SELF-ESTEEM AND ACHIEVEMENT:

ETHNICITY, GENDER, PARENTAL LOVE AND COPING STYLES

By

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Abstract

The strength of the relationship between various measures of self, such as self-esteem, self-concept, self-acceptance, and achievement has been studied extensively with varying results (see Hansford & Hattie, 1982). This variation may be attributable to the use of different self and achievement measures, ranges in the age of those studied, and not controlling for socioeconomic status, ethnicity/race, gender, or school effects.

The main goal of my thesis was to estimate the strength of the relationship between self-esteem, and achievement when gender, ethnicity/race, socioeconomic status, aspects of the parent-child relationship and school contextual effects were controlled. Analyses were conducted on two large data sets. The first was taken from the National Educational Longitudinal Study (NELS) - 1988 and consists of 21,039 grade 8 students sampled from the United States. The second data set was taken from the School-Based Prevention Project (SBPP) - 1995 and consists of 6,795 grade 8 through 12 students from 20 schools in British Columbia, Canada. For both data sets, 7 of 10 items from the Rosenberg Self-Esteem Scale (1965) were used to measure self-esteem.

Analyses of the NELS data set yielded three notable findings: (1) the strength of the self-esteem/achievement relationship is not equivalent across gender-ethnic/racial groups, (2) the self-esteem/achievement relationship varies when grades versus tests scores are used as achievement measures, and (3) the variability in self-esteem is largely within-schools. Variables controlled in these analyses were gender, ethnicity/race and socioeconomic status.

Analyses of the SBPP data yielded four notable findings: (1) the strength of the self-esteem/achievement relationship varies across a new measure of coping styles, (2) relational factors reduce the strength of the self-esteem/achievement relationship, (3) relational factors explain much more of the variance in self-esteem than does achievement, and (4) almost all the variance in self-esteem is within-

schools. Variables controlled in these analyses included gender, grade-level, socioeconomic status, perceptions of Mother's and Father's love, and coping styles.

The theoretical implications of these results are discussed in terms of attachment theory (Ainsworth, 1969), coping styles (Horney, 1950), and the need to belong (Baumeister & Leary, 1995).

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CHAPTER 1: THE NEED TO UNDERSTAND SELF-ESTEEM AND ITS RELATIONSHIP WITH ACHIEVEMENT

Today, as perhaps never before, there is an overwhelming concern for the self-esteem of our children and youth. All over North America school programs and research endeavors consume millions of dollars as methods are sought to protect or enhance children's self-esteem. In the United States, programs such as Head Start, Follow Through, and Upward Bound have been implemented due in part to the belief that self-esteem is related to academic achievement (see Pottebaum, Keith, & Ehly, 1986). In Canada, school programs such as Towards the Year 2000 (British Columbia) and "no-fail" policies (Bouw, 1996) have been implemented with the aim of protecting the self-esteem of students. British Columbia's Towards the Year 2000 program called for a move from a letter-grading system to an "anecdotal" grading system so that children would focus less on performance (i.e., "making the grade"), and more on learning (i.e., "what can I do and what do I need to learn"). The new B.C. "no-fail" policy that aims to protect or enhance self-esteem by avoiding telling children that they have failed a grade.

The assumption underlying "no-fail" policies and many of the programs aimed at protecting or increasing self-esteem is that there is at least a moderate direct relationship between self-esteem and achievement. However, a survey of the research literature on the relationship between self-esteem and achievement reveals a wide range of different results. For example, Hansford and Hattie (1982) conducted a meta-analysis with 128 studies comprising 202,823 people on the relationship between various measures of self and achievement. They found a range in the correlations between the measures of self and achievement from -.77 to .96. This study showed the variety of results in this relationship when different self measures (e.g., self-esteem, self-concept, self-confidence) and samples were used. The variety of the estimates may also be attributed, in part, to sampling of students from different types of schools, socioeconomic levels, and ethnic/racial backgrounds.

Purpose of this Research

One problem with a wide range of estimates of the strength of the self-esteem/achievement relationship is that they do not provide adequate information for making educational policy decisions at provincial/state or national levels where policies apply to many different groups of students and schools. To address this problem, my dissertation focused on one self-esteem instrument and method of examining self-esteem and achievement, with the hope of gaining a greater theoretical understanding of the self-esteem/achievement relationship.

Two data sets were used in this research, the National Educational Longitudinal Survey (NELS) and the School-Based Prevention Project (SBPP). Each data set contributed a unique set of variables to the research and, therefore, a unique set of questions that could be addressed. The National Educational Longitudinal Survey (NELS) is a longitudinal study that has collected data on approximately 25,000 students every other year since 1988. For this study, 21,039 of these students were used in the main analyses (after excluding American Indians, outliers and those with missing data). The 1988 data were available at the time this research began and, therefore, were used in this study. This was an archival data set and the advantage of using it being the absence of cost and the possibility of conducting analyses without the time needed to collect and enter data. The disadvantage of using this data set was being limited in terms of which variables were available for analyses.

The School-Based Prevention Project (SBPP) collected data in 1993 and 1995 from schools in British Columbia. The 1995 data contain information from approximately 8,000 grade 8 to 12 students, and 6,795 were used for the main analyses in this study (after excluding outliers and those with missing data). I participated in the design of this survey, data collection and data analyses as a part of a larger project. Thus, using this data set was not only advantageous in terms of absence of cost, but also its timing gave me the advantage of placing some of my own measures on the survey instrument.

Below is a basic overview of the definitions and measurements of self-esteem and achievement used. This is followed by an overview of the dissertation and how the issue of significance was addressed.

Defining Self-Esteem

In The Penguin Dictionary of Psychology, self-esteem has been defined as "[t]he degree to which one values oneself" (Reber, 1985, p. 678, emphasis added). Although definitions vary among researchers, Battle (1982, p.27, emphasis added) concludes that "[a]ll definitions indicate that self-esteem is a subjective, evaluative phenomenon which determines the individual's characteristic perception of personal worth" (see also Blascovich & Tomaka, 1991). Where self-concept implies a mentally conceived image, idea, or thought (Morehead & Morehead, 1981) in which one thoroughly describes oneself (Reber, 1985), self-esteem is an evaluative judgment of one's self or self-worth (Gurney, 1986; Reber, 1985). For example, an item on a self-esteem scale might be "I feel good about the way I look", whereas one on a self-concept scale might be "I have a physically attractive face". The former item asks respondents to assess how they feel about their appearance, whereas the latter item asks respondents to answer a descriptive comment about their appearance.

Measuring Self-Esteem

Self-esteem measures may be general or specific in that items may be presented in a context-free or context-bound form, respectively. With context-bound measures people are asked to respond relative to a given context (e.g., sports), whereas with context-free measures people are asked to respond to general statements without reference to a context (e.g., I feel good about myself).

One disadvantage of context-bound measures is that they limit the individual to responses that are within designated areas, such as academics, appearance or sports. This can be a problem, especially when there is a topic area that is very important to a segment of the sample that is not presented. For example, if one segment of the population values the family business more than academic performance but the measure of self-esteem includes only academic and social contexts, then their feelings about themselves with respect to their activities in the family business are excluded.

Sometimes several context-bound measures are averaged to derive a global self-esteem score that cuts across different contexts. The problem with these global self-esteem measures is that they may mask or distort gender and ethnic/racial differences. Gender differences may be masked because males tend to score higher on some context-bound measures (math, physical ability, physical appearance, and emotional stability scales) whereas females tend to score higher on other context-bound measures (verbal, social relations with the same gender, and honesty scales; see Skaalvik, 1986). Similarly, context-bound measures that include items related to academic achievement may be biased towards Whites and against Blacks. Steele (1990) has suggested that Black students are faced with forces, such as societal stigmatization, that "...prevent them from identifying with schooling", by which he means "...the incorporation of the domain of school and the goals of learning as a basis of self-esteem" (p.11). If the purpose of the research is to focus on a specific context then such measures are appropriate; however, caution may be needed for generalizing the results to group differences.

When group differences are of interest, a context-free measure of self-esteem may be more appropriate since respondents are able to respond in general terms about how they feel about themselves. Whatever is most important to their feelings about themselves can be incorporated into their responses without the questions limiting their responses. Thus, context-free measures can provide more information about what is related to one's overall sense of value when their attention is not drawn to a specific area, such as academic self-esteem. In this research a context-free measure of self-esteem, the Rosenberg Self-Esteem scale, was used.

The Rosenberg Self-Esteem Scale (RSE)

The RSE has been used extensively since 1965 (e.g., Hensley, 1977; Dobson, Goudy, Keith, & Powers, 1979; Schmitt & Bedeian, 1982; Byrne & Shavelson, 1986; Bekhuis, 1994) and is cited more frequently than any other self-esteem scale, with an average of 61.2 times per year (Blascovich & Tomaka, 1991; the next most cited scale was Coopersmith's Self-Esteem Inventory with an average of 54.6 citations per year). Blascovich and Tomaka (1991) noted that the RSE

> ...is the most popular measure of [self-esteem]. Indeed, it is the standard with which developers of other measures usually seek convergence....The measure's relatively high internal consistency and test-retest reliability undoubtedly contribute to its popularity (p.120).

The RSE scale contains self-statements to which one can respond strongly agree, agree, disagree, or strongly disagree. These items are as follows:

(1) I feel that I am a person of worth, at least on an equal basis with others.
(2) I feel that I have a number of good qualities.
(3) All in all, I am inclined to feel that I am a failure.*
(4) I am able to do things as well as most other people.
(5) I feel I do not have much to be proud of.*
(6) I take a positive attitude toward myself.
(7) On the whole, I am satisfied with myself.
(8) I wish I could have more respect for myself.*
(9) I certainly feel useless at times.
(10) At times I think I am no good at all.*

* = reverse-scored

According to Rosenberg (1965), high scores on the RSE indicate:

> ... that one is 'good enough'. The individual simply feels that he is a person of worth; he respects himself for what he is, but he does not stand in awe of himself nor does he expect others to stand in awe of him. He does <u>not</u> necessarily consider himself superior to others (p.31).

The questions do not focus on specific attributes, such as physical appearance or academic achievement, but inquire about how people feel about themselves in general and, to some extent, their abilities in general (e.g., items 4 and 9).

<u>Reliability of the RSE</u>

Internal consistency with the scale has been high for youth (Byrne & Shavelson, 1986; Cronbach's alpha = .87 for 11th and 12th grade Canadian students), parents (Orme, Reis & Herz, 1986; Cronbach's alpha = .80) and for civil servants (Schmitt & Bedeian, 1982; Cronbach's alpha = .83).

Test-retest correlations of .82 to .85 have been found with 1 to 2 week intervals (see Blascovich & Tomaka, 1991) and of .63 with a 7-month interval (Byrne, 1983; high school students). In an extensive review of self-esteem scales, Wells (1976) also found the RSE to converge with other measures of self-esteem as well as to be more consistent than many other measures in terms of criterion-related performance.

Measurement Problems with RSE

There are two main problems with the RSE, as with all self-evaluative measures. One is the possibility of response problems such as self-deception and social desirability, which are common to most self-evaluative measures (Blascovich & Tomaka, 1991). This may be assessed with a lie-scale, however, no such scale was present on the NELS or SBPP data sets. Self-deception is an issue with self-esteem measures because the researcher is typically trying to determine how respondents truly feel about themselves so that the measure of self-esteem can be said to reflect actual self-feelings. If self-deception is not eliminated then the self-esteem measure does not reflect true underlying self-feelings.

Researchers can deal with this problem by trying to measure self-deception and use that measure to interpret the self-esteem results. Alternatively, self-esteem measures can be seen as reflecting the conscious attitudes of respondents, whether involving deception or not. If respondents employ self-deception for answering a self-esteem survey then they also likely employ that same self-deception in their daily lives. With this perspective, the self-deception may be seen as reflecting some quality of coping style, such as an insecure person deceiving themselves to be grander than they are in order not to face their insecurity. Therefore, such deception or coping style can be incorporated into the study of self-esteem. This is the approach taken with this research. In the analyses of the SBPP data a coping measure was used and considered alongside the self-esteem results.

The second problem is dimensionality. Some researchers have found the RSE to have two underlying factors (e.g., Goldsmith, 1986). However, because all the positively worded items load on one dimension and the all negatively worded items load on the other factor, many researchers see the dimensionality not a problem of content, but of the pattern of responding to negatively worded items (see also Blascovich & Tomaka, 1991) and can be used as a unidimensional scale (Shahani, Dipboye, & Phillips, 1990; Vallieres & Vallerand, 1990).

Defining and Measuring Academic Achievement

Achievement may be defined as "(1) accomplishment or proficiency of performance in a given skill or body of knowledge [or] (2) progress in school" (Good, 1973). Academic achievement may be defined as "knowledge gained or skills developed in school subjects, usually designated by tests scores or by marks assigned by teachers or by both" (Good, 1973). For the purposes of this research, the latter definition is used and both test scores and grades assigned by teachers were used.

Each type of measure, tests and grades assigned by teachers, has its own advantages and disadvantages depending on the purpose of the research. Classroom grades take into account academic performance plus other aspects of classroom life that are not captured in standardized test scores. For example, with classroom grades, relationships between teachers and students or among students may influence attendance and effort at school. Standardized test scores, on the other hand, capture test performance at only a few points in time, but are more likely to capture academic performance apart from classroom dynamics.

One disadvantage with classroom grades is that they are typically self-reported rather than collected from the school because of expense. This brings in the problem of students reporting their grades accurately. While this problem is not addressed in this research, standardized test scores and classroom grades are used with the analyses of the NELS data and comparisons are made between these two types of measures to determine if they have different relationships with the self-esteem measure.

Overview of Dissertation

Main Analyses

The principal analyses in both data sets employ hierarchical models using the program Hierarchical Linear Modeling (HLM; Bryk, Raudenbush, Seltzer & Congdon, 1986). HLM can address two problems particularly relevant to this research. First, the analysis takes account of the nested structure of the data by estimating separate regression equations for students within each school. The estimation of separate

equations makes it possible to examine the relationships between background factors, achievement, and self-esteem within- and between-schools, and to determine the extent to which within-school relationships vary across schools (e.g., Lee & Bryk, 1989). Second, HLM determines the extent to which the between-school relationships vary across schools, and if they do vary significantly, it allows one to ask whether the variation is associated with school-level factors (see Appendix A for more details on the motivation for using and explanation of HLM).

Statistical Significance

Substantive significance relates to the practical significance, or the relative impact that may be seen in society. Hollon and Flick (1988) have noted that significance may be determined in relation to different views: to the standard error of the instrument, to the individual's well-being, to larger society through individual behaviour and to professionals and their theories. The present study is mainly interested in larger society and the broad impact that policies may have on society by influencing large numbers of individuals. One way of determining the significance of outcomes for large numbers of people is to examine effect sizes, fractions of the sample standard deviation (e.g., see Glass, McGraw & Smith, 1982), rather than statistical significance. A reason for using effect sizes is that when using large data sets statistical significance may be achieved too easily since large samples provide high power and increased likelihood of achieving significance even though observed effects may be of little substantive significance.

For this study, continuous variables, such as self-esteem, achievement, SES and parental love measures, were standardized to have a mean of zero and a standard deviation of one. This means that if one group has a mean standardized self-esteem score of .00 and another of .30, then these scores reflect the difference between being at the 50th and 62nd percentiles. This method of reporting group differences is not uncommon with large-scale studies (e.g., see Lee & Bryk, 1989). In considering whether differences are substantively significant, one must consider the sample. If it is based on a large nationally-representative sample, differences between gender-ethnic/racial groups of 5% of a standard deviation on achievement, for example, may be statistically significant at the .01 level, but are small in substantive

terms, equivalent to the difference between scores at the 50th versus 52nd percentile. Furthermore, if one is talking about increasing a whole country's high school academic achievement by 5% of a standard deviation, then it is a big difference. If only a few schools' average level of achievement is increased 5% of a standard deviation then the substantive effect is not that large. There are no fixed rules with setting levels of substantive significance, but it is a judgment call depending on what is being talked about as to what effect sizes are considered significant.

In this research, effect sizes were sometimes clearly significant (e.g., 25% of a standard deviation) or at other times clearly insignificant (e.g., 2% of a standard deviation difference). Differences of 5% or 10% of a standard deviation were more difficult to evaluate for substantive significance. For consistency, two values were selected for determining substantive significance. For group differences, 10% of a standard deviation difference were considered substantively significant. For multiple regression coefficients, where many variables are added together to help explain the variation in the dependent variable, a .05 (5% of a standard deviation change in outcome variable associated with a 1 unit change in predictor variable) was considered significant as long as the observed effect was also statistically significant.

Summary of Chapters

This dissertation is divided into six chapters and three appendices. Chapter Two presents a review of self-esteem and achievement research in the context of gender, ethnic/racial and school factors. It also provides a brief overview of theories related to self-esteem and of theories providing insight into how self-esteem may be related to contextual factors such as those that are a part of different cultures and school environments.

Chapter three presents the methods, results and discussion of the NELS analyses. These analyses examined the strength of the self-esteem/achievement relationship while controlling for ethnicity/race[1], gender, socioeconomic status and school context.

Chapter four presents a review of research and theory pertaining to parent-child relationships and coping styles. These two research areas were introduced in an effort to further clarify the self-esteem/achievement relationship by explaining more of the variation in self-esteem.

Chapter five presents the methods, results and discussion of the SBPP analyses. These analyses examined the strength of the self-esteem/achievement relationship while controlling for gender, socioeconomic status, school context, parental love and coping styles.

Chapter six presents a discussion of two major findings from this research and the implications these findings have for our understanding the self-esteem/achievement relationship and suggestions for future research.

Appendix A presents an overview of HLM. Appendices B and C present more detailed aspects of data analyses than were presented in the main text, such as outlier analyses and tests of normality and linearity assumptions.

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[1] The term ethnicity/race is used to account for those groups having a common ethnic group, but different racial group. This is consistent with Graves (1996).

CHAPTER 2: RESEARCH AND THEORY - GENDER, ETHNICITY/RACE, SCHOOLS AND CULTURE

In the first chapter it was noted that research on the strength of the self-esteem/achievement relationship has yielded a wide range of results, so this dissertation research was designed to estimate the strength of the relationship between self-esteem and achievement while controlling for a variety of factors that have been found to be related to self-esteem and/or achievement.

Research on the relationship between self-esteem and achievement has yielded a variety of results for several possible reasons. Some of this variation in results may be attributable to selected samples containing subgroups of the population where in one group academic achievement is less central to self-esteem than it is for another group. Variability may also be due to inconsistencies in the models specified: Some models control for SES while others do not; some control for ethnicity/race while others do not; some control for gender, while others do not. There is evidence of differences in the levels of self-esteem between the genders (e.g., Cheung, 1986; Marsh, Parker, & Barnes, 1985; Richman, Clark & Brown, 1985; Skaalvik, 1986, 1990), and among ethnic/racial groups (e.g., Epps, 1975; Gruber, 1980; Rotheram-Borus, 1990), but relatively few studies have controlled for both of these factors when examining the relationship between self-esteem and achievement (e.g., Simmons, Brown, Bush & Blyth, 1978; Wasserman, Rauh, Brunelli, Garcia-Castro & Necos, 1990).

Another consideration in examining the relationship between self-esteem and achievement is the type of achievement measure used. A different relationship may prevail between self-esteem and language arts skills, for example, than between self-esteem and mathematics. Also, some researchers have used measures based on teachers' assessments (e.g., grades), whereas others have used standardized test scores. These measures differ in at least two ways. First, grades are assigned by the teacher in the context of a teacher-student relationship. This can mean that if teacher-student relationships are positive, students will try to perform better for teachers (see Midgley, Feldlaufer, & Eccles, 1989). In addition, the teachers' own

personalities (Wallin, 1993) and needs (Crowl, 1984) may influence the types of grades they assign to their students. These factors suggest that letter grades can include subjective as well as objective elements of achievement. If researchers are wanting to eliminate this possible subjective nature of classroom grades, then standardized tests may be a better measure of academic achievement.

A second difference between grades and standardized test scores is that grades are more likely than test scores to be known by students and by their parents and peers. While self-esteem may influence achievement, if achievement is influencing self-esteem, this more public exhibition of achievement may relate differently to self-esteem than does general ability or achievement. In light of this, assessing the strength of the relationship between self-esteem and two different types of achievement (self-reported grades and standardized tests scores) may lend greater insight to the nature of the self-esteem/achievement relationship.

A final consideration in self-esteem/achievement research is whether schools affect this relationship, and if so, what school-level characteristics (e.g., mean socioeconomic status) are relevant. For example, it has been found that levels of academic achievement vary depending on school characteristics and the socioeconomic background of the students (e.g., Lee & Bryk, 1989). It is also possible that similar effects may be operating for self-esteem, therefore, school effects should be taken into account whenever possible. If there is a large amount of variability in self-esteem, achievement, or in the relationship between self-esteem and achievement among schools, then it may be that school-level factors are related to that variability and, thus, are important to control for in such research. However, if there is little variability in self-esteem, achievement, or in the relationship between self-esteem and achievement among schools, then reasons for the low variability should be explored. One possible reason for small variation in levels of self-esteem is that schools may have relatively small effects on children's self-esteem: Perhaps school practices are not highly related to student's self-esteem, or self-esteem is more strongly related to non-school factors such as familial, peer and gang acceptance. Another plausible reason for small variation between-schools

is that self-esteem measures are relative, that is, children may rank themselves with respect to their classmates, such that average levels of self-esteem are about the same for each school.

The review that follows is divided into two sections, an empirical review and a theoretical review. The empirical review covers some of the variables mentioned above, such as gender, ethnicity/race, and school effects. The second section reviews theories that pertain to the findings in the empirical review.

Review of Research

The first section of this review examines research findings on self-esteem levels while the second examines research pertaining to the self-esteem/achievement relationship. The research in both sections is divided by whether studies accounted for gender and ethnicity/race, or school/contextual effects. The studies presented vary in the self-esteem instruments used, sample characteristics and sizes, and control variables. In research areas where self-esteem measures were sparse, studies using self-concept measures are presented to provide some indication of what may be found in that area regarding self-esteem.

Self-Esteem Levels

Gender Differences

Many studies examining gender differences in levels of self-esteem have found males to have significantly higher self-esteem than females (e.g., Bagley, Bolitho, & Bertrand, 1997; Hoelter, 1983; Marsh, Parker & Barnes, 1985; Martinez & Dukes; 1991; Oyefeso & Zacheaus, 1990; Skaalvik, 1986; Wade, 1991; Wigfield, Eccles, MacIver, Reuman, & Midgley, 1991). What distinguishes studies that have found gender differences in self-esteem levels from those that have not found differences in self-esteem levels is often the type of self-esteem measure used.

Researchers who do not report significant gender differences in self-esteem levels have often used context-bound measures (measures using statements that limit respondents to given contexts) that tend to mask gender differences (see Skaalvik, 1986; and Josephs, Markus, & Tafarodi, 1992 for exceptions).

Alternatively, many of the studies that do report significant gender differences have used one of the Rosenberg self-esteem measures which are essentially context-free. For example, Rosenberg and Simmons (1975) reported a small difference between males and females in a random sample of 2,625 grades 3 to 12 students from the 25 schools in the Baltimore, Maryland area. Self-esteem was measured using a six-item Guttman scale (see Rosenberg & Simmons, 1972) and boys were found to score about 5% higher on this self-esteem scale. Chubb, Fertman and Ross (1997) also found gender differences in self-esteem levels. They administered the 10-item Rosenberg Self-Esteem Scale to one group of 174 high school students (41% males and 59% females) at four different times: when they were in grade 9, 10, 11 and 12. They found that throughout all four years males' self-esteem was significantly higher than females' self-esteem.

Even within the same sample, the tendency of context-bound measures to mask gender differences can be found. For example, Marsh, Parker, and Barnes (1985) found that males had higher general self-esteem scores, based on a context-free measure of self-esteem, but reported no gender difference with self-esteem scores derived from several context-specific scales. Similar findings led Skaalvik (1986) to suggest that measures of self-esteem should be context-free so that the individual may be guided by what is most central to their sense of self. In this way, the individual -- not the researcher -- determines which aspects of self-esteem carry the most weight in their self-esteem score. In a review of studies using context-free measures, Skaalvik (1986) did find that context-free self-esteem was higher for males than for females between the ages of 12 and 18.

Gender and Ethnicity/Race

Gender differences have also been replicated across different ethnic/racial groups. For example, Simmons, Brown, Bush, and Blyth (1978) administered a context-free self-esteem measure (Rosenberg & Simmons, 1972) to 798 students from 8 schools and found with Blacks and Whites that males had higher self-esteem than females of the same ethnicity/race, although the gender-gap was smaller for Black students than it was for White students. This self-esteem measure included items such as the following: "A kid told

me: 'There's a lot wrong with me'. Do you ever feel like this? (IF YES, ASK): Do you feel like this a lot or a little" (p.89).

Again, using a context-free measure of self-esteem (the RSE) with 195 11th-grade students (75% Black, 25% White; 48% female, 52% male), Richman, Clark and Brown (1985) found Blacks to have higher self-esteem than Whites, males to have higher self-esteem than females, and high SES students to have higher self-esteem than low SES students, with the exception of high SES White females. This study controlled well for ethnicity/race, gender, and SES, but only contained students from three schools in North Carolina and did not control for school effects.

In comparing Hispanics and Blacks, Wasserman, Rauh, Brunelli, Garcia-Castro and Necos (1990) compared the self-esteem of Hispanics and Black mothers (teen and adult) using the 10-item Rosenberg Self-Esteem Inventory. They found that Blacks had higher self-esteem scores than Hispanics.

While researchers using context-free measures of self-esteem have tended to find gender and ethnic/racial differences, those using context-bound measures seem to obtain different results. For example, Osborne and LeGette (1982) administered some of the subscales of the Coopersmith Self-Esteem Inventory (SEI) which contains some context-bound items (e.g., "I am not as nice looking as most people" - physical appearance). Osborne and LeGette (1982) found Blacks to have lower self-esteem scores than Whites. Similar results were found with Gray-Little and Appelbaum (1979) with the use of the Coopersmith Self-Esteem Inventory, Whites had higher self-esteem than Blacks.

School and Contextual Effects

Only one study could be found that controlled for school contextual effects. In this study Bekhuis (1994) used multilevel modeling to assess differences between-schools in levels of self-esteem, while controlling for gender and ethnicity/race. This study did employ a context-free measure of self-esteem (a shorter version of the RSE) and found Blacks to have higher self-esteem than Whites, and males to have higher self-esteem than females. This study showed that only about 1% of the variation in students' scores was between-schools.

Summary

These studies underscore the consideration that needs to be given in self-esteem research to the type of self-esteem measure used. They indicate that results may be influenced to a large extent by the type of scale used. While some studies may have different purposes than others, when comparing ethnic/racial and gender differences it is apparent that context-bound measures appear to mask such differences while context-free measures reveal differences. Overall, it appears that when context-free measures are used, males tend to have higher self-esteem scores than females, and Blacks tend to have higher self-esteem scores than Whites.

The Self-Esteem and Achievement Relationship

The last section briefly reviewed research on self-esteem levels across gender and ethnic/racial groups using a variety of self-esteem measures. This section reviews research on the strength of the self-esteem/achievement relationship across gender and ethnic/racial groups. The studies differ in the size of samples, self-esteem measures, and achievement measures.

Hansford and Hattie (1982) conducted a meta-analysis with 128 studies comprising 202,823 people on the relationship between various measures of self and achievement. Self measures included self-concept, self-esteem, self-acceptance, self-perception and several others. The studies used included people of varying ages (preschool to college), SES status, and different ethnic/racial groups (e.g., Anglo, Mixed, Kenyan, Bolivian). Hansford and Hattie (1982) found a range in the correlations between these different measures of self and achievement from -.77 to .96. While the scope of their study is beyond this research, it is useful in that it illustrates the wide range of results that can be found in the literature when varying measures and samples are used.

Pottebaum, Keith and Ehly (1986) conducted one of the simplest, yet large, studies on the relationship between self-esteem and achievement. They used longitudinal data from a two-stage stratified probability sample of over 58,000 high school students from over 1,000 schools in the United States. Self-

esteem was measured using the four positively worded statements from the Rosenberg Self-Esteem Scale, with internal consistency estimates ranging from .82 in 1980 to .97 in 1982 and factor analyses on other data sets showing construct validity (see Keith, Pottebaum & Eberhart, 1985). Academic achievement was measured using an average of standardized test scores from the areas of mathematics, science, writing, and civics education (Cronbach's alpha = .92; see Heyns & Hilton, 1982)

Using cross-lagged panel correlation, Pottebaum et al. tested the strength and the direction of the self-esteem/achievement relationship between 1980 and 1982. They found no significant direct path between self-esteem and achievement, but suggested that their association appears to be the effects of some other set of common causes, such as social class or ability. Given the large and nationally representative sample in this study, it provides convincing evidence that the self-esteem/achievement relationship is complex and that studies need to include variables that may moderate this relationship. One caution, however, is that standardized test-scores and not class grades were used as an index of achievement. Had class grades been used, the relationship may have been stronger, given that class grades may be known by peers and may be assigned on the basis of more than just academic ability. Another problem is that gender and ethnicity/race were not controlled, which may have masked any direct self-esteem/achievement relationships within groups.

In a smaller study, Maruyama, Rubin, and Kingsbury (1981) also found no direct relationship between self-esteem and achievement. Their study was based on longitudinal data from four cohorts of approximately 1,000 children participating in the Educational Follow-Up study and they used LISREL for Linear Structural Relations. Self-esteem was measured using the Coopersmith Self-Esteem Inventory and academic achievement was measured using the Stanford Achievement Test and the Wide Range Achievement Test (see Berendes, 1966; Rubin & Balow, 1977). They found self-esteem and achievement to be strongly related to social class and ability, suggesting that these two background variables may be a common contributor to both self-esteem and achievement. Maruyama et al. (1981) did note, however, that class grades, rather than test scores, may have shown a stronger relationship to self-esteem "...because they

are a more salient benchmark of performance for children than are standardized test scores...Because children may never directly receive information about their performance on standardized tests, such performance may be less likely to influence self-esteem" (p.973).

Gender and Ethnic/Racial Differences

Gender and ethnic/racial differences in the relationship between self-esteem and achievement have been found using a variety of different self-esteem scales. For example Skaalvik (1983) used 7 context-free items from the 13-item Harter's Perceived Competence Scale for Children (see Harter, 1979 for original scale) with internal consistency of .80 (see Skaalvik, 1982 for validity tests). With this measure, students report whether certain statements are true for them (e.g., "Some kids are very happy being the way they are BUT, Other kids wish they were different"). Academic achievement was measured using two Norwegian standardized reading tests (Bakke, undated; Gjessing, undated) and teacher ratings of students' academic performance (i.e., 5 point scale from one of the best to one of the poorest). Measures were administered to 348 elementary school children from 15 schools.

Skaalvik (1983) found a positive correlation between self-esteem and achievement in the third grades for girls (.39, $p<.01$)), but not for boys (-.06); however, by the fourth, sixth, and eighth grades, this relationship was nonsignificant for girls (.06, .05, and .07, respectively) and significant for boys (.22, $p<.10$; .43, $p<.01$; and .26, $p<.10$, respectively). The direction of the correlations were the same with both achievement measures, but stronger when teacher ratings versus reading tests were used. Skaalvik's interpretation of these results was that girls may internalize new criteria for evaluating themselves earlier than do boys because of their tendency towards conformity.

Gender differences have also been found in the relationship between self-esteem and achievement with Hong Kong students. Cheung (1986) used items derived from the RSE (internal consistency = .64; Guttman split-half = .72). Three measures of academic achievement were used: students' class ranking based on examination results from all subjects; students' track position (good, average, or poor; the definition of which was not given); and financial status of the school (public schools are subsidized and

tend to be better managed and have higher academic performance than private schools). Students were selected through a probability sample (random sampling of schools and classes) yielding a sample of 1,466 10 to 20 year-old secondary students.

Cheung found class position to be significantly related to self-esteem for males with those in higher positions having higher self-esteem. Class position and self-esteem were related for females, but those ranked in the first and third rankings had similar mean self-esteem scores (31.38 and 31.58, respectively). Track position was significantly related to self-esteem for males (those in the good tracks having higher self-esteem than those in the poor tracks), but not for females. Finally, males attending a public schools, which have more financial aid, had higher self-esteem than those attending private schools, but there was no difference for females.

Ethnic/racial differences were not found in another study when a context-bound measure of self-esteem, academic self-esteem, was used. Strassburger, Rosen, Miller, and Chavez (1990) measured academic self-esteem using the 8-item School-Academic scale from the Coopersmith Self-Esteem Inventory (Coopersmith, 1981). Academic achievement was measured using the grade-point average from the first six weeks of the fall term. Strassburger et al. (1990) found no significant ethnic/racial difference in mean levels of academic self-esteem or in the relationship between academic self-esteem and achievement. Across ethnic/racial groups, however, those with low academic self-esteem did have a significantly lower grade-point average (using analysis of variance, a main effect at $p<.001$). Given, however, that a context-bound measure of self-esteem was used, ethnic/racial differences may have been masked. In addition, Strassburger et al. (1990) did not control for gender and this also may have disguised ethnic/racial differences if the strength of the self-esteem/achievement relationship varied markedly for Hispanic males and Hispanic females.

Using the Coopersmith Self-esteem Inventory (Coopersmith, 1967), Mboya (1986) examined the relationship between global self-esteem (average scores across all 58-items of the Coopersmith Self-esteem Inventory) and achievement relationship among 211 Black, American grade 10 students (internal

consistency in this study = .62). Academic achievement was measured using the California Achievement Test (CAT) on total, reading, language and math components (total test-retest reliability for grade 10 = .98). Mboya (1986) found that self-esteem was not significantly related to academic achievement, except for Black females where there was a significant correlation (.30; $p<.05$) between self-esteem and the reading component of the CAT. Again, given that the Coopersmith Inventory is not context-free, students were bound to respond to how they felt about given topics.

School and Contextual Effects

Each of the studies below examined the self-esteem/achievement relationship in different contexts. These studies illustrate how different contexts or environments may moderate the strength of the self-esteem/achievement relationship.

Rogers, Smith and Coleman (1978) examined the self-esteem/achievement relationship and the classroom context using the 80-item Piers-Harris Children's Self-Concept Scale (Piers, 1969) that has items like "My friends think that I have good ideas" to which children may respond yes or no. Academic achievement was measured using the Metropolitan Achievement Test (MAT).

To capture an aspect of the classroom context, Rogers et al. (1978) ranked 159 six- to twelve-year-old students as high, medium, or low achievers in two different ways, once according to their classroom standing and once according to their overall standing in the pooled sample. This ranking was done once for math scores and once for reading scores. Mean self-concept scores were computed for the groups of students at each level. The results with the reading test scores yielded significant mean differences in composite self-concept scores among high, medium, and low achievers when children were ranked within classrooms. Alternatively, when children were ranked relative to the entire sample, differences in self-concept scores among high, medium, and low achievers disappeared. The results with the math test scores yielded significant differences among high, medium, and low achievers for both the within and pooled rankings. However, the significance of the differences did decline with the pooled rankings. They concluded from these findings that "the relationship between academic achievement and self-concept is

manifest most strongly within the context of the social comparison group or classroom" (p.55). This study suggests that the type of people one is surrounded with can affect one's self-perceptions. It should be highlighted, however, that they studied self-concept and not self-esteem; younger children; small classrooms; and underachievers, which limits the generalizability of the results.

The Simmons et al. (1978) study (described above) examined the strength of the self-esteem/achievement relationship while controlling for the segregation aspect of school contexts. They compared differences in self-esteem and achievement of Black students in grade six and seven according to segregation levels, defined as the proportion of Black students in the student's school. The percentage of students classified as having high self-esteem (approximately the top one third) was not different for varying levels of segregation when the Black sample was taken as a whole, that is, Blacks' self-esteem was not related to school context in terms of the proportion of Blacks in the school. However, for Black children who came from broken homes, self-esteem was positively correlated with segregation (a high proportion of Black students in the school). Simmons et al. (1978) suggested that this effect was due to the smaller number of broken homes in desegregated schools compared to segregated schools. This means that those children coming from broken comes had fewer equivalent comparisons to make. What is important to note is that context may have differential effects on self-esteem for different groups of students.

Hoge, Smit, and Hanson (1990) controlled for the overall climate of a school when evaluating the self-esteem/achievement relationship. They conducted a 2-year longitudinal study with children from two schools, with 95% of the sample being White. Times of testing were 1983/84 (early Fall and late Spring - Time 1, sixth grade) and 1984/85 (early Fall and late Spring - Time 2, seventh grade). Self-esteem was measured with the 10-item RSE (Rosenberg, 1965) which had internal consistency alphas of .77, .80, .81, and .86 at the different measurement times. Academic achievement was measured using grade point average over all courses. School climate was measured using the 23-item Quality of School Life Scale (Epstein & McPartland, 1975), with the three subscales having internal consistency alphas of .73, .74 and .78 in the spring of sixth grade. Students were also asked about parental interest in various aspects of their

schooling which were averaged for a parental concern score as well as about their physical appearance. These variables, as well as IQ, gender, ethnicity/race, single-parent family, mother's work status, father's employment status, stepbrothers or stepsisters, and Time 1 global self-esteem, were used as control variables. Multiple regression analysis was used to analyze the data and control variables accounted for almost 50% of the variance in Time 2 global self-esteem.

The results for the Spring seventh grade model (with general self-esteem as predicted variable) were that commitment to schoolwork (school climate variable) had a standardized regression coefficient of .138 ($p<.05$); teacher evaluations of individuals' social habits and work habits had standardized regression coefficients of -.230 and .301, respectively (both $p< .05$); and being admitted to an advanced math class had a standardized regression coefficient of .123 ($p< .05$). Hoge et al. found the school effects on self-esteem to vary among disciplines and between-school years and they suggested that it is the specific teachers and experiences that are likely to influence self-esteem, not the general characteristics of the school. They concluded that the task of finding school effects with self-esteem is a challenging one because "...school impacts are subject to short-run situational factors and are not constant from school to school or year to year" (p.126). However, there were only two schools involved in the study, and the only proxy used to control for student SES was whether the student came from a single- or two-parent family.

Summary

The preceding review of self-esteem and achievement research indicates several things. First, the type of self-esteem measure used seems to influence results pertaining to gender and ethnic/racial differences in self-esteem levels. Specifically, studies that used context-free measures of self-esteem tended to find gender and ethnic/racial differences in self-esteem levels, whereas those using context-bound measures tended not to find such differences. This impact of type of self-esteem measure on research results indicates two things. One is that the selection of a self-esteem measure should be done with careful consideration to the purpose of the research. Another is that the interpretation of results needs to take into

account what different types of measures reflect, with context-bound measures being limited to the defined context and with context-free measures being more influenced by respondents' values and viewpoints.

The review of studies on the relationship between self-esteem and achievement also shows the importance of controlling for gender and ethnicity/race as the strength of the relationship did vary across groups, particularly with context-free measures of self-esteem. Furthermore, when gender and ethnicity/race were not controlled, the self-esteem/achievement relationship appeared to be masked. The review also showed that the strength of the relationship may vary with age (e.g., Skaalvik, 1983) and across different contexts, such as school climate (Hoge et al., 1990) or classroom standing (Rogers et al. , 1978) indicating that controlling for age and contextual effects may be important when examining the self-esteem/achievement relationship.

Theoretical Explanations

The theoretical review is divided into two sections. The first section examines the role of contextual effects in shaping the thoughts and attitudes of gender and ethnic/racial groups. The second section examines what Rosenberg considers to be the four main processes involved in self-esteem formation and how they may operate within contextual effects.

Contextual Effects

A contextual effect is the impact that any given environment (e.g., culture, school, family) has on one's thoughts, feelings, skills, and actions. Specifically, it focuses on the role that social interactions play in the development of human cognition (Gordon & Armour-Thomas, 1991). It is through social interactions that people internalize various characteristics of their environment and how they fit into that environment. Different contexts will result in the individual having different thoughts, feelings, and skills. In this way, contexts have the potential to limit how we think, what we think about, and how we see things (see Okagaki & Sternberg, 1991). What is supplied by different contexts varies depending on which context is referenced. For example, there is the cultural context and the family context, with the family

context being a micro example of cultural contexts. This may also be said about the school context and its culture. The links between culture and school contexts with the self-esteem/achievement relationship are presented below. Family contexts are addressed in Chapters 4 and 5.

Culture

Culture transmits many things to its members, values being one of them. Values, those things or qualities regarded as useful or desirable (Morehead & Morehead, 1981), differ among cultures. One value that may or may not be held by a culture is high academic achievement. Considering the extent to which a culture values achievement is important in examining the self-esteem/achievement relationship, since the extent to which one values achievement will moderate the relationship between self-esteem and achievement. Differences among cultures in their valuing of achievement may lead to overall differences in the relationship between self-esteem and achievement among cultures.

Values. Cultural variability in valuing achievement may be linked with at least two broad types of cultural differences, which Ogbu (1988) identifies as being associated with primary cultural differences and secondary cultural differences. Primary cultural differences are associated with inherent and unique qualities of each culture, irrespective of the relationship between minority and majority cultural groups. For example, the unique spiritual beliefs among First Nations people are a set of primary cultural differences between First Nations and White Canadians. The existence of these beliefs is not associated with their relationship with the majority group in that they existed before this relationship. The second type of cultural differences, referred to as secondary cultural differences, arises out of the relationship between a minority group and the majority group. Ogbu (1988) considers three types of minority groups in explaining secondary cultural differences:

(1) Autonomous minorities: minority groups that are not politically, socially or economically subordinated by the majority group.

(2) Immigrant minorities: minority groups that have volunteered to enter another country or area where they become a minority; this choice is often made in order to improve economic, political, or social well-being.

(3) Subordinate/Castelike minorities: groups that are a minority against their choice, perhaps as the result of slavery or conquest, where they are given a low position in society and not allowed to assimilate fully with the rest of the culture.

Minority groups assimilate and accommodate to the majority group to varying degrees. Some groups accommodate to the dominant culture, but do not assimilate because assimilation threatens their own culture. Ogbu (1988) suggests that a minority group's degree of accommodation or assimilation is influenced by the type of minority they are: autonomous, immigrant, or subordinate. Members of the first two groups are more free to adopt the values of the dominant culture or to maintain the values of their own culture.

In the case of the Africans who were sold into slavery and brought to North America, Ogbu would classify them as a subordinate minority who might respond to subordination in several ways. One way is through clientship, which involves being dependent and compliant with the dominant group to achieve favoritism, and may include valuing academic achievement. Another way is by resisting the values of the majority group. In fact, Ogbu (1991) suggests that some Blacks do not have high academic achievement (a value of 'White' culture) because they do not value it; and that this is a by-product of their coping response to subordination and exploitation by White Americans. Furthermore, these "[c]ultural frames of reference are strongly associated with both the emotional needs and sense of group identity of blacks..." (Ogbu, 1991, p. 442). For example, some high achieving Black students are teased by other Black students. They call those who get good grades in school "Oreos" (Black on the outside, White on the inside) or "Uncle Toms", implying that they are acting on values that are not part of the Black culture (perhaps being falsely accused of the clientship coping response). Therefore, some high achieving students try to hide their

academic success. Under these circumstances one would not expect academic achievement to be highly related to self-esteem.

Primary and secondary cultural differences are important to consider when examining self-esteem and its relationship with academic achievement because in Canada and the U.S. achievement is generally valued by the majority group. Academic achievement may be valued by some minority groups and not other groups. For example, those within a subordinate/castelike minority group may value academic achievement to varying degrees depending on the extent to which their group has assimilated into the dominant culture. While individuals within a culture will vary in the degree to which they value achievement, it is expected that there will be overall differences in the self-esteem/achievement relationship among cultures.

Cultural Subordination. One's response to subordination, as an individual or a group, may also be related to self-esteem. For example, it has been found that unemployed Blacks who perceive themselves to be victims of discrimination have higher levels of psychological well-being than those perceiving less discrimination (see McLoyd, 1990). Furthermore, some families prepare their children not only for poverty, but also for racism. Nobles (1988) notes that the parent-child relationship in Black families focuses on (a) the sense of history, (b) the sense of family, and (c) the sense of the ultimate supreme power. Religion is often an escape from things seemingly impossible (Pipes, 1988). It has also been found that Black mothers have attempted to prepare their children for the racist world by instilling in them high self-esteem (see Peters, 1988). Not only may this lead to high and enduring self-esteem, but it places value on something other than achievement and gives members of the group another avenue by which they can feel good about themselves. This provides a possible explanation for the higher levels of self-esteem found among Blacks compared to Whites and Hispanics by some researchers.

Subordination may occur through the use of language. For example, in some cultures women are often referred to as girls, whereas men are called boys only occasionally, and typically in situations where they are participating in recreation or social activities (e.g., "out with the boys"). Similarly, in the recent

past American culture, Black males were referred to as boys. In discussing the meaning of words, Markova (1982) sets out an example using boy, girl, man and woman. The meanings of the words boy, girl, man, and woman are presented below:

Boy:	Animate and Human and Male and Not Adult
Girl:	Animate and Human and Female and Not Adult
Man:	Animate and Human and Male and Adult
Woman:	Animate and Human and Female and Adult

These meanings show us that when a man is called a 'boy' or a woman is called a 'girl' they are sent the message that they are Not Adult. An Adult is "[h]aving arrived at mature years or to full size and strength; pertaining or relating to full strength; suitable for an adult" (Thatcher, 1984). Being labeled a *Not Adult* implies a lack of power or strength, and over time this concept may be incorporated into how people consciously or unconsciously think or feel about themselves self. Perhaps this differential labeling plays a role in the way females versus males feel about themselves.

School

What people learn in their culture and family contexts may influence how well they perform in school or value their school performance. According to Vygotsky (1986), if teachers are instructing students in a manner that connects with what they have learned within their cultural and familial contexts, knowledge will be transmitted. However, if the teaching is not well linked to one's cultural learning, the gap between what the student knows and what they need to learn may be too large for learning to occur.

Vygotsky (1986) considered the external and internal worlds of children to be inseparable. Although he saw children as being active in their own cognitive development, he also emphasized the importance of how well information is transmitted to them, thereby placing much of the responsibility for children's cognitive development on parents, teachers, and other significant figures. Vygotsky's theory of social processes places more emphasis on the parents and/or older siblings because he believed that it was the social exchange between a more experienced person and a less experienced person that held the greatest

significance for the child. This differing level of expertise is highlighted in the four basic concepts that help to explain cognitive development (see Gordon & Armour-Thomas, 1991):

a) Transmission of knowledge from the more experienced to the less experienced.

b) Transmission of cognitive skills through demonstration by the more experienced which will modify and strengthen the cognitive functioning of the less experienced.

c) Cultivation of nascent cognitive abilities by having the more experienced correct, model, clarify, and explain the task -- share responsibility for the task.

d) Encouragement of cognitive abilities by having the more experienced help with tasks that the less experienced might not challenge without help.

The role of parents and older siblings is to interact with their children in a manner that allows for the above activities to occur. In doing this, parents, teachers, and siblings need to make use of the gap between what the student knows and what is being taught. This gap is what Vygotsky refers to as the zone of proximal development (Vygotsky, 1986). Teachers, parents and siblings are helpful in the learning process if they ensure that the gap is the right size. If there is no gap, no learning occurs, but if the gap is too large, learning is less likely to occur. To do this, they must be aware of the children's limitations and they should make some link with pre-existing abilities or mode of reasoning.

Vygotsky's emphasis on the role of social experience was received as very promising because it addressed differences among cultural groups and between the socially advantaged and disadvantaged, without laying blame. His theory allowed for enthusiasm for teaching not only 'average' individuals, but also individuals with cognitive disadvantages. For example, Feuerstein (see Gordon & Armour-Thomas, 1991) is known for raising performance levels of people with mental retardation by providing a mediated learning experience where the teacher builds a bridge between what the learner knows and what they need to learn.

The link between teaching and cultural learning is also connected with the work of John Dewey.

Dewey (1960) noted the importance of school contextual effects when he discussed the mismatch-match that is often found between the school curriculum and the individual. He noted the narrow and personal world of the child who classifies things based on practical life (not abstract) and emotional bonds with parents and siblings. The school on the other hand is broad and impersonal, with material that is logical, but not obviously practical or relating to emotions. The child may be taught the ways of the school, but the extent to which those skills, thoughts, and behaviours are linked only to the school will influence how much the child uses these skills in the real world. In other words, if the teachers do not model or transmit knowledge according to how these skills can be used in the real world, many children will not make the extension on their own.

This match between what is transmitted to the child by their parents and what is expected in school has direct bearing on the relationship between self-esteem and achievement. The more the social exchange at home matches the expectations in the school environment the greater the likelihood that children will be able to succeed academically. Thus, the learning context of the school interacts with learning styles of cultural groups in that they may be well-suited for children from one cultural group, but not another. Furthermore, if a child comes from a culture which does not particularly value academic achievement, they may have little motivation to persevere in an environment where the nature of the social exchange is considerably different from their early experiences. In this way, cultural values may interact with school context to decrease the strength of the relationship between self-esteem and achievement. It may also contribute to the varying levels of achievement found among different ethnic/racial groups.

Psychological Processes

The preceding section explored how different contexts may be related to self-esteem and achievement. This next section takes a closer look at the processes underlying contextual or individual factors that may be related to self-esteem. Rosenberg (1979) believes there are four main processes involved in the formation of self-esteem: reflected appraisals, social comparison, self-attribution, and psychological centrality.

Reflected Appraisals

Rosenberg (1979) noted that reflected appraisals are important to self-esteem because people tend to view themselves as they are viewed by others. Reflected appraisals may operate through direct reflections (how particular people actually view the individual), perceived selves (how the individual believes others view them), and generalized other (general attitudes of the society as a whole, arising out of a series of social experiences). This principle is derived from symbolic interaction theory and has been addressed by several well-known theorists (Mead, 1934; Cooley, 1902; and Sullivan, 1947). Cooley (1902) is known for his "looking-glass self", a social self that consists of three elements: (1) our imagination of how we appear to others, (2) our imagination of how others judge our appearance, and (3) a resulting self-feeling (e.g., pride, shame). The importance of the social self is also highlighted by Coopersmith (1967) who noted that:

> ...Mead is concerned with the process by which the individual becomes a compatible and integrated member of his social group...He comes to respond to himself and develops self-attitudes consistent with those expressed by the significant others in his world. ... From Mead's formulation we would conclude that self-esteem is largely derived from the reflected appraisal of others (Coopersmith, 1967, p.31).

With reflected appraisals being related to self-esteem, we can see that contextual differences, whether they have to do with culture, school, or family, do provide individuals with information about themselves. For example, it is possible that Blacks tend to have higher self-esteem than Whites or Hispanics because some parents have responded to cultural subordination by instilling in their children a value of self (Nobles, 1988). Could a similar process also explain, in part, the consistent gap in self-esteem levels between males and females? Do females fail to combat negative cultural messages about their value, such as that implied in sexual exploitation or being 'girls' versus women, or general messages about their value being less than that of males? Or, do both genders receive negative messages, but do males have higher self-esteem because they are taught a specific set of defense mechanisms that females lack?

At the family level, reflected appraisals also play a role in the parent-child relationship as the child begins to see who they are through their caregivers' attitudes. This aspect of the parent-child relationship and its role in self-esteem are discussed in terms of attachment theory in Chapter 4.

Social Comparison

Self-esteem may also be related to people's comparisons with others. The impact of social comparison on self-esteem will vary depending on the targets or comparison (are they the same or different?), on what attributes they are being compared (does the individual value the attributes?), and whether they are comparing themselves to people who are better or worse on a given characteristic. Social comparison theory originated with Festinger (1954), but the first to examine its impact on self-esteem were Morse and Gergen (1970; also see Goethals, 1986). Morse and Gergen showed that social comparisons did affect self-esteem, but in different ways for different individuals. For example, recent research has shown that people do not always want to compare themselves with others, do not always compare themselves with similar others, and the accuracy of their comparisons is not always important (Kruglanski & Mayseless, 1990). Furthermore, comparisons appear to have different effects for low versus high self-esteem students (Aspinwall & Taylor, 1993). For example, social comparisons that should increase one's low self-esteem may be hampered by the fact that one has low self-esteem. Aronson (1992) has confirmed previous research that suggested people tend to reject information that is inconsistent with already established views of self.

Social comparison suggests that it may be better to be a big fish in a little pond than a little fish in a big pond (e.g., Davis, 1966) because most comparisons would boost self-esteem. However, Smith and Tyler (1997) suggest that it is not so much the size of the pond, but the right fit, that leads to pride and respect. They suggest that because of the role pride plays in self-esteem, one not only needs to be respected by other group members, but also needs to value them and feel good about being associated with them in order for their respect to matter.

The complexity of this process is highlighted further by the Simmons et al. (1978) study in which the self-esteem of Blacks attending schools with varying levels of segregation was assessed. No differences in self-esteem levels were found until Blacks were divided into those coming from broken and unbroken homes. With this comparison it was found that segregation was positively related to self-esteem for Blacks coming from broken homes. The researchers suggested that because of the relative infrequency of broken homes in desegregated schools, Black students from broken homes had fewer equivalent comparisons and this decreased their self-esteem levels.

Self-Attribution

Self-attribution refers to the explanations people give for why they do or do not perform well at a given task. Attribution theory has evolved over the years, beginning with Heider (1958), who noted that reasons are attributed by people for why they have succeeded or failed at a task. These reasons were luck, task difficulty, ability, and effort. Rotter (1966) divided these reasons into attributing success or failure to some factor internal (e.g., effort) or external (e.g., luck) to the self. Weiner (1971) further suggested that attributions are mediated by the need for achievement and they might be stable or unstable. The general position of attribution theory in relation to self-esteem and achievement is that individuals with high self-esteem tend to attribute their failures to bad luck or a lack of effort, and their successes to ability and effort (e.g., Burke, 1978). Indeed, there is evidence that students who do not do well and attribute their failure to ability have significantly lower self-esteem than those who attribute their failure to other factors (Skaalvik, 1990).

There is evidence to suggest that males and females may have different attributional styles and that this may lend some insight into the gender differences in self-esteem levels (e.g., Rosenfield & Stephan, 1978). For example, Josephs, Markus and Tafarodi (1992) found differences between men and women with high and low self-esteem in terms of perceptions of abilities. They found that men with high self-esteem perceived themselves as having 'uniquely superior abilities in every domain [they] examined' (p.

394), but men with low self-esteem estimated their abilities more modestly. Women with high self-esteem, however, were not characterized by a perception of unique abilities.

In the case of women, Berg, Stephan and Dodson (1981) found that women changed their attribution for success or failure depending on whether or not another person would know about their attribution, and that attributions about future performance were mediated by protective modesty.

Brown and Dutton (1997) found among undergraduate students that it is not so much thoughts about success that distinguish low versus high self-esteem participants, but how they feel about failure, with low self-esteem participants feeling more ashamed and a greater sense of lack of competence. Brown and Dutton (1997) did not report on gender differences.

Psychological Centrality

Psychological centrality refers to what is valued and important to people. Rosenberg (1979) has suggested that people try to get better at what they value, and value those things at which they do well. Those things that people value will have a stronger relationship to self-esteem than those things that are not valued. Rosenberg (1979) has also suggested that any attempts to change self-esteem through certain components (e.g., achievement) will only be effective to the extent that the component is valued by the people.

This principle of psychological centrality may be loosely associated with the 18th century philosopher William James' view of what is related to self-esteem. Coopersmith (1967, p.29-30) summarized James' conclusions regarding the self as follows:

> ...human aspirations and values have an essential role in determining whether we regard ourselves favorably. Our achievements are measured against our aspirations for any given area of behavior. ...but [James] also believes that men achieve a sense of their general worth by employing communal standards of success and status...A third source of self-esteem, according to James, is the value placed upon extensions of the self ...[his] house, wife, children, ancestors, friends, reputation and works. ...In addition to the material constituents of the self, James proposes a 'social self which is the recognition he gets from his peers....A man has as many social selves as there are people who recognize him and carry an image of him in their mind....

The association between self-esteem and psychological centrality has been shown by Harter (1988), who found that children reported similar degrees of satisfaction in different areas of their lives, yet had different levels of self-esteem. She reported that self-esteem was highest for children who were satisfied in areas that were important to them, and unsatisfied in areas that were unimportant to them.

The principle of psychological centrality may explain some of the differences found in the strength of the self-esteem/achievement relationship among different ethnic/racial groups. For example, there is some indication that the relationship between self-esteem and achievement is weaker for Blacks (Mboya, 1986) than for Asians (Cheung, 1986) or Whites (Liu et al., 1992). If so, this would be consistent with Ogbu's position that because of cultural subordination, Blacks have developed their own values and they are often opposite to that of the dominant culture, even so far as high achieving Black students being called "oreos" because they are Black on the outside and White on the inside. If academic achievement is valued, on average, less by Blacks than other ethnic/racial groups then one would expect two things. First, that Blacks would have lower levels of achievement, if it is true that, according to Rosenberg (1979), people try to get better at what they value, and value those things at which they do well. Second, the strength of the relationship between self-esteem and achievement would be weaker for Blacks than for Whites or other minority groups that identify with the majority group.

In terms of gender differences, the valuing of academic achievement may be more difficult to predict. With changing roles and more women pursuing careers requiring university level education, this may be a moving target.

Summary

The formation self-esteem depends, to some extent, on people's perceptions of how others appraise them, the group with which they makes comparisons, whether they attribute their successes or failures to luck and fate versus ability and effort, and the extent to which they value particular achievements, competencies, and traits.

Rosenberg (1979) has noted that people tend to try to get better at what they value, and value what they do well. Children from a culture where skills taught do not match the methods of teaching in the schools will be less likely to value school. It is necessary that schools be in tune with the skills that children are bringing with them into the school context. For this reason, considering discrepancies between the school context and one's cultural or home context is important in examining the relationship between self-esteem and achievement.

Cultural differences in self-esteem are also likely to vary according to the principles of generalized other and reflected appraisals, and Ogbu's theorizing about cultural subordination. Culture informs individuals about their personal worth. If sub-groups of a culture, or all members of a culture, are labeled in a certain way by their own culture or by another cultural group, the label will contribute to how they view themselves. An example of this is the reference to mature females as 'girls' or the way Black males used to be called 'boys'.

Differences in the self-esteem/achievement relationship can also be expected for individuals or groups of individuals from a given cultural group or SES strata, according to the principle of psychological centrality, Vygotsky's theorizing about the zone of proximal development, and Dewey's theory about the match between students' homes and school environments. If students' home lives are vastly different from their school environment, learning is less likely to occur and, in turn, students may be less likely to value achievement.

This overview of factors that may be related to self-esteem and achievement is not exhaustive, yet despite its brevity, it shows that attempting to understand self-esteem and its relationship with achievement is a complex endeavor. Nevertheless, broad aspects of what was found with this review are considered in the research that follows.

The review showed that it is reasonable to expect the self-esteem/achievement relationship to be related to gender, ethnicity/race, SES, and school membership. Therefore, gender, ethnicity/race, and SES

were included in the following study of self-esteem and achievement. They were measured at the individual level, with aggregation to the school level to capture some school contextual effects.

This first study (Chapter 3) used the NELS data set and the second study (Chapter 5) used the SBPP data set. The main difference between the two sets of analyses conducted on each of these data sets is the availability of variables. The NELS data set allowed for an investigation of self-esteem as it relates to ethnicity/race, a detailed index of socioeconomic status, and two types of academic achievement measures. Because the decision to conduct the second study was made after completing analyses on the first study, the motivation for the second study, an additional literature review, and the variables employed are presented in a second research and theory chapter (Chapter 4).

CHAPTER 3: GENDER, ETHNICITY/RACE, SCHOOL FACTORS AND THE SELF-ESTEEM/ACHIEVEMENT RELATIONSHIP

The literature review in Chapter 2 showed that the relationship between self-esteem and achievement may be moderated by gender, ethnicity/race and school factors. It also showed that the type of self-esteem measure used can influence research results. The main goal of the following study was to determine, for a nationally representative sample of eighth-grade students in the U.S., the strength of the self-esteem/achievement relationship using a context-free measure of self-esteem while controlling for gender, ethnicity/race, socioeconomic status and school effects. By controlling for these factors, it can also be determined which factors are the strongest predictors of self-esteem, and to what extent they moderate the relationship between self-esteem and achievement. The specific research questions are as follows:

Within-school Questions

(1) Are there substantive differences in the levels of self-esteem between males and females within each ethnic/racial group?

(2) Is self-esteem related to academic achievement? If so, does the strength of this relationship vary for males and females within each ethnic/racial group? If so, to what extent are these relationships moderated by SES?

Between-school Questions

(3) Do levels of self-esteem vary between-schools, before and after controlling for SES, gender, and ethnicity/race?

(4) If there are differences in levels of self-esteem between males and females within each ethnic/racial group (question 1 above), are they constant across schools, or do they vary between-schools?

(5) If self-esteem is related to achievement (question 2 above), does the strength of this relationship vary between-schools, after controlling for SES, gender, and ethnicity/race? If so, is some of this variation attributable to school characteristics?

Achievement Measure Question

(6) Is there a difference in the relationship between self-esteem and achievement when grades versus test scores are used to measure achievement?

Methods

The data set used in this research was collected through the National Educational Longitudinal Study (NELS) conducted by the U.S. Department of Education's National Center for Education Statistics (NCES). NELS continues to collect data every two years, the purpose of which is:

> ...to study the educational, vocational, and personal development of students at various grade levels, and the personal, familial, social, institutional, and cultural factors that may affect that development (Base Year: Student Component Data File User's Manual, p. 1).

NELS: 88 is the base year of the study which obtains trend data regarding critical transitions often experienced by students in the elementary to high school and college transition. Students participating in the 1988 survey continue to be tracked every two years into their post-secondary education. The base year data, used in this study, are from a national random sample of 24,599 grade eight students.

Sample

The sub-sample of the NELS: 88 data used in this research includes Asians, Blacks, Hispanics, and Whites. Native Americans were excluded from the major analyses because of small numbers. In addition, students were excluded (listwise) from analyses if they had not completed all of the self-esteem items. Furthermore, as HLM requires that there be no missing data at the school-level, schools with missing data and the students associated with those schools were eliminated from the analyses. Student

cases were weighted according to sampling probabilities (see Appendix B for method and rationale of weighting). The resulting weighted sample consists of 21,039 students from 861 schools (see Table 3-1).

Measures

Self-esteem. Self-esteem was described in Chapter 1 as a self-evaluative measure. One may evaluate one's self generally (e.g., "I feel good about myself") or relative to a given context, such as schooling (e.g., "I feel good about myself as a learner"). A context-free measure of self-esteem, 7 of 10 items from the Rosenberg Self-esteem Scale (RSE), was used in this study. It should be noted that the NELS manual calls refers to this scale as a 'self-concept' scale, however, the items are in fact from the Rosenberg Self-Esteem scale, and thus, the term self-esteem is used as it is not only consistent with Rosenberg's labelling, but also with the evaluative nature of the items which sets self-esteem items apart from self-concept measures. This shorter version should not compromise the measurement of self-esteem as Gray-Little, Williams, and Hancock (1997) conducted an item response theory analysis of the 10-item scale and found the items to be uniform in content and to define a unidimensional trait. From this study, Gray-Little et al. (1997) suggested that the scale could be shortened and still provide a measurement of global self-esteem.

The seven items from the RSE used in this study are as follows:
(1) I feel good about myself,
(2) I feel I am a person of worth, the equal of other people,
(3) I am able to do things as well as most other people,
(4) On the whole, I am satisfied with myself,
(5) I certainly feel useless at times,
(6) At times I think I am no good at all, and
(7) I feel I do not have much to be proud of.

Students responded to these statements on a five point scale from 'Strongly Agree' to 'Strongly Disagree'. In this study, a composite self-esteem score was computed for each student. This was done by first transforming the score for each of the seven self-esteem items into a z-score. The mean of these seven z-scores was calculated for each student and then these composite scores were standardized to a mean of zero and a standard deviation of one. The composite self-esteem scores were computed for the entire 1988

Table 3-1

Weighted Sample Breakdown by Gender and Ethnicity/Race

	Males	Females	n	%
Asians	369	333	702	3.3
Blacks	1,334	1,386	2,053	12.9
Hispanics	1,037	1,017	2,720	9.8
Whites	7,796	7,767	15,564	74.0
n	10,536	10,503	21,039	
%	50.1	49.9		100.00

sample of 24,599 grade eight students so that the composite z-scores reflect each person's standing within the nationally representative sample rather than the subsample used in this study. The internal consistency - Cronbach's alpha) of the scale in this study was .77 (see Table 3-2), which shows a good level of homogeneity among the scale items. Among the different gender-ethnic/racial group this did vary somewhat, with the lowest alpha being .65 for Black males and the highest being .80 for Asian and White females. This shows that scale items are more homogeneous for some gender-ethnic/racial groups than others and some caution may be needed when interpreting group differences.

Achievement. Two types of achievement measures were used: self-reported grades and standardized test scores (see Appendix B for details on administration). For both achievement measures a single score was derived from the mean of the students performance in English (Reading for the standardized tests measure), Math, Science, and Social Studies (History for the standardized tests measure). The composite scores for grades and test scores were standardized so that each student's score is a z-score derived from the entire sample (N=24,599).

Socioeconomic status. In the United States, ethnic/racial groups differ in their levels of socioeconomic status (SES), with minorities typically having lower SES than majority members, so SES was included to control for any links between self-esteem and achievement that may be an artifact of SES, but not ethnicity/race. SES was calculated using the following variables: family income, mother's and father's education level, mother and father's occupation, and the number of siblings (reverse coded). "Number of siblings" is sometimes used in composite SES measures, alongside other indicators of SES, because it is associated with the amount of resources available for each child, and in most societies is negatively correlated with family income and the prestige of the parents' education. In the NELS data, and in a large data set describing Scottish secondary pupils, number of siblings loads heavily on the first principal component of a set of factors describing students' background (e.g., see Willms, 1986). All values were first standardized, then summed, and then re-standardized for the final SES value.

Table 3-2

Self-Esteem Internal Consistency Values: Gender by Ethnic/Race Groups

	n	α^*
Asian Males	368	.76
Asian Females	333	.80
Black Males	1,334	.65
Black Females	1,386	.69
Hispanic Males	1,036	.73
Hispanic Females	1,017	.77
White Males	7,796	.76
White Females	7,767	.80
All	21,039	.77

*Cronbach's alpha

Gender. Gender was coded as follows: 1 = female and 0 = male. These scores are centered (each person's score minus the average) in the HLM analyses, which makes the beta weights representative of the 'average' student.

Ethnicity/Race. There was no breakdown for people of mixed ethnic/racial backgrounds, such as having a Black Father and a White Mother. Instead, respondents were asked to identify themselves according to what best described their ethnicity/race. Three variables were used to code ethnicity/race (see Appendix B for phrasing of ethnicity/race items): Asian (1 = Asian, 0 = Black, Hispanic, or White); Black (1 = Black, 0 = Asian, Hispanic, or White); and Hispanic (1 = Hispanic, 0 = Asian, Black or White) and were also centered.

School-level variables. Variables at the school-level include ethnic/racial composition, grade-span, number of pupils per school, private or public school, mean socioeconomic status, mean grades (classroom grades) and mean tests (standardized test scores). The first four variables were reported by a member from the school administration and the last three variables were computed by aggregating individual scores within each school (see Appendix B for details on school-level variables).

Analyses

Preliminary analyses were conducted to examine outliers, normality and linearity. The methods and results of these analyses are presented in Appendix B. Additional analyses include principal components analyses, tests for homogeneity of variance-covariance, descriptive statistics and the estimates of hierarchical linear models. The purposes for each of these are outlined below.

Principal Components Analyses (PCA)

Principal components analyses were conducted to determine if (a) the underlying factor structure of the RSE is the same as that found in the literature, and (b) the factor structure is equivalent across Gender-ethnic/racial groups. While there are many methods that may be used to determine the underlying factor structure of a set of measures, Harris (1975) suggests that in many cases PCA is preferable to principle

factor analyses because to conduct any type of factor analysis would reduce the clear association "..between original variables and the hypothetical variable" (Harris, 1975, p.223). Varimax rotation, which redistributes variance and maximizes the variance of loadings for each component was used to give a clearer meaning to factors (Marasculio & Levin, 1983). Factors with eigen values greater than one were accepted (Marascuilio & Levin, 1983).

Homogeneity of Variance-Covariance

A test of the homogeneity of the variance-covariance matrix containing the seven self-esteem items was conducted for each of the gender-ethnic/racial groups to determine the extent to which the self-esteem scale measured the same construct in each of the groups. If there is not homogeneity of the variance-covariance matrix across groups then there exists the possibility that the RSE is measuring something different in each group. This would then alter the way in which the results could be interpreted, especially in terms of group comparisons.

Descriptive Differences Between Groups

Group means are presented for descriptive purposes. This is to provide an overall picture of how the different ethnic/racial and gender groups score on measures of self-esteem, achievement and socioeconomic status.

Hierarchical Linear Modeling (HLM)

The main analyses in this study were done using Hierarchical Linear Modeling (HLM). For the HLM analyses, the gender and ethnicity/race variables were coded categorically. For instance, the variable Gender was assigned a value of 1 for females and 0 for males. Similarly, the variable Black was given a value of 1 for Blacks and 0 for all non-Blacks. These variables were then centered by subtracting the mean, so that beta weights represent the average across individuals.

Seven HLM models were tested (see Table 3-3 for a summary of these models). Each model builds upon the next model in complexity to find the best model in terms of simplicity and explained variance. Control variables were entered before the achievement variables to determine the amount of variation in self-esteem attributable to these variables, apart from achievement.

First a null model, identical to the random effects ANOVA, was constructed (i.e., no predictor variables at either the individual or school level) with self-esteem as the predicted or outcome variable. This model determines the overall percentage of variation in self-esteem that lies between-schools before controlling for individual or school variables, and therefore, can be explained at either the individual or school level. Model 2 introduces the gender and ethnicity/race variables and Model 3 builds on Model 2 by adding SES. Models 4 and 5 include achievement variables to assess the relationship between self-esteem and achievement. The measures of achievement are self-reported grades for Model 4 and standardized test scores for Model 5. Finally, Models 6 and 7 add school-level factors to Models 4 and 5, respectively. Due to the large number of school-level variables, preliminary analyses were conducted to determine which of the school-level variables (e.g., school size, ethnic/racial composition, mean achievement) might be significantly related to between-school differences in self-esteem levels. School variables included in the analyses are those that significantly accounted for between-school variability in self-esteem for either the grades (Model 6) or the tests (Model 7) equations.

Results

Principal Components

Principal components analyses with Varimax rotation was conducted for each of the eight groups (male and female Asians, Blacks, Hispanics, and Whites; see methods for description). The underlying factor structure of self-esteem was similar, but not identical, across the eight groups (see Appendix B, Table B-3a and B-3b). Across the eight groups the self-esteem composite yielded two factors, and in most cases the positively worded statements loaded on the first factor and negatively worded statements loaded

Table 3-3

HLM Self-Esteem (Outcome) Models: Predictor Variables

Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
	Gender	Gender	Gender	Gender	Gender	Gender
	Ethnicity/R.	Ethnicity/R.	Ethnicity/R.	Ethnicity/R.	Ethnicity/R.	Ethnicity/R.
		SES	SES	SES	SES	SES
			Grades	Tests	Grades	Tests
					(School)*	(School)

* School-level variables modeled on intercept: % White, Public, Mean Achievement
School-level variables modeled on SES: % Black
School-level variables modeled on Achievement: Mean SES

Note: Ethnicity/R. = Ethnicity/Race

on the second factor. Factor 1 consisted of the following items (letters correspond to the labelling and ordering in the NELS student questionnaire):

A. I feel good about myself,

D. I feel I am a person of worth, the equal of other people,

E. I am able to do things as well as most other people,

H. On the whole, I am satisfied with myself,

and Factor 2 consisted of the following items:

I. I certainly feel useless at times

J. At times I think I am no good at all

L. I feel I do not have much to be proud of

The exceptions to the above loadings were with Asian males and White females where item L had a slightly higher loading on Factor 1. For all other groups, the loading for item L was only a slightly higher on Factor 2.

This pattern of loadings, where positively worded statements are on one factor and negatively worded statements are on a second factor, has been found by others who have subsequently suggested that the two factors emerge as a result of response styles to negatively versus positively worded items (e.g., Goldsmith, 1986; see also Shahani, Dipboye, & Phillips, 1990). This means that the two dimensions are not due to content, but due to the way students respond to negatively phrased items compared to positively phrased items. Since the dimensionality was not based on content, in this study the construct was used as a unidimensional construct with a composite score being an equally weighted sum of the seven self-esteem items. This single factor construct has an internal consistency (Cronbach's alpha) of .77 (see Table 3-2 for gender by ethnic/racial breakdown of internal consistency scores).

Homogeneity of Variance-Covariance

A test of homogeneity of dispersion matrices was applied to the 7 x 7 item variance-covariance matrices for the eight gender-ethnic/racial groups. The test was significant, $F(196, 13890156) = 8.04$,

$p<.001$, indicating that the correlation among the items of the scale differs amongst groups. This means that the underlying construct may reflect something different among the eight groups.

To address this problem, separate multiple regression analyses were conducted for each of the eight groups in addition to the pooled HLM analyses. The individual multiple regression analyses are referred to when discussing group differences, whereas the pooled HLM analyses are referred to when discussing within- and between-school variance of self-esteem.

In addition, a comparison was made of the predicted self-esteem/achievement relationship from HLM pooled results and from individual MR regression results for each of the groups. The changes in self-esteem as related to a one unit change in grades and tests are presented in Table 3-10 (This table is located in the summary of results section where it will be discussed in more detail). Except for Asian males, there were no significant differences between the individual multiple regression analyses (MR) and HLM analyses (columns three and six in Table 3-10). Significant differences were found for Asian males where there was a 5.8 and 7.8 percentage point difference, respectively, between MR and HLM analyses. The results of the HLM analyses are presented below. This is followed by a summary of the individual MR results.

Descriptive Differences Between Groups

Group means and standard deviations of the eight groups of students are presented in Tables 3-4a and 3-4b (see Appendix B, Table B-2 for correlation coefficients). All variables were standardized on the entire national probability sample, therefore, means are relative to the national average. However, subsequent analyses include only those students with complete self-esteem scores and complete school-level data. Native American students were excluded because there were too few of them to provide reliable estimates. In total, excluded students comprise 14% of the entire sample. Relative to the entire 1988 sample, the individuals who were selected for this study are approximately 1% of a standard deviation higher in self-esteem, mean grades, and SES; and 3% of a standard deviation higher in averaged test scores than individuals not included in this study.

Table 3-4a

Means and Standard Deviations of Outcome and Predictor Variables: Ethnicity by Gender Groups

		Self-Esteem		Grades		Tests		SES	
		Mean	SD	Mean	SD	Mean	SD	Mean	SD
Asians	(n*=683)	-.047	.984	.371	.975	.244	1.032	.285	1.097
Males	(n=361)	**.070**	.953	**.270**	1.034	**.231**	1.088	**.240**	1.097
Females	(n=321)	**-.176**	1.003	**.481**	.893	**.257**	.967	**.335**	1.097
Blacks	(n=2,651)	.305	.914	-.215	.924	-.640	.807	-.427	.885
Males	(n=1,291)	**.404**	.876	**-.345**	.938	**-.666**	.814	**-.411**	.903
Females	(n=1,360)	**.211**	.940	**-.091**	.893	**-.615**	.799	**-.442**	.869
Hispanics	(n=2,004)	-.057	.984	-.195	.950	-.432	.894	-.625	.977
Males	(n=1,010)	**.101**	.934	**-.257**	.972	**-.392**	.935	**-.606**	.982
Females	(n=994)	**-.218**	1.001	**-.133**	.924	**-.472**	.850	**-.645**	.971

*The reported n indicates the smallest sample size used for calculating the mean in each row.

Table 3-4b

Means and Standard Deviations of Outcome and Predictor Variables: Ethnicity by Gender Groups - Continued

		Self-Esteem		Grades		Tests		SES	
		Mean	SD	Mean	SD	Mean	SD	Mean	SD
Whites	(n* = 15,277)	-.025	.985	.064	1.006	.200	.955	.159	.936
Males	(n=7,654)	**.157**	.941	**-.050**	1.037	**.195**	.993	**.176**	.936
Females	(n=7,622)	**-.207**	.994	**.177**	.960	**.204**	.916	**.143**	.936
All groups	(n=20,614)	.014	.982	.013	.998	.032	.987	.012	.983
Males	(n =10,316)	**.180**	.037	**-.096**	1.027	**.031**	1.020	**.027**	.985
Females	(n=10,297)	**-.152**	.999	**.122**	.956	**.033**	.952	**-.004**	.981

*The reported n indicates the smallest sample size used for calculating the mean in each row.

Self-Esteem

Within each ethnic/racial group, mean self-esteem was higher for males than for females. The size of the gender gaps within each ethnic/racial group were as follows, in standard deviation units: Blacks, 19.3%; Asians, 24.6%; Hispanics, 31.9%; and Whites, 36.4%. For the group as a whole, self-esteem for males was 33% of a standard deviation [.180 -(-.152) = .332] higher than for females.

The average self-esteem levels among ethnic/racial groups were equivalent, with the exception of Blacks whose self-esteem was approximately 33% of a standard deviation higher than Asians, Hispanics, and Whites. Mean self-esteem for Asians, Hispanics and Whites did not differ among each other by more than 3.2% of a standard deviation.

Grades

Within each ethnic/racial group females had higher mean grades than males. For the sample as a whole, this difference was 22% of a standard deviation, and was much the same for Asians (21%), Whites (23%), and Blacks (25%), but smaller for Hispanics (12%). As a group, Asians had the highest mean grades, 59% of a standard deviation higher than Blacks and Hispanics, and 31% of a standard deviation higher than Whites. Blacks and Hispanics had the lowest mean grades, with only 2% of a standard deviation difference between them.

Tests

While males and females differed significantly on grades, they did not differ significantly on mean test scores (0.2% of a standard deviation between them). The largest gender difference, though still insignificant, was for Hispanics, where females' test scores were 8% of a standard deviation higher than males' test scores. Asians and Whites had the highest mean test scores, .24 and .20 respectively, which gave them an overall standing approximately 20% of a standard deviation higher than Hispanics and 40% of a standard deviation higher than Blacks.

Socioeconomic Status (SES)

As one would expect, across the sample, males and females did not differ in SES levels (only 3% of a standard deviation between them). For Asians there was 10% of a standard deviation between males and females, with the females having higher SES levels. This difference is significant and unexpected. The reason for this difference can only be speculated. For example, perhaps SES Asian females are less likely to attend school in grade 8 than are higher SES Asian females, there could be fewer females in low SES Asian families, or there may be different immigration patterns for different families.

Overall, Asians and Whites had the highest SES (.28 and .16 respectively), with the SES of Asians being 70% and 91% of a standard deviation higher than the SES of Blacks and Hispanics, respectively.

Summary of Descriptive Differences

The self-esteem mean differences are consistent with previous findings indicating that Black children and adolescents have higher self-esteem than Whites (e.g., Gruber, 1980; Hoelter, 1983; Madhere, 1991; Rotheram-Borus, 1990) and that male children and adolescents have higher self-esteem than their female counterparts (e.g.; Hoelter, 1983; Marsh, Parker, & Barnes, 1985; Oyefeso & Zacheaus, 1990; Skaalvik, 1986; Wade, 1991). The ethnicity/race by gender results are also consistent with Simmons et al. (1978) who found that males were more likely to have higher self-esteem than their same ethnicity/race female counterparts and that Blacks had the smallest male-female difference in self-esteem.

One possible explanation for this consistent gender difference in self-esteem is that females may process attitudes about their abilities differently than males. For example, Josephs, Markus and Tafarodi (1992) found that men with high self-esteem perceived themselves as having 'uniquely superior abilities in every domain [they] examined' (p. 394), but men with low self-esteem estimated their abilities more modestly. Women with high self-esteem (high for women), however, were not characterized by a perception of unique abilities. The reason for this difference in attitudes about abilities may be how males and females are socialized in terms of modesty. For example, Berg, Stephan and Dodson (1981) found that

women changed their attribution for success or failure depending on whether or not another person would know about their attribution, and attributions about future performance were mediated by protective modesty.

This concern for modesty also fits well with findings that adolescent females tend to be more self-conscious than males. Rosenberg and Simmons (1975) found an increasing difference between males and females (from grades 3 to 12) on a measure of self-consciousness containing items about awareness of what others think of them. They found the difference with children aged 8-11 to be only 2%, but to be 24% for the students aged 15 or older. Furthermore, this is consistent with Schwalbe and Staples' (1991) finding that women place a greater weight on reflected appraisals than do men. Their study was conducted with a group of 514 undergraduates (52% male, 48% female; mean age 20 years).

It is noteworthy that male and female eight-graders in this study differed significantly on mean self-reported grades, but not on mean standardized test scores. This suggests that when studying the relationship between self-esteem and achievement, the type of achievement measure may critically influence the results. Indeed, the overall correlation between self-esteem and grades (.222) was higher than for tests (.145; see Appendix B, Table B-2).

With respect to self-esteem and grades, note that while across ethnic/racial groups females were consistently lower in self-esteem than their male counterparts, the reverse was true for grades - females had consistently higher scores than males. Similarly, the self-esteem scores for Blacks and Hispanics were much higher than one might expect given their grades, while the reverse was true for Asians and Whites. This suggests some complexity in the relationship between self-esteem and achievement.

Hierarchical Linear Modeling (HLM)

Model 1. The school grand mean for self-esteem in the null model is .012 with a standard error of .009 (see Table 3-5). Since the self-esteem variable was standardized to a mean of zero and a standard deviation of one for the entire sample, the grand mean (intercept) should be close to zero. It is slightly larger than zero (.012) due to the use of a subset of the entire sample (i.e., exclusion of Natives, schools

Table 3-5

HLM Regression Results for Null Model

	Model 1: Null Model		
Fixed Effects		Coeff.	SE
Grand mean		.012	.009
Random Effects	Rel.[1]	Var.[2]	χ^2
School means	.425	.0315**	1512.53
Residual		.9330	
Variance partitioning in self-esteem			%
Between-school			3.27
Within-school			96.73

[1]Rel. = Reliability of means.
[2]There were 860 degrees of freedom for the χ^2 test.
* $p<.05$; ** $p<.01$.

with missing data, and individuals with incomplete esteem scores) and because the precision-weighted mean of the means is not exactly equal to the student-level mean.

The between-school variability ($B\sigma^2$) for self-esteem, .0315, is significant, χ^2 (860) = 1512.53, $p<.01$ (see Raudenbush & Bryk, 1986 for details of the χ^2 analyses). The reliability of the school means is .425. Reliability in HLM means the ratio of true to observed variance, the proportion of all variance around each parameter that is actually parameter variance and is available to be explained (Arnold, 1992). A reliability of .425 suggests that it is fairly difficult to distinguish which schools have particularly high or low means. The within-school variability ($W\sigma^2$) is .9330. This means that the proportion of the total self-esteem variation that is within-schools is 96.73% [($W\sigma^2$ / $W\sigma^2$ + $B\sigma^2$) = .9330 /(.9330 + .0315)] and between-schools is only 3.27% [($B\sigma^2$/ $W\sigma^2$ + $B\sigma^2$) = .0315/(.9330 + .0315)] (see Appendix A for details on HLM modeling).

It is the variance components (.0315 and .9330) that are of interest here, as they inform us about how much variability in self-esteem can potentially be explained by student- and school-level variables. Student-level variables can potentially explain both within- and between-school variance, whereas school-level variables typically explain only school-level variance (Raudenbush & Willms, 1995).

Model 2. Model 2 controls for ethnicity/race and gender. The regression intercept (Grand mean) estimates the mean self-esteem score for all students. The remaining beta coefficients estimate the average within-school gap between any given group and the grand mean. For example, being a Black male is associated with being 30.7% of a standard deviation higher on self-esteem than that of the grand mean of .017. Being a White female is associated with being 34.8% of a standard deviation lower in self-esteem than the grand mean (see Table 3-6). In this model the t-tests of the beta coefficients for the variables Black, Gender, Asian x Gender, and Black x Gender were statistically significant at $p<.01$, indicating these variables are significant predictors of self-esteem. These results are similar to the mean scores by group presented in Table 3-3. However, because HLM estimates the gaps on a school-by-school basis, and

Table 3-6

HLM Results for Student-Level Variables on Self-Esteem: Models 2 and 3

	Model 2: Gender and Ethnicity/Race			Model 3: Gender, Ethnicity/Race, and SES		
Fixed Effects		Coeff.	SE		Coeff.	SE
Grand mean		.017	.009		.016	.008
Asian		.014	.030		-.023	.030
Black		.307**	.023		.385**	.023
Hispanic		-.018	.022		.077**	.023
Gender		-.348**	.015		-.343**	.014
Asian x Gender		.124	.058		.118*	.058
Black x Gender		.182**	.043		.180**	.043
Hispanic x Gender		.047	.043		.043	.042
SES					.127**	.008
Random Effects	Rel.[1]	Var.[2]	χ^2	Rel.	Var.	χ^2
School means	.346	.0227**	1327.19	.217	.0161**	1119.59
Gender	.092	.0171*	948.58	.080	.0152*	946.24
SES				.012	.0008	853.38
Residual		.8952			.8861	
Variance in Self-Esteem Explained[3]			%			%
Between-school			28.01			48.94
Within-school			4.05			5.02
Total			4.83			6.46

[1] Rel = Reliability of means. [2] Degrees of freedom for χ^2 tests are 856 for Models 2 and 3.
[3] [Within var (null) - Within var (new)]/Within var (null) = Within variance explained; [Between var (null) - Between var (new)]/Between var (null) = Between variance explained ; [Total variance (null) - Total var (new)]/Total variance (null) = Total variance explained. *p<.05; **p<.01.

averages them across schools (again, a precision-weighted average), the HLM analysis reveals that the large ethnic/racial and gender differences are a within-school phenomenon.

The between-school variance remaining after controlling for ethnicity/race and gender is .0227, which is statistically significant at $p<.01$, indicating there is more between-school variance to be explained. These analyses explain some of that variation in self-esteem with demographic variables before adding achievement to the model. Since the initial within-school variance was .9330 and the initial between-school variance was .0315, the ethnicity/race and gender variables have accounted for only 4.05% [(.9330-.8952)/.9330 = .0405] of the within-school variance and 28.01% [(.0315-.0227)/.0315 = .2801] of the between-school variance (see random effects section of Model 2 in Table 3-6).

Model 3. Model 3 adds SES to Model 2 (see Table 3-6). This model shows that a one standard deviation increase in SES (SES scores are in standardized form) is associated with .127 of a standard deviation increase in self-esteem. With the addition of SES, Model 3 accounts for 5.02% of the within-school and 48.94% of the between-school variance. SES explains a significant proportion of the between-school variation in self-esteem. With the inclusion of ethnicity/race, gender, and SES variables, almost half the between-school variance has been explained. Also note that the random portion of the model shows slightly significant gender gap between schools. Also note that for the random portion, four single-sex schools were dropped from the analyses which means that this research does not address questions pertaining to impact of single-sex schools on self-esteem. It may be argued that single-sex schools for females may be beneficial for self-esteem where there is no competition with males.

Model 4. In model 4 grades, gender x grades, and ethnicity/race x grades variables are added to Model 3 (see Table 3-7a and 3-7b). Note that the largest increase in self-esteem associated with an increase in grades is for Hispanic females (.197 + .029 + .079 = .305 = 30.5%), and the smallest increase is for Black males (.197 - .069 = .128 = 12.8%). Beta coefficients in Table 3-7a show that females' self-esteem is more strongly related to grades than it is for males of the same ethnic/racial group, with the

Table 3-7a

HLM Results for Student-Level Variables on Self-Esteem: Models 4 and 5

	Model 4: + Letter Grades		Model 5: + Test Scores	
Fixed Effects	Coeff.	SE	Coeff.	SE
Grand mean	.009	.008	.017*	.008
Asian	-.099**	.032	-.029	.030
Black	.398**	.023	.498**	.027
Hispanic	.091**	.022	.140**	.024
Gender	-.395**	.014	-.344**	.014
Asian x Gender	.138*	.063	.168**	.060
Black x Gender	.220**	.042	.215**	.044
Hispanic x Gender	.078	.041	.086*	.042
SES	.052**	.008	.060**	.008
Grades **or** Tests (G/T[1])	.197**	.010	.148**	.011
Black x G/T	-.069**	.022	.027	.025
Hispanic x G/T	.029	.021	.028	.023
Asian x G/T	-.026	.031	-.011	.029
Gender x G/T	.079**	.014	.050**	.015
Asian x Gender x G/T	-.096	.060	-.144*	.057

[1]G/T refers to whether grades (G) or tests(T) achievement measures were used. This means that for Model 4 G/T is achievement-grades and for Model 5 G/T is achievement - tests.
*p<.05; **p<.01

Table 3-7b

HLM Results for Student-Level Variables on Self-Esteem: Models 4 and 5 - Continued

	Model 4: + Letter Grades			Model 5: + Test Scores		
Random Effects	Rel.[1]	Var.[2]	χ^2	Rel.	Var.	χ^2
Grand mean	.166	.0120**	1050.22	.192	.0156**	1096.01
Gender	.069	.0132	889.61	.084	.0167	921.65
SES	.036	.0026	876.09	.013	.0010	877.90
Grades slope	.051	.0029*	937.59			
Tests slope				.029	.0020	846.80
Within-school		.8360			.8638	
Variance in Self-Esteem Explained			%			%
Between-school			61.88			50.48
Within-school			10.40			7.42
Total			12.08			8.82

[1]Rel = Reliability of means.
[2]The degrees of freedom for the χ^2 tests are 856 for Model 4 and 855 for Model 5.
*p<.05; **p<.01.

exception of Asians. Also, the self-esteem of Blacks has less of an association with grades than it does for other groups.

This model accounts for 10.40% [(.9330-.8360)/.9330 = .1040] of the within-school variance (an additional 5.38 percentage points from Model 3) and 61.90% [(.0315-.0120)/.0315 = .6190] of the between-school variance (an additional 12.96 percentage points from Model 3). Although the drop in the SES estimate indicates somewhat of an overlap of these variables, with the increase in the amount of variance accounted for with grade variables in the model, they clearly play a major role in the prediction of self-esteem.

Model 4 is the final HLM model with grades as the achievement measure, therefore, a graph representing the results of this model is presented in Figure 3-1. Self-esteem was estimated for each of the eight groups by using the beta weights in a prediction equation. For example, the following equation was used to estimate self-esteem for Asian males with Grades-achievement one standard deviation below the mean:

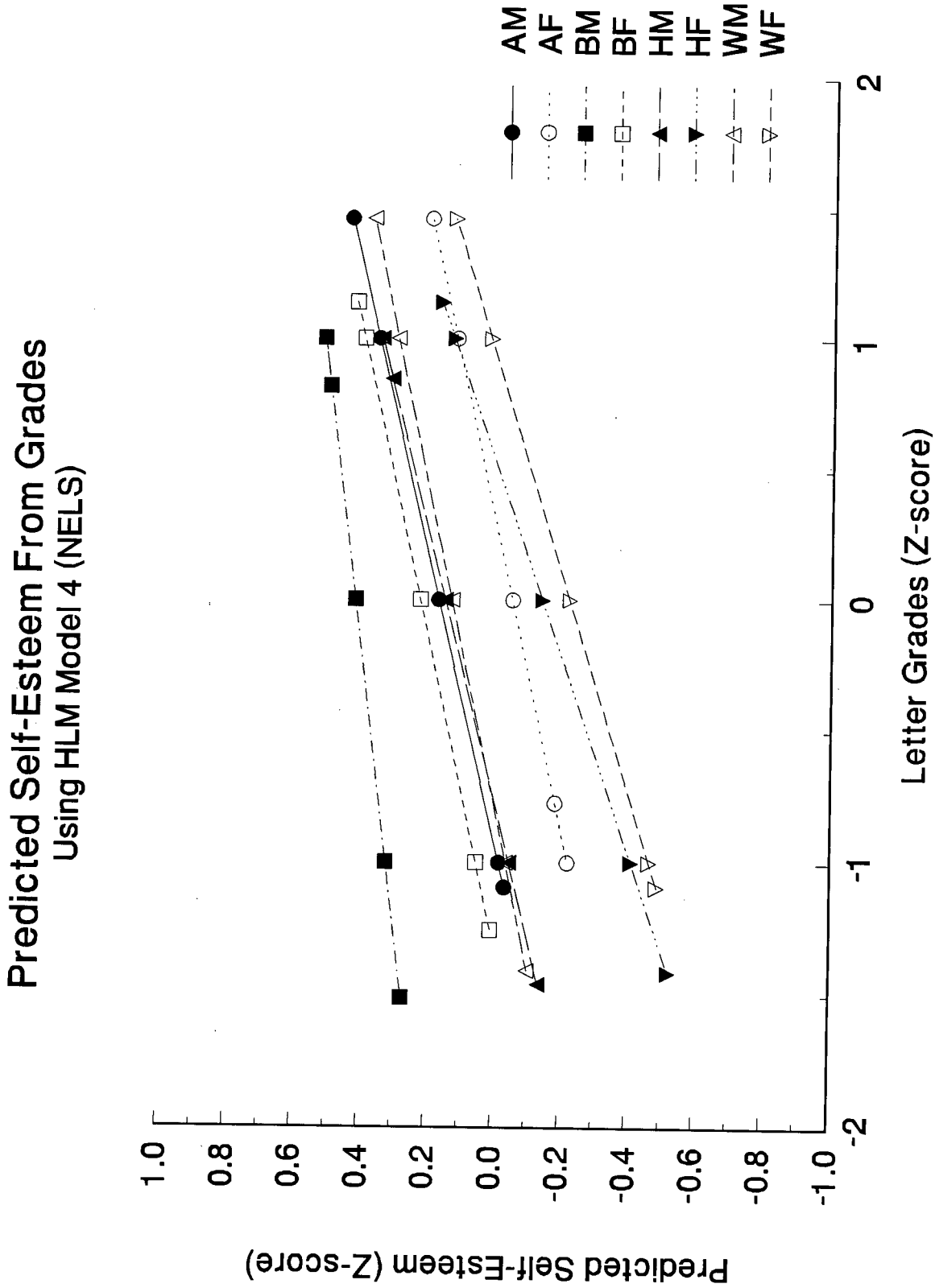
$$\begin{aligned}\text{Pred Esteem (Asian Males)} &= \underline{b}_0 + \underline{b}_{1\text{asian}}\,(.96) + \underline{b}_{2\text{black}}\,(-.13) + \underline{b}_{3\text{hispanic}}\,(-.10) \\ &+ \underline{b}_{4\text{gender}}\,(-.50) + \underline{b}_{5\text{asiaXgender}}\,(-.48) + \underline{b}_{6\text{blckXgender}}\,(-.07) + \underline{b}_{7\text{hispXgender}}\,(-.05) + \underline{b}_{8\text{ses}}\,(.24) \\ &+ \underline{b}_{9\text{grades}}\,(-1) + \underline{b}_{10\text{blckXgrd}}\,(-.13 \times -1) + \underline{b}_{11\text{hispXgrd}}\,(-.10 \times -1) \\ &+ \underline{b}_{12\text{AsiaXgrd}}\,(.96 \times -1) + \underline{b}_{13\text{genderXgrd}}\,(-.50 \times -1) + \underline{b}_{14\text{aisanXgenderXgrad}}\,(-.48 \times -1),\end{aligned}$$

where b = beta estimated in HLM model for each variable.

The numbers for Asian through to Hisp x Gender are all constants and represent whether one is a member of that particular group. For SES, the mean (z-score) SES value for each gender-ethnic/racial group was inserted, for Asian males, the mean SES is .24. For grades, -1 is used to predict self-esteem for those one standard deviation below the mean. The lines in Figure 3-1 are extended to the 10th and 90th percentiles of Grades values for each gender-ethnic/racial group. This graph shows the slightly steeper self-esteem/achievement slope for Hispanic females and slightly flatter slope for Black males.

Model 5. The difference between Models 4 and 5 is the index of achievement that is used. In Model 4 mean grades were used, whereas in Model 5 mean test scores were used (see Tables 3-7a and

Figure 3-1


Predicted Self-Esteem From Grades
Using HLM Model 4 (NELS)
AM
AF
BM
BF
HM
HF
WM
WF
Predicted Self-Esteem (Z-score)
1.0
0.8
0.6
0.4
0.2
0.0
-0.2
-0.4
-0.6
-0.8
-1.0
-2
-1
0
1
2
Letter Grades (Z-score)

3-7b). Note that the largest increase in self-esteem associated with a one unit increase in tests is for Hispanic and Black females (22.6% and 22.5%, respectively), and the smallest increase is for Asian females (4.3%).

This model accounts for 7.42% [(.9330-.8638)/.9330 = .0742] of the within-school variance (a 2.98 percentage point decrease from Model 4) and 50.48% [.0315-.0156)/.0315 = .5048] of the between-school variance (an 11.42 percentage point decrease from Model 4). Clearly, test scores have considerably weaker predictive power for self-esteem than do grades. Also, the self-esteem/achievement relationship for Blacks did not differ from that of Whites for tests, but it did for grades.

A graph was also plotted using the data from Model 5 for predicting self-esteem using Test means and is presented in Figure 3-2 (see Model 4 for method of computation for plot points). This graph shows slightly flatter slopes for all groups, except Black males and females.

It is also interesting to note that before any achievement measure was included in the HLM models, a one unit increase in SES is associated with a 13.1% of a standard deviation increase in self-esteem. When grades and tests variables are added to the models, a one unit increase in SES is only associated with 5% and 6% of a standard deviation increase in self-esteem, respectively, indicating its association with levels of academic achievement.

Model 6. Model 6 introduces school-level variables to the grades model (Model 4). There was little change in the student-level coefficient estimates with the addition of the school-level variables, therefore only the statistically significant school-level variables are reported. For comparability, school-level variables were retained if they were statistically significant for either the grades or tests models.

School-level variables modeled on the intercept indicate the effect those variables have on the level of the outcome variable, self-esteem (see Table 3-8a). Model 6 indicates that the percent of students in the school that are White and being in a public or private school, significantly affects the level of self-esteem. With a 10% increase in the proportion of students that are White, self-esteem is estimated to go up 1.2% of

Figure 3-2

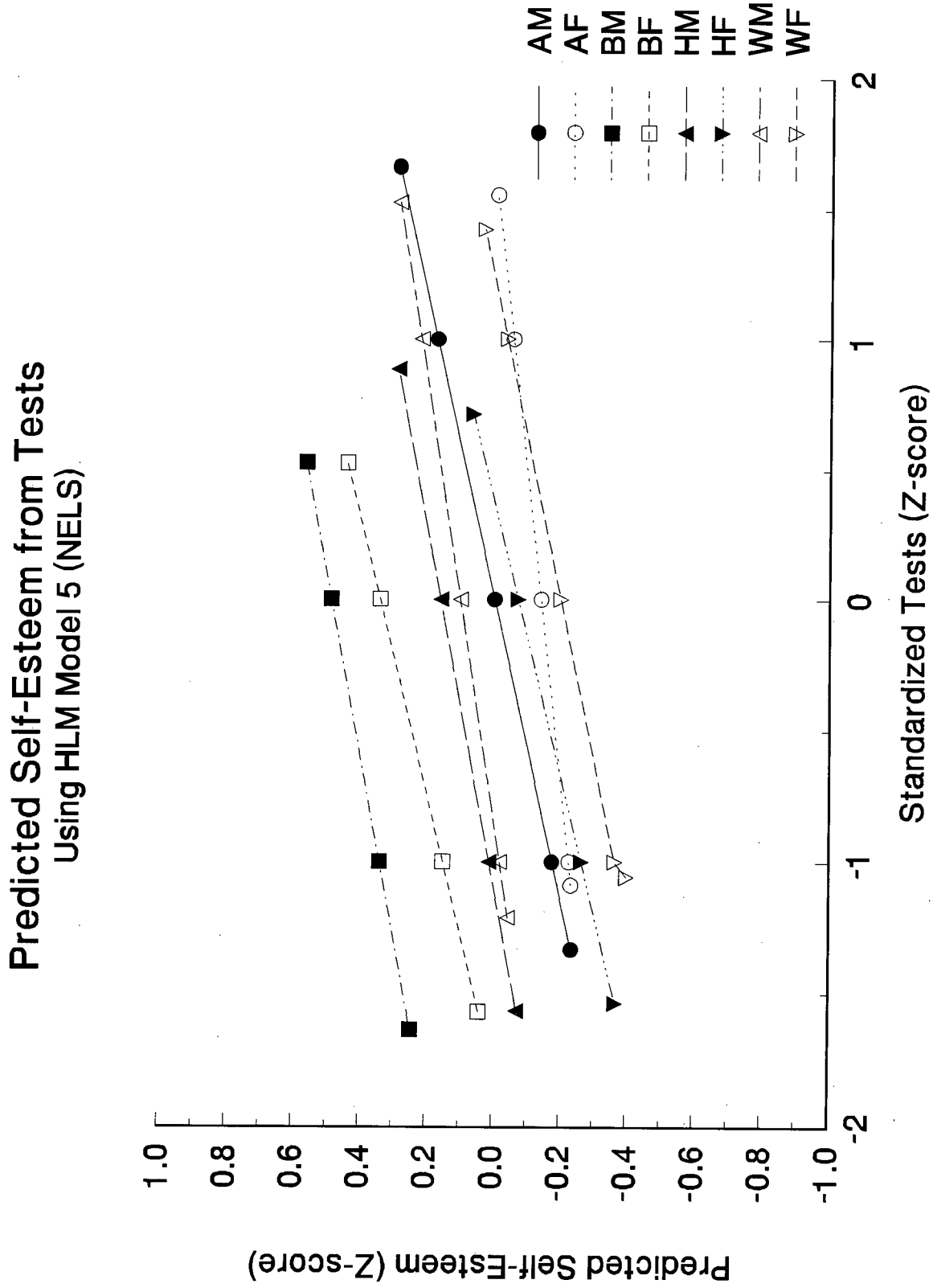

Predicted Self-Esteem from Tests
Using HLM Model 5 (NELS)
AM
AF
BM
BF
HM
HF
WM
WF
Predicted Self-Esteem (Z-score)
1.0
0.8
0.6
0.4
0.2
0.0
-0.2
-0.4
-0.6
-0.8
-1.0
-2
-1
0
1
2
Standardized Tests (Z-score)

Table 3-8a

HLM Results for Student-Level Variables on Self-Esteem: Models 6 and 7

	Model 6: Grades + School		Model 7: Tests + School	
Fixed Effects	Coeff.	SE	Coeff.	SE
Grand mean	.046*	.024	.097**	.025
Asian	-.102**	.032	-.041	.030
Black	.343**	.026	.429**	.030
Hispanic	.112**	.023	.134**	.025
Gender	-.396**	.014	-.344**	.014
Asian x Gender	.149*	.063	.170**	.060
Black x Gender	.222**	.042	.217**	.044
Hispanic x Gender	.082*	.041	.084*	.043
SES	.032**	.009	.055**	.009
Grades **or** Tests (G/T[1])	.199**	.010	.159**	.011
Black x G/T	-.052*	.023	.028	.026
Hispanic x G/T	.038	.022	.016	.024
Asian x G/T	-.032	.030	-.006	.029
Gender x G/T	.079**	.014	.048**	.015
Asian x Gender x G/T	-.101	.060	-.140*	.057

[1]G/T refers to the type of achievement measure: G=grades, T=tests.
*p<.05; **p<.01

Table 3-8b

HLM Results for Student-Level Variables on Self-Esteem: Models 6 and 7 Cont'd

	Model 6: Grades + School			Model 7: Tests + School		
School-Level Factors		Coeff.	SE		Coeff.	SE
Intercept: % White		.0012**	.000		.0012**	.000
Public school		-.084**	.024		-.126**	.025
Mean grade		.015	.024			
Mean test					-.072**	.021
SES: % Black		.0013**	.000		.0008*	.000
Grades/test: Mean SES		.047**	.013		-.015	.013
Random Effects	Rel.[1]	Var.[2]	χ^2	Rel.	Var.	χ^2
School means	.149	.0105**	1030.49	.156	.0121**	1051.88
Gender	.073	.0140	890.31	.081	.0161	919.95
SES	.024	.0017	867.07	.008	.0006	874.02
Grades slope	.055	.0031*	930.11			
Tests slope				.026	.0018	842.82
Residual		.8348			.8644	
Variance in Self-Esteem Explained[3]			%			%
Between-school			66.70			61.16
Within-school			10.53			7.35
Total			12.36			9.12

[1]Rel = Reliability of means.
[2]The degrees of freedom for the χ^2 tests are 853 & 852 for intercept; 856 & 855 for gender; 855 & 854 for SES; 855 for grades slope; and 854 for tests slope.
[3] See Bottom of Table 3-7b for method of computation of variance explained. *p<.05; ** p<.01

a standard deviation (see Table 3-8b). Being in a public school is associated with 8.4% of a standard deviation lower self-esteem than being in a private school.

In this model, the relationships between self-esteem and gender, self-esteem and SES, and self-esteem and grades were allowed to vary among schools. School-level variables were modeled to determine the extent to which school-level factors moderate the relationship between self-esteem and each predictor variable (see Table 3-8b). The preliminary analyses indicated that there were no school-level variables significantly related to the relationship between self-esteem and gender; therefore, they were dropped from the model. For the relationship between self-esteem and SES, only the percent of Black students was significantly related. Every 10% increase in the proportion of students that were Black is associated with an increase of .013 in the self-esteem/SES relationship. Finally, for the relationship between self-esteem and grades, only mean school SES significantly affected the relationship. A one unit (standard deviation) increase in SES was associated with an increase in the self-esteem/grades relationship by 4.7%. In other words, the SES/grades relationship tends to be more prominent in high SES schools than in low SES schools.

With the addition of the school-level variables, 10.53% of the within-school variance (an decrease of .13 percentage points from Model 4) and 66.70% of the between-school variance (an increase of 4.80 percentage points from Model 4) is explained. Therefore, these variables explained only a small portion of the variance, indicating that school-level variables have only a modest impact on self-esteem and the relationship between self-esteem and achievement.

Model 7. Model 7 introduces school-level variables to the tests model (Model 5). Again, there was little change in the student-level coefficient estimates with the addition of the school-level variables, therefore only the significant effects of the school-level variables are reported (see Table 3-8a).

The effect of school-level variables on mean self-esteem (intercept) for the tests model is presented in Table 3-8b under the heading Model 7. These values indicate that the percent of students in the school that are White, attending a public versus private school, and school mean test scores significantly affect

mean self-esteem scores. With every 10% increase in the proportion of students that are White, self-esteem is estimated to go up 1.2% of a standard deviation. Being in a public school is associated with 12.6% of a standard deviation lower self-esteem than being in a private school, and for every standard deviation increase in school mean test scores, estimated self-esteem is decreased by 7.2%. Note that this effect for school mean achievement was not significant when mean grades was the measure of achievement.

The percent of Black students in a school was significantly related to the relationship between self-esteem and SES. For every 10 percentage point increase in the proportion of students that were Black, there was a .8% of a standard deviation increase in self-esteem. This is slightly lower than the increase associated with Model 6, the grades model. Finally, mean SES did not significantly affect the relationship between self-esteem and tests, as it did in Model 6.

With the addition of the school-level variables to the tests model, 7.35% of the within-school variance (a decrease of .07 percentage points from Model 5) and 61.16% of the between-school variance (an increase of 11.12 percentage points from Model 5) was explained.

Individual Multiple Regression Analyses (Based on HLM Models 4 and 5).

Tables 3-9a and 3-9b present the results of the individual multiple regression analyses. Table 3-10 presents a comparative summary of these results with alongside the HLM results. The first thing to note is the larger discrepancy for Asian males between the HLM results and the individual MR results. The discrepancy in these results could be for several reasons:

(1) Small sample (Asians = 702, compared to over 2 000 Blacks/Hispanics and over 15 500 Whites).

(2) Grade coefficients for females in all other ethnic/racial groups is positive, only for Asian females is it negative.

(3) The 3-way interaction term in HLM to account for uniqueness of Asian females has a very high standard error.

Table 3-9a

Unstandardized Multiple Regression Coefficients and Standard Errors for each Gender-Ethnic/Racial Group (Comparable to HLM Models 4 and 5)

	Asian				Black			
	Males		Females		Males		Females	
	B	SE	B	SE	B	SE	B	SE
Grades Model								
SES	.067	.046	.083	.050	.040	.028	.069*	.030
Achiev. - Grades	.226***	.049	.189**	.062	.131***	.026	.194***	.029
(constant)	-.007	.050	-.295***	.062	.465***	.027	.259***	.028
R^2 (adjusted)	.072		.036		.023		.043	
Tests Model								
SES	.023	.051	.083	.056	.018	.028	.059	.031
Achiev. - Tests	.216***	.051	.076	.063	.185***	.031	.198***	.034
(constant)	.014	.050	-.223***	.058	.535***	.031	.358***	.032
R^2 (adjusted)	.063		.013		.031		.036	

*p<.05; **p<.01; ***p<.001.

Table 3-9b

Unstandardized Multiple Regression Coefficients and Standard Errors for each Gender-Ethnic/Racial Group (Comparable to HLM Models 4 and 5) - Continued

	Hispanic				White			
	Males		Females		Males		Females	
	B	SE	B	SE	B	SE	B	SE
Grades Model								
SES	.126***	.029	.067*	.032	.039**	.012	.049***	.012
Achiev. - Grades	.261***	.029	.306***	.033	.204***	.011	.290***	.012
(constant)	.244***	.032	-.134***	.036	.160***	.010	-.266***	.011
R^2 (adjusted)	.104		.088		.058		.089	
Tests Model								
SES	.107***	.031	.054	.034	.059***	.012	.069***	.013
Achiev. - Tests	.211***	.032	.215***	.039	.137***	.012	.189***	.013
(constant)	.248***	.033	-.081*	.039	.120***	.011	-.256***	.011
R^2 (adjusted)	.072		.040		.031		.044	

*p<.05; **p<.01; ***p<.001.

Table 3-10

Changes in Self-Esteem Associated with Changes in Achievement[1]: Models 4 and 5.

Group	% Increase in Esteem with Unit Increase in Grades		Difference	% Increase in Esteem with Unit Increase in Tests		Difference
	Indiv. MR Grades	HLM[2] Grades	MR-HLM Grades	Indiv. MR Tests	HLM[3] Tests	MR-HLM Tests
Asian males	22.6	17.1	5.5*	21.6	13.8	7.8*
Asian females	18.9	15.4	3.5	7.6	4.4	3.2
Black males	13.1	12.8	0.3	18.5	17.6	0.9
Black females	19.4	20.7	-1.3	19.8	22.6	-2.8
Hispanic males	26.1	22.6	3.5	21.1	17.7	3.4
Hispanic females	30.6	30.5	0.1	21.5	22.7	-1.2
White males	20.4	19.7	0.7	13.7	14.8	-1.1
White females	29.0	27.6	1.4	18.9	19.9	-1.0

[1] Achievement measures are in standardized deviation units.
[2] Based on HLM (pooled) results: Models 4.
[3] Based on HLM (pooled) results: Models 5.
*>5s.d.u.=significant.

Any one or more of these possibilities could greatly reduce the accuracy of any of the Asian coefficients. Although the only discrepancy in estimates is for Asians, for consistency I have included individual MR for all gender-ethnic/racial groups.

The HLM results may be more accurate than the multiple regression results because HLM looks at average within-school slopes for each group when there are grouping variables. Furthermore, multiple regression takes all the Asians (and Blacks, etc.) as a group and does not examine them by schools. This means multiple regression would not detect, for example, if there is a negative slope within-schools and positive slope overall for one group. However, with heterogeneity of the variance-covariance matrices it was a judgment call as to which results to use to describe group differences. I decided to use the multiple regression results to discuss group differences.

The multiple regression analyses show that self-esteem was related to academic achievement, with varying strengths of the relationship across gender-ethnic/racial groups. When grades were used as a measure of achievement, Black males had the weakest self-esteem/achievement relationship, with a one unit increase in standardized grades being associated with a 13.1% of a standard deviation increase in self-esteem (see Figure 3-3). There may be some ceiling effect here with Blacks' self-esteem being higher and less variable (standard deviation = .88 compared to .98 for entire sample) than other groups.

White and Hispanic females had the strongest self-esteem/achievement relationship with a one unit increase in grades being associated with a 29.0% and 30.6% of a standard deviation increase in self-esteem, respectively (see Figure 3-3). This means that the strength of the self-esteem/grades achievement relationship varies among gender-ethnic/racial groups by as much as 17.5% of a standard deviation.

When tests were used as a measure of achievement, the strength of the self-esteem/achievement relationship weakened for all groups except for Black males where self-esteem increased 5.4% more than grades for every unit increase in achievement. The self-esteem/achievement relationship remained about the same for Asian males and Black females for grades and tests. For the remaining groups the self-esteem/achievement relationship was weaker with tests than with grades. This was most notable with

Asian females, White females and White males where a one unit increase in tests was associated with 7.6%, 18.9% and 13.7% of a standard deviation increase in self-esteem, respectively. This means that the strength of the self-esteem/tests achievement relationship varies among gender-ethnic/racial groups by as much as 14.0% of a standard deviation. It also shows that for Asian and White females and White males, self-esteem tends to increase about 10% of a standard deviation more with a unit increase in grades than with a unit increase in tests (see Figure 3-4).

The largest gender gap in the strength of the self-esteem/achievement relationship when grades were used was for Whites and Blacks, where females' self-esteem was associated with increases of 8.6% and 6.3% of a standard deviation in grades more than males' self-esteem for every unit increase in grades. For tests, the largest gender gap was for Asians, where males' self-esteem was associated with an increase of 14.0% of a standard deviation in tests more than females.

The estimates of the self-esteem/achievement relationship above did control for socioeconomic status. When socioeconomic status was not controlled for, the strength of the self-esteem/achievement relationship increased slightly for all eight groups. Without SES controlled for, when grades was used as a measure of self-esteem, self-esteem increased by no more 2.6% of a standard deviation for any group more than it did when SES was controlled for. However, without SES controlled for and when tests were used, Asian males and Hispanic males showed almost 4% of a standard deviation greater increase in self-esteem with every unit increase in tests than when SES was controlled for. Although this increases are not large, they are consistent across all eight groups and whether grades or tests are used.

Conclusions and Implications

There are four main findings from this study: (1) the strength of the self-esteem/grades relationship ranges, among gender-ethnic/racial groups, from a one unit increase in grades being associated with a 13.1% (for Black males) to a 30.6% (for Hispanic females) of a standard deviation increase in self-esteem, (2) the strength of the self-esteem/tests relationship ranges, among gender-ethnic/racial groups, from a one

Figure 3-3

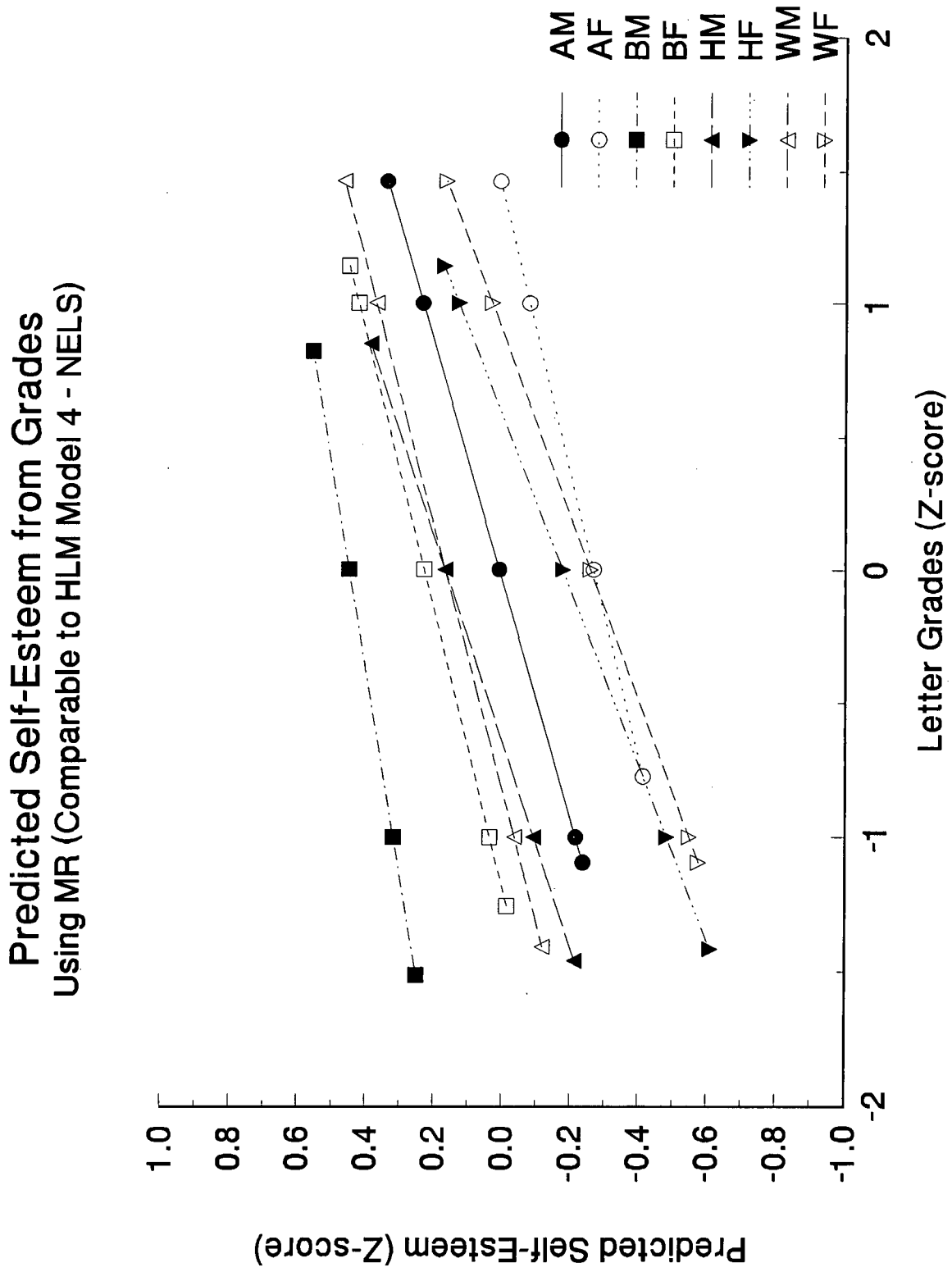
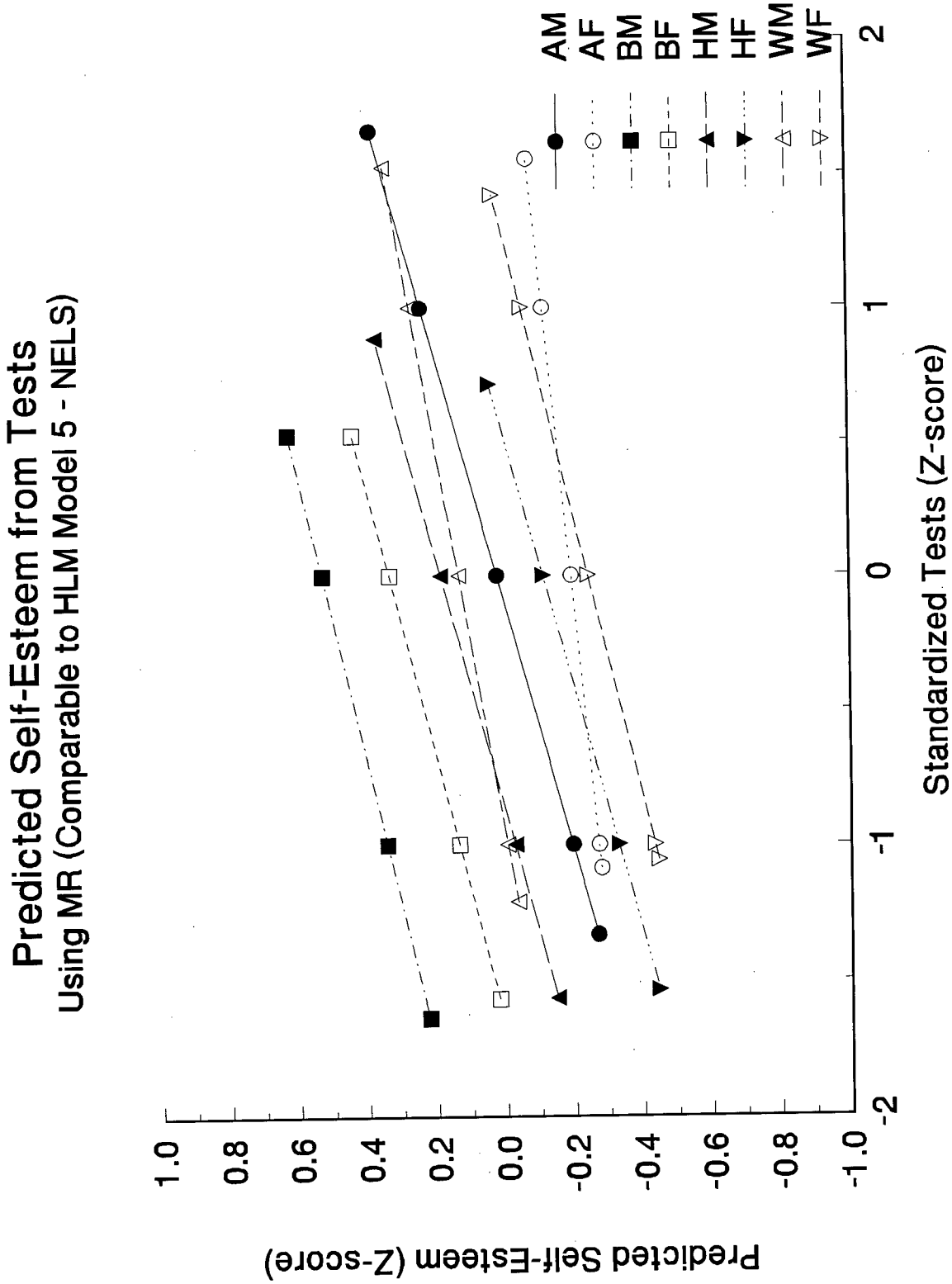

Predicted Self-Esteem from Grades
Using MR (Comparable to HLM Model 4 - NELS)
Predicted Self-Esteem (Z-score)
1.0
0.8
0.6
0.4
0.2
0.0
-0.2
-0.4
-0.6
-0.8
-1.0
-2
-1
0
1
2
Letter Grades (Z-score)
AM
AF
BM
BF
HM
HF
WM
WF

Figure 3-4


Predicted Self-Esteem from Tests
Using MR (Comparable to HLM Model 5 - NELS)
Predicted Self-Esteem (Z-score)
Standardized Tests (Z-score)
AM
AF
BM
BF
HM
HF
WM
WF
1.0
0.8
0.6
0.4
0.2
0.0
-0.2
-0.4
-0.6
-0.8
-1.0
-2
-1
0
1
2

unit increase in grades being associated with 7.6% (for Asian females) to 21% (for Asian males and Hispanics) of a standard deviation increase in self-esteem, (3) The variation in self-esteem is largely within-schools rather than between-schools and (4) the best HLM model accounted for only 12.36% of the total variation in self-esteem.

Variation in the Self-Esteem/Achievement Relationship Across Ethnic/Racial and Gender Groups

The varying strength of the self-esteem/achievement relationship among ethnic/racial groups may be explained, in part, by Ogbu's theory of majority and minority cultures. Ogbu suggests that when a culture is subordinated by another culture, they will often produce secondary cultural differences that are in opposition to the culture that subordinated them. This is supported by evidence that some Black students accuse high achieving Black students as "acting white".

This may not only explain the weaker self-esteem/achievement relationship found among Blacks, but also the lower levels of academic achievement. According to psychological centrality (Rosenberg, 1979), people do well at what they value, and value those things that they do well. Because today's society requires students to do well academically in order to attain quality jobs, it is easy to argue that academic achievement is a helpful thing to value. However, because of the negative history many Blacks have in the United States, any encouragement to value academic achievement may need to come from other Blacks within their community.

The differing strength of the self-esteem/achievement relationship across type of achievement measures may be due to the fact that all students would be aware of the grades, but would have less of an idea about their standardized test scores. If this is true, then the strength of the self-esteem/tests relationship may be attributable, in part, to its association with classroom grades. In this study, the test results correlated .541 ($p < .001$) with classroom grades. Perhaps with an even higher correlation between grades and tests, the self-esteem/tests relationship would also be stronger.

A different explanation is warranted for Black males whose self-esteem/achievement relationship was stronger with tests than with classroom grades. One possible explanation to this may be the extent to

which Black males value classroom grades compared to basic academic abilities that may be reflected more in standardized tests. It could also indicate that the grades they receive in school do not accurately reflect their academic abilities.

In terms of contextual effects, the results indicate that schools have very little impact on self-esteem levels. Half of the 3.27% of variation in self-esteem that was between-schools, was explained when gender, ethnicity/race and SES were controlled for. The small amount of variation in self-esteem left to be explained may be due in part to the nature of the schooling system. As Hoge et al. (1990) suggest "..school impacts are subject to short-run situational factors and are not constant from school to school or year to year" (p. 126). Furthermore, self-esteem has its beginnings very early in life (e.g., Epstein, 1994) and the relationship that schools have to it may be very different from other factors, such as academic achievement which is introduced to children mainly around the time they begin school. Academic achievement has been found to vary as much as 9.3% between-schools (Lee & Bryk, 1989).

Variation in Self-Esteem: Within-schools and Amount Explained

Given that most of the variation in self-esteem was within-schools, it is of some concern that a maximum of only 10.53% (Model 6) of within-school variation was explained. The reasons for this may be an unreliable dependent measure, unreliable independent measures, or an incompletely specified model. In terms of the first reason, the Rosenberg scale has produced high reliability (over .80) in a number of different studies (e.g., Byrne & Shavelson, 1986; Goldsmith, 1986; Hagborg, 1993) as well as the present study (Chronbach's alpha = .77, with a range of .65 to .80 for each of the eight groups, with 7 of the 10 Rosenberg items). The second reason can be ruled out because the reliability of the independent variables has been illustrated in another study using the same data set (Ho & Willms, 1996). This leaves the third reason, that the model is incompletely specified.

These results are important in that they suggest that school contexts may have a limited relationship with self-esteem. It is also possible that with increasing levels and breadth of information that may be accessed through other media, such as television, the relative impact of schools is diminishing.

Future studies with individual-level items which are theoretically-related to self-esteem may improve the amount of explained variation and further clarify the relationship between self-esteem and achievement. Chapter 5 will address this with an inclusion of more individual-level items in the HLM models. Chapter 4 reviews research and theories that provided motivation for the selection of variables for the Chapter 5 study.

Implications for Studies of Self-Esteem

These findings have implications for research on self-esteem. First, it is clear that whenever possible one should control for gender and ethnicity/race, especially given that Blacks have considerably higher mean levels of self-esteem than other ethnic/racial groups. This means that the relative presence or absence of Blacks in a study will influence mean self-esteem results. This may not be as critical if a study includes primarily a mixture of Asians, Hispanics, or Whites as these groups did not vary substantively in their mean levels of self-esteem. Also, given the consistent male-female differences in self-esteem, gender should always be controlled for in self-esteem research. Not adequately controlling for ethnicity/race and gender may explain some of the inconsistencies in previous research.

Implications for Studies of The Relationship Between Self-Esteem and Achievement

For studies on the relationship between self-esteem and achievement, it is important to select an appropriate measure of achievement. This study revealed a stronger relationship between self-esteem and grades than between self-esteem and test scores. This does not necessarily mean that grades should be the preferred measure when studying the relationship between self-esteem and achievement, but does indicate that the purposes of a study should be considered when selecting achievement measures. While grades are more public and more easily influenced by teacher-student dynamics, tests reflect a more absolute measure of academic achievement.

As we saw from the mean scores, gender differences in achievement are not present for mean test scores, but are for mean grades where females consistently do better than males. One possible reason for

this is that, as a group, females may exhibit more appropriate classroom behaviour or social skills than males and may subsequently be rewarded for that behaviour through classroom grades. For example, males have been found to have higher rates of conduct disorder (Offord, Adler, & Boyle, 1986) and attention-deficit disorder (Szatmari, Offord, & Boyle, 1989) than girls. Some teachers may consider appropriate classroom behaviour to be an important aspect of achievement since positions in the work force often require these skills. In this way, grades may carry a component of social relationships that test scores do not, and in fact, may be the reason for the stronger relationship with achievement. Further research in this area may be warranted not only for a better understanding of self-esteem, but also for understanding the relative importance of standardized testing to classroom grading. For example, are classroom grades or standardized more predictive of future work-related achievements and is there any variation in this relationship across groups?

Controlling for gender and ethnicity/race is also important when examining the relationship between self-esteem and achievement. Given the consistent variation in the self-esteem relationship between males and females, gender should always be controlled for. It is also important to control for ethnicity/race, unless the sample consists largely of one ethnic/racial group. The present study revealed that the relationship between self-esteem and achievement varies across all four ethnic/racial groups. The broad range of correlations yielded in self-esteem and achievement studies (see Hansford & Hattie, 1982) may be partially the result of inadequate controls for ethnicity/race and gender.

Implications for School Policies or Programs Aimed at Influencing Self-Esteem

The findings suggest that it is difficult to identify schools that have particularly strong effects on children's self-esteem. In fact, much of the variation is within-schools, suggesting that some unidentified student-level variables are having a much larger effect on self-esteem. Therefore, research aimed at examining school effects and self-esteem may need to examine the effects of specific well-designed programs that aim to improve children's schooling and/or self-esteem. Cross-sectional research on self-

esteem in the "school effects" tradition is not likely to be fruitful in the same way that it has been for reading or mathematics achievement, given the low percentage of variation in self-esteem between-schools.

These findings also challenge the popular notion that if we could only increase children's academic achievement, we could improve their self-esteem. For example, some private companies that provide educational services and/or materials directly to parents often include in their advertising that academic performance in a given area is related to self-esteem and their materials will not only improve performance in a given area, but also self-esteem. This belief underlies many of the programs aimed at improving the self-esteem or achievement of at risk youth. This research suggests that self-esteem related policies may need to be focused more on what is best for students' self-esteem independently of what is best for achievement, and not be based on the assumption of a strong self-esteem/achievement relationship. This may lead to some policies that have a greater impact on achievement and different policies that aid self-esteem, with the understanding that policies aimed at influencing self-esteem may be limited given the small amount of between-school variation in self-esteem.

Limitations of NELS Study

One concern with the strength of the self-esteem/achievement relationship found in this study is the relatively small amount of within-school variance explained. With almost 90% of the variance unexplained, it is unsure what effect a more powerful model might have on the self-esteem and achievement relationship reported here. It may be that the estimated strength of the esteem-achievement relationship may be weaker with a well-specified model. The SBPP study addresses this concern by including perceptions of parental love and coping styles.

CHAPTER 4: THEORY AND RESEARCH - PARENT-CHILD ATTACHMENT AND COPING STYLES

The main goal of the NELS study in Chapter 3 was to attain an accurate estimate of the self-esteem/achievement relationship while controlling for ethnicity/race, gender and schools effects. The NELS study showed that the relationship between self-esteem and achievement (as measured by grades) does vary across ethnic/racial and gender groups. However, the best model derived from the Chapter 3 study left almost 90% of the within-school variance in self-esteem unexplained. This is important given that 96.7% of the total variation is within-schools. The purpose of this chapter was to explore variables that may lend further insight into the nature of the self-esteem/achievement relationship. It is hoped that by doing so, better prediction models may be constructed to explain more of the variation in self-esteem and, thus, better predict the relationship between self-esteem and achievement. Two variables were selected for this purpose, parental love and coping styles.

These variables were selected and reviewed because of their importance beginning very early in a child's development and their potentially long-lasting relationship with self-esteem. The evidence for this comes from two bodies of theory and research; attachment theory and the work of Karen Horney. While attachment theory and the study of different coping styles both deal with the origin and development of a child's first interpersonal relationship (Ainsworth, 1969), each takes a different focus on the parent-child relationship. Although parental love, not attachment, was measured in this research, attachment theory and related research do provide motivation for measuring parental love in that it should reflect one aspect of the parent-child relationship.

Attachment theory takes an ethological approach in that it focuses on the biological function that attachment plays in maintaining proximity between the caregiver and child. The result of this attachment is a cognitive representation of the relationship. Because of this proposed cognitive representation, attachment theory lends insight into the significance of the parent-child relationship and the information

children acquire about the 'other' as well as about their 'self'. This theory brings family experiences into our understanding of self-esteem.

The theory of coping styles, in the context of Horney's (1950) work, involves a psychoanalytic approach and focuses on children's experiences and how they might respond to what they are experiencing or perceiving. Horney's theory is informative in terms of the child's perceptions and their tendency for different types of reactions to different environments. It brings individual factors into our understanding of self-esteem, particularly as they relate to achievement.

Attachment theory and Karen Horney's theory on coping styles are outlined below. This is followed by a survey of research related to each theory and its connection with self-esteem and achievement.

Attachment Theory

For some time it has been thought that self-esteem is rooted in self-perceptions and the perceptions of others. This viewpoint is expressed in Festinger's social comparison theory (1954), Cooley's looking-glass self (1902) and Mead's generalized other (1934). The people in our environment influence who we compare ourselves to, how we interpret others' perceptions, the general societal messages we receive, and what is important to us (Okagaki & Sternberg, 1991). A special case of this is the way parents influence children.

The importance of the parent-child relationship in the formation of self-esteem can be seen as an example of the principle of reflected appraisals. The child comes to know who they are by their perceptions of how their parent sees them. Although there are many relationships through which the child will have an opportunity for reflected appraisals, the research in the area of attachment figures indicates that parent-child relationships are one of the most important early relationships for informing people about themselves (Ainsworth, 1969; Bowlby, 1973; Mikulincer, 1995).

The parent-child relationship exists for children before they can speak and endures even through undesirable circumstances. One of the earliest indicators that the parent-child relationship plays a critical role in the formation of self-esteem is the specific set of predictable responses from infants when they are separated from adults with whom they have established an attachment, including their mother and father. Ainsworth (1969) theorizes that this set of predictable responses exists because attachment figures have a permanent existence in infants' minds regardless of the figures' presence. This permanent existence comes in the form of inner representations or internal working models (IWMs). These IWMs are hypothesized to contain information about the attachment figure (Ainsworth, 1969) and the self (Bretherton, 1985, 1992; Epstein, 1994; see also Cooley, 1902; Mead, 1934).

If it is true that these IWMs contain information pertaining to attachment figures and the self, it is expected that if people's attachment figures are loving, then they will tend to represent themselves as lovable. Alternatively, if people's attachment figures are unloving, they will represent themselves as not worthy of love. It is this link between self and other in the early IWMs that may lay the foundation for self-esteem. Epstein (1980) contends that because these earlier IWMs are constructed pre-verbally, they are less susceptible to alterations and, therefore, can have potentially long lasting effects. If this is true, then early attachment figure characteristics should be significantly related to one's self-esteem throughout life (Epstein, 1980). While new information may be assimilated into earlier information about significant others, the earlier information should be relatively resistant to change because it is established early in life.

Coping styles

Above it was stated that the nature of children's relationships with their attachment figures will be related to their perception of self: If attachment figures are loving, children will tend to perceive themselves as lovable. Horney's work is linked to attachment theory insofar as she considers different styles of coping with unloving childhood environments. Coping styles may be defined as:

> ...generalized coping strategies defined as typical, habitual preferences for ways of approaching problems; for example a tendency to withdraw from rather than move toward people, to deny rather than ruminate over difficulty, to be active rather than reactive, or to

> blame others other than one-self. Such coping-style typologies, by definition, assume some cross-situational, relatively stable problem-solving tendencies in individuals (Menaghan, 1983, p. 159).

Karen Horney (1950) defines a loving environment as one which provides the individual with "..both a feeling of inner security and the inner freedom enabling him to have his own feelings and thoughts and to express himself" (p.18). It includes the good will of others, guidance, encouragement, and healthy friction (Horney, 1950). What Horney's theory addresses is what happens when environments are not loving.

According to Horney (1950), children growing up in unloving environments come to feel isolated and have a level of anxiety that keeps them from interacting naturally with those around them. She also suggests that children will try to reduce this anxiety by using strategies that fit their personality and the environmental contingencies. She notes that

> The cramping pressure of his basic anxiety prevents the child from relating himself to others with the spontaneity of his real feelings, and forces him to find ways to cope with them... he may try to cling to the most powerful person around him; he may try to rebel and fight; he may try to shut others out of his inner life and withdraw emotionally from them. In principle, this means that he can move toward, against, or away from others (p.18-19).

Horney says that people cope with the various shortcomings of their home environment by moving mainly in one of three directions with respect to the people around them; towards others and into relationship; against others and in conflict; or away from others and out of relationship. Horney (1950) suggests that all people make these movements towards, against, and away from others, but children who have become anxious because of being in an unloving environment are different in that their moves become more extreme and rigid over time.

> Affection, for instance, becomes clinging; compliance becomes appeasement. Similarly, he is driven to rebel or to keep aloof, without reference to his real feelings and regardless of the inappropriateness of his attitude in a particular situation. The degree of blindness and rigidity in his attitude is in proportion to the intensity of the basic anxiety lurking within him (Horney, 1950, p. 19).

Over time, a particular style of movement can increasingly dominate people's personalities and they become people who move towards others to get love, move against others to feel superior and worthy, or move away from others in an effort to be sheltered from a further sense of rejection.

Another consequence of this anxiety is that individuals become overly concerned with what they think they should be. Horney calls this the tyranny of the shoulds and says that these 'shoulds' will show themselves differently depending on the individual and their environment. The form of the shoulds depends on each individual's particular style of defense. The battle may involve trying to be perfect and seeking mastery with thoughts like "I should be perfect, and I am perfect". It may involve trying to attain approval from others and seeking love with thoughts like "I should be perfect so others will love me, but I am not perfect". Finally, the battle of the shoulds may involve rejecting any should and imposing their own shoulds onto others and seeking freedom with thoughts like "They think I should be perfect, but I will not be perfect".

The three styles of seeking to meet unmet love needs, moving towards, away, and against, are outlined below. Keep in mind that these descriptions are of those people who have become rigid with their movements in relation to others. They do not refer to people who are flexible with the movement styles and enlist them appropriately in different situations.

Moving Towards Others - Love

A movement toward people, also referred to as seeking love, may mean increasing interactions with people the individual admires or feels are important. As adults, these 'love-seekers' move towards people to acquire the love they did not receive from their parents. Their hope is that by being accepted by these important people, who themselves appear to be accepted, they themselves will come to be acceptable and important by association. Those seeking love see others as better than themselves and seek acceptance from those that are better. In applying Festinger's social comparison theory (Festinger, 1954) in such cases we would expect that because these people focus on those they see as better than their selves, they are more

likely to have a lower view of themselves and, therefore, have low self-esteem. Horney (1950, p. 76-77) describes these people as follows:

> The self-effacing type, for whom love seems to solve all problems, likewise feels that his shoulds constitute a law not to be questioned. But when trying ---anxiously--- to measure up to them, he feels most of the time that he falls pitiably short of fulfilling them. The foremost element in his conscious experience is therefore self-criticism, a feeling of guilt for *not* being the supreme being.

The Love type may have many standards, but they focus on where they fall short of meeting their standards, thus have a prevailing feeling of failure. This type may have grown up under the shadow of a parent or sibling and found peace in subordinating themselves to that person. This leads them to seeing their value in terms of being loved and accepted by others and in this way they are very dependent on others.

Moving Against Others - Mastery

Those with a tendency to seek mastery are essentially the opposite of those that have a tendency to seek love. Whereas those seeking love are out to seek approval from others, those seeking mastery are out to prove they are better than others. A movement against others may mean rebelling against others or trying to establish one's self as unique and above others. Instead of depending on others for a feeling of acceptance, those seeking mastery try to gain acceptance by convincing themselves that they meet their own needs and standards by being superior to other people. They need others only to the extent that they need people to be 'below' them to feel superior. They are likely to deny flaws in their own self and magnify the flaws in others. Again, in applying Festinger's social comparison theory (Festinger, 1954) we would expect that the tendency to focus on those 'below' themselves, these people are more likely to have high self-esteem. People who tend to move against others have an inclination towards mastery and are described by Horney (1950, p. 76) as follows:

> The expansive type, for whom mastery of life is crucial, tends to identify himself with his inner dictates and, whether consciously or unconsciously, to be proud of his standards. He does not question their validity and tries to actualize them in one way or another...He should be all things to all people; he should know everything better than anybody else...[a]nd, in his mind, he does measure up to his supreme standards. His arrogance may

> be so great that he does not even consider the possibility of failure, and discards it if it occurs.

This type tends to repress self-effacing trends, deny failures, and unlike the love type, believe they do meet their standards. They may have grown up in an environment where they received early admiration, were pressured by rigid standards, or were treated harshly, with these different environments leading to a tendency towards narcissism, perfectionism, or arrogant vindictiveness, respectively.

Moving Away From Others - Freedom

Finally, those that move away from others, also referred to as seeking freedom, may shut people out or withdraw. Instead of going to people and risking rejection, or trying to be better than others and risking failure, these people do not try to do anything active. They like to be left alone and do not like people telling them what they should do. Horney (1950, p.77) describes a person like this as follows:

> The resigned type...to whom the idea of "freedom" appeals more than anything else, is, of the three, most prone to rebel against his inner tyranny. Because of the very importance which freedom ---or his version of it--- has for him, he is hypersensitive to any coercion. He may rebel in a somewhat passive way. Then everything that he feels he should do...turns ---in his mind--- into [an external] coercion, arouses conscious or unconscious resentment, and in consequence makes him listless.

These people also have shoulds, but they tend to rebel against them or externalize them and believe that other people are pushing them or pulling them to do or be certain things. Because of this tendency they are highly sensitive to coercion or pressure. They also tend to dread any sort of change and the effort that goes with change. Whereas the Love types minimize expansive drives and the Mastery types minimize self-effacing drives, the Freedom types try to immobilize both drives. A person with a Freedom tendency may have grown up in an environment which:

> made explicit and implicit demands for him to fit in this way or that way and threatened to engulf him without sufficient regard for his individuality, not to speak of encouraging his personal growth (p. 275).

The Freedom types may also be characterized by persistent resignation, rebellion or shallow living.

In terms of self-esteem, one might expect these people to have moderate self-esteem, but without any effort to protect their self-perceptions, perhaps an indication that they are not even worthy of trying to get the love they need, they may have the lowest self-esteem of all three groups of people.

Summary of Theories

Attachment theory and Karen Horney's theory of movement types suggest that one's familial environment is an important factor in self-esteem and its relationship with achievement. Attachment theory illustrates how the internal working models laid down early in life contain information not only about the parent, but also about the child and how they exist in the eyes of the parent (Ainsworth, 1969). This is related to the principle of reflected appraisals - that people tend to view themselves as they are viewed by others. If the familial environment lacks love, individuals will find a coping style that matches their personality and environment (Horney, 1950). This may mean striving for mastery, such as academic excellence, or striving to be liked by others. It may also mean withdrawing from others in order to protect themselves from being hurt.

Attachment theory and the idea of internal working models suggest a significant and long-term impact of significant others on one's self-esteem. The parents are typically the first and most physically present significant others in people's lives. Their frequent physical presence leads to a cognitive presence as the child's internal working model of their parent(s) develops. This working model contains not only information about the parent and their attitudes towards the child, but also of the child as a result of the parental attitudes. Because the IWMs tend to be long-lasting, the likely impact on the parent-child relationship is long-lasting.

Another component of this parent-child relationship is how children cope in situations where parents are unloving. Because children will try to get what they need, the correspondence between parental love and children's self-perceptions may vary considerably among people with different types of coping styles. People may respond to an unloving environment by seeking out love in others, by believing that they

are the best at everything that matters to them, or by hiding away from others. Controlling for these coping styles may be particularly important for understanding the self-esteem achievement relationship because achievement may be more critical for self-esteem in some movement types than others. The next two sections contain a brief survey of research that relates to parent-child relationships and coping styles, respectively.

Research with Parent-Child Attachment and Self-Esteem

Part of the motivation for examining parent-child relationships in this research is their early existence and likelihood of a long-term relationship to self-esteem. In terms of research, there is evidence to show that parent-child attachment classifications are not only relatively stable over time, but are also related to self-esteem. This holds true not only for different age-groups, but also with different methods of classifying attachment types.

Consistency of classifications over time have been found, for example, by McCormick and Kennedy (1994) with a sample of 137 female and 81 male unmarried undergraduates (84% White, 13% Black, 3% other). In their study, students rated their attachment relationships retrospectively (e.g., "when I was a child") and currently using Hazan and Shaver's (1987) Rocky Mountain Survey (RMS). The proportions categorized in the same attachment type with their Mother for initial and current perspectives are as follows: Avoidant = 64.7%, Secure = 90.8%, and Ambivalent = 70.8%. The analogous values for their attachment with their Father are as follows: Avoidant = 69.2%, Secure = 88.2%, and Ambivalent = 75%.

With respect to self-esteem, classifications have been found to be related to self-esteem across a range of ages. For example, Cassidy (1988) conducted a study involving 52 6-year-old children (26 girls, 26 boys) from White, middle class families. These children were administered Harter's (1982) Subscale of global self-esteem, a context-free measure of self-esteem. Attachment classification was made using Main and Cassidy's (1985, 1986) scale. Cassidy (1988) found that self-esteem was significantly correlated with

the children's behaviour at the time of being reunited with their parents (insecure versus secure; $r = .40$ at $p < .01$), with higher self-esteem being associated with secure reunion behaviour.

With undergraduates, McCormick and Kennedy (1994) examined the relationship between attachment types and self-esteem using the Coopersmith Self-Esteem Inventory (see Coopersmith, 1967). They found that the attachment types did differ in their levels of self-esteem. In the case of the Mother attachment groups, the secure group had significantly higher self-esteem than both the Avoidant and Ambivalent groups. For the Father attachment groups, the Secure group had significantly higher self-esteem than the Avoidant group, but not the Ambivalent group.

Finally, Bartholomew and Horowitz (1991) found similar results with undergraduates with their four-category model of attachment classification. In this study, they enlisted 77 introductory psychology students (40 males and 37 females) ranging in age from 18 to 22. Most were White (67%) or Asian (16%), with small portions of Blacks, Hispanics, and other. All students were classified as having one of the four different attachment prototypes using a 60 minute interview and yielding high internal consistency values (Cronbach's alpha =.87 to .95). They were also administered the 10-item Rosenberg (1965) self-esteem scale (Cronbach's alpha = .85). Because of the additional fourth category of attachment, Bartholomew and Horowitz's (1991) definition of each attachment type are briefly described below:

(1) Secure: '...sense of worthiness (lovability) plus an expectation that other people are generally accepting and responsive' (p.227).

(2) Preoccupied: '...sense of unworthiness (unlovability) combined with a positive evaluation of others' (p.227).

(3) Fearful: '...sense of unworthiness (unlovability) combined with an expectation that others will be negatively disposed (untrustworthy and rejecting)' (p.227).

(4) Dismissing: '...sense of love-worthiness combined with a negative disposition toward other people' (p.227).

Note that with this four category model of attachment styles, there is a striking similarity between the last three categories and Horney's three movement styles. The preoccupied type, feeling unloved, is similar to Horney's self-effacing or seeking Love type. The fearful type is much like the Freedom person who moves away from people. And finally, the Dismissing type is much like the against type who sees themselves as better than others.

Bartholomew and Horowitz (1991) found that ratings reflecting the degree to which subjects matched each of the four prototypes were significantly correlated with self-esteem. The secure and dismissing prototypes ratings were positively correlated with self-esteem, self-acceptance, and subjective distress (.20 to .41, all ps <.05). The fearful and preoccupied prototype ratings were negatively correlated with self-esteem, self-acceptance, and subjective distress (-.18 to -.49, all ps <.06; correlations specifically for self-esteem were not provided).

Research with Coping Styles, Self-Esteem and Achievement

No quantitative studies could be found that directly examined the three coping styles, mastery , love and freedom, posited by Karen Horney (1950). Some researchers, however, have examined the strength of the self-esteem/achievement relationship in connection with coping strategies that are somewhat related to Horney's different coping styles. Two of these studies, summarized below, illustrate how coping styles may relate to self-esteem and its relationship with achievement.

The first study by Byrne (1990) provided evidence that some students cope with low academic achievement and protect their self-esteem by reducing their self-investment in academic achievement. This means that academic achievement becomes less psychologically central to their identity when they do not do well academically. Byrne (1990) compared the strength of the relationship between self-esteem and academic achievement with two samples: (1) a proportional sampling of low- and high-track grade 9-12 students (n= 180 and 749, respectively), and (2) grade 11 and 12 students from low- and high-track mathematics classes (n=314 and 654 respectively). General self-esteem was measured using the 10-item

Rosenberg Self-Esteem Scale (Rosenberg, 1965) and academic achievement was measured using the mean final grade for all core subjects. Academic self-concept was also measured using Brookover's Self-concept of Ability Scale (Brookover, 1962). Discriminant function analyses were conducted to determine which factor contributed most to discriminating between low-and high-track students. Byrne (1990) found that academic achievement and academic self-concept , but not self-esteem, discriminated the low- and high-track students. She concluded that "...although low-track students may know of their inferior academic ability (as shown in their low academic SC's), they may place little value on academic attainment...; their low [academic achievement] therefore has little bearing on their overall concept of self" (pp. 179). This study shows the importance of taking into account low academic students' ability to protect self-esteem by self-investing in non-academic areas. This may relate to Horney's freedom type that tries to minimize mastery drives.

While some people may reduce their self-investment in academic achievement to protect their self-esteem, Liu, Kaplan, and Risser (1992) found others may increase their self-investment in academic achievement to the point that it is maladaptive and they have excessive aspirations and neurotic needs to achieve. Liu et al. (1992) studied the responses of 315 grade 7-12 students in a private school to a 419-item self-administered questionnaire that included two measures of self-esteem which were derived from Rosenberg's Self-Esteem Scale (see Kaplan & Pokorny, 1969). They also measured academic achievement (GPA from school records), academic motivation, perception of teachers' responses (self-perceived rejection by teachers), academic self-concept and deviance. Using LISREL to test a model of the interrelationship of these variables they not only found an indirect *positive* path from academic achievement to self-esteem, but also a direct *negative* path from academic achievement to self-esteem.

Several explanations were given for the negative path: (1) low achievers' compensating low self-esteem by developing abilities unrelated to academics, (2) high achievers with aspirations beyond their ability, resulting in failure and, subsequently, reduced self-esteem, and (3) an "...antecedent variable such as a neurotic need to achieve in order to compensate for chronically low self-esteem (the neurotic

disposition would be positively related to academic achievement and inversely related to general self-esteem" (Liu et al., 1992, p. 42). This study confirms two things. First, it shows the significance of the positive relationship between self-esteem and achievement and, second, it shows the possibility of a significant negative relationship between self-esteem and achievement for certain segments of the student population.

Summary

Attachment theory suggests that parental-child attachment patterns play a significant role in the way children come to see themselves. Research in this area shows not only that the impact of the parent-child relationship may endure for years, it also shows that secure attachment bonds are related to higher levels of self-esteem.

Horney's theory suggests that when parent-child or home environment conditions are unloving, children try to cope in three main ways - to seek love, mastery or freedom. Those who seek love tend to be self-effacing, perceive that they always fall short of their ideals, and seek approval to others to feel good about themselves. Because of this, they may have a more performance orientation to achievement, which may lead to their feelings about their self fluctuating with their performance levels. Alternatively, those with who move towards mastery tend to identify with their ideals and believe that they meet them and even deny failure. This belief that they meet their ideals, even in the face of contradictory evidence, may mean that this group would tend to have higher overall levels of self-esteem than the Love or Freedom types. Finally, those with a freedom tendency tend to repress self-effacing and mastery tendencies with a high sensitivity to others trying to control them. They tend to move away from things and do not like people telling them what they should do. This type tends to be more rebellious and less likely to have high achievement goals.

While there is no quantitative research on the specific coping styles presented by Horney, related research in this field does show that some people do have a negative relationship between self-esteem and

achievement which may be indicative of neurotic needs to achieve. This may be comparable to the love type who move towards others to seek love. One way in which they can do this is by trying to achieve in order to be loved. Related research also shows that some people cope with low achievement by reducing their self-investment in academic achievement. This may be comparable to the freedom type who tends to avoid rejection by moving away from people or from efforts at achievement.

In the study that follows, perceptions of parental love and the three coping styles, love, mastery and freedom, were examined. The study was conducted in a similar manner to the study in Chapter 3, and was designed to determine whether the inclusion of these new variables would (a) modify the self-esteem/achievement relationship and (b) explain more of the within-school variance in self-esteem.

CHAPTER 5: COPING STYLES, PARENTAL LOVE AND THE SELF-ESTEEM/ACHIEVEMENT RELATIONSHIP

The NELS study in Chapter 3 showed that the relationship between self-esteem and achievement did vary across ethnic/racial and gender groups. However, almost 90% of the variation in self-esteem was left unexplained, with most of this unexplained variation being within-schools. Because of this, individual-level variables of coping styles and parental love were explored in Chapter 4 to understand whether these variables play an important role in the self-esteem/achievement relationship.

The main goal of this study was to attain a better estimate of the strength of the self-esteem/achievement relationship while controlling for coping styles, as measured by the RUN scale (Reaction to Unmet Needs - a new scale based on the work of Horney, 1950, and how children react to unloving environments) and parental love. It was hoped that controlling for these two variables would reduce the within-school variation of self-esteem and, therefore, provide a more reliable estimate of the strength of the relationship between self-esteem and achievement. This study was conducted using the School-Based Prevention Project (SBPP) data and followed the same methodology used the NELS study, but with different students and variables. My role in the SBPP project included helping to select and design items for the student questionnaire, analysis of the data, and writing reports.

The specific research questions addressed in this study were as follows:

Within-school Questions

(1) Is there a gap in self-esteem levels across gender Reaction to Unmet Need (RUN) groups?

(2) Is self-esteem significantly related to academic achievement? If so, does the strength of this relationship vary across gender or RUN types? Does the strength of this relationship change substantively when parental love is controlled for in the equation?

Between-school Questions

(3) Do self-esteem levels vary significantly between-schools, before and after controlling for gender, RUN type, and parental love?

(4) If there are gaps in self-esteem between males and females, or between RUN types, are they constant across schools, or do they vary between-schools?

(5) If self-esteem is significantly related to achievement, does the strength of this relationship vary significantly between-schools, after controlling for gender, RUN type, and parental love? If so, what school characteristics are most strongly related to this variability?

This chapter is divided into two sections. The first is the methods section and describes the sample, variables, and analyses undertaken in this study. An in-depth presentation of methodology of sampling, survey administration, and a detailed list of measures and instrument validation are presented in Appendix C. The second section presents the results and discussion of the study.

Methods

Data Set

Data employed in the present study were taken from those collected as a part of the School-Based Prevention Project (SBPP) survey, conducted by the Institute of Health Promotion Research at the University of British Columbia, Canada. The SBPP was sponsored by Alcohol and Drug Programs (ADP) of the Ministry of Health and Ministry Responsible for Seniors and involves the placement of 47 prevention workers in 58 BC schools. Schools that participated in the study were those that responded to a request for proposals and whose proposals were accepted by ADP.

Sample

In 1995, 16 of the 58 SBPP schools were selected for administration of the student survey. In addition to the 16 SBPP schools, 1 school with the program requested the survey, and three schools without the SBPP program were surveyed to serve as a comparison group (there were initially 4 comparison schools, but one school dropped out of the study). As the focus of this study is self-esteem and achievement, not substance use, no distinction was made in the analyses between intervention and control schools. The 20 schools yielded a total sample size of 7,518 students, 6,795 of which were included in the present study. Of these students, 48.2% are male and 51.8% are female. The breakdown by grade-level is as follows: Grade 8 = 22.4%, Grade 9 = 21.5%, Grade 10 = 23.4%, Grade 11 = 17.0%, and Grade 12 = 15.0% (see Table 5-1). The sample breakdown by RUN types is as follows: Love-Mastery = 40.4%, Mastery-Love = 10.6%, Love-Freedom = 41.4%, and Freedom-Love = 7.6% (see Table 5-2).

Measures

As in the NELS analyses, measures of self-esteem, achievement and SES were used. In addition, two new measures, parental love and Reaction to Unmet Needs (RUN), were constructed, piloted, and revised by this researcher for use on the SBPP student survey. Tests of validity for these measures were conducted and are presented in Appendix C. Perceived stress, having a friend to go to for help, the helpfulness of an adult, how students felt about other students, and students' feeling of belonging in the school were measures designed for the purposes of the SBPP project, but were used in this study in exploratory analyses.

Self-esteem. Self-esteem was described in Chapter 1 as a self-evaluative measure. One may evaluate one's self generally (e.g., "I am a person of worth") or relative to a given context, such as schooling (e.g., "I am a good learner"). The instrument in this study was a context-free measure of self-esteem. The SBPP 1995 survey used seven of the ten items from the Rosenberg Self-esteem Scale (Rosenberg, 1989) as a measure of general self-esteem. The self-esteem composite value was calculated by

Table 5-1

Sample Breakdown by Gender and Grade

	Males	Females	n	%
Grade 8	813	869	1,682	22.4
Grade 9	819	794	1,613	21.5
Grade 10	823	934	1,757	23.4
Grade 11	606	672	1,278	17.0
Grade 12	565	623	1,188	15.8
n	3,626	3,892	6,795	
%	46.8	53.2		100.00

Table 5-2

Sample Breakdown by Gender and RUN Type

	Males	Females	n	%
Love-Mastery	1,262	1,485	2,747	40.4
Mastery-Love	392	326	718	10.6
Love-Freedom	1,253	1,561	2,814	41.4
Freedom-Love	275	241	516	7.6
n	3,182	3,613	6,795	
%	46.8	53.2		100.00

first standardizing each of the seven self-esteem items to z-score form. Second, the seven z-score values were then averaged to yield one score, which was then also standardized z-score form. The composite scores were computed with the entire 1995 sample of 7,518 grade eight to twelve students.

Achievement. Self-reported grades were used as a measure of academic achievement. A single standardized score was derived from the average of the students' self-reported grades in English, Math, Science, Social Studies, and Physical Education. The method used to compute composite scores for the letter-grades was the same as that used for the self-esteem composite.

SES. Mother's and Father's level of education were used as a proxy for socioeconomic status. SES was computed by standardizing the mean of the two standardized education scores. It is acknowledged that more accurate proxies for SES are preferred, however, more detailed income-related items were not permitted on the SBPP questionnaire.

Parental love. Parental love was measured for the Mother (Momlov) and Father (Dadlov) using 17 items. These items were selected to tap various qualities of love. These qualities are patience, kindness, perseverance, sincerity, protectiveness, hopefulness, trustfulness, and an absence of envy, boasting, arrogance, rudeness, self-centerdness, quick-temperdness, or a counter of wrongs (1 Corinthians 13: 4-7). The items and validity test of this measure are presented in Appendix C.

Reaction to Unmet Needs. Coping styles were measured with the Reaction to Unmet Needs (RUN) scale that I designed based on Horney's theory of movement styles (1950). Horney suggested that when children are raised in unloving environments they come to have a basic level of anxiety. They then try to cope with this anxiety by moving in one of three directions: towards, away, or against others. Those moving towards people seek love and acceptance, those moving away seek freedom, and those moving against seek mastery. The scale developed for this research includes six statements (see Appendix C) that were used to categorize students in terms of moving towards, away, and against other people. Statements were presented to students in pairs, forcing them to choose between one style or another. For example, the first pair of items read: Would you rather...

(1) Be the best at everything and not be liked by other kids, OR

(2) Be average at everything and be liked by other kids.

Students who checked item (1) chose mastery over love and received a score of one towards their mastery tally. Alternatively, those who checked item (2), chose love over mastery and received a score of one towards their love tally. With all three pairs of items, a student could have a total of up to three points (e.g., 2 for mastery, 1 for love, and 0 for freedom). Students were classified according to their two highest scores (e.g., if mastery = 2, love = 1, freedom = 0, then classification = Mastery-Love; if mastery = 0, love = 2, freedom = 1, then classification = Love-Freedom). Pilot testing indicated that most fell into one of four classifications: Mastery-Love, Love-Mastery, Love-Freedom and Freedom-Love. Combinations of Mastery-Freedom were rare and not expected given the opposite nature of these two styles.

Perceived stress. For three stress variables, students responded on a five point scale of (1) 'not at all stressful' to (5) 'very stressful' to the following questions: In the last 12 months, how would you describe your home life? your school life? your social life?

Help - friend. A help-friend variable was measured with the following question: When you have problems, do you have at least one good friend that you can go to for help and understanding? and students responded either (1) 'no' or (2) 'yes'.

Help - adult. For the helpfulness of adult variable students were asked: When you needed help or had a problem, how supportive or helpful was the caring adult(s) in your life? Students responded on a five point scale of (1) 'do not have caring adult', (2) 'not helpful' to (5) 'very helpful'

Feel - students. For the variable of attitudes towards peers, students were asked: How do you feel about students? Responses were to a five point scale of (1) 'really do not like' to (5) 'really like' attitudes towards other students.

Belong - school. The belong-school variable was derived from responses to the statement 'I feel like I belong in this school', to which students could respond on a five-point scale from (1) 'strongly disagree' to (5) 'strongly agree'.

Analyses

Preliminary analyses were conducted to examine outliers, normality, and linearity. The present study did not include students in school with missing data, outliers, or those without complete esteem scores. This excluded group comprised 2.23% (n=548) of the entire sample. Relative to the entire sample, the individuals excluded from this study were approximately 15% of a standard deviation lower in self-esteem, Father's love and Mother's love. They were also 33% of a standard deviation lower on GPA. Because of this difference, analyses were conducted to determine if exclusion of this sample would alter the findings of this research and it was determined that the main results were not affected by excluding this group. The methods and results of these outlier analyses are presented in Appendix C.

Also conducted were principal components, homogeneity of variance-covariance, group means, and hierarchical linear modeling analyses. The purpose in doing each of these are outlined below.

Principal Components

Principal components analyses (PCA) were conducted to determine if (a) the underlying factor structure of the RSE is the same as that found in the literature, and (b) the factor structure is equivalent across RUN-Gender groups.

Homogeneity of Variance-Covariance

A test of homogeneity of the variance-covariance matrix (containing the seven self-esteem items) was conducted across ethnic/racial and gender groups. This was to determine the extent to which the self-esteem measure is measuring the same construct in each of the different RUN-Gender groups.

Construct Validity for Parental Love and RUN Type Scales

The focus of the validity check is construct validity. Of the many ways to examine construct validity, two types were used here. These are internal consistency and classification of extreme groups comparisons (see Anastasi, 1988). The internal consistencies of the parental love scales were over .94

across all groups and are reported in Appendix C. The classification of extreme groups was used for the parental love scales to determine if extremes were possible. Then, for the parental love scales and RUN scale, overall levels of self-esteem, GPA, SES and substance use were examined among the different groupings to see if the groupings yielded significantly different clusterings of students.

Descriptive Differences Between Groups

Group means are presented for two purposes. First, to examine the question of whether there are significant RUN-Gender group gaps in levels of self-esteem. Second, to provide information on varying levels of self-esteem, achievement and SES among the different RUN-Gender groups.

Hierarchical Linear Modeling Analyses

The main analyses in this study were done using Hierarchical Linear Modeling (HLM; see Appendix A for an overview of this method). For the HLM analyses, the gender and RUN type variables were 1 or 0 for group membership. For instance, the variable gender was assigned a value of 1 for females and 0 for males. These variables were then centered (0 or 1 minus the sample mean) so that beta weights are for those with a mean on all variables. The seven models tested in the present study are outlined below.

Seven a priori models and three post hoc models were tested using HLM. First a null model, identical to a random effects ANOVA, (i.e., no predictor variables at either the individual or school level) was tested with self-esteem as the predicted or outcome variable. In this model, a mean score for each school was calculated and then a "precision-weighted" mean for the whole sample was calculated. This grand mean was weighted across schools according to the sample of students taken from each school, with school means having larger samples carrying more weight into the grand mean (the larger the school sample, the more precise the estimate). This model determines the overall percentage of variation in self-esteem that lies between-schools before controlling for individual or school variables (i.e., predictor variables). This indicates how much variability there is to be explained.

Model 2 includes gender and grade-level variables. The third model adds the RUN style variables, Model 4 adds the SES variable, and Model 5 adds the GPA variable. Models 6 and 7 introduce the Mother's and Father's love variables, respectively. In preliminary analyses, a search for relevant school-level variables was done. However, given the very small amount of between-school variation (.19%) it was apparent that no one variable would significantly explain this variation. Given the futility of the school-level model with this data, it is not presented.

The post hoc models continue from Model 7. The first post hoc model, Model 8, includes all variables present in Model 7 as well as the home, school, social stress variables. Model 9 includes all the Model 8 variables as well as the having a friend to go to for help, helpfulness of adults, and attitude toward other students. Finally, Model 10 includes the belong-school variable.

Results and Discussion

Principal Components

Self-Esteem. For self-esteem, all eight groups (males and females in each of the four RUN types) yielded two factors (seeTables C-3a and C-3b in Appendix C). Except for two groups, all positively worded statements loaded on one factor and negatively worded statements loaded on the other factor. In the case of the two exceptions (Love-Mastery and Love-Freedom females), item G loaded almost equally on both factors. Factor 1 consisted of the following items (each letter corresponds to the letter assigned each item on the SBPP questionnaire):

A. I feel good about myself,

B. I feel I am a person of worth, the equal of other people,

D. I am able to do things as well as most other people,

H. On the whole, I am satisfied with myself,

and Factor 2 consisted of the following items:

C. I certainly feel useless at times

E. At times I think I am no good at all

G. I feel I do not have much to be proud of

This pattern of loadings is consistent with results in the literature for factor analyses conducted on the Rosenberg scale (e.g., Goldsmith, 1986) and with the results from the NELS analyses. The internal consistency of the single factor was high for all eight groups. Cronbach's alpha ranged in values from .70, for Freedom-Love males, to .83, for Love-Freedom females (see Appendix C, Table C-4).

Parental Love. For both Momlov and Dadlov variables and for each of the eight groups, all items loaded onto one factor (see Tables C-5 and C-6 in Appendix C). Internal consistency scores were very high and varied little, with both variables having an alpha ranging from .94 to .96 (Tables C-7 and C-8 in Appendix C).

Homogeneity of Variance-Covariance

The tests of homogeneity of variance-covariance matrices were significant for self-esteem, $F(196, 6527299) = 4.62$, $p<.001$; Momlov, $F(546, 4212842) = 2.15$, $p<.001$; and Dadlov, $F(546, 3711871) = 1.98$, $p<.001$. This means that results may be affected by pooling each of the RUN x gender groups into one analysis. To deal with this problem individual multiple regression (MR) analyses with the same variables as HLM analyses were conducted for each of the eight groups and are referred to when discussing group differences.

Construct Validity for Parental Love and RUN Type Scales

One of the concerns with the parental love scales is the extremely high internal consistency and high correlation between the Dadlov and Momlov scales (see Table C-2 for correlations). Because of this, there was some concern that these scales may not be capturing differences in student's perceptions of their parental love. To address this concern, students were first classified into quartiles for each of the parent scales. Second, students were then classified according to high and low combinations of Dadlov and Momlov quartile locations. For example, students were classified as 'Both low' if they were in the bottom

two quartiles for Dadlov and Momlov. Alternatively, they were classified as 'Mom hi/Dad low' if they were in the top two quartiles of Momlov and in the bottom two quartiles of Dadlov. This was done not only to determine if opposite groupings could occur (e.g., high on Dadlov, low on Momlov), but also to check if these different groupings of students showed different levels of self-esteem, GPA, and drug use levels. A measure of high risk drug use was included to provide a more objective measure for comparison than self-esteem and self-reported grades. For the RUN types, rates of drug use, mean self-esteem, GPA and parental love were compared among types. Note that the entire sample (before excluding those with missing self-esteem data) were used for these analyses in order to ensure that future validation of the instruments would not be biased by the selected sample used in the present research.

The drug use risk variable is a composite of drug-use levels for all drugs included in the survey. This includes tobacco, alcohol, cannabis, LSD, hallucinogens and several others. High risk use of a particular drug was set by ADP (Alcohol and Drug Programs in the province of BC) drug use standards. For the drugs used most often by students, the standards for high risk use are as follows:

Tobacco = 6 or more cigarettes per day.

Alcohol = 2/3 times per week.

Cannabis = 6 or more times in the past year.

LSD = Once or more in the past year.

Parental Love Scales

Table 5-3 shows the results of the crosstabulation of Dadlov and Momlov quartiles according to whether students were in the same or different quartiles for each scale. It shows that while the majority of students do have the same quartile classification for both scales (56.93%; n= 4,041) a substantial number is located in different quartiles (40.7%; n=3,057), with 9.8% (n=692) differing by two or more quartiles.

Table 5-4 shows the proportions of students classified in the same or different half of the scale, yielding four classifications of parental love combinations. With this broader classification, 78.67% (n= 5,584) of the students are in the same half of the each scale and 21.32% (n= 1,514) are in opposite halves

Table 5-3

Dadlov and Momlov Same-Different Quartile Proportions

	%	n
Same Quartile	56.93	4,041
Different by 1	33.32	2,365
Different by 2	7.00	495
Different by 3	2.80	197
Total Classified	100.00	7,098

Table 5-4

Dadlov and Momlov High-Low Quartile Combination Proportions

	%	n
Both low	39.07	2,773
Dad low/Mom high	10.93	776
Mom low/Dad high	10.40	738
Both high	39.60	2,811
Total Classified	100.00	7,098

of the scale. Because of the simplicity of this combination of parental love quartiles, it is this breakdown that is used in examining differences in drug use, self-esteem and GPA rankings.

Table 5-5 presents mean values of self-esteem, GPA, and SES for students in each parental love combination (as shown in Table 5-4). With self-esteem there is a large difference of 72% of a standard deviation between those in the 'Both Low' and those in the 'Both High' category. There is approximately 33% of a standard deviation between those in the mixed parental love combinations and those in the either 'Both High' or 'Both Low' categories. These results show that there is a significant difference between having both parents rated high or low on the scale compared to having one high and one low. This suggests that the scale does distinguish between parents, although it is more common for parents to receive similar ratings than different ratings.

Differences in GPA among the different parental combinations are not as marked as those for self-esteem, but are significant between the 'Both Low' group and the 'Both High' group with a 33% of a standard deviation difference. This shows that the parental love scales are significantly related to GPA, but are most strongly related to self-esteem.

The group differences for SES are even still smaller with 20% of a standard deviation between 'Both Low' and 'Both High' groups. Interestingly, in the case of SES the 'Both Low' and 'Dad Low/Mom High' groups have the same SES levels, but the 'Mom Low/Dad High' group is 14% of a standard deviation higher than the first two groups.

Table 5-6 presents the proportions of students in each parent love combination at different levels of drug use. A χ^2 analyses was conducted for the proportions of students that are high risk in each parental combination. The χ^2 was conducted using 38.6% (total sample rate of high risk drug use) and the total sample proportion of each combination group. For example, with the 'Both Low' group, the expected number of students for each was computed to be .386 x .3907 x 8170 = 1232.12. The number of students in each group did differ significantly, $\chi^2(3, \underline{n}=1,533) = 215.31$, $\underline{p}<.01$. The largest expected vs. obtained discrepancy was for the 'Both High' group which had considerably fewer high-risk students than expected.

Table 5-5

Means and Standard Deviations of Self-Esteem, GPA and SES: Parental Love Combinations and RUN Types

	Self-Esteem		GPA		SES	
	Mean	SD	Mean	SD	Mean	SD
All (N=7 640)	**.01**	.99	**.05**	.98	**.02**	.99
Parental Love Combinations						
Both Low (n=2 602)*	**-.35**	.98	**-.11**	1.01	**-.08**	1.03
Dad Low/Mom High (n=743)	**-.02**	.96	**-.02**	.95	**-.07**	.95
Mom Low/Dad High (n=701)	**.03**	.91	**.06**	.96	**.07**	.98
Both High (n=2,663)	**.37**	.90	**.22**	.94	**.13**	.94
RUN Types						
Love-Mastery (n=2,519)	**.133**	.947	**.252**	.931	**.089**	.972
Mastery-Love (n=645)	**.249**	1.034	**.332**	.970	**.067**	1.038
Love-Freedom (n=2,551)	**-.145**	.981	**-.147**	.935	**-.040**	.960
Freedom-Love (n=433)	**-.203**	1.00	**-.522**	1.061	**-.223**	1.055

* Sample sizes are based on the smallest number used for any mean calculation.

Table 5-6

Drug Use Rates Among Parental Love Combinations and RUN Types

	Drug Use					
	Zero Use		Low-Risk		High-Risk[1]	
	%	(n)	%	(n)	%	(n)
All	14.8	(1,207)	46.6	(3,807)	38.6	(3,156)
Parental Love Combns.						
Both Low	10.8	(300)	43.3	(1,200)	45.9	(1,273)
Dad Low/Mom High	10.2	(79)	45.4	(352)	44.5	(345)
Mom Low/Dad High	14.9	(110)	48.4	(357)	36.7	(271)
Both High	20.0	(561)	53.5	(1,503)	26.5	(744)
RUN Types						
Love-Mastery	17.7	(510)	52.2	(1,507)	30.2	(871)
Mastery-Love	22.4	(168)	41.9	(315)	35.7	(268)
Love-Freedom	11.0	(325)	47.3	(1,397)	41.7	(1,231)
Freedom-Love	8.1	(44)	34.3	(186)	57.6	(313)

[1] χ^2 with high risk proportions on parental love combinations: $\chi^2 = 215.31$ ($df = 3$; $p<.01$)
χ^2 with high risk proportions on RUN Types: $\chi^2 = 113.13$ ($df = 3$; $p<.01$)

This analysis shows that the scales measuring perceived parental love do capture a meaningful aspect of the parent-child relationship. Specifically, those who rate both parents as very loving also tend to be at lower risk for drug use.

RUN Types

Table 5-5 also presents mean values of self-esteem, GPA, and SES for students of each RUN Type. With self-esteem the largest gap among groups is between Mastery-Love and Freedom-Love Types, with 45.2% of a standard deviation between these groups. The smallest gap in self-esteem is 5.8% of a standard deviation between Love-Freedom and Freedom-Love types. In Chapter 4 it was suggested that those with a Mastery tendency should have higher self-esteem than the other groups because they believe that they are their ideals. These findings are consistent with this theory in that the Mastery-Love group has the highest self-esteem and those in the Love-Mastery group have higher self-esteem than those in the Love-Freedom group. This suggests that the scale does distinguish among students in a manner consistent with the theoretical predictions of self-esteem.

The largest differences in GPA among the different types is 85.4% of a standard deviation between the Mastery-Love and Freedom-Love types. The smallest difference is 8% of a standard deviation between the Mastery-Love and Love-Mastery types. These results are again consistent with the theoretical prediction that Freedom types suppress mastery drives with the Freedom-Love group having the lowest GPA and the Love-Freedom group having a lower GPA than the Love-Mastery group.

In terms of SES, all groups were similar except the Freedom-Love group which was 18.3% to 31.2% of a standard deviation lower in SES than the other three groups. This suggests that those with a strong Freedom tendency may come from a lower SES strata, or at least have parents with lower mean education, given the limited information used in the SES proxy.

Table 5-6 presents the proportions of students in each RUN Type group that are at different levels of drug use. A χ^2 analyses was conducted for the proportions of students that are high risk in each RUN

Type. The χ^2 was conducted using 38.6% (total sample rate of high risk drug use) and the total sample proportion of each RUN type. The number of students in each group was significantly different, χ^2 (3, n = 2,683) = 113.13, $p<.01$. The largest expected vs. obtained discrepancy was for the Love-Mastery and Freedom-Love, with the former having fewer high-risk students than expected and the latter having more high-risk students than expected. This analysis shows that the scale predicting RUN Types does produce different groupings of students.

Summary

Overall, the construct validity analyses suggests that these first versions of the parental love and RUN Type scales do have some validity. The parental love combinations show that students classified in the different groups do vary in self-esteem and achievement as well as substance use. The RUN Type classifications show differences in these variables among groups and in the expected direction. While more detailed analyses would be necessary to increase the accuracy and understanding of these scales, they are sufficient for the purposes of this research.

Descriptive Differences Between Groups

Group means and standard deviations of the eight groups of students are presented in Table 5-7a and 5-7b. All variables were standardized with the entire sample, so means are relative to the sample. Group means are compared below according to standardized scores, as was done in Chapter 3 where a difference of 10% of a standard deviation or greater is considered substantively significant (refer to Chapter 1 for rationale). While there are many mean differences that are of interest, those discussed are those that directly address the first specific research question presented above regarding group differences in self-esteem.

These analyses address the within-school questions of whether there are significant differences in the levels of self-esteem across gender and RUN groups. In terms of gender, self-esteem was 43% of a standard deviation [.231 -(-.195) = .423] higher for males than for females, a finding that is consistent with

Table 5-7a

Means and Standard Deviations of Outcome and Predictor Variables: RUN Type by Gender Groups

	Self-Esteem		GPA		SES		Dadlov		Momlov	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
LM (n*=2,519)	.133	.947	.252	.931	.089	.972	.194	.923	.181	.914
Males (n=1,136)	**.342**	.921	**.092**	.939	**.124**	.956	**.285**	.901	**.208**	.892
Females(n=1,383)	**-.044**	.933	**.388**	.903	**.060**	.985	**.119**	.935	**.159**	.931
ML (n=645)	.249	1.034	.332	.970	.067	1.038	.115	.994	.111	.996
Males (n=353)	**.445**	1.045	**.236**	.959	**.095**	1.040	**.136**	1.017	**.098**	1.006
Females(n=292)	**.013**	.974	**.448**	.973	**.033**	1.037	**.091**	.967	**.125**	.987
LF (n=2,551)	-.145	.981	-.147	.935	-.040	.960	-.106	.992	-.088	.998
Males (n=1,126)	**.097**	.942	**-.226**	.908	**.053**	.951	**-.007**	.978	**-.079**	.981
Females(n=1,425)	**-.339**	.968	**-.084**	.952	**-.111**	.961	**-.184**	.997	**-.096**	1.010

*Sample sizes are based on the smallest number used for any mean calculation.
**LM = Love-Mastery; ML = Mastery-Love; LF = Love-Freedom; FL = Freedom-Love

Table 5-7b

Means and Standard Deviations of Outcome and Predictor Variables: RUN Type by Gender Groups - Continued

	Self-Esteem		GPA		SES		Dadlov		Momlov	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
FL (n=433)	-.203	1.00	-.522	1.061	-.223	1.055	-.343	1.081	-.292	1.124
Males (n=228)	**.031**	1.00	**-.481**	1.077	**-.114**	1.099	**-.287**	1.109	**-.264**	1.131
Females(n=205)	**-.470**	.938	**-.567**	1.043	**-.349**	.991	**-.406**	1.048	**-.323**	1.118
All (n=6,148)	.005	.987	.037	.981	.011	.985	.023	.986	.027	.986
Males (n=2,843)	**.231**	.962	**-.064**	.966	**.072**	.979	**.105**	.980	**.042**	.976
Females(n=3,305)	**-.195**	.966	**.126**	.986	**-.043**	.986	**-.047**	.987	**.015**	.994

*Sample sizes are based on the smallest number used for any mean calculation.
**LM = Love-Mastery; ML = Mastery-Love; LF = Love-Freedom; FL = Freedom-Love

previous studies on gender differences in self-esteem levels (Hoelter, 1983; Oyefeso & Zacheaus, 1990; Wade, 1991). This gender gap in self-esteem levels was present across RUN groups, but with a variation in the size of the gap across RUN groups. The size of the gaps, in percentage of standard deviation units, within each RUN group were as follows: Love-Mastery, 38.6%; Mastery-Love, 43.2%; Love-Freedom, 43.6%; and Freedom-Love, 50.1%.

An examination of self-esteem means among RUN groups, collapsing gender, shows that the Mastery-Love group has the highest average self-esteem of all the groups. The Mastery-Love group has an average self-esteem that is 45.2% of a standard deviation higher the Freedom-Love group, 39.4% of a standard deviation higher than the Love-Freedom group, and 11.6% of a standard deviation higher than the Love-Mastery group.

The Love-Mastery group has the next highest average self-esteem, being 27.8% of a standard deviation higher than the Love-Freedom group and 33.6% of a standard deviation higher than the Freedom-Love group. The self-esteem averages of the Love-Freedom and Freedom-Love groups do not substantively differ (difference is 5.8% of a standard deviation).

Hierarchical Linear Modeling (HLM)

Model 1 - Null. The null model shows the school grand mean for self-esteem to be .006 with a standard error of estimate being .015 (see Table 5-8). This value should be close to zero since the self-esteem variable was standardized to a mean of zero and a standard deviation on the entire sample.

The between-school variability for self-esteem is .0012, $p=.095$, with an estimated reliability of .287 with (reliability in HLM means the ratio of true to observed variance). The within-school variability is .9736. This means that the percentage of the total self-esteem variation that is within- and between-schools is 99.83% and .12%, respectively. This tells us that for this sample of students, virtually all of the variation in self-esteem is within-schools. Note that the between-school variation with this SBPP data is less than that found in the NELS data (see Chapter 3) which reported the between-school variation in self-

Table 5-8

HLM Results for Null Model with Self-Esteem as Outcome Variable

	Model 1: Null Model		
Fixed Effects		Coeff.	SE
Grand mean		.004	.014
Random Effects	Rel.[1]	Var.[2]	χ^2
Grand mean	.287	.0012	27.42
Within-school		.9736	
Variance partitioning of self-esteem			%
Between-school			.12
Within-school			99.88

[1] Rel = Reliability of means.
[2] There were 19 degrees of freedom for the χ^2 test.
*p<.05; **p<.01

esteem to be 3.27%. This lower estimate of between-school variation with the SBPP data may be attributable, in part, to the small number of schools (n=20) in the SBPP study. Because the purpose of school-level variables is to explain between-school variation, which is only .12%, the school-level model is not explored. The remaining models attempt to explain some of the within-school variation.

Model 2. Model 2 controls for gender and grade-level. The coefficient estimates in the fixed effects section of Table 5-9 indicate how much self-esteem increases with a one-unit increase in each variable. For example, a one-unit difference in the variable grade-level (e.g., the difference between being in grade 8 versus grade 9) is associated with 2.1% of a standard deviation higher self-esteem than being one grade lower. The variables gender and grade-level have accounted for 6.4% of the within-school variance

Model 3. Model 3 includes the RUN type variables. This model shows that those classified as being Love-Mastery have 27.1% of a standard deviation higher self-esteem than those classified as Love-Freedom (see Table 5-9). The self-esteem of Mastery-Love types is estimated to be 34.6% of a standard deviation higher than those classified as Love-Freedom. Self-esteem estimates for Freedom-Love types are not significantly higher than those for Love-Freedom types (9.4% of a standard deviation difference). With the addition of the RUN types, Model 3 accounts for 7.03% of the within-school variation, an additional 2.39 percentage points from Model 2.

Model 4. Model 4 shows that a one unit increase in SES (one standard deviation, since SES was standardized) is associated with 5.9% of a standard deviation increase in self-esteem (see Table 5-10). With the addition of SES, Model 4 accounts for 7.35% of the within-school variance, an increase of only .32 percentage points from Model 3.

Model 5. Model 5 shows that a one-unit increase in GPA is associated with 17.7% of a standard deviation increase in self-esteem (see Table 5-10). This model accounts for 10.03% of the within-school variance, an additional 2.68 percentage points from Model 4. Note that the inclusion of GPA in Model 5 has made the coefficient for SES insignificant (.015), indicating that there is some overlap in these

Table 5-9

HLM Results for Student-Level Variables on Self-Esteem: Models 2 and 3

	Model 2: Gender and Grade			Model 3: RUN Type		
Fixed Effects		Coeff.	SE		Coeff.	SE
Grand mean		.016	.013		.154**	.019
Gender		-.426**	.023		-.421**	.023
Grade level		.021*	.008		.014	.008
Love-Mastery					.271**	.025
Mastery-Love					.346**	.040
Freedom-Love					-.094	.046
Random Effects	Rel.[1]	Var.[2]	χ^2	Rel.	Var.	χ^2
Grand mean	.141	.0004	22.06	.192	.0006	23.92
Within-school		.9284			.9052	
Variance in Self-Esteem Explained			%			%
Between-school			66.67			50.00
Within-school			4.64			7.03
Total			4.72			7.08

[1] Rel = Reliability.
[2] The degrees of freedom for the χ^2 tests are 19.
*p<.05; **p<.01.

variables, but with the increase in the amount of variance accounted for with the GPA variables, it is an important predictor of self-esteem.

Models 6 and 7. In models 6 and 7 Momlov and Dadlov is introduced, respectively (see Table 5-11). When Momlov is added to Model 5, we see that a one-unit increase in Momlov is associated with 27.3% of a standard deviation increase in self-esteem. This model accounts for 17.13% of the within-school variance, an additional 7.10 percentage points from Model 5. When Dadlov is introduced in Model 7, we see that the impact of Momlov is decreased, but still significant. In this model a one-unit increase in Momlov and Dadlov results in the expected increase in self-esteem of 19.3% and 12.8% of a standard deviation, respectively. Model 7 accounts for 18.05% of the within-school variance. With the inclusion of Momlov and Dadlov, all variables that were significant in Model 5 are still significant, with GPA dropping from .148 to .140. Because Model 7 is the last a priori model, its results are summarized in Figure 5-1. The beta weights from the model were used to estimate the values of self-esteem for the figure. For example, the following equation was used to estimate self-esteem for Love-Mastery males with Grades-achievement one standard deviation below the mean:

$$\text{Pred Esteem (Love-Mastery Males)} = \underline{b}_0 + \underline{b}_{1\text{gender}}(-.51) + \underline{b}_{2\text{grade}}(0) + \underline{b}_{3\text{Lovmas}}(.19) + \underline{b}_{4\text{Maslov}}(-.21) + \underline{b}_{5\text{Frelov}}(-.15) + \underline{b}_{6\text{SES}}(.12) + \underline{b}_{7\text{GPA}}(-1) + \underline{b}_{8\text{Momlov}}(.21) + \underline{b}_{9\text{Dadlov}}(.28),$$

where b = beta estimated in HLM model for each variable.

The numbers for gender through to Freedom-Love are all constants and represent whether one is a member of that particular group. For SES, the mean (z-score) SES value for each RUN/gender group was inserted, for Love-Mastery males, the mean SES is .12. For grades, -1 is used to predict self-esteem for those one standard deviation below the mean.

The lines in Figure 5-1 are extended to the 10th and 90th percentiles of Grades values for each RUN/gender group. As no RUN/gender by GPA interaction variables were significant (see Table C-10a and C-10b in Appendix C), all of the lines in this graph are parallel, indicating the strength of the self-

Table 5-10

HLM Results for Student-Level Variables on Self-Esteem: Models 4 and 5

	Model 4: SES			Model 5: GPA		
Fixed Effects		Coeff.	SE		Coeff.	SE
Grand mean		.150**	.019		.114**	.019
Gender		-.413**	.023		-.453**	.023
Grade level		.014	.008		.014	.008
Love-Mastery		.263**	.025		.197**	.025
Mastery-Love		.340**	.040		.256**	.040
Freedom-Love		-.083	.045		-.029	.045
SES		.059**	.011		.015	.012
GPA					.177**	.012
Random Effects	Rel.[1]	Var.[2]	χ^2	Rel.	Var.	χ^2
Grand mean	.166	.0005	23.81	.255	.0009	28.11
Within-school		.9020			.8759	
Variance in Self-Esteem Explained			%			%
Between-school			58.33			25.00
Within-school			7.35			10.03
Total			7.42			10.05

[1] Rel = Reliability.
[2] The degrees of freedom for the χ^2 tests are 19.
*p<.05; **p<.01.

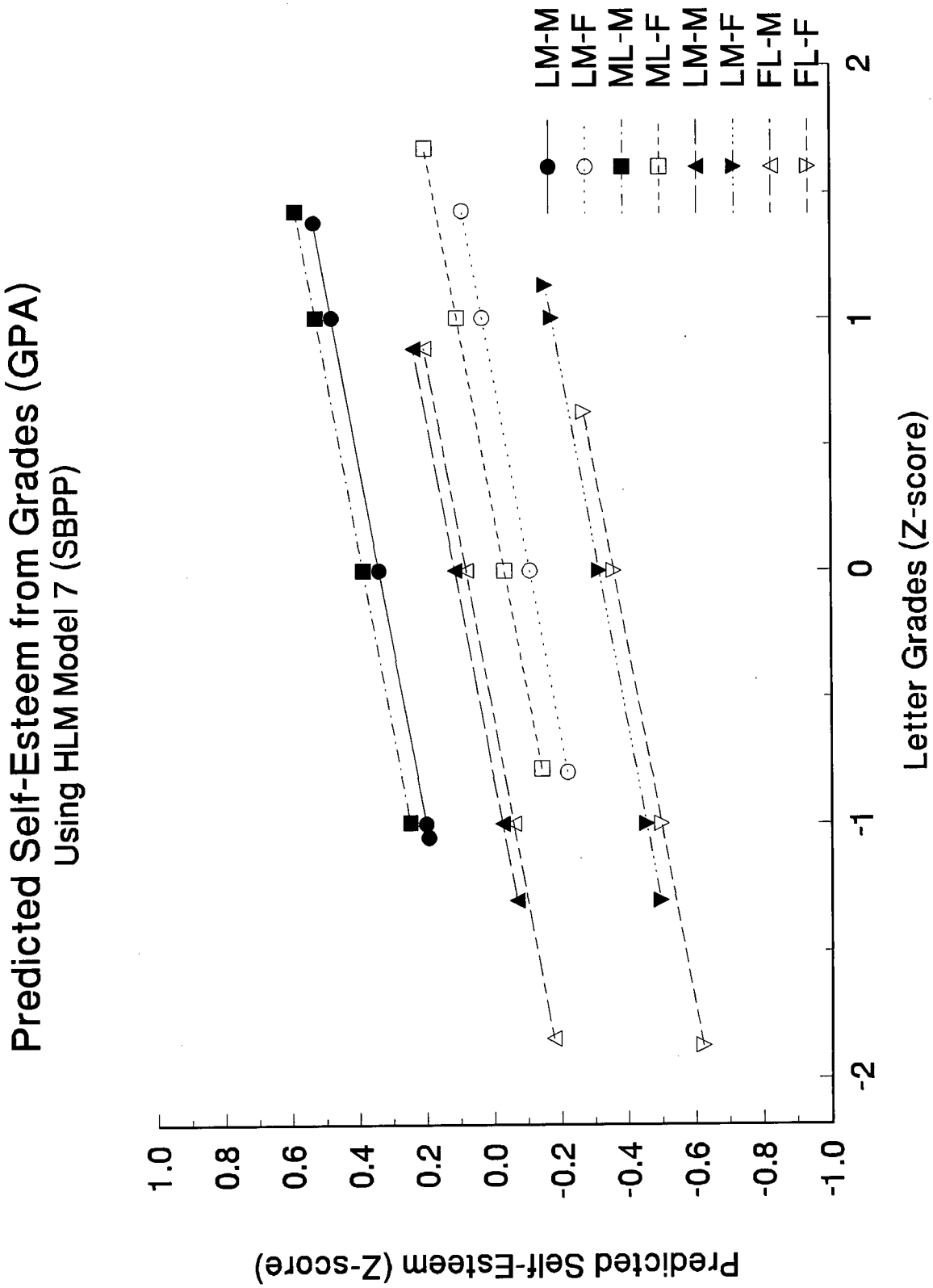
Table 5-11

HLM Results for Student-Level Variables on Self-Esteem: Models 6 and 7

	Model 6: Momlov			Model 7: Dadlov and Momlov		
Fixed Effects		Coeff.	SE		Coeff.	SE
Grand mean		.082**	.017		.077**	.017
Gender		-.440**	.022		-.421**	.022
Grade level		.016	.008		.020*	.008
Love-Mastery		.138**	.025		.125**	.025
Mastery-Love		.218**	.038		.211**	.038
Freedom-Love		.010	.043		.022	.043
SES		.003	.011		-.003	.011
GPA		.148**	.012		.140**	.012
Momlov		.273**	.011		.193**	.014
Dadlov					.128**	.014
Random Effects	Rel.[1]	Var.[2]	χ^2	Rel.	Var.	χ^2
Grand mean	.047	.0001	21.96	.078	.0002	23.33
Within-school		.8068			.7979	
Variance in Self-Esteem Explained			%			%
Between-school			92.67			83.33
Within-school			17.13			18.05
Total			17.22			18.13

[1] Rel = Reliability.
[2] The degrees of freedom for the χ^2 tests are 19.
* $p<.05$; ** $p<.01$.

Figure 5-1


Predicted Self-Esteem from Grades (GPA)
Using HLM Model 7 (SBPP)
Predicted Self-Esteem (Z-score)
1.0
0.8
0.6
0.4
0.2
0.0
-0.2
-0.4
-0.6
-0.8
-1.0
-2
-1
0
1
2
Letter Grades (Z-score)
LM-M
LM-F
ML-M
ML-F
LM-M
LM-F
FL-M
FL-F

esteem/achievement relationship to be the same. Although the HLM analyses showed the self-esteem/achievement relationship to be the same for males and females, and for all RUN types, individual multiple regression (MR) analyses did show differences in the strength of this relationship (see Table 5-12 and Figure 5-2; Figure 5-2 was constructed in the same manner as Figure 5-1). The discrepancy for RUN types may be due to the small number of students in two of the types and, therefore, the larger error rates in the HLM analyses.

According to the MR results, Freedom-Love males had the weakest self-esteem/achievement relationship, with a one unit increase in GPA being associated with 4.6% of a standard deviation increase in self-esteem. Love-Mastery males and females and Mastery-Love males had the strongest self-esteem/achievement relationship with a one unit increase in GPA being associated with 16.3%, 17.3% and 19.6% of a standard deviation increase in self-esteem, respectively (see Table 5-13a and 5-13b). The self-esteem/grades achievement relationship varied among RUN-gender groups by as much as 15% of a standard deviation, with the largest gap being for the Mastery-Love group, where a one unit increase in GPA was associated with an increase in self-esteem 10.7% and 19.6% of a standard deviation for females and males, respectively.

There are two notes concerning the Freedom-Love groups that have to do with non-linear relationships among some of the variables (details of these analyses and results are reported in Appendix C). First, for males, the strength of the self-esteem/achievement relationship varied for those with different levels of Momlov. The Momlov/achievement correlation was significant for Freedom-Love males when Momlov values were less than -1.00 (r=.32; n=48; p<.05), but not when Momlov values were greater than -1.00 (r=.08; n=188; p>.05).

Second, for Freedom-Love females, the size of the self-esteem/achievement correlation was nonsignificant when Dadlov values were less than zero (r=.10; n=122; p>.05), but it was significant when Dadlov values were greater than zero (r=.33; n=81; p<.01). That these differences occurred for male and female Freedom-Love groups suggests that there may be a different sensitivity to parental love on the part

Table 5-12

Changes in Self-Esteem Associated with Changes in Achievement: Model 7[1]

Group	% Increase in Esteem with Unit Increase in Grades		Difference	MR Expl'd Variance
	Indiv. MR	HLM[2]	MR-HLM	$R^{2\,(Adjusted)}$
Love-Mastery Males	16.3	14.0	2.3	15.1
Love-Mastery Females	17.3	14.0	3.3	16.4
Mastery-Love Males	19.6	14.0	5.6*	11.9
Mastery-Love Females	10.7	14.0	-3.3	8.3
Love-Freedom Males	10.0	14.0	-4.0	11.9
Love-Freedom Females	12.3	14.0	-1.7	13.8
Freedom-Love Males	4.6	14.0	-9.4*	15.5
Freedom-Love Females	7.8	14.0	-6.2*	7.8

[1]Achievement measure, GPA, is standardized deviation units.
[2] Containing variables: gender, RUN types, grade-level, SES, GPA, Momlov, Dadlov. MR has same variables except those for grouping.
*>5 standard deviation units=significant.

Figure 5-2

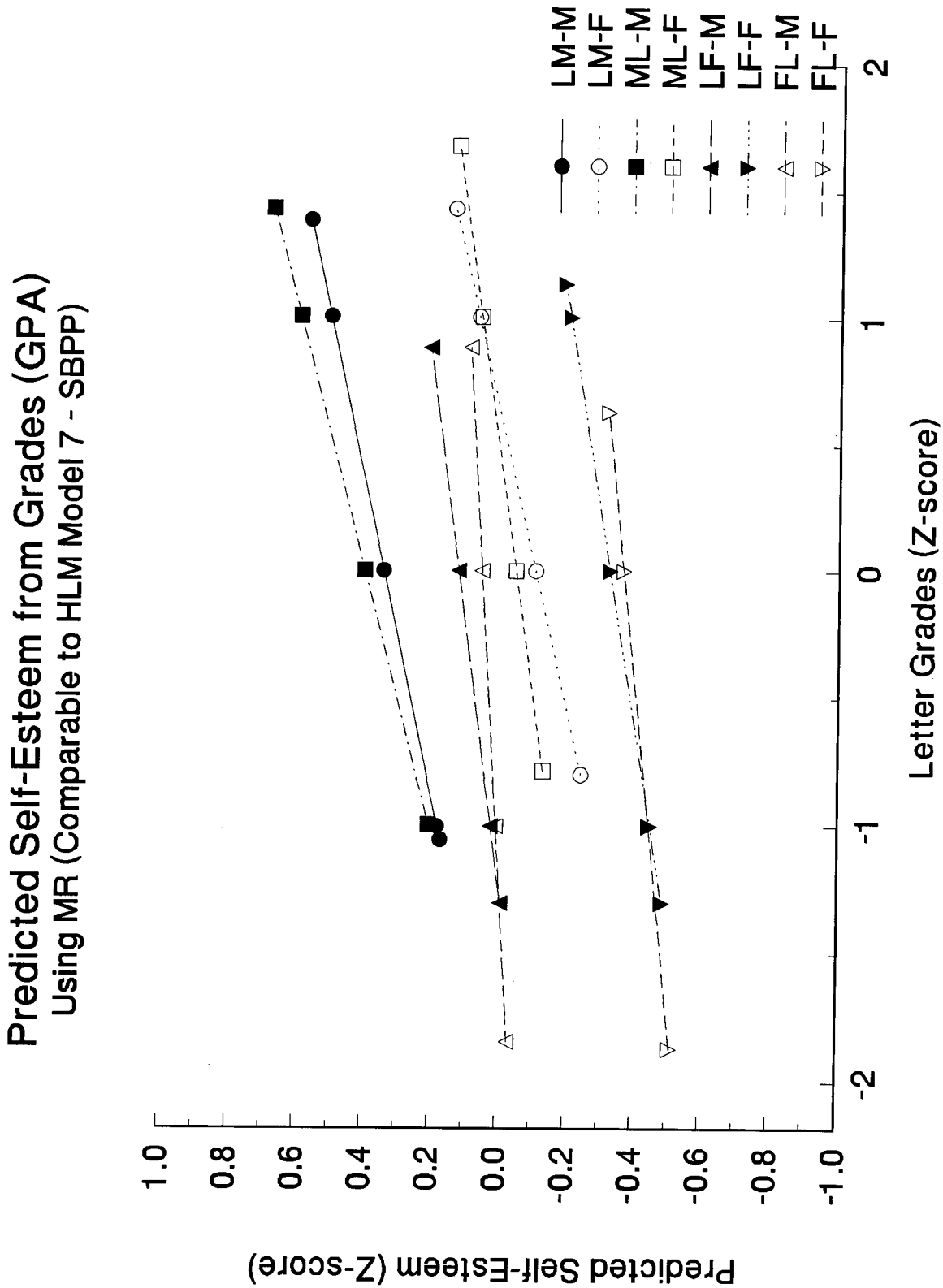

Predicted Self-Esteem from Grades (GPA)
Using MR (Comparable to HLM Model 7 - SBPP)
Predicted Self-Esteem (Z-score)
1.0
0.8
0.6
0.4
0.2
0.0
-0.2
-0.4
-0.6
-0.8
-1.0
-2
-1
0
1
2
Letter Grades (Z-score)
LM-M
LM-F
ML-M
ML-F
LF-M
LF-F
FL-M
FL-F

Table 5-13a

Unstandardized Multiple Regression Coefficients and Standard Errors for Each RUN-Gender Group (Comparable to HLM Model 7)

	Love-Mastery				Mastery-Love			
	Males		Females		Males		Females	
	B	SE	B	SE	B	SE	B	SE
Grade level	.024	.018	.025	.017	.075	.039	.067	.040
SES	-.067*	.028	-.002	.025	-.017	.054	.038	.057
GPA	.163***	.029	.173***	.027	.196***	.058	.107	.060
Momlov	.128**	.040	.238***	.031	.206**	.076	.095	.073
Dadlov	.244***	.041	.152***	.032	.151*	.068	.194**	.074
(constant)	.245***	.026	-.164***	.024	.356***	.051	-.078	.059
R^2 (adjusted)	.151		.164		.119		.083	

*p<.05; **p<.01; ***p<.001.

Table 5-13b

Unstandardized Multiple Regression Coefficients and Standard Errors for Each RUN-Gender Group, Continued

	Love-Freedom				Freedom-Love			
	Males		Females		Males		Females	
	B	SE	B	SE	B	SE	B	SE
Grade level	.013	.020	-.001	.018	-.005	.048	.082	.054
SES	.046	.029	-.005	.026	-.017	.058	.069	.069
GPA	.100**	.031	.123***	.027	.046	.061	.078	.066
Momlov	.197***	.038	.192***	.030	.179*	.076	.102	.085
Dadlov	.132***	.038	.171***	.031	.213**	.079	.123	.090
(constant)	.137***	.026	-.280***	.024	.159	.064	-.286***	.074
R^2 (adjusted)	.119		.138		.155		.078	

*p<.05; **p<.01; ***p<.001.

of Freedom-Love individuals or different parenting styles on the part of parents of Freedom-Love individuals compared to other RUN types. While further research is needed to fully understand the dynamics here, what is important is that the self-esteem/achievement relationship varies among as well as within groups.

The results from these analyses show that not only is the self-esteem/achievement relationship very weak for some groups, and only moderate for other groups, but that a considerable portion of the variation in self-esteem still remains unexplained. This leaves us with two problems. First, there is a lot of information about self-esteem that we do not have, and second, there is only moderate confidence in the accuracy of the findings. Because of this, post hoc models were tested in an attempt to explain more of the variation in self-esteem and yield more confident estimates of the strength of the self-esteem/achievement relationship.

Post Hoc Models

A priori Model 7 explains 18.05% of the total within-school variance. While this is a satisfactory increase in variance explained from Chapter 3 it still does not provide a high level of confidence in the estimated strength of the self-esteem/achievement relationship. Because of this, post hoc models were tested that include variables found to be highly correlated with self-esteem through exploratory analyses. As these models are post hoc, their results are preliminary, and therefore suited to inform future research rather than school policies. As with the gender and grade-level variables, the new variables are not composite variables. Therefore, each variable was centered, but not standardized, so as to maintain its meaning. Beta coefficients then represent the proportional increase in self-esteem associated with a one unit increase in each variable, with the one unit increase being equal to one number on the survey response scale.

Model 8. Table 5-14 presents the results of Models 8 and 9. In model 8 we can see that all three stress variables are significantly related to self-esteem. A one unit increase in social stress is associated with 12.5% of a standard deviation increase in self-esteem, the largest association of the three stress

variables. This model accounts for 22.63% of the within-school variance, an additional 5.50 percentage points from Model 7.

Model 9. In model 9 the help and student attitude variables are also significantly related to self-esteem. In this model, having a friend to go to for help is associated with 22.7% of a standard deviation increase in self-esteem. A one unit increase in helpfulness of an adult or how one feels about other students are both associated with 10.1% of a standard deviation increase in self-esteem. This Model accounts for 24.93% of the within-school variance.

Model 10. Model 10 (see Table 5-15) adds the 'I belong in this school' variable to Model 9. A one unit increase in Belong is associated with 12.8% of a standard deviation increase in self-esteem. This Model accounts for 26.86% of the within-school variance. Because this is the last of the post-hoc models, multiple regression analyses were conducted for this model with each of the RUN-gender groups and the results of these are presented in Tables 5-16a and 5-16b. A comparison of MR and HLM results for this model is presented in Table 5-17. As in the previous studies, the MR results do vary significantly from the pooled HLM results for some of the groups. In this case, the Love-Freedom males and Freedom-Love females have a significantly lower self-esteem/achievement relationship with MR than HLM analyses. Because of this, group differences are discussed with reference to the MR results.

There are several things to note about Table 5-17. First is the noticeable difference between Love-Mastery/Mastery-Love groups and Love-Freedom/Freedom-Love groups with respect to the strength of the self- esteem/achievement relationship. Those with a primary or secondary mastery component show a stronger self-esteem/achievement relationship than do those with a primary or secondary freedom component.

It should also be noted that the variance explained in MR analyses differed by as much as 10%, with Mastery-Love females having the lowest variance explained and Love-Mastery females having the most variance explained by Model 10. This means that the estimated strength of the self-esteem/achievement relationship may be more accurate for the Love-Mastery groups than for the Mastery-

Table 5-14

HLM Results for Student-Level Variables on Self-Esteem: Models 8 and 9

	Model 8: + Stress			Model 9: + Support/Peers		
Fixed Effects	Coeff.	SE		Coeff.	SE	
Grand mean	.006	.013		.001	.013	
Gender	-.388**	.021		-.420**	.021	
Grade level	.045**	.008		.044**	.008	
SES	-.001	.011		.001	.011	
GPA	.141**	.011		.138**	.011	
Momlov	.177**	.014		.123**	.015	
Dadlov	.097**	.014		.062**	.014	
Home stress	-.035**	.010		-.040**	.010	
School stress	-.091**	.011		-.082**	.011	
Social stress	-.125**	.010		-.110**	.010	
Friend - help				.227**	.042	
Adult - helpfulness				.101**	.011	
Feel about students				.101**	.012	
Random Effects	Rel.[1]	Var.[2]	χ^2	Rel.	Var.	χ^2
Grand mean	.284	.0009	29.08	.349	.0012*	31.15
Within-school		.7533			.7309	
Variance in Self-Esteem Explained			%			%
Between-school			25.00			0.00
Within-school			22.63			24.93
Total			22.63			24.90

[1] Rel = Reliability. [2] The degrees of freedom for the χ^2 tests are 19. * $p<.05$; ** $p<.01$.

Table 5-15

HLM Results for Student-Level Variables on Self-Esteem: Model 10

Fixed Effects	Coeff.	SE
Grand mean	.078**	.018
Gender	-.414**	.021
Grade level	.039**	.008
SES	-.000	.011
GPA	.107**	.011
Momlov	.114**	.015
Dadlov	.053**	.014
Home stress	-.041**	.010
School stress	-.071**	.010
Social stress	-.107**	.010
Friend - help	.236**	.042
Adult - helpfulness	.091**	.011
Feel about students	.049*	.013
Belong in this school	.128**	.012

Random Effects	Rel.[1]	Var.[2]	χ^2
Grand mean	.386	.0014	32.52*
Within-school		.7131	

Variance in Self-Esteem Explained	%
Between-school	0.00
Within-school	26.86
Total	26.70

[1] Rel = Reliability.
[2] The degrees of freedom for the χ^2 tests are 19. * p<.05; ** p<.01.

Table 5-16a

Unstandardized Multiple Regression Coefficients and Standard Errors for Each RUN-Gender Group (Comparable to HLM Model 10).

	Love-Mastery				Mastery-Love			
	Males		Females		Males		Females	
	B	SE	B	SE	B	SE	B	SE
Grade level	.036*	.018	.040*	.016	.084*	.038	.095*	.040
SES	-.061*	.026	.005	.023	.014	.052	.052	.056
GPA	.130***	.028	.130***	.026	.142*	.057	.132*	.059
Momlov	.043	.040	.145***	.033	.077	.076	.008	.076
Dadlov	.153***	.040	.064*	.031	.079	.068	.085	.076
Home Stress	-.032	.025	-.054*	.022	-.039	.048	-.078	.050
School Stress	-.060*	.024	-.039	.023	-.016	.048	-.040	.050
Social Stress	-.116***	.025	-.137***	.020	-.128**	.046	-.147**	.046
Feel - students	.112***	.031	.009	.030	.018	.058	.004	.069
Help - friend	.309***	.088	.126	.120	.244	.155	.246	.224
Help - adult	.118***	.029	.090***	.025	.118	.060	.139*	.055
Belong - school	.072**	.028	.185***	.026	.165**	.053	.054	.064
(constant)	-.140	.176	-.567***	.161	-.469	.387	-.989*	.412
R^2 (adjusted)	.249		.274		.195		.170	

*p<.05; **p<.01; ***p<.001.

Table 5-16b

Unstandardized Multiple Regression Coefficients and Standard Errors for Each RUN-Gender Group (Comparable to HLM Model 10) - Continued

	Love-Freedom				Freedom-Love			
	Males		Females		Males		Females	
	B	SE	B	SE	B	SE	B	SE
Grade level	.015	.019	.037*	.018	-.023	.047	.097	.052
SES	.033	.027	-.009	.025	-.022	.056	.055	.065
GPA	.043	.030	.075**	.026	.076	.060	.043	.064
Momlov	.155***	.038	.122***	.032	.104	.079	.034	.089
Dadlov	.086*	.037	.101***	.030	.136	.077	.057	.088
Home Stress	.032	.026	-.069**	.023	-.004	.059	-.073	.061
School Stress	-.113***	.026	-.117***	.027	-.058	.057	-.242***	.064
Social Stress	-.111***	-.024	-.079***	.022	-.142**	.053	-.071	.055
Feel - students	-.078*	.032	-.056	.031	.057	.057	-.079	.075
Help - friend	.227*	.090	.093	.134	.327	.167	.214	.266
Help - adult	.031	.028	.047	.025	.112*	.053	.043	.064
Belong - school	.176***	.029	.119***	.029	.074	.058	.027	.066
(constant)	-.017	.190	-.647***	.174	.447	.472	-1.258*	.507
R^2 (adjusted)	.233		.219		.233		.183	

*p<.05; **p<.01; ***p<.001.

Love groups. Varying accuracy in estimates of the self-esteem/achievement relationship is further supported by the significance levels of the GPA betas in the MR analyses (see row three in Tables 5-16a and 5-16b). Although the GPA betas for the Mastery-Love groups are similar to those for the Love-Mastery groups, they are also only significant at $p<.05$ whereas for the Love-Mastery groups they are significant at $p<.001$ indicating the greater confidence in the Love-Mastery estimates than in the Mastery-Love estimates.

Similarly, in the MR version of Model 7 (Table 5-12) the variance explained for Mastery-Love males was 11.9% and for every unit increase in GPA they showed 19.6% of a standard deviation increase in self-esteem. However, in the MR version of Model 10 (Table 5-17) the variance explained for this same group increased to 19.5% and for every unit increase in GPA they showed a 14.1% increase in GPA. This indicates that better specified models do alter the predicted strength of the self-esteem/achievement relationship.

Overall, the results show differences in the strengths of the self-esteem/achievement relationship among RUN groups, with the Mastery-Love and Love-Mastery groups having a stronger self-esteem/achievement relationship than Love-Freedom and Freedom-Love groups. In terms of variation between- and within-schools, HLM showed that almost all of the variation in self-esteem was within-schools (99.88%), but given the non-random and small sample of schools, the between-school variation may be underestimated. Nevertheless, this finding is consistent with the low variation in self-esteem between-schools that was found in the NELS (Chapter 3) study.

Conclusions and Implications

There are three main findings from this study: (1) the strength of the self-esteem/achievement relationship does vary across RUN types, (2) the strength of the self-esteem/achievement relationship is weakened when perceptions of parental love and belonging are controlled for, and (3) relational variables

Table 5-17

Changes in Self-Esteem Associated with Changes in Achievement: Model 10[1]

Group	% Increase in Esteem with Unit Increase in Grades		Difference	MR Expl'd Variance
	Indiv. MR	HLM[2]	MR-HLM	$R^{2\,(Adjusted)}$
Love-Mastery Males	13.0	10.7	2.3	24.9
Love-Mastery Females	13.0	10.7	2.3	27.4
Mastery-Love Males	14.2	10.7	3.4	19.5
Mastery-Love Females	13.2	10.7	2.5	17.0
Love-Freedom Males	4.3	10.7	-6.4*	23.3
Love-Freedom Females	7.5	10.7	-3.2	21.0
Freedom-Love Males	7.6	10.7	-3.1	23.2
Freedom-Love Females	4.3	10.7	-6.4*	18.3

[1]Achievement measure, GPA, is standardized deviation units.
[2] Containing variables: gender, RUN types, grade-level, SES, GPA, Momlov, Dadlov, home stress, school stress, social stress, feel about students, help of friend, helpfulness of adult, and belong. MR has same variables except those for grouping.
*>5 standard deviation units=significant.

explained a sizable portion of the variation in self-esteem and were the strongest predictors of self-esteem across all RUN types.

Variation in the Self-Esteem/Achievement Relationship across RUN Types

The theoretical motivation for including the RUN types in this research was that different people cope with their environments in unique ways and this research did find a difference between these groups. It found a consistent pattern, with RUN types that have a mastery component having a stronger self-esteem/achievement relationship than those with a freedom component. That these different styles do vary in the strength of their self-esteem/achievement relationship shows that we cannot assume that the self-esteem/achievement relationship exists in similar strengths across all groups of individuals. In terms of research, this means that trying to account for major coping styles may be necessary to better understand self-esteem and its relationship with achievement.

Change in the Self-Esteem/Achievement Relationship across Models

Table 5-18 presents a summary of the estimated strength of the self-esteem/achievement relationship across the different models as well as the total variance explained with each model. When only GPA is in the model it is estimated that for every standard deviation unit increase in GPA, self-esteem increases 18.7% of a standard deviation. With the final model (Model 10) this estimated increase in self-esteem drops 8 percentage points to 10.7%. This is a decrease of 42.78% in the strength of the self-esteem/achievement relationship. What is important to note is that 85% of this decrease (a total of 6.8 percentage points of the 8 percentage point decrease) is attributed to only 3 of the 14 variables that were included in the models. These variables are Momlov, Dadlov, and the Belong variable.

The overall reduction in the strength of the self-esteem/achievement relationship shows to what extent the strength of this relationship may be overestimated when certain variables are not controlled for. That most of this reduction came when the parental love and the belong variables were introduced may mean that a good portion of the self-esteem/achievement relationship may be moderated by love from

Table 5-18

Summary of Self-Esteem/Achievement Relationships and Total Variance Explained across HLM Models

	% Increase in Self-Esteem with GPA[1]	Variance Explained[2] %
(GPA only)	18.7	3.40
Model 2: Gender, grade-level	--	4.72
Model 3: + RUN types	--	7.08
Model 4: + SES	--	7.42
Model 5: + GPA	17.7	10.05
Model 6: + Momlov	14.8	17.22
Model 7: + Dadlov	14.0	18.13
Model 8: + Home/school/social stress	14.1	22.63
Model 9: + Friend for help, Helpfulness of adult, Feel about others	13.8	24.90
Model 10: + Belong	10.7	26.70

[1] Percent of a standard deviation increase in self-esteem with one standard deviation increase in GPA.
[2] Total variance explained for each model.

parents and a sense of belonging in the school. That is, part of the association between self-esteem and achievement may be that achievement helps one to feel they belong and are loved and it is this senseof belonging and being loved that is related to self-esteem. Of course, it could also be that being loved and having a sense of belonging increases one's self-esteem and then this too is associated with higher levels of achievement.

Another thing to note about Table 5-18 is that the list of variables for the post-hoc models (Models 8 through 10) are all relational. These variables were selected because of their high association with self-esteem across all RUN-Gender groups. This further suggests an important role of relationships to self-esteem in general. In view of this, GPA appears to stand out as 'one of those things that does not belong'. However, if it is seen as a variable that can increase the likelihood that people are loved and accepted, giving them a sense of belonging, then it does fit with all of the other variables that were highly related to self-esteem. The importance of the relational variables to the self-esteem/achievement relationship is discussed further in Chapter 6.

Limitations of the SBPP Study

There were four major limitations to the SBPP study. The first is the sample of schools and students. Both were selected non-randomly, with schools being self-selected. This limits the generalizability of the data and requires replication with better sampling procedures. The second limitation is the development of the RUN scale. Given that it is only in its early stages, a refinement of the scale may yield more accurate results. However, that there were patterns consistent with theoretical foundations even with this crude scale does suggest that refinement of the scale is a worthwhile task. The third limitation is the post-hoc analyses. These analyses provided very interesting results in that they highlighted the importance of relational variables. However, given that these analyses were exploratory further underscores the need for replication studies. Finally, the proxy used to measure SES was very crude (parental education levels) and a more refined measure might provide more accurate results. On the other

hand, the relatively weak role SES played in the NELS (Chapter 3) study, despite its comprehensive nature, suggests that a better measure might not significantly change results.

The chapter that follows provides a general discussion of both studies and broader implications for research and policies relating to self-esteem in children.

CHAPTER 6: DISCUSSION

The main goal of this research was to attain a clear understanding of the nature of the relationship between self-esteem and achievement. This last chapter brings together the findings from the NELS and SBPP analyses to discuss the overall findings and the theoretical, empirical and practical contributions that have come out of this research. It also discusses areas where this research may be improved upon and recommendations for future research.

Overview of Findings

NELS: Main Analyses

The results from the analyses of the NELS data showed several things. First, they showed the strength of the self-esteem/achievement relationship varies among gender and ethnic/racial groups and whether classroom grades or standardized tests are used to measure achievement. The strength of the self-esteem/achievement relationship ranged from as low as 7.6% of a standard deviation increase in self-esteem with a one-unit increase in tests (Asian females) to 30.6% of a standard deviation increase in self-esteem with a one-unit increase in grades (Hispanic females). Second, it showed that the variation in self-esteem is largely within-schools rather than between-schools. And third, the best HLM predictor model of self-esteem accounted for only 12.36% of the total variation in self-esteem.

SBPP: Main Analyses

The results from the analyses of the SBPP data confirmed some of the results from the NELS analyses. First, the strength of the self-esteem/achievement relationship varies across RUN types. The strength of the self-esteem/achievement relationship ranged from as low as 4.6% of a standard deviation increase in self-esteem with a one-unit increase in grades (Freedom-Love males) to 19.6% of a standard deviation increase in self-esteem with a one-unit increase in grades (Mastery-Love males). These analyses also showed that the strength of the self-esteem/achievement relationship is weakened when parental love

variables were included in the predictor model. Second, 99% of the variation in self-esteem with the SBPP sample was within-schools. Third, the best a priori HLM predictor model of self-esteem in the SBPP main analyses accounted for 18.13% of the total variation in self-esteem.

SBPP: Post Hoc Analyses

The results of the SBPP post hoc analyses showed that the strength of the self-esteem/achievement relationship is weakened with the inclusion of relational variables, particularly the belong variables in the predictor model. With gender, grade-level, RUN type and SES in the model, a one-unit increase in GPA was associated with 17.7% of a standard deviation increase in self-esteem. With the variables just listed as well as all of the relational variables, a one-unit increase in GPA was associated with 10.7% of a standard deviation increase in self-esteem. It also showed that including relational variables in the predictor model increased the amount of variation in self-esteem that could be explained to about 27%.

Summary

Overall, this research showed that the strength of the relationship between self-esteem and achievement varies considerably across gender, ethnic/racial and RUN type groups. It also showed that including relational, as opposed to demographic (e.g., gender, ethnicity/race, grade-level, SES) variables in the predictor model increases confidence in predicting the strength of the self-esteem/achievement relationship. Including the relational variables more than doubled the explained variation in self-esteem that was found when only demographic variables were included. While this may be an artifact of simply having more parameters in the model, it does raise the possibility that the relational variables are relatively more important to predicting self-esteem than is achievement. Finally, including these variables weakened the strength of the self-esteem/achievement relationship.

Contributions and Implications of this Research

Theoretical

At the outset of this research it was not expected that two data sets would be needed to attain a good understanding of the nature of the self-esteem/achievement relationship. However, the small percentage of the variation in self-esteem that was explained with the analyses of the NELS data did not provide the confidence for as accurate estimates of the strength of the self-esteem/achievement relationship that was hoped for. This led to the SBPP analyses in an attempt to explain more of the variation in self-esteem in order to yield more accurate estimates of the self-esteem/achievement relationship. The results from the SBPP analyses pointed to the importance of relational variables, particularly Mother's love, Father's love, and belong variables, in moderating the self-esteem/achievement relationship. Eighty-five percent of the reduction in the self-esteem/achievement relationship that occurred with the inclusion of all the variables in this study was due to the inclusion of these three variables. This finding of the importance of parental love and belong variables to the self-esteem/achievement relationship provides support for a link between the self-esteem/achievement relationship and the theories of attachment, Karen Horney's coping styles, and two other theories not reviewed in this thesis: achievement motivation and the need to belong.

Attachment Theory and Horney's Coping Styles

With respect to attachment theory and Karen Horney's coping styles, it was noted in Chapter 4 that there is a striking resemblance between Bartholomew and Horowitz's (1991) four-category classification of attachment styles and Karen Horney's three movement types (see Appendix D for a detailed comparison of the definitions for each type). Bartholomew's four-category model was based on whether people's views of self and other were negative or positive. Those with a positive view of self were described as seeing themselves to be worthy of love, whereas those with a negative view of self were described as seeing themselves as unworthy of love (Bartholomew & Horowitz, 1991). Therefore, these types are, by definition, distinguished in part by whether or not they see themselves as being of value or worth.

Horney's movement types were based on how people tend to respond to being in an unloving environment. Horney's types are similar to Bartholomew's classification scheme in that the different types may be distinguished by their views of self and other (see Table 6-1). With Mastery types having

Table 6-1

Comparison of Bartholomew's Attachment Types and Horney's Coping Styles

		View of Self: Positive	View of Self: Negative
View of Others	Positive	B: Secure H: (no anxiety)	B: Preoccupied H: Love
	Negative	B: Dismissing H: Mastery	B: Fearful H: Freedom

B = Bartholomew and Horowitz (1991)
H = Horney (1950).

a positive view of self and negative view of others, Love types having a negative view of self and a positive view of others, and Freedom types having a negative view of self and others. These two theories link parent-child relations, children's responses to family environments, and self-esteem. Horney's theory further links the family environment and children's responses to that environment to achievement in that: (a) the Mastery types are characterized by a strong drive to master tasks, which may include excelling in academic achievement, (b) the Love types are characterized by a strong drive to be self-effacing and seek approval from others, which may include performing in academic arenas for approval, but with a higher risk to self-esteem, and (c) the Freedom types are characterized by trying to immobilize both mastery and self-effacing drives, which may be associated with a lack of striving to achieve academically.

This research shows preliminary support for the link among attachment types, Horney's movement types, and academic achievement in that it showed: (a) a strong relationship between self-esteem and

parental love (secure groups having high self-esteem), (b) that Mastery types had higher self-esteem (positive view of self) and achievement than Love and Freedom types, and (c) that Freedom types had the lower self-esteem (negative view of self) and academic achievement than Mastery and Love types. The Love types had levels of self-esteem and achievement between the extremes of the Mastery and Freedom types.

Love, Belonging, and the Self-Esteem/Achievement Relationship

This research also found that the strength of the self-esteem/achievement relationship is reduced when parental love and belong variables are controlled for, showing that part of the self-esteem/achievement link has to do with being loved and belonging. This may mean that high academic achievement leads directly to people perceiving they are of value, or that when people perceive they are of value, they are able to do better academically. The reasons for the existence of a self-esteem/achievement relationship in either direction may be understood by examining the importance of the need to belong and parental love.

Baumeister and Leary (1995) have suggested that the need to belong is a major underlying drive for people and they posit a belongingness hypothesis which states that:

> ..human beings have a pervasive drive to form and maintain at least a minimum quantity of lasting, positive, and significant interpersonal relationships.

They note that while research has acknowledged relational tendencies, it has not acknowledged the broad impact that such a basic drive might have on a variety of behaviours. Baumeister and Leary (1995, p.498) note that :

> the motivation literature [for example] has been dominated by research on the respective needs for power, achievement, intimacy, approval, and to a lesser extent, affiliation. But the need for power may well be driven by the need to belong... Likewise, people prefer achievements that are validated, recognized, and valued by other people over solitary achievements, so there may be a substantial interpersonal component behind the need for achievement.

Baumeister and Leary (1995) also cite evidence of rejected children having higher rates of psychopathology, the tendency of unattached young people to join gangs that serve as families, and lack of social integration being related to higher rates of suicide

When children are raised in unloving environments we would expect that they would be less likely to feel that they belong. In fact, Baumeister and Leary (1995) suggest that it is a sense of isolation that is, in part, the cause of the basic anxiety that Horney says results from children being in an unloving environment. That is, the very thing which drives people to move rigidly towards, against or away from others is first the feeling of being isolated.

Horney's theory shows three main ways people behave when they are trying to meet this need to belong: to be striving towards mastery, love or freedom. These movements then link belonging to achievement in that some types may tend to cope with not belonging by striving to be better than others (Mastery), to please others (Love), or to avoid achievement in order to avoid further rejection (Freedom).

Another theory that fits with the need to belong theory and Horney's theory is achievement motivation theory. Dweck (1986), in discussing achievement motivation theory, has suggested that there are two main motivations for achievement: one to learn and one to perform, the latter done in order to gain acceptance. Dweck posits that the function of the learning goal is to master the task, whereas the function of the performance goal is to gain approval from others. Those with learning goals may be more effective learners because criticism tends to be received as helpful information for learning and, thereby, more likely to increase learning. Alternatively, for those with performance goals, criticism is more likely to be taken as some form of personal rejection rather than a comment on the learning task at hand, and thereby, not only decrease self-esteem, but also hinder learning. This fits with the RUN types where the Mastery types, who are focused on mastering the task, have higher self-esteem and achievement, and the Love types, who are focused on gaining acceptance, have higher self-esteem and achievement than the Freedom types, but lower self-esteem and achievement than the Mastery types.

These relationships among the different theories need to be investigated more thoroughly to provide firm support for their interrelationships, but this research does provide preliminary support that further research in this area may be fruitful.

Summary

These theories and the preliminary support this research provides for their interrelationship suggest that conventional ways of looking at the self-esteem/achievement relationship may be missing what is central to the relationship. In discussing the self-esteem/achievement relationship, many question whether self-esteem is influencing achievement or achievement influencing self-esteem. This way of thinking about the relationship is also likely associated with program efforts to raise self-esteem via achievement, or vice versa. However, it may be that being loved or having a sense of belonging may be related to both self-esteem and achievement. Belonging may show children they are of value, thereby increasing the likelihood they will perceive themselves to be value and have high self-esteem. Furthermore, when the need to belong is met, they would not spend energy trying to meet this need. In terms of achievement, this should increase the likelihood that they would have learning goals rather than performance goals because they would not have a strong need to gain acceptance from others by performing.

Empirical

The varying strength of the self-esteem/achievement relationship across ethnic/racial, gender and RUN groups informs researchers of the bias that may occur in studies of self-esteem and achievement that do not control for ethnicity/race, gender or various types of coping styles. While it is not practical for all studies to control for all variables, this research does provide some insight as to the extent to which and direction in which a given study may be biased by not accounting for these variables. These results may help researchers to design studies that better suit the researcher's purpose and to minimize misleading generalizations of the results.

Another empirical contribution of this research is the use of the RSE with a Canadian sample of high school students. Bagley, Bolitho, and Bertrand (1997) have noted that they could locate only seven published studies that used the RSE with Canadian high school students, although more have been published with older populations. Furthermore, this research found a similarity of the findings between the findings with the NELS (U.S.) and SBPP (BC, Canada), with respect to the strength of the self-esteem/grades relationship and gender gaps in self-esteem. This suggests that results with the RSE are comparable between U.S. and Canadian (at least BC) high school students.

Practical

This research showed that with more of the variation in self-esteem explained, the predicted increase in self-esteem for every standard deviation unit increase in self-esteem dropped from 18.7% of a standard deviation increase to 10.7% of a standard deviation increase. This research also showed that parental love and belonging are important to self-esteem and its relationship to achievement. This means that practitioners need to stop exploiting the self-esteem/achievement relationship and begin putting it into perspective in terms of its variability across groups and the importance of loving and belonging. They cannot assume that practices based on the assumption of a strong self-esteem/achievement relationship will be effective.

In terms of achievement, Dweck (1986) has suggested that the best motivation is learning, not performance because those with performance goals seem to take criticism more as personal rejection rather than constructive direction. In view of this, and the association found in this research between the need to belong and self-esteem, children may do better when their relational needs are met first. Dweck (1986) has suggested that people with performance goals are performing in order to be accepted. If this acceptance is given first, not only might this meet the need to belong, but it may improve self-esteem to the extent that belonging leads to increased self-esteem (although higher self-esteem may influence the feeling of belonging). This may increase children's likelihood of having learning goals rather than performance goals.

Limitations of the Research

Measures

One area of limitation in this research is the validity of the self-esteem, achievement, parental love and RUN type measures. For self-esteem, some researchers have expressed the concern that self-esteem measures are deceptive in that not everyone responds honestly (with themselves or others) and that there may be variation in presentation styles (Baumeister, Tice & Hutton, 1989; Lawton, Fergusson & Horwood, 1989; Lobel & Teiber, 1994; Paulhus, 1991). Given the differences in self-esteem across gender and ethnic/racial groups, it may be worth investigating cultural differences in styles of self-disclosure. It may be, for example, that females' reports of their feelings about themselves understate their inner feelings in order to not be perceived as immodest. Alternatively, it may be that males' reports of their feelings do not reflect their inner feelings and they are more protective of their selves.

Another concern with self-esteem is the possibility of the predictor variables in the post-hoc analyses being independent from self-esteem and not just a proxy for self-esteem. This could particularly be a concern with the belong variable which directs respondents to think about themselves (i.e., 'I feel like I belong in this school'). It is important to note that the addition of the belong variable explained an additional 1.8% of the variation in self-esteem. If this variable is a proxy for self-esteem, then it should have explained more of the variation in self-esteem.

The validity of the measure of grades in the NELS and SBPP analyses is another limitation of this research. This measure was self-reported and it is possible that self-esteem may be related to accuracy in recalling grades. A future study could collect grades directly from the school. The problem with this, especially in large-scale studies, is the high cost. An alternative would be to study a smaller set of students and examine the relationship between self-reported grades and grades collected from the school for groups of high and low self-esteem students.

The parental love and RUN scales were developed with a very limited time schedule and, therefore, they are limited in terms of assessing their validity, such as an absence of test-retest reliabilities. For example, the parental love scales had very high levels of internal consistency which may mean that some items are not necessary. There was also a very high association between respondents' perceptions of Mother's love and Father's love, possibly indicating that this scale does not easily enable respondents to be sensitive to differences between their Mother and Father's love. It may also mean that respondents' perceptions of parental love is associated with an individual factor that influences their perception of others in general. For example, those with high self-esteem may simply perceive others to be more loving. More detailed research with these scales will be needed to investigate these possibilities.

There are also more well-validated scales measuring aspects of the parent-child relationship or parental love that may have been more suitable for this research. For example, the Parental Bonding Instrument (PBI; Parker, Tupling, & Brown, 1979) has been used extensively in psychological research (Parker, 1990) and has a validated brief current form (PBI-BC; e.g., Todd, Boyce, Heath, & Martin, 1994) that has been found to show construct validity with self-concept (Klimidis, Minas, Ata, & Stuart, 1992). However, for this research there was only a small amount of time between completing the NELS analyses and the design of the SBPP instrument which limited the ability to conduct a thorough search of such instruments.

In terms of the RUN scale, one problem was the inability to distinguish rigid movement types from healthy types. Horney (1950) has noted that all people move in the directions of towards love, away from others and against others, but it becomes unhealthy when the movements are rigid and the people are moving predominantly in one direction without regard to the circumstances. A refinement of this scale is necessary in order to distinguish those that have a balance of movements towards, away or against others compared to those who move rigidly in one or two of these directions.

Causality

Although this study did provide a better understanding of the strength of the self-esteem/achievement relationship and how it varies among groups, it does not provide information about the direction of causality among self-esteem, achievement and belonging. Furthermore, the best post-hoc model still left 63% of the variation in self-esteem unexplained. This means that with more well-specified models there could be a further reduction of the estimated strength of the self-esteem/achievement relationship and further clarification of how these two variables relate to the need to belong. To do this, longitudinal data would be needed that can assess changes in self-esteem over time and its relationship with achievement and belonging.

Informing School Policy

Finally, in terms of policy or program issues there are two problems with the current study that may mask the potential relationship between-school-level variables and self-esteem. First, it did not assess any aspect of the personal relationship between the student and the school or school staff members. Given the personal nature of self-esteem, it may be that a school can have its best impact when the right personnel are employed, rather than the right program. Second, if there is a small number of schools with staff members who are effective in reaching students, these schools will not carry enough weight into the HLM models to increase the between-school variation. This is where smaller, but more in-depth, studies may be helpful in gaining a greater understanding of the school dynamics.

In view of the varying strength of the self-esteem/achievement relationship across ethnic/racial, gender, and RUN groups, policy-makers need to consider that policies based on the assumption of a strong self-esteem/achievement relationship may be effective for only a small portion of the student population. This is a very important finding for policy-makers and program developers given the sizable financial and human investment that is present with provincial or nation-wide school policies and programs. For example, in Chapter 1 I noted that part of the goal of the Year 2000 program was to protect children's self-esteem by changing from a letter-grading system to an anecdotal grading system. This was a province-wide program that was ultimately cancelled, due in part, to parents' concern for children's academic

achievement. This research has the potential to minimize some of these resource losses if received by educational policy-makers and program developers.

In terms of the importance of parental love and belonging, the results in this research are preliminary, but policy-makers can be directed to carefully consider new and existing research on the relationship between these factors and self-esteem and achievement. There may be a need, for example, to direct policies or train teachers in a manner that increases the likelihood that students will feel accepted in the school environment, regardless of their achievement or other behaviours. This does not mean accepting negative behaviours, but simply accepting the individual in order to show them that they are of value and do belong apart from their behaviour, academic or otherwise.

Generalizability

The results from the NELS analyses are generalizable to grade eight ethnic/racial and gender groups within the United States, and possibly Canada given there is some similarity in cultures. While it was beyond the scope of this present research to examine these differences, it is acknowledged that self-esteem and its relationship with achievement may be very different in other areas of the world. This research is limited in that it cannot generalize to different cultural groups that have been raised and continue to live in their nation of origin as there is a Western culture that is uniquely different from non-Western cultures. The concept of self in many non-Western cultures is more interdependent with others, whereas in Western cultures it is more independent of others, which may influence emotions and motivation (Markus & Kitayama, 1991). For example, some researchers assume that individuals in Chinese culture tend to self-efface rather than self-enhance (e.g., Bond, 1991), which may have implications for self-esteem and its relationship with achievement. Recently, Yik, Bond, and Paulhus (1998) found in a Hong Kong sample of Chinese college students to exhibit self-enhancement behaviour than a comparable North American sample (43% versus 56%) and they found that with this sample there was a significant level of self-effacement on five of eight personality dimensions.

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APPENDIX A: MOTIVATION FOR USING HIERARCHICAL LINEAR MODELING

The principal analyses employed hierarchical models using the program HLM. The reason for using this statistical technique is the nature of the data in that they consist of students sampled from schools. Because the students were sampled from schools they are nested, not independent, observations. This nesting means that there is dependence of outcomes among students from a given school. Not taking into account this dependence can result in mis-estimated standard errors. HLM deals with this problem by including the unique effects of each school into the model.

Another problem with individual data collected from schools is that when examining relationships between variables, such as that between self-esteem and achievement, the relationship may vary between-schools. This means that different schools would have different regression lines for the given variables, that is, there is heterogeneity of regression. Again, HLM accounts for this by formulating within- and between-school equations so that an overall relationship between variables can be determined (within-school) as well as the amount of variation in this relationship between-schools.

Typical between- and within-school equations in HLM are as follows:

Within-school: $\underline{Y}_{ij} = \underline{b}_{jo} + \underline{b}_{j1}\underline{X}_{ij1} + \underline{b}_{j2}\underline{X}_{ij2} + \ldots + \underline{b}_{jk}\underline{X}_{ijk} + \underline{R}_{ij}$

Where:

$\underline{Y}_{ij}$ = outcome variable of student i in school j,

$\underline{b}_{jo}$ = intercept,

$\underline{b}_{j1}\underline{X}_{ij1}$ = each school's slope x students background variable 1, and

$\underline{R}_{ij}$ = random error.

Between-school: $\underline{b}_{jk} = g_{ok} + g_{1k}\underline{W}_{1j} + g_{2k}\underline{W}_{2j} + \ldots + g_{pk}\underline{W}_{pj} + \underline{U}_{jk} + \underline{e}_{jk}$

Where:

$\underline{b}_{jk}$ = school effects for school j,

g_{ok} = intercept,

$g_{1k}\underline{W}_{1j}$ = effects of school characteristic 1 on the distribution of the outcome variable within-schools,

$\underline{U}_{jk}$ = unique effect associated with school j, and

$\underline{e}_{jk}$ = error.

Conventional linear methods are not able to estimate the variables in the between-school equations because they are computed with a complex error term that requires iterative computations (Bryk & Raudenbush, 1988). Bryk and Raudenbush (1988) state the following characteristics of estimating between-school variables with HLM:

(1) Variability in precision of estimates across schools because of varying amounts of data,

(2) computations are fully multivariate because estimation takes into account covariation among beta coefficients,

(3) estimated variables are measured with error, therefore can distinguish between variation in the actual school effect and variation due to sampling,

(4) covariance among betas is estimated, and

(5) there are more precise estimates of beta coefficients in each school because estimation of betas is repeated across the schools.

HLM enables the researcher to address the problem of the nested structure of the data typically associated with research in the schools. The analysis takes account of the nested structure of the data by estimating separate regression equations for students within each school. These separate equations make it possible to examine the relationships between background factors, achievement, and self-esteem within- and between-schools, and the extent to which within-school relationships vary across schools.

School-Based Research and Hierarchical Linear Modeling

One evident characteristic of school-based research is its multilevel structure (e.g., students within classrooms within schools). Cognitive development and educational achievement must be measured at the level of the individual because they are individual characteristics. However, because individuals are grouped into classrooms, classrooms into schools, etc., the data collection cannot be limited to this level. There are factors within the classroom (e.g., teacher cognitive style), within the school (e.g., strength of leadership) that may have their effects on the individual. These must be measured at their respective levels. However, there are several problems with multilevel data. The three most common problems are as follows:

1) Aggregation bias: This can occur because variables have different meanings at different levels. This means that their effects may not be equal at different levels. For example, the social class of student, which reflects their home life, taps into something different than does the social class of a school, which reflects area resources and environment.
2) Mis-estimated Standard errors: This occurs when the dependence among outcomes are not taken into account. For example, two students coming from the same school versus those coming from different schools, would be expected to have closer achievement scores than the latter. If this between-school difference is not accounted for the standard errors will be smaller than would be expected (this leads to tight confidence intervals).
3) Heterogeneity of regression: This means that across schools the relationship between variables. For example, at one school there could be a positive relationship between SES and achievement, while at another it may be negative or nonsignificant. If such effects are present, a micro-analysis may be valuable (Lee & Bryk, 1989).

How HLM Works

HLM works through the estimation of different types of models. There are several types of HLM models, but two basic types are presented below, along with a description of how HLM computes these models.

The Unconditional Model: The Most Simple Hierarchical Linear Model

HLM is multilevel regression. The first step in HLM is the estimation of level-1 (within-school model) using Ordinary Least Squares Regression. This simple hierarchical linear model is the same as the one-way random effects ANOVA. This model gives an overall mean (grand mean) and it will divide the variance into between and within groups variance. It also provides a test of whether or not the group means are significantly different. The only difference between this simple HLM and the 1-way random effects ANOVA is the notation. HLM separates the general linear model into two levels. Level-1 is the individual (e.g., students) level, whereas Level-2 is the group (e.g., schools) level.

In HLM this one-way random effects ANOVA is referred to as a null model in that it is fully unconditional. This null model is often the first step in an analysis as it gives you the following information:

(1) An estimation of the grand mean.

(2) A partitioning of total variance into between and within variation

(3) The degree of dependence of observations within each school (intraclass correlation)

(4) A measure of reliability of each school's sample average outcome variable as an estimate of its true mean.

(5) A test of the hypothesis that all schools have the same mean outcome score (a Chi square test of the variance of the mean outcome score; Bryk & Raudenbush, 1984).

The Conditional Model

The null (or 1-way random ANOVA) model is unconditional in that neither at the individual (Level-1) or group (Level-2) levels are any "independent" variables included in predicting the outcome variable. In the null model, variation in the outcome variable is assessed without controlling for any other variables. More complicated HLM models are assessed to account for the variation that was revealed in the null model. These models may include variables only at the level-1 equation, only at the level-2 equation, or at both levels and are called conditional models.

The estimation of the conditional models take place in two steps. First, level-1 variables are introduced (e.g., gender, grade, self-esteem). For each of these level-1 variables, regression coefficients are computed. The second step of the estimating the conditional model involves using the coefficients and intercepts of the level-1 model (within-school) as dependent variables for the level-2 (between-school) model. In this way the variation of the within-school model intercepts and coefficients are modeled as a function of school-level characteristics.

Coefficients from smaller schools have less precise estimates and are given less weight. The intercepts are tested using a t-test to see if they are significantly different from zero. In this way, HLM takes into account the parameter variance in the level-1 (or within-school) model at the level-2 (or between-school) model. The main goal of HLM is to explain the variation in the intercept and coefficients between-schools.

APPENDIX B: DETAILED METHODS AND PRELIMINARY ANALYSES OF NELS[2]

This appendix contains details of the NELS methods and analyses either not presented in Chapter 3 or not presented in as much detail as presented here. It contains information on sampling, weights, data collection, and measures, as well as analyses of outliers, and assumptions of normality and linearity.

Student Sampling. Approximately 26 grade eight students were randomly sampled from the pool of students (N=202,996) in the 1,052 selected schools. Students excluded from the sample were those who were mentally handicapped (n=6,182; 3.04%), not proficient in English (n=3,831; 1.90%), and those having physical or emotional problems (n=840; .41%). Other students excluded were those no longer attending school and part-time students. Two of the usually 26 students sampled were usually Hispanic and Asian oversampled students[3]. This yielded a sample of 26,435 students. A total of 24,599 students completed the student questionnaire (93.05%).

Weighting. Student data was weighted to compensate for sample selection bias and nonparticipation once selected. A preliminary weight was first calculated using the probability that the student's school was selected and the probability that a student was selected from within that school. This value was then multiplied by a ratio of non-response adjusted school weights for participating versus non-participating students (see Table B-1).

Student questionnaire and tests. The student questionnaire was designed by NORC and agencies subcontracted by NORC. The Educational Testing Service (ETS) designed four time-limited cognitive tests in the areas of reading, mathematics, science, and history. The reading test consisted of 21 items and students were allotted 21 minutes to complete the test. This test consisted of five short passages with comprehension and interpretation questions. The mathematics test consisted of 40 items and students were allowed 30 minutes to complete the test. It consisted of quantitative comparisons and questions measuring mathematical knowledge. The science test contained 25 items and students received 20 minutes to write

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[2] The information in this section is taken from the NORC Base Year: Student Component Data File User's Manual.
[3] The U.S. Department of Education's Office of Bilingual Education and Minority Language Affairs funded an oversampling of Hispanic and Asian-Pacific Islander students which resulted in an additional 2,200 students.

this test. It tested science knowledge and scientific reasoning ability. Finally, the history/government test contained 30 items and students were allotted 14 minutes to write the test. It contained questions regarding U.S. history, civics, and government.

Table B-1

Weighting Formula

$$(A) = \frac{1}{\text{Probability the student's school was selected}} \times \frac{1}{\text{Probability the student was sampled within their school}}$$

$$(B) = \frac{\text{S Participating students} \quad \text{Nonresponse-adjusted preliminary school weight} \times (A)}{\text{S Nonparticipating students} \quad \text{Nonresponse-adjusted preliminary school weight} \times (A)}$$

(C) = (A) x (B) = Student weight

Data Collection

Parent questionnaire. A questionnaire, instructions, and a letter addressed to the primary parent was mailed along with a 30-minute questionnaire.

Student questionnaire. Student questionnaires (28 pages) and tests (85 minutes) were administered in group sessions of approximately 25 students or via telephone interviews. Students were informed of the purpose of the study and that their participation was voluntary and confidential. Surveys were administered to students that received parental permission. Following the tests NORC representatives attempted to attain missing or incorrectly marked data. If the student opted to not answer an item, the representative marked it as a "no retrieval". The data collection took place between February 1 and June 30, 1988 and make-up sessions were scheduled for those students who were unable to attend the original survey day.

Data entry. Except for tracking information, questionnaire items were entered via an optical mark reading procedure. Accuracy of data entry was tested with specially designed dummy questionnaires and by comparing a number of questionnaire entries to the original questionnaire. Students that did not follow instructions for filter questions (i.e., said "no" to a filter question but then went on to answer the next question they were given a value of legitimate skip. Other values given to missing data were multiple response, refused, and missing. Out-of-range responses were checked and the occupation codes were manually checked to validate all codes. Modifications were made to achieve accuracy. The degree of accuracy attained was not listed in the Data File User's Manual.

Student Measures and Analyses

Below are details not presented in Chapter 3 about student measures. The means, standard deviations, and correlations for all student measures are presented in Table B-2.

Self-esteem. The RSE was the measure of self-esteem used in this research. Principle component analyses of the RSE yielded two factors across all groups (see Tables B-3a and B-3b). As discussed in Chapter 3, the two factors were not conceptually different, but different according to items being phrased negatively or positively, thus, the scale was considered unidimensional.

Achievement. Two measures of achievement are used: grades and standardized test scores. For both measures a single score was derived from the average of students' performance in English (Reading for tests), Math, Science, and Social Studies (History/Geography for tests). Both scores are standardized within the entire 24,599 sample. The grades were supplied by the student by responding the following question for English Mathematics, Science, and Social Studies:

> For each of the school subjects listed below, mark the statement that best describes your grades from the sixth grade up till now.
>
> (1) Mostly As (a numerical average of 90-100)
> (2) Mostly Bs (80-89)
> (3) Mostly Cs (70-79)
> (4) Mostly Ds (60-69)
> (5) Mostly below D (below 60)
> (6) Does not apply to me - my classes are not graded (NELS Student Questionnaire, 1988).

Table B-2

Means, Standard Deviations, and Correlations for Predictor and Outcome Variables

Variable	Mean	SD	Product-Moment Correlation							
			1	2	3	4	5	6	7	8
1. Self-esteem	.014	.982	1.000							
2. Asian	-.002	.180	(-.011)	1.000						
3. Black	-.003	.336	.114	-.072	1.000					
4. Hispanic	-.006	.297	-.024	-.061	-.127	1.000				
5. White	.740	.439	-.067	-.313	-.650	-.554	1.000			
6. Gender	.499	.500	-.169	(-.009)	(.008)	(-.003)	(-.000)	1.000		
7. SES	.012	.983	.105	.052	-.172	-.213	.254	(.016)	1.000	
8. Grades	.013	.998	.222	.067	-.089	-.070	.087	-.106	.334	1.000
9. Tests	.032	.987	.145	.040	-.261	-.154	.288	(.001)	.460	.541

Note: Correlations computed with pairwise deletion of missing data. Total N=21,039; minimum n=20,429. ( ) = Not significant at p< .001

Table B-3a

Principle Components Analyses Results for Self-Esteem Items with Varimax Rotation

	Asians				Blacks			
	Males		Females		Males		Females	
	F_1	F_2	F_1	F_2	F_1	F_2	F_1	F_2
Feel Good	.70	.19	.45	.62	.37	.52	.40	.56
Person Worth	.68	.10	-.01	.71	-.00	.71	-.01	.68
Able to do	.75	.06	.11	.76	-.01	.74	-.01	.70
Satisf. w/self	.71	.10	.37	.69	.22	.53	.40	.59
Feel Useless	.10	.89	.88	.04	.85	-.01	.80	-.02
No Good	.19	.89	.87	.17	.83	.09	.83	.05
Not Proud	.55	.35	.56	.45	.47	.33	.59	.29
Eigenvalue	2.91	1.23	3.22	1.14	2.31	1.24	2.51	1.20
Pct of Var.	41.60	17.60	46.10	16.40	33.00	17.70	35.90	17.20

Note: F_1 = Factor 1; F_2 = Factor 2.

Table B-3b

Principle Components Analyses Results for Self-Esteem Items with Varimax Rotation, Continued

	Hispanics				Whites			
	Males		Females		Males		Females	
	F_1	F_2	F_1	F_2	F_1	F_2	F_1	F_2
Feel Good	.38	.58	.67	.31	.64	.30	.68	.35
Person Worth	.00	.76	.72	.08	.70	.04	.74	-.01
Able to do	.01	.77	.72	.05	.76	.07	.78	.09
Satisf. w/self	.37	.63	.72	.26	.71	.27	.72	.34
Feel Useless	.83	.04	.10	.87	.10	.87	.10	.88
No Good	.85	.08	.13	.86	.14	.87	.16	.87
Not Proud	.63	.23	.38	.54	.40	.46	(.50)	(.48)
Eigenvalue	2.74	1.31	3.00	1.17	2.90	1.17	3.25	1.17
Pct of Var.	39.20	18.80	42.90	16.70	41.40	16.80	46.50	16.70

Note: F_1 = Factor 1; F_2 = Factor 2.

The test scores were attained from the standardized tests administered by NORC (see above). The grade scores provide a relative measure of achievement as these scores are typically assigned relative to classmates and patterns of grade assignment may vary by school. Alternatively, the test scores provide a more absolute measure of achievement in that no evaluative bias enters into the assignment of the score.

Ethnicity/Race. Ethnicity/race was determined by asking students which of the following categories best described them:

(1) Asian or Pacific Islander (if yes, had to distinguish between Chinese, Filipino, Japanese, Korean, Southeast Asian, Pacific Islander, South Asian, West Asian, Middle Eastern or other).
(2) Hispanic, regardless of ethnicity/race (if yes, had to distinguish between Mexican, Cuban, Puerto Rican, and other as well as if Black, White, or Other Hispanic).
(3) Black not of Hispanic origin.
(4) White, not of Hispanic origin.
(5) American Indian or Alaskan native (NELS Student Questionnaire, 1988).

In reviewing the data, NORC representatives found the proportion of students listing themselves as American Indian or Alaskan Native inaccurate when compared to parental responses. To remedy this problem, a random sample of 100 parents were telephoned and asked the ethnicity/race of their child. Ninety-three percent of the parents said their child was "White, not of Hispanic origin". Based on these findings, responses were recoded for the 625 students reporting they were "American Indian or Alaskan Native" AND whose parent responded that the were themselves "White, not Hispanic" on the parent questionnaire. The categories were collapsed into five groups:

(1) Asian or Pacific Islander
(2) Hispanic
(3) Black, not Hispanic
(4) White, not Hispanic
(5) American Indian or Alaskan Native (NELS Student Questionnaire, 1988).

These final categories were used in the present study.

Gender. Gender was determined by asking students: What is your gender? Respondents checked either Male or Female. If the student's response to this item was missing, information from the school roster was used. If this was not available then gender was determined from the student's name if it was not ambiguous. All other missing values were randomly assigned as male or female.

School Measures

School minority composition. School composition was derived from student-level data by calculating the percent of each minority sampled within each school. This yielded four values for each school: percent Asian, percent Black, percent Hispanic, and percent Native.

School socioeconomic status. School SES was also derived from student-level data. A school's SES value was calculated by taking the mean of the student SES values from that school.

School mean achievement - grades. School achievement for grades was the mean of each student's average grade across Math, English, Social Studies, and Science. These grades were reported by the student (see student measures above).

School mean achievement - tests. School achievement for tests was the mean of the standardized mean of each students performance across the four tests - mathematics, reading, science, and history (see student measures above).

School type. School type was taken from the student data file which indicated whether the school was public, Catholic, private - other religious affiliation, or private - no religious affiliation. For the purposes of this study, schools were recoded into public and private, with private schools having a score of 0 and public schools having a score of 1 on the variable public.

Preliminary Analyses

Outliers

Scores beyond three standard deviations from the mean are traditionally considered to be outliers. With large samples, however, it is expected to have scores in this range (Tabachnick & Fidell, 1989). There is no standard limit set for outliers in large samples, so the limit set here was extended one standard deviation to four standard deviations.

Self-esteem

Individual self-esteem item scores range between one and four. Because of this limitation, it was not reasonable to search for outliers with the individual items. However, the self-esteem composite (the standardized mean of the standardized items) spreads out the distributions among a greater number of scores and so allows one to check for outliers. Standardized self-esteem composite scores range from -5.46560 to 1.89505. With an outlier limit of plus or minus 4 standard deviations, 42 cases were outliers on the self-esteem variable. Of these 42 cases, 29 were female and 13 were male. The ethnic/racial composition of the outliers were as follows: 34 Whites, 2 Asians, 4 Hispanics, 1 American Indian/Alaskan Native, and 2 unidentified. The mean scores for these outliers were as follows: SES (.31), self-esteem (-4.15), tests (.01), and grades (-.36). These cases were excluded from all subsequent analyses. This brought the range of the self-esteem scores to -3.86019 to 1.83446. Given the small number of outliers relative to the size of the sample, deleting them should not influence the results.

Grades and Tests and SES

The range of scores for grades is from -3.15418 to 1.46998. The range of scores for tests is -2.59296 to 2.35499. These scores are well within the outlier limit, therefore none were excluded. The range of scores for SES is from -4.75531 to 3.77319. One outlier was excluded for SES which brought its range to -3.67324 to 3.77319.

Incomplete Self-Esteem Inventories and Missing School Data

The focus of this dissertation was self-esteem, its measurement, and its relationship with achievement. Because of this, only cases without complete self-esteem data were selected for the study. In addition, HLM requires that school-level data have no missing values and have more than 10 cases for each school. To meet these and outlier requirements a total of 2,943 cases were eliminated from the study. Although this is a large number, the main results of the study should not be influenced because of the large sample employed (N= 21, 039).

Together, these excluded students were approximately 9% of a standard deviation lower on self-esteem, 3% of a standard deviation lower on grades, 10% of a standard deviation lower on tests, and 1% of a standard deviation higher on SES than those used in this research. They consisted of 151 Asians, 472 Hispanics, 495 Blacks and 1,825 Whites, with Whites being slightly under-represented in the elimination than are the other ethnic/racial groups. Although the excluded sample means on self-esteem, grades, tests, and SES are similar to the main data set levels, when broken down by gender-ethnic/racial groups, means did deviate somewhat more from the main data set. The mean differences for the excluded group and for the included group are presented in Table B-4. This table shows a broad range of differences in mean scores, from zero (Asian females' SES) to 26.5% of a standard deviation (Hispanic males' tests).

Although several of these differences are significant, the exclusion of this group should not affect the main results. To confirm this, multiple regression analyses were conducted for each gender-ethnic/racial group before any exclusions. These separate group analyses included SES and Grades/Tests. The beta weights for grades/tests from these analyses were compared with the individual group analyses with the included students. Comparing the two sets of MR, excluding this group does not affect the strength of the self-esteem/achievement relationship for any of the groups. The difference in beta weights between the included and excluded groups ranged from .002 to .016 for grades and from .001 to .023 for tests.

Normality

Skewness and kurtosis assess the extent to which a distribution deviates from normality. The values of skewness and kurtosis increase in their deviance from zero with increasing non-normality. The significance of skewness and kurtosis values are determined by dividing each value by their respective standard errors. The resulting value is then checked against the z-score distribution. What is important to consider when evaluating skewness and kurtosis is that the standard errors are markedly influenced by the size of the sample. This is because for skewness the standard error is the square root of 6/N and for kurtosis it is the square root of 24/N. This means the larger the N, the smaller the standard error. With

Table B-4

Differences between Means for Included versus Excluded Samples

	Variable Mean Differences (Excluded - Included)			
Group	Self-Esteem	Grades	Tests	SES
Asian males	.087	-.126	-.039	.098
Asian females	.036	-.055	-.088	.000
Black males	-.217	-.068	.187	-.043
Black females	-.204	.059	.057	-.132
Hispanic males	-.072	.088	.265	.072
Hispanic females	.047	.063	.172	.142
White males	-.037	-.013	.002	.127
White females	-.156	-.011	-.016	.079

very large samples, standard errors will be so small that even minor deviations from normality may yield significant z-values.

Because of the influence of sample size, it is the appearance of the graphed distributions that is important and the extent that the skewness and kurtosis values deviate from zero rather than the values arrived at by dividing by the standard errors (Tabachnick & Fidell, 1989).

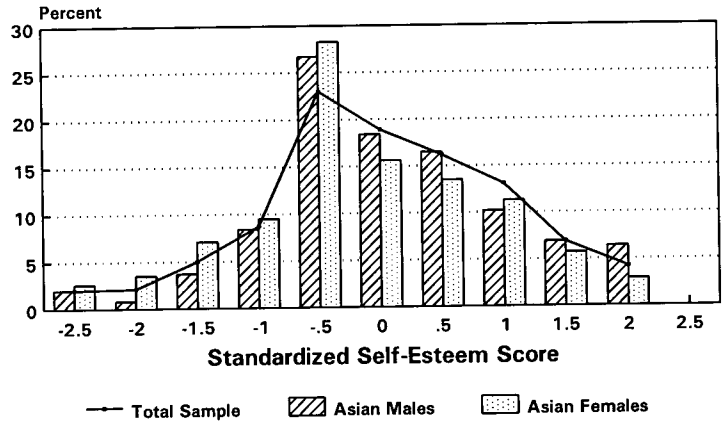
Figure B-1 shows the self-esteem distribution for each gender-ethnic/racial group with a comparison line including all eight groups. These graphs indicate only minor deviations from normality. The largest deviation from normality is with Blacks where there is slight negative skew to the distribution. These negative skew is reflected in their higher average self-esteem scores, but should not large enough to significantly alter results from the main analyses.

The distributions for letter grades did deviate somewhat more from normality (see Figure B-2), with a more jagged distribution, due to the possible response items (e.g., mostly A's, mostly B's, etc.). Blacks, Hispanics, and Whites do have distributions with a center peak, however, the Asian distribution has a peak in the upper grade averages. This difference between the Asian grade distribution and the other distributions are considered when examining the self-esteem/achievement coefficients.

The distributions for tests (see Figure B-3) for Asians and Whites are normal, but somewhat flat. For Hispanics the distribution is similar, but with a slightly positive skew. For Blacks the tests distribution is more peaked and positively skewed. The largest deviation is for the Blacks which, although not severe, will be considered when examining the relationship between self-esteem and tests.

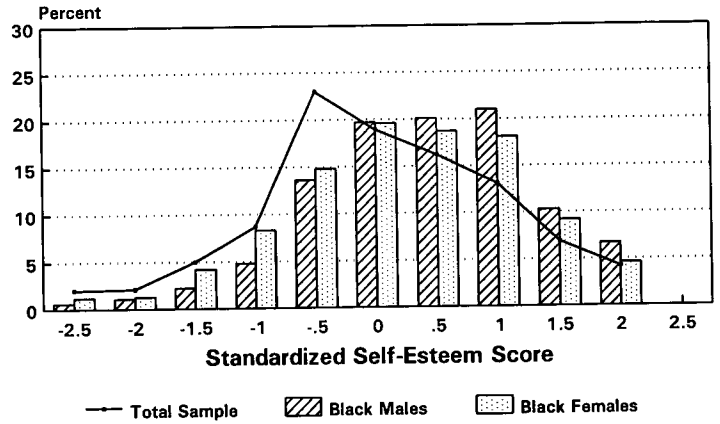
Finally, the distributions for SES (see Figure B-4) were relatively normal across all groups, with the Black and Hispanic groups being only slightly positively skewed. Overall, however, it appears that these small deviations from normality are not large enough to significantly alter the results of the main analyses. Some transformations were conducted on the self-esteem variable to determine if a more normal distribution would impact results, but they did not markedly change the regression analyses

Self-Esteem Distribution
Asians and Total Sample



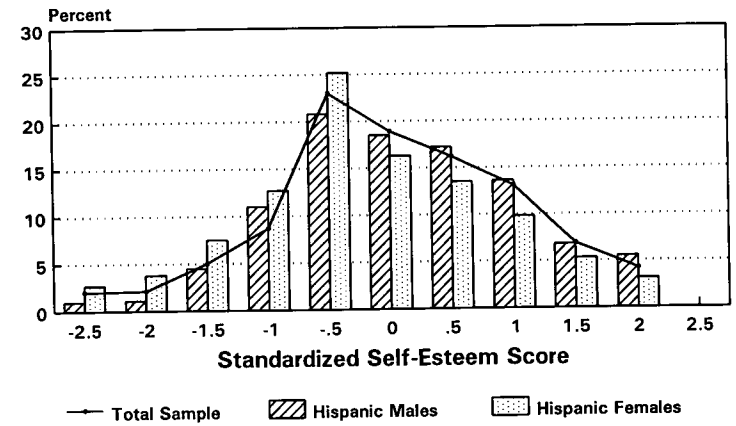
N = 369mal;333fem;21,039 tot

Self-Esteem Distribution
Blacks and Total Sample



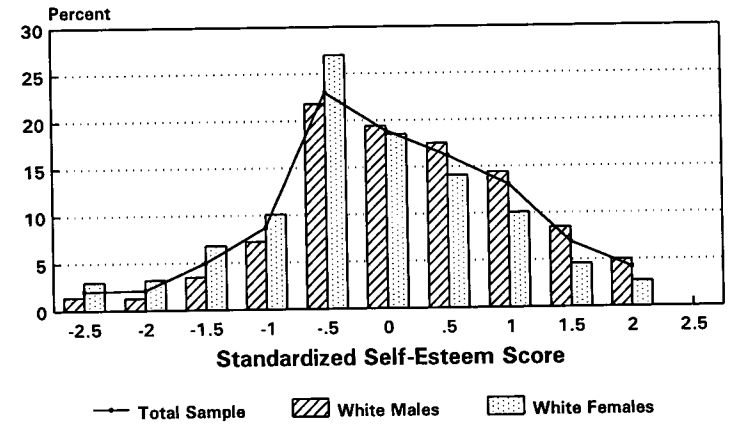
N = 1,334mal;1,386fem;21,039 tot

Self-Esteem Distribution
Hispanics and Total Sample



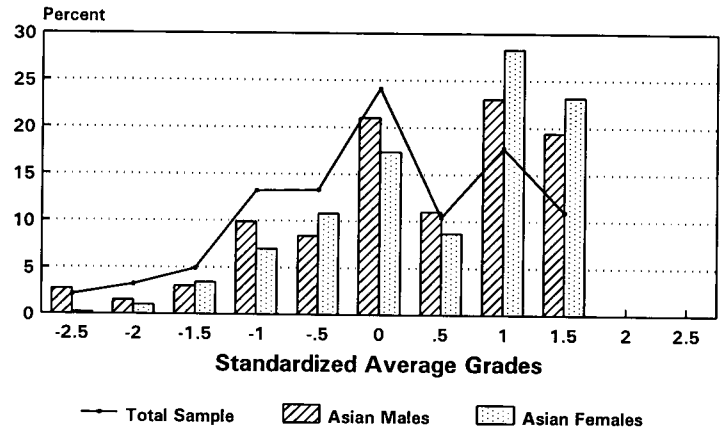
N = 1,037mal;1,017fem;21,039 tot

Self-Esteem Distribution
Whites and Total Sample



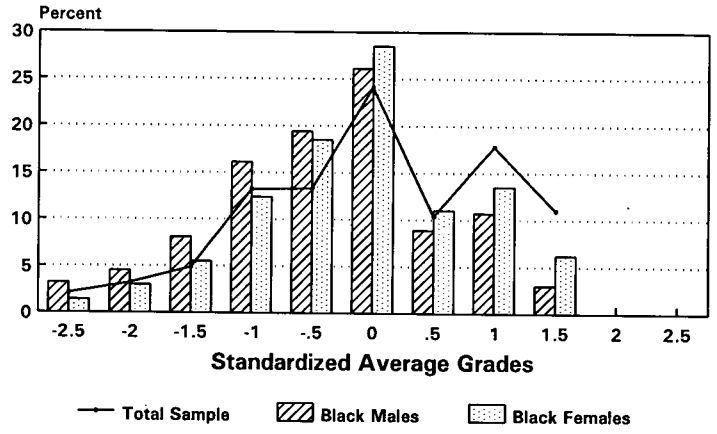
N = 7,796mal;7,767fem;21,039 tot

Average Grades Distribution
Asians and Total Sample



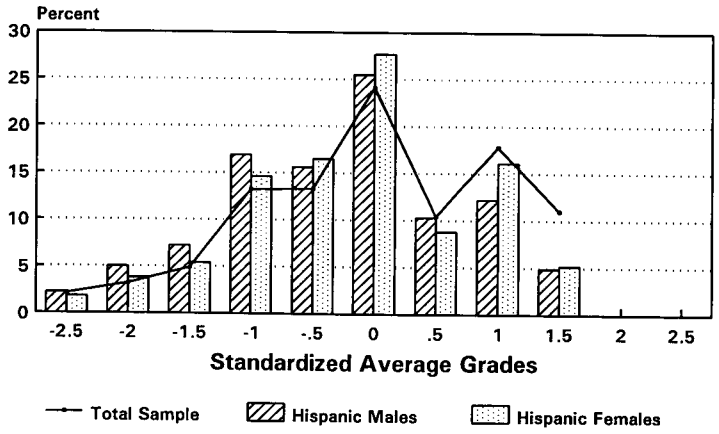
N = 361mal;331fem;20,846 tot

Average Grades Distribution
Blacks and Total Sample



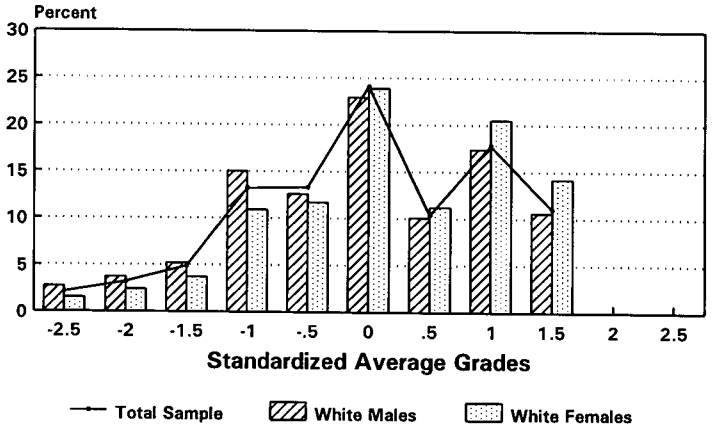
N = 1,305mal;1,367fem;20,846 tot

Average Grades Distribution
Hispanics and Total Sample



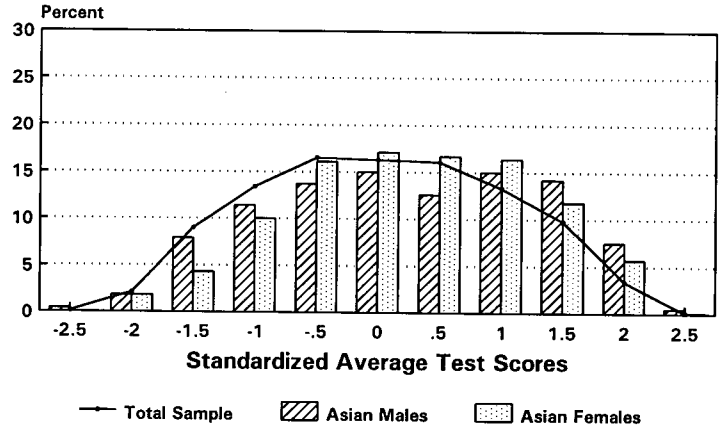
N = 1,021mal;1,008fem;20,846 tot

Average Grades Distribution
Whites and Total Sample



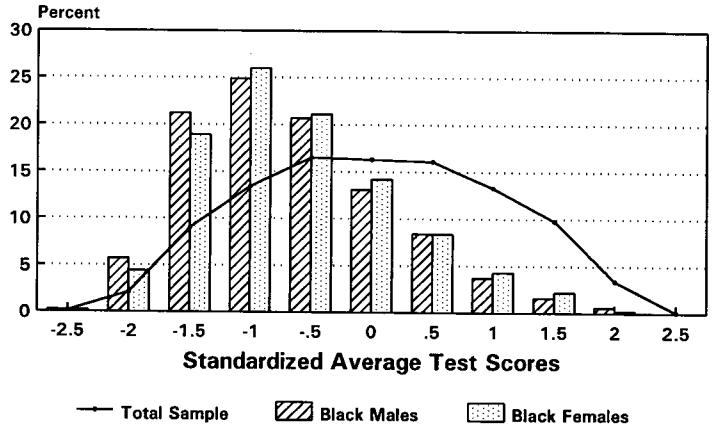
N = 7,730mal;7,723fem;20,846 tot

Average Tests Distribution
Asians and Total Sample



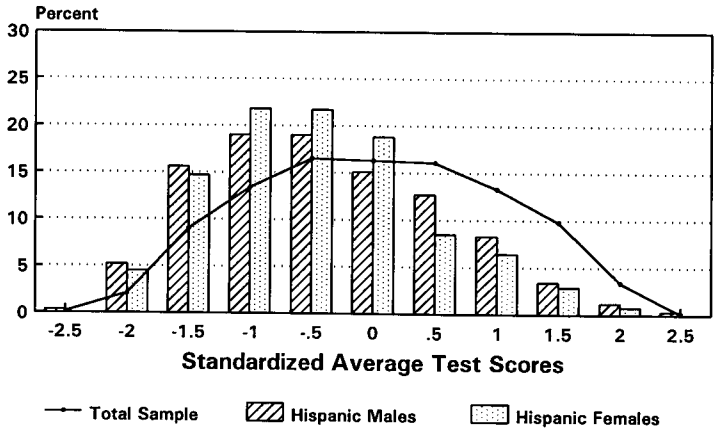
N = 361mal;321fem;20,610 tot

Average Tests Distribution
Blacks and Total Sample



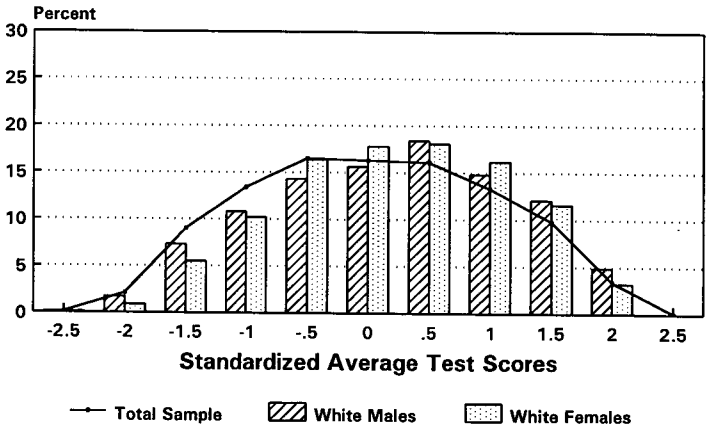
N = 1,291mal;1,360fem;20,610 tot

Average Tests Distribution
Hispanics and Total Sample



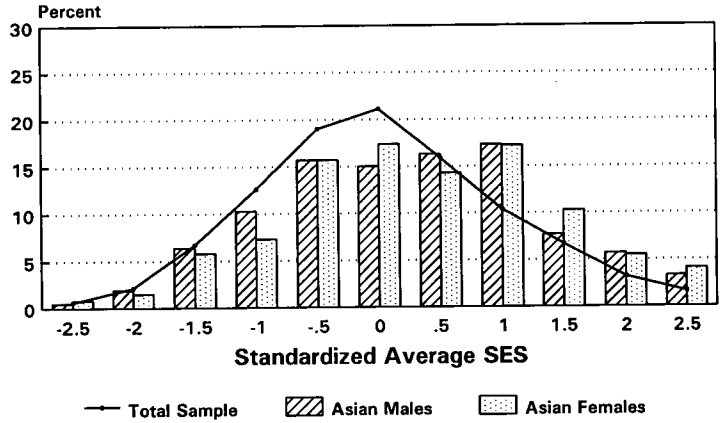
N = 1,010mal;993fem;20,610 tot

Average Tests Distribution
Whites and Total Sample



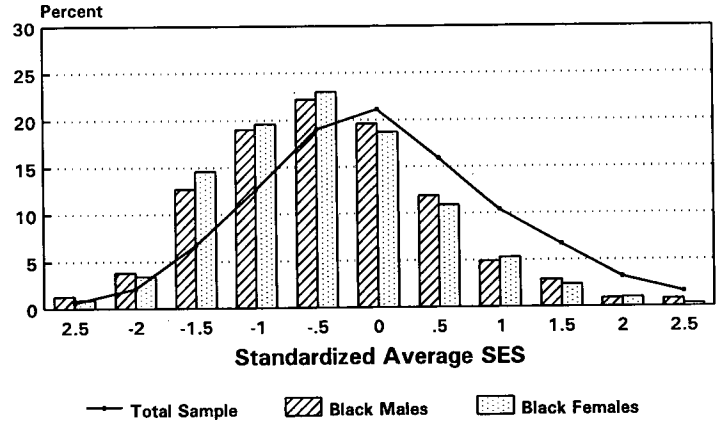
N = 7,652mal;7,621fem;20,610 tot

Average SES Distribution
Asians and Total Sample



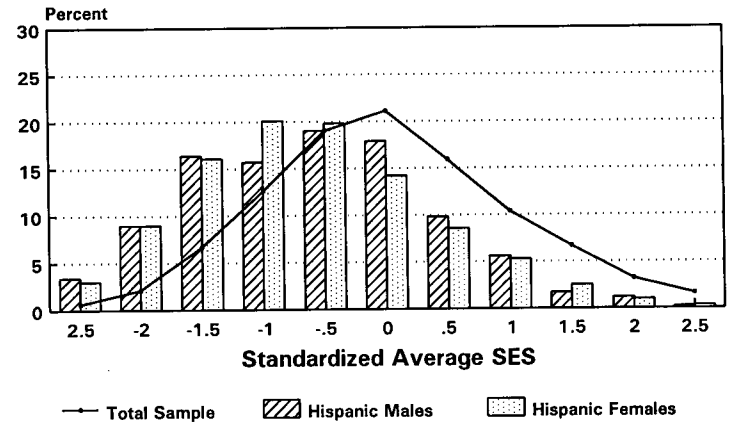
N = 366mal;331fem;21,008 tot

Average SES Distribution
Blacks and Total Sample



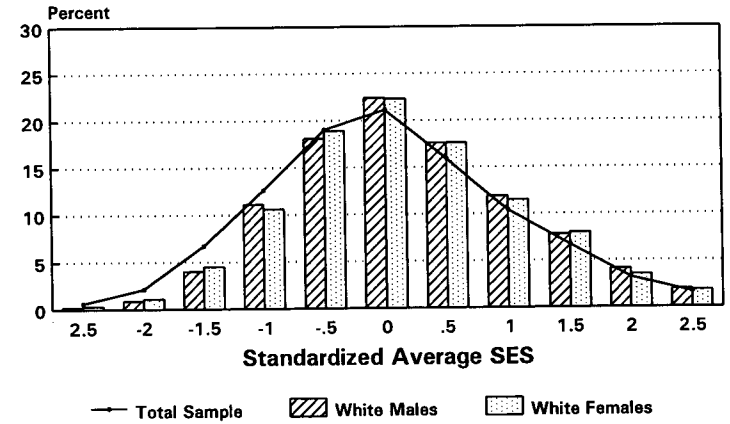
N = 1,325mal;1,379fem;21,008 tot

Average SES Distribution
Hispanics and Total Sample



N = 1,034mal;1,015fem;21,008 tot

Average SES Distribution
Whites and Total Sample



N = 7,792mal;7,765fem;21,008 tot

Linearity

Linearity was assessed with bivariate plots of the variables. The graphics program used to examine linearity could not manage all cases, therefore, where group n's exceeded 1000, a sample of 1000 cases were selected from that group. Grades and tests variables were analyzed separately, therefore there was no need to test for linearity between them. The following combinations were necessary to meet linearity requirements:

(1) Self-esteem and grades,

(2) Self-esteem and tests,

(3) Self-esteem and SES,

(4) Grades and SES,

(5) Tests and SES.

All other variables in the analyses have only two values, therefore, have only linear relationships with the continuous variables. Each of the above five combinations of plots were assessed for each gender/race group. There were no clear non-linear relationships in the plots, therefore, there was no need to construct non-linear models. Due to the large number of graphs only a sample are included here for presentation (see Figures B-5 to B-9). These graphs consist of a sample of all students including both genders and all ethnic/racial groups.

Figure B-5

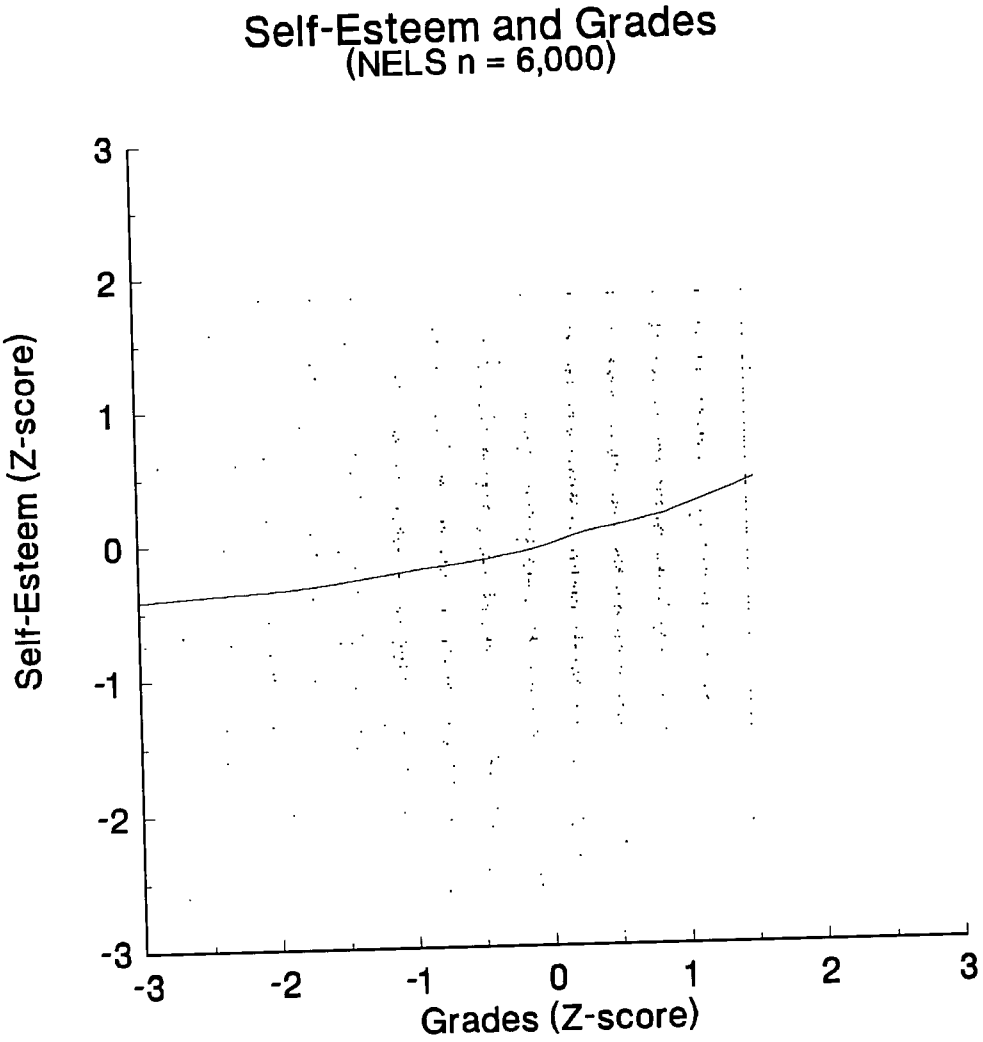

Self-Esteem and Grades
(NELS n = 6,000)
Self-Esteem (Z-score)
3
2
1
0
-1
-2
-3
-3
-2
-1
0
1
2
3
Grades (Z-score)

Figure B-6

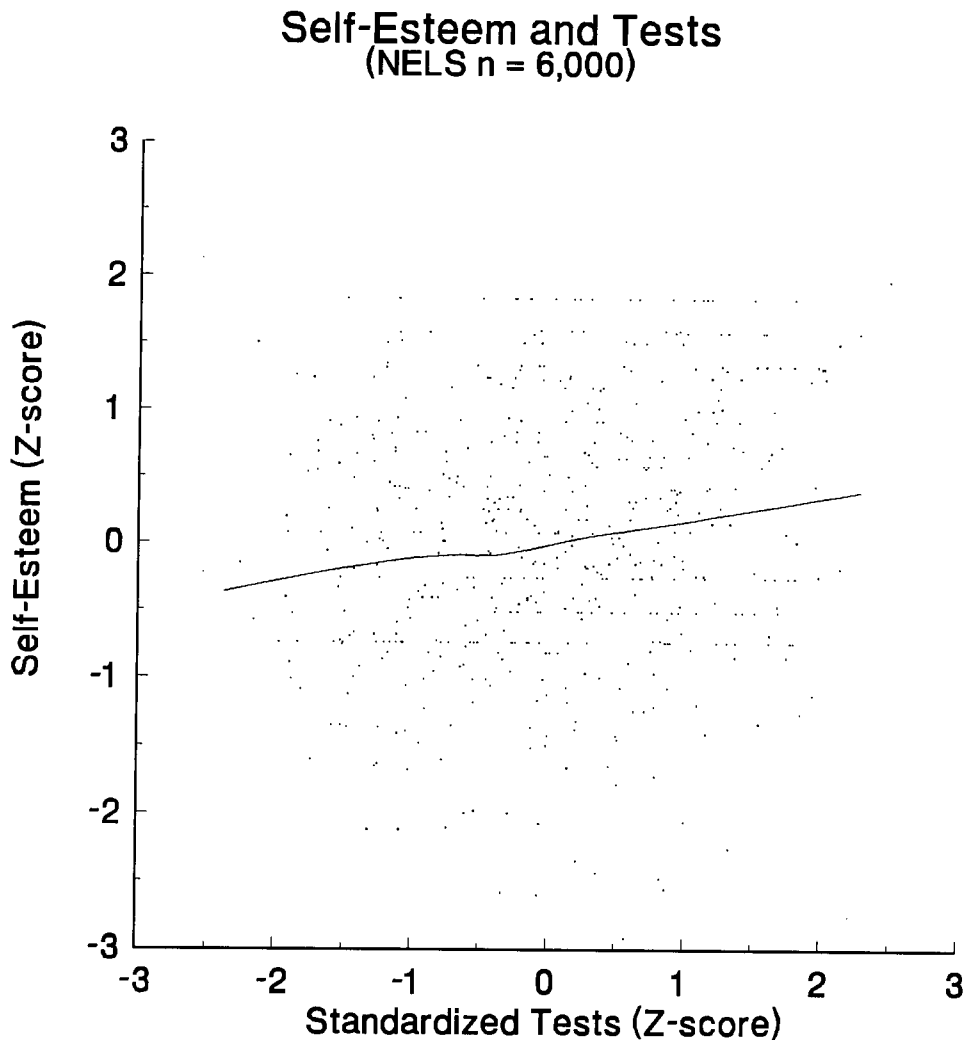

Self-Esteem and Tests
(NELS n = 6,000)
Self-Esteem (Z-score)
3
2
1
0
-1
-2
-3
-3
-2
-1
0
1
2
3
Standardized Tests (Z-score)

Figure B-7

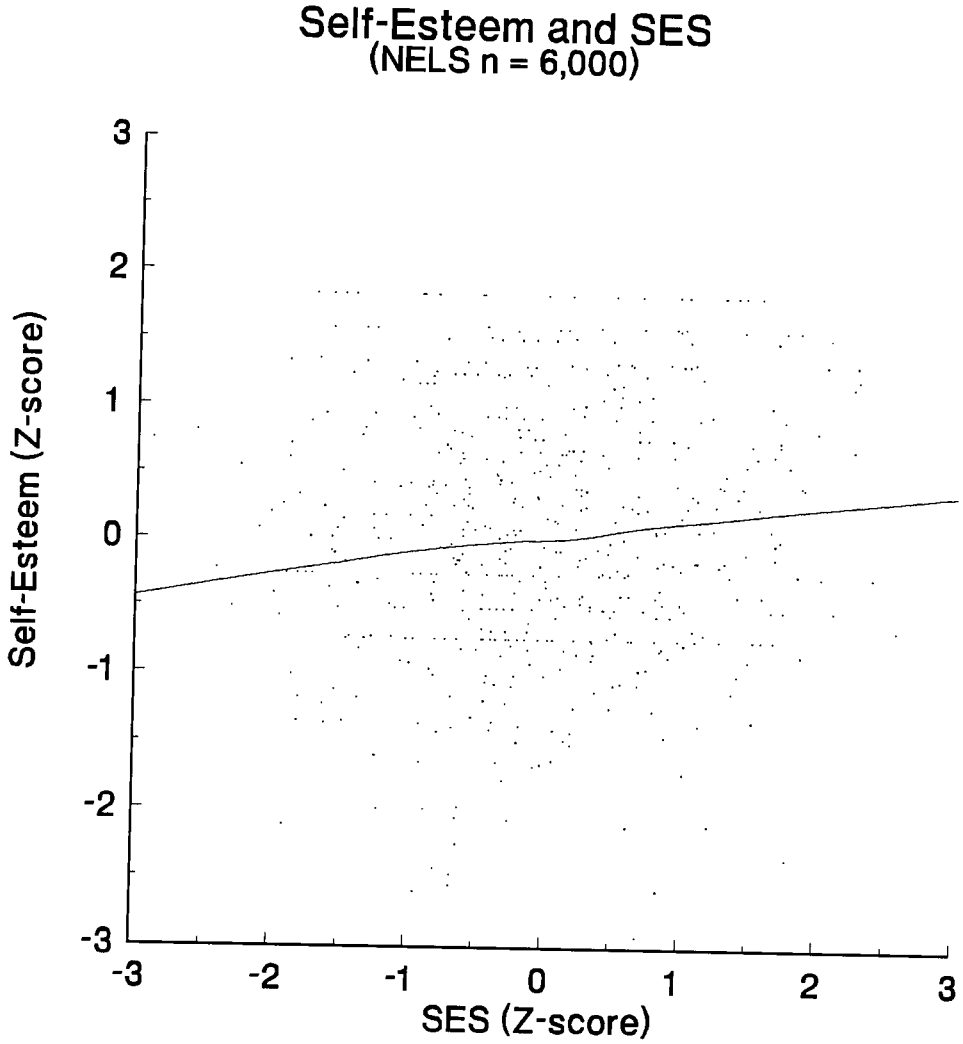

Self-Esteem and SES
(NELS n = 6,000)
Self-Esteem (Z-score)
SES (Z-score)
3
2
1
0
-1
-2
-3
-3
-2
-1
0
1
2
3

Figure B-8

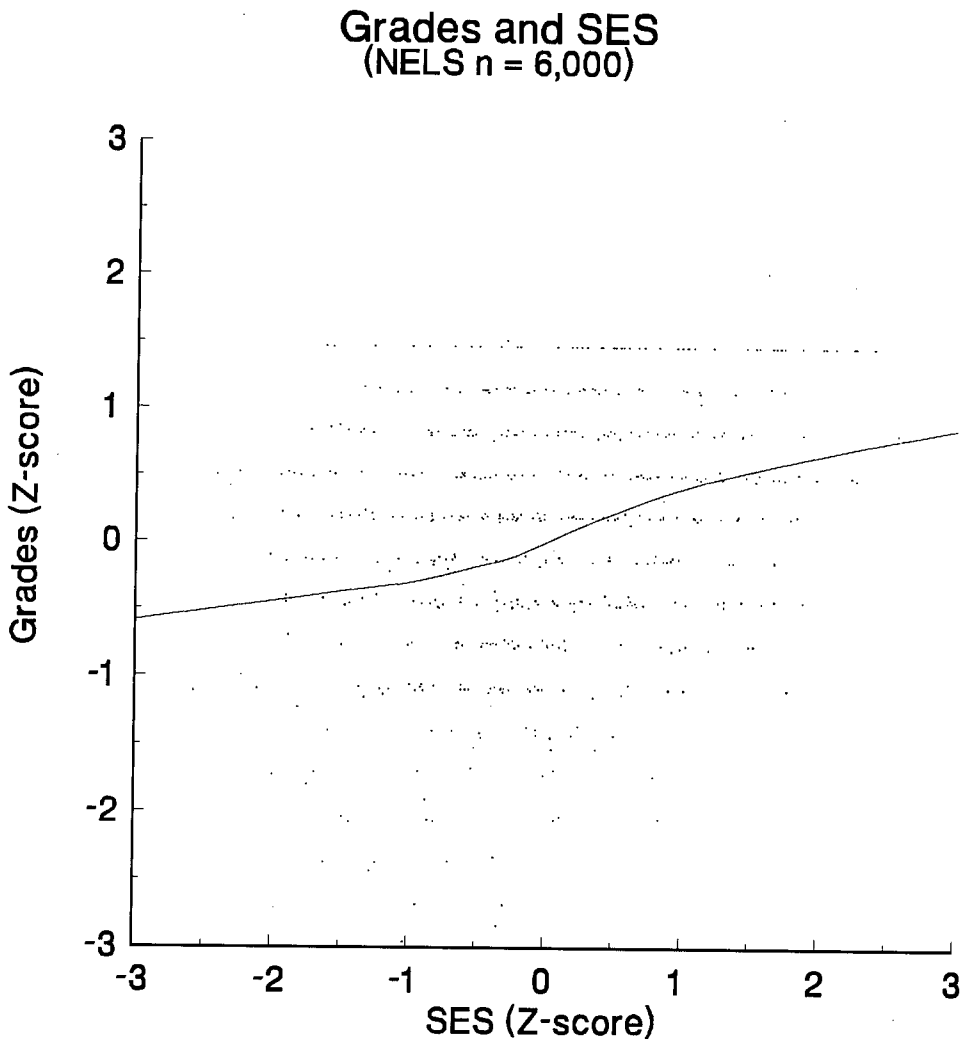
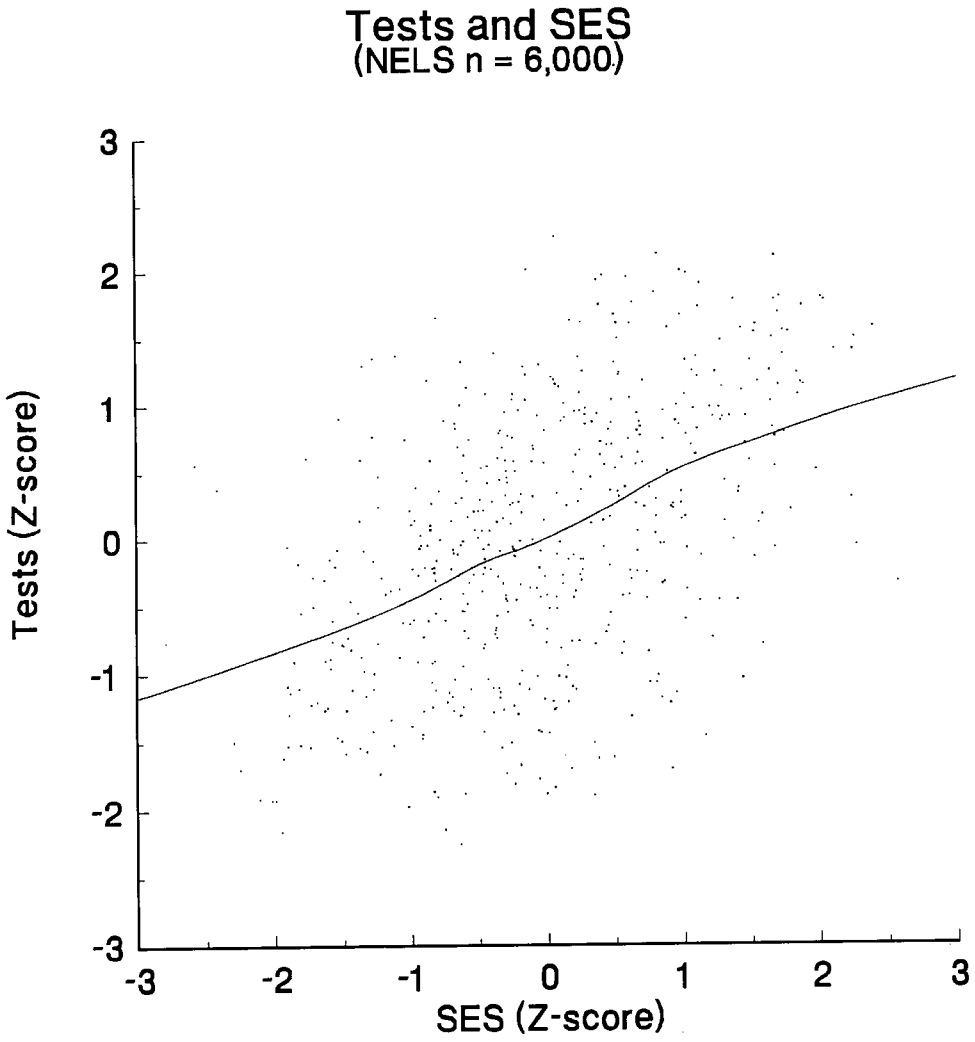

Grades and SES
(NELS n = 6,000)
Grades (Z-score)
SES (Z-score)
3
2
1
0
-1
-2
-3
-3
-2
-1
0
1
2
3

Figure B-9


Tests and SES
(NELS n = 6,000)
Tests (Z-score)
SES (Z-score)
3
2
1
0
-1
-2
-3
-3
-2
-1
0
1
2
3

APPENDIX C: DETAILED METHODS AND PRELIMINARY ANALYSES OF SBPP

This appendix contains details of methods and preliminary analyses for the study from Chapter 5 not presented in that Chapter. This study used data that was collected through the School-Based Prevention Project (SBPP) by the Institute of Health Promotion Research (IHPR) at the University of British Columbia. The main goals of the SBPP were to:

(i) enhance the health and well-being of the student [population] through school-based prevention strategies; and

(ii) assist schools, in collaboration with the surrounding community, in fostering healthy school environments (Ministry of Health, Request for Proposal #105178, Item 3.0).

Data collection of the SBPP began was conducted at three main time points: Fall 1993, Spring 1993, and Spring 1995. It is the Spring 1995 data collection that is used and described in this research.

Methods

Survey Administration, Data Entry, and Verification

Schools were mailed passive consent forms. One school opposed passive consent and a regulation was passed in that school district that all consent should be active, therefore, one of the 16 schools were sent active consent forms. At the appropriate time, participating schools were sent survey protocol forms, questionnaires, and envelopes. All correspondence and mailings were directed to the prevention worker who was then requested to coordinate the administration of the questionnaires.

Two main methods of administration were used. Either the prevention worker entered each classroom and administered the survey or the prevention worker gave the teachers the questionnaires and protocol forms and the teacher administered the questionnaires. Students with parental consent were given the option to participate in the survey. Most students were given an hour to complete the questionnaire. Survey administrators were requested to bundle the questionnaires by classroom, and include a record of

the number of students present, the number of students with parental consent, and the number of students completing the questionnaire.

Manual data entry was done by a contractor. Verification of the entered data was carried out on a sample of schools. This was done by selecting the first school's data entered and then from that point selecting every third school's data, in order of entry. Of the schools selected, every 10th questionnaire was then selected for verification. Every item of the sampled questionnaires were checked against a hardcopy printout of that school's data. The error rate was calculated by dividing the total number of keystroke errors in the selected verification sample by the total number of keystrokes in the verification sample. This yielded an error rate of less than 1%. Errors, along with out of range values for the entire sample were verified and corrected on raw data files.

Measures

Below are details regarding measures that were used, but not presented in Chapter 5. The means, standard deviations and correlations of all main measures are presented in Tables C-1 and C-2.

Self-esteem. Principle components analyses of the self-esteem items yielded two factors with positively worded items loading on one factor and negatively worded items loading on the other factor (see Table C-3a and C-3b). As discussed in Chapter 5, the scale is used as a unidimensional scale given that the two factors appear to be more of response style to negatively worded items rather than a conceptual difference. Cronbach's alpha internal consistency scores across groups for the one-factor scale ranged from .70 for Freedom-Love males to .83 for Love-Freedom females (see Table C-4).

Achievement. Self-reported grades were used as a measure of achievement. A single score was derived from the average of the students' self-reported grades in English, Math, Science, Social Studies, