlined.

The Need for the Study of LD Subgroups

In their review of 105 articles published in eight major journals between 1976 and 1978, Torgesen and Dice

(1980) state that "although heterogeneity of samples of learning disabled children is widely acknowledged, it is apparent...that researchers are currently not designing their experiments in ways that are responsive to this fact" (p.533). Relatively few investigations have attempted to study homogeneous subgroups of LD children. Rather, various subgroups have been combined and studied as one undifferentiated sample, typically in comparison to an equally heterogeneous group of non-LD children (Applebee, 1971). "In this situation even the best results will confound the underlying true situation" (Applebee, 1971, p.101).

Differing neuropsychological patterns among LD children have been investigated with increasing frequency by recent research (Doehring & Hoshko, 1977; Fisk & Rourke 1983; Mattis, French & Rapin, 1975; Petrauskas & Rourke, 1979; Rourke & Finlayson, 1978; Rourke & Strang, 1978). However, differences in personality functioning among these children continue to be relatively neglected by the literature, although their existence has been established (Porter & Rourke, 1985) and despite the relationship between learning disabilities and social difficulties. The study of subject characteristics has been particularly overlooked in the attributional and self-concept literature.

Particular personality subtypes have been consistently

reported in both the child psychopathology and LD literature (Achenbach & Edelbrock, 1978; Porter & Rourke, 1985). The relationships between such diagnostic categories, attributional processes, and self-concept have not been addressed by the existing literature, but will be explored by the present study.

Broad-Band Approach to Social-Emotional Functioning

Peterson (1961) has noted that factor analyses of instruments measuring problem behaviours or symptoms have consistently yielded two major broad-band factors - Conduct Problems and Personality Problems. "Both problems are personality expression, and both affect conduct ... In one case, impulses are expressed and society suffers; in the other case impulses are evidently inhibited and the child suffers" (Peterson, 1961, p.206).

These two patterns of deviant personality functioning have been substantiated by a number of investigators (Quay & Quay, 1965; Quay, Morse & Cutler, 1966). The broad-band syndrome labelled Conduct Problems by Peterson has been found under the labels of Immature Conduct Problem (Lessing & Zagorin, 1971), Aggressive (Ross, Lacey & Parton, 1965), Anger-Defiance (Kohn & Rosman, 1972), Hostile-Aggressive (Behar & Stringfield, 1974), Aggression (Miller, 1967), Aggressive-Conduct Disorder (Conners, 1970), Impulsivity (Ferguson, Partyka & Lester, 1974), and Externalizing

(Achenbach, 1978).

Support for Peterson's Personality Problems factor has also been provided by a number of investigators. They have variously named it Withdrawn (Ross, Lacey & Parton, 1965), Apathy-Withdrawal (Kohn & Rosman, 1972), Anxious-Fearful (Behar & Stringfield, 1974), Inhibition (Miller, 1967), Anxious-Immature (Conners, 1970), and Internalizing (Achenbach, 1978).

In addition to these major dimensions, two further broad-band categories of disturbance have found support in the literature. One of these has been called Learning Problems (Achenbach & Edelbrock, 1978; Clarfield, 1974), Learning Disability (Cowen, Dorr, Clarfield, Kreling, McWilliams, Pokracki, Pratt, Terrell & Wilson, 1973), and Learning Difficulty (Borgatta & Fanshel, 1965).

The other broad-band syndrome that appears repeatedly in the literature Achenbach and Edelbrock (1978) have labelled Pathological Detachment. It has also been found under the names of Maladaptation (Lorr & Jenkins, 1953), Inadequacy-Immaturity (Quay, Morse, & Cutler, 1966), and Severe and Diffuse Psychopathology (Achenbach, 1966). Although there is some lack of uniformity in the findings related to this factor, Achenbach and Edelbrock (1978) conclude that it seems to reflect general abnormality.

In summary, four major broad-band factors have consistently found support in the literature. The first is

related to externalization and conduct problems. The second involves internalization and personality problems. The third factor reflects learning difficulties and the fourth is related to general abnormality.

Personality Functioning of LD Children

A few studies have applied a broad-band approach to the study of social-emotional difficulties of LD children. Their results parallel, to a large extent, the findings related to personality problems within the general population of children.

Paraskevopolous and McCarthy (1970) found that a factor analysis of the Behaviour Problem Checklist (BPC) (Quay & Peterson, 1967) yielded three dimensions among LD children: 1) Conduct Disorder, characterized by restlessness, distractibility, hostility, and aggression; 2) Immaturity, composed of passivity, lack of interest, and introversion; and 3) Anxiety-Withdrawal, which is related to feelings of inferiority, hypersensitivity, and suggests neurotic and disturbed behaviour. Grieger and Richards (1976), also employing the BPC with LD children, replicated the Conduct Disorder and Anxiety-Withdrawal (which they labelled Personality Problem) factors. They found, however, that the third factor included not only characteristics related to immaturity, but to attentional and activity problems as well. This factor was labelled Inadequacy-Immaturity.

A third study employing the BPC with LD children (Epstein, Cullinan & Rosemier, 1983), also revealed a Conduct Disorder factor and a dimension similar to Grieger and Richards' Inadequacy-Immaturity factor, which they labelled Attention Deficit. Epstein et al. describe the pattern of behaviours associated with this factor as "reminiscent of the DSM-III 'attention-deficit disorder, with hyperactivity'" (p.310). They found, however, that the third factor reported in the previous two studies, Anxiety-Withdrawal, was split into Social Incompetence and Anxiety.

All of these studies found that, of the three factors, Conduct Disorder accounted for the most variance. Porter and Rourke (1985), however, obtained results which differ somewhat from the foregoing findings. They conducted a factor analysis employing the Personality Inventory for Children (PIC) (Wirt, Seat & Broen, 1977) with a group of 100 LD children. They found that the most frequently occurring personality pattern was not significantly different from that of normally-achieving children and indicated "balanced and well-adjusted social-emotional functioning" (p.83). It may be that the previously-described studies simply did not report data regarding a non-symptomatic personality factor, as their investigations were focused upon behaviour problem patterns. Other possible explanations for these

conflicting results include differences in the nature of the tests employed, discrepancies in subject populations, and differences in informants used (all of the BPC studies used teachers as informants, although Paraskevopolous & McCarthy (1970) utilized mothers as well, while Porter and Rourke (1985) employed mothers only).

Porter and Rourke's (1985) results also differed from those of the other three studies in terms of the relative frequency of occurrence of the behaviour problem factors which emerged, as well as the nature of one the factors. They found that the most frequently-occurring personality problem dimension was Internalization (which appears to be similar to the Anxiety-Withdrawal factor of the other studies), followed by Somatic Concern, and Externalization (which seems to parallel the previously-described Conduct Disorder factor). The Somatic Concern subtype was characterized solely by excessive worry about one's physical well-being.

The discrepancies between Porter and Rourke's findings and those of the other three studies may be explained by the possibilities previously raised. In any case, however, two factors which consistently have emerged from the factor-analytic studies of LD children are Externalization/Conduct Disorder and Internalization/Anxiety-Withdrawal. These are two primary factors which have also been established within the general

population of children.

Externalizing LD Children

Murray and Whittenberger (1983) have suggested a number of factors which may contribute to externalizing behaviour disorders. They state that aggressive children may sustain a cognitive or mediational deficit which interferes with their ability to control their impulses. They also mention frustration as a possible component of aggressive behaviour. In terms of LD children, it might be hypothesized that underlying both of these factors is a maladaptive attributional process, which involves ascribing responsibility for both successes and failures to external, uncontrollable causes, leading to increased frustration beyond that produced by the learning disability itself, and a belief in the justification of their acting-out behaviour.

Murray and Whittenberger (1983) further suggest that social learning theory may help to explain externalizing behaviour patterns. Two components of this theory state that: 1) "aggression is more likely to occur when the child is aversively stimulated, e.g., by...thwarting of goal-directed behavior" (p.79); and 2) aggression is maintained by "cognitive processes that are used to justify the hostile actions," such as claims that "I didn't start it," or "He made me do it" (p.80).

Again, a picture emerges of a child who is frustrated by a learning difficulty, attributes the blame for this difficulty and for its accompanying negative affect to external, uncontrollable causes, and perpetuates such a response by attributing his or her behaviour to an external cause. Such a child would tend to experience peer rejection (Dodge, 1983), but a tendency to externalize the causes of failures, both academic and social, may serve to protect this child's self-concept, to some extent.

Internalizing LD Children

Social learning theory often views anxiety as a "series of responses indicative of a low expectancy of success in a valued-need area" (Margalit & Zak, 1984, p.537). Anxious behaviours resulting from such expectancies may include worrying, withdrawal, or manifestation of somatic concern. In the case of LD children, it may be hypothesized that the basis of anxiety is a tendency to attribute academic and social failures to internal, uncontrollable causes and successes to external, uncontrollable causes. Such an attributional style would likely lead to a low expectancy of success, resulting avoidance of academic tasks (perhaps through somatic complaints), and withdrawal from social situations. These children would be neglected by their peers (Dodge, 1983), and their self-blame and ascription of failure to internal causes would contribute to a lowered self-concept.

These experiences and attributions may be associated with tendencies to further distort perceptions of outcomes in a negative direction. In other words, these children may tend to catastrophize, overgeneralize, personalize, and selectively attend to negative aspects of their experiences (Leitenberg et al., 1986).

In summary, two primary personality dimensions have been established by the literature related to both LD children and the general population of children. These factors have been labelled Externalization or Conduct Disorder, and Internalization or Anxiety-Withdrawal. In the following section, the relevance of this finding for the present study will be clarified through a description of the purposes of the present investigation. The hypotheses set forth by the present study will then be presented.

The Present Investigation

The purpose of the present study is to explore the cognitions accompanying three widely discrepant behaviour patterns associated with learning disability - externalizing or acting-out behaviours, internalizing, or anxiety-related behaviours, and behaviour patterns reflecting adequate social-emotional adjustment - through an examination of LD children's attributional processes. Second, an attempt will be made to assess the relationship

between the behaviour patterns, attributional styles, and self-concepts of these three groups of LD children. Third, an investigation of the globality of the attributional processes and self-concepts of these LD subgroups will be carried out by examining these constructs across the academic and social domains.

Expectations

The following hypotheses are partially based upon the literature regarding social and academic attributions of LD and non-LD children previously reviewed. Hypotheses related to differences between behavioural subtypes are based upon Dodge (1983), Margalit and Zak (1984), and Murray and Whittenberger (1983). Expectations regarding cognitive errors are based upon findings by Leitenberg et al. (1986).

Hereafter, the groups of children under investigation will be referred to as follows:

Group Cont - Non-LD, Non-behaviour disordered
(Control)

Group LDNorm - LD, Non-behaviour-disordered

Group LDExt - LD, Externalizing symptoms present
Internalizing symptoms not present

Group LDExt/Int - LD, Externalizing and
Internalizing symptoms present

Hypothesis I: Attributional Categories

Hypothesis Ia - Attributions for Success

As psychological "health" is generally considered to be associated with taking responsibility for one's successes (Diener & Dweck, 1980), the non-behaviour-disordered subjects (Groups Cont and LDNorm) are expected to attribute academic and social success to internal causes more than are Groups LDExt and LDExt/Int. Groups LDExt and LDExt/Int are expected to use external categories more frequently to explain academic and social successes than are Groups Cont and LDNorm. The latter attributional style would be associated with frustration due to a perception of independence between success and one's effort and ability (Diener & Dweck, 1980; Dweck & Repucci, 1973).

Hypothesis Ib - Attributions for Failure

As it is generally predicted that subjects in Group LDExt will tend to externalize responsibility for failure and hence act on their environments, it is expected that these children will attribute academic and social failures to external categories more frequently than will Groups Cont and LDNorm. Such an attributional pattern would be associated with the belief that one's goal-directed behaviour is being thwarted and that one's hostility is justified - characteristics which, according to social learning theory, may accompany externalizing

behaviour patterns (Murray & Whittenberger, 1983).

Goetz and Dweck (1980) demonstrated that internalization of failure is associated with withdrawal from and severe disruption of attempts to gain social approval. It is predicted that Group LDExt/Int will tend to view the causes of failure as internal more than will the other three groups, blaming themselves, and becoming anxious and depressed as a result.

Hypothesis II: Attributional Dimensions

Hypothesis IIa - Successful Outcomes

According to current literature, adaptive behaviour is associated with a perception of success as being controllable, stable, and due to internal factors (Weiner, 1985b). It is predicted, therefore, that Groups Cont and LDNorm will view causes of academic and social successes as more controllable, stable, and internal than will Groups LDExt and LDExt/Int.

Hypothesis IIb - Failure Outcomes

Adaptive behaviour is also associated with a perception of failure as being controllable, unstable, and externally caused (Weiner, 1985b). It is predicted that Groups Cont and LDNorm will view academic and social failures as more controllable and unstable than will Groups LDExt and LDExt/Int.

Further, LDExt children are expected to view their

failures as resulting from external causes to a greater extent than are Cont or LDNorm children, and hence their tendency to act upon their environments. Weiner (1985b) has suggested that ascription of negative outcomes to factors controllable by others is an antecedent to anger. LDExt/Int subjects, on the other hand, are expected to view the causes of their failures as more internal than are the other three groups. Such an attributional style would lead these children to blame themselves, and to become anxious and depressed. Attributions for failure to internal, stable, uncontrollable factors have been linked to feelings of shame, guilt, and hopelessness (Weiner, 1985b).

Hypothesis III: Cognitive Errors

Negative cognitive distortions are associated with maladaptive patterns of behaviour (Beck, 1976; Leitenberg, 1986). It is expected that Groups LDExt and LDExt/Int will tend to catastrophize, overgeneralize, and selectively attend to negative aspects of situations more than Groups Cont and LDNorm will.

It is further predicted that Group LDExt/Int subjects will obtain higher scores on the Personalization scale than will subjects in the other three groups - that is, they will take more personal responsibility for negative outcomes than will the other groups.

Hypothesis IV: Self-Concept

Since it has been hypothesized that Groups Cont and LDNorm will take responsibility for success and will externalize failure, and that they will view outcomes as being within their control, it is predicted that these subjects will obtain higher Cognitive, Social, and General Self-Concept scores than will Groups LDEExt and LDEExt/Int (Fielstein et al., 1985).

Further, since Group LDEExt/Int is expected to view failure as uncontrollable, stable, and internally-caused, these children are expected to obtain lower self-concept scores in the three domains than are Group LDEExt subjects.

CHAPTER II

METHOD

Subjects

Subjects were selected from the populations of children admitted to two mental health agencies, the Chedoke Child and Family Centre in Hamilton, Ontario ($n=38$) and the Children's Assessment and Treatment Centre in Burlington, Ontario ($n=13$), and from the population of children attending Chisholm Educational Centre ($n=9$), which is a private school for LD children in Oakville, Ontario.

All subjects were between the ages of 8-0 and 13-11. The sample was composed of 13 eight-year-olds, 8 nine-year-olds, 18 ten-year-olds, 7 eleven-year-olds, 8 twelve-year-olds, and 6 thirteen-year-olds. There were 12 boys and 3 girls in each of the four groups. Each of the children met the following criteria:

Inclusion Criteria

All LD children: 1) obtained Full Scale IQ's of at least 85; and 2) exhibited an academic achievement deficit in at least one subject area, (i.e., a significant discrepancy between expected achievement and ability).

(See Appendix A for a more detailed discussion of the definition of learning disability.) A significant achievement deficit was defined as a discrepancy of at least one standard deviation between a score on: 1) the WRAT Reading and/or WRAT Spelling subtests and WISC-R Verbal IQ; and/or 2) the WRAT Arithmetic subtest and WISC-R Performance IQ.

All non-LD children: 1) obtained Full Scale IQ's of at least 85; and 2) demonstrated academic achievement commensurate with their intellectual ability. According to the latter criterion, these children obtained: 1) WRAT reading and WRAT spelling subtest scores which fell within one standard deviation of their WISC-R Verbal IQ's; and 2) WRAT arithmetic scores which fell within one standard deviation of their Performance IQ's.

Exclusion Criteria

Children determined to have defective hearing or vision on the basis of their medical records, ophthalmological examinations, and/or audiological assessments were excluded from the subject sample. Subjects showed no evidence of severe emotional disturbance; such children had been eliminated from the subject pool by their clinicians during the selection process. Also excluded were children who had suffered traumatic brain injury or severe cultural neglect. All subjects spoke English as their primary language.

Classification Groups

Following selection of the LD children on the basis of the above criteria, they were placed according to their scores on the Child Behaviour Checklist (CBCL) (Achenbach, 1978) to compose three classification groups:

Externalizers (T-scores of at least 71 on the broad-band Externalizing scale and less than 70 on the Internalizing scale), children of "mixed" symptomatology (T-scores of at least 71 on the broad-band Externalizing and Internalizing scales), and Normals (T-scores of 70 or less on the Externalizing and Internalizing scales). CBCL questionnaires were completed by subjects' mothers at the time of their children's interviews. It should be noted that during the period of data collection, only three LD children with only internalizing behaviour problems were encountered. Thus, this subgroup was not included in the research design.

Among the sample obtained, the maximum Internalizing score obtained by the Externalizing group was 68. The minimum Externalizing score of this group was 71. The maximum Externalizing and Internalizing scores obtained by the LD Normal group were 68 and 67, respectively.

Non-LD children were further selected on the basis of their CBCL scores. All non-LD children employed in the study obtained T-scores of 65 or less on the Externalizing scale and 66 or less on the Internalizing

scale. These children served as a Clinic Control group. Members of this group had been referred for assessment for reasons such as family dysfunction, mild academic difficulties, or other vague problems. Thus, although they had undergone the same referral and assessment procedures as had subjects in the other three groups, they did not meet the criteria which defined learning disabilities or behavioural difficulties in the present study. (See Appendix B for a discussion of the utility of a Clinic Control group).

Investigator

One investigator carried out the study. In order to minimize investigator bias, the experimenter did not have knowledge of the subjects' membership in the four groups. Subjects were selected on the basis of records which did not divulge their names, but were organized on the basis of file numbers. When all subjects had been selected, their file numbers were collected and matched to names without further reference to their intellectual and achievement test scores or CBCL data. For the purposes of statistical analysis, these scores became known only after all dependent measures had been scored.

Dependent Measures

In general, the four dependent measures which were

utilized in the present study were the categories used by subjects in making success and failure attributions (both academic and social); their placements of these categories on three dimensions; their cognitive errors in the academic and social areas; and their academic, social, and general self-concepts. These variables will be discussed in detail in this section.

1. Attribution Measure - Categories

(See Appendix C for a full discussion of the measurement of attributions.) The academic attribution measure consisted of eight items selected from the Intellectual Achievement Responsibility (IAR) Scale (Crandall, Katkovsky, & Crandall, 1965). The items were chosen on the basis of their relevance to academic situations. Four of the items relate primarily to the self (eg., "Suppose you do well on a test at school. Why would this happen?"), while the remaining four are other-related (eg., "Suppose your teacher didn't pass you to the next grade. Why would that happen?"). Two of each type of item presented positive outcomes, while the other two represented negative events. (See Appendix D for a list of the items contained in the Academic Attribution Questionnaire.)

The social attribution measure was taken from Earn and Sobol (1984). Its design parallels that of the academic attribution measure. It consists of eight items, four of

which present self-initiated social situations (eg., "You ask a girl/boy on your street to play with you but she/he does not play with you. Why would this happen?"). The other four items present other-initiated social situations (eg., "A girl/boy in your class is having a party and you are invited. Why would that happen?"). Two of the items of each type have positive outcomes, while the other two present negative outcomes. (See Appendix D for a list of the items comprising the Social Attribution Questionnaire.)

Children responded to the items on these two measures with causes or "categories" to which they attributed the outcomes described to them. Subjects who provided more than one category were asked to identify which of those causes was most important. These categories were coded according to a coding scheme which was largely based on previous literature, but the classifications were altered slightly to accommodate the responses of this particular subject sample.

The coding scheme for academic items consisted of the following categories:

"Internal" categories

Effort - Study ("I studied/worked hard.")

Effort - Attending ("I wasn't listening/concentrating.")

Ability ("I'm good at it.")

Motivation ("I didn't want to.")

"External" categories

Luck ("It was a lucky guess.")

Others' Intervention ("Other kids were distracting me.")

Task difficulty was employed by only seven subjects (three for successful outcomes and three for failure outcomes), and was therefore omitted from the analysis.

Effort was divided into two subcategories, as these forms of effort were clearly delineated in the subjects' responses.

The coding scheme for social items consisted of the following categories:

"Internal" category

Characteristics of Self ("I'm nice.")

"External" categories

Other's Characteristics ("He's a bully.")

Other's Motivation ("She felt like it.")

Third-Party Intervention ("His mother wouldn't let him.")

"Interactional" categories

Personality Interaction ("We're friends.")

Interpersonal Evaluation
("She likes me.")

Reciprocation was used by only two subjects, and was therefore omitted from the analysis.

Réliability

A graduate student in Psychology, who was blind to the purpose of the study, was trained in the use of the coding schemes so that reliability of coding could be estimated. Cohen's kappa was calculated for coding of academic and social categories. Kappa was found to equal 89.3% for academic coding and 87.8% for social coding.

2. Attribution Measure - Dimensions

On each of the attribution measures, subjects were asked to place the categories they used to explain outcomes on three dimensional scales. The scales measured their perceptions of the controllability ("Is that something that you can do something about?"), stability ("Is that something that will change?"), and locus of causality ("Is that because of things about you or because of things that have nothing to do with you?") of each of the categories they employed to explain successes and failures. Children placed their responses to the dimensional questions along four-point scales. (See Appendices C and D for further illustration of the dimensional scales.)

3. Cognitive Error Measure

The Children's Cognitive Error Questionnaire (CCEQ) (Leitenberg, et al, 1986) examines children's cognitions and attributions regarding hypothetical situations in the academic, social, and athletic domains. The error measures

are catastrophizing, overgeneralization, personalization, and selective abstraction. The questionnaire contains 24 items - two reflecting each of the four error types in each of the three content areas. Subscale scores for each type of cognitive error and for each content area may be derived, as well as a total cognitive distortion score.

Test-retest reliability was found to be .65 ($p < .001$) for the total score and .44 to .59 ($p < .001$) for subscale scores (Leitenberg et al., 1986). Internal consistency for the total score and subscale scores ranged from .60 to .89 in one sample and from .49 to .60 in another (Leitenberg et al, 1986). (See Appendix E for further data on this scale).

The following scores were obtained for the purposes of the present study: total distortion score, error category scores, and academic and social content area scores.

4. Self-Concept Measure

The Perceived Competence Scale for Children (Harter, 1979) was used to obtain measures of subjects' academic, social, and general self-esteem. Three of the four subscales of this test were employed. The first, the Cognitive Competence scale, measures children's perceived competence in school performance (i.e., doing well at school work, feeling good about school performance, etc.). The second subscale, measuring perceived social competence, contains items related to interpersonal competence with

regard to one's peers (i.e., having a lot of friends, being easy to like, etc.). The third, the General Self-Esteem scale, assesses how a child feels about his or her own general self-worth, rather than referring to any particular type of activity (i.e., being sure of one's self, being happy with the way one is, etc.). Each of these subscales contains seven items. In accordance with standardized administrative procedures, the entire 28-item test was administered (including the physical competence scale), but only the academic, social, and general self-esteem subscale scores were used in the present study.

On a measure of internal consistency, values of .76, .78, and .73 were obtained for the cognitive, social, and general subscales, respectively (Harter, 1979). Factor analytic procedures have demonstrated that children do discriminate between the four domains tapped; factor loadings ranged from .49 to .71 on the cognitive scale, from .44 to .70 on the social scale, and from .40 to .67 on the general scale in a sample of 341 children from two states (Harter, 1979). (See Appendix F for further details regarding this measure.)

Design and Statistical Analyses

The data were analyzed in a series of five analyses of variance (ANOVAs). Two 4 X 2 X 6 (Group X Outcome X Category) ANOVAs were carried out on the frequencies with

which subjects employed various categories to explain academic and social outcomes, respectively. These data were analyzed in two ANOVAs, rather than in one MANOVA, because the academic and social categories could not be collapsed or combined in any way. A Chi-Square analysis of category frequencies was also inappropriate for this data since the cell frequencies were not independent. That is, a subject's use of one category necessarily determined that that subject's remaining cell frequencies would be zero. Thus, the assumption of independence of cell frequencies was violated.

A 4 X 2 X 2 X 3 (Group X Domain X Outcome X Dimension) ANOVA was conducted on subjects' scores on the three dimensional scales (Controllability, Stability, and Locus of Causality). Subjects' Cognitive Errors were analyzed in a 4 X 4 X 2 (Group X Error Type X Error Domain) ANOVA. Finally, a 4 X 3 (Group X Domain) ANOVA was carried out on subjects' cognitive, social, and general self-concept scores.

The alternative method of analyzing the data in a single MANOVA was rejected on the bases previously mentioned as well as on the basis that each data set involved different numbers of and different levels of the independent variables. Thus, they could not be combined into a single analysis.

Post-hoc tests utilizing the Newman-Keuls method of

pairwise comparisons were carried out when significant F-ratios were found in the ANOVAs.

CHAPTER III

RESULTS

The results of the statistical analyses will be presented in six general sections: 1) the descriptive statistics; 2) analyses of attributional categories used by the four groups of children to explain academic successes and failures; 3) analyses of attributional categories subjects employed to explain social successes and failures; 4) analyses of subjects' placements of these categories along the dimensions of controllability, stability, and locus of causality; 5) analyses of subjects' scores on the Children's Cognitive Error Questionnaire; and 5) analyses of subjects' academic, social, and general self-concept scores on the Perceived Competence Scale for Children.

Descriptive Statistics

The mean and standard deviation for each of the control variables employed are presented for the four subject groups in Table 1. One-way analyses of variance and Student-Newman-Keuls post hoc tests were carried out to determine whether the groups differed on these variables. No significant differences were found between groups on

Table 1

Descriptive Statistics for Control Variables

Group Means					

Variable Name	Cont n=15	LDNorm n=15	LDExt n=15	LDExt/Int n=15	F Value

Age ^a	123.87 (23.95) ^b	130.47 (15.89)	120.87 (16.35)	129.00 (21.75)	.76
SES	46.20 (17.63)	44.59 (18.36)	39.27 (12.98)	37.74 (13.16)	1.01
VIQ	104.60 (15.21)	101.53 (13.18)	99.60 (9.77)	101.87 (10.62)	.41
PIQ	101.67 (12.45)	115.80 (15.78)	105.00 (14.44)	107.00 (13.92)	2.71
FIQ	103.13 (13.46)	109.00 (13.72)	102.00 (9.11)	104.53 (11.48)	.97
Reading	105.73c (15.91)	88.47d (16.71)	85.47d (16.59)	87.93d (17.36)	4.69**
Spelling	104.33c (14.24)	88.67d (15.16)	85.80d (16.66)	82.33d (16.11)	5.84**
Arithmetic	99.87c (18.49)	86.20d (17.02)	85.20d (12.43)	83.47d (17.44)	3.13*
Externalizing	57.80c (6.18)	61.07c (6.66)	74.53d (3.64)	77.13d (4.97)	46.09**
Internalizing	56.67c (8.30)	60.93c (6.36)	64.93c (3.15)	77.80d (3.93)	36.91**

^aAge in months.^bFigures in parentheses are standard deviations.Means with the same letter are not significantly different.

*p<.05 **p<.01

age, socioeconomic status, VIQ, PIQ, or FIQ ($p > .05$).

There were 12 boys and 3 girls in each of the four groups.

There were significant differences between groups on reading, spelling and arithmetic WRAT scores, as well as on internalizing and externalizing scores from the CBCL.

Student-Newman-Keuls tests of multiple comparisons revealed that the mean reading, spelling and arithmetic scores of group Cont were significantly higher than those of the other three groups. The mean CBCL externalizing scores of groups LDExt and LDExt/Int were significantly higher than those of Groups Cont and LDNorm. Group LDExt/Int obtained an internalizing score that was significantly higher than those obtained by the other three groups. Table 1 contains the F value and probability level for each of the measures.

Attributional Categories - Academic Outcomes

The causes to which subjects attributed positive and negative academic outcomes were analyzed in a $4 \times 2 \times 6$ (Group X Outcome X Category) ANOVA. A summary of the ANOVA results is presented in Table 2. Student-Newman-Keuls (SNK) post hoc tests were carried out on significant main effects and interactions.

Table 2

Summary of ANOVA - Academic Categories

Source	df	MS	F	p
Group (A)	3	0.08	0.58	.6307
Outcome (B)	1	0.03	0.47	.4956
A X B	3	0.08	1.12	.3477
Error (B)	56	0.07	.....	.....
Category (C)	5	52.06	49.52	.0001**
A X C	15	1.32	1.25	.2325
Error (C)	280	1.05	.....	.....
B X C	5	4.58	14.21	.0001**
A X B X C	15	0.59	1.82	.0313*
Error (B X C)	280	0.32	.....	.....

* $p < .05$ ** $p < .001$

Main Effects

Category

A significant main effect for category was obtained ($p < .001$), indicating that, across groups, children attributed academic outcomes to the six categories with differing frequencies. Table 3 contains the absolute and mean frequencies with which each category was utilized. An SNK test revealed that, across groups and outcomes, effort-study was used more frequently than were effort-attending and ability, and that motivation, luck, and others' intervention were employed least frequently.

Group and outcomes main effects were not significant ($p > .05$).

Interactions

Outcome X Category

An Outcome X Category interaction was yielded by the analysis ($p < .001$). Therefore, across groups, subjects demonstrated different patterns in their attributions for academic successes and failures. This interaction is illustrated in Figure 1. Table 3 contains the absolute and mean frequencies with which each category was utilized for explaining successful and unsuccessful academic outcomes, respectively.

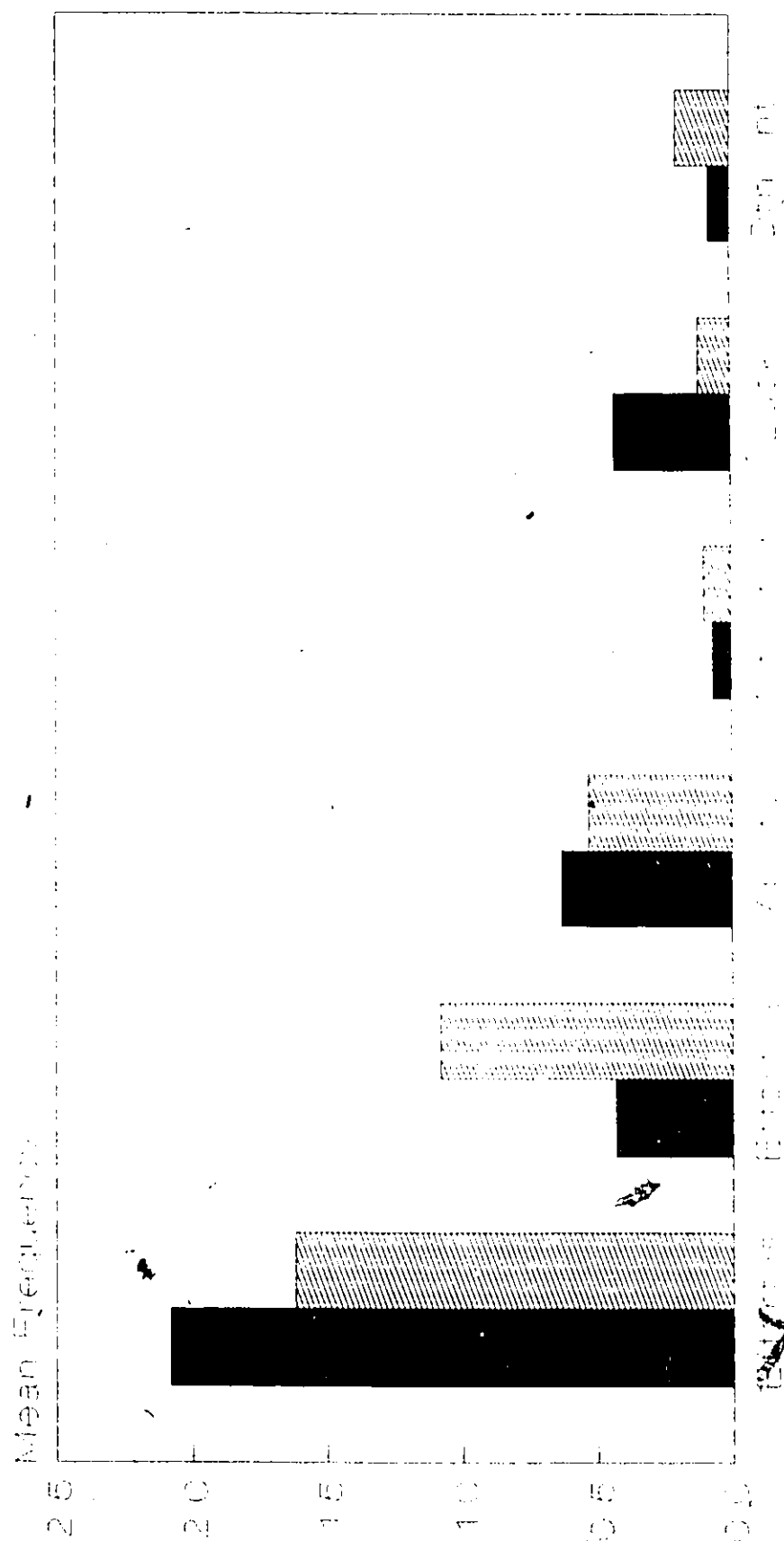
Effort-study and luck were used to explain successes more than to explain failures ($p < .01$). Failures, on the other hand, were attributed to effort-attending more

Table 3

Outcome X Category Frequencies

Category	Success		Failure		Total	
	Total	M	Total	M	Total	M
Effort-S	125	2.08	97	.62	222	1.85
Effort-A	26	.43	65	1.08	91	.76
Ability	38	.63	32	.53	70	.58
Motivation	4	.07	6	.10	10	.08
Luck	26	.43	7	.12	33	.28
Others' intervention	5	.08	12	.20	17	.14

Figure 1. Outcome X Category Interaction - Academic Outcomes.



than were successes ($p < .01$).

Outcome X Category X Group

A significant Outcome X Category X Group interaction was also found ($p < .05$). In other words, different patterns were observed in the attributions of the four groups for academic successes as well as for failures. Absolute and mean frequencies are presented in Table 4. Figures 2 through 5 illustrate this interaction for the four subject groups.

Attributions for academic success versus failure. Children in groups Cont and LDExt attributed more successes than failures to effort-study ($p < .01$). LDNorm children attributed more successes to luck than they did failures ($p < .05$).

Groups Cont, LDNorm, and LDExt/Int employed effort-attending to explain failures more than to explain successes ($p < .01$). LDExt children attributed more failures than successes to others' intervention ($p < .05$).

Attributions for academic success. In all four groups, subjects made more academic success attributions to effort-study than to any other category ($p < .01$).

Among LDNorm subjects, no other differences in category usage were observed ($p > .05$).

Within group Cont, subjects attributed success to

Table 4

Outcome X Category Frequencies by Group -Academic Outcomes

Category	Group							
	Cont		LDNorm		LDExt		LDExt/Int	
	Outcome		Outcome		Outcome		Outcome	
	S	F	S	F	S	F	S	F
Effort-S	32	20	34	28	32	21	27	28
	2.13	1.33	2.27	1.87	2.13	1.40	1.80	1.87
Effort-A	11	26	3	12	9	15	3	12
	.73	1.73	.20	.80	.60	1.00	.20	.80
Ability	9	4	8	8	10	11	11	9
	.60	.27	.53	.53	.67	.73	.73	.60
Moti- vation	0	0	1	6	2	0	1	0
	.00	.00	.07	.40	.13	.00	.07	.00
Luck	6	1	8	1	2	1	10	4
	.40	.07	.53	.07	.13	.07	.67	.27
Others' inter- vention	1	1	1	1	2	10	1	0
	.07	.07	.07	.07	.13	.67	.07	.00

*Mean frequency.

Figure 2. Outcome X Category X Group Interaction - Group Cont.

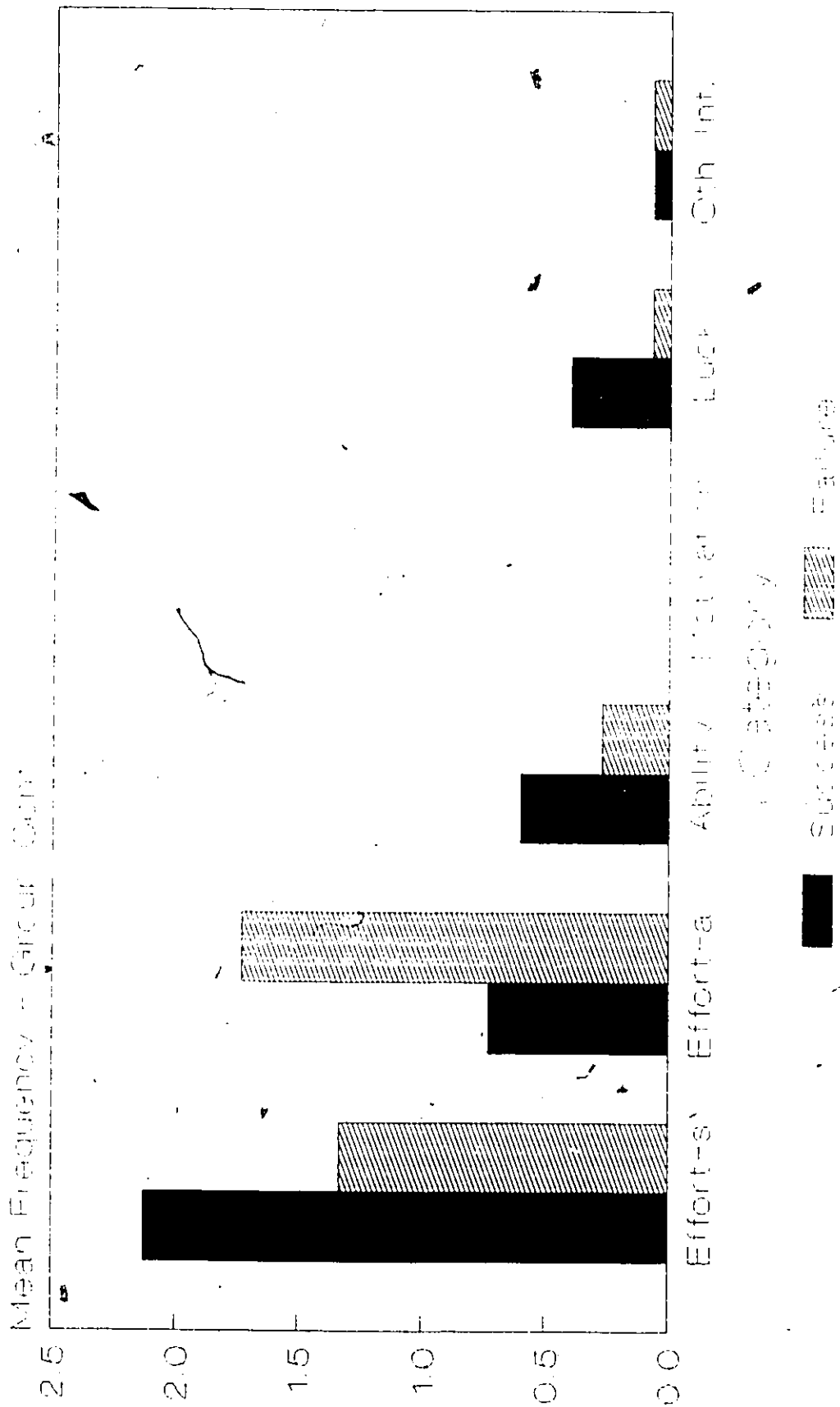


Figure 3. Outcome X Category X Group Interaction - Group LDNorm.

