Toward an Integration of
Subjective Well-Being
and Psychopathology

A Dissertation Submitted to the College of
Graduate Studies and Research
in Partial Fulfillment of the Requirements
for the Degree of Doctor of Philosophy
in the Department of Psychology
University of Saskatchewan
Saskatoon

By
Peter Jay Greenspoon

Fall 1998

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SUMMARY OF DISSERTATION
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of the requirements for the

DEGREE OF DOCTOR OF PHILOSOPHY

by

PETER JAY GREENSPOON

Department of Psychology
College of Arts and Science
University of Saskatchewan

Fall 1998

Examinining Committee:

Dr. Angela Ward
Dr. Linda McMullen
Dr. Don Saklofske
Dr. Robert Zemore
Dr. Gerry Farthing
Dr. Vicki Schwean

Dean/Associate Dean
Dean's Designate, Chair
College of Graduate Studies and Research
Chair, Department of Psychology
Advisor, Department of Educational Psychology
Department of Psychology
Department of Psychology
Dept. for the Education of Exceptional Children

External Examiner:

Dr. Henry Janzen
Department of Educational Psychology
University of Alberta
Edmonton, Alberta, T6G 2G5
The objective of this study was to explore the potential validity and utility of a dual-factor system (DFS) of conceptualizing mental health. The factors were the traditional perspective on mental health, psychopathology (PTH), and the relatively recent perspective, subjective well-being (SWB). Research has shown that PTH and SWB are not simply opposite poles of a single continuum, however, the constructs have yet to be integrated in a meaningful manner.

The sample consisted of 407 children in Grades 3 - 6. Self- and teacher-report data were available for the entire sample, in addition to parent-report data for a subsample of 247 children. Measures of PTH and SWB were completed, after which subjects were classified as either high or low in each area, using various criteria. Subjects meeting criteria for further analysis were those classified as low PTH - high SWB (Group 1), high PTH - low SWB (Group 2), and low PTH - low SWB (Group 3), the last group being the one challenging the unidimensional perspective. Group membership was then used as the classification variable in a series of discriminant function analyses. Predictor variables used were those in which research has indicated relationships with both PTH and SWB. These variables assessed the domains of temperament, personality, self-concept, locus of control, and interpersonal relations.

The results indicated that all three groups could be classified at well above chance levels. Groups 1 and 2 showed significant differences on virtually all predictor variables, with Group 2 scoring in the pathological directions. Group 3, however, showed similarities and differences with both Groups 1 and 2. Whereas Groups 1 and 3 were similar on the disposition-type variables of Neuroticism and Locus of Control, Group 3 was similar to Group 2 on the situation-type variables of Interpersonal Relations and Academic Competence. A linear trend was noted on the Self-Concept variables, with Group 3 consistently falling between Groups 1 and 2.

The results of this study offer strong preliminary evidence for the validity and potential utility of a DFS. These results are discussed, as are implications for the fields of mental illness prevention and intervention.
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Head of the Department of Psychology
University of Saskatchewan
Saskatoon, Saskatchewan, S7N 5A5
ABSTRACT

The objective of this study was to explore the validity and utility of a dual-factor system (DFS) of mental health. The factors were the traditional perspective on mental health, psychopathology (PTH), and the more recent perspective, subjective well-being (SWB). Research has shown that PTH and SWB are not simply opposite poles of a single continuum, however, the constructs have yet to be integrated in any manner.

The sample consisted of 407 children in Grades 3 - 6. Subjects were classified as either high or low on measures of PTH and SWB. Subjects meeting criteria for analysis were those classified as low PTH - high SWB (Group 1), high PTH - low SWB (Group 2), and low PTH - low SWB (Group 3), the last group challenging the unidimensional perspective. Group membership was used as the classification variable in a series of discriminant function analyses. Predictor variables assessed the domains of temperament, personality, self-concept, locus of control, and interpersonal relations.

All groups were classified at well above chance levels. Groups 1 & 2 showed significant differences on virtually all variables, with Group 2 scoring in the pathological directions. Group 3, showed similarities and differences with both Groups 1 & 2. Whereas Groups 1 & 3 were similar on the disposition-type variables of Neuroticism and Locus of Control, Group 3 was similar to Group 2 on the situation-type variables of Interpersonal Relations and Scholastic Competence. A linear trend was noted on the Self-Concept variables, with Group 3 falling between Groups 1 & 2.
These results offer strong preliminary evidence for the validity and potential utility of a DFS. Results are discussed, as are implications for the fields of mental illness prevention/intervention.
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DEDICATION

I wish to dedicate this work to the three women in my life who truly represent my past, present, and future.

To the memory of my mother, Kathleen (1926-1995). Her support and encouragement as I grew gave me the confidence to pursue such a demanding goal as this. I regret not being able to share this with her.

To my wife, Marion. Her steadfast presence by my side over the decade gave me an invaluable sense of security and certainty while pursuing a goal where little is certain beyond the next semester.

And to my new daughter, Anna. Her birth has given new meaning to the future. I am sure that Marion and I will continue to learn as much from her over the years as she learns from us.
# TABLE OF CONTENTS

PERMISSION TO USE ........................................................................................................ i

ABSTRACT ......................................................................................................................... ii

ACKNOWLEDGEMENTS ..................................................................................................... iv

DEDICATION ....................................................................................................................... v

TABLE OF CONTENTS ....................................................................................................... vi

LIST OF TABLES ............................................................................................................... viii

LIST OF FIGURES ........................................................................................................... x

LIST OF ABBREVIATIONS ............................................................................................... xi

PREFACE ............................................................................................................................ xii

1. INTRODUCTION ........................................................................................................... 1
   1.1 Historical Overview of the Concept of Mental Health ............................................... 4
   1.2 Current Concepts of Mental Health ........................................................................... 5
   1.3 Defining Subjective Well-Being .............................................................................. 9
       1.3.1 The Tripartite Model of Subjective Well-Being ............................................... 12
   1.4 Subjective Well-Being in Childhood and Its Measurement ..................................... 17
   1.5 Should SWB and PTH Be Conceptualized as Distinct Yet Related? ......................... 19
   1.6 Toward a Conceptual Integration of SWB and PTH .............................................. 21
   1.7 Operationalizing SWB and PTH .............................................................................. 22

2. LITERATURE REVIEW ................................................................................................. 26
   2.1 Temperament .......................................................................................................... 27
   2.2 Personality .............................................................................................................. 32
   2.3 Self-concept .......................................................................................................... 35
   2.4 Interpersonal Relationships ..................................................................................... 39
   2.5 Locus of Control .................................................................................................... 45
   2.6 Additional Evidence From the Field of Stress Resiliency ....................................... 48
   2.7 Statement of Research Questions and Goals .......................................................... 49

3. METHOD ....................................................................................................................... 51
   3.1 Subjects ................................................................................................................ 52
   3.2 Measures ............................................................................................................... 54
   3.3 Procedures ............................................................................................................. 61
   3.4 Statistical Decisions ............................................................................................... 64
       3.4.1 Description of the Discriminant Function Analytic Procedures ..................... 67
4. RESULTS........................................................................................................... 71
  4.1 Data Screening............................................................................................. 71
  4.2 Classification 1: Using Self-Report PS Data ............................................ 74
  4.3 Classification 2: Using Teacher-Report PS Data ..................................... 81
  4.4 Classification 3: Using Parent-Report PS Data ....................................... 89
  4.5 Classification 4: Using Self Satisfaction Scores for LS Classification .... 91
  4.6 Classification 5: Using School Satisfaction Scores for LS Classification .... 99
  4.7 Summary of Results .................................................................................. 106

5. DISCUSSION.................................................................................................... 107
  5.1 Discussion of the First Goal of the Study ................................................. 109
  5.2 Discussion of the Second Goal of the Study ............................................ 114
  5.3 Perceptions of Self Versus Perceptions of One’s Situation ..................... 116
  5.4 Self-Concept: ............................................................................................ 118
  5.5 Additional Observations .......................................................................... 122
    5.5.1 Temperament and Personality ............................................................. 123
    5.5.2 Remaining Observations .................................................................... 125
  5.6 Significant Implications ............................................................................ 126
    5.6.1 Neuroticism and Locus of Control ....................................................... 127
    5.6.2 Interpersonal Relations and Scholastic Competence .......................... 129
  5.7 Limitations of the Present Study ............................................................... 131
  5.8 Conclusion.................................................................................................. 133

REFERENCES...................................................................................................... 136

APPENDIX A: LETTER OF PARENTAL CONSENT .............................................. 152

APPENDIX B: SUMMARY TABLE OF THE 40-20-40 PERCENTILE SPLIT CLASSIFICATION USING THE MSLSS SCHOOL/SELF COMPOSITE SCORE AND BASC-SAD TRIAD .................................................. 154
LIST OF TABLES

Table 3.1 Order of Presentation for the Measures ........................................ 63

Table 3.2 Variables and Methods Used to Classify Cases .......................... 66

Table 4.1 Pooled Within-Groups Correlations Between Discriminating
Variables and Standardized Canonical Discriminant Functions for
Classification 1 .................................................................................................. 77

Table 4.2 Descriptive Statistics for Predictor Variables for Each Group ....... 77

Table 4.3 Independent Samples t-test of Predictor Variables for
Classification 1 .................................................................................................. 78

Table 4.4 Pooled Within-Group Correlations Among Predictor
Variables for Classification 1 ............................................................................ 79

Table 4.5 DFA Summary Table for Classification 1 .................................... 81

Table 4.6 Pooled Within-Groups Correlations Between Discriminating
Variables and Standardized Canonical Discriminant Functions for
Classification 2 ................................................................................................. 84

Table 4.7 Descriptive Statistics for Predictor Variables for Each Group ....... 85

Table 4.8 Independent Samples t-test of Predictor Variables for
Classification 2 ................................................................................................. 85

Table 4.9 Pooled Within-Group Correlations Among Predictor
Variables for Classification 2 ............................................................................ 87

Table 4.10 DFA Summary Table for Classification 2 .................................... 88

Table 4.11 DFA Summary Table for Classification 3 .................................... 89

Table 4.12 Pooled Within-Groups Correlations Between Discriminating
Variables and Standardized Canonical Discriminant Functions for
Classification 4 ................................................................................................. 94

Table 4.13 Descriptive Statistics for Predictor Variables for Each Group ..... 94

Table 4.14 Independent Samples t-test of Predictor Variables for
Classification 4 ................................................................................................. 96
LIST OF FIGURES

Figure 1.1 Matrix of SWB - PTH Combinations ......................................................... 23

Figure 4.1 Group Centroids on the Discriminant Functions for Classification 1 .................................................................................................................. 75

Figure 4.2 Group Centroids on the Discriminant Functions for Classification 2 .................................................................................................................. 83

Figure 4.3 Group Centroids on the Discriminant Functions for Classification 4 .................................................................................................................. 93

Figure 4.4 Group Centroids on the Discriminant Functions for Classification 5 .................................................................................................................. 100
LIST OF ABBREVIATIONS

AIR Father ................................................................. AIR-FTHR
AIR Female Peers .................................................. AIR-GIRL
AIR Male Peers ....................................................... AIR-BOY
AIR Mother ............................................................... AIR-MTHR
AIR Number of Parents Living With Child .......... AIR-PRNT
AIR Opposite Sex Peers ........................................ AIR-OPP
AIR Same Sex Peers ................................................ AIR-SAME
AIR Teacher .............................................................. AIR-TCHR
AIR Total Relationship Index .................................. AIR-TRI
BASC Locus of Control ........................................ BASC-LOC
Dual-Factor System .................................................. DFS
EAS-PR Activity ....................................................... EASP-ACT
EAS-PR Emotionality ............................................... EASP-EM
EAS-PR Shyness ....................................................... EASP-SHY
EAS-PR Sociability .................................................. EASP-SOC
EAS-TR Activity ....................................................... EAST-ACT
EAS-TR Emotionality ............................................... EAST-EM
EAS-TR Shyness ....................................................... EAST-SHY
EAS-TR Sociability .................................................. EAST-SOC
JEPQRA Extraversion .............................................. JEPQRA-E
JEPQRA Neuroticism ............................................... JEPQRA-N
JEPQRA Psychoticism .............................................. JEPQRA-P
Life Satisfaction ...................................................... LS
Negative Affect ......................................................... NA
Positive Affect ......................................................... PA
Psychological Symptoms .......................................... PS
Psychopathology ....................................................... PTH
SPPC Athletic Competence ..................................... SPPC-AC
SPPC Behavioral Conduct ....................................... SPPC-BC
SPPC Global Self-Worth .......................................... SPPC-GSW
SPPC Physical Appearance ..................................... SPPC-PA
SPPC Scholastic Competence .................................. SPPC-SC
SPPC Social Acceptance ......................................... SPPC-SA
Subjective Well-Being ............................................. SWB
PREFACE

The following document describes what will be an attempt to move towards a conceptual integration of two central concepts within the mental health disciplines: subjective well-being and psychopathology. This study was carried out using a child sample, however, it would be equally feasible using an adult sample. The decision to conduct this study in a child population is largely based on personal preferences and philosophies. First, my professional goals are to work with children and their families. But more important, should the results support the assertion that these two concepts are related in a systematic but presently unknown way, such results may point to new ways of identifying at-risk children, or rather those children who do not exhibit signs of psychopathology, yet nonetheless may be at increased risk for its future development.

It has long been known that the roots of adult psychopathology often lie in childhood experience. Unfortunately, our understanding of which children will grow up to develop a mental disorder is far from perfect. Perhaps even more common are those individuals who will one day feel the need to utilize mental health services without ever having a diagnosable disorder. We do know that a simple lack of psychopathological symptoms is not an adequate predictor of who will ultimately seek mental health services. Support for relationships between subjective well-being and psychopathology within the framework proposed in this study may offer insight into new ways of identifying at-risk individuals and Conceptualizing prevention strategies, by offering new
descriptions of a potentially at-risk group: those individuals without significant symptomology who also report low subjective well-being. Although the prospective nature of prevention research makes this, in of itself, an unfeasible goal of the present study, positive results will serve to lay the foundation for such research in the future.

The benefits of preventing the development of psychopathology early in the life cycle are self-evident. First, it would ease the financial strains on our mental health systems in these economically difficult times. But the true benefit of such strategies is that years, if not decades, of personal pain and suffering could be minimized, giving us the opportunity to offer individuals in need something that they would otherwise never be able to reclaim.
1. INTRODUCTION

The aim of this study will be to take the first step toward developing an integrated system of assessing mental health. The attempted integration will be between the inter-related yet separate and distinct constructs of subjective well-being (SWB) and psychopathology (PTH). Existing evidence has demonstrated that an elevation in one domain is not necessarily associated with a decrease in the other, although such a unidimensional relationship is what is typically assumed.

Of particular interest in the present study are those individuals who exhibit low levels of PTH, yet also report low levels of SWB. These individuals challenge our unidimensional understanding of "mental health". The aim of this study will be to discriminate this group from the two groups that are typically the focus of psychological research: the high PTH - low SWB and low PTH - high SWB groups (i.e., the groups which fit within a unidimensional perspective).

At this point it should be made clear that a fourth potential group exists within this two-dimensional model, a group manifesting both high levels of SWB and PTH. However, this group will not be investigated in the present study. While this does not imply that the fourth group is any less important or even non-existent, the decision not to include this group was based on statistical considerations rather than conceptual ones. Perhaps the most salient
consideration regards the exploratory nature of this study, and the desire to minimize Type II error (i.e., the probability of missing actual relationships). Had the goal of this study been to validate the existence of two groups rather than one, Type II error rates would rise. Due to the statistical procedures, if one of the two groups could not be discriminated this would negatively impact the discrimination of all groups. Furthermore, in considering how these two groups might be understood, it seemed likely that different variables would be related to each, in turn also affecting Type II error. Thus, should the results of this study support the two-dimensional model, a foundation will have been set to extend this paradigm to the study of this fourth group.

In order to discriminate the three groups, a series of discriminant function analyses will be performed, entering group membership as the variable to be classified. To date, research investigating possible relationships in such a dual-factor system (i.e., SWB and PTH) appears to be nonexistent. Thus, discriminating variables were selected based upon the existing research database with respect to major variables known to demonstrate relationships to both SWB and PTH, independently.

Should the obtained results demonstrate that these three groups can be reliably discriminated from one another, a significant first step will have been taken toward the conceptual integration of SWB and PTH. Such results could offer a compelling challenge to the unidimensional, bipolar view of mental illness/well-being, encouraging researchers to search for additional relationships between these two distinct yet related constructs. In the present
study, assessing the meaningfulness of such relationships will be accomplished through the analysis of those variables that discriminate the groups. These analyses will hopefully provide the groundwork to begin developing a conceptual model of the little understood group of individuals manifesting low SWB - low PTH. Furthermore, such results could potentially offer a new perspective for viewing the other two, "unidimensional" groups. The term unidimensional is used loosely. Although these two groups fit within the traditional unidimensional perspective, they fit equally well within a dual-factor framework. Nonetheless, although a successful discrimination may offer interesting descriptions of all three groups, it is the description of the "low-low" group that is considered most valuable. It is this group that directly challenges the unidimensional understanding of mental health, thus it is this group that is overlooked when either SWB or PTH is studied in isolation.

Lastly, although it is not a direct goal of the present study, perhaps the greatest significance that positive results would have is the logical relevance of such findings for the identification of children, and perhaps adults, who may be at-risk for the development of mental disorder/illness. Furthermore, by describing how the predictor variables discriminate the groups, such findings may potentially offer new information relevant to the development of future intervention/prevention strategies. The growing inability of our governments to provide the financial resources needed to service clinical populations is well known. Such fiscal realities serve to emphasize the pressing need for new and innovative systems of assessing mental health that will help in the creation of
new and effective prevention strategies, strategies known to be significantly more cost-effective (not to mention humane) in comparison to servicing clinical populations.

1.1 Historical Overview of the Concept of Mental Health

Prior to the middle of this century, mental health was typically, if not exclusively, defined in negative terms. In other words, lack of PTH was considered indicative of psychological well-being, ergo a positive sense of SWB. This is most likely due to psychology's earliest roots within the medical model, in which an individual is considered of sound health until acted upon by a pathological agent or process, resulting in illness. For examples of how the medical model was applied to psychology at its earliest roots, consider the ancient Greek physician Galen who attributed four ill "temperaments" to a bodily excess of one of four humours: blood, black bile, yellow bile, and phlegm, or Hippocrates, who considered insanity a disease of the brain (Davison & Neale, 1990).

The focus on disease entities and processes remains to this day within both the psychological and physical health disciplines. We search for pathology or a disease entity so that we can excise it, or otherwise rid the person (or "host") of it, with the assumption that its destruction will result in a relative return to normalcy or health. With regard to physical well-being, such assumptions
would appear more or less valid.\textsuperscript{1} However, with regard to the psyche these assumptions appear less applicable, offering a less complete picture of what is implied by well-being. In other words, unlike the relationship between physical illness and health, a lack of PTH is not the definitive indicator of SWB. This statement should not be interpreted as an attack on the utility of the methods of the traditional medical model within the psychological sciences, but rather, a criticism of our virtually exclusive reliance upon such methods within the mental health disciplines. Naturally, we must include the search for what is wrong or pathological when we attempt to help others, however, the results of such searches must not be assumed to answer the equally important question "what is (or is not) right with this person?" One does not necessarily imply the other, although I suspect that many, if pushed, would claim that it does. This issue is elaborated upon in the following section.

1.2 Current Concepts of Mental Health

The growing interest in SWB over the last several decades illustrates what can be viewed as a general paradigm "adjustment" regarding our conceptions of mental health. The historical conceptualization would imply that mental health and disease lie on opposite poles of one continuum. One early and influential challenge to this conception was offered by Jahoda (1958), who suggested that "it [is] unlikely that the concept of mental health can be usefully defined by identifying it with the absence of disease" (p. 14). Jahoda went on to state that

\footnote{This statement is not meant to detract from the field of physical health promotion or illness prevention, but rather to highlight that the search for physical disease entities and their subsequent destruction has proven quite effective through the ages.}
“the absence of disease may constitute a necessary, but not sufficient, criterion for mental health” (p. 15, italics added). Such statements challenge our unidimensional view of illness-health, pointing to the possibility that mental health and illness might be more usefully conceptualized as two separate yet related constructs. Later in this section encouraging preliminary evidence suggesting that this is indeed the case will be reviewed, and a major goal of this dissertation will be to begin to delineate and explicate the nature of the relationships between these two constructs when both SWB and PTH are assessed concurrently.

In more recent times, there has been an attempt to integrate the theories of Jahoda and others like her into mainstream psychology. Such conceptions have also influenced the general medical model. In 1964, the World Health Organization (WHO) offered the following definition of health, “health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity” (p. 1). We see in this definition not only an attempt to integrate positive indicators of well-being into our conception of health, but also an integration of all the major human systems (physical, mental, and social). As examples of this influence specific to the area of child psychology, the developers of measures such as the Child Behavior Checklist (Achenbach, 1991) and the Behavior Assessment System for Children (Reynolds & Kamphaus, 1992) have included adaptive scales (e.g., happiness, social skills) in their instruments, as well as measures of somatic disturbances, in addition to the traditional psychopathological scales. However, the fact remains that these
instruments were developed for use in clinical populations where the existence of PTH is already suspected or known. In the clinical setting, information regarding adaptive skills is typically obtained in order to help alleviate existing pathological symptoms. Furthermore, it is left to the clinician to interpret the significance of independent adaptive and maladaptive scales, which fails to foster the conceptual integration of the two constructs of PTH and SWB. In sum, it would appear that such measures, while acknowledging the importance of both SWB and PTH, do not help us to understand the implications of the various possible combinations of PTH- and SWB-type scale scores.

Several contemporary researchers continue to challenge traditional beliefs (e.g., Cowen, 1991; Schlosser, 1990; Seeman, 1989), arguing that greater emphasis must be placed on positive indicators of SWB as we continue to refine our conceptions of mental health and illness. This trend is indicative of the growing emphasis on prevention rather than treatment. Cowen (1991) effectively captures this sentiment when he proposes the sentiment "build health, rather than the implicit slogan that has wagged the last two millennia, fight sickness" (p. 404, italics in original). The implications of such an argument are clear. What does it mean when a person states that life is "great," versus "OK," or "not so good?" Using traditional measures of PTH, all such individuals who significantly differ in their perceptions of their SWB could appear "normal" (e.g., Schlosser, 1990), however, the potential for significant differences regarding future development of PTH is evident. To illustrate, a longitudinal study by Lewinsohn, Redner, and Seeley (1991; N = 749) found that non-
depressed subjects who scored low on life satisfaction measures at Time 1 (between May, 1982 and November 1983) were more likely to become depressed at Time 2 (between November 1984 and March 1986).

If integrated systems of assessing both SWB and PTH can help identify at-risk groups, what resources would be required to decrease the probability of PTH from developing, and how would this compare to the resources needed to treat a clinical population? We know the costs of clinical treatment are substantial. A U.S. study that examined only one specific population (inpatient treatment for mental disorders of children and adolescents [0-18] in short-term, non-Federal general hospitals in 1980) estimated annual costs of over $1.5 billion (Kiesler, Simpkins, & Morton, 1989). Kiesler et al. also pointed to the skyrocketing admission rate for inpatient care. Such findings strongly support the need for new and innovative intervention and prevention strategies. As Huebner (1994) states, “the assessment of an individual’s positive SWB perceptions is considered fundamental to a positive, preventative approach to mental health” (p. 149).

Reich and Zautra (1981) suggest how one approach to prevention might work. For their experimental manipulation, three groups of subjects engaged in either 0, 2, or 12 pleasant activities over a one month period (from a subject-selected list of activities in four separate categories: recreational, academic, intellectual/cultural/artistic, and social). Measurements at Time 2 indicated that those engaging in either 2 or 12 activities scored higher on a measure of SWB than those who had engaged in no pleasant activities. Furthermore, subjects
who were experiencing considerable life stress at Time 1 experienced a significant reduction in distress (and an increase in SWB) when engaging in 12 activities, rather than 2 or none. These results strongly suggest that a positive sense of SWB is intrinsic to mental health and, perhaps more important, that simple activities that can increase SWB can be employed to intervene, and possibly prevent, the development of PTH.

Other research in the related field of self-concept has produced similar results. Marsh, Richards, and Barnes (1986) found that individuals participating in the Outward Bound program (a demanding outdoor program originally developed to build stronger character and the will to survive) experienced significant and reliable increases in various domains of self-concept. Such results also add to the validity of the WHO's integrative definition of health, in that both physical and social activity appear to influence mental health. Although it is unknown whether this trend towards integration will continue to grow in the next century, it does appear likely. Within the last decade or so, we have seen the creation of the American Psychological Association Division of Health Psychology, as well as the publication of the journal, Health Psychology. Such developments serve as testament to our growing realization of the importance of an integrative approach to well-being.

1.3 Defining Subjective Well-Being

This section will review the construct of SWB in conjunction with more traditional psychopathological variables, and offer a working definition of SWB for purposes of the present study. In so doing, implications for what may
constitute general “mental health” cannot be avoided. However, with respect to defining mental health, the variables reviewed here should be considered as only some components among many (albeit central ones). The importance of other issues, such as cultural relativism, statistical normalcy, and idiosyncrasy, cannot be ignored (the reader is referred to Jahoda [1958]). The reality of the human condition suggests that an all-encompassing, universal objective definition of mental health is an unattainable goal. As examples, consider the sociopath who might enjoy a high degree of SWB, the non-pathological “normal” individual with low SWB, or the member of another culture whose behaviour would be viewed as normal is his/her society but pathological in our own. Such issues exemplify the importance of an integrative, holistic approach for mental health researchers and practitioners. Furthermore, such examples suggest that both objective and subjective indices should be utilized to assess both mental health and mental illness.

Gains in our understanding of SWB have been hindered by confusion and inconsistencies in the relevant nomenclature (Bryant & Veroff, 1982; George, 1979; Veenhoven, 1991). Terms such as happiness, satisfaction and morale are all too often used interchangeably. Despite this confusion, investigations have yielded robust support for a tripartite model of SWB, in which three related yet independent factors have emerged: Positive Affect (PA), Negative Affect (NA) and Life Satisfaction (LS) (Andrews & Withey, 1976; Campbell, Converse, & Rogers, 1976; Diener, 1984; Emmons & Diener, 1985a). Other studies have also demonstrated relationships between various constellations of these three
factors that are consistent with the tripartite model (Bradburn, 1969; Bryant & Veroff, 1982; Costa & McCrae, 1980; Diener & Emmons, 1985; Huebner, 1991a).

There is a conceptual distinction to be made between the first two factors, PA and NA, and the third factor, LS. PA and NA are defined by one’s perceptions of his/her affective states (i.e., the frequency and intensity of feelings such as happiness and sadness), whereas, LS has been defined as, “an individual's subjective evaluation of the degree to which his or her most important needs, goals, and wishes have been fulfilled” (Frisch, Cornell, Villanueva, & Retzlaff, 1992, p. 93). Shin and Johnson (1978) have similarly defined LS as an individual’s summary assessment of quality of life according to one’s unique standards. Thus, an individual’s perception of LS involves a cognitive process (as opposed to the affective processes involved in PA and NA ratings) which requires an evaluative judgement.

To be consistent with the tripartite model, we expect an individual’s assessment of SWB to result from an integration of the subjective perceptions of positive and negative feelings, and satisfaction. Consistent with this definition, Diener (1984) has identified three hallmarks of our understanding of SWB. First, it is subjective. SWB is not dependent on any particular objective condition (e.g., physical condition, wealth), but rather, stems from internal experience. This does not preclude the possible influence of specific objective conditions. It only suggests that any such influence could be idiosyncratic, and therefore, not inherent to SWB.
Second, positive factors must be measured. Their presence cannot be inferred simply by a lack of negative factors. The evidence supporting the independence of positive and negative affect, cited above, supports this conclusion (see also section 1.3.1).

Third, assessment of SWB is not specific to any domain, but rather encompasses all aspects of one's life. “Although affect or satisfaction within a certain domain may be assessed, the emphasis is usually placed on an integrated judgement of the person’s life” (Diener, 1984, p. 544).

1.3.1 The Tripartite Model of Subjective Well-Being

Before reviewing the evidence for the tripartite model, the reader should note that for the purposes of the present study, the focus will be on the LS factor of SWB. The results of several studies suggest that measures of LS may be the most appropriate (and parsimonious) when the goal is to assess SWB. The greater stability of LS (Diener, 1984; Diener & Larsen, 1984; Heady & Wearing, 1989) suggests that a measure of LS can be of greater diagnostic utility. In other words, although LS may be less likely to change (typically a negative prognostic indicator), the discovery of effective intervention strategies aimed at increasing LS may one day help to create meaningful and enduring change for the individual. Furthermore, if LS is influenced by other variables, including affect (e.g., Costa & McCrae, 1980; Emmons & Diener, 1985b), we might expect a measure of LS to offer a more clinically meaningful indication of overall SWB than any single variable of which it is composed (i.e., whose influence is partial and limited). This notion has received some support. For
example, as Costa and McCrae (1980) point out, although introverts may appear less happy than extraverts, we cannot assume that they are less satisfied, nor of decreased mental health (e.g., they may simply be more reserved). As such, LS measures allow one to circumvent the difficulties which may be encountered when attempting to interpret the meaning of scores on affective measures. Lastly, because affective-type items are usually found in measures of PTH (whereas LS-type items are not), their use as a measure of SWB would introduce a possible confound (see also section 1.7).

Despite the large body of SWB research, very few studies have focused primarily on the LS factor (notable exceptions include Diener, Emmons, Larsen, & Griffin, 1985; Pavot, Diener, Colvin, & Sandvik, 1991) and instead, have concentrated on the affective components of SWB. In addition, even within the small body of existing LS research, the confusion in the nomenclature has resulted in “LS” measures that do not strictly measure LS (for several examples, see Diener, 1984; Diener, Emmons, Larsen, & Griffin, 1985; Frisch, Cornell, Villanueva, & Retzlaff, 1992; and Huebner, 1991b). In this light, it will be beneficial to review the major findings in the SWB literature as they pertain to PA and NA, as well as LS.

Bradburn's seminal work on the structure of psychological well-being (1969) was among the first to demonstrate the independence of PA and NA (a finding that, as mentioned, has been well supported). Bradburn's findings, however, did not go unchallenged as many researchers criticized potential flaws in his methodology (see Diener, 1984, for a review). The results of this debate
have helped us to further understand the nature of the relationship between PA and NA. For example, Diener and Emmons (1985) found a significant negative correlation between PA and NA when the two factors were measured at one point in time (apparently contradicting Bradburn's findings), however, they also found that when PA and NA were measured over time (i.e., repeated measures) the correlation was significantly attenuated and they emerged as two largely independent factors. In other words, while it may be likely for an individual to report high PA and low NA (or vice versa) at a given point in time, this does not appear to be the case for repeated measure over extended periods of time. It is in this context that much of the support regarding the independence of PA, NA, and LS has been found (Andrews & Withey, 1976; Costa & McCrae, 1980; Emmons & Diener, 1985a; Huebner, 1991a).

In his 1969 work, Bradburn developed the much used Affect Balance Scale (ABS). Bradburn postulated that since PA and NA appeared to be independent factors, one could calculate the difference between the two (PA minus NA) and arrive at, "a good indicator of an individual's current level of psychological well-being" (p. 67). He found that the ABS correlated well (higher than either PA or NA alone) with a general question of happiness and a general question of, "getting the things you want out of life." Interestingly however, the ABS correlated no better than NA alone with a general question of LS ("would you like to change the way your life is going at this moment"): The more negative affect, the less satisfied a person is, with the level of PA apparently playing little role. Bradburn hypothesized that the "kind" of dissatisfaction that
leads to a desire for change is related to NA, and not PA. Although Bradburn
did not elaborate on what kind of dissatisfaction might lead one to a desire for
change, or why such a person could score either high or low on a measure of
PA, his investigation was largely examining objective variables, such as
marriage and work.

More recent research has identified the potential influence of individual
differences in these relationships as well, which will be discussed later in this
review (see Chapter 2). In any case, Bradburn's finding that PA is not related to
LS has not been well supported. For example, a study by Emmons and Diener
(1985b) examined the relationships between the three SWB variables within
and among a variety of specific domains (e.g., friends, love life). Their results
supported Bradburn's finding that PA and NA are largely independent ($r = -.29$),
as well as his finding that NA and LS are significantly negatively correlated ($r = 
-.50$). However, in stark contrast to Bradburn's findings, they found the largest
correlation ($r = .64$) to be between PA and LS. Huebner (1991b) obtained
similar results in his study of LS among children. The meaning of this
discrepancy is unclear at present. Bradburn assumed that his question about
"desire for change" was a general indicator of LS. Perhaps this question was
also assessing some other variable, such as aspirations. Emmons and Diener,
on the other hand, asked subjects directly, how satisfied they are within the
various domains under investigation. Regardless of the possible sources of this
intriguing discrepancy, it underscores the complexity of the relationships
between the three factors of the tripartite model, as well as the need for
researchers to "speak a common language" and ensure that they are measuring the construct that they claim.

Diener and Larsen (1984) conducted a study examining the temporal stability and cross-situational consistency of PA and NA. Their results suggest that affect is somewhat stable and consistent. Among several other variables measured was LS, which was more stable and consistent than both PA and NA. These initial findings suggest that life satisfaction may be the most stable of the three SWB factors (see also Diener, 1984).

Despite the general support for the tripartite model, the nature of the relationship between the three variables is still largely unknown. The distinction between the affective nature of PA and NA, and the judgmental nature of LS has already been made. In this light, some researchers have hypothesized that LS is really the result of some summative process involving PA and NA (Costa & McCrae, 1980; Emmons & Diener, 1985b). This notion is actually similar to Bradburn's ABS (recall that the ABS uses the discrepancy between PA and NA as an indicator of overall or global SWB). There is at present little support for the notion that LS is directly caused by affect, however, some researchers (e.g., Costa & McCrae, 1980; Emmons & Diener, 1985a) have outlined a model in which distinct combinations of personality traits appear to influence PA and NA separately, which in turn are hypothesized to affect the overall sense of SWB. Although such models suggest that LS is influenced by affect, the large body of research supporting the independence of the three factors indicates that any
such influence would be partial and that LS is not simply a measure of affect (Andrews & McKennell, 1980; Diener, 1984; Huebner, 1991a).

1.4 Subjective Well-Being in Childhood and Its Measurement

The psychological construct of SWB has received considerable attention in the past two decades. Indeed, the journal, *Social Indicators Research*, established in 1974, is devoted to SWB research. Specific areas such as marriage, work, and aging have received the lion's share of attention in SWB research. Conversely, investigations of children's perceptions of SWB have been practically non-existent.

Although interest in SWB has been growing over the last several decades, it is only in more recent years that a small handful of researchers have begun to examine the structure of SWB in childhood and have further begun to develop measures to assess one component of SWB: LS (Adelman, Taylor, & Nelson, 1989; Huebner, 1991b; Huebner, 1994). The development of such positive indicators of children's well-being offers a much-needed alternative to the traditional focus on clinical symptoms (i.e., PTH). The philosophy behind the development of children's well-being measures suggests a broader societal perspective which includes *promoting mental health* rather than exclusively treating mental illness, a philosophy in which the present work fits well.

In reviewing the existing SWB database, it appears that not only has very little research been conducted in this area involving children or adolescents, but that a majority of SWB research to date has focused at the other end of the age continuum, the geriatric population. For the present review of the SWB
literature, it was found that references to children were made almost exclusively as variables relating to the SWB ratings of parents (typically comparing them to adults without children). In his review of the literature, Huebner (1994) found only two measures of children's life satisfaction. One measure he found was the Perceived Life Satisfaction Scale (Adelman, Taylor, & Nelson, 1989). An investigation of this scale by Huebner and Dew (1993) found limited psychometric data for the measure, as well as difficulty in interpreting the factor structure of the scale (their own factor analysis yielded four primary factors as opposed to the unidimensional factor structure assumed by the authors of the measure). Furthermore, the scale was designed only for children who have reached adolescence and would not be appropriate for younger children.

The second scale which Huebner found was the Student's Life Satisfaction Scale (SLSS; Huebner, 1991b). This seven item measure of global life satisfaction was developed for use in large scale surveys of children's well-being (Grades 3 to 8). Although the scale was found to have a unidimensional factor structure (Dew & Huebner, 1994; Huebner, 1991b), the results of one study (Huebner, 1991c) indicated that preadolescent students were able to differentiate (in terms of perceived life satisfaction) among specific domains in their lives, and that the relative importance of a domain might change as a function of age (childhood versus adolescence). However, because of the inherent shortcomings of single-item scales, it was apparent that the SLSS would not suffice as a multidimensional scale of life satisfaction for children. Spurred by the encouraging results of his previous studies, Huebner developed
the Multidimensional Students’ Life Satisfaction Scale (MSLSS; Huebner, 1994).

This third measure, the MSLSS, is a 40-item questionnaire which requires the individual to answer each item by marking one of four statements (where never = 1; sometimes = 2; often = 3; almost always = 4). For example, an item might state, “I enjoy school activities”. Huebner conducted two studies in which results supported the overall validity and reliability of the instrument. The results of these studies demonstrated a five-factor solution, theoretically consistent with five domains of children’s LS (Family, Friends, School, Self, and Living Environment), as well as acceptable reliability estimates, and significant correlations with various criterion measures in the expected directions. Subsequent validation investigations of the MSLSS by Greenspoon and Saklofske (1997; in press) offered further support for the measure, as well as supporting the validity of the MSLSS total score as a measure of global life satisfaction. The MSLSS is described in greater detail in section 3.2.

1.5 Should SWB and PTH Be Conceptualized as Distinct Yet Related?

Generally, of the three SWB factors NA is the most commonly associated with PTH, as is to a lesser extent, an absence of PA. The fact that these affective components are part of the SWB model suggests that PTH and SWB, although distinct, are inter-related in some as yet unknown manner. The results of the study by Lewinsohn, Redner, and Seeley (1991), in which non-depressed subjects scoring low on LS measures were more likely to become depressed later, also suggest a relationship and demonstrates how our focus on PTH gives
us an incomplete picture of the likelihood of the future development of PTH. In sum, as researchers begin to examine relationships between SWB and PTH, the inadequacy of our current models becomes more apparent, in turn suggesting that the time has come to begin to search for integrated systems of assessing mental health.

As we have seen so far in this introduction, in the last few decades several researchers have become interested in the construct of SWB, as well as LS specifically. Regarding our interest in the construct of PTH, a review of this vast literature should not be necessary (if even feasible). Suffice to say, this construct has received extensive attention for centuries, if not millennia. One of the central themes underlying research in the SWB field has been the implied criticism of traditional research for ignoring the role of this important construct in psychological research. To repeat, a lack of PTH should not imply positive SWB. The nature of such critiques of the research suggests that the direction of future research should be to create integrated systems of assessing mental health/illness in which the constructs of both SWB and PTH are included, in essence, a dual-factor conceptualization of mental health.

Despite the direction for research implied by SWB investigators, no such integrated models or investigations were found for this review of the literature. Unless the underlying belief of those from the SWB “camp” is that SWB research should supplant the traditional focus on PTH, these theorists and researchers do not appear to be wholly addressing their own concerns. Namely, that exclusively relying on only one of two central constructs within a domain is
by definition to have an incomplete picture. Furthermore, because my reading of the SWB literature is not that these researchers wish to eliminate the role of PTH in the mental health disciplines, I must assume that the scientific search for the information needed to build a dual-factor system is the logical next step in this relatively new field.

1.6 Toward a Conceptual Integration of SWB and PTH

In attempting to develop a dual-factor system (DFS) of assessing mental health, it is important to consider what is currently known about the concepts one is attempting to integrate (in this case, SWB and PTH). Next, because there appears to be no existing investigations of such an integrated system, any hypotheses that are created should be at the macroanalytic, or gross level of conceptualization. In other words, it is necessary to guard against the desire to make finer-grained distinctions than are currently warranted by the existing research database. Such premature attempts would increase the Type II error rate, an undesirable risk in any exploratory/preliminary research.

For present purposes, the cited initial evidence supporting non-unidimensional relationships between the two constructs is one guide. Similar is the intuitive appeal, as well as the encouraging preliminary evidence (e.g., Lewinsohn, Redner, & Seeley, 1991; Schlosser, 1990) supporting the notion that to judge one’s life as “great” vs. “OK”, or “so-so” is somehow qualitatively different and clinically significant even when differences in PTH are not evident. Lastly, the challenge to the unidimensional view of mental health should be
clear in the framework of the DFS. Taking these factors into consideration, the following structure for a DFS is proposed.

To make the most general of distinctions of either PTH or SWB independently, is to say that an individual can be either high or low in one or the other. One can exhibit a significant level of PTH or not, or a significant level of SWB or not. To combine all possibilities of these two levels of two variables when examined concurrently results in a four-celled matrix (see Figure 1.1). In view of the fact that these two variables have not yet been investigated in this manner (i.e., the $2 \times 2$ matrix, or more generally, the concurrent measurement and combining of SWB and PTH), any attempt to test the meaningfulness of such a structure will need to examine those variables that are known to be related to the individual constructs which comprise the structure. Thus, a search for those variables known to have the strongest relationships to SWB and PTH is called for. On the other hand, efforts should not be wasted searching for those variables which may indeed demonstrate strong relationships to these two constructs, yet nonetheless be unfeasible in terms of the practical limitations of doctoral level research (e.g., home observation of parent-child interactions, genetic variables). With these goals and limitations in mind, Chapter 2 describes the results of the search for relevant associated variables.

1.7 Operationalizing SWB and PTH

As has already been discussed in section 1.3.1, the LS factor of SWB will be the focus of this study. Section 1.3.1 explicated the reasoning behind this decision, specifically, that LS may offer the most clinically meaningful and
stable estimate of SWB. Of equal importance with respect to this decision, is the potential confound that would arise if the affective components were to be used as indicators of SWB. It was discussed in section 1.5 that the affective components of SWB are presently represented, albeit within a separate conceptual framework, in measures of PTH. Thus, if affective components were used to define SWB, and obtained results were to support the discrimination of the groups, a valid criticism would be that the results were confounded by the similarities of the two outcome measures (i.e., the SWB and PTH measures), which would in turn suggest that the groups might actually be discriminated with a "better" unidimensional measure. However, the more likely result would be that the "low-low" group would not be discriminated because such construct overlap could be expected to make it more difficult to find such cases, as well as to seriously cloud the meaning of membership in this group. LS on the other
hand, does not appear to be represented in measures of PTH, thus, it would not be subject to such pitfalls.

With respect to PTH, it must first be considered that this construct is in fact a superordinate class descriptor. The most immediate subordinate classifications to be made of this construct are between internalizing and externalizing symptoms. In addition, this distinction may be most commonly made within the domain of child psychology, marking it as particularly relevant to the present study. Internalizing symptoms can be described as those symptoms in which manifestations are experienced predominantly intrapsychically, such as anxiety, sadness, depression, loneliness, etc. On the other hand, externalizing symptoms, especially in childhood, can be described as those symptoms that are predominantly identified by others (e.g., parents, teachers), such as aggression, truancy, disobedience, destructiveness, hyperactivity, etc. The distinct nature of these domains, namely, the subjective nature of internalizing symptoms versus the more observable, behaviourally oriented nature of externalizing symptoms, would likely demonstrate unique relationships with the variables under investigation in this study, including SWB.

The subjective point of reference for both internalizing symptoms and SWB suggests this is a logical choice of psychopathological domains to investigate in the present study. Furthermore, the evidence reviewed above (e.g., Lewinsohn, Redner, & Seeley, 1991), supporting relationships between PTH and SWB included specific internalizing disorders, such as depression, further supporting this decision. Nonetheless, the relevance of externalizing
symptoms should not be ignored, especially in view of the fact that many children appear to manifest both internal distress and externalizing symptoms (e.g., Gaub & Carlson, 1997; Gould, Bird, & Jaramillo, 1993; Weiss & Catron, 1994). Thus, for the purposes of the present study PTH will be more specifically defined as internalizing and externalizing symptoms (as distinct domains) and SWB will be specifically defined as LS.

As discussed in section 1.6, it is important at this preliminary stage in the development of a DFS to examine constructs at the macroanalytic level, thus, global measures of internalizing and externalizing symptoms will be used. To estimate internalizing symptomatology, a self-report measure will be used, whereas teacher and parent reports will be used to estimate externalizing symptoms. This decision is based on how we define the nature of these two types of symptoms, discussed above.

The terms SWB and PTH will continue to be used in this document, although it has been made explicit that sub-domains of these constructs are what will be assessed. More specific distinctions will be made as necessary.

In sum, what is being proposed is a two-dimensional model of mental health, in which both positive indicators and negative indicators are treated independently and equally. Should results support the existence of the non-unidimensional group, initial evidence supporting the validity and utility of this two-dimensional model will have been obtained.
2. LITERATURE REVIEW

In evaluating the following review of the research literature, the reader should keep in mind that although the focus of the present study will be upon the LS factor of the tripartite model of SWB, evidence pertaining to all three factors will be discussed. Considering that the affective components are known to be related to both SWB and PTH, an understanding of their relationships to the following variables appears appropriate.

Although research findings and theoretical considerations for both children and adults are offered throughout this chapter, the reader should also bear in mind that this study was completed using a child sample. Support for this two-dimensional model in the present study would suggest that the method may be viable using an adult sample as well. However, the same should not be inferred with respect to the specific manner in which the analyses offer their discriminatory power. Developmental issues could certainly be expected to influence the analyses and have different implications for children versus adults (e.g., satisfaction with parents and siblings versus spouse and children; satisfaction with school versus work; adults' greater ability to shape their environments). Adult based research is offered here in addition to child research insofar as it further supports the inclusion and robustness of variables in the present study.
2.1 Temperament

The study of infant and child temperament is a huge field. Child temperament is largely believed to provide the substrate for the developing personality (e.g., Buss, 1989; Prior, Buss & Plomin, 1975, 1984; Crook, Stripp, Power, & Joseph, 1986; Rutter, 1987). Thus, as in the investigation of personality, temperament has often been implicated as a significant predictor variable related to later behavioural adjustment, the development of psychopathology, and general well-being (see Maziade, 1989; Prior, 1992; and Rutter, 1987, for reviews of this large research base). Although the predictive power of temperament appears to be relatively weak when measured in infancy, relationships become stronger as the child grows older, especially from 3 to 5 years on (e.g., Maziade, Côté, Thivierge, Boutin, & Bernier, 1989; McDevitt, 1986; Thomas & Chess, 1982). Note that for the present study, the sample was derived predominantly from children in Grades 4 and 5, well into middle childhood.

One of the pioneering studies investigating longitudinal implications of childhood temperament was Thomas and Chess’ (1977) New York Longitudinal Study (NYLS). Although the authors developed nine dimensions of temperament (Activity, Mood, Intensity of response, response Threshold, Persistence, Approach vs. Withdrawal, Adaptability to new experience, Distractibility, and Rhythmicity, or regularity of biological functions), the most commonly researched cluster has been that of the “difficult” versus “easy” temperament. Originally, this cluster included five of the nine dimensions
(Mood, Approach, Adaptability, Intensity, and Rhythmicity), and numerous studies have shown it to correlate with present and future behavioural adjustment (e.g., Earls, 1981; Prior, Sanson, & Oberklaid, 1989). However, Maziade (1989) reported several studies in which the Rhythmicity dimension, unlike the other four dimensions, failed to load strongly as a “first-order” factor using principal components analysis. Regardless, the predictive utility of this cluster has been well documented.

Some examples of relevant findings using the easy-difficult framework are described next. Maziade, Capéraà, Laplante, Boudreau, Thivierge, Côté, and Boutin (1985) measured temperament twice at age 7 using the Thomas and Chess classification. These ratings were then compared with clinical disorders at age twelve, as assessed by blind ratings of two independent psychiatrists. From 980 subjects for whom data were available, 15 subjects were classified as having an easy temperament and 24 as having a difficult temperament. Of those 15 subjects classified as having an easy temperament at age 7, only one was given a diagnosis at age 12. Of the 24 subjects classified as having a difficult temperament at age 7, 12 had been given a diagnosis, the difference between the two groups being significant at less than .001. In addition, virtually all of the diagnoses were of Oppositional/Externalized type disorders. These results clearly suggest that young children with difficult temperaments are more likely to be given externalizing type diagnoses.

Thomas and Chess (1982) examined the associations between infant/child temperament and later adjustment into adulthood as assessed from
questionnaire and interview data, including an assessment for the presence of clinical diagnoses. The subject pool was derived from the 133 original subjects from the NYLS, for whom temperament data were available for each of the first five years of life. Incredibly, 132 of the original 133 subjects participated in this follow-up study (although not all data were obtained from each subject). Subjects were 18-22 years of age at follow-up. No significant correlations were obtained between overall adult adjustment scores and temperament ratings obtained in the first two years of life. However, for years 3 through 5, all correlations were significant ($p < .05$). Furthermore, when child temperament ratings were correlated only with clinical diagnoses made in the adult interview, years 4 and 5 were both significant ($p < .05$). These results indicate the value of early childhood (but not infant) temperament ratings for predicting adult adjustment 17 years later.

Other frameworks than the "easy-difficult" temperament have been used to investigate temperament as well. Emmons and Diener (1985a) used Buss and Plomin's (1975) EASI-III survey of temperaments along with their own measures of PA, NA, and LS, in two samples of university undergraduates. The EASI-III consists of four temperament scales: Emotionality, Activity, Sociability, and Impulsivity. The results indicated that three of the four EASI-III scales correlated with SWB in predictable ways. Both Emotionality and Impulsivity showed consistent significant relationships with NA, but moderate to non-significant relationships with PA and LS. Sociability showed consistent strong relationships to both PA and LS, but moderate to non-significant relationships with NA. In
addition to identifying relationships between specific temperament characteristics and SWB dimensions, these results offer further evidence for the validity of the tripartite model of SWB. The authors also presented similar results with respect to personality characteristics, which will be described in the next section.

As a component to a series of studies, Costa and McCrae (1980) examined the relationships between adult temperament and PA, NA, and LS. Six temperament scales were assessed (General emotionality, Fear, Anger, Poor inhibition of impulse, Sociability, Tempo, Vigor). For PA and NA, Bradburn’s (1969) scales were used, thus offering the additional Affect Balance Scale (ABS). LS was assessed using the Life Satisfaction Index (LSI), which asked subjects to rate their satisfaction on a five-point scale in nine areas (work, health, money, appearance, self-respect, getting along with others, love, sex, religious faith). The Personal Security Inventory (PSI: Knutson, 1952) was also administered, apparently also a partial measure of LS. Data from the Bradburn scales were collected four times at three month intervals, while the remaining measures were administered once. When the six temperament scales were correlated with the ABS sum, PSI, and LSI, all but one correlation were significant, the exception being between the LSI and Anger scale. The six temperament scales were also correlated with the PA, NA, and ABS at each of the four times Bradburn data were collected. Sixty of the 72 correlations were significant. The most notable exceptions were between the PA and Anger scales (none of the four significant) and the NA and Tempo scales (none of the
four significant). All significant correlations were in the expected directions. In sum, these results offer good evidence for the concurrent relationships between temperamental dimensions in adulthood and the three dimensions of the tripartite model of SWB.

In their prospective study of infants/toddlers, Earls and Jung (1987) assessed the potential relationship between temperament as measured at both two and three years of age and behaviour problems at age three. Thomas and Chess' (1977) nine dimensions of temperament were assessed, as were four variables designed to assess for stressful home environments (marital discord, maternal depressive symptoms, adversity, and number of life events in the past year). A preschool behaviour checklist was completed to assess for problem behaviours at age three. All data were acquired from the mothers of the children. Multiple regression was used to determine which of the 13 variables significantly accounted for unique variance in predicting problem behaviours. Using the data obtained at age 2 to predict behaviour problems at age 3, only “low adaptability” and “high intensity” were entered into the equation, accounting for 30% of the variance ($p < .001$). Using the data obtained at age 3 to predict behaviour problems at age 3, “low adaptability”, “high activity”, and “negative mood” were entered into the equation, accounting for 54% of the variance ($p < .001$). None of the home environment variables entered either equation. As the authors stated, “These analyses reflect the overriding importance of temperament in the origin of behavior problems” (p. 496).
2.2 Personality

With respect to SWB, the literature regarding the personality variables of extraversion and neuroticism has generally demonstrated consistent results: Individuals who score high on measures of extraversion (i.e., socially outgoing, energetic without being impulsive) tend to score higher on measures of PA and LS, whereas those who score high on measures of neuroticism tend to score high on NA and low on LS measures. In a series of studies, Costa and McCrae (1980) examined the influence of extraversion and neuroticism on happiness. Based on previous research, they used specific clusters from the Cattell Sixteen Personality Factor Questionnaire (16PF; Cattell, Eber, & Tatsuoka, 1970), and the Eysenck Personality Inventory (EPI; Eysenck & Eysenck, 1964), both of which they had previously found to be reliable measures of extraversion and neuroticism. To measure affect, they used Bradburn’s (1969) PA, NA, and ABS scales. The authors hypothesized that extraversive traits would influence PA while neurotic traits would influence NA. The relevant results from this longitudinal study were as follows: The authors found neuroticism and anxiety to be more strongly correlated with NA than either PA or the ABS, whereas extraversion correlated more strongly with PA than either NA or (in six out of eight cases) the ABS.\(^2\) They also found significant correlations, in the expected directions, between measures of PA and NA, and measures of extraversion and neuroticism taken ten years earlier, suggesting a potential causal relationship.

\(^2\) The relationship between neuroticism (a personality trait) and anxiety (an internalizing psychopathology) is well known (e.g., Canals, Martí-Henneberg, Fernández-Ballart, Clivillé, & Domènech, 1992; Carey & DiLalla, 1994; Clark, Watson, & Mineka, 1994). Anxiety is discussed here insofar as it supports the inclusion of the Neuroticism variable in the analyses.
between these variables. Specifically, neuroticism scores from Time 1 correlated significantly with NA ($r = .39, p < .001$), and ABS ($r = -.30, p < .001$), but not PA ($r = -.08, ns$) scores at Time 2, whereas extraversion scores at Time 1 correlated significantly with PA ($r = .23, p < .001$), and ABS ($r = .14, p < .05$), but not NA ($r = .03, ns$) at Time 2. The implications of these results are many. First, they lend further support to the tripartite model of SWB by demonstrating the independence of the factors. Second, they demonstrate that extraversion and neuroticism have unique relationships with SWB dimensions. Third, the observed relationships between personality traits and affective components and anxiety suggest some relationship to both PTH and SWB. Fourth, and perhaps most intriguing, they offer preliminary evidence for a causal relationship between personality variables and future outcome in terms of SWB and PTH.

Using other measures of SWB, a similar study by Emmons and Diener (1985a) examined the relationships between the three SWB factors and the 16PF (Cattell et al., 1970). These researchers also found that extraversion correlated significantly with PA ($r = .55; p < .01$) and LS ($r = .35; p < .01$), but not with NA ($r = -.08, ns$). Social boldness also correlated significantly with PA ($r = .48; p < .01$) and LS ($r = .38; p < .01$), but not NA ($r = -.10, ns$). Conversely, several scales related to anxiety (Tenderminded, Guilt Proneness, Tense, and Anxiety) showed strong correlations with NA, but more moderate or non-significant correlations with both PA and LS. Nearly identical results were

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3 The authors did present data regarding life satisfaction that appeared to be consistent with the tripartite model. However, because the authors were using the terms "happiness" and "life satisfaction" interchangeably at times in presenting these results, their exact meaning could not be determined and, therefore, they were not presented in detail here.
obtained when the three SWB factors were correlated with scores from the Eysenck Personality Inventory scales of Extraversion and Neuroticism (EPI: Eysenck & Eysenck, 1964). Furthermore, the EPI Extraversion scale can be broken down into Sociability and Impulsivity subscales. As the authors hypothesized, it was the Sociability dimension of the Extraversion scale for which the relationships to the SWB factors of PA and LS held (Impulsivity showed stronger relationships with NA). Neuroticism scores were consistently related to NA with moderate to non-significant relationships to both PA and LS. The authors summarize these results by stating that high PA is typically associated with extraversion (without impulsivity), high NA with emotional reactivity, interpersonal sensitivity, low self-esteem, and external locus of control, and LS seems to involve a combination of interpersonal skills and internal states (e.g., sociability and self-esteem). Note that these findings hold equal relevance to several of the following sections (e.g., self-concept, interpersonal relationships, locus of control).

In his study of LS in childhood, Huebner (1991c) administered his SLSS (Huebner, 1991b) to children in grades 5-7, as well as a measure of extraversion and neuroticism (the Eysenck Personality Questionnaire-Junior Version; Eysenck & Eysenck, 1975). The correlations with the SLSS were as follows: neuroticism, -0.46 (p < .01); and extraversion, 0.23 (p = .02). These results suggest that as neuroticism increases LS decreases, whereas the reverse seems true regarding extraversion: As extraversion increases so do levels of LS.
Argyle and Lu (1990a) also examined the relationship between both extraversion and neuroticism and PA in their sample of 63 adults. The correlation between extraversion and PA was .37 (p < .01) and -.39 (p < .01) between neuroticism and PA, further suggesting the potential relationship between these two personality variables, PTH, and SWB.

Finally, Pavot, Fujita, and Diener (1997) examined the relationships between self-aspect congruence (i.e., the congruence between "actual" and "ought" self-aspect), SWB dimensions, and Costa and McCrae's (1991) five-factor model of personality (Neuroticism, Extraversion, Openness, Agreeableness, Conscientiousness). The most notable result for present purposes was the strength of the Neuroticism variable, relative to the remaining four personality variables, in accounting for unique variance in SWB variables, beyond that accounted for by the self-aspect congruence variable. Both zero-order and partial correlations (removing the effects of congruence) between the SWB variables of PA and LS, and Neuroticism scores were consistently significant. This was the case for PA data obtained from both self- and peer-report, and LS data obtained by self-report at two time periods and peer-report. These results suggest that Neuroticism may have a uniquely important relationship to SWB dimensions, above and beyond the variance accounted for by self-aspect congruence.

2.3 Self-concept

One of the more important distinctions to be made within the domain of self-concept is between the unidimensional concept of global self-esteem (e.g.,
Coopersmith, 1967; James, 1890) and the multidimensional view which includes one's self-evaluations across various domains (e.g., appearance, abilities). Acceptance of the multidimensional view however, should not preclude the acceptance of global self-esteem as a useful concept. To the contrary, appreciation for both global and specific self-evaluations has led to hierarchical models, with global self-esteem at the apex (Harter, 1996). This section includes research evidence pertaining to both global self-esteem and specific domains of self-concept.

Self-esteem has been demonstrated to be one of the most consistent (positive) correlates of SWB, and LS specifically. In addition, there is evidence supporting this relationship in both childhood and adulthood. Dew and Huebner (1994) administered the Student's Life Satisfaction Scale (SLSS; Huebner, 1991b) which is a global measure of LS, and the Self-Description Questionnaire-II (SDQ-II; Marsh, 1990a) which, among its eleven scales, measures general self-esteem, parent, same, and opposite-sex peer relations, physical abilities and appearance, and verbal, math, and general school performance. The measures were given to 222 adolescents in grades 8, 10, and 12. Among these eleven scales, only one (the Verbal scale) did not demonstrate a significant correlation ($p < .05$) with the SLSS, with seven of the eleven scales showing highly significant relationships (i.e., $p < .001$). Huebner (1994) conducted a similar study, using the Multidimensional Students' Life Satisfaction Scale (MSLSS; which offers LS estimates in five areas), and the Self Description Questionnaire-I (SDQ-I; Marsh, 1990b). The measures were
administered to 413 students in Grades 3-5. Of the four MSLSS dimensions expected to demonstrate their strongest relationships with specific SDQ-I scales, three did so (between MSLSS Family, School, and Self and SDQ-I Parent Relations, General School, and General Self, respectively). The exception was the MSLSS Friends scale, which demonstrated slightly higher relationships with the SDQ-I General Self ($r = .33$) and Parent Relations ($r = .30$) scales than with the Peer Relations scale ($r = .27$; $p < .01$ for all three).

Greenspoon and Saklofske (1997) obtained similar results in their study assessing the validity and reliability of the MSLSS. The authors administered the MSLSS along with the Behavior Assessment System for Children: Self-Report of Personality (BASC-SRP; Reynolds & Kamphaus, 1992) to 75 children in Grades 3-8. The MSLSS Self and Total Scale were expected to correlate significantly with the BASC-SRP Self-Esteem subscale. The correlations were .44 and .41, respectively ($p < .001$ for both). In addition, the Self-Esteem subscale correlated significantly with both the MSLSS Family subscale ($r = .39$, $p < .001$) and School subscale ($r = .21$, $p < .05$). These results indicate that self-esteem appears to be an important correlate with many facets of one's sense of LS.

Another study by Huebner (1991c) asked similar questions of 79 students in Grades 5-7, using the SLSS and the Coopersmith Self-Esteem Inventory (SEI; Coopersmith, 1981). The correlation between the two was .65 ($p < .01$), further suggesting that these two variables are highly related constructs in childhood. Huebner and Alderman (1993) replicated this facet of Huebner's
(1991b) study and obtained a correlation of .65 (p = .01) between the SLSS and the SEI.

Research with adults has offered similar results (Campbell, Converse, & Rogers, 1976; Lewinsohn, Redner, & Seeley, 1991). In his review of the literature, Wilson (1967) found high self-esteem was a common correlate of global happiness. More recently, Campbell (1981) reported the findings from a series of U.S. national surveys conducted between 1957 and 1978. Similar to Wilson’s findings, Campbell also found that, “satisfaction with self ... is strongly related to satisfaction with life in general and, as might be expected, is also associated, though not so strongly, with positive feelings of affect” (p. 217). Emmons and Diener (1985a), in addition to investigating the relationships between personality variables and SWB, looked at self-esteem. Using a step-wise multiple regression analysis, they obtained a regression coefficient of .67 (p < .001) between LS and self-esteem (predicting LS from self-esteem). The Pearson correlation between the two was .26 (p = .01). In sum, it appears that as one’s feelings of self-esteem increase, so do overall levels of LS.

Low self-esteem has also been shown to be associated with increased PTH symptoms. For example, Kliwer and Sandler (1992) administered the 7-item General Self-Worth subscale of the Perceived Competence Scale for Children (Harter, 1982), to 238 children aged 8-16. To assess PTH symptoms, they administered a number of self-report, as well as clinical interview measures, resulting in a PTH symptoms index including both internalizing and
externalizing type symptoms. The resulting correlation between the two was
-.39 (p < .01), indicating that as self-esteem decreases PTH increases.

Patton (1991) conducted a similar study examining the relationship
between depression and a number of self-image variables in a sample of 202
adolescents aged 14-16. Depression level was measured using the 66-item
Children's Depression Scale (CDS; Lang & Tisher, 1978) and self-image was
measured with a 118-item modified version of the Offer Self-Image
Questionnaire (OSQ; Offer & Howard, 1972). A total of ten subscales from the
OSQ were used: Impulse Control, Emotional Tone, Body and Self-Image, Social
Relationships, Morals, Vocational and Educational Goals, Family Relationships,
Mastery/External World, Psychopathology, and Superior Adjustment. Data were
analyzed separately by gender. Of the twenty correlations calculated between
the CDS and OSQ subscales, all were significant at p < .01, with values ranging
from .24 - .67. Not surprisingly, the highest correlations were with the
Psychopathology subscale, however, the consistently significant results for all
subscales offers strong support for the association between depression and
self-concept.

2.4 Interpersonal Relationships

Interpersonal relations can be viewed from several different perspectives,
many of which have demonstrated a positive relationship with LS. People who
have higher numbers of friends, higher quality friendships and parental
relationships, and a higher frequency of general social interactions, tend to
score higher on measures of LS.
Lewinsohn, Redner, and Seeley (1991) conducted a longitudinal investigation of the relationship between LS and several psychosocial variables. Two samples ($N = 998$ and $N = 749$) completed a series of measures twice over a period ranging from three to 11 months. Lewinsohn et al. used their own measure of LS based on those developed by Andrews and Withey (1976), and Campbell, Converse, and Rogers (1976). For sample 1, the correlation between frequency of social contact and LS was .16 ($p < .001$) at Time 1, and .14 ($p < .001$) at Time 2. Sample 2 completed a measure of social support networks, resulting in the following correlations with LS: .34 ($p < .001$) and .35 ($p < .001$) at Time 1 and 2, respectively. These results support the idea that social contact in general is an important aspect in individual evaluations of LS.

Emmons and Diener (1985a) found stronger correlations between LS and social contact. They correlated the results from the Satisfaction With Life Scale (Diener, Emmons, Larsen, & Griffin, 1985) with a “sociability” composite, consisting of the sociability scale from the EASI-III Survey of Temperaments (Buss & Plomin, 1975), and the sociability items from the Eysenck Personality Inventory (Eysenck & Eysenck, 1964). The correlation between LS and the composite was .58 ($p < .001$). Persons who are more sociable show a strong tendency to report higher levels of LS. In a similar longitudinal study (data were collected at four time points every three months), Costa and McCrae (1980) correlated the EASI-III with Bradburn’s (1969) PA, NA, and ABS scales. The EASI-III sociability scale was correlated with the three Bradburn scales for each of the four sets of data, resulting in the following twelve correlations: the four
correlations between PA and sociability ranged from .22 to .24 ($p < .001$ for all), between NA and sociability, the correlations ranged from -.13 to -.20 ($p < .001$ for all), and between ABS and sociability, they ranged from .23 to .29 ($p < .001$ for all). These results indicate that interpersonal relations demonstrate good associations with two of the three SWB variables, and to the extent that the ABS captures LS as Bradburn hypothesized, the third component as well.

Frisch, Cornell, Villanueva, and Retzlaff (1992) included an item assessing the number and quality of close friendships (other than relatives), in their Quality of Life Inventory (a measure of LS). The item-total correlation between this item and the total score was .59 for their sample of 399 college-age students. This strong correlation supports the notion that, as the number and quality of social contacts (i.e., friendships) increases, so does LS in general. Another study by Argyle and Lu (1990b) tested the authors' hypotheses that increased levels of happiness would correlate with increased extraversion (see also section 2.2) and that higher engagement and enjoyment of social activity by extraverts would explain the correlation. They administered their measures of happiness, social activity, and extraversion to 131 university students. The correlation of .46 ($p < .001$) between happiness and extraversion supported the first hypothesis. Further correlational analyses indicated that both enjoyment of, and participation in social activities were significantly correlated with both extraversion and happiness, a pattern suggesting extraverts' greater engagement and enjoyment of social activity, which is positively correlated with happiness. However, using hierarchical multiple regression analysis, and
controlling for the effects of extraversion and gender, it was found that the social enjoyment factors did not predict happiness. The procedure was repeated with social participation factors where withdrawal from social activities (negatively correlated with extraversion) was found to be the most powerful predictor of happiness scores, alone accounting for 11% of the variance. Social activities accounted for another 5% of the variance. The authors' explanation for these results is that “extraverts engage in more social activities, which enhances happiness [and/or] introverts withdraw from social situations, which reduces happiness” (p. 1015).

Huebner and Alderman (1993) have examined similar variables in children, with results in the expected directions. Along with the SLSS (Huebner 1991b) they administered the Children's Loneliness and Social Dissatisfaction Scale (Asher, Hymel, and Renshaw, 1984) to 48 children in Grades 3-6. Increased scores on the second measure indicate lower satisfaction with friendships. The correlation between these two measures was -.56 ($p < .001$). As children become more dissatisfied with their social contacts, there is a strong tendency for them to feel less satisfied with life in general.

Next, recall that the Dew and Huebner study (1994) described in section 2.3 examined the relationship between the SLSS and Marsh’s SDQ. Opposite-sex and same-sex peer relations both demonstrated significant correlations with LS ($r = .33$ and $.29, p < .001$, respectively), with parent relations showing the strongest relationship among all eleven SDQ scales ($r = .62, p < .001$). Similarly, the Greenspoon and Saklofske study (also described in section 2.3)
examined the relationships between the MSLSS and BASC-SRP Relations with Parents (RP), Interpersonal Relations (IR), and Social Stress (SS) subscales. The obtained results of the hypothesized correlations were as follows: .62 between MSLSS Family and the BASC-SRP RP ($p < .001$), .58 between MSLSS Friends and the BASC-SRP IR ($p < .001$), and -.45 between MSLSS Friends and the BASC-SRP SS ($p < .001$). In addition, the RP, IR, and SS subscales correlated significantly with the MSLSS Total Scale (.43, .46, & -.41, respectively: $p < .001$ for all). These results indicate that family and peer relations are not solely related to their respective LS domains, but to one's overall sense of LS as well.

Interpersonal relations have also been shown to be associated with both internalizing and externalizing PTH variables. Boivin, Hymel, and Bukowski (1995) examined the relationships between sociometric peer ratings and depression and loneliness. This longitudinal study ($N = 567$) was conducted in the spring over a six-week period in each of two consecutive years. Subjects were in Grades 4-5 at Time 1. Children rated their classmates on three sociometric measures: Peer Status (a continuous scale with higher scores indicating greater acceptance), Withdrawal (does the child prefer to play alone; shy), and Victimization (e.g., being teased, hit). Children also completed self-report measures of Loneliness and Depression. Of these nine variables with data at two time points, every inter-correlation was significant at $p < .01$ or less. Correlations between the peer and PTH variables at T1 ranged from .15 to .42, with a similar range at T2 (.17 to .41). Correlations between the peer variables
at T1 and PTH variables at T2 (and vice versa) were almost as strong \( (range = .13 - .32) \), while stability coefficients ranged from .52 to .71. In sum, these results provide good evidence for the stable relationships between peer-rated peer relationships and internalizing type PTH.

Results from the Waterloo Longitudinal Project (Rubin, Chen, McDougall, Bowker, & McKinnon, 1995), have also supported the potential importance of relationship factors in the development of both internalizing and externalizing PTH. The study included results for sixty children for whom data were available in Grade 2 and seven years later in Grade 9. Three relevant variables assessed at T1 were Social Withdrawal (SW), Aggression, and Social Competence (SC). These indices are aggregates of peer- and teacher-reports, as well as direct observation ratings. Relevant variables at T2 included a measure of Loneliness, relationship measures of Felt Peer Group Insecurity (FPGI) and Felt Family Group Insecurity (FFGI), and a Delinquency measure. All measures at T2 were self-report. SW was significantly correlated with three of the four T2 variables (Loneliness, .49, \( p < .001 \); FPGL, .45, \( p < .001 \); FFGI, .23, \( p < .05 \)). SC correlated significantly with Loneliness \( (r = -.33, p < .01) \) and FPGL \( (r = -.33, p < .01) \) at T2. Aggression was only significantly correlated with the remaining variable (Delinquency, .33, \( p < .01 \)). Although these data are correlational, the seven year interval been data collection points offers persuasive evidence for the possible role of social withdrawal and the lack of social competence in the development of internalizing PTH, in addition to the role of aggressive tendencies in the development of externalizing PTH.
As a final note, McCallum and Bracken (1993) offer an excellent review of the importance of interpersonal relations between school children and their male and female peers, parents, and teachers. In addition to reviewing assessment and treatment issues, the article reviews the relevant research with respect to the relationships between unhealthy relations in childhood and the increased risk for problems later in life, such as school drop-out, criminality, and marital maladjustment.

2.5 Locus of Control

Locus of control (LOC) refers to the beliefs one holds regarding the degree to which life events are caused by internal forces, as opposed to external forces. Individuals who feel that they are largely in control of their lives (i.e., internal locus of control) consistently tend to score higher on measures of SWB, and LS in particular.

Several studies have been conducted that have examined these relationships in children. Huebner (1991c) administered the Nowicki-Strickland Locus of Control Scale for Children (Nowicki & Strickland, 1973) along with the SLSS (Huebner, 1991b) to a sample of children in grades 5-7 ($N = 79$). Huebner obtained a correlation of $-0.48 (p < .01)$ between the two measures (high LOC scores denote greater externality). Children who believed that events in their lives are caused by external forces tended to be less satisfied with life in general. Dew and Huebner (1994) replicated this facet of the previous study with a sample of adolescents from Grades 8, 10, and 12 ($N = 222$). Similar results were obtained, with a correlation of $-0.52$ between the two measures.
Greenspoon and Saklofske (1997, described in section 2.3) also administered the BASC-SRP Locus of Control (LOC) subscale along with the MSLSS. The LOC was expected to negatively correlate with both the MSLSS Self and Total scale. The obtained correlations were -.21 \((p < .05)\) and -.43 \((p < .001)\), respectively. Interestingly, the highest correlation was between the BASC-SRP LOC and MSLSS Family subscale \((r = -.44, p < .001)\), highlighting the importance of the relationship between a child’s sense of control and satisfaction with family.

Smith, Adelman, Nelson, Taylor, and Phares (1987) wanted to examine the relationship between perceived control specifically within the school context, and its relation to LS. They administered the Perceived Control at School Scale (Adelman, Smith, Nelson, Taylor, and Phares, 1986), with higher scores indicating higher internality, and the Perceived Life Satisfaction Scale (Adelman, Taylor, & Nelson, 1989), to 80 students, ranging in age from nine to 18 years. They obtained a correlation of .48 \((p < .001)\) between the two measures. Children who felt in control in the school setting, tended to be more satisfied with life in general. Using the same two measures, Adelman, Taylor, and Nelson (1989) obtained similar results in their school samples. Although the correlation between perceived control at school and dissatisfaction was weaker \((r = -.29, p < .001)\), post hoc analysis indicated significantly higher dissatisfaction scores for those students whose perceived control at school scores fell in the bottom third of the distribution versus the top third (result of the
initial comparison of the bottom, middle, and top groups was $F[2,462] = 10.81, p < .001$).

Another intriguing finding relevant to this topic regards the survey report by Campbell (1981), cited earlier. Consistent with the research reviewed here, Campbell found that individuals with a low sense of personal control tended to be less satisfied with life as well. However, when an individual suffers from both a low sense of control and low self-esteem, the result appears to be extreme dissatisfaction with life. As Campbell states, “And that small number of people who are both dissatisfied with themselves as persons and convinced that their lives are controlled by external forces have one of the most unrelieved patterns of unhappiness and discontent to be found in the entire population” (p. 220).

LOC has also demonstrated significant associations with PTH variables. In the Kliewer and Sandler study (1992) described earlier (see section 2.3), the Nowicki-Strickland Children's Locus of Control Scale (Nowicki & Strickland, 1973) was also administered. The obtained correlation between this and the PTH symptoms index was .37 ($p < .01$) indicating that with an increased sense of events being controlled externally comes the tendency to experience a greater number of PTH symptoms.

Petrosky and Birkimer (1991) conducted a study investigating the relationships between three LOC subscales and a number of PTH symptom types in a sample of 102 adults. They used Levenson’s LOC scale (1973) which assesses the degree to which one believes events are controlled by personal action (Internal scale), by powerful others (Powerful Others scale), or by chance
(Chance scale). PTH was assessed using the Hopkins Symptom Checklist (Derogatis, Lipman, Rickels, Uhlenhuth, & Covi, 1974) which includes the following five subscales (in addition to the total symptoms scale): Somatization (S), Obsessive-Compulsive (OC), Interpersonal Sensitivity (IS), Anxiety (A), and Depression (D). Ten of the eighteen correlations were significant (one-tailed), with all three LOC scales significantly correlated with D and IS. The Chance and Powerful Others scales were both significantly correlated with the total symptoms and OC scales. Surprisingly, none of the LOC scales were correlated with anxiety. Nonetheless, the majority of relationships were significant, indicating the importance of the relationship between LOC and PTH.

Lastly, in a sample of 211 medical students, Richman and Flaherty (1986) used the Center for Epidemiologic Studies Depression scale (CESD: Radloff, 1977) and correlated responses with those on the Rotter Locus of Control scale (Rotter, 1966). The correlation between the two was .20 ($p < .01$), indicating that an external LOC is significantly associated with growing levels of depression.

2.6 Additional Evidence From the Field of Stress Resiliency

With respect to the variables reviewed above, additional support for their role in the development of psychopathology comes from research in the field of childhood resiliency. Resiliency refers to those children growing up in what are known to be at-risk environments for the development of PTH (e.g., inner city slums, low socio-economic status, abusive or neglectful homes) yet who do not go on to develop mental illness. Cederblad, Dahlin, Hagnell, and Hansson
(1994) review some of the consistent findings in this field. Investigators have found the following factors (relevant to the present study) to be associated with increasing resilience: temperament (Smith & Prior, 1995); attachment (Egeland, Carlson, & Sroufe, 1993; Egeland & Farber, 1984) social capacity (Rutter, 1979; Rutter, Maughan, Mortimore, & Ouston, 1979; Werner, 1989); positive self-esteem (Bleuler, 1978; Rutter, 1979; Werner, 1985); and inner locus of control (Werner, 1985; 1989). To avoid repetition/redundancy, these studies will not be described, however, an awareness that the factors to be assessed in the present study also appear relevant in the childhood resilience literature offers further support for their relevance within a DFS of assessing mental health.

2.7 Statement of Research Questions and Goals

For the present study, the LS factor of SWB will be assessed, thus, SWB will be operationally defined as LS. For PTH, both internalizing and externalizing symptoms will be assessed. These will be generally defined as psychological symptoms (PS).

In summary, the central question which this study was designed to address is as follows: Is the group of children who can be characterized as exhibiting low levels of both LS and PS identifiable different, or unique, with respect to those variables known to be related to both LS and PS independently which were assessed in the present study, when compared to those children who exhibit and inverse relationship between LS and PS (i.e., the unidimensional perspective)? Gathering relevant information that addresses this question is considered the primary goal of this dissertation.
Should the results of this study support the hypothesis that the group of low LS - low PS children do indeed appear unique as compared to the other two "unidimensional" groups, the central questions then become: a) What are the variables assessed in the study which serve to discriminate the groups? and, b) What is the nature of the relationships between the groups and the variables (i.e., how do the discriminating variables differentially relate to the three groups)? Gathering relevant information that addresses these questions is considered the second goal of this dissertation. Such analyses will serve to offer the foundation for a conceptual framework of a DFS of assessing mental health.
3. METHOD

As should always be the case, the choice of statistical analyses fell naturally from the goals of the study. Discriminant Function Analysis (DFA) is optimally suited to addressing both the primary and secondary goals of this study, as outlined in section 2.7.

With respect to the first goal (i.e., can the three groups be predicted from scores on the variables assessed in the study), it is exactly this type of question for which DFA was developed. Furthermore, results are obtained regarding the accuracy of prediction for each group separately, as is information regarding inaccurate predictions.

With respect to the second goal (i.e., what is the nature of the relationships between groups and predictor variables), DFA offers several methods to assess such relationships, for example: a) it can identify which variables among those entered provide the greatest discriminating power; b) when more than one function is calculated (the present case) it identifies which groups or combination of groups the variable is best discriminating (e.g., Group 1 from 2 and 3, Group 2 from 1 and 3, etc.); c) through examination of group mean scores, information regarding the nature of the relationship between groups and the variable is obtained; and, d) in addition to information
concerning the relationships between groups and predictors, pooled within-group correlations indicate how predictor variables relate to each other.

At this juncture, it is important to state one function that DFA does not perform, namely, it cannot be inferred that groups are conceptually unique typologies simply because they have been adequately discriminated. For instance, it is also possible that the "groups" represent dimensional constructs rather than typological ones. However, statistical procedures rarely, if ever allow a determination of whether an inferred psychological taxon actually exists. Rather, theoretical psychological entities are defined by the substantive interpretation allowed through the analysis of relevant indicators (Meehl, 1995). Meehl (1992) also recommends that, should statistical data suggest a taxon exists, the stance should be to revise the theory and not discard the facts. The implications for the present study are apparent: Although no results will "prove" the existence of the hypothesized typology, putative evidence can be obtained through substantive interpretation and theory revision.

3.1 Subjects

Written parental consent was obtained for each subject and child assent was obtained prior to testing, with the understanding that participation could be discontinued at any time without prejudice. The consent form is presented in Appendix A. Of 779 consent forms given to children to take home to their parents, 491 were returned for a consent rate of 63%. Of those 491 children, 410 completed the questionnaires. The remaining 81 children for whom consent was obtained did not complete the measures for the following reasons: 28 were
absent on the day of testing; 26 chose to discontinue either prior to, or during the administration; 18 were unable to finish in the available time; 1 was too old; and 8 did not participate due to teachers' misunderstanding of the returned consent forms (i.e., 2 teachers mistook the parents' wishes not to participate themselves as no consent for the child).

Of the 491 consent forms received from the parents, 409 parents (83.3%) were willing to participate in the study themselves. Of these 409, 345 parent questionnaires were ultimately sent home to the parents. Of the 345 parent questionnaires sent, 249 were returned (72.2%). Thus, parent data are available for a subset of 249 of the 410 child subjects (60.7%). Teachers completed their questionnaires for the entire sample of 410 cases.

The sample was obtained from 17 schools in Saskatoon and surrounding areas. The sample consisted of 6, 199, 195, and 10 children from grades 3 through 6, respectively (the Grade range was in part determined by the available measures). Fifty percent of the sample was male. The mean age of participants was 10.5 years ($SD = .70$). The subsample for which parent data were available consisted of 2, 120, 123, and 4 children from grades 3 through 6, respectively. 53.8% of this subsample was female. The mean age for the subsample was 10.5 years ($SD = .68$).

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4 The remaining 64 parents were not sent questionnaires because their children were among those who had not completed the measures. These parents were sent a letter of explanation instead.

5 The few children from Grades 3 and 6 were the result of administration in split classes (e.g., a Grade 3/4 or 5/6 class) in which these children nonetheless met the age requirements for the measures.
3.2 Measures

Assessment of Interpersonal Relations (AIR; Bracken, 1993). The AIR is a self-report measure for children and adolescents between the ages of 9-19 years. The AIR is used to assess the quality of relationships with mothers, fathers, male peers, female peers, and teachers. Each of the five scales consists of 35 items and uses a four-point Likert scale. The same 35 items are repeated for each of the five relationships being assessed, for a total of 175 items. Responses to the five scales are also combined to provide a Total Relationship Index (TRI).

The AIR was normed on a total of 2501 subjects from Grades 5-12. Coefficients alpha for the five subscales and TRI are excellent. The values are as follows: Mother, .95; Father, .96; Male Peers, .94; Female Peers, .94; Teachers, .93; and, TRI, .96. Gender norms were used to calculate t-scores, from the norms available for children aged 9-11 years.

Behavior Assessment System for Children (BASC; Reynolds & Kamphaus, 1992). The BASC is a multi-scale behaviour rating measure designed for the multi-informant evaluation of children. Its three versions allow for parent-, teacher-, and self-report. These are the Parent Rating Scales (BASC-PRS), Teacher Rating Scales (BASC-TRS), and Self Report of Personality (BASC-SRP), respectively. The BASC underwent extensive psychometric testing during its development, based on large representative samples. Norms were created by age, gender, and clinical status.
Subscales from all three forms were used in the present study. Gender norms were used to calculate t-scores, from the norms available for children aged 8-11 years. Within forms, there is no item overlap between any scales.

To assess internalizing PS, three subscales of the BASC-SRP were used. The three subscales, also referred to as the SAD Triad composite, were the Social Stress (S), Anxiety (A), and Depression (D) subscales. The subscales consist of 12, 17, and 17 items, respectively. The standardization sample consisted of 5413 subjects, not including the clinical norm sample which was not used in this study. The subscales demonstrate high internal consistency, with coefficients alpha of .81, .87, and .88 for S, A, and D, respectively.

The Locus of Control subscale from the BASC-SRP was also administered to the children. This scale from the BASC-SRP consists of 16 items, with coefficient alpha = .87. Aside from the Nowicki-Strickland Locus of Control Scale for Children (Nowicki & Strickland, 1973), a research instrument published 25 years ago, this scale appears to be the only published child measure of locus of control for children available today, and the only scale having undergone extensive standardization.

Participating parents completed the Externalizing composite of the BASC-PRS. This composite consists of the Hyperactivity (H), Aggression (Ag), and Conduct Problems (C) subscales. The subscales consist of 10, 13, and 11 items, respectively. The standardization sample consisted of 1817 subjects, not including the clinical norm sample which was not used in this study. The subscales demonstrate good internal consistency, with coefficients alpha of .74,
.83, and .71 for H, Ag, and C, respectively. Alpha = .89 for the Externalizing composite.

Participating teachers completed the Externalizing composite of the BASC-TRS. Like the BASC-PRS, this composite consists of the Hyperactivity (H), Aggression (Ag), and Conduct Problems (C) subscales. The subscales consist of 13, 14, and 10 items, respectively. The standardization sample consisted of 876 subjects, not including the clinical norm sample which was not used in this study. The subscales demonstrate good to excellent internal consistency, with coefficients alpha of .93, .95, and .77 for H, Ag, and C, respectively. Alpha = .95 for the Externalizing composite.

The BASC manual reports extensive validity/reliability data, including both short- and long-term stability (i.e., test-retest reliability), interrater reliability, correlations with other instruments, profiles of clinical groups, and comparison with expert judgements. Overall, the results indicate very sound psychometric properties for the BASC.

*EAS Temperament Survey for Children* (EAS, Buss & Plomin, 1984). The EAS is a 20-item survey offering an index of four dimensions of childhood temperament: Emotionality, Activity, Sociability, and Shyness. A five-point, Likert scale response format is used. Two forms of the EAS were used in the present study, the EAS Temperament Survey for Children: Parental Ratings (EAS-PR) and Teacher Ratings (EAS-TR).

The EAS-PR was a revision of the authors’ older parental rating scale, the EASI-II (Buss & Plomin, 1975). The most significant alteration in the scale was
the addition of the Sociability scale in addition to the Shyness scale, a
distinction the authors state was not commonly made among researchers. The
Sociability scale was based on the EAS Temperament Survey for Adults
Sociability scale. At least one subsequent study has supported the conceptual
and empirical distinction of these two scales, in other words, that non-shyness
cannot be equated with sociability (Boer & Westenberg, 1994). A second
notable alteration was the removal of the older Impulsivity scale.

The manual reports very little data with respect to the psychometric
properties of this research instrument. Internal consistencies averaged .83, and
one-week retest correlations ($N = 31$; mean age = 3.6 years) ranged from
.58 -.80.

The EAS-TR was also a newly created instrument, essentially a modified
version of the EAS-PR. No psychometric data are reported for this new
measure.

*Abbreviated Form of the Revised Junior Eysenck Personality
Questionnaire* (JEPQR-A; Francis, 1996) This abbreviated version of the
81-item Junior Eysenck Personality Questionnaire (Eysenck & Eysenck, 1975)
is a children's self-report measure consisting of 24 items, which uses a yes/no
format. The measure was developed for those “research situations in which time
constraints only permit the use of a small number of items” (Francis, 1996, p.
835), an important consideration in the present study. The measure assesses
Eysenck’s three personality dimensions of Extraversion, Neuroticism, and

57
Psychoticism, as well as including a Lie scale. Each scale consists of six items with no overlap.

The starting point for the JEPQR-A was Corulla's (1990) 48-item short-form of the Revised Junior Eysenck Personality Questionnaire (JEPQR-S), a measure currently being employed in research studies. The JEPQR-S was administered to 1597 adolescents aged 13-15 years. Six of the 12 items from each scale were then chosen based on: a) the item-test correlations, and b) domain representation. The resulting coefficients alpha for the four JEPQR-A scales were marginal, however, sufficiently satisfactory for a large sample research study. The values were as follows: Extraversion, .66; Neuroticism, .70; Psychoticism, .61; and, Lie scale, .57. Values for the JEPQR-S ranged from .68 - .79.

Correlations between the JEPQR-S and JEPQR-A were very high. The values were as follows: Extraversion, .91; Neuroticism, .92; Psychoticism, .88; and, Lie scale, .89. Obviously, the fact that the entire JEPQR-A sample was also included in the JEPQR-S sample would significantly inflate the correlations. Nonetheless, the magnitude of the relationships indicates that the two measures are roughly equivalent.

In sum, this research instrument would appear to demonstrate acceptable psychometric properties and “is recommended as a good functional equivalent to the 48-item short-form” (Francis, 1996, p. 835).

Multidimensional Students’ Life Satisfaction Scale (MSLSS; Huebner, 1994). The MSLSS is a 40-item self-report questionnaire which was constructed
to measure children's subjective perceptions of life satisfaction in five conceptually relevant domains: Family, Friends, School, Self, and Living Environment. In the first of two studies (Huebner, 1994) the MSLSS included 70 items and was administered to 312 students in Grades 3-8. Huebner reported that the readability of the initial 70-item research instrument was assessed at a grade level of 1.5 by the Flesch-Kincaid readability formula (Rightsoft Inc., 1987). Using exploratory factor analysis, only those items with factor loadings of .30 or greater were maintained, resulting in the 40-item, five-factor scale, with each factor having internal consistency values greater than .80. The 40-item version contains more positively than negatively worded items because a disproportionate number of negative items from the original 70 items failed to meet retention criteria. These results are consistent with Marsh's (1986) findings that children, up to age ten, are often confused by negative self-report items (see also Marsh, Barnes, Cairns, & Tidman, 1984). Marsh has suggested that these findings reflect a cognitive-developmental phenomenon, signaling to test-developers that they should exercise caution when including negative items in self-report measures for young children.

For Study 2, the 40-item version was administered to 413 students in Grades 3-5. In addition to replicating the factor analysis procedure used in Study 1, Huebner examined the relationships between the MSLSS and relevant measures to assess convergent and discriminant validity, as well as relationships between the MSLSS and demographic variables. The results from
Study 2 replicated those of Study 1 and offered initial convergent and discriminant validation for the MSLSS scales.

A subsequent investigation of the psychometric properties of the MSLSS offered further support for its validity (Greenspoon & Saklofske, 1997). The results of this study of 314 students in Grades 3-8 cleanly replicated the five-factor structure, demonstrated acceptable internal consistency and one-month stability, found meaningful relationships to several self-reported variables known to be associated with LS, and supported the validity of the MSLSS total score as a measure of global life satisfaction. Greenspoon and Saklofske (in press) also assessed Huebner's five-factor model by means of confirmatory factor analytic procedures (using the SPSS LISREL statistical package). The results of this study also demonstrated acceptable factor loadings, internal consistency for all scales, and goodness of fit indices.

In short, the results of these studies clearly identified five separate and replicable factors, each of unique conceptual meaning showing considerable face validity. The studies demonstrate sound psychometric properties of the MSLSS, with respect to both its validity and reliability.

The SPPC is an oft used measure of children's self-concept. The manual offers limited psychometric data, without standardized norms. Data were derived from four samples, with subjects being children from Grades 3-8. All told, the samples consisted of 1543 subjects. Across samples, coefficients alpha ranged from .71 - .86 for the six scales. However, the manual states that three items were subsequently replaced/revised "to improve reliability" (p. 12). No data are reported for the new items.

Factor analysis results are also reported for the five specific subscales (i.e., all but the Global Self-Worth scale), from three of the four samples. The results very clearly identified the five factors with all items loading highest on their own factor and no complex variables (i.e., no significant loadings on more than one variable).

3.3 Procedures

All children's self-report measures were administered in the classroom setting. Non-participating students either remained at their desks and engaged in a neutral activity (e.g., silent reading) while the measures were being completed, or alternatively, were sent to another room (e.g., library) to engage in tasks not critical to the school curriculum (e.g., reading). The choice of which alternative to use was based on the teachers' requests, with only one of the alternatives used for a given classroom. One researcher and a class teacher were present during completion of the measures. The researcher first ensured that child assent had been obtained, and then read the general instructions aloud for all measures at the outset, so that children could complete the
measures at their own pace. The researcher remained available for questions during the administration.

Approximately 150 minutes of class time was required for the children to complete the measures (341 items in total). Seeing as this amount was sure to exceed the uninterrupted attention capacity of most children of this age, the measures were administered over two, 75 minute sessions, in all instances having taken place in the same day. Furthermore, two different orderings of the measures were used, to help control for possible order effects. Table 3.1 outlines the ordering of the measures. The following considerations were used in determining the order of the measures. First, the AIR and SPPC appeared to be the most challenging measures for the children to complete, thus these measures were always placed at the beginning of a session so that directions were fresh in the children’s minds. The BASC, with its predominantly psychopathological content, was not given as the last measure in a session to minimize the potential for children being left feeling uneasy. For this reason the MSLSS, a more “positive” measure, was used to end a session when possible. Finally, the measures were ordered so that each session would be of roughly equivalent time, otherwise the longer session would have increased the tax on children’s attention span.

Teachers from participating classrooms completed the 20-item EAS-TR and the Externalizing composite of the BASC-TRF for each subject. Teachers were given the materials on the day of administration of the child self-report measures and were asked to complete them in a period of two weeks.
Table 3.1 Order of Presentation for the Measures

<table>
<thead>
<tr>
<th></th>
<th>Order A</th>
<th>Order B</th>
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</thead>
<tbody>
<tr>
<td><strong>First Session</strong></td>
<td>Introduction</td>
<td>Introduction</td>
</tr>
<tr>
<td></td>
<td>SPPC</td>
<td>AIR</td>
</tr>
<tr>
<td></td>
<td>BASC</td>
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<tr>
<td></td>
<td>MSLSS</td>
<td></td>
</tr>
<tr>
<td><strong>Second Session</strong></td>
<td>AIR</td>
<td>SPPC</td>
</tr>
<tr>
<td></td>
<td>JEPQR-A</td>
<td>JEPQR-A</td>
</tr>
<tr>
<td></td>
<td></td>
<td>BASC</td>
</tr>
<tr>
<td></td>
<td></td>
<td>MSLSS</td>
</tr>
</tbody>
</table>

Parents of participating students were asked if they would be interested in completing a questionnaire about their children as part of the study. However, parent participation was optional and not required for child participation (in order to not unduly negatively affect the consent rate). The request for parent participation accompanied the initial study description and consent form that the children brought home to their parents. The parent questionnaires were given to the children of participating parents on the day of testing to take home to their parents. The EAS-PR and Externalizing composite of the BASC-PRF, along with instructions, were placed in a sealed envelope which also contained a self-addressed, stamped return envelope.

All identifying information was removed after all data had been collected and prior to data entry. Thus, participation was essentially anonymous. Furthermore, the format of the statistical analyses to be performed is sufficiently general to ensure that no participants can be inadvertently recognized.
3.4 Statistical Decisions

The most difficult statistical decision regards the basis for determining group membership for the discriminant analyses. Specifically, what will be the cutoff score with which a child is determined to be either “high” or “low” on the measures of PS and LS? In light of the exploratory nature of the study, it was considered appropriate, if not necessary, to run the statistical analyses using several criteria, as follows.

First, the use of standardized measures simplifies this task somewhat, in that t-scores are often provided that signal borderline and clinical elevations. For this study, a t-score of 60 (Borderline elevation) was used for the measures of psychopathological symptoms. Using any higher t-score would risk classifying children exhibiting significant symptoms in the group of primary interest, namely, the low-low group, while using lower t-scores risks losing its meaning (e.g., classifying a t-score of 51 in the “high” PS group). Unfortunately, no standardized norms exist for the MSLSS, thus, sample norms were created and converted to t-scores. For the LS scores, a t-score of 40 was used as the cutoff, for similar reasons to those discussed above. Specifically, using a lower t-score would increase the risk of including dissatisfied children in the “well-adjusted” group while a higher t-score becomes less meaningful. The use of such t-score cutoffs (i.e., 60 for PS and 40 for LS) is expected to result in most children being classified in the well-adjusted group.

A second alternative is to create percentile splits, removing a middle portion of the sample based on PS and LS scores separately, and subsequently
combining the two scores to create the groups. This procedure is desirable in that it removes borderline cases from the analyses, however, its effect on sample size, and therefore statistical power, is unknown because the middle group would be removed from the two groups separately (i.e., from both the PS and LS scores), and only cases with a score on both variables are included. With these factors in mind, two percentile split methods were used: a 35-30-35 percentile split (emphasizing the removal of borderline cases), and a 40-20-40 split (giving more weight to the retention of cases, increasing statistical power).

A third, parsimonious method is a simple split based on mean scores for the two variables. Like the t-score method, this method maximizes statistical power (all cases are retained). However, by including borderline cases it does so at the risk of masking real differences between the groups, also a risk for the t-score method.

Finally, in addition to the above mentioned methods used to classify cases, there are also numerous variables available upon which to base the classifications. For LS data, these include the five subscales and Total Scale of the MSLSS, while for PS data, these include the three BASC subscales and composite scales for each of the self-, teacher-, and parent-report versions used. It is unknown which combination of these variables may offer the greatest discriminating power in the analyses. Table 3.2 lists all variable groupings that were investigated.

In light of the exploratory nature of this study, performing several runs of the analyses using a number of different decision rules and variables is
<table>
<thead>
<tr>
<th>LS Variable</th>
<th>PS Variable</th>
<th>Classification Split Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>MSLSS Total Score</td>
<td>BASC-SRP Composite</td>
<td>Mean Score</td>
</tr>
<tr>
<td>MSLSS Total Score</td>
<td>BASC-SRP Composite</td>
<td>t = 40/60</td>
</tr>
<tr>
<td>MSLSS Total Score</td>
<td>BASC-SRP Composite</td>
<td>40%-20%-40%</td>
</tr>
<tr>
<td>MSLSS Total Score</td>
<td>BASC-SRP Composite</td>
<td>35%-30%-35%</td>
</tr>
<tr>
<td>MSLSS Total Score</td>
<td>BASC-TRS Composite</td>
<td>Mean Score</td>
</tr>
<tr>
<td>MSLSS Total Score</td>
<td>BASC-TRS Composite</td>
<td>t = 40/60</td>
</tr>
<tr>
<td>MSLSS Total Score</td>
<td>BASC-TRS Composite</td>
<td>40%-20%-40%</td>
</tr>
<tr>
<td>MSLSS Total Score</td>
<td>BASC-PRS Composite</td>
<td>35%-30%-35%</td>
</tr>
<tr>
<td>MSLSS Total Score</td>
<td>BASC-PRS Composite</td>
<td>Mean Score</td>
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<td>BASC-PRS Composite</td>
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<tr>
<td>MSLSS Total Score</td>
<td>BASC-PRS Composite</td>
<td>35%-30%-35%</td>
</tr>
<tr>
<td>MSLSS Total Score</td>
<td>BASC-SRP Anxiety</td>
<td>40%-20%-40%</td>
</tr>
<tr>
<td>MSLSS Total Score</td>
<td>BASC-SRP Depression</td>
<td>40%-20%-40%</td>
</tr>
<tr>
<td>MSLSS Total Score</td>
<td>BASC-SRP Composite</td>
<td>40%-20%-40%</td>
</tr>
<tr>
<td>MSLSS Family</td>
<td>BASC-SRP Composite</td>
<td>40%-20%-40%</td>
</tr>
<tr>
<td>MSLSS Friends</td>
<td>BASC-SRP Composite</td>
<td>40%-20%-40%</td>
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<tr>
<td>MSLSS School</td>
<td>BASC-SRP Composite</td>
<td>40%-20%-40%</td>
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<td>MSLSS School</td>
<td>BASC-SRP Composite</td>
<td>40%-20%-40%</td>
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<tr>
<td>MSLSS School</td>
<td>BASC-SRP Social Stress</td>
<td>40%-20%-40%</td>
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<tr>
<td>MSLSS School</td>
<td>BASC-SRP Anxiety</td>
<td>40%-20%-40%</td>
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<tr>
<td>MSLSS School</td>
<td>BASC-SRP Depression</td>
<td>40%-20%-40%</td>
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<tr>
<td>MSLSS Self</td>
<td>BASC-SRP Social Stress</td>
<td>40%-20%-40%</td>
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<tr>
<td>MSLSS Self</td>
<td>BASC-SRP Anxiety</td>
<td>40%-20%-40%</td>
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<td>40%-20%-40%</td>
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<tr>
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<td>BASC-TRS Composite</td>
<td>40%-20%-40%</td>
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<tr>
<td>MSLSS Friends</td>
<td>BASC-TRS Composite</td>
<td>40%-20%-40%</td>
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<tr>
<td>MSLSS School</td>
<td>BASC-TRS Composite</td>
<td>40%-20%-40%</td>
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<tr>
<td>MSLSS Self</td>
<td>BASC-TRS Composite</td>
<td>40%-20%-40%</td>
</tr>
<tr>
<td>MSLSS Living Environment</td>
<td>BASC-TRS Composite</td>
<td>40%-20%-40%</td>
</tr>
<tr>
<td>MSLSS Total Score</td>
<td>BASC-PRS Composite</td>
<td>40%-20%-40%</td>
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<tr>
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<td>BASC-TRS Conduct Problems</td>
<td>40%-20%-40%</td>
</tr>
<tr>
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<td>BASC-TRS Hyperactivity</td>
<td>40%-20%-40%</td>
</tr>
<tr>
<td>MSLSS Total Score</td>
<td>BASC-TRS Aggression</td>
<td>40%-20%-40%</td>
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</tr>
<tr>
<td>MSLSS School/Self</td>
<td>BASC-SRP Composite</td>
<td>40%-20%-40%</td>
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considered acceptable, if not warranted. The impact on Type II error rates simply indicates that any significant results must be considered tentative and in need of replication. Yet replication is considered a necessary step in the development of all new conceptual frameworks. To design this exploratory study with the aim of preserving the conventional yet arbitrary cutoff of “five chances in one hundred” for Type I error is to unduly sacrifice the chances of uncovering valid, meaningful, yet presently unknown relationships between PTH and SWB, in terms of how several important variables may help us to describe meaningful differences between groups using the DFS of assessing mental health.

3.4.1 Description of the Discriminant Function Analytic Procedures

For all DFA’s performed on the entire data set, a total of 23 predictor variables were included in the analyses. These included: the five subscales of the AIR; the AIR Total Relationships Index; the number of parents living at home as reported on the AIR; “Opposite Sex” and “Same Sex” scales (created from the AIR Male and Female Peers scales); the BASC Locus of Control scale; the six subscales of the SPPC; the four subscales of the EAS - Teacher Ratings; and the JEPQ-R-A Extraversion, Neuroticism, and Psychoticism subscales. For the analyses performed on the data set for which parent data were available, four additional predictor variables were included (the EAS - Parent Rating subscales), for a total of 27 predictor variables. In sum, these variables represent all available data for which any potential discriminating power between groups existed.
Next, the stepwise method of variable entry/removal was used in the discriminant analyses. In light of the large number of available predictor variables, this method helped to ensure that only non-redundant variables offering significantly greater discriminating power to the analyses were included. \( F > 3.84 \) was the criterion for entry and \( F < 2.71 \) was the criterion for removal. The reader should be careful not to conclude that variables not entered into the analyses failed to account for a significant amount of discriminating variance. Indeed, in the present analyses the great majority of variables were noted to show significant relationships with respect to group membership when viewed independently, however, the stepwise method requires that a variable must demonstrate a statistically significant increase in variance accounted for, above those variables entered in previous steps, with the one most significant variable at each step being entered. Thus it is possible, for example, that the "second" most significant variable (when viewed independently) not even enter an analysis, when it is the case that most of its significant variance overlaps with the variable entered on the first step.

The decision whether to use the stepwise or direct method of variable entry was a difficult one. Essentially, the main concern was that if meaningful interpretations of the results of several DFA's were to be made, each with dozens of discriminating variables, any interpretation would become entirely confusing, hence, meaningless.

Related complications were evident as well. First, it was a safe assumption that the high-low and low-high groups would be quite different on most
variables, thus univariate tests of equality of group means were likely to be significant regardless of specific scores for the group of primary interest, the low-low group. Determining the variables on which this group significantly differed from the others would require hundreds of independent samples t-tests if all variables needed to be analyzed. Again, this would probably be more confusing than elucidating as the number of relationships to be integrated grew, along with the probability of a number of those significant relationships being spurious.

Nonetheless, the direct method of variable entry was examined for the various analyses in order to aid in the final determination, with only minimal changes observed in the discriminating power of the DFA's. Furthermore, in some instances the stepwise method offered significantly better discrimination. The result of using the direct entry method in these analyses would be to necessitate trying to conceptually integrate many more variables with respect to inferior results, i.e., using more to say less. Some follow-up analyses were also performed, using the direct entry method with those variables entered stepwise removed. In some cases, classification rates dropped to chance levels, indicating that the variables entered stepwise were indeed the most important in terms of discriminating power.

The results of using either method were compared in detail, with the stepwise method clearly appearing more appropriate. Although the possibility that an important variable was excluded cannot be unequivocally ruled out, it should be noted that several DFA's are reported in the present study. Thus,
even using the stepwise entry method, the opportunity existed for important variables to surface in more than one analysis. The advantages to interpretability clearly outweighed the minimal possibility that overall, key variables would be missed.

A full description of the DFA procedure and results will be given for the analyses which offered clearly superior discriminating power. Furthermore, the summary table (also known as a "confusion matrix") will be presented for those DFA's in which poor results were also considered of theoretical interest.

For all the analyses, Group 1 refers to the high LS - low PS cases, Group 2 refers to the low LS - high PS cases, and Group 3 refers to the low LS - low PS cases (i.e., the group of primary interest). The issue remains of how to refer to the groups in a more conceptually meaningful manner. Thus, the groups may alternatively be referred to as “well-adjusted” (Group 1), “distressed” (Group 2), and “dissatisfied” (Group 3), recognizing that these labels offer rough conceptual approximations at best.
4. RESULTS

4.1 Data Screening

As outlined in Tabachnick and Fidell (1989), different procedures are used for the screening of grouped data, such as in discriminant function analysis, and ungrouped data, as in multiple regression. When screening grouped data, one essentially conducts a separate screen for each of the groups to be classified. Due to the numerous separate analyses performed in this study, this procedure was not deemed feasible for all attempted classifications, nor necessary. Specifically, dozens of classification schemes were investigated in the present study, each including the three groups of interest. Many of the classifications created were not expected to offer superior discrimination, nonetheless, this assumption needed to be confirmed. Of the dozens of classifications created, only a small handful offered clearly superior discrimination of all three groups. Thus, conventional data screening procedures for grouped data were only performed after the discriminant function analyses had been conducted, and only for those classifications that had proven to be superior.

Nonetheless, some indication as to the quality of the data set was desired prior to the analyses, thus the entire set was screened using conventional procedures for ungrouped data. Although not entirely adequate for grouped data, this course of action does appear appropriate as an initial screen for the
present study. It offers some means of initially assessing the data set with respect to statistical assumptions prior to analysis.

Thus, prior to analyses the data were examined for accuracy of data entry and missing values. Of the total sample of 410 cases, three were deleted due to a large amount of unanswered items, reducing the sample size to 407 cases, and 247 cases for the parent-data subsample (from 249 cases). Of the three deleted cases, one did not complete the AIR Male Peers subscale, a second missed 15 of 35 items on the AIR Female Peers subscale, and the third subject missed 11 of 17 and 9 of 12 items on the BASC-SRP Depression and Social Stress subscales, respectively. With these three cases removed, the proportion of missing values for a given scale per subject was found to be very acceptable.

In calculating the numerous scale scores, all missing items were replaced with the subject's mean score for that scale. Thus, there are no missing data in the scale scores used for the analyses. Where available, published standardized scores were used for analyses. This includes the BASC and AIR. For the remaining measures (i.e., EAS, JEPQR-A, MSLSS, SPPC), local norms based on the current data set were created and scores were converted to t-scores.

In light of the evidence that boys and girls will often differ with respect to many of the constructs measured by the instruments in this study (e.g., Bracken, 1993; Buss & Plomin, 1984; Eysenck & Eysenck, 1975; Feiring & Lewis, 1989; Francis, 1992, 1993, 1996; Harter, 1985; McCallum & Bracken, 1993; Reynolds & Kamphaus, 1992), gender t-scores were used for all
measures except the MSLSS. Both the BASC and AIR provide standardized norms by gender. Gender norms were created for the remaining measures.

Although several of the scales demonstrated some level of skewness and/or kurtosis, none was deemed significant enough to warrant variable transformation, other than the transformation to t-scores.

Eleven multivariate outliers were identified though Mahalanobis distance with $p = .001$. Using a t-test for the equality of means, comparison of the variable means of outliers to the remainder of the sample revealed no significant differences at $p = .01$, when equality of variance was not assumed. Visual inspection of the eleven cases individually indicated that their scores tended to be significantly higher or lower than the mean for that variable, but there were no variables in which most or all outliers consistently scored either high or low. In other words, their scores showed great variability, and no clear pattern. Next, the multiple regression data screen for all 407 cases resulted in no cases with residuals above three standard deviations of the mean residuals score. Finally, virtually all scores on the independent variables were within 3.67 standard deviations ($p = .001$) of the mean for the particular scale for the entire sample. The rare instance that was greater than this value is not unusual in a sample of this size. In sum, it was decided that the eleven outliers would remain in the sample as they appeared to belong to the intended target population and no clear pattern was discernible as to how they might affect the analyses.
4.2 Classification 1: Using Self-Report PS Data

Of the three sources of PS data available, self-report data consistently offered overall superior classification results. Thus, the first classification to be described is one for which self-reported levels of PS were used. Second, the classifications based on total scale scores for both LS and PS also offered among the most superior discriminations, thus, this first classification to be described was derived from the MSLSS Total Score and the BASC-SRP composite scale. Finally, of the four methods used to divide cases into groups, the 40-20-40 percentile split method appeared to offer the best balance between retaining cases and highlighting group differences, thus, the DFA based on this classification method is presented here. Of the original 407 cases, 237 were retained in the analysis. Of these cases, 103, 104, and 30 were classified in Groups 1, 2, and 3, respectively. Groups 1, 2, and 3 consisted of 50.4%, 47.1%, and 70.0% males, respectively.

Data screening of the groups individually revealed no threats to the analysis. One outlier was identified using Mahalanobis distance set to \( p > .001 \). The case, belonging to Group 2, appeared to have some extreme scores in the clinical directions on various scales. However, none of the scores was greater than 3.67 standard deviations from the mean \( (p = .001) \) for Group 2 and the direction of the extreme scores indicated the case is part of the intended population that Group 2 represents, thus, the case was not deleted.

Two discriminant functions (the maximum for three groups) were calculated. The combined \( \chi^2 (16) = 356.32, p < .001 \), indicated a strong
association between the groups and predictor variables. Chi-square remained highly significant after removal of the first function ($\chi^2 [7] = 56.18, p < .001$), indicating significant overlap between groups and predictors remained after removal of the first function. The first and second function accounted for 90.7% and 9.3% of the variance, respectively. Figure 4.1 shows that the first discriminant function maximally separates Group 2 from the other two groups, whereas the second discriminant function then separates Group 1 from Group 3, with Group 2 falling between the two.

![Figure 4.1 Group Centroids on the Discriminant Functions for Classification 1](image)

Using the stepwise entry method, eight of the 23 variables were entered into the analysis. In order, these were: BASC-LOC; SPPC-GSW; JEPQRA-N; SPPC-SC; AIR-TRI; SPPC-PA; AIR-OPP; and AIR-SAME. Table 4.1 shows the
loading matrix of correlations between predictors and discriminant functions. The results pertaining to the first function indicate that the best predictors (i.e., loadings equal to or greater than .50) for discriminating between Group 2 and the other groups are BASC-LOC, SPPC-GSW, and JEPQRA-N. Examination of mean scores for each group (see Table 4.2) indicates that Group 2 reported increased levels of external Locus of Control, a lower sense of Global Self-Worth, and a higher level of neurotic personality characteristics. No variables had loadings equal to or greater than .50 on the second function.

In order to determine which predictors reliably separate each group from the other, independent samples t-tests were run (see Table 4.3). Comparison of Group 1 and Group 2 shows that differences on all variables are significant. Furthermore, inspection of the means in Table 4.2 shows that all differences are in the logical directions (e.g., Group 2 reported higher external Locus of Control, greater frequency of neurotic personality characteristics, etc.). Similarly, Group 1 and Group 3 also differed significantly on six of the eight variables, with inspection of the means indicating the differences were in the logical directions. However, Group 3 scored no differently than Group 1 on the Neuroticism or Opposite Sex Relationships scales. Lastly, Group 2 and Group 3 differed significantly on four of the eight variables, with Group 2 having scores in the “maladaptive” direction on all four variables. Conversely, Group 2 and Group 3 did not differ significantly in the self-reported quality of their overall interpersonal relationship, nor in their beliefs in their scholastic competence. In sum, these results suggest that dissatisfied children are no more “neurotic” than
Table 4.1 Pooled Within-Groups Correlations Between Discriminating Variables and Standardized Canonical Discriminant Functions for Classification 1

<table>
<thead>
<tr>
<th>Predictor Variable</th>
<th>Function 1</th>
<th>Function 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>BASC-LOC</td>
<td>-.67</td>
<td>.26</td>
</tr>
<tr>
<td>SPPC-GSW</td>
<td>.58</td>
<td>.28</td>
</tr>
<tr>
<td>JEPQRA-N</td>
<td>-.52</td>
<td>.46</td>
</tr>
<tr>
<td>SPPC-SC</td>
<td>.38</td>
<td>.47</td>
</tr>
<tr>
<td>AIR-TRI</td>
<td>.31</td>
<td>.49</td>
</tr>
<tr>
<td>SPPC-PA</td>
<td>.47</td>
<td>.22</td>
</tr>
<tr>
<td>AIR-OPP</td>
<td>.08</td>
<td>.05</td>
</tr>
<tr>
<td>AIR-SAME</td>
<td>.26</td>
<td>.21</td>
</tr>
<tr>
<td>Canonical r</td>
<td>.85</td>
<td>.47</td>
</tr>
<tr>
<td>Eigenvalue</td>
<td>2.68</td>
<td>0.28</td>
</tr>
</tbody>
</table>

Table 4.2 Descriptive Statistics for Predictor Variables for Each Group

<table>
<thead>
<tr>
<th></th>
<th>BASC-LOC</th>
<th>SPPC-GSW</th>
<th>JEPQRA-N</th>
<th>SPPC-SC</th>
<th>AIR-TRI</th>
<th>SPPC-PA</th>
<th>AIR-OPP</th>
<th>AIR-SAME</th>
</tr>
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<tr>
<td>1 Mean</td>
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<td>57.72</td>
<td>43.80</td>
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<td>57.23</td>
<td>102.21</td>
<td>107.77</td>
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<td>103</td>
<td>103</td>
<td>103</td>
<td>103</td>
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<td>SD</td>
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<td>7.22</td>
<td>9.92</td>
<td>7.34</td>
<td>15.30</td>
<td>11.49</td>
</tr>
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<td>2 Mean</td>
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<td>41.99</td>
<td>57.48</td>
<td>44.61</td>
<td>91.14</td>
<td>43.23</td>
<td>97.66</td>
<td>96.99</td>
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<td>104</td>
<td>104</td>
<td>104</td>
<td>104</td>
<td>104</td>
<td>104</td>
<td>104</td>
</tr>
<tr>
<td>SD</td>
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<td>9.65</td>
<td>8.37</td>
<td>10.43</td>
<td>14.22</td>
<td>9.50</td>
<td>16.08</td>
<td>11.73</td>
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<tr>
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<td>48.20</td>
<td>43.50</td>
<td>45.33</td>
<td>90.17</td>
<td>48.93</td>
<td>99.27</td>
<td>99.63</td>
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<td>30</td>
<td>30</td>
</tr>
<tr>
<td>SD</td>
<td>5.63</td>
<td>7.52</td>
<td>7.24</td>
<td>8.19</td>
<td>12.14</td>
<td>8.35</td>
<td>15.55</td>
<td>12.85</td>
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</tbody>
</table>
well-adjusted children, yet like distressed children, they appear to perceive the overall quality of their interpersonal relationships as poor and have less belief in their scholastic competence. In addition, although their Locus of Control score is significantly different from both Groups 1 and 2, they clearly appear more similar to well-adjusted children on this variable. On the remaining variables, they appear to fall quite neatly between Groups 1 and 2.

Table 4.3 Independent Samples t-test of Predictor Variables for Classification 1

<table>
<thead>
<tr>
<th>Predictor Variable</th>
<th>t-value &amp; p (2-tailed)</th>
<th>1 vs. 2 (df = 205)</th>
<th>1 vs. 3 (df = 131)</th>
<th>2 vs. 3 (df = 132)</th>
</tr>
</thead>
<tbody>
<tr>
<td>BASC-LOC</td>
<td>t</td>
<td>-16.30</td>
<td>-3.53</td>
<td>7.19</td>
</tr>
<tr>
<td></td>
<td>p</td>
<td>.001</td>
<td>.001</td>
<td>.001</td>
</tr>
<tr>
<td>SPPC-GSW</td>
<td>t</td>
<td>14.51</td>
<td>7.80</td>
<td>-3.25</td>
</tr>
<tr>
<td></td>
<td>p</td>
<td>.001</td>
<td>.001</td>
<td>.001</td>
</tr>
<tr>
<td>JEPQRA-N</td>
<td>t</td>
<td>-12.48</td>
<td>.68</td>
<td>8.30</td>
</tr>
<tr>
<td></td>
<td>p</td>
<td>.001</td>
<td>.844</td>
<td>.001</td>
</tr>
<tr>
<td>SPPC-SC</td>
<td>t</td>
<td>9.59</td>
<td>7.28</td>
<td>-3.5</td>
</tr>
<tr>
<td></td>
<td>p</td>
<td>.001</td>
<td>.001</td>
<td>.730</td>
</tr>
<tr>
<td>AIR-TRI</td>
<td>t</td>
<td>8.04</td>
<td>6.77</td>
<td>.34</td>
</tr>
<tr>
<td></td>
<td>p</td>
<td>.001</td>
<td>.001</td>
<td>.733</td>
</tr>
<tr>
<td>SPPC-PA</td>
<td>t</td>
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<td>5.28</td>
<td>-2.97</td>
</tr>
<tr>
<td></td>
<td>p</td>
<td>.001</td>
<td>.001</td>
<td>.004</td>
</tr>
<tr>
<td>AIR-OPP</td>
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<td>.95</td>
<td>-.50</td>
</tr>
<tr>
<td></td>
<td>p</td>
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<td>.345</td>
<td>.621</td>
</tr>
<tr>
<td>AIR-SAME</td>
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<td>3.29</td>
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<tr>
<td></td>
<td>p</td>
<td>.001</td>
<td>.001</td>
<td>.294</td>
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</tbody>
</table>
The pooled within-group correlations among the eight predictor variables are shown in Table 4.4. The strongest correlations are between the three self-concept variables. This suggests that beliefs about one's scholastic competence, and especially about one's physical appearance are particularly important to one's overall sense of self-worth. Locus of Control also demonstrated some strong relationships to other variables. Specifically, it appears that children who tend to believe that events are under their control have fewer neurotic characteristics, better interpersonal relationships, and a better sense of their self-worth. Finally, it also appears that as one has less confidence in his/her scholastic competence, s/he will tend to have more neurotic characteristics.

<table>
<thead>
<tr>
<th></th>
<th>SPPC-GSW</th>
<th>JEPQRA-N</th>
<th>SPPC-SC</th>
<th>AIR-TRI</th>
<th>SPPC-PA</th>
<th>AIR-OPP</th>
<th>AIR-SAME</th>
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</thead>
<tbody>
<tr>
<td>BASC-LOC</td>
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<td>-.03</td>
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<tr>
<td>SPPC-GSW</td>
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<td>.14</td>
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<td>.13</td>
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<tr>
<td>JEPQRA-N</td>
<td>-.13</td>
<td>-.03</td>
<td>-.06</td>
<td>-.09</td>
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<tr>
<td>SPPC-SC</td>
<td>.05</td>
<td>.16</td>
<td>.12</td>
<td>.02</td>
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<td></td>
</tr>
<tr>
<td>AIR-TRI</td>
<td></td>
<td>.02</td>
<td>.58</td>
<td>.57</td>
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<td></td>
</tr>
<tr>
<td>SPPC-PA</td>
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<td>.02</td>
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<td>-.04</td>
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<tr>
<td>AIR-OPP</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 4.4 Pooled Within-Group Correlations Among Predictor Variables for Classification 1

---

6 Because the AIR-OPP and AIR-SAME are included in the AIR-TRI, the high correlations of the former variables with the latter are not interpreted.
Table 4.5 offers a summary of the DFA classification results (i.e., the confusion matrix). The prior probability of a case to be classified in either of Groups 1, 2, or 3 was 43.5%, 43.9%, and 12.7%, respectively. Based on the prior probability, 39.78% of the 237 cases in the analysis would be correctly classified by chance alone. Table 4.5 indicates that for each group independently, and for all groups in total, the correct classification rate was substantially higher than that expected by chance alone. For Groups 1, 2, and 3, the incremental increase above chance levels was 51.6%, 44.5%, and 44.0%, respectively. For Groups 1 and 2, this represents roughly a doubling of chance levels, whereas for Group 3 the correct classification rate more than quadruples the chance level. The total accuracy of prediction was 87.3%, an incremental increase of 47.5% above chance.

The lower half of Table 4.5 displays the results of the “jackknifed” classification. Using this cross-validating technique, each case is classified by the functions derived from all cases other than that case. This statistical procedure offers a more accurate estimate of the results that would be obtained should the present discriminant functions be applied to a new sample from the same population. As can be seen in the table, this technique resulted in only minor decreases in correct classification rates, for each group individually as well as the total accuracy of prediction.
Table 4.5 DFA Summary Table for Classification 1

<table>
<thead>
<tr>
<th></th>
<th>Predicted Group Membership</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Original Count</td>
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<td>3</td>
<td>7</td>
</tr>
<tr>
<td>%</td>
<td>1</td>
<td>95.1</td>
</tr>
<tr>
<td></td>
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<td>8.7</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>23.3</td>
</tr>
<tr>
<td>Cross-validated</td>
<td>1</td>
<td>98</td>
</tr>
<tr>
<td>Count</td>
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<td>10</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>8</td>
</tr>
<tr>
<td>%</td>
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<td>9.6</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>26.7</td>
</tr>
</tbody>
</table>

87.3% of original grouped cases correctly classified.  
86.1% of cross-validated grouped cases correctly classified.

4.3 Classification 2: Using Teacher-Report PS Data

The second classification to be discussed will be one in which teacher-report data were used to classify PS, again using the composite score of PS data (i.e., the BASC - Externalizing composite comprised of the Aggression, Conduct Problems, and Hyperactivity scales). As with the self-report data used in Classification 1, classifications based on percentile splits appeared to offer the best balance between retaining cases and highlighting group differences, however, in this case the 35-30-35 percentile split appeared superior while retaining a sufficient number of cases for the analysis. Thus, the DFA based on this classification method is presented here. Of the original 407 cases, 157
were retained in the analysis. Of these cases, 55, 65, and 37 were classified in Groups 1, 2, and 3, respectively. Groups 1, 2, and 3 consisted of 56.4%, 43.1%, and 48.6% females, respectively. Data screening of the groups individually revealed no threats to the analysis. No outliers were identified using Mahalanobis distance set to $\rho > .001$.

Two discriminant functions were calculated. The combined $\chi^2 (18) = 193.10, \rho < .001$, indicated a strong association between the groups and predictor variables. Chi-square remained highly significant after removal of the first function ($\chi^2 [8] = 32.64, \rho < .001$). The first and second function accounted for 88.7% and 11.3% of the variance, respectively. Figure 4.2 shows that the first discriminant function maximally separates Group 1 from the other two groups, whereas the second discriminant function then separates Group 2 from Group 3, with Group 1 falling between the two.

Using the stepwise entry method, nine of the 23 variables were entered into the analysis. In order, these were: SPPC-GSW; BASC-LOC; EAST-EM; SPPC-BC; EAST-SHY; AIR-TRI; AIR-OPP; SPPC-SC; and JEPQRA-P. Table 4.6 shows the loading matrix of correlations between predictors and discriminant functions. The results pertaining to the first function indicate that the best predictors for discriminating between Group 1 and the other groups are SPPC-GSW and BASC-LOC. Examination of mean scores for each group (see Table 4.7) indicates that Group 1 reported increased levels of Global Self-Worth as compared to the other groups, while a more linear trend was observed on BASC-LOC. Specifically, Groups 1, 3, and 2, respectively, reported
increasing levels of external Locus of Control. SPPC-GSW and SPPC-SC were the most significant predictors on the second function. Examination of the mean scores indicates that Group 1 reported higher levels of positive self-perception regarding scholastic competence than did the other groups.

---

![Figure 4.2 Group Centroids on the Discriminant Functions for Classification 2](image)

**Figure 4.2** Group Centroids on the Discriminant Functions for Classification 2

---

Table 4.8 presents the results of the independent samples t-tests. Comparison of Group 1 and Group 2 shows that differences on all variables were highly significant, except for interpersonal relationships with opposite sex peers and teacher ratings of shyness, which were not significant. Inspection of the means in Table 4.7 shows that all significant differences are in the logical directions (e.g., Group 2 reported higher external Locus of Control, teachers reported them as more emotionally reactive, etc.). Group 1 and Group 3 differed
significantly on five of the nine variables (SPPC-GSW; BASC-LOC; SPPC-BC; AIR-TRI; and SPPC-SC), with all differences in the logical directions. Lastly, Group 2 and Group 3 differed significantly on three of the nine variables (EAST-EM; SPPC-BC; and JEPQRA-P), with a trend noted on BASC-LOC. Again, all differences were found to be in the logical directions.

Table 4.6 Pooled Within-Groups Correlations Between Discriminating Variables and Standardized Canonical Discriminant Functions for Classification 2

<table>
<thead>
<tr>
<th>Predictor Variable</th>
<th>Function 1</th>
<th>Function 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPPC-GSW</td>
<td>.55</td>
<td>.52</td>
</tr>
<tr>
<td>BASC-LOC</td>
<td>-.50</td>
<td>-.08</td>
</tr>
<tr>
<td>EAST-EM</td>
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<td>.38</td>
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<tr>
<td>SPPC-BC</td>
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<td>-.12</td>
</tr>
<tr>
<td>EAST-SHY</td>
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<td>-.24</td>
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<tr>
<td>AIR-TRI</td>
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<td>.21</td>
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<td>AIR-OPP</td>
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<td>.31</td>
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<td>SPPC-SC</td>
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<td>.50</td>
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<td>JEPQRA-P</td>
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<td>.24</td>
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</table>
Table 4.7  Descriptive Statistics for Predictor Variables for Each Group

<table>
<thead>
<tr>
<th></th>
<th>SPPC-GSW</th>
<th>BASC-LOC</th>
<th>EAST-EM</th>
<th>SPPC-BC</th>
<th>EAST-SHY</th>
<th>AIR-TRI</th>
<th>AIR-OPP</th>
<th>SPPC-SC</th>
<th>JEPQRA-P</th>
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<td>44.68</td>
<td>56.58</td>
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<td>101.55</td>
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<td>55</td>
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<tr>
<td>SD</td>
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<td>5.46</td>
<td>6.09</td>
<td>8.89</td>
<td>11.31</td>
<td>10.23</td>
<td>12.32</td>
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<td>2 Mean</td>
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<td>54.72</td>
<td>43.47</td>
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<td>90.18</td>
<td>101.12</td>
<td>45.33</td>
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<td>65</td>
<td>65</td>
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<td>37</td>
<td>37</td>
<td>37</td>
<td>37</td>
<td>37</td>
</tr>
<tr>
<td>SD</td>
<td>9.90</td>
<td>8.41</td>
<td>9.05</td>
<td>7.91</td>
<td>10.86</td>
<td>13.34</td>
<td>15.44</td>
<td>10.36</td>
<td>8.71</td>
</tr>
</tbody>
</table>

Table 4.8  Independent Samples t-test of Predictor Variables for Classification 2

<table>
<thead>
<tr>
<th>Predictor Variable</th>
<th>t-value &amp; p (2-tailed)</th>
<th>1 vs. 2 (df = 118)</th>
<th>1 vs. 3 (df = 90)</th>
<th>2 vs. 3 (df = 100)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPPC-GSW</td>
<td>t</td>
<td>9.72</td>
<td>8.57</td>
<td>.04</td>
</tr>
<tr>
<td></td>
<td>p</td>
<td>.001</td>
<td>.001</td>
<td>.968</td>
</tr>
<tr>
<td>BASC-LOC</td>
<td>t</td>
<td>-8.56</td>
<td>-5.98</td>
<td>1.95</td>
</tr>
<tr>
<td></td>
<td>p</td>
<td>.001</td>
<td>.001</td>
<td>.054</td>
</tr>
<tr>
<td>EAST-EM</td>
<td>t</td>
<td>-6.54</td>
<td>-1.70</td>
<td>3.72</td>
</tr>
<tr>
<td></td>
<td>p</td>
<td>.001</td>
<td>.092</td>
<td>.001</td>
</tr>
<tr>
<td>SPPC-BC</td>
<td>t</td>
<td>8.33</td>
<td>4.02</td>
<td>-3.47</td>
</tr>
<tr>
<td></td>
<td>p</td>
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<td>.001</td>
<td>.001</td>
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<tr>
<td>EAST-SHY</td>
<td>t</td>
<td>.59</td>
<td>-.93</td>
<td>-1.55</td>
</tr>
<tr>
<td></td>
<td>p</td>
<td>.558</td>
<td>.353</td>
<td>.125</td>
</tr>
<tr>
<td>AIR-TRI</td>
<td>t</td>
<td>5.82</td>
<td>5.02</td>
<td>-.57</td>
</tr>
<tr>
<td></td>
<td>p</td>
<td>.001</td>
<td>.001</td>
<td>.571</td>
</tr>
<tr>
<td>AIR-OPP</td>
<td>t</td>
<td>.16</td>
<td>1.85</td>
<td>1.56</td>
</tr>
<tr>
<td></td>
<td>p</td>
<td>.870</td>
<td>.067</td>
<td>.122</td>
</tr>
<tr>
<td>SPPC-SC</td>
<td>t</td>
<td>7.15</td>
<td>6.68</td>
<td>.65</td>
</tr>
<tr>
<td></td>
<td>p</td>
<td>.001</td>
<td>.001</td>
<td>.517</td>
</tr>
<tr>
<td>JEPQRA-P</td>
<td>t</td>
<td>-4.26</td>
<td>-1.09</td>
<td>2.75</td>
</tr>
<tr>
<td></td>
<td>p</td>
<td>.001</td>
<td>.280</td>
<td>.007</td>
</tr>
</tbody>
</table>
These results suggest that dissatisfied children are perceived by their teachers as being no more emotionally reactive than well-adjusted children, a finding consistent with the previous DFA findings regarding Neuroticism scores (emotionality believed to be a temperamental precursor to neurotic personality characteristics). Groups 1 and 3 were also similar (and significantly different from Group 2) in the degree of self-reported Psychoticism characteristics, with differences found in the logical direction.\(^7\) This result further points to the importance of, and similarity of Groups 1 and 3 on personality characteristics.

Also consistent with the first DFA, like distressed children, dissatisfied children appear to perceive the overall quality of their interpersonal relationships as poorer and they have less belief in their scholastic competence. Unlike the previous DFA, Groups 2 and 3 showed no differences in Global Self-Worth (with both scoring significantly below Group 1), as well as Locus of Control (although a trend was noted in the expected direction).

The pooled within-group correlations among the nine predictor variables are shown in Table 4.9. As in the previous DFA, strong correlations were observed between the self-concept variables.\(^8\) This suggests that beliefs about one's scholastic competence, and behavioural conduct are important to one's overall sense of self-worth. Interestingly, children's perceptions of their scholastic competence and the quality of their behavioural conduct were also strongly, positively correlated. A strong positive relationship was also observed

\(^{7}\) The Psychoticism scale may be more appropriately viewed as an "anti-social" or "conduct problems" scale (e.g., "Do you enjoy hurting people you like?"; "Do you sometimes like teasing animals?").

\(^{8}\) Because the AIR-OPP is included in the AIR-TRI, the high correlation will not be interpreted.
between teacher ratings of emotionality and shyness. Unlike the previous DFA, Locus of Control did not demonstrate strong relationships to other variables, except for a moderate negative correlation with SPPC-GSW.

Table 4.9  Pooled Within-Group Correlations Among Predictor Variables for Classification 2

<table>
<thead>
<tr>
<th></th>
<th>BASC-LOC</th>
<th>EAST-EM</th>
<th>SPPC-BC</th>
<th>EAST-SHY</th>
<th>AIR-TRI</th>
<th>AIR-OPP</th>
<th>SPPC-SC</th>
<th>JEPQRA -P</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPPC-GSW</td>
<td>-.19</td>
<td>-.11</td>
<td>.29</td>
<td>-.08</td>
<td>.07</td>
<td>.16</td>
<td>.29</td>
<td>.06</td>
</tr>
<tr>
<td>BASC-LOC</td>
<td>.04</td>
<td>-.06</td>
<td>.15</td>
<td>-.12</td>
<td>-.12</td>
<td>-.16</td>
<td>.04</td>
<td></td>
</tr>
<tr>
<td>EAST-EM</td>
<td></td>
<td>-.07</td>
<td>.37</td>
<td>.02</td>
<td>.04</td>
<td>.05</td>
<td>-.10</td>
<td></td>
</tr>
<tr>
<td>SPPC-BC</td>
<td></td>
<td></td>
<td>-.03</td>
<td>.03</td>
<td>-.01</td>
<td>.44</td>
<td>-.12</td>
<td></td>
</tr>
<tr>
<td>EAST-SHY</td>
<td></td>
<td></td>
<td></td>
<td>-.04</td>
<td>-.05</td>
<td>-.10</td>
<td>-.03</td>
<td></td>
</tr>
<tr>
<td>AIR-TRI</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.67</td>
<td>.05</td>
<td>-.05</td>
<td></td>
</tr>
<tr>
<td>AIR-OPP</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.13</td>
<td>-.03</td>
<td></td>
</tr>
<tr>
<td>SPPC-SC</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-.12</td>
<td></td>
</tr>
</tbody>
</table>

Table 4.10 presents the confusion matrix for the DFA classification results. The prior probability of a case to be classified in either of Groups 1, 2, or 3 was 35.0%, 41.4%, and 23.6%, respectively. Based on the prior probability, 34.96% of the 157 cases in the analysis would be correctly classified by chance alone. Table 4.10 indicates that for each group independently, and for all groups in total, the correct classification rate was substantially higher than that expected by chance alone. For Groups 1, 2, and 3, the incremental increase above chance levels was 57.7%, 43.2%, and 30.5%, respectively. The total accuracy of prediction was 80.3%, an incremental increase of 45.34% above chance.
Nonetheless, despite offering a classification clearly above chance levels, the incremental increases above chance are not as great as in Classification 1 (compare Tables 4.5 & 4.10).

The lower half of Table 4.10 displays the results of the jackknifed classification. The most substantial decrease in correct classification was observed for Group 3, with a decrease of 8.2%. In light of the goals of the present study, this finding also suggests the general superiority of Classification 1.

<table>
<thead>
<tr>
<th>Predicted Group Membership</th>
<th>Original Count</th>
<th></th>
<th></th>
<th></th>
<th>Total</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>55</td>
<td>65</td>
<td>37</td>
</tr>
<tr>
<td>Original %</td>
<td>1</td>
<td>92.7</td>
<td>3.6</td>
<td>3.6</td>
<td>100.0</td>
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<tr>
<td></td>
<td>2</td>
<td>3.1</td>
<td>84.6</td>
<td>12.3</td>
<td>100.0</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>13.5</td>
<td>32.4</td>
<td>54.1</td>
<td>100.0</td>
<td></td>
</tr>
<tr>
<td>Cross-validated Count</td>
<td>1</td>
<td>51</td>
<td>2</td>
<td>2</td>
<td>55</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>3</td>
<td>53</td>
<td>9</td>
<td>65</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>6</td>
<td>14</td>
<td>17</td>
<td>37</td>
<td></td>
</tr>
<tr>
<td>Cross-validated %</td>
<td>1</td>
<td>92.7</td>
<td>3.6</td>
<td>3.6</td>
<td>100.0</td>
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<tr>
<td></td>
<td>2</td>
<td>4.6</td>
<td>81.5</td>
<td>13.8</td>
<td>100.0</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>16.2</td>
<td>37.8</td>
<td>45.9</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

80.3% of original grouped cases correctly classified.
77.1% of cross-validated grouped cases correctly classified.
4.4 Classification 3: Using Parent-Report PS Data

The resultant classifications using parent-report PS data (i.e., the BASC Externalizing composite comprised of the Aggression, Conduct Problems, and Hyperactivity scales) offered clearly inferior results, thus, none will be reported here in detail. Nonetheless, the results (or lack of them) can still be considered to be of conceptual significance, thus, an abbreviated description will be presented. Of the four methods used for classifying groups, that based on the 35-30-35 percentile split appeared to offer the best discrimination among groups. Table 4.11 presents the confusion matrix for this DFA.

Table 4.11 DFA Summary Table for Classification 3

<table>
<thead>
<tr>
<th>Predicted Group Membership</th>
<th>Original</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Count</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1</td>
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<tr>
<td>1</td>
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<td>7</td>
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<tr>
<td>2</td>
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<tr>
<td>3</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>%</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>82.1</td>
<td>17.9</td>
</tr>
<tr>
<td>2</td>
<td>6.3</td>
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<tr>
<td>3</td>
<td>18.8</td>
<td>25.0</td>
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<tr>
<td>Cross-validated</td>
<td>Count</td>
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<td>2</td>
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<tr>
<td>1</td>
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<td>7</td>
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<tr>
<td>2</td>
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<td>40</td>
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<tr>
<td>3</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>%</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>82.1</td>
<td>17.9</td>
</tr>
<tr>
<td>2</td>
<td>8.3</td>
<td>83.3</td>
</tr>
<tr>
<td>3</td>
<td>25.0</td>
<td>37.5</td>
</tr>
</tbody>
</table>

79.6% of original grouped cases correctly classified.
75.7% of cross-validated grouped cases correctly classified.
The prior probabilities for classification in Groups 1, 2, and 3 were 37.9%, 46.6%, and 15.5%, respectively, and 38.47% for the entire sample of 103 cases. As Table 4.11 shows, the results of the DFA were still substantially above chance levels, however, they were nonetheless considerably inferior to classifications based on both self-report and teacher-report data, especially with respect to Group 3. Using the stepwise entry method, five of 27 available variables were entered into the DFA. In order, these were SPPC-GSW; AIR-FTHR; EASP-EM; EASP-ACT; and SPPC-SC. It is interesting to note that two of these variables are also parent-report, whereas a third involves the child's perception of a parent.

Most notable in Table 4.11 is the jackknifed classification rate for Group 3, in which cases were equally likely to be incorrectly classified in Group 2 as they were to being correctly classified. This poor result for Group 3 is particularly relevant given the goals of this study.

The poorer results obtained from parent-report data may be in part be due to the attenuated sample size. However, when self-report PS data were used with the 35-30-35 percentile split method, Group 3 also contained very few cases ($N = 18$), yet still maintained an acceptable level of classification. Indeed, the overall results of that classification were still superior to any of the classifications derived from either teacher- or parent-report data. In sum, it

---

9 Note that the classification based on the 40-20-40 percentile split contained only one additional case in Group 3, with 15 additional cases for the entire sample. Furthermore, the results were considerably poorer than those obtained with the 35-30-35 split.
would appear that self-reported levels of both LS and PS offer the strongest and most meaningful results in relation to the predictor variables used in this study.

4.5 Classification 4: Using Self Satisfaction Scores for LS Classification

In light of the superior results obtained through self-report data, several classifications were created using subscales of both LS and self-report PS data. Specifically, classifications were created using: a) the MSLSS Total Score with each of the three BASC subscales individually; and b) the BASC composite with each of the five MSLSS subscales individually. Furthermore, the 40-20-40 percentile split method was utilized as it has appeared to offer the best balance between retaining cases and superior DFA results.

Of these eight classifications that were created, two offered very good results and will be described next. It should not be surprising that the classification based on the MSLSS Self subscale offered superior discriminatory results. Conceptually, satisfaction with self would appear to be of central importance to one’s subjective well-being or subjective perception of overall life satisfaction. Indeed, the results of this DFA rival those of Classification 1 where MSLSS Total Scale scores were used to classify LS.

Of the original 407 cases, 236 were retained in the analysis using the MSLSS Self subscale and BASC-SRP Composite for classification. Of these cases, 112, 94, and 30 were classified in Groups 1, 2, and 3, respectively. Groups 1, 2, and 3 consisted of 53.6%, 43.6%, and 56.7% males, respectively.

Data screening of the groups individually revealed no threats to the analysis. One outlier was identified using Mahalanobis distance set to $p > .001$. The
case, belonging to Group 2, appeared to have some extreme scores in the clinical directions on various scales (e.g., AIR-FTHR, JEPQRA-E; SPPC-SC), with the exception of the AIR-BOY scale in which the subject's standard score was 125 (the subject was male). However, none of the scores was greater than 3.67 standard deviations from the mean (\( p = .001 \)) for Group 2 and the direction of the extreme scores, with the one exception, indicates the case is part of the intended population that Group 2 represents, thus, the case was not deleted.

Two discriminant functions were calculated. The combined \( \chi^2 (12) = 345.24, p < .001 \), indicated a strong association between the groups and predictor variables. Chi-square remained highly significant after removal of the first function (\( \chi^2 [5] = 53.50, p < .001 \)). The first and second function accounted for 90.7% and 9.3% of the variance, respectively. Figure 4.3 shows that the first discriminant function maximally separates Group 2 from the other two groups, whereas the second discriminant function then separates Group 1 from Group 3, with Group 2 falling between the two.

Using the stepwise entry method, six of the 23 variables were entered into the analysis. In order, these were: BASC-LOC; SPPC-GSW; SPPC-SA; JEPQRA-N; AIR-MTHR, and; SPPC-PA. Table 4.12 shows the loading matrix of correlations between predictors and discriminant functions. The results pertaining to the first function indicate that all variables except for AIR-MTHR were substantial predictors in discriminating between Group 2 and the other groups. Examination of mean scores for each group (see Table 4.13) suggests that compared to the other two groups, Group 2 reported increased levels of an
external Locus of Control and neurotic personality characteristics. A more linear
trend, in the expected directions, was observed on the remaining three
variables. Specifically, Groups 2, 3, and 1, respectively, reported increasing
levels on the self-concept variables of Global Self-Worth, Social Acceptance,
and Physical Appearance.

![Graph](image)

**Figure 4.3** Group Centroids on the Discriminant Functions for Classification 4
Table 4.12 Pooled Within-Groups Correlations Between Discriminating Variables and Standardized Canonical Discriminant Functions for Classification 4

<table>
<thead>
<tr>
<th>Predictor Variable</th>
<th>Function 1</th>
<th>Function 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>BASC-LOC</td>
<td>-.66</td>
<td>.40</td>
</tr>
<tr>
<td>SPPC-GSW</td>
<td>.62</td>
<td>.29</td>
</tr>
<tr>
<td>SPPC-SA</td>
<td>.53</td>
<td>.37</td>
</tr>
<tr>
<td>JEPQRA-N</td>
<td>-.51</td>
<td>.50</td>
</tr>
<tr>
<td>AIR-MTHR</td>
<td>.21</td>
<td>.53</td>
</tr>
<tr>
<td>SPPC-PA</td>
<td>.53</td>
<td>.37</td>
</tr>
<tr>
<td>Canonical $r$</td>
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<td>.46</td>
</tr>
<tr>
<td>Eigenvalue</td>
<td>2.55</td>
<td>.26</td>
</tr>
</tbody>
</table>

Table 4.13 Descriptive Statistics for Predictor Variables for Each Group

<table>
<thead>
<tr>
<th></th>
<th>BASC-LOC</th>
<th>SPPC-GSW</th>
<th>SPPC-SA</th>
<th>JEPQRA-N</th>
<th>AIR-MTHR</th>
<th>SPPC-PA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>40.66</td>
<td>57.64</td>
<td>56.66</td>
<td>44.05</td>
<td>100.38</td>
<td>57.48</td>
</tr>
<tr>
<td>N</td>
<td>112</td>
<td>112</td>
<td>112</td>
<td>112</td>
<td>112</td>
<td>112</td>
</tr>
<tr>
<td>SD</td>
<td>4.72</td>
<td>5.10</td>
<td>6.83</td>
<td>7.74</td>
<td>10.54</td>
<td>6.85</td>
</tr>
<tr>
<td>Mean</td>
<td>54.79</td>
<td>41.32</td>
<td>41.41</td>
<td>56.95</td>
<td>92.11</td>
<td>42.31</td>
</tr>
<tr>
<td>N</td>
<td>94</td>
<td>94</td>
<td>94</td>
<td>94</td>
<td>94</td>
<td>94</td>
</tr>
<tr>
<td>SD</td>
<td>8.52</td>
<td>9.75</td>
<td>9.65</td>
<td>8.44</td>
<td>11.15</td>
<td>9.70</td>
</tr>
<tr>
<td>Mean</td>
<td>40.90</td>
<td>49.40</td>
<td>47.42</td>
<td>41.86</td>
<td>89.30</td>
<td>48.36</td>
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<td>N</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td>SD</td>
<td>4.35</td>
<td>7.99</td>
<td>9.11</td>
<td>5.71</td>
<td>9.10</td>
<td>7.89</td>
</tr>
</tbody>
</table>
The AIR-MTHR variable was the best predictor on the second function. Examination of the mean scores indicates that Group 1 reported higher levels of positive interpersonal relationships with their mothers than did the other groups. Interestingly, the JEPQRA-N was also a very good predictor on the second function indicating that neurotic characteristics discriminated between groups 1 and 3. However, Group 3 actually had a lower mean score on this variable (i.e., the lowest of all three groups), suggesting that this personality variable is indeed quite an important contributor to the conceptual picture of Group 3 as "unique".

Table 4.14 presents the results of the independent samples t-tests. Comparison of Group 1 and Group 2 shows that differences on all six variables were highly significant, with all differences being in the expected directions (see Table 4.13). Group 1 and Group 3 differed significantly on all but the Locus of Control and Neuroticism variables with all significant differences in the logical directions. Thus, despite the fact that Neuroticism scores helped to discriminate Group 1 and 3, with Group 3 showing lower mean scores, this difference was not significant. Lastly, Group 2 and Group 3 differed significantly on all but the AIR-MTHR variable. Again, all differences were found to be in the logical directions.

It now appears to be a consistent finding among the various DFA's described that dissatisfied children are no more "neurotic" than well-adjusted children. In addition, they appear to have an equally developed internal Locus of Control which distinguished both groups from Group 2. Although a more
linear trend was noted on this variable in the previously described DFA's,

Groups 1 and 3 have tended to appear more similar than Group 2 on those
classifications based exclusively on self-report data (as in the present analysis).

<table>
<thead>
<tr>
<th>Predictor Variable</th>
<th>t-value &amp; p (2-tailed)</th>
<th>1 vs. 2 (df = 204)</th>
<th>1 vs. 3 (df = 140)</th>
<th>2 vs. 3 (df = 122)</th>
</tr>
</thead>
<tbody>
<tr>
<td>BASC-LOC</td>
<td>t</td>
<td>-15.02</td>
<td>-.25</td>
<td>8.57</td>
</tr>
<tr>
<td></td>
<td>p</td>
<td>.001</td>
<td>.802</td>
<td>.001</td>
</tr>
<tr>
<td>SPPC-GSW</td>
<td>t</td>
<td>15.38</td>
<td>6.89</td>
<td>-4.11</td>
</tr>
<tr>
<td></td>
<td>p</td>
<td>.001</td>
<td>.001</td>
<td>.001</td>
</tr>
<tr>
<td>SPPC-SA</td>
<td>t</td>
<td>13.24</td>
<td>6.11</td>
<td>-3.01</td>
</tr>
<tr>
<td></td>
<td>p</td>
<td>.001</td>
<td>.001</td>
<td>.003</td>
</tr>
<tr>
<td>JEPQRA-N</td>
<td>t</td>
<td>-11.43</td>
<td>1.45</td>
<td>9.14</td>
</tr>
<tr>
<td></td>
<td>p</td>
<td>.001</td>
<td>.149</td>
<td>.001</td>
</tr>
<tr>
<td>AIR-MTHR</td>
<td>t</td>
<td>5.47</td>
<td>5.26</td>
<td>1.25</td>
</tr>
<tr>
<td></td>
<td>p</td>
<td>.001</td>
<td>.001</td>
<td>.213</td>
</tr>
<tr>
<td>SPPC-PA</td>
<td>t</td>
<td>13.11</td>
<td>6.28</td>
<td>-3.10</td>
</tr>
<tr>
<td></td>
<td>p</td>
<td>.001</td>
<td>.001</td>
<td>.002</td>
</tr>
</tbody>
</table>

Another consistent result is that, like distressed children, dissatisfied
children appear to perceive some aspect of the quality of their interpersonal
relationships as poorer, this time, relationships with mother proving most
significant. Aside from this one variable, Groups 2 and 3 differed significantly on
the remaining five variables, with all differences in the expected directions.

The pooled within-group correlations among the six predictor variables are
shown in Table 4.15. Once again, the strongest correlations were observed
between the self-concept variables. The high correlation between Global Self-
Worth and Physical Appearance (also noted in Classification 1) is a result consistent with previous research, suggesting the large impact of our perceptions of our physical selves to our overall self-esteem (e.g., Harter, 1985). Locus of Control also demonstrated good correlations, with both the JEPQRA-N and AIR-MTHR variables. It appears that as one’s sense that events are controlled by external factors grows, so does his/her neurotic characteristics, while perceptions of the relationship to mother become less positive.

<table>
<thead>
<tr>
<th></th>
<th>SPPC-GSW</th>
<th>SPPC-SA</th>
<th>JEPQRA-N</th>
<th>AIR-MTHR</th>
<th>SPPC-PA</th>
</tr>
</thead>
<tbody>
<tr>
<td>BASC-LOC</td>
<td>-.12</td>
<td>-.09</td>
<td>.23</td>
<td>-.18</td>
<td>.00</td>
</tr>
<tr>
<td>SPPC-GSW</td>
<td>.21</td>
<td>-.11</td>
<td>.10</td>
<td>.50</td>
<td></td>
</tr>
<tr>
<td>SPPC-SA</td>
<td></td>
<td>-.14</td>
<td>.02</td>
<td>.25</td>
<td></td>
</tr>
<tr>
<td>JEPQRA-N</td>
<td></td>
<td></td>
<td>.01</td>
<td>-.09</td>
<td></td>
</tr>
<tr>
<td>AIR-MTHR</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-.02</td>
</tr>
</tbody>
</table>

Table 4.15 Pooled Within-Group Correlations Among Predictor Variables for Classification 4

Table 4.16 presents the confusion matrix for the DFA classification results. The prior probability of a case to be classified in either of Groups 1, 2, or 3 was 47.5%, 39.8%, and 12.7%, respectively. Based on the prior probability, 40% of the 236 cases in the analysis would be correctly classified by chance alone. Table 4.16 indicates that for each group independently, and for all groups in total, the correct classification rate was substantially higher than that expected.
by chance alone. For Groups 1, 2, and 3, the incremental increase above chance levels was 48.9%, 44.2%, and 47.3%, respectively. The total accuracy of prediction was 86.9%, an incremental increase of 46.9% above chance. These results clearly rival those of Classification 1 (see Table 4.5) and actually appear marginally superior with specific respect to the classification of Group 3.

Table 4.16 DFA Summary Table for Classification 4

<table>
<thead>
<tr>
<th>Predicted Group Membership</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
</tr>
<tr>
<td><strong>Original</strong></td>
<td></td>
</tr>
<tr>
<td>Count</td>
<td>108</td>
</tr>
<tr>
<td>2</td>
<td>9</td>
</tr>
<tr>
<td>3</td>
<td>8</td>
</tr>
<tr>
<td>%</td>
<td>96.4</td>
</tr>
<tr>
<td>2</td>
<td>9.6</td>
</tr>
<tr>
<td>3</td>
<td>26.7</td>
</tr>
<tr>
<td><strong>Cross-validated</strong></td>
<td></td>
</tr>
<tr>
<td>Count</td>
<td>106</td>
</tr>
<tr>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>3</td>
<td>9</td>
</tr>
<tr>
<td>%</td>
<td>94.6</td>
</tr>
<tr>
<td>2</td>
<td>10.6</td>
</tr>
<tr>
<td>3</td>
<td>30.0</td>
</tr>
</tbody>
</table>

86.9% of original grouped cases correctly classified. 85.2% of cross-validated grouped cases correctly classified.

The lower half of Table 4.16 displays the results of the jackknifed classification. Decreases were minimal based on this more reliable method. Only one additional case from Group 3 was misclassified (in Group 1), with correct classification for Group 3 falling to 56.7%.
4.6 Classification 5: Using School Satisfaction Scores for LS Classification

The second classification to offer superior results from the eight examined was that based on the MSLSS School Satisfaction scores and the BASC-SRP Composite. Of the original 407 cases, 209 were retained in the analysis. Of these cases, 76, 82, and 51 were classified in Groups 1, 2, and 3, respectively. Groups 1, 2, and 3 consisted of 52.6%, 51.2%, and 33.3% females, respectively. Data screening of the groups individually revealed no threats to the analysis. No outliers were identified using Mahalanobis distance set to $p > .001$.

Two discriminant functions were calculated. The combined $\chi^2 (14) = 319.99$, $p < .001$, indicated a strong association between the groups and predictor variables. Chi-square remained highly significant after removal of the first function ($\chi^2 [6] = 52.28$, $p < .001$). The first and second function accounted for 90.3% and 9.7% of the variance, respectively. Figure 4.4 shows that the first discriminant function maximally separates Group 2 from the other two groups, whereas the second discriminant function then separates Group 1 from Group 3, with Group 2 falling between the two.

Using the stepwise entry method, seven of the 23 variables were entered into the analysis. In order, these were: BASC-LOC; SPPC-SC; JEPQRA-N; SPPC-PA; AIR-TCHR; AIR-PRNT; and, EAST-SOC. Table 4.17 shows the loading matrix of correlations between predictors and discriminant functions. Not surprisingly, the results pertaining to the first function indicate that Locus of Control and Neuroticism scores were the best predictors in discriminating
between Group 2 and the other groups. Examination of mean scores for each group (see Table 4.18) indicates that Group 1 and 3 have virtually identical mean scores on these two variables while Group 2 reported increased levels of an external Locus of Control and neurotic personality characteristics.

![Graph](image)

**Figure 4.4** Group Centroids on the Discriminant Functions for Classification 5

The SPPC-SC and AIR-TCHR variables were the best predictors on the second function, which best discriminates Group 1 and 3. Examination of the mean scores indicates that Group 1 reported higher levels of positive interpersonal relationships (with respect to their teachers in this instance) than did the other groups, as well as an increased sense of their scholastic competence, results also consistent with the previously reported DFA's.
### Table 4.17 Pooled Within-Groups Correlations Between Discriminating Variables and Standardized Canonical Discriminant Functions for Classification 5

<table>
<thead>
<tr>
<th>Predictor Variable</th>
<th>Function 1</th>
<th>Function 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>BASC-LOC</td>
<td>.67</td>
<td>.16</td>
</tr>
<tr>
<td>SPPC-SC</td>
<td>-.41</td>
<td>.59</td>
</tr>
<tr>
<td>JEPQRA-N</td>
<td>.55</td>
<td>.32</td>
</tr>
<tr>
<td>SPPC-PA</td>
<td>-.41</td>
<td>.29</td>
</tr>
<tr>
<td>AIR-TCHR</td>
<td>-.12</td>
<td>.53</td>
</tr>
<tr>
<td>AIR-PRNT</td>
<td>.03</td>
<td>.42</td>
</tr>
<tr>
<td>EAST-SOC</td>
<td>-.15</td>
<td>-.11</td>
</tr>
<tr>
<td>Canonical r</td>
<td>.86</td>
<td>.48</td>
</tr>
<tr>
<td>Eigenvalue</td>
<td>2.74</td>
<td>.29</td>
</tr>
</tbody>
</table>

### Table 4.18 Descriptive Statistics for Predictor Variables for Each Group

<table>
<thead>
<tr>
<th></th>
<th>BASC-LOC</th>
<th>SPPC-SC</th>
<th>JEPQRA-N</th>
<th>SPPC-PA</th>
<th>AIR-TCHR</th>
<th>AIR-PRNT</th>
<th>EAST-SOC</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Mean</td>
<td>40.43</td>
<td>57.45</td>
<td>43.45</td>
<td>57.21</td>
<td>99.87</td>
<td>1.93</td>
<td>51.01</td>
</tr>
<tr>
<td>N</td>
<td>76</td>
<td>76</td>
<td>76</td>
<td>76</td>
<td>76</td>
<td>76</td>
<td>76</td>
</tr>
<tr>
<td>SD</td>
<td>4.36</td>
<td>6.80</td>
<td>7.06</td>
<td>7.42</td>
<td>12.05</td>
<td>.25</td>
<td>10.28</td>
</tr>
<tr>
<td>2 Mean</td>
<td>55.33</td>
<td>43.46</td>
<td>57.75</td>
<td>43.11</td>
<td>91.71</td>
<td>1.93</td>
<td>45.76</td>
</tr>
<tr>
<td>N</td>
<td>82</td>
<td>82</td>
<td>82</td>
<td>82</td>
<td>82</td>
<td>82</td>
<td>82</td>
</tr>
<tr>
<td>SD</td>
<td>8.00</td>
<td>9.62</td>
<td>8.69</td>
<td>10.33</td>
<td>13.72</td>
<td>.26</td>
<td>11.51</td>
</tr>
<tr>
<td>3 Mean</td>
<td>42.43</td>
<td>47.99</td>
<td>43.37</td>
<td>50.75</td>
<td>88.86</td>
<td>1.76</td>
<td>51.40</td>
</tr>
<tr>
<td>N</td>
<td>51</td>
<td>51</td>
<td>51</td>
<td>51</td>
<td>51</td>
<td>51</td>
<td>51</td>
</tr>
<tr>
<td>SD</td>
<td>5.34</td>
<td>8.03</td>
<td>6.75</td>
<td>8.30</td>
<td>14.12</td>
<td>.43</td>
<td>9.64</td>
</tr>
</tbody>
</table>
Table 4.19 presents the results of the independent samples t-tests.

Comparison of Group 1 and Group 2 shows that differences on six of the seven variables were highly significant, with all differences being in the expected directions (see Table 4.18). The exception was the "number of parents living at home" variable. Group 1 and Group 3 differed significantly on all but the Neuroticism and teacher-rating of Sociability scale. Although the mean score on the Locus of Control variable was significantly different for Group 1 and 3, inspection of the means indicates that the two groups are substantially more alike relative to Group 2. Lastly, Group 2 and Group 3 differed significantly on all but the AIR-TCHR variable.

<table>
<thead>
<tr>
<th>Predictor Variable</th>
<th>t-value &amp; p (2-tailed)</th>
<th>1 vs. 2 (df = 156)</th>
<th>1 vs. 3 (df = 125)</th>
<th>2 vs. 3 (df = 131)</th>
</tr>
</thead>
<tbody>
<tr>
<td>BASC-LOC</td>
<td>t</td>
<td>-14.38</td>
<td>-2.31</td>
<td>10.19</td>
</tr>
<tr>
<td></td>
<td>p</td>
<td>.001</td>
<td>.022</td>
<td>.001</td>
</tr>
<tr>
<td>SPPC-SC</td>
<td>t</td>
<td>10.48</td>
<td>7.14</td>
<td>-2.81</td>
</tr>
<tr>
<td></td>
<td>p</td>
<td>.001</td>
<td>.001</td>
<td>.006</td>
</tr>
<tr>
<td>JEPQRA-N</td>
<td>t</td>
<td>-11.30</td>
<td>.07</td>
<td>10.07</td>
</tr>
<tr>
<td></td>
<td>p</td>
<td>.001</td>
<td>.946</td>
<td>.001</td>
</tr>
<tr>
<td>SPPC-PA</td>
<td>t</td>
<td>9.79</td>
<td>4.58</td>
<td>-4.46</td>
</tr>
<tr>
<td></td>
<td>p</td>
<td>.001</td>
<td>.001</td>
<td>.001</td>
</tr>
<tr>
<td>AIR-TCHR</td>
<td></td>
<td>3.96</td>
<td>4.71</td>
<td>1.15</td>
</tr>
<tr>
<td></td>
<td></td>
<td>.001</td>
<td>.001</td>
<td>.252</td>
</tr>
<tr>
<td>AIR-PRNT</td>
<td>t</td>
<td>.18</td>
<td>2.81</td>
<td>2.71</td>
</tr>
<tr>
<td></td>
<td>p</td>
<td>.857</td>
<td>.006</td>
<td>.008</td>
</tr>
<tr>
<td>EAST-SOC</td>
<td>t</td>
<td>3.01</td>
<td>-.22</td>
<td>-2.92</td>
</tr>
<tr>
<td></td>
<td>p</td>
<td>.003</td>
<td>.830</td>
<td>.004</td>
</tr>
</tbody>
</table>
Once again, it was observed that dissatisfied children are no more "neurotic" than well-adjusted children and that like distressed children, dissatisfied children appear to perceive some aspect of the quality of their interpersonal relationships as poorer, this time, relationships with teacher proving most significant: An interesting result given that LS data were derived from school satisfaction reports. Nonetheless, teachers appear to see the children in Group 3 as equally sociable to those in Group 1. A novel result in the present DFA is the inclusion of the "number of parents at home" variable. Also novel is that this variable represents the only instance among all predictor variables reported in this study in which Group 3 showed the most "pathological" result while Groups 1 and 2 were identical to each other.\textsuperscript{10}

The pooled within-group correlations among the seven predictor variables are shown in Table 4.20. Overall, the magnitude of the correlations is much smaller than in the previous analyses. The strongest correlation was once again between the self-concept variables. Locus of Control demonstrated moderate correlations with the JEPQRA-N and both AIR variables. As in the previously reported DFA's, it appears that as one's sense that events are controlled by external factors grows, so does his/her neurotic characteristics, while perceptions of relationships, to teacher in this instance, become less positive. In addition, results of the present DFA suggest that such children are more likely to come from families in which only one parent lives in the home.

\textsuperscript{10} The term "pathological" is used liberally here, simply to indicate that single-parent families are known to be subject to increased stressors.
Table 4.20 Pooled Within-Group Correlations Among Predictor Variables for Classification 5

<table>
<thead>
<tr>
<th></th>
<th>SPPC-SC</th>
<th>JEPQRA-N</th>
<th>SPPC-PA</th>
<th>AIR-TCHR</th>
<th>AIR-PRNT</th>
<th>EAST-SOC</th>
</tr>
</thead>
<tbody>
<tr>
<td>BASC-LOC</td>
<td>-.03</td>
<td>.15</td>
<td>.01</td>
<td>-.14</td>
<td>-.14</td>
<td>.06</td>
</tr>
<tr>
<td>SPPC-SC</td>
<td>-.08</td>
<td>.19</td>
<td>-.03</td>
<td>.06</td>
<td>.05</td>
<td>-.02</td>
</tr>
<tr>
<td>JEPQRA-N</td>
<td>-.00</td>
<td>-.03</td>
<td>.10</td>
<td>-.01</td>
<td>.02</td>
<td>.03</td>
</tr>
<tr>
<td>SPPC-PA</td>
<td>.10</td>
<td>-.02</td>
<td>.10</td>
<td>-.01</td>
<td>.02</td>
<td>.03</td>
</tr>
</tbody>
</table>

Table 4.21 presents the confusion matrix for the DFA classification results. The prior probability of a case to be classified in either of Groups 1, 2, or 3 was 36.4%, 39.2%, and 24.4%, respectively. It is interesting to note that in this analysis based on school satisfaction reports, Group 2 represents the mode while Group 3 is roughly twice as large as in previous classifications (based on percentage). Based on the prior probability, 34.6% of the 209 cases in the analysis would be correctly classified by chance alone. Table 4.21 indicates that for each group independently, and for all groups in total, the correct classification rate was substantially higher than that expected by chance alone. For Groups 1, 2, and 3, the incremental increase above chance levels was 50.4%, 52.3%, and 40.3%, respectively. The total accuracy of prediction was 83.3%, an incremental increase of 48.7% above chance. As in the previous analysis based on self satisfaction scores, these results rival those of Classification 1 (see Table 4.5), and also appear superior with specific respect to the classification of Group 3. The lower half of Table 4.21 displays the results.
of the jackknifed classification and shows only minimal decreases based on this more reliable method.

<table>
<thead>
<tr>
<th>Predicted Group Membership</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Original</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Count</td>
<td>1</td>
<td>66</td>
<td>0</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>3</td>
<td>75</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>15</td>
<td>3</td>
<td>33</td>
</tr>
<tr>
<td>%</td>
<td>1</td>
<td>86.8</td>
<td>.0</td>
<td>13.2</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>3.7</td>
<td>91.5</td>
<td>4.9</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>29.4</td>
<td>5.9</td>
<td>64.7</td>
</tr>
<tr>
<td><strong>Cross-validated</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Count</td>
<td>1</td>
<td>65</td>
<td>0</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>3</td>
<td>75</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>15</td>
<td>5</td>
<td>31</td>
</tr>
<tr>
<td>%</td>
<td>1</td>
<td>85.5</td>
<td>.0</td>
<td>14.5</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>3.7</td>
<td>91.5</td>
<td>4.9</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>29.4</td>
<td>9.8</td>
<td>60.8</td>
</tr>
</tbody>
</table>

83.3% of original grouped cases correctly classified.
81.8% of cross-validated grouped cases correctly classified.

In light of the superior results offered by the School and Self Satisfaction subscales of the MSLSS, these two scales were combined in order to observe whether this composite might offer even better discrimination of the groups. The School/Self composite was paired with the BASC-SRP composite using the 40-20-40 percentile split method. Although the results were still very good, incrementally they did not appear to offer significantly better results than the classifications presented thus far. Thus, this DFA will not be described here.
however, the interested reader can find the summary table for this analysis in Appendix B.

4.7 Summary of Results

Viewed in sum, there appear to be several patterns to the preceding results worth noting. Specifically with respect to neuroticism, but more generally for all temperament and personality variables entered in the analyses, children in Group 3 were remarkably similar to those in Group 1. These two groups were also similar in their locus of control. With respect to all of these disposition-type variables, these two groups consistently appeared to manifest potentially more adaptive characteristics as compared to Group 2.

On the other hand, Groups 2 and 3 showed consistent similarity on variables assessing the quality of their interpersonal relationships, and their self-concept with respect to scholastic competence. With respect to all of these situation-type variables, these two groups consistently appeared to have more maladaptive scores as compared to Group 1.

The remainder of the variables that entered the analyses were self-concept variables. Aside from the Scholastic Competence variable mentioned above, a more linear trend was noted for these variables, with Group 3 consistently falling between Groups 1 and 2. This pattern fits well with how Group 3 is conceptualized, i.e., not as well-adjusted as Group 1 but not as distressed as Group 2.

These results and their implications are discussed in more detail in the following chapter.
5. DISCUSSION

As was pointed out in Chapter 3, I feel it is important to reiterate here that the positive results of a DFA do not in of themselves offer conclusive evidence of unique typologies as opposed to a dimensional organization of the variables under investigation. This type of determination is the domain of theoretical conceptualization, where statistical analysis is an important indicator but not the ultimate proof for a typology (Meehl, 1995). For instance, one could likely create a strong discriminant function for predicting a high versus low factual knowledge base in a sample aged 5-50 years, based on the discriminating variables of height, weight, and shoe size. The statistics would not inform us that the real source of discrimination was age and exposure to facts. We would need to turn to theoretical conceptualization, perhaps followed by statistical corroboration to uncover this fact.

As this example illustrates, the choice of variables is of critical importance. The central issue is, is the choice of variables theoretically defensible. In the present study, the variables were carefully chosen based on current research which has demonstrated, both theoretically and statistically, that the variables are related to mental health.

Meehl (1992) also pointed out that statistical data cannot be ignored. When the data support the existence of some theoretical concept, such data
cannot be discounted lightly. I believe the present study has offered initial
statistical evidence for the existence of a group of meaningfully “unique”
children. And although the results are not proof in of themselves that the
children form some class, I will attempt to describe here how this data supports
a theoretical position. The assertion is that individuals are free to vary in both
their subjective levels of LS and PS independently, that they can be classified
on this basis, and subsequently, their psychological make-up will show
conceptually meaningful differences with respect to those variables associated
with mental health. In short, these results support the validity of a two-
dimensional model of mental health.

However, at this juncture it is important to reiterate that these results are
only relevant to three of the four possible groups within the DFS. Although this
study could have easily incorporated the fourth group in the analyses, the
reasons for not doing so were outlined in the Introduction. It is very possible
that the present analyses would have been unsuccessful with the inclusion of
Group 4 because of the risk of increasing Type II error rates. Such a result
could have had the unintended effect of discouraging future researchers from
investigating this two-dimensional model. Although including only the three
groups offers no insight into this fourth group, the positive results of this study
have created a solid conceptual foundation on which future researchers can
build. Had all four groups been studied, this justification may not have been
obtained.
5.1 Discussion of the First Goal of the Study

The results of this study appear to have offered substantive evidence with respect to both of the primary goals of this study. The first goal of this study was to address the question: Is the group of children who can be characterized as exhibiting low levels of both LS and PS identifiably different, or unique, with respect to those variables known to be related to both LS and PS independently which were assessed in the present study, when compared to those children who exhibit and inverse relationship between LS and PS (i.e., the unidimensional perspective)? The results of this study unequivocally indicate that the answer to this question is yes. Results of the various DFA’s offered between 100% to 300% increases above chance levels in the rate of correct classification for Group 3. The excellent classification rates consistently obtained for Groups 1 and 2 (as high as 95.1%) suggest that the choice of discriminating variables offered a valid representation of the domain of variables known to be related to both SWB and PTH. Furthermore, the consistently minor decreases obtained through jackknifed classification speak to the reliability of these results. Thus, these results would appear to offer meaningful and valid data with respect to key variables associated with mental health, with preliminary evidence suggesting that these results are replicable.

In light of the rather straightforward content of this first question, further discussion of the topic should not be necessary to substantiate that the goal has indeed been met. However, there were several general observations which warrant some brief discussion. The first observation regards the general
superiority of the composite LS and PS scales over the subscales of which they were comprised. Although this finding was not explicitly hypothesized, it was reassuring nonetheless. This finding lends further support to the widely held belief in the superiority of comprehensive assessment measures over brief, even single-item, scales.

On the other hand, the two classifications derived from the MSLSS Self and School subscales were equally impressive. However, rather than concluding that composite scales do not offer superior measurements, I suggest these results point to the relative importance of these two sub-domains of LS in children’s overall level of mental health. Furthermore, both of these subscales are multi-item scales, and the results were based on classifications using the BASC-SRP SAD Triad composite.

Further evidence which supported the superiority of more comprehensive measures came from the analysis of data derived from a single-item measure of Global Life Satisfaction (GLS). Previous research (Greenspoon & Saklofske, 1997) found this single-item measure (“I think I have a good life”) which uses the same format as the MSLSS to demonstrate a positive association ($r = .61$, $p < .001$, $N = 312$) with the MSLSS Total score, indicating that the MSLSS Total score appears to be an acceptable measure of GLS. Furthermore, the correlation was not so high as to indicate that the multi-item MSLSS was simply a cumbersome method of obtaining the same information. The current study replicated this previous finding ($r = .63$, $p < .001$, $N = 407$). In addition, the DFA results from this study using the GLS to classify LS offered no discriminating
power. This result strongly suggests that the multi-item MSLSS offers a more accurate estimate of LS, in turn suggesting it is a more valid indicator of GLS. Finally, this result also points to the superiority of comprehensive assessment measures.

The second observation regards the general superiority of self-report data for both classification and discriminating variables, which raises the question of the possible influence of shared method variance on the results. Unfortunately, this possibility cannot be ruled out. However, I believe the more important question is, how else except for self-report would one expect to obtain a valid measurement of the subjectively experienced phenomena of life satisfaction and psychological distress? Furthermore, if some other method is possible, would it be expected to be potentially more valid than a well constructed self-report measure of the same phenomenon?

I put forth that theoretically, self-report should offer the greatest potential for inherent validity when measuring subjectively experienced phenomena (see Strupp, 1996, for a related discussion). The issue is not trivial. Cross-informant correlations of child/adolescent behavioural and emotional problems have proven to be low. For example, in their meta-analysis of 269 samples from 119 studies, Achenbach, McConaughy, and Howell (1987) found mean correlations of .60 between similar informants (e.g., pairs of teachers or parents), .28 between different types of informants (e.g., parent/teacher), and .22 between self-report and other informants. These results highlight that the choice of informant can significantly alter one's findings even when item content is similar.
or identical. The relevance for the present study is apparent. Given my assertion noted above, self-report would be the logical choice of informant. The present findings support this position.

A final point on this issue regards the use of parent and teacher data in the present study, in combination with self-report data. When both LS and PS were classified using self-report data, the parent-/teacher-report discriminating variables (the EAS variables) consistently failed to meet the stepwise entry criteria (the one exception being the inclusion of EAST-SOC in Classification 5 based on School satisfaction scores). Conversely, EASP or EAST variables consistently entered the stepwise procedure when PS was classified using parent or teacher report, respectively. Once again, the possible influence of shared-method variance cannot be ruled out. However, an alternate explanation is that these results reflect a consistency of report within informants that should not be expected between informants (e.g., Achenbach, McConaughy, & Howell, 1987). The results of a recent study by Offord, Boyle, Racine, Szatmari, Fleming, Sanford, and Lipman (1996) were consistent with such an explanation. The authors examined the consequences of integrating data from multiple informants when measuring child psychiatric disorder. Specifically, they assessed parent - teacher agreement on the presence of Conduct Disorder and Oppositional Disorder (both externalizing disorders, i.e., readily observed by others) in a sample of 1,134 children aged 6-16 years. Consistent with the results of the Achenbach et. al. study, the authors found that parent - teacher agreement was low. Using Cohen's Kappa (1960; a coefficient of agreement
used for nominal scales), they obtained values of .14 and .13 for Conduct and Oppositional Disorders, respectively. In addition, the results indicated that “Combining informants had the disadvantage of masking the distinctive patterns of associated features noted in informant-specific disorders” (p. 1078). The authors concluded that “Child psychiatric disorders should be conceptualized as informant-specific phenomena” (p. 1078). These results, as well as the present findings, suggest that future investigations of the DFS may be wise to analyze data from multiple informants independently.

In the present study, self- versus parent-/teacher- report of PS classifying data differed with respect to internalizing versus externalizing PTH, respectively. This factor as well would be expected to account for some of the difference in discriminating variables entered in the stepwise analyses. Variables such as EAST-EM, EAST-SHY, SPPC-BC, JEPQRA-P, EASP-EM, and EASP-ACT entered only the analyses based on parent-/teacher-report of PS, all of which can be logically expected to relate to externalizing or observable behaviours. The inclusion of these variables only in the analyses based on parent-/teacher- report of externalizing PS would also appear to support Offord et. al’s assertion of PTH being an informant-specific phenomenon.

In sum, I believe the major implications of these findings with respect to the first goal of this study are as follows. First, the logical direction for the future investigation of the DFS in childhood would appear to be an initial focus on self-report data of both LS and internalizing PS, both being inherently subjective
phenomena. Second, there does appear to be a role for at least teacher-report data, if not parent-report data as well. In light of the more observable nature of externalizing PTH, this appears to be an appropriate choice of data to collect from other-informants. How this data is to be integrated into a DFS is not yet clear. Available evidence suggests that combining other-report of PS with self-report of LS is not the most appropriate way of using such data.

Perhaps one direction might be to integrate data based on individual report of both LS and PS, with the additional data from other-informants. For example, research has shown that children with externalizing symptoms often, but not always, manifest internalizing symptoms as well (e.g., Gaub & Carlson, 1997; Gould, Bird, & Jaramillo, 1993; Weiss & Catron, 1994). Using a DFS approach based on self-report to classify children in one of the four possible groups and subsequently comparing children with externalizing disorders with respect to their DFS Group Membership may one day offer valuable information with respect to the factors which distinguish these children. These would be children who externally appear quite similar but whose internal experience, by definition, would be different.

5.2 Discussion of the Second Goal of the Study

Given the support obtained for the first goal of the study, the more fundamental issue becomes: What is the nature of the relationships between the groups and the discriminating variables? This inherently more complex question was the second goal of this study.
To begin, I would like to point out an observation which speaks to the choice of discriminating variables. In all the DFA’s except for Classification 3 (based on parent-report of PS), at least one variable was entered stepwise from each of the self-report measures used. Furthermore, for Classification 2 (the one classification based on teacher-report of PS), at least one variable was entered stepwise from every measure used, both self- and teacher-report measures. Given the criteria for stepwise variable entry, these results offer further validation for the choice of discriminating variables used in the study.

As mentioned, the only exception was Classification 3. Not only were no JEPQR-A variables entered stepwise, but BASC-LOC was not entered, whereas this variable was either the first or second variable to be entered in the four remaining DFA’s. On this note, it should be pointed out that Classification 3 was the only DFA that offered somewhat better results when direct variable entry was used rather than stepwise. Using direct entry, the results for the initial analysis were impressive, with 14 of 16 cases for Group 3 correctly classified. However, correct classification for Group 3 shrank substantially using the jackknife method (down to 50%). I strongly suspect that these rather confusing results are at least in part due to the attenuated sample size of the analyses derived from parent-report data. The DFA procedure can become highly sensitive to uneven group variance-covariance matrices when groups are uneven and small, both the case for the parent-data DFA (Tabachnick & Fidell, 1989). Furthermore, Classification 3 was the only DFA reported that violated the general guideline that the number of predictor variables should be less than the
size of the smallest group (ibid.). Twenty-seven variables were entered while Group 3 consisted of 16 subjects. In this light, I suggest that it would be inappropriate to draw conclusions from this parent-report analysis. Despite the results of the present study suggesting that self-report data offer the most significant findings, future research using larger samples of parents are needed before any conclusions on the utility of parent data can be drawn. Meanwhile, the implications for the present study are clear. There is sufficient doubt cast upon these results that it is inappropriate to discuss them further.

The pattern of results with respect to how the variables discriminated the groups offers some intriguing possibilities as to just how this DFS may add to our insight into mental health. To begin, I will discuss the general features of the results in which similarities were observed across DFA’s. At this juncture, it is important to emphasize certain cautions. The results of the DFA procedure, based on correlational data, do not offer evidence per se with respect to explanatory or causal relationships. Nonetheless, patterns of relationships may be observed which are consistent with potentially meaningful, even causal relationships between variables. In this light, some discussion of the possible implications of such relationships is considered appropriate, in the context of the stated caveat.

5.3 Perceptions of Self Versus Perceptions of One’s Situation

First, in reviewing the results based on self-report (Classifications 1, 4, & 5), there were a number of variables in which two of the groups scored very similarly while the third was obviously quite different. Furthermore, there
appeared to be a pattern to these various combinations in that the content of
the variables in which Group 3 was more similar to Group 1 was rather distinct
as compared to the variables in which Group 3 was more similar to Group 2.\(^{11}\)
Groups 1 and 3 showed remarkable similarity on two variables which measure
more dispositional characteristics, or rather, characteristics which involve
perceptions of self or internal states (Neuroticism and Locus of Control),
whereas Group 2 and 3 were more similar on certain variables which essentially
assess for more observable characteristics, or rather, one's perceptions of self-
in-relation-to the environment (these were various Interpersonal Relations
variables, in addition to perceptions of Scholastic Competence).

With respect to the various AIR scales, virtually every one which entered
the analyses demonstrated the pattern described above.\(^ {12}\) Furthermore, the
specific AIR variables to enter a given analysis appeared to offer additional
support both for the validity of the DFS and for the use of the DFA procedure in
investigating it. For instance, the AIR-TCHR was the most significant AIR
variable to enter Classification 5, based on self-report of School satisfaction.
Conversely, for those DFA's based on the total composites of both LS and PS
(Classifications 1 & 2), the AIR-TRI composite was the first relationship variable
entered. The recoded peer relations variables (AIR-SAME & AIR-OPP) also
entered Classifications 1 and 2. Thus, despite the overlap in variance (which
decreases the likelihood of a variable being entered in the stepwise procedure

\(^{11}\) Note that Groups 1 and 2 were significantly different on all variables in all DFA's with one
exception, AIR-PRNT in Classification 5. This anomaly is discussed later in the chapter.

\(^{12}\) The exception was AIR-PRNT in Classification 5.
after the first, “best” variable is entered), peer relations appear to be of noteworthy importance to children.

I believe that this particular pattern of results is potentially the most significant finding to come from this study. These results suggest that certain fundamental qualities of self, such as not being overly worrisome or fearful and an internal Locus of Control, may play an important role in helping to buffer the negative effects of being in bad situations, such as having bad relationships or possibly not being the best student. In other words, the factors of Neuroticism and Locus of Control may be particularly important for the “resilient” child. When these resilient children find themselves in these unfortunate circumstances, LS understandably appears to suffer, however, they do not go on to develop increased levels of PS. Should future research support this hypothesis, this knowledge would have several significant implications for the intervention in, and prevention of mental illness. These implications are discussed later in this chapter.

5.4 Self-Concept:

For the remaining variables entered in the three analyses based on self-report of PS, a more linear trend was noted. Furthermore, consistent with the theoretical basis upon which the three groups are conceptualized, the scores for Group 3 fell between the other two groups for each of these variables. Interestingly the other variables were, without exception, self-concept variables. The most significant of the self-concept variables appeared to be, not surprisingly, global self-worth (GSW). It was noted earlier that GSW is
conceptually distinct in comparison to the other self-concept variables, which all assess specific domains of self-competence. This global judgement of one's self-worth appears to be particularly important within the DFS. It was the second variable entered in Classifications 1 and 4 (self-report) and the first variable entered in Classification 2 (teacher-report). The only classification in which SPPC-GSW was not entered was number 5, based on school satisfaction scores. For Classification 5, the second variable entered (after BASC-LOC) was the SPPC-SC, a striking consistency when the content of the LS variables are taken into consideration. Specifically, the relationship between school satisfaction and the SPPC-SC is conceptually consistent with the relationships between total LS or self satisfaction and GSW.

SPPC-SC was the only self-concept variable that did not consistently demonstrate a linear relationship to the groups. As noted in the previous section, children in Group 3 appeared more similar to those in Group 2 with respect to their beliefs in their scholastic competence. In Classifications 1 and 2 (i.e., DFA's based on both self- and teacher-report), Groups 2 and 3 had virtually identical mean scores on this variable. Although a moderately more linear trend was observed for this variable for Classification 5, the same general pattern was noted (i.e., Groups 2 and 3 more similar than Group 1). In addition, SPPC-SC was the most significant variable to discriminate Groups 1 and 3 in Classification 5, a further indication of the greater similarity of Groups 2 and 3 on this variable in comparison to Group 1. Thus, this particular self-concept
variable appears to have a somewhat unique relationship with the groups as compared to the other self-concept variables.

The three remaining self-concept variables which entered the analyses did demonstrate the linear trend. SPPC-PA appeared to be the more important of the three, being entered in all three classifications based on self-report. This variable is known to be highly related to GSW (e.g., Harter, 1985), a result obtained in the present study as well. The correlations between SPPC-GSW and SPPC-PA were .52 and .50 for the two DFA's in which both variables were entered (Classifications 1 and 4, respectively). Next, SPPC-BC was entered in Classification 2, based on teacher-report. The last self-concept variable to be entered was SPPC-SA. This variable was entered in Classification 4 based on Self satisfaction.

The pattern of results pertaining to these variables appears to be as follows. Children's perceptions of their physical appearance was consistently important in those classifications using self-report of internalizing PS, whereas their perceptions of their behavioural conduct was important in the classification based on teacher-report of externalizing PS. These results show considerable face validity. The strong relationship between SPPC-GSW and SPPC-PA in the self-report DFA's indicates how important our views about our self-appearance are to our general well-being. It would follow that to have a low opinion of one's attractiveness could logically contribute to feelings of anxiety, sadness, and stress in social situations (i.e., the SAD Triad). With respect to SPPC-BC, the relationship to externalizing PS is evident: Externalizing PS is essentially an
assessment of (poor) behavioural conduct. Finally, the inclusion of SPPC-SA in Classification 4 would appear to highlight the importance of peer relations, in this case, with specific respect to satisfaction with Self.

Why these three domain specific self-concept variables, along with the SPPC-GSW, demonstrated a linear trend is difficult upon which to speculate. In practical terms, this linear relationship indicates that these four variables are the only ones in which the knowledge of a subjects score on one of the variables would lead to an increase in the prediction rate for all three groups.\textsuperscript{13} One possibility is that these variables may represent concurrent "outcome" conditions, in addition to group membership.\textsuperscript{14} Above, it was discussed how specific constellations of dispositional variables in combination with certain situation based variables may result in one’s group membership. Perhaps a concomitant outcome is one’s sense of self-concept in these four areas. In other words, it could be that when a child manifests particular levels of SWB and PTH, they will tend to develop certain self-concepts consistent with their levels of subjectively perceived mental health.

Alternatively, the role of these variables could be more causal than effect, similar to my position taken with respect to the remaining variables. It was pointed out earlier that the three groups appear to represent an ordinal grouping on the scale of "mental health", with Group 3 falling between Groups

\textsuperscript{13} By contrast, knowing a subject’s score on the remaining variables only increases the prediction rate for choosing one group over the remaining two (or vice versa). For instance, the best prediction from a low Neuroticism score is Group 1 or 3, over Group 2.
\textsuperscript{14} I remind the reader that for purposes of this section, these results are discussed in terms of how they might be consistent with causal hypotheses.
1 and 2. Thus, the role of the self-concept variables may well be causal, simply reflecting this linear relationship. This notion is similar to that proposed by Segal and Swallow (1993). The authors posit that self-concept may represent a higher-order construct, based on an experientially derived knowledge set. This complex of beliefs about self and self-in-relation-to the world creates a lens through which future experience is interpreted. In the case of PTH, the interpretations are often distorted which results in symptomology.

Unfortunately, the results of this study do not allow further speculation with regard to the plausibility of one of these alternative hypotheses over the other. However, regardless of this difficulty, these results strongly suggest that self-concept variables are important contributors for classification in the DFS and bear further investigation in future studies investigating the utility of this new system. Self-concept variables may prove to be an important general indicator of a child’s placement within the DFS. These were the only variables to consistently demonstrate a linear relationship with the DFS in a manner consistent with the theoretical basis of the system: Group 3 is not as well-adjusted as Group 1 but not as distressed as Group 2. Consequently, their self-concept scores were consistently between the two, significantly different from both groups.

5.5 Additional Observations

At this point, I believe I have addressed the major findings to come from this study. Nonetheless, there were a number of specific results which, although less compelling, deserve comment.
5.5.1 Temperament and Personality

Of all the specific results deserving some comment, those pertaining to personality variables, and to a lesser extent, temperament variables, seem to be the most salient. To begin, in comparing the three classifications based on self-report with that based on teacher-report, it is interesting to note that self-reported Neuroticism was not included in the teacher-report classification. Indeed, consistent with the results of Pavot, Fujita, and Diener (1997), this variable played a crucial role in discriminating Groups 1 and 3 from Group 2 in the self-report classifications. Despite this seeming discrepancy, the results do still demonstrate consistency in this respect. Although Neuroticism was not entered in Classification 2, the teachers’ ratings of Emotionality (EAST-EM), believed to be a temperamental precursor to Neuroticism, was entered. Furthermore, the same pattern of results was obtained, with Groups 1 and 3 scoring similarly on EAST-EM, and both being significantly lower than Group 2. Thus, although this result is unique to Classification 2 (with the spectre of shared-method variance once again rearing its head), it is entirely consistent with the discussion of the Neuroticism variable offered above. Interestingly, the correlation between JEPQR-A-N and EAST-EM for the whole sample, although statistically significant, was rather weak ($r = .13$, $p = .005$). Thus, despite the known long-term implications for high Emotionality with respect to the development of high Neuroticism, these two variables would appear to share little variance when measured concurrently in middle childhood. Of course, the issue of the data coming from different informants may well have attenuated the
correlation between these two variables (e.g., Achenbach, McConaughy, & Howell, 1987; Offord, Boyle, Racine, Szatmari, Fleming, Sanford, & Lipman, 1996). Nonetheless, this weak relationship only makes the consistency between the two variables in terms of how they entered the DFA’s in the present study all the more intriguing.

Next, it is worth noting that Psychoticism was a significant variable in Classification 2, again, with Groups 1 and 3 scoring similarly, and both being significantly lower than Group 2. This pattern is identical to that observed with the Neuroticism variable, suggesting that children in Group 3 may be more similar to Group 1 with respect to personality in general. Furthermore, the fact that Psychoticism was entered in the analysis based on externalizing PS is also a logical outcome. One can easily hypothesize how a child who answers yes to “Do you enjoy hurting people you like?” (a Psychoticism item) might show elevations on teacher-report of Aggression or Conduct Problems.

Perhaps the most surprising result to come from this study was the fact that the remaining personality variable, Extraversion, did not reach the entry criteria for even one of the DFA’s reported. Considering the significance of this variable in research investigating either PTH or SWB in isolation, this non-result was rather unexpected. This non-finding offers some support for Costa and McCrae’s (1980) contention that we must be careful not to assume that extraverted individuals are somehow happier or more satisfied than introverts. Future research using the DFS may show this non-finding to be among the
more important outcomes, perhaps changing our views on the role of extraversion in mental health.

Although extraversion did not enter the analyses per se, EAST-SOC was entered in Classification 5. Naturally, this temperament dimension is one considered to be a precursor to Extraversion. And once again, the same pattern was observed, with Groups 1 and 3 scoring similarly and Group 2 scoring significantly below the other two. Although the variable was the last of seven to be entered and demonstrated poor loadings on both functions, I believe the significance of this result is that it indicates yet another dimension of temperament/personality in which the same pattern of results held constant. In sum, the results of this study offer strong support for the interpretation of Groups 1 and 3 being indistinguishable which respect to temperament/personality in general, and that without exception, Group 2 scored in the direction generally considered “maladaptive” on these variables.

5.5.2 Remaining Observations

There remain two specific observations which warrant mention. The first observation is the inclusion of AIR-PRNT in Classification 5. This was the only DFA in which this variable was entered. More noteworthy however, this was the only case of a variable in which Group 3 scored in the “maladaptive” direction, with Groups 1 and 2 having identical scores. Why this variable should enter only in the DFA based on School satisfaction is not at all clear, however, the group differences were beyond doubt. Whereas only seven percent of children in Groups 1 and 2 apparently belonged to single-parent households, 24% of
children from Group 3 could make the same claim. This result suggests that single-parent status may not be particularly meaningful in the development of PS but may contribute to decreased LS, at least in the domain of school satisfaction. It was not surprising that this variable should enter at least one of the analyses. This variable has been shown to be a psychosocial stressor in many respects (e.g., increased economic stresses, decreased opportunities for family supports, impact on self-concept of being motherless/fatherless). However, it is curious that this variable was only related to decreased LS and not increased PS as well. Nonetheless, given the single occurrence of the variable being entered in this study, future research will need to determine whether this result is replicable or spurious.

The last observation concerns the results pertaining to SPPC-GSW in Classification 2. Unlike the linear pattern noted for this variable in the self-report classifications, here Groups 2 and 3 were identical on this variable, both scoring significantly below Group 1. Again, why this discrepancy might exist is not at all clear. Furthermore, any suggestions would clearly be contrary to the speculations offered above with respect to the consistent linear pattern noted among the self-concept variables. Thus, here also it will remain to future research to determine if this result was spurious or indicative of some meaningful yet hidden relationship.

5.6 Significant Implications

The most significant implication of the results of this study concern nothing less than how we conceptualize mental health. Although the notion that SWB
and PTH are related but unique is not new, the attempt to create an assessment system including both is. This study, being a preliminary investigation, offered substantial evidence for the potential validity and utility of such an integrated system. These results indicate that when freed from the trap of the unidimensional perspective of mental illness-health, there exists a potential to come to a more complex understanding of what it means to be mentally healthy versus ill.

As was stated at the outset of this study, the implications for the areas of intervention and prevention were considered the most important with respect to the potential utility of such a system. In keeping with the dual factor structure, the results of this study suggest two general directions for intervention/prevention research. The first direction comes from the similarity of Groups 1 and 3 on the “dispositional” type factors, while the second direction comes from the similarity of Groups 2 and 3 on the more situation based variables. These will be discussed in turn.

5.6.1 Neuroticism and Locus of Control

Consistent with the findings of Pavot, Fujita, and Diener (1997) who found that Neuroticism was the most significant of the “Big Five” personality factors in accounting for SWB factors, the results of the present study indicate that Neuroticism is the most significant of the “Even Bigger Three” personality factors in accounting for children’s mental health within the DFS. These results suggest that this trait may offer an individual protection from developing a psychopathology in the face of adverse situations such as poor interpersonal
relations or perceptions of poor scholastic competence. Despite the fact that personality characteristics are believed in large part to be genetically determined, research has indicated that a large portion of the variance remains to be accounted for by factors other than heredity. This suggests that any strategy designed to decrease one’s propensity toward a neurotic character style may prove to increase the psychological resilience of the person given other adverse factors.

The notion of altering temperament/personality characteristics, although uncommon, is not without precedent. For example, primate research has demonstrated how enriched environments can increase problem-solving abilities and decrease fearfulness, as well as signs of behavioural and affective disturbance in Rhesus monkey infants (Champoux, DiGregorio, Schneider, & Suomi, 1990; Schneider, Moore, Suomi, & Champoux, 1991). Results of the present study suggest that efforts to reduce similar characteristics in human youngsters (e.g., fearfulness, neuroticism), could have lasting beneficial effects. Attempting such change in children would seem to be the logical starting point. Costa and McCrae (1994) suggest that personality becomes essentially unmalleable somewhere between 21 and 30 years. Mischel and Shoda (1995) suggest that personality may even be modified but the chance of meaningful change lessens with age. Both of these claims support continued efforts with younger populations.

The results also suggest that strategies aimed at increasing an internal locus of control could have similar beneficial effects, helping to foster resiliency
in children, and no doubt adults. Currently, interventions aimed at modifying locus of control are more common than those directed at personality (e.g., Carton & Nowicki, 1996; Fernandes & Fontana, 1996), suggesting this factor may present a logical first step for intervention/prevention research aimed at these dispositional type characteristics.

Attempting to modify children’s neurotic tendencies as well as their beliefs surrounding the degree of control they have in their lives may result in creating more resilient individuals. Within the framework of the DFS, the idea would be to help shift children from Group 2 to either Group 1 or 3. Furthermore, should future longitudinal studies show that non-pathological children high in Neuroticism and external locus of control are indeed more likely to develop Group 2 symptom patterns, such strategies could be used to prevent, rather than intervene with PTH development.

5.6.2 Interpersonal Relations and Scholastic Competence

The second direction for intervention/prevention suggested by these results comes from the similarity between Group 2 and 3 on certain variables. Interventions based on improving various social relationships, both within and outside the home, may help to relieve more situation based stressors, stressors which are commonly known to occur in clinical populations. The results also indicated that one’s beliefs in his/her scholastic competence are related to decreased LS and/or increased PS. Although helping children to use more effective work strategies would be useful in this case, genetics will place the ceiling on one’s potential for academic achievement. Thus, strategies aimed at
helping children to develop a more balanced or realistic view of both their strengths and weaknesses may prove beneficial.

The aim of intervening at this level would be to help shift children from Group 3 to 1, or from Group 2 to 3 or 1. Further, it is these types of problem areas with which schools and mental health agencies often deal. Social skills programs are ubiquitous. Cognitive-behavioural interventions for school performance fears are equally popular. In this context, an important issue needing to be addressed is the role of Neuroticism and Locus of Control in predisposing one to these types of problems. Should these dispositional factors play a causal role, such interventions would be situation-specific, and individuals remaining high in Neuroticism and external Locus of Control would remain at-risk for the future development of additional relationship difficulties and doubts about their competence. Certainly, the potential short-term benefit would make such intervention strategies a worthy goal, however, strategies such as those outlined in section 5.6.1 may one day prove necessary in order to create lasting change in these areas.

On the other hand, even if high Neuroticism and external Locus of Control do prove to predispose one to increased PTH, the present results pertaining to Group 3 indicate this is not the only path to these situation-type difficulties. In other words, it may be the child’s situation which shifts him/her from Group 1 to 3, in effect, decreasing LS. Intervening at this level (e.g., improving relations, helping children to feel more accepting of their academic potential) would then be expected to increase LS, returning the child to Group 1. Thus, these types of
interventions may prove sufficient for children in Group 3 while the interventions discussed in the previous section may also need to be utilized for children in group 2. It will be left to future research to determine if these directions, indicated by this study, prove valid and beneficial.

5.7 Limitations of the Present Study

Intelligence data would certainly have been advantageous but impractical in this study as it would have required too much of the children's school time, unless a brief and more restricted group measure (e.g., matrices test) was employed. Unfortunately, obtaining existing intelligence/achievement data from the schools proved unfeasible. The importance of self-concept of scholastic competence in the present study suggests it would be worthwhile collecting such data in the future.

There is considerable data from the children's family that would have certainly offered discriminating power in this study, for example, parental history of PTH and criminality, mother-child attachment history, and measures of parental neglect, to name a few. However, the collection of such data is either very time-consuming or of a sensitive nature. Attempting to collect relatively sensitive data would run the risk of significantly reducing the consent rate, which in turn introduces logistical as well as interpretational difficulties. With respect to attachment history specifically, it can be hypothesized that the estimation of the current quality of children's relationships to their mothers and fathers would be related to attachment history (e.g., Masten & Coatsworth, 1998). By measuring parent-child relationships in the present study, it may well
be that this important variable is nonetheless being indirectly accounted for. Indeed, the importance of interpersonal relations and scholastic competence found in this study are consistent with findings from the field of child resilience (Masten & Coatsworth, 1998), where these two variables appear to be the two most commonly reported predictors of resilience.

A further potential issue concerns the use of self- versus other-report. The reasoning for relying predominantly on self-report has already been discussed, nonetheless, it was possible that factors involving meta-cognitive development could have had a negative impact on the analyses. In other words, it is possible that children this age can lack a certain level of insight that would make it difficult for them to offer accurate estimates of their internal states, thoughts, and feelings. However, in light of the positive results of this study, any such influences would appear to have posed no threats to the analyses, and further support the notion of the inherent validity of self-report of subjective experience even in childhood. Future researchers may choose to replicate this study using predominantly parent- or teacher-report, which would serve to challenge or support the present findings. But even if such studies were to challenge the present findings, the question of which results should be considered more inherently valid would not be answered. To reiterate the question posed earlier: How else than through self-report could one expect to achieve the most accurate assessment possible of subjectively experienced phenomena?

A final general issue relates to sample size. This issue has already been discussed earlier in this chapter with respect to Classification 3 based on the
parent-data subsample. Although the size of Group 3 varied in the remaining analyses (range = 30-51), it was never so low as to threaten the DFA procedure. Nonetheless, replicating this study with a larger sample for Group 3 would be helpful. In particular, there were two specific results which may have been spurious given the relatively small size of Group 3. First was the gender difference for Group 3 on Classification 1 (only 30% female) whereas the gender split was roughly 50/50 for groups 1 and 2. Second was the number of single-parent children in Group 3 (24%) in Classification 5 whereas this figure was only 7% for both groups 2 and 3. Replication of this study using larger samples for Group 3 should help to uncover the meaning, if any, of these results. As a final note on this topic, it does not appear likely that Group 3 in its entirety could be the result of sampling or measurement error (i.e., support for the two-dimensional model resulting from error). Had this been the case, it is extremely improbable that the DFA's would have worked as well as they did. And lastly, when viewed in sum, the descriptive statistics and data-screens for Group 3 across the various DFA's were very reasonable, revealing no threats to the analyses.

5.8 Conclusion

For the last half-century, researchers and theorists have been advocating for the importance of SWB in our understanding of mental health, yet this now large database is yet to be integrated in any meaningful way in how we view the mental illness-health continuum. This study has taken the important first step of
demonstrating a systematic procedure for integrating the fields of SWB and PTH.

I believe the results of this study offer good reason for optimism regarding how this new system may be utilized. Even at this preliminary stage, the nature of the relationship between these two central concepts is already apparently being uncovered. The results suggest that Neuroticism and Locus of Control are significant characteristics of the individual protecting from the development of PTH. In addition, it was not surprising that our interpersonal relationships seem to be key components associated with PTH and/or decreased SWB. After all, we humans are social organisms.

That these variables were implicated in their importance to our mental health is nothing new. Indeed, they were chosen for their known associations with mental health. What is new is that this study has begun to uncover the nature of their relationships in a manner which is not possible when mental health is viewed exclusively though the framework of SWB or PTH. Had only PTH been assessed in the present study, the differences with respect to interpersonal relationships and scholastic competence would have been lost because Groups 1 and 3 would have been collapsed (in effect, attenuating the difference on these variables for the two remaining groups). Had SWB been assessed exclusively, so too would the differences in Neuroticism and Locus of Control been masked (also due to attenuation of differences). Only in conjunction, did we begin to see the nature of the relationships among these predictor variables in the context of the DFS groups.
For practical purposes, this study was not intended to provide an exhaustive representation of factors associated with mental health-illness. The results suggest that more comprehensive research endeavors will prove fruitful. In hindsight, it would appear that the complete version of the Eysenck Personality Questionnaire would have been appropriate, in light of the importance of Neuroticism, and personality in general. Intelligence and achievement data may also have been important discriminators given the importance of self-concept of scholastic competence.

It is only logical to assume that future such studies will continue to uncover meaningful relationships between additional predictor variables and mental health within the dual-factor framework. This study has set the stage, indicating that the method is viable.

It is my particular pleasure that the method was shown to be viable in a child sample. Given the potential for this type of data to be used in the fields of intervention and prevention, it is my hope that this direction of research will one day result in the application of new intervention/prevention programs in the child population. The long-term outcome of these programs will offer the ultimate test of the validity of the DFS.
REFERENCES


Bracken, B.A. (1993). *Assessment of interpersonal relations*. Austin, TX: PRO-ED.


teacher-reported psychological problems and school functioning. *Social Indicators Research, 30*, 71-82.


Argyle, & N. Schwartz (Eds.), *Subjective well-being* (pp. 141-169). New York: Plenum Press.


in the general population for predicting psychiatric diagnosis at age 12. 

American Journal of Psychiatry, 142, 943-946.


APPENDIX A: LETTER OF PARENTAL CONSENT

Dear Parents and/or Guardians,

With the approval and support of the Board of Education and the Principal of your child's school, your child's class has been randomly chosen to participate in a research project with the aim of developing a new way of looking at children's sense of well-being. Specifically, we are interested in combining children's views about their satisfaction with their lives with more traditional measures that tend to focus on how they think and feel about themselves. For several decades now, we have known that it is important to ask people how good or positive they feel about things in their lives and not simply to ask what is wrong. You may be familiar with this idea if you have followed the current changes that the Saskatchewan Health Board is making in creating the "Wellness" model. By creating these positive ways of looking at children's well-being, we believe we will take a significant step in helping to create new economical programs aimed at improving the lives of all children. For example, the typical child does not experience significant problems but can still offer useful information about how life could be made more satisfying, maybe something as simple as a certain after school activity. This approach shows great respect for the dignity of children. It respects the child as "expert" on him/herself and looks to the child for finding ways of making positive change, whether small or more significant. In this way, we feel we can offer children the most that society's resources can offer, doing our part to help children go on and lead productive and fulfilling lives.

We request your consent in allowing your child to participate in this research project. There are no harmful effects or risks associated with this project. Your child's participation will involve him or her answering a number of written, multiple-choice questions, asking about thoughts, feelings, and satisfaction. This will take about two hours (two one-hour sessions).

We also believe that you, as a parent, can offer important information about your child's sense of well-being. Thus, we ask you to consider responding to a few questions yourself. These are also multiple-choice questions that would take about fifteen minutes to complete. Your participation is, of course, optional and separate from your child's participation. In other words, you need not participate in order for your child to take part in the study. Should you decide to participate, your child would bring home your questionnaire in a sealed package, along with a postage-paid return envelope so you can simply drop your completed questionnaire into the mail. The consent form attached to this letter has two sections: one asking about your child's participation and the second asking about your own participation.

152
Your child's school is one of many selected within your school division. The results of participation in the project are strictly anonymous and will not affect your child's grade or progress in school. The results of this project will not be reported for individual students or schools, therefore, individual participants will not be identifiable. The findings of this study will be made available to you through a summary letter, presentation, and/or article in the school Newsletter.

We thank you for considering your child's participation in this project. We are most eager to have your child participate, however, participation is strictly voluntary and you or your child are free to withdraw consent at any time without consequence. Should you have any questions, you can contact Peter Greenspoon, M.A. (249-5440) or Dr. Don Saklofske (966-7727).

Sincerely,

Peter Greenspoon, M.A.  
Psychology Doctoral Student  
University of Saskatchewan

Don Saklofske, Ph.D.  
Prof. of Educational Psychology  
University of Saskatchewan

Director  
School Board

IF YOU CONSENT, PLEASE COMPLETE AND RETURN THIS PORTION TO YOUR CHILD’S TEACHER AS SOON AS POSSIBLE

I, __________________________, consent to allow _________________________, to
(paren’s name)  
(child’s name)
participate in the “Children’s Sense of Well-Being” project described above.

If you, the parent(s), would like to participate by responding to a brief questionnaire, please check the appropriate box below, in which case, your child shall bring home your questionnaire on the day of the study. Your participation is NOT required for your child’s participation.

Please check one of the following:

☐ I (we), the parent(s), will participate in the study
☐ I (we), the parent(s), do not wish to participate in the study

______________________  
(paren’s signature)

_________________________  
(date)
APPENDIX B: SUMMARY TABLE OF THE 40-20-40 PERCENTILE SPLIT CLASSIFICATION USING THE MSLSS SCHOOL/SELF COMPOSITE SCORE AND BASC-SAD TRIAD

<table>
<thead>
<tr>
<th>Predicted Group Membership</th>
<th>Total</th>
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<tr>
<td><strong>Cross-validated</strong></td>
<td></td>
</tr>
<tr>
<td>Count</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>82</td>
</tr>
<tr>
<td>2</td>
<td>8</td>
</tr>
<tr>
<td>3</td>
<td>12</td>
</tr>
<tr>
<td>%</td>
<td>92.1</td>
</tr>
</tbody>
</table>

84.5% of original grouped cases correctly classified.
84.0% of cross-validated grouped cases correctly classified.