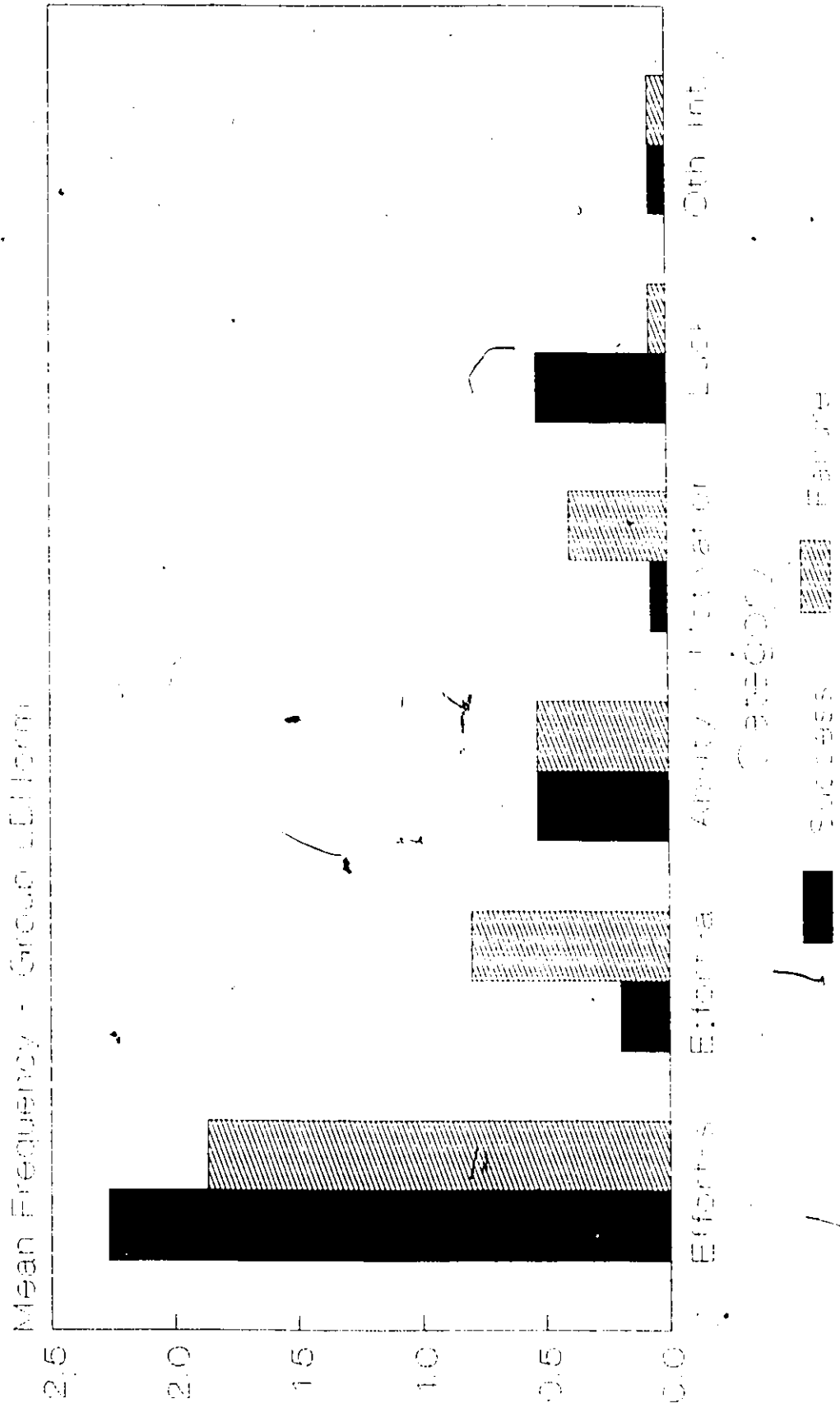


Figure 4. Outcome X Category X Group Interaction - Group LDExt.

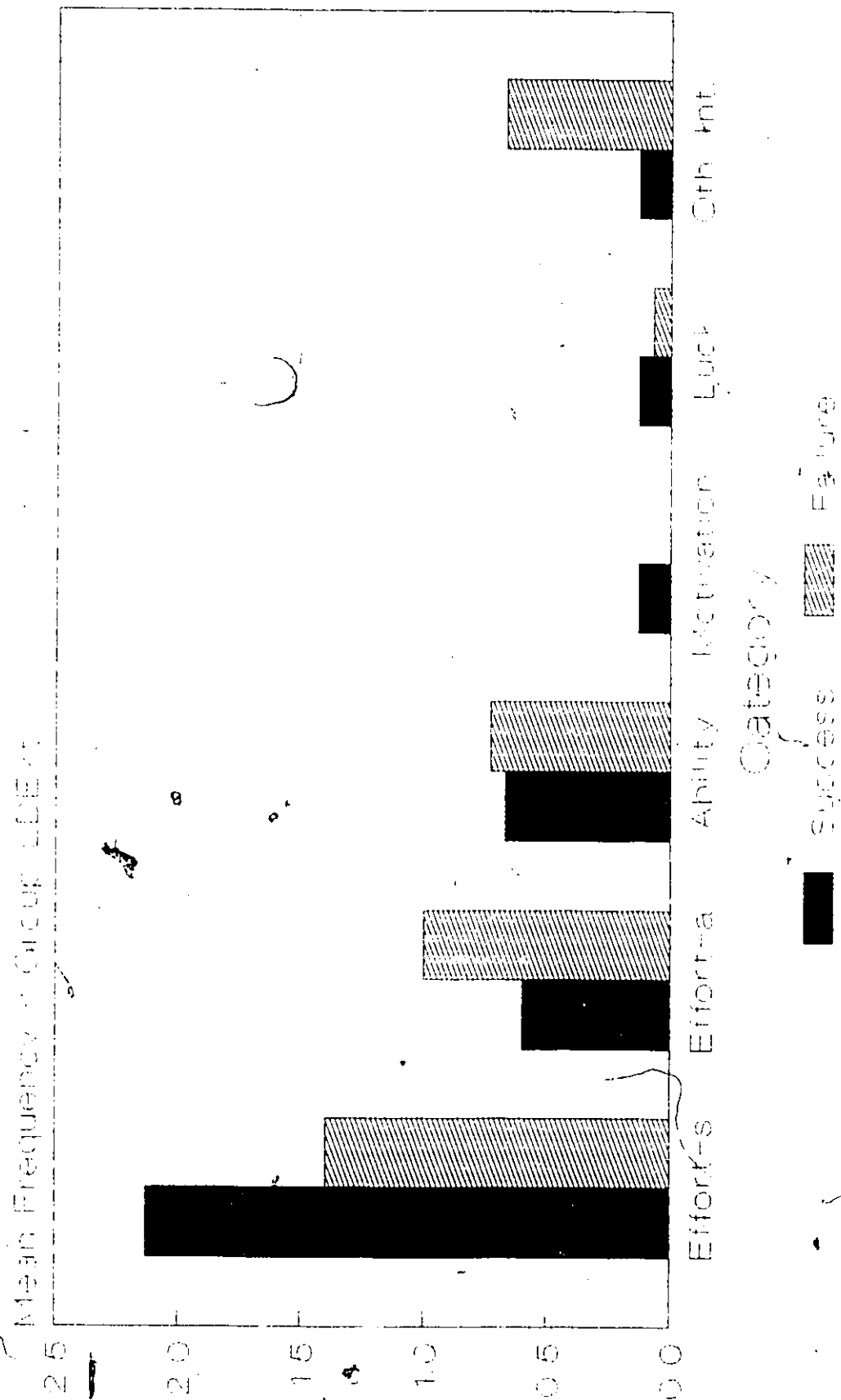
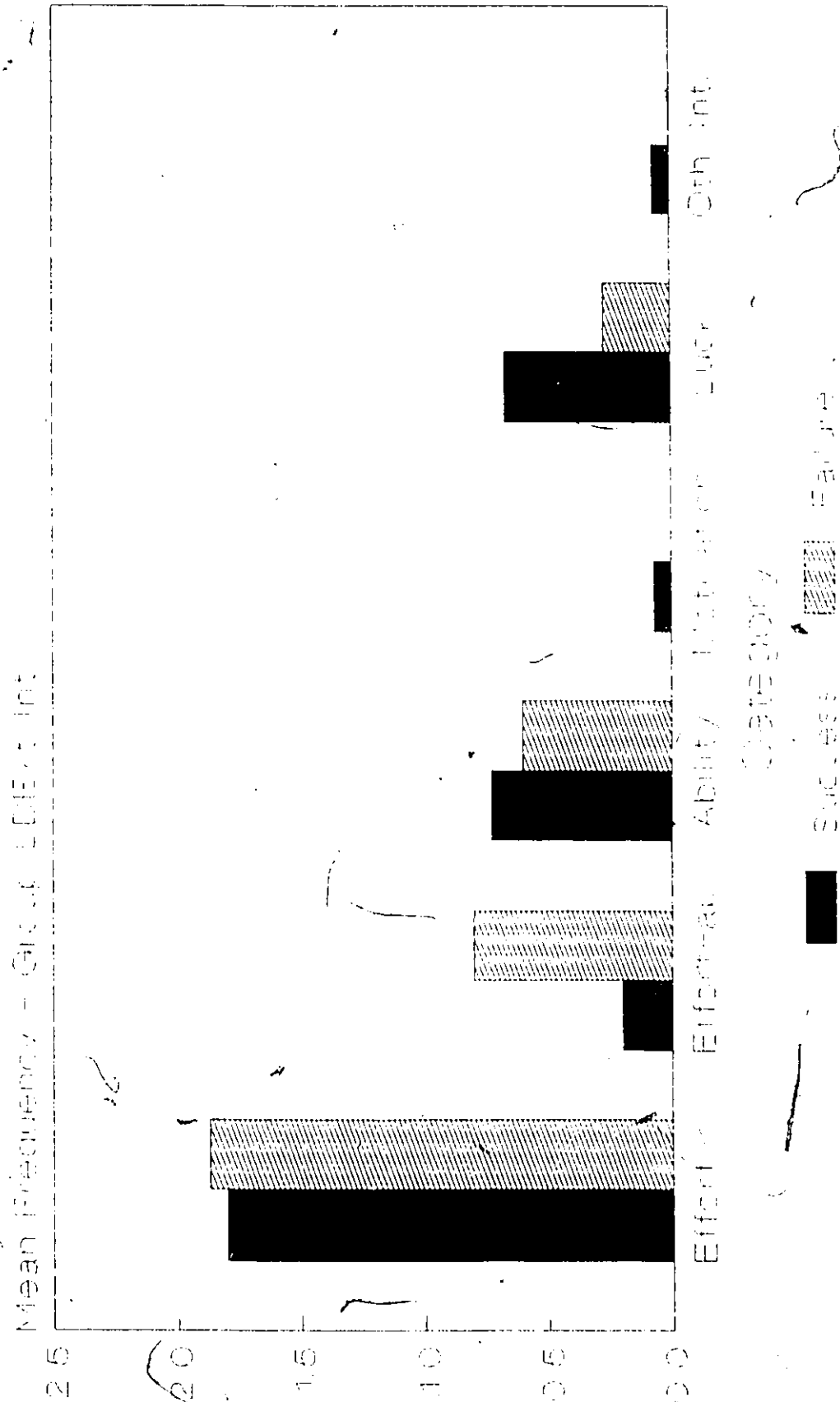


Figure 5. Outcome X Category X Group Interaction - Group LDExt/Int.



effort-attending ($p < .01$) and ability ($p < .05$) more frequently than to motivation or others' intervention. Group LDExt made more success attributions to effort-attending and ability than to motivation, luck, or others' intervention ($p < .05$). LDExt/Int subjects, however, made more success attributions to ability than to effort-attending ($p < .05$), motivation ($p < .01$), or others' intervention ($p < .01$). These children also attributed success to luck more frequently than to effort-attending ($p < .01$), motivation ($p < .05$), or others' intervention ($p < .05$).

Attributions for academic failure. In terms of their attributions for academic failure, subjects in groups LDNorm and LDExt/Int employed effort-study more than any other category. Among children in group LDNorm, no other significant differences in category usage were observed ($p > .05$). Group Cont subjects employed the effort-attending as well as effort-study more than any other category ($p < .01$) to explain academic failure, with no further differences in category usage ($p > .05$).

Children in group LDExt attributed failures to effort-study more frequently than to ability, motivation, luck, or others' intervention ($p < .01$). They also made more attributions to effort-attending, ability, and others' intervention than to motivation or luck

($p < .01$). The frequencies with which they used effort-attending, ability, and others' intervention did not differ significantly ($p > .05$). LDExt/Int subjects made failure attributions to effort-attending more frequently than to ability, motivation, luck, or others' intervention ($p < .01$), and to ability more frequently than to motivation, luck, or others' intervention ($p < .05$).

Differences between groups in attributions for academic success and failure. Post hoc tests revealed no significant differences in the frequencies with which the four groups employed effort, ability, or motivation to explain academic successes or failures ($p > .05$). An SNK test did indicate, however, that group LDExt/Int attributed academic successes to luck more frequently than did subjects in group LDExt ($p < .05$). Further, children in group LDExt employed others' intervention to explain academic failures more frequently than did children in the other three groups ($p < .01$).

Attributional Categories - Social Outcomes

The causes to which subjects attributed positive and negative social outcomes were analyzed by means of a 4 X 2 X 6 (Group X Outcome X Category) ANOVA. A summary of the ANOVA results is presented in Table 5. SNK post hoc tests were carried out on significant main effects and

Table 5

Summary of ANOVA - Social Categories

Source	df	MS	F	p
Group (A)	3	0.03	2.56	.0641
Outcome (B)	1	0.01	0.67	.4177
A X B	3	0.01	1.11	.3523
Error (B)	56	0.01	.....	.....
Category (C)	5	20.19	17.97	.0001**
A X C	15	3.58	3.19	.0001**
Error (C)	280	1.12	.....	.....
B X C	5	6.10	13.01	.0001**
A X B X C	15	1.06	2.26	.0051**
Error (B x C)	280	0.47	.....	.....

**p<.01

Figure 14. Domain X Outcome X Dimension Interaction - Controllability.

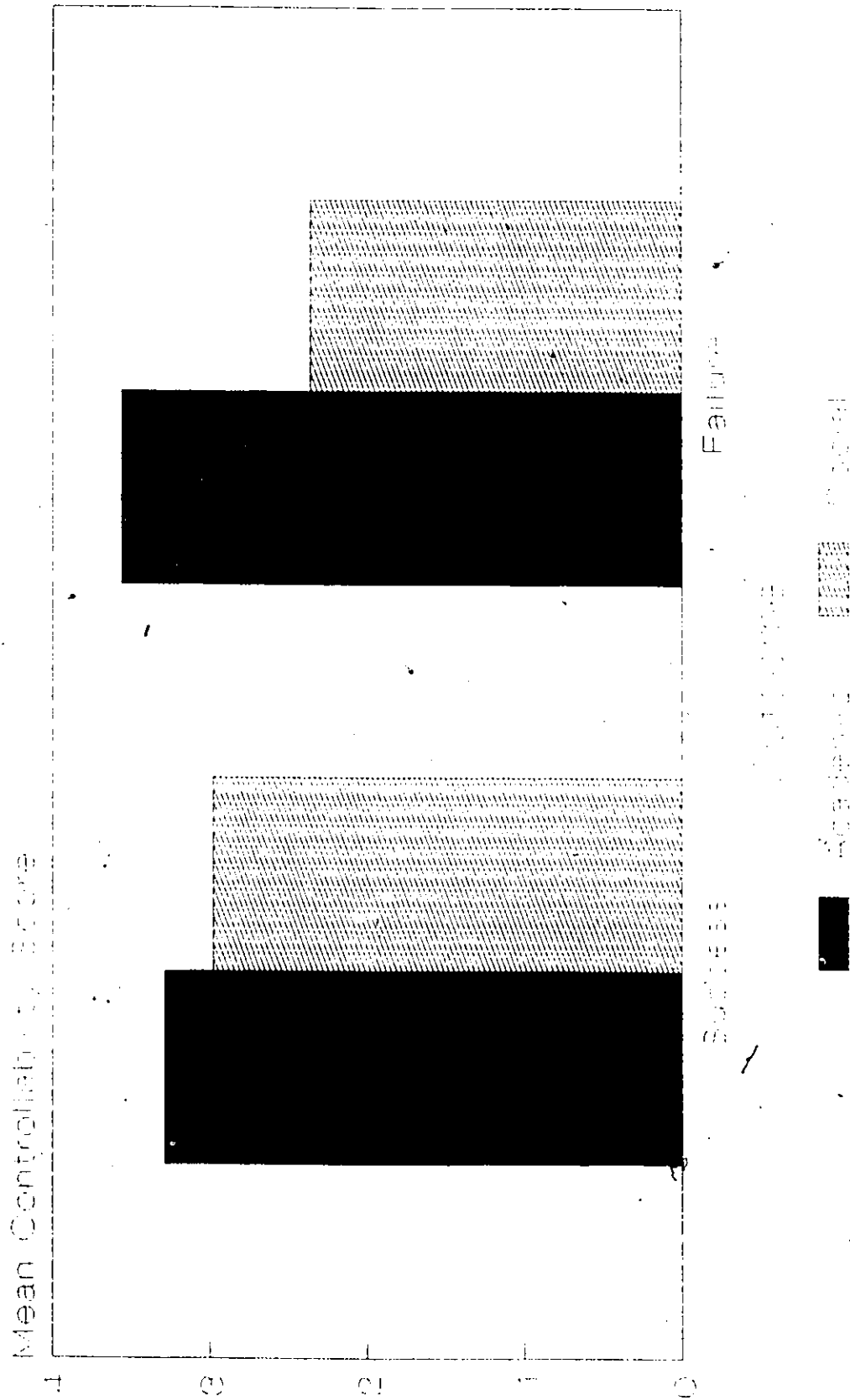


Figure 15. Domain X Outcome X Dimension Interaction - Stability.

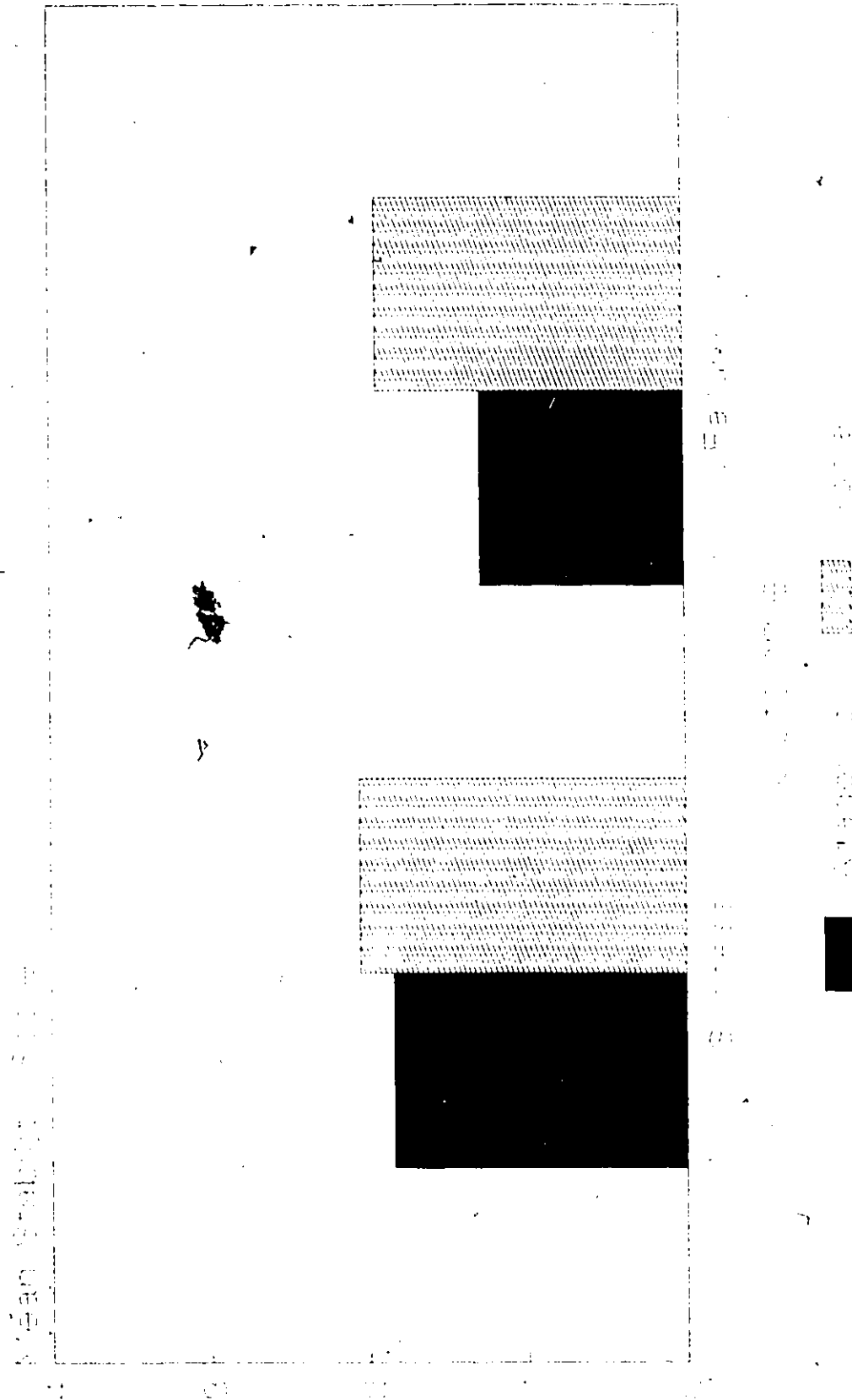


Figure 16. Domain X Outcome X Dimension Interaction - Locus.

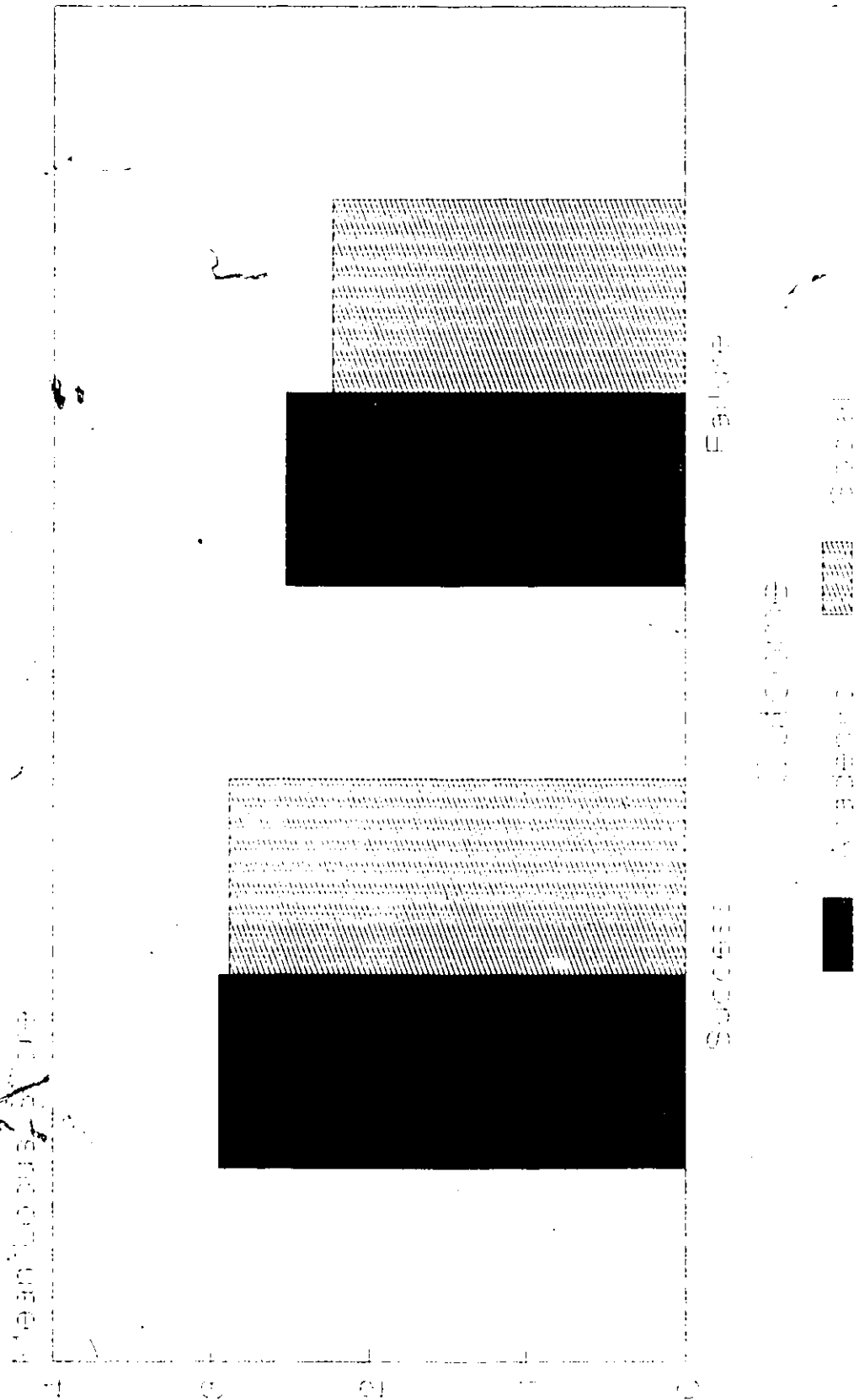


Table 12

Mean Dimension Scores by Domain and Outcome

	Dimension					
	Control-lability		Stability		Locus of Causality	
	Domain		Domain		Domain	
	Acad	Soc	Acad	Soc	Acad	Soc
Success	3.29	2.98	1.64	2.05	2.95	2.88
Failure	3.56	2.36	1.28	1.94	2.52	2.23

academic successes ($p < .01$). On the other hand, causes of social successes were scored as significantly more controllable than were causes of social failures ($p < .01$).

Figure 15 illustrates that causes of social successes were rated as more stable than were causes of academic successes ($p < .05$), although both obtained moderately low stability scores. Causes of social failures were also viewed as more stable than were causes of academic failures ($p < .01$). Causes of academic successes were scored as significantly more stable than were causes of academic failures ($p < .01$).

As indicated in Figure 16, subjects rated causes of social failures as more external than they rated causes of academic failures ($p < .01$). Causes of both academic and social successes were scored as more internal than causes of academic or social failures ($p < .01$).

Cognitive Errors

A 4 X 4 X 2 (Group X Error Type X Error Domain) ANOVA was performed. A summary of the ANOVA results is presented in Table 13. No significant main effects or interactions were observed.

Groups Cont and LDNorm were collapsed into a Non-Behaviour-Disordered (NonBD) group, and Groups LDExt and LDExt/Int were combined to form a Behaviour-Disordered

Table 13

Summary of ANOVA - Cognitive Errors (4 Groups)

Source	df	MS	F	p
Group (A)	3	19.76	0.86	.4686
Error Type (B)	3	5.24	2.25	.0847
A X B	9	1.43	0.61	.7840
Error (B)	168	2.33	....	.....
Domain (C)	1	2.41	0.77	.3850
A X C	3	5.32	1.69	.1788
Error (G)	56	3.14	....	.....
B X C	3	2.38	1.01	.3904
A X B X C	9	3.34	1.42	.1844
Error (B X C)	168	2.36	....	.....

Table 14

Summary of ANOVA - Cognitive Errors (2 Groups)

Source	df	MS	F	p
Behaviour Type (A)	1	53.33	2.39	.1278
Error Type	3	5.24	2.29	.0800
A X B	3	2.17	0.95	.4180
Error (B)	174	2.29	....	.....
Domain (C)	1	1.41	0.78	.3809
A X C	1	12.68	4.10	.0474*
Error (C)	58	3.01	....	.....
B X C	3	2.38	0.98	.4014
A X B X C	3	1.96	0.81	.4900
Error (B X C)	174	2.42	....	.....

* $p < .05$

Figure 17. Error Domain X Behaviour Type Interaction.

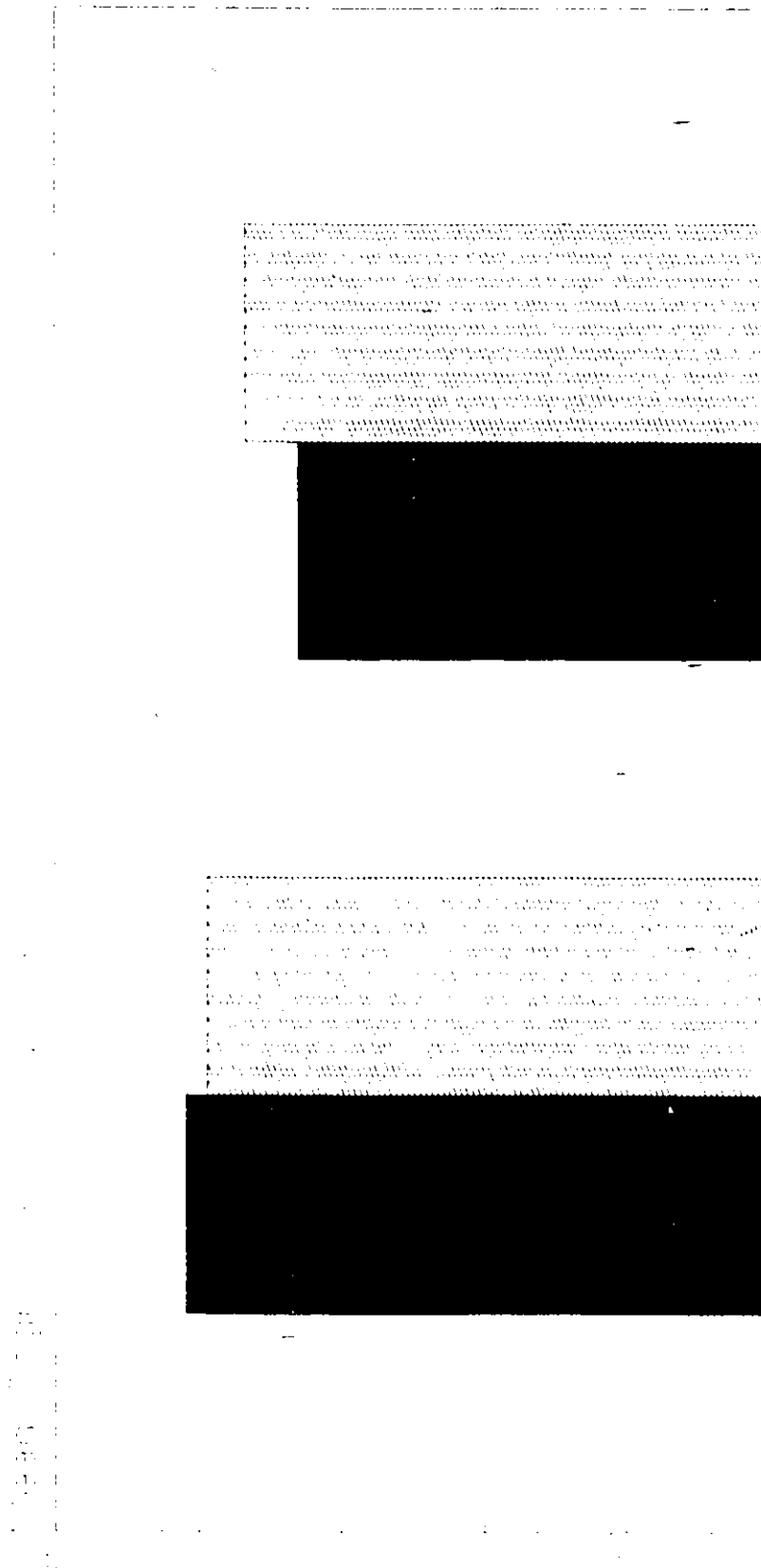


Table 15

Mean Error Domain Scores by Behaviour Type

Domain	Behaviour Type	
	NonBD	BD
Academic	20.43	16.47
Social	19.70	18.30

(BD) group. The latter group was assigned this label on the basis of presence of externalizing behavioural difficulties in all members. A 2 X 4 X 2 (Behaviour Type X Error Type X Error Domain) ANOVA was conducted to determine whether mean number of errors differed in relation to presence or absence of behaviour disorder. A summary of the results of this ANOVA is presented in Table 14.

The analysis yielded a Domain X Behaviour Type interaction, illustrated in Figure 17 ($p < .05$). Group means are presented in Table 15. SNK tests revealed that the NonBD group obtained significantly higher error scores in the academic domain than did the BD group ($p < .05$).

Self-Concept

A 4 X 3 (Group X Domain) ANOVA was carried out to determine whether Cognitive, Social, or General Self-Concept scores on the Perceived Competence Scale for Children differed among groups. A summary of the results of the ANOVA is contained in Table 16.

Main Effects

Group

A significant group main effect was obtained, indicating that, collapsed across domains, self-concept differed among the groups. Table 17 contains Group means. An SNK test indicated that groups Cont and LDNorm obtained

Table 16

Summary of ANOVA - Self-Concept

Source	df	MS	F	p
Group (A)	3	3.73	4.13	.0102*
Domain (B)	2	0.93	3.18	.0452*
A X B	6	0.23	0.79	.5787
Error (B)	112	0.29	.....	.....

* $p < .05$

Table 17

Group Means for Overall Self-Concept

	Group			
	Cont	LDNorm	LDExt	LDExt/Int
Mean score	3.03	2.92	2.55	2.43

higher self-concept scores overall than did Groups LDExt and LDExt/Int ($p < .05$).

Domain

A significant main effect for domain was also observed ($p < .05$). Mean domain scores are presented in Table 18. Across groups, subjects' general self-concept scores were found to be higher than their cognitive self-concept scores.

Interactions

No significant interactions were yielded by the analysis.

When the four groups were collapsed into two (NonBD and BD) groups and a t -test was performed, highly significant differences emerged. Means for the two groups are presented in Table 19. The mean cognitive self-concept score of the NonBD group was significantly higher than that of the BD group, $t(58) = -2.71$, $p < .01$. The mean social self-concept score of the Non-BD group was also significantly higher than that of the BD group, $t(58) = 2.86$, $p < .01$. Finally, the mean general self-concept score of the BD group was found to be significantly higher than that of the BD group, $t(58) = -2.49$, $p < .05$.

Table 18

Mean Self-Concept Scores by Domain

	Domain		
	Cognitive	Social	General
Mean score	2.59	2.79	2.82

Table 19

Mean Self-Concept Scores of Non-Behaviour-Disordered
and Behaviour-Disordered Groups

Domain	Group	
	NonBD	BD
Cognitive	2.84 (0.72) ^a	2.33 (0.73)
Social	3.05 (0.66)	2.53 (0.76)
General	3.03 (0.59)	2.60 (0.73)

^aFigures in parentheses are standard deviations.

CHAPTER IV

DISCUSSION

Investigations of the attributional patterns of LD children have indicated that they may be more likely than non-LD children to believe that outcomes are beyond their control and, therefore, to be less persistent or motivated to succeed (Aponik & Dembo, 1983; Licht, 1983; Pearl, Bryan, & Donahue, 1980). Examination of the literature, however, reveals inconsistencies which may be a function of the fact that virtually all studies of LD children's attributions assume that these children constitute a homogeneous group in terms of their social-emotional functioning despite the repeated contradiction of this assumption (Epstein, Cullinan, & Rosemier, 1983; Grieger & Richards, 1976; Paraskevopolous & McCarthy, 1970; Porter & Rourke, 1985).

The primary purpose of the present study was to determine whether different behavioural subtypes of LD children form different beliefs regarding their successes and failures. A between-groups design was employed in an attempt to compare the attributional patterns and self-concepts of three behavioural subgroups of LD children

and a control group of non-LD, non-behaviour-disordered children. The three LD subgroups employed were composed of non-behaviour-disordered children, children demonstrating externalizing behavioural symptoms, and children exhibiting both externalizing and internalizing symptoms, respectively.

The results of the present investigation indicate that the spontaneous attributions of LD and non-LD children for their successes and failures do not differ to the extent that previous research has suggested. In other words, the presence of a learning disability by itself does not appear to determine children's patterns of beliefs or self-concepts. However, children who demonstrate behavioural difficulties in combination with learning difficulties do exhibit different attributional patterns and lower self-concepts than do LD or non-LD children without behaviour disorders. This support for the notion of heterogeneity of learning disabled children's beliefs helps to explain some of the inconsistencies in attributional research and suggests that previous findings may have been confounded.

In this chapter, the findings of the present study will be discussed in further detail and integrated. An evaluation of the methodology of the study will then be presented. Finally, the implications of this investigation will be discussed and future research directions suggested.

General Discussion

Effort Attributions

One of the most significant findings of the present study is the overwhelming use of effort to explain academic successes and failures by each of the four groups. This finding is supported by recent studies which have revealed that LD children may attribute successes and failures to effort as much as or more than non-LD children (Jacobsen, Lowery, & DuCette, 1986; Kistner, White, Haskett, & Robbins, 1985). Thus, the commonly-held belief that LD children view outcomes as beyond their control appears to be unfounded. Of course, the present study employed an open-ended format, while the vast majority of studies have utilized forced-choice questionnaires, making the results of the two types of designs difficult to compare. However, the format used in the present study possesses greater ecological validity (Sobol & Earn, 1985a) than providing subjects with pre-determined causes which they may or may not use spontaneously.

A second important finding regarding the subjects' effort attributions is what appears to be their own perception of effort as taking two forms: studying and paying attention. These two categories seem particularly relevant to success and failure in school settings. A study conducted by Hiebert, Winograd, and Danner (1984) subdivided effort into these two categories a priori for

use in a forced-choice attribution measure. They also found these categories to be used frequently by both normally- and low-achieving children. In the present investigation, studying was used to a greater extent than was attending. The latter was employed to the same degree as was ability.

Further evidence for what may be at least the bi-dimensionality of effort is provided by the Outcome X Category interaction revealed in the present study. Subjects attributed more successes than failures to study and more failures than successes to paying attention.

Advantages of an Open-Ended Questionnaire

As a result of using an open-ended format, further information was revealed which was unexpected on the basis of findings from forced-choice studies. First, task difficulty was offered as an explanation with surprisingly low frequency. This is one of the four major causes which are typically included in forced-choice questionnaires (Bugental, Whalen, & Henker, 1977; Hiebert, Winograd, & Danner, 1984; Jacobsen, Lowery, & DuCette, 1986; Medway & Venino, 1982; Palmer, 1982; Palmer, Drummond, Tollison, & Zinkgraff, 1982; Pearl, 1982; Thomas & Pashley, 1982). Therefore, children may frequently be asked to choose between a category they do not spontaneously use (task difficulty) and one which does not represent their beliefs

in a particular situation (e.g., luck). The potentially confounding effects of such a method seem obvious (Bar-Tal, Ravgad, & Zilberman, 1981; Sobol & Earn, 1985a).

Further, the subjects of the present study offered explanations which are not included in forced-choice measures, namely motivation and others' intervention. The notions of not wanting to perform or succeed on a task and of blaming others for outcomes have not been included in attribution studies to date, but their frequency of occurrence in the present investigation warrants their consideration.

The open-ended format employed in the present investigation allowed an important finding to be revealed: an external locus of causality cannot simply be defined as frequent attributions to task difficulty or luck. Nor can an internal locus be defined as use of effort or ability to explain outcomes. These assumptions have been made in the vast majority of studies and certainly by measures such as the IAR. In the present study, it was found that there are many more causes which are externally or internally located and which have their own specific meanings to the individual. For example, the LDExt children did not attribute their academic failures to luck or task difficulty more than the other groups. They did, however, make more failure attributions to others' intervention, which is certainly an external category and one that

implies blame to a greater extent than does luck or task difficulty. Therefore, it appears that knowledge of the degree of externality or internality of an individual's attributions is not sufficient for gaining an understanding of his or her belief system. Rather, the complexity of the locus dimension must be considered in terms of examining the actual categories used and their phenomenological meanings.

Learning Disabled versus Normally Achieving Children

A great deal of literature has sought to identify attributional differences between LD and non-LD children. Differences have, at times, been revealed (Aponik & Dembo, 1983; Jacobsen, Lowery, & DuCette, 1986; Pearl, 1982; Pearl, Bryan, & Donahue, 1980), but a number of studies have emphasized these differences to the exclusion of similarities between the two groups (Pearl, Bryan, & Donahue, 1980; Pearl, Bryan, & Herzog, 1983).

The results of the present study indicate that the belief systems of LD and non-LD children are not vastly different. The three categories most frequently used to explain academic successes - effort-study, effort-attending, and ability - as well as motivation, were employed equally by the four groups. Within each of the groups, academic successes were attributed primarily to effort-study. Thus, LD children are as likely as their non-LD, non-behaviour-disordered counterparts to ascribe

their academic successes to their own effort and ability. Further, the LD groups were found to be no more likely to attribute their academic failures to insufficient ability than were the normally-achieving children. Nor were the LD subjects found to be any less likely to make effort attributions for academic failure.

It appears, then, that ascriptions of academic failure to internal, uncontrollable factors are no more characteristic of LD than non-LD, non-behaviour-disordered children. This is not to say that LD children do not make maladaptive attributions (findings which will be discussed in the following section), but the explanations they provide most frequently for academic outcomes are the same as those given most often by the non-LD, non-behaviour-disordered group.

In the social domain, there were no group differences found in the usage of three of the six categories in explaining successful outcomes. The non-LD group was as likely as the LD groups to attribute social successes to external causes. In terms of their explanations for social failure, the LD groups did not internalize the causes of such negative outcomes to any greater extent than did the normally-achieving group. Therefore, in explaining social outcomes, the LD groups did not demonstrate a more typically helpless attributional style than did the non-LD group.

The similarities between the attributional patterns of the LD and non-LD groups are highlighted by the finding that the four groups demonstrated no differences in their perceptions of the controllability, stability and locus of causes of academic outcomes. One LD subgroup viewed social successes as more stable than another, but no other group differences were found in the dimensional placements of causes of social outcomes. Unfortunately, these findings are difficult to interpret as it cannot be determined given the design of the present study whether there are group differences in the dimensional scoring of individual categories. As previously suggested, the dimensional scores obtained were aggregated across categories and do not, therefore, indicate subjects' perceptions of the controllability, stability and locus of particular causes. However, it seems significant that no differences in the groups' views of the controllability, stability and locus of causes in general were found.

Presence or absence of a learning disability does not appear to be a factor in the extent to which children negatively distort situational outcomes. The non-LD group did not differ from any of the LD groups in the number of negative cognitive errors they made - in terms of either error type or situational domain. Thus, the presence of a learning disability by itself does not appear to affect a child's tendency to view his or her experiences in an

overly negative way. This finding is of some importance, as it is frequently indicated in the literature that LD children are likely to expect negative outcomes and blame themselves for their failures (Adelman & Taylor, 1983; Licht, 1983; Pearl, Bryan, & Donahue, 1980). Clearly, the relationship between achievement level and beliefs is not such a simple one.

Further, the non-LD group did not obtain higher social or general self-concept scores than any of the LD groups and differed only from the LD group with mixed symptomatology in cognitive self-concept. Thus, the presence of a learning disability does not by itself determine self-concept. This finding is most significant in light of the fact that the vast majority of studies of the self-concepts of LD children assume, as evidenced by their unspecified subject samples, that a learning disability is the major determining factor in self-esteem. The results of the present investigation indicate that the findings of such studies are quite likely to be confounded. It is to the issue of behavioural styles and their relationship to cognitions and self-concept that this discussion now turns.

Heterogeneity of the LD Population

- An important finding of the present investigation is that not only is a learning disability per se insufficient

as an explanation of attributional patterns and self-concept, but that the cognitions of LD children differ according to behavioural subtype. This finding serves to clarify some inconsistent results in previous studies as well as to raise questions regarding the conclusions which have been drawn on the basis of responses obtained from heterogeneous subject samples.

Academic attributions. Several researchers have found that LD children are more likely to attribute their academic successes to luck than are non-LD children (Aponik & Dembo, 1983; Jacobsen, Lowery, & DuCette, 1986; Pearl, 1982). The results of the present study suggest that this conclusion cannot be generalized across LD children as a whole, but that different subgroups of LD children make luck attributions to different extents. The non-LD group and the non-behaviour-disordered LD group attributed their academic successes to luck as frequently as to effort-attending and ability, and there was no difference in the frequencies with which the two groups ascribed academic success to luck. Only the LDExt/Int group attributed success to luck more than to effort-attending and they made significantly more luck attributions than did the LDExt group. The LDExt children were the only subjects to make fewer success attributions to luck than to effort-attending or ability.

These findings indicate that, in terms of luck

attributions, the distinction is not between LD and non-LD children but, rather, between subgroups of LD children. LD children with externalizing and internalizing symptoms ascribe success to luck more than to paying attention, whereas externalizing LD children who do not demonstrate symptoms of anxiety make significantly fewer luck attributions than does the former group and fewer luck than ability or attending attributions. Thus, the presence of anxiety appears to be related to a tendency to ascribe success to an uncontrollable cause among behaviour-disordered LD children. This link between the controllability dimension and anxiety has been demonstrated in the literature (Leary & Miller, 1986). It is not possible, on the basis of the present data, to determine whether there is a causal link between luck attributions and anxiety or what its direction may be. It may be hypothesized, however, that the group of children most likely to believe that success is, to some degree, beyond their control will have lower expectations of success, will worry more, and be more anxious than will the children least likely to view successes as uncontrollable.

A further group difference in the academic domain which provides evidence for the heterogeneity of LD children's attributions is the greater frequency of failure attributions to others' intervention among LDExt subjects than among children in the other LD groups or the control

group. Thus, the group of LD children who tend to externalize their behaviour, acting on their environments, are more likely to blame other people for their academic failures than are non-behaviour-disordered LD children or LD children who tend to also display internalizing symptoms. In other words, the children who externalize their behaviour to the greatest degree also externalize responsibility for failure to the greatest degree.

The non-behaviour-disordered LD group differed from the non-LD group in terms of their effort attributions. While the control group attributed their academic failures equally to inadequate studying and insufficient attention, the LDNorm group attributed failure primarily to lack of study. There are at least two possible explanations for this difference. First, the LDNorm group may be aware of their need for concentration and attention due to their histories of academic difficulties. They may assume, then, that they would be paying attention to difficult tasks. Alternatively, the LDNorm group may be less aware of their need to attend well - a factor which may be contributing to their learning difficulties.

Social attributions. The behaviour-disordered LD groups were demonstrated to differ from each other and from the other groups in terms of their attributions for social, as well as academic, outcomes. The LD group with externalizing symptoms attributed their social successes

primarily to their own characteristics and did so to a greater extent than did members of the other three groups. Although it had been expected that these subjects would externalize their successes to the greatest degree, they actually take credit for their successes to the greatest extent. Thus, this group of children certainly appears to believe that they are responsible for and in control of their success in social situations. However, this characteristic may be contributing to and/or compounded by the particular behavioural difficulties experienced by these children. Such an attributional pattern may indicate a relative insensitivity to the positive contributions of others to their social interactions and a tendency to take more credit than is due them. Thus, it is possible that an internal, rather than interactional, locus of causality for social successes indicates a rather self-centered and relatively insensitive belief system.

The children who displayed internalizing as well as externalizing behaviours, in contrast, attributed social successes primarily to interpersonal evaluation and did so more frequently than did the non-LD or LDExt groups. As previously suggested, the LDExt children are less likely to look to interactional causes than are the LDExt/Int subjects in explaining social successes. The non-LD group is also less likely to attribute successes to interpersonal evaluation than is the LDExt/Int group, but they made as

many attributions to this category as they did to their own characteristics. Thus, they take credit for their successes but also acknowledge the interactional factors involved. The LDExt/Int group, however, attributed most of their successes to the category represented by statements such as "because he thinks I'm nice." The dominance of such attributions may indicate a relative over-awareness of others' opinions untempered by confidence in one's own characteristics. It may be hypothesized that such an attributional pattern would be associated with some degree of anxiety resulting from and leading to a reliance on others' feelings toward oneself as the primary factor determining positive social outcomes. Previous research has suggested that emotionality or anxiety is increased by attributions which imply personal inadequacy and/or a lack of control that is threatening or embarrassing (Leary & Miller, 1986).

The prominence of interpersonal evaluation attributions among LDExt/Int children was also observed in their attributions for failure. They employed this category more frequently than did their counterparts in the other three groups. Although they did not make many purely internal attributions for social failure, they once again demonstrated a greater sensitivity to other's feelings toward them than did the other groups (e.g., "She thinks I'm bad."). This group was also found to make fewer

failure attributions to personality interaction than either non-LD or externalizing groups. Attributions to personality interaction (e.g., "We don't get along.") would appear to be more egalitarian in terms of sharing responsibility than do attributions to interpersonal evaluation, which emphasizes another's subjective opinion of oneself.

An illustration of the importance of the specific categories employed by subjects to drawing conclusions regarding the locus dimensions lies in the differing attributional patterns of the non-LD and LDExt groups. It must be noted, however, that the following group differences were only marginally significant statistically. The non-LD children were found to be more likely to attribute social failures to the other child's characteristics than were the LDExt subjects. However, the latter group attributed failures to third-party intervention more frequently than did the control group. Both of these categories are certainly external, but their meanings differ.

In the case of the non-LD group, more failure attributions were made on the basis of evaluations of another child and his or her behaviour (e.g., "He's hard to get along with.") The LDExt group, on the other hand, was more likely to blame the interference of a third party (e.g., "She told them bad things about me that aren't

true."). The latter category, it seems, implies that another child intentionally behaved in a hurtful way, whereas the former category, while serving to externalize responsibility, merely provides a description of personality. Thus, the LDExt children may be seen to read more into an unsuccessful social situation than do the non-LD children and place blame more actively on the intentional behaviour of other children. This finding is consistent with those of Dodge (1980) who has demonstrated that in a hypothetical situation with a negative outcome in which the peer's intentions are ambiguous, aggressive boys attribute hostile intent to the peer to a greater extent than do non-aggressive boys. Further, Weiner (1986) has concluded that anger is elicited by attribution of personal failure to the controllable actions of others.

The Relative Importance of Learning Disability versus Behaviour Disorder

Clearly, the results of the present investigation have indicated that the presence or absence of a learning disability per se does not determine attributional patterns; behavioural subtype is at least as important a factor in children's belief systems. This finding was seen most distinctly in subjects' responses to the cognitive error and self-concept measures.

As previously noted, no differences were found in the number of cognitive errors made by the LD and non-LD

Interactions

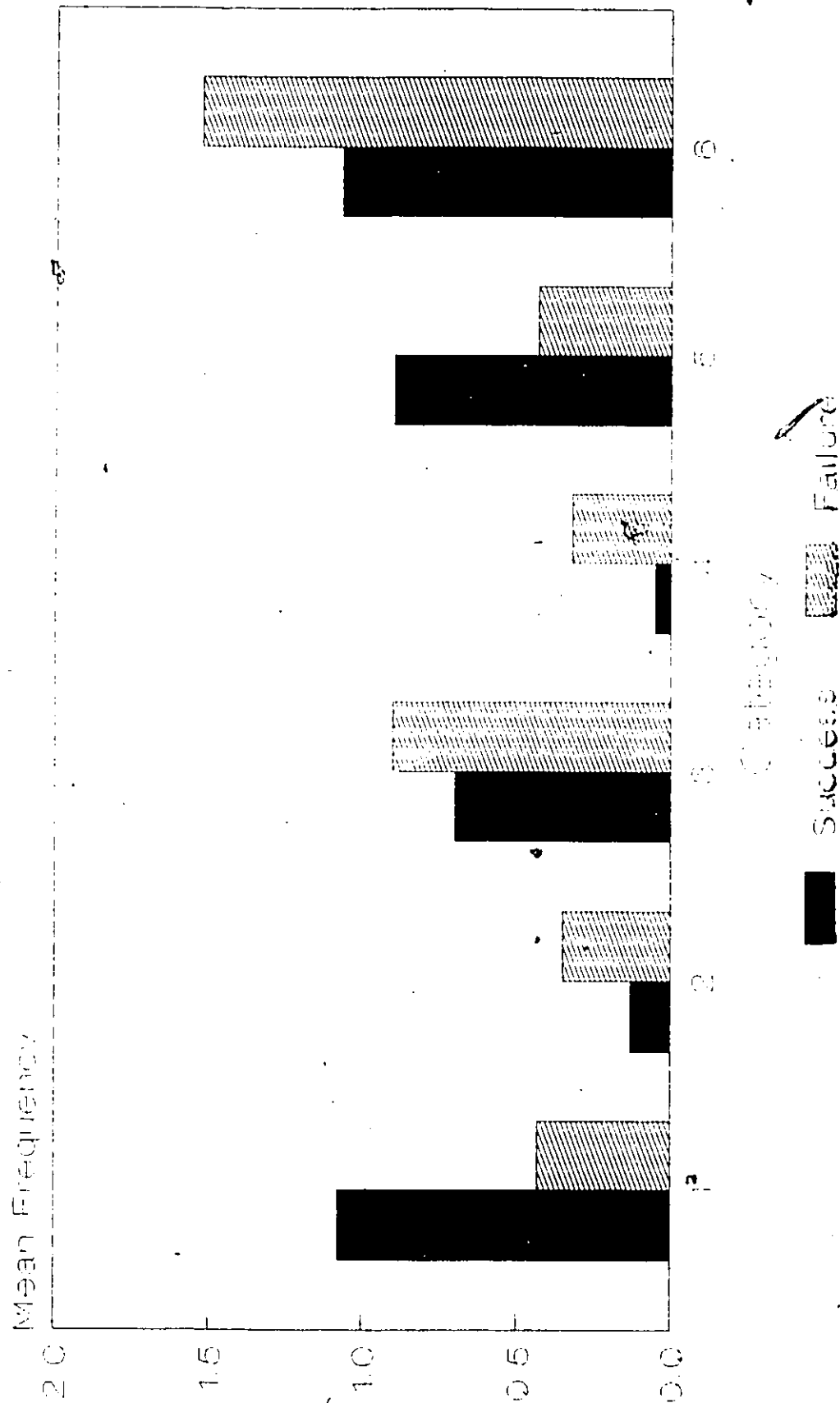
Outcome X Category

A significant Outcome X Category interaction was observed ($p < .001$), indicating that, across groups, different patterns were evident in subjects' attributions for social successes and failures. Figure 6 illustrates this interaction. Table 6 contains the absolute and mean frequencies with which each category was utilized in explaining successful and unsuccessful outcomes, respectively. Characteristics of self and personality interaction were employed more frequently to explain successes than to explain failures ($p < .01$). On the other hand, attributions to third-party intervention ($p < .05$) and interpersonal evaluation ($p < .01$) were made more frequently in explaining failures than in explaining successes ($p < .01$).

Group X Category

Figure 7 shows the significant Group X Category interaction obtained ($p < .001$). This interaction reveals that the frequencies with which the various categories were used to explain social outcomes differed between groups. Absolute and mean frequencies are presented in Table 7 for the four subject groups. No significant group differences were found in the use of other's characteristics, other's motivation, third-party intervention, or personality interaction ($p > .05$).

Figure 6. Outcome X Category Interaction - Social Outcomes.



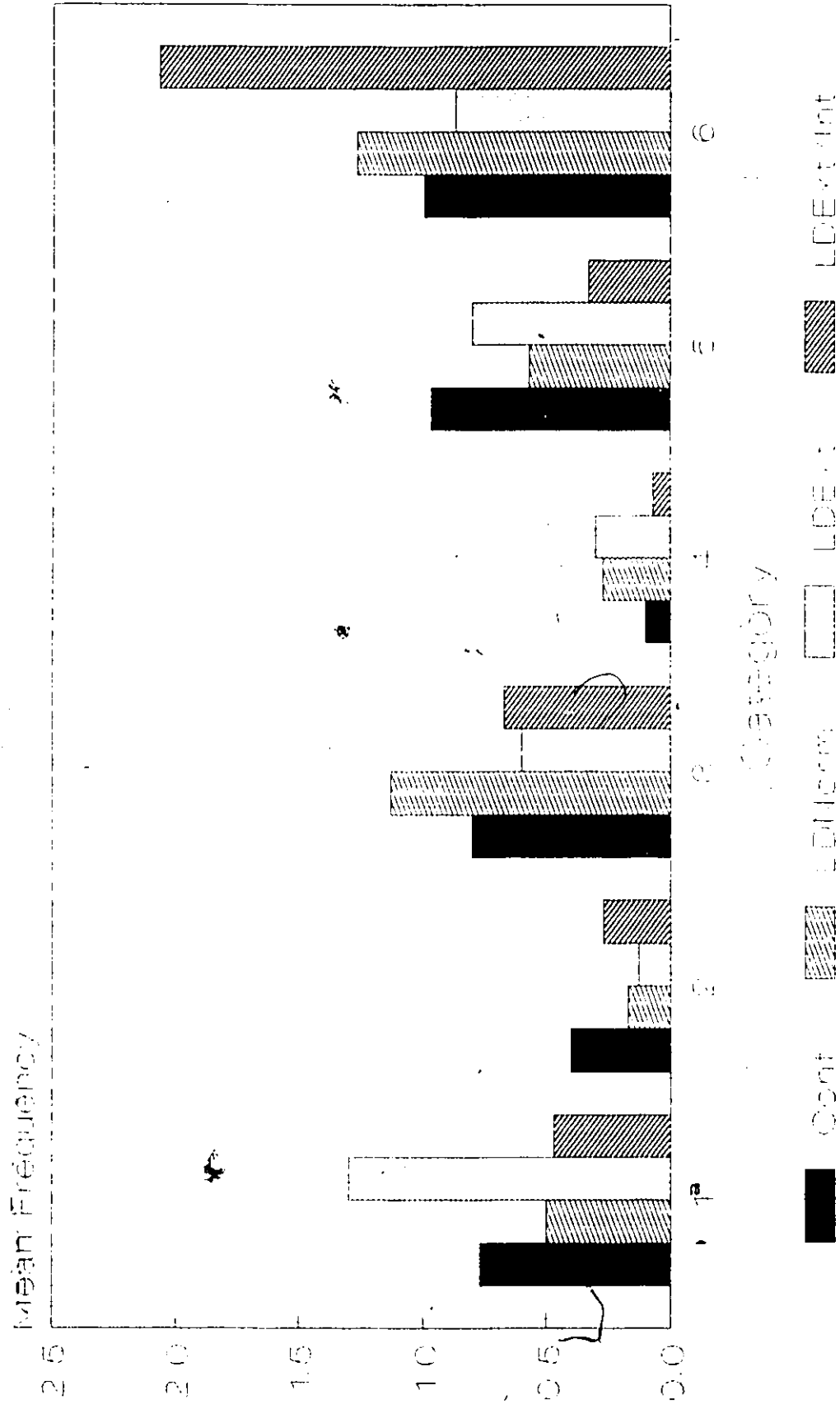
1 = Characteristics of Self, 2 = Other's Characteristics, 3 = Other's Motivation, 4 = Third-Party Intervention, 5 = Personality Interaction, 6 = Interpersonal Evaluation.

Table 6

Outcome X Category Frequencies - Social Outcomes

Category	Success		Failure		Total	
	Total	<u>M</u>	Total	<u>M</u>	Total	<u>M</u>
Characteristics of self	65	1.08	27	.43	92	.76
Other's characteristics	8	.13	19	.35	27	.24
Other's motivation	42	.70	51	.90	93	.80
Third-party intervention	3	.05	20	.32	23	.18
Personality interaction	54	.90	28	.43	82	.67
Interpersonal evaluation	64	1.07	91	1.53	155	1.30

Figure 7. Group X Category Interaction - Social Outcomes.



1 = Characteristics of Self, 2 = Other's Characteristics, 3 = Other's Motivation, 4 = Third-Party Intervention, 5 = Personality Interaction, 6 = Interpersonal Evaluation.

Table 7

Frequency of Category Use by Group - Social Outcomes

Category	Group							
	Cont		LDNorm		LDExt		LDExt/Int	
	Total	<u>M</u>	Total	<u>M</u>	Total	<u>M</u>	Total	<u>M</u>
Characteristics of self	23	.77	15	.50	39	1.30	15	.47
Other's characteristics	12	.40	5	.17	4	.13	6	.27
Other's motivation	24	.80	34	1.13	16	.60	19	.67
Third-Party intervention	3	.10	7	.27	10	.30	3	.07
Personality interaction	30	.97	17	.57	25	.80	10	.33
Interpersonal evaluation	29	1.00	38	1.27	26	.87	62	.07

However, an SNK test revealed that group LDEExt attributed social outcomes to characteristics of self more frequently than did groups LDNorm ($p < .01$) and LDEExt/Int ($p < .05$). Further, group LDEExt/Int made more attributions to interpersonal evaluation than did the other three groups ($p < .01$).

Group X Outcome X Category

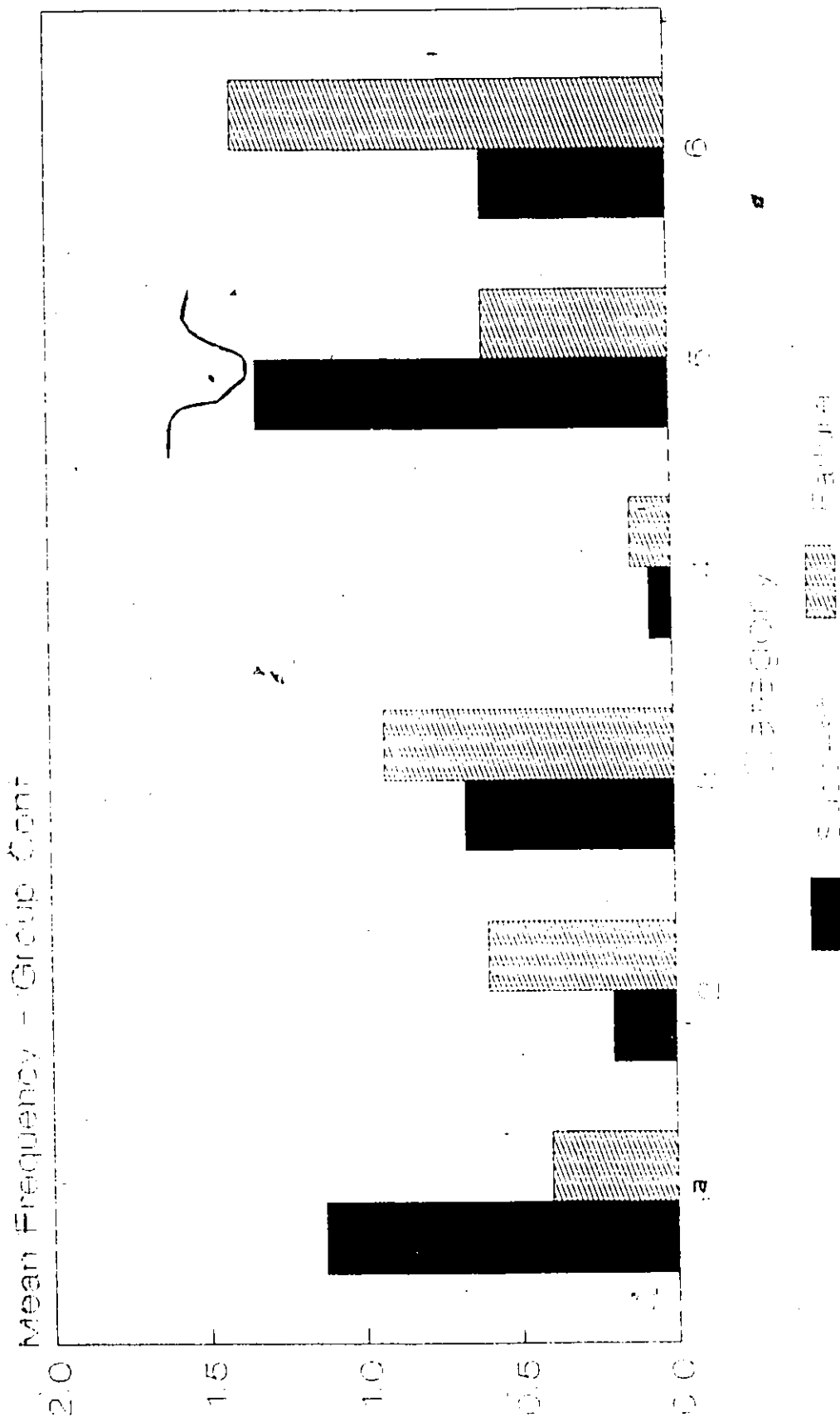
Figures 8 through 11 illustrate the significant Group X Outcome X Category Interaction obtained for the four subject groups. Absolute and mean frequencies are contained in Table 8.

Attributions for social success versus social failure. Cont and LDEExt children attributed more successes to characteristics of self than they did failures. Children in groups Cont and LDEExt/Int attributed more successes than failures to personality interaction ($p < .01$).

Group LDEExt/Int ascribed more failures than successes to other's characteristics ($p < .05$), while group LDEExt attributed more failures than successes to third-party intervention ($p < .05$). Subjects in groups Cont ($p < .01$), LDEExt ($p < .05$), and LDEExt/Int ($p < .05$) employed interpersonal evaluation to explain failures more frequently than to explain successes.

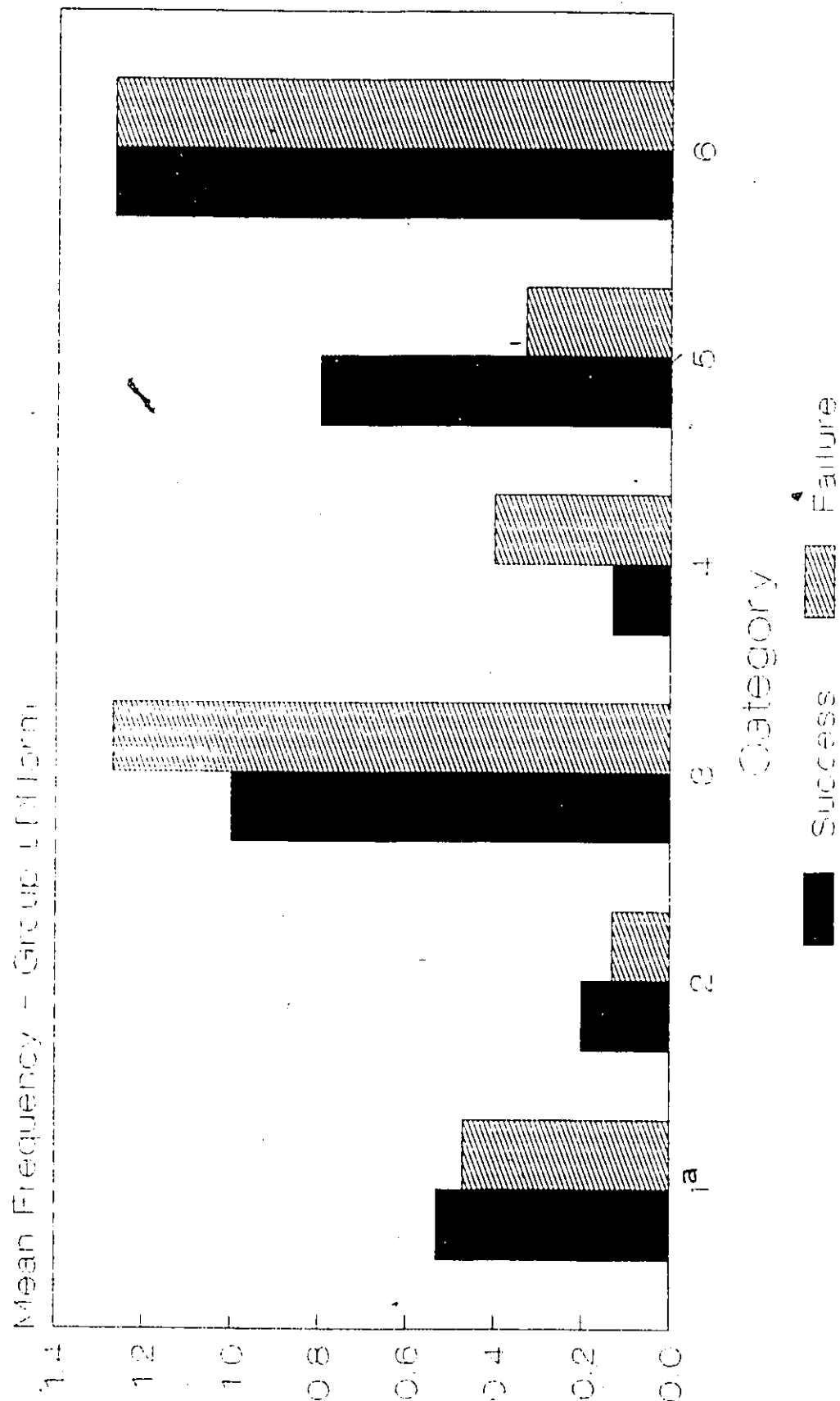
Attributions for social success. Within Group

Figure 8. Group X Outcome X Category Interaction - Group Cont.



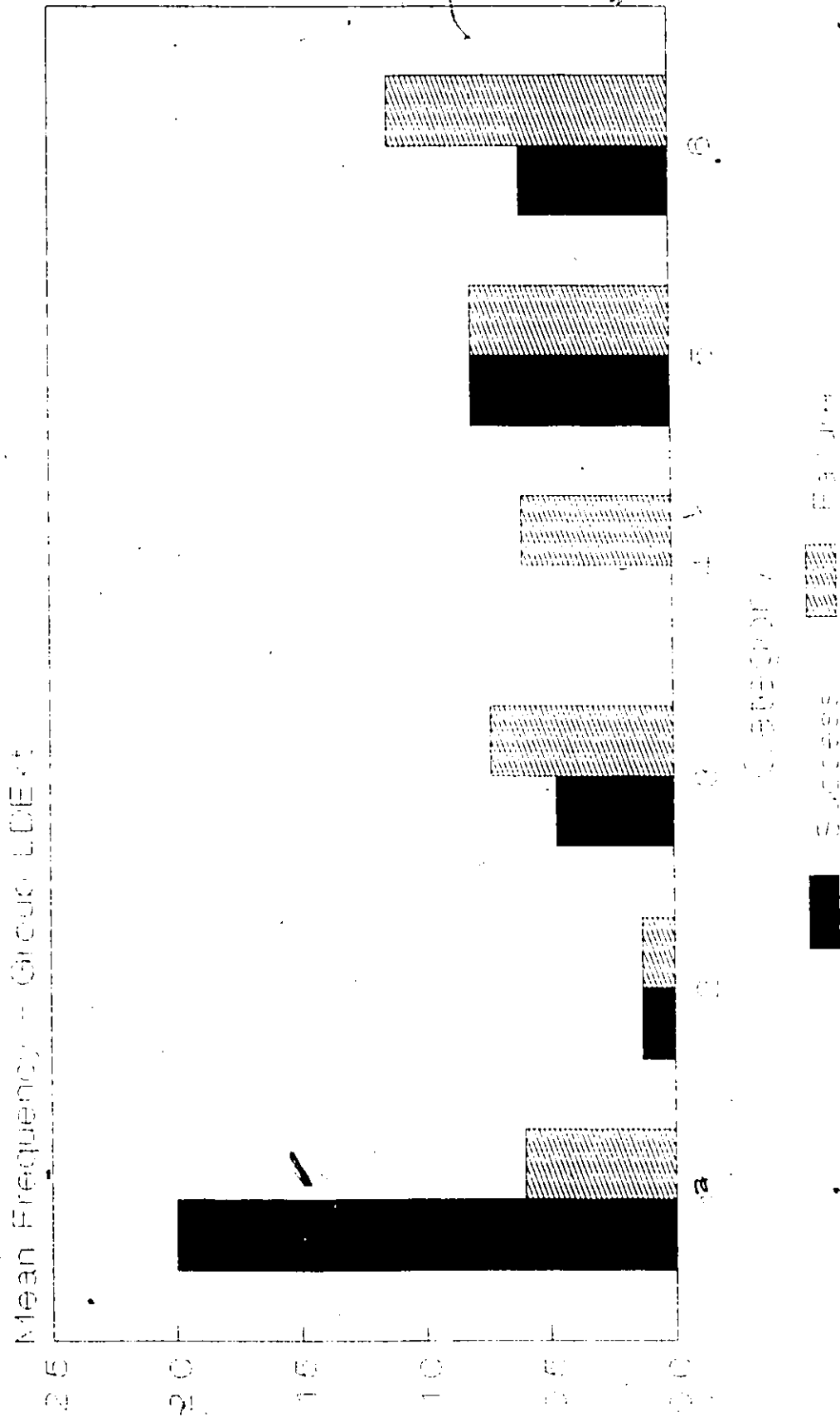
1 = Characteristics of Self, 2 = Other's Characteristics, 3 = Other's Motivation, 4 = Third-Party Intervention, 5 = Personality Interaction, 6 = Interpersonal Evaluation.

Figure 9. Group X Outcome X Category Interaction - Group LDNorm.



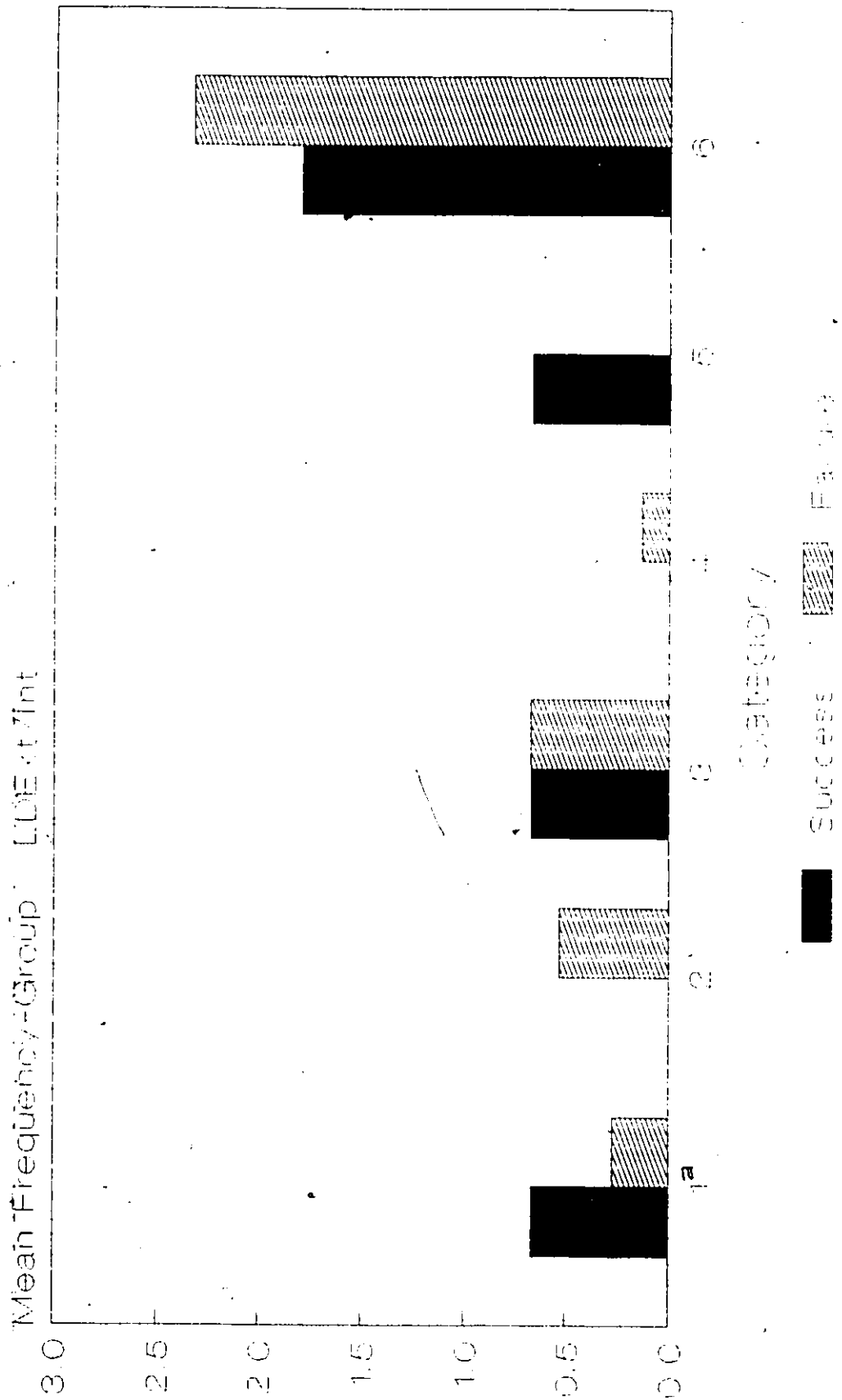
1 = Characteristics of Self, 2 = Other's Characteristics, 3 = Other's Motivation, 4 = Third-Party Intervention, 5 = Personality Interaction, 6 = Interpersonal Evaluation.

Figure 10. Group X Outcome X Category Interaction - Group LDEExt.



1 = Characteristics of Self, 2 = Other's Characteristics, 3 = Other's Motivation, 4 = Third-Party Intervention, 5 = Personality Interaction, 6 = Interpersonal Evaluation.

Figure 11. Group X Outcome X Category Interaction - Group LDExt/Int.



1 = Characteristics of Self, 2 = Other's Characteristics, 3 = Other's Motivation, 4 = Third-Party Intervention, 5 = Personality Interaction, 6 = Interpersonal Evaluation.

Table 8

Outcome X Category Frequencies by Group -Social Outcomes

Category	Group							
	Cont		LDNorm		LDExt		LDExt/Int	
	Outcome		Outcome		Outcome		Outcome	
	S	F	S	F	S	F	S	F
Character- istics of self	17 1.13 ^a	6 .40	8 .53	7 .47	30 2.00	9 .60	10 .67	5 .27
Other's character- istics	3 .20	9 .60	3 .20	2 .13	2 .13	2 .13	0 .00	6 .53
Other's motivation	10 .67	14 .93	15 1.00	19 1.27	7 .47	9 .73	10 .67	9 .67
Third-party intervention	1 .07	2 .13	2 .13	5 .40	0 .00	10 .60	0 .00	3 .13
Personality Interaction	20 1.33	10 .60	12 .80	5 .33	12 .80	13 .80	10 .67	0 .00
Interpersonal evaluation	9 .60	20 1.40	19 1.27	19 1.27	9 .60	17 1.13	27 1.80	35 2.33

^aMean frequency.

Cont, subjects made more social success attributions to characteristics of self than to other's characteristics or third-party intervention ($p < .01$). More success attributions were also made by these children to personality interaction than to interpersonal evaluation ($p < .05$), other's motivation ($p < .05$), third-party intervention ($p < .01$), or other's characteristics ($p < .01$).

In explaining social successes, children in group LDNorm employed interpersonal evaluation more often than characteristics of self ($p < .05$), other's characteristics ($p < .01$), or third-party intervention ($p < .01$). These subjects also used personality interaction more frequently than other's characteristics or third-party intervention to explain successes ($p < .05$). Other's motivation was more frequently used in making success attributions than were other's characteristics or third-party intervention ($p < .01$) by Group LDNorm children.

Characteristics of self was the category most frequently used by group LDExt in making attributions for social successes ($p < .01$). Group LDExt children also used personality interaction more frequently than other's characteristics or third-party intervention in explaining successes ($p < .05$).

LDExt/Int subjects attributed social successes to

interpersonal evaluation more than to any other category ($p < .01$). They employed personality interaction, characteristics of self, and other's motivation more frequently than other's characteristics or third-party intervention ($p < .01$) to explain successes.

Attributions for social failure. Group Cont subjects attributed social failure to interpersonal evaluation more frequently than to characteristics of self, other's characteristics, third-party intervention, or personality interaction ($p < .01$). Members of group LDNorm attributed social failures to interpersonal evaluation and other's motivation more frequently than to characteristics of self, other's characteristics, third-party intervention, or personality interaction ($p < .01$).

Group LDExt ascribed social failures to personality interaction and other's motivation more often than to other's characteristics ($p < .05$). They also attributed failures to interpersonal evaluation more often than to other's characteristics ($p < .01$).

LDExt/Int children made more attributions for unsuccessful social outcomes to interpersonal evaluation than to any other category ($p < .01$). No other significant differences were found in their category usage for social failures ($p > .05$).

Differences between groups. Post hoc tests

revealed no significant group differences in the use of other's characteristics, other's motivation, third-party intervention, or personality interaction in explaining social successes. However, an SNK test indicated that group LDExt employed characteristics of self to explain successes more frequently than did the other three groups, ($p < .01$). Group LDExt/Int, on the other hand, attributed social successes to interpersonal evaluation more frequently than did groups Cont or LDExt ($p < .01$).

No significant group differences in the frequencies of use of characteristics of self, other's characteristics, third-party intervention, or other's motivation in explaining social failures emerged in the analysis ($p > .05$). Two group differences in attributions for social failures were evident in SNK test results. Personality interaction was employed more often by groups Cont and LDExt than by group LDExt/Int in explaining failures ($p < .05$), while LDExt/Int subjects made more failure attributions to interpersonal evaluation than did the other three groups ($p < .05$).

Attributional Dimensions

Subjects' scores on the three Dimensional scales (Controllability, Stability and Locus of causality) were analyzed in a 4 X 2 X 2 X 3 (Group X Domain X Outcome X Dimension) repeated measures ANOVA, with dimensional

ratings as the dependent variable. A summary of the ANOVA results is presented in Table 9. SNK tests were carried out on significant main effects and interactions.

A score of 4 on the Controllability scale indicated that the subject viewed the cause to which he or she attributed a given outcome as highly controllable. A score of 1, on the other hand, indicated a perception of low controllability. Similarly, a score of 4 on the Stability scale represented high stability, while a score of 1 indicated low stability of the cause. Finally, assigning a cause a score of 4 on the Locus of Causality scale indicated a perception of high internality, while a score of 1 represented high externality.

The normality of the distributions of responses to the three dimensional scales was examined to determine whether subjects tended to primarily employ the two poles of the continua. The kurtosis and skewness of the response distributions of the three dimensional scales indicated that the distributions were within reasonable limits of normality (Bliss, 1967). None of the three distributions was highly skewed or bimodal.

Main Effects

Domain

The analysis yielded a main effect for domain ($p < .01$). Collapsing across dimensions, causes of

Table 9

Summary of ANOVA - Attributional Dimensions

Source	df	MS	F	p
Group (A)	3	0.51	0.51	.6776
Domain (B)	1	5.20	7.92	.0068**
A X B	3	0.12	0.18	.9110
Error (B)	56	0.66	.....	.....
Outcome (C)	1	21.99	44.00	.0001**
A X C	3	0.15	0.30	.8281
Error (C)	56	0.50	.....	.....
Dimension (D)	2	100.65	74.91	.0001**
A X D	6	1.64	1.22	.3002
Error (D)	112	1.34	.....	.....
B X C	1	0.98	3.01	.0615
A X B X C	3	0.20	0.62	.6047
Error (B X C)	56	0.33	.....	.....
B X D	2	21.31	36.42	.0001**
A X B X D	6	0.84	1.44	.2072
Error (B X D)	112	0.59	.....	.....
C X D	2	2.05	5.13	.0074**
A X C X D	6	0.55	1.36	.2353
Error (C X D)	112	0.40	.....	.....
B X C X D	2	6.67	22.91	.0001**
A X B X C X D	6	0.39	1.35	.2398
Error (B X C X D)	112	0.29	.....	.....

*p<.05

**p<.01

academic outcomes were assigned higher scores than were causes of Social outcomes. In other words, the triad of scores fell higher along the continua for academic outcomes than for social outcomes.

Outcome

A significant main effect for outcome was also observed ($p < .001$). Causes of successes received higher scores across the three dimensions than did causes of failures. Thus, again, the triad of dimensional scores grouped more highly along the continua for successes than for failures.

Dimension

A significant dimension main effect was obtained ($p < .001$). Across domains and outcomes, causes were scored as controllable ($M = 3.05$), unstable ($M = 1.78$), and mid-way along the locus dimension ($M = 2.65$). These three means are significantly different from each other.

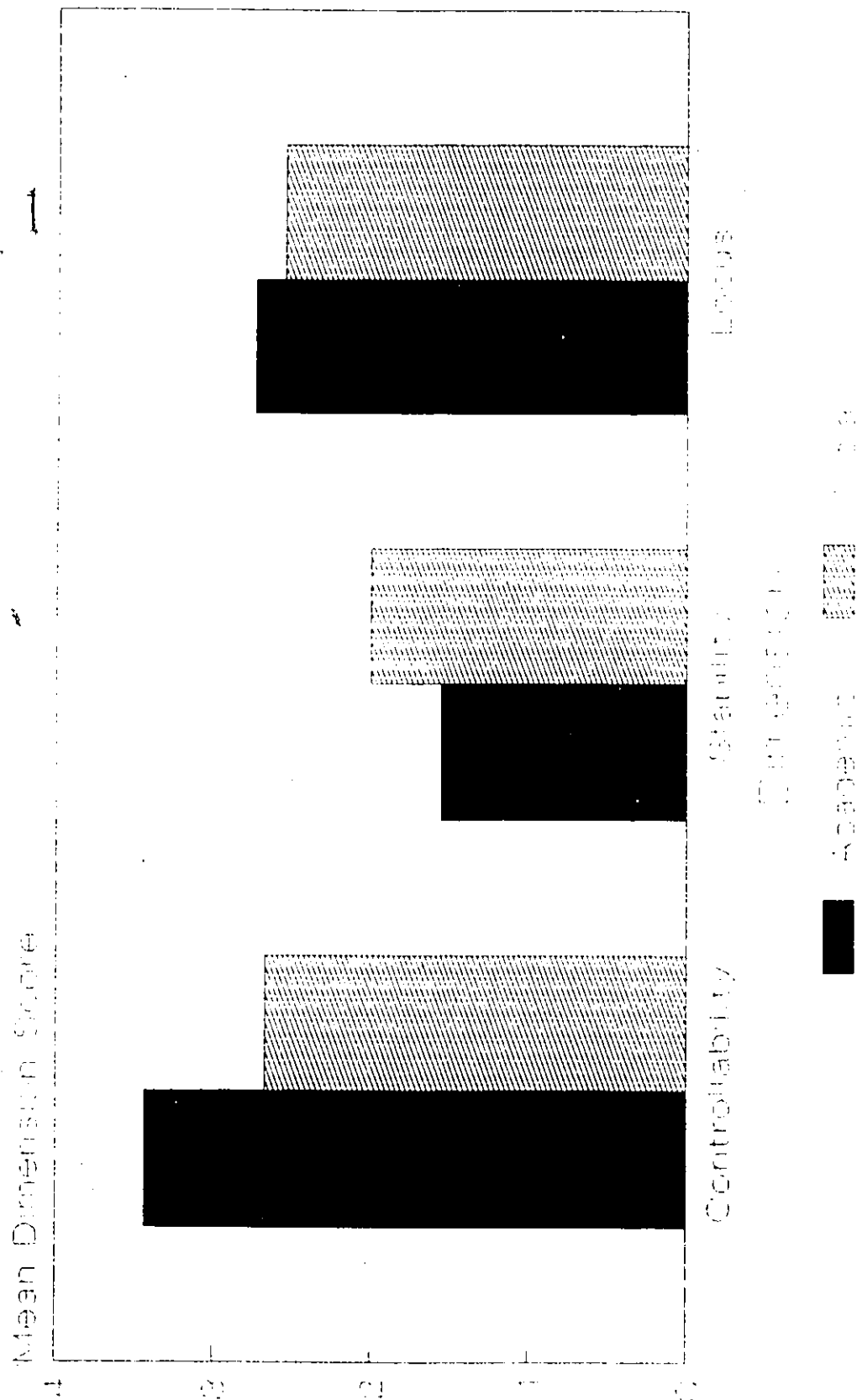
The group main effect was not significant.

Interactions

Domain X Dimension

A significant interaction between domain and dimension ($p < .001$) is illustrated in Figure 12. This interaction reveals that subjects placed causes of academic and social outcomes at different locations along the

Figure 12. Domain X Outcome Interaction - Attributional Dimensions.



dimensional scales. Mean scores are presented in Table 10. Subjects scored causes of academic outcomes as more controllable than causes of social outcomes ($p < .01$), while causes of social outcomes were scored as more stable than causes of academic outcomes ($p < .01$).

Outcome X Dimension

Figure 13 illustrates the significant interaction found between outcome and dimension ($p < .01$), which indicates that children perceived the causes of successes and failures differently in terms of the three dimensions. Mean scores are presented in Table 11. Causes of success were viewed as more stable and more internal than were causes of failures ($p < .01$).

Domain X Outcome X Dimension

The Domain X Outcome X Dimension interaction ($p < .001$) is shown for the three dimensions in Figures 14 through 16. Mean scores are presented in Table 12. This finding indicates that subjects placed causes of academic successes and failures differently along the three dimensions than they placed social successes and failures.

As Figure 14 indicates, causes of academic successes and failures were viewed as more controllable than were causes of social successes or failures ($p < .01$).

Further, causes of academic failures were rated as significantly more controllable than were causes of

Table 10

Mean Dimension Scores by Domain

Domain	Control- lability	Stability	Locus of Causality
Academic	3.43	1.56	2.74
Social	2.67	2.00	2.55

Figure 13. Outcome X Dimension Interaction - Attributional Dimensions.

Mean Dimensions

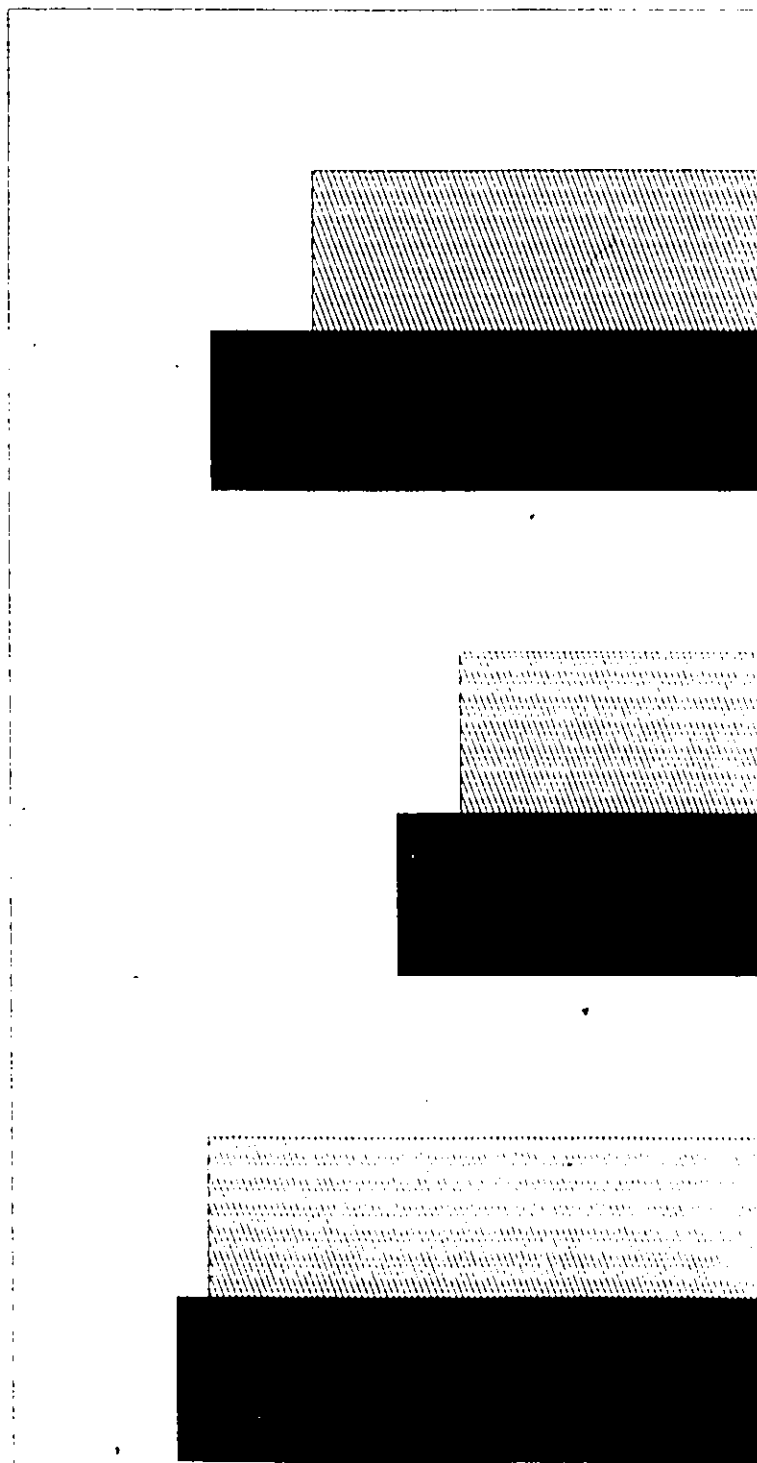


Table 11

Mean Dimension Scores by Outcome

Outcome	Control- lability	Stability	Locus of Causality
Success	3.13	1.95	2.92
- Failure	2.96	1.61	2.38

groups. There was, however, a significant difference in the frequency of negative distortions of academic situations made by the non-behaviour-disordered (nonBD) and behaviour-disordered (BD) groups. Surprisingly, however, the nonBD group made more academic errors than did the BD group, indicating that they view academic events more negatively. This finding is quite unexpected, since more psychologically healthy children are thought to make fewer negative distortions than children with difficulties. Leitenberg et al. (1986) found that cognitive errors in academic and social situations were more frequent among depressed than non-depressed children, and more frequent among anxious than non-anxious children.

Nevertheless, there is a possible explanation for this result. Leitenberg et al. (1986) studied the relationship between presence of internalizing behaviours and frequency of cognitive errors among non-clinic children. The present analysis, on the other hand, investigated the relationship between presence of externalizing behaviours and frequency of cognitive distortions among clinic-referred subjects. The nonBD (non-externalizing) group may be more aware of the potential ramifications of negative academic outcomes or may be more sensitive to the effects their behaviour may have on others. As a result, they may get along better socially. For example, a child in the BD group, when asked about a situation in which the opposing team won a spelling

contest, replied that "they must have cheated." Rather than acknowledging his role as a team member sharing responsibility for the outcome of the contest, this child shed all responsibility and placed blame on the other team.

The further finding that the nonBD children possess higher self-concepts than the BD group appears to contradict the finding related to cognitive errors but this may not necessarily be the case. The CCEQ and the Perceived Competence Scale for Children (PCSC) contain quite different types of items. The CCEQ taps children's abilities to assess their contribution to a group activity, interpret other people's behaviour, and take the perspectives of others. The PCSC, on the other hand, requires a more simple evaluation of one's performance (see Appendices E and F). Children who are capable of insight into their effects on others and who are sensitive to the parts they play in situational outcomes are more likely to experience success and would therefore evaluate their performance more highly.

Methodological Limitations

The subject groups used in the present investigation were carefully defined, and assessments determining subjects' group membership were administered by the investigator. Thus, there was no need to rely on the subjective or objective diagnoses of others. Further, the

control group employed in this study was also carefully selected and the choice to obtain a clinic control group served to hold the effects of referral constant. However, this control group may not be representative of the non-behaviour-disordered, non-LD population at large. The factors which led to their referrals may not be present in the lives of non-referred subjects and may affect their cognitions and self-concepts in some way. Therefore, caution must be used in generalizing results from this group to a non-referred sample. Further, the LD subgroups in the present study had also been referred for treatment. Thus, findings related to them may not be generalizable to LD children who have not undergone treatment.

The subject groups in this study were defined on the basis of behavioural characteristics. No attempt was made to match groups on the basis of type of learning disability as this was not within the scope of the present study. Subjects' patterns of deficits were, however, randomly distributed within each of the four groups. Questions remain regarding the relevance of learning disability subtype to attributional patterns and self-concept. If particular types of difficulties are viewed by children or adults as more serious, disabling, or less easily overcome than others, then such perceptions may affect children's beliefs and self-concepts. Further, particular LD subtypes may be especially sensitive to certain situations presented

in the questionnaires and may respond differently as a result. Finally, various types of central processing deficits may differentially affect the ways in which children perceive situations and their own behaviour. Mixing of learning disability subtypes, then, may constitute a threat to the internal validity of the present results.

A further difficulty with the methods employed in this investigation is a function of one of its strengths. An open-ended questionnaire was employed to obtain subjects' spontaneous explanations for outcomes. The advantages of such a format have been discussed previously. However, this method rendered results related to dimensional placements of categories uninterpretable. It was not possible to compare the dimensional scores assigned to individual categories since not all categories were employed by all groups and cell frequencies were, in many cases, extremely unequal or very low.

The attributional questionnaire utilized was derived from previously-employed scales with some evidence of their validity. The items possess face validity and subjects' responses to the measure indicated that they felt that the items were relevant to their concerns. Nevertheless, there are many possible academic and social situations on which to base such items, and the results obtained from one set of situations may not generalize to a different set. The

amount of detail may also vary from one measure to another, necessitating caution in interpretation. For example, a child's beliefs about the reasons for his or her not being invited to a party may vary according to the perceived popularity of the child giving the party, the number of children not invited, the relationship of the subject to the child giving the party, and so on. Very few details were provided in the present study in an attempt to obtain the children's most spontaneous thoughts. However, this must be kept in mind when interpreting and comparing results of studies employing more specific items.

Finally, the possibility of observer bias exists since the investigator administered the dependent measures. This threat to internal validity could be overcome by replicating the study with a test administrator who is blind to the purposes of the study.

Implications and Future Research

The results of the present study have indicated that LD and non-LD children's attributional patterns do not differ to the extent that previous research has suggested, and that the differences that do exist are secondary and related to behavioural subtype. Thus, support has been provided for the notion that different behavioural patterns among LD children are associated with different sets of cognitions.

The first major finding of this study, which is that LD as well as non-LD children primarily attribute their academic successes and failures to effort, raises some interesting questions. For instance, it is not clear that an attribution to effort has the same meaning for all groups. A non-LD child who is capable of success with sufficient effort may be quite able to accept that he or she simply did not try hard enough and may willingly expend more effort in the future. An LD child with a low frustration tolerance, however, may find that success on a task in his or her area of difficulty is simply not worth the effort. As a result, such a child may believe that success may come with greater effort but may be unwilling to try that hard and risk failure. Covington and Omelich (1979, 1984) have demonstrated that shame about failure is reduced when effort is low. Thus, for some children, attributions to insufficient effort may be accurate and motivating, while for others they may be self-protecting and reinforcing of low effort. It has been demonstrated that individuals may handicap themselves when they are faced with the possibility of negative feedback so that they have an excuse for failure (Leary & Miller, 1986). This is particularly true on tasks which are perceived as moderately difficult and as soluble by others. Thus, the labels of "lazy" or "unmotivated" may be preferable to that of "incompetent" (Leary & Miller, 1986). Further,

this phenomenon may be seen to exist even in individuals with low self-esteem - in other words, its primary purpose may be to prevent others from becoming aware of what the individual already knows. This area of idiosyncratic meaning of causes to individuals merits a great deal of investigation. Until such research is carried out, interpretations of children's attributions must be conducted in a relative vacuum.

Such questions also have implications for parents and teachers, who punish low effort and reward high effort (Covington & Omelich, 1979) in an attempt to motivate children. It is possible that the subjects of the present study have internalized such values and yet find their own discomfort reduced by exerting low effort. For LD students, who truly have great difficulty in academic areas, an inordinate amount of effort may be required for success. Thus, the child may be caught between parents' and teachers' values and their own need to avoid incompetence attributions for failure. Also, such an emphasis on generalized effort does not provide the LD child with any new tools with which to work. Perhaps attributions need to be made more specific, such as "I didn't use/know a strategy for that task." This suggests new avenues for attribution retraining and investigations of the relationship between the attributions, motivation, and performance of LD children.

The prominence of effort attributions in the present results also raises questions concerning measurement of attributions. It is possible that a number of subjects merely offered the response they felt would be most acceptable to the investigator. It is of great importance that a well-controlled investigation of the relative merits of different assessment procedures is carried out. For instance, it would be most informative to discover whether children's responses following their actual performance on a soluble/insoluble task differ from those given when they are asked to imagine hypothetical situations. The actual experience of success and failure and their accompanying emotions may serve to elicit more valid attributions.

A further area of needed research concerns the cognitions of behavioural subgroups of non-LD children. From the present study, it was learned that LD children as a whole do not differ greatly from non-behaviour-disordered, non-LD children. However, in many studies the characteristics of non-LD comparison groups are unspecified and therefore these groups may be quite heterogeneous. It would be important to investigate whether or not externalizing non-LD children respond in a fashion similar to LD externalizers, and so on. If this were the case, further evidence would be provided of the relatively greater importance of behaviour disorder compared to that of learning disability in the development

of attributions.

In a related vein, it would be useful to compare the responses of a clinic control group with those of a non-referred, non-behaviour-disordered, non-LD group. This would help to assess the effects of referral more fully.

The present findings raise questions concerning the direction of relationship between behavioural style, attributions, and self-concept. The present study did not permit exploration of this issue due to the limited sample size and large number of variables. Much would be gained, however, from conducting a path analysis which would elucidate the causal structure of the network of variables.

Finally, similar studies need to be carried out using narrow-band behavioural measures. Groups could be more specifically defined as depressed, anxious, somatizing, hyperactive, aggressive, delinquent, and so on. Such a series of studies would offer a great deal of information regarding the mediating cognitions of LD and non-LD subgroups.

In conclusion, a major implication of the findings of the present study concerns the attitudes of parents, educators, and therapists toward LD children. As long as the image of LD students as helpless children lacking self-esteem is perpetuated and overgeneralized, LD children will be treated as such. The results of such attitudes

include the effects of self-fulfilling prophecy (Leary & Miller, 1986; Rosenthal & Jacobson, 1968), condescension, low expectations, and statements such as "You can do it if you try." None of these effects is constructive for LD children. Their abilities and self-perceptions must be assessed accurately and individually such that they can be given tools which will truly increase their control over outcomes. The cognitions of behaviour-disordered LD children must be included in any assessment or treatment of their difficulties so that they can be helped to view situations in the most productive way. Finally, attribution retraining programs must become more sophisticated and take the child's strengths and limitations into account. The present study has only begun to demonstrate the complexity of attribution and self-concept in children and their ramifications for children's psychological health.

APPENDIX A

DEFINITION OF A LEARNING DISABILITY

It is now generally accepted that the definition of a learning disability as merely a low level of performance in a given area is outdated and not clinically useful

(Barkley, 1981). Rather, it is the "profile of relative deficits" which yields information regarding the existence and nature of a learning disability. According to Barkley (1981, p. 453), "it is the severity of discrepancy in ... skill levels, not their absolute levels, that seems to create learning disabilities in academic achievement."

Based upon this definition, then, a child who obtains average or above-average scores on an achievement test may be classified as learning disabled if he or she is of superior intellectual ability and is achieving at grade level only with great difficulty. "Despite the normal levels of performance in the relatively deficient areas, the child is not likely to perform adequately in class and is likely to find these subjects highly frustrating" (Barkley, 1981, p. 444).

For the purposes of the present study, then, a learning disabled child was defined as one whose reading and/or spelling achievement falls one standard deviation or more below his Verbal IQ and/or whose arithmetic

achievement falls one standard deviation or more below his Performance IQ. Based on findings by Rourke and Finlayson (1978), which demonstrated the relationship between scores on reading and spelling achievement tests and WISC-R Verbal IQ, as well as the relationship between arithmetic achievement and Performance IQ, it would appear that Verbal and Performance IQ scores are more useful measures of ability than Full Scale IQ for the purposes of classifying subjects as learning disabled.

APPENDIX B
CLINIC CONTROL GROUPS

A clinic control group is one which is drawn from a clinic population, rather than from the "normal population" at large. Its utility lies in its ability to control for the effects of clinic referral while providing subjects who are "normal" on measures of the independent variables under study. Referral to a clinic is a potentially confounding variable in that it may produce effects upon the subjects under study. Second, children who are referred to clinics may represent a subgroup of the population who possess particular characteristics which may confound results. Thus, a clinic control group can hold these factors constant while varying levels of the independent variables.

APPENDIX C

MEASUREMENT OF ATTRIBUTIONS

Most studies investigating children's attributions have employed highly structured forced-choice measures which have required subjects to select between a number of pre-determined attributional categories, namely ability, effort, luck, and task difficulty (for example, Bugental, Whalen, and Henker, 1977; Palmer, 1982). Further, dimensional evaluation has tended to take place from the perspective of the Experimenter, such that, for example, "luck" is generally rated as an external, unstable, and uncontrollable cause.

Weiner (1983), however, has warned against the use of such schemes. "A basic error exhibited in attribution research... is that the a priori categorization of causes is accepted without considering the situation as perceived by the subject" (p. 535). He has further cautioned against the use of pre-determined dimensional placements of causes:

[T]he relative placement of a cause on a dimension is not invariant over time or between people. For example, health might be perceived as an internal ("I am a sickly person") or an external ("The flu bug got me") cause of failure. Inasmuch as attribution theory deals with phenomenal causality, such personal interpretations must be taken into account (Weiner, 1979, p. 6).

Sobol and Earn (1985a) have also found that use of

forced-choice measures may confound a study's results and they recommend a more "idiosyncratic approach" to the assessment of the meaning of children's attributions for events. They found that when LD children were asked to spontaneously generate explanations for social events, only one of the four categories generally employed in forced-choice measures (luck) was given as a cause. Thus, it appears that pre-determined causes may not actually be representative of the causes children themselves generate to explain outcomes. Sobol and Earn recommend that, in order to ensure ecological validity, an open-ended interview format be employed which allows children to provide their own explanations of situations.

Second, Sobol and Earn found that LD children's placements of causes of social events along attributional dimensions indicated that their interpretations of causes may be different from those typically employed in coding schemes (for example, Elig & Frieze, 1975). For instance, children may interpret luck as an external cause ("It's an unlucky world.") or an internal cause ("I'm an unlucky person."). Further, in their research, Sobol and Earn found that "others' motives", which is generally interpreted by researchers as an uncontrollable factor, was defined in their sample of children as personally controllable. Based on these findings, the present study employed an open-ended interview format to determine the

categories of LD children's attributions, and three dimensional scales to examine the children's interpretations of the meaning of these causes.

The interview utilized a "two-stage process" (Sobol & Earn, 1985a). Each attributional question ("Why would that happen?") was followed by the following three questions: 1) Is that something that you can do something about?; 2) Is that something that will ever change?; and 3) Would that be because of things about you or because of other things? (See Appendix D for details of the dimensional scales.)

The categories generated by the subjects were classified according to a rationally-derived coding scheme. Based on the findings of Sobol and Earn (1985a), it seems that a pre-constructed coding scheme, such as that employed by Elig and Frieze (1975), may not fit the subjects' responses and may defeat the purpose of utilizing an "idiosyncratic approach" to attributional assessment.

APPENDIX D
ATTRIBUTION MEASURES

Instructions to Subjects

I am interested in how children think about things. I would like to ask you some questions to find out how you think about different things. There are no right or wrong answers - all kids think very differently.

I'll give you an example of the kind of thing I'd like you to do. (Examiner reads the first sample item and asks for a categorical attribution - "Suppose you bake a cake, and it burns. Why ~~do~~ you think that would happen?").

Examiner asks the first dimensional question and presents first the dimensional scale - "Do you think that [the reason] is because of things that you can do something about or because of things that you can do nothing about?")

I would like you to circle the number on this scale that best tells how you think. If you think that the reason you gave is because of things that you can do something about, circle "yes." If you think that the reason you gave is because of things that you can do nothing about, circle "no." If you think that you can probably do something about the reason you gave, circle "probably." If you think that you probably can't do anything about the reason you gave, circle ~~the~~ probably

not." (After the child circles a response, the Experimenter goes through the same procedure with the other two dimensional scales.)

Do you have any questions? Let's try another example. (Examiner reads the second sample item, asks for an categorical attribution, and presents the first dimensional scale.) Is that something that you can do something about (Examiner points to right side of scale) or is that something that you can do nothing about (Examiner points to left side of scale)? A similar procedure is followed as the other two dimensional scales are presented.

Do you have any questions? (Any questions are answered and the Examiner proceeds with the scale items.)

Sample Items

1. Suppose you bake a cake and it burns. Why do you think that would happen?
2. Suppose you are looking for something you lost and you find it. Why do you think that would happen?

Academic Attribution Questionnaire

1. Suppose your teacher passes you to the next grade. Why you think that would happen?
2. Suppose you do well on a test at school. Why do you think that would happen?
3. Suppose your parents say you aren't doing well in your school work. Why do you think that would happen?
4. Suppose you aren't sure about the answer to a question your teacher asked you, but your answer turned out to be right. Why do you think that would happen?

5. Suppose you don't do well on a test at school. Why do you think that would happen?
6. Suppose your teacher didn't pass you to the next grade. Why do you think that would happen?
7. Suppose your parents say you are doing well in school. Why do you think that would happen?
8. Suppose you're not sure about the answer to a question your teacher asks you and the answer you give turns out to be wrong. Why do you think that would happen?

Social Attribution Questionnaire

1. Suppose a new girl/boy comes into your class. You ask her/him to be your friend and you become friends. Why do you think that would happen?
2. Suppose you ask a girl/boy on your street to play with you but she/he does not play with you. Why do you think that would happen?
3. Suppose a girl/boy in your class is having a birthday party and you are invited? Why do you think that would happen?
4. Suppose some girls/boys in your class have a secret they do not ask you to join. Why do you think that would happen?
5. Suppose a new girl/boy comes into your class. You ask her/him to be your friend but she/he does not become your friend. Why do you think that would happen?
6. Suppose you ask a new girl/boy on your street to play with you and she/he does play with you. Why do you think that would happen?
7. Suppose a girl/boy in your class is having a birthday party and you are not invited. Why would that happen?
8. Suppose some girls/boys in your class have a secret club and they ask you to join. Why would that happen?

Dimensional Scales

1. Is (the reason) something that you can do something about?

yes probably probably not no

2. Is (the reason) something that will change?

yes probably probably not no

3. Would (the reason) be because of things about you or because of other things?

things mostly things mostly other other
about me about me things things

APPENDIX E

CHILDREN'S COGNITIVE ERROR QUESTIONNAIRE

Instructions to Subjects

"I am going to describe a number of situations that might happen to kids. Each situation is followed by a thought that a kid in that situation might have. I want to know how similar that thought is to what you might think in that situation. "Please listen to each situation and imagine that it is happening to you, even if it never has in the past. Then listen to each thought. On this sheet, circle the statement that best describes how similar that thought is to how you would think in that situation.

"As an example, listen to this:

- A. You are the goalie for your soccer team. The game ends in a 1-1 tie. After the game you hear one of your teammates say that your team should have won today. You think, 'He/She thinks it's my fault we didn't win.'

"If the thought 'He/She thinks it's my fault we didn't win.' was somewhat like the way you would think in that situation, you would circle 'somewhat like I would think.'

"Here is another example:

- B. You see two of your friends talking together at recess. As you walk towards them, they go over to the softball field and start playing catch. You think, 'Maybe they're mad at me about something.'

"If the thought 'Maybe they're mad at me about something' was a lot like the way you would think in that

situation, you would circle 'a lot like I would think.'

"I will read each item out loud. If you have a question, please ask and I will answer it. Since this is a research study, it is important that you answer honestly. Nobody else will be allowed to see your answers. Any questions? Here is the first question." (Leitenberg, et al, 1986).

Scale Items

The Children's Cognitive Error Questionnaire (Leitenberg et al., 1986) is composed of 24 items. Each item was read aloud to the subject. He or she then circled which of five descriptions printed on a sheet placed before him or her best reflected the degree of similarity between the thought presented in the item and how he or she would think in that situation. The sheet was arranged as follows:

This thought is:

almost	a lot	somewhat	only a	not at all
exactly	like I	like I	little	like I
like I	would	would	like I	would
would	think	think	would	think
think			think	

The scale consists of the following items:

- 1) You invite one of your friends to stay overnight at your house. Another one of your friends finds out about it. You think, "He/she will be real mad at me for not asking them and never want to be friends again." (CATAST, SOC)=
- 2) Your class is having 4-person relay races in gym

class. Your team loses. You think, "If I had just been faster we would not have lost." (PERS, ATH)

- 3) You are trying out for the school softball team. You get up four times and get two hits and make two outs. You think, "What a lousy practice I had." (SA, ATH)
- 4) Your team loses a spelling contest. The other team won easily. You think, "If I were smarter, we wouldn't have lost." (PERS, ACA)
- 5) Some of your friends have asked you if you're going to try out for the school soccer team. You tried out last year but did not make it. You think, "What's the use of trying out, I couldn't make it last year." (OVER, ATH)
- 6) You call one of the kids in your class to talk about your math homework. He/She says, "I can't talk to you now, my father needs to use the phone." You think, "They didn't want to talk to me." (PERS, SOC)
- 7) You and three other students completed a group science project. Your teacher did not think it was very good and gave your group a poor grade. You think, "If I hadn't done such a lousy job, we would have gotten a good grade." (PERS, ACA)
- 8) Whenever it is someone's birthday in your class, the teacher lets that student have a half hour of free time to play a game with another student. Last week it was one of your friend's birthday and they picked someone else. Now another of your friends is going to get to choose someone. You think, "They probably won't pick me either." (OVER, SOC)
- 9) Your softball team is having practice. The coach tells you he would like to talk to you after practice. You think, "He's not happy with how I'm doing and doesn't want me on the team anymore." (CATAST, ATH)
- 10) You went to a party with one of your friends. When you first got there your friend hung around with some other kids instead of you. Later you and your friend decide to stop at his/her house for a snack before you go home. Later that night you think, "My friend didn't seem to want to hang around with me tonight." (SA, SOC)

- 11) You forgot to do your spelling homework. Your teacher tells the class to hand them in. You think, "The teacher is going to think I don't care and I won't pass." (CATAST, ACA)
- 12) You were having a good day in school up until the last period when you had a math quiz. You did poorly on the quiz. You think, "School is a drag, what a waste of time." (SA, ACA)
- 13) You play basketball and score 5 baskets but miss 2 real easy shots. After the game you think, "I played poorly." (SA, ATH)
- 14) Last week you had a history test and forgot some of the things you had read. Today you are having a math test and the teacher is passing out the test. You think, "I'll probably forget what I studied just like last week." (OVER, ACA)
- 15) You spent the day at your friend's house. The last hour before leaving you were really bored. You think, "Today was no fun." (SA, SOC)
- 16) You are taking skiing lessons. The instructor tells the class that he does not think people are ready for the steep trails yet. You think, "If I could only learn to ski faster, I wouldn't be holding everyone up." (PERS, ATH)
- 17) Your class is starting a new unit in math. The last one was really hard. When it's time for math class you think, "That last stuff was so hard I just know I'm going to have trouble with this too." (OVER, ACA)
- 18) You just started a part-time job helping one of your neighbours. Twice this week you were not able to go skating with your friends because of having to work. As you see your friends leaving to go skating, you think, "Pretty soon they won't ever want to do anything with me." (CATST, SOC)
- 19) Last week one of the kids in your class had a party and you weren't invited. This past week you heard another student in your class telling someone he was thinking of getting some kids together to go to a movie. You think, "It'll be just like last week. I won't be asked to go." (OVER, SOC)

- 20) You did an extra credit assignment. Your teacher tells you that he would like to talk to you about it. You think, "He thinks I did a lousy job on my assignment and is going to give me a bad grade."
(CATAST, ACA)
- 21) You're with two of your friends. You ask if they would like to go to a movie this week-end. They both say they can't. You think, "They probably just don't want to go with me."
(PERS SOC)
- 22) Your cousin calls you to ask if you'd like to go on a long bike ride. You think, "I probably won't be able to keep up and people will make fun of me."
(CATAST, ATH)
- 23) Your team has just lost in a spelling contest. You were the last one up for your team and had spelled four words right. The last word was "excellent" and you got it wrong. When you sit down you think, "I'm no good at spelling."
(SA, ACA)
- 24) Last week you played softball and struck out twice. Today some kids from your class ask you to play soccer. You think, "There's no sense playing. I'm no good at sports."
(OVER, ATH)

"CATAST = catastrophizing; OVER = overgeneralization;
PERS = personalization; SA = selective abstraction; SOC = social; ACA = academic; ATH = athletic.

Normative Data

Norms were obtained for a sample of 311 boys and 326 girls in grades 4 ($n = 191$), 6 ($n = 210$), and 8 ($n = 236$) of two public schools in New York state (Leitenberg et al., 1986). The mean score of this sample was 57. Of the types of distortions, selective abstraction was endorsed significantly more than the others and catastrophizing significantly less. There was no

significant difference between overgeneralization and personalization. Of the three content areas, significantly higher scores were obtained in the social area than in either the academic or athletic areas ($p < .01$).

Significantly higher distortion scores were also obtained in the academic area than in the athletic domain ($p < .01$).

From this sample, smaller samples were drawn of low self-esteem ($n = 87$) and high self-esteem children ($n = 75$). The children with low self-esteem were found to have higher total distortion scores as well as higher scores on each error type and content subscale than did high self-esteem children.

From a pool of 212 Vermont schoolchildren in grades 5 through 8, subsamples of depressed ($n = 42$) and non-depressed ($n = 42$) children were drawn. The depressed group scored higher than the non-depressed group on total distortion score as well as on each of the seven subscales. Overgeneralization was endorsed most often among the depressed group, while selective abstraction was endorsed most often among the non-depressed children.

Subsamples of high anxiety ($n = 95$) and low anxiety ($n = 106$) children were drawn from the normative sample. Total scores and all subscale scores were significantly higher among the high anxiety children than among the low anxiety children. Highly anxious

children endorsed overgeneralization most often, while low anxiety children endorsed selective abstraction most often.

APPENDIX F

PERCEIVED COMPETENCE SCALE FOR CHILDREN

Instructions to Subjects

I have some sentences here and, as you can see from the top of your sheet where it says "What I am like," I am interested in what you are like, what kind of a person you are like, and how you think and feel about different things. This is not a test. There are no right or wrong answers. Since kids are very different from one another, each one will put down something different.

First, let me explain how these questions work. There are two sample questions at the top. I'll read the first one out loud, which is marked (a), and you follow along with me. (Examiner reads first sample question.) This question talks about two kinds of kids.

- (1) What I want you to decide first is whether you are more like the kids on the left side who would rather play outdoors, or whether you are more like the kids on the right side who would rather watch T.V. Don't mark anything down yet, but first decide which kind of kid is most like you, and go to that side.

- (2) Now, the second thing I want you to think about, now that you have decided which kind of kid is

most like you, is to decide whether that is only sort of true for you, or really true. If it's only sort of true, then put an X in the box under sort of true; if it's really true for you, then put an X in that box, under really true.

- (3) For each sentence you only check one box.

Sometimes it will be on one side of the page, and other times it will be on the other side of the page, but you can only check one box for each sentence. Do you have any questions?

- (4) OK, let's try the second sample one, which is (b).

(Examiner reads and goes through the same explanation above in points 1, 2, and 3.)

- (5) OK, those were just for practice. Now I have some more sentences which I'm going to read out loud. For each one, just check one box, the one that goes with what is true for you, what you are most like.

The 28 items of this scale were read aloud to the subject, who was also shown visual representations of the items. He or she then checked the box which best represented 1) which kind of child he or she was most like, and 2) how true that was for him or her. The written form of the test which was given to the subject was arranged as

follows:

REALLY SORT OF
TRUE TRUE
for me for me

REALLY SORT OF
TRUE TRUE
for me for me

Some kids would BUT Other kids
rather play out- would rather
doors in their watch T.V.
spare time

Master List of Items Grouped According to Subscale

Cognitive Competence

Item #	Keyed	
1	+	Some kids feel that they are very good at their school work but other kids worry about whether they can do the school work assigned to them.
5	+	Some kids feel like they are just as smart as others their age but other kids aren't so sure and wonder if they are as smart.
9	-	Some kids are pretty slow in finishing their school work but other kids can do their school work quickly.
13	-	Some kids often forget what they learn but other kids can remember things easily.
17	+	Some kids like school because they do well in class but other kids don't like school because they aren't doing very well.
21	-	Some kids wish it was easier to read but other kids don't have any trouble understanding what they read.
25	-	Some kids have trouble figuring out the answers in school but other kids

almost always can figure out the answers.

Social Competence

Item #	Keyed	
2	-	Some kids find it hard to make friends but for other kids it's pretty easy.
6	+	Some kids have alot of friends but other kids don't have many friends.
10	-	Some kids don't think they are a very important member of their class but other kids think they are pretty important to their classmates.
14	+	Some kids are always doing things with alot of kids but other kids usually do things by themselves.
18	-	Some kids wish that more kids liked them but others feel that most kids do like them.
22	+	Some kids are popular with others their own age but other kids are not very popular.
26	+	Some kids are really easy to like but other kids are kind of hard to like.

Physical Competence

Item #	Keyed	
3	+	Some kids do very well at all kinds of sports but others don't feel that they are very good when it comes to sports.
7	-	Some kids wish they could be alot better at sports but other kids feel they are good enough.
11	+	Some kids think they could do well at just about any new outdoor activity they haven't tried before but other

kids are afraid they might not do well at outdoor things they haven't tried.

- 15 + Some kids feel that they are better than others their age at sports but other kids don't feel they can play as well.
- 19 - In games and sports some kids usually watch instead of play but other kids usually play rather than just watch.
- 23 - ~~Some~~ Some kids don't do well at new outdoor games but other kids are good at new games right away.
- 27 - Some kids are among the last to be chosen for games but other kids are usually picked first.

General Self-Esteem

- | Item # | Keyed | |
|--------|-------|--|
| 4 | - | Some kids feel that there are alot of things about themselves that they would change if they could but other kids would like to stay pretty much the same. |
| 8 | + | Some kids are pretty sure of themselves but other kids are not very sure of themselves. |
| 12 | + | Some kids feel good about the way they act but other kids wished they acted differently. |
| 16 | - | Some kids think that maybe they are not a very good person but other kids are pretty sure that they are a good person. |
| 20 | + | Some kids are very happy being the way they are but other kids wish they were different. |
| 24 | - | Some kids aren't very happy with the way they do a lot of things but other kids think the way they do things is |

fine.

28

+

Some kids are usually sure that what they are doing is the right thing but other kids aren't sure whether or not they're doing the right thing.

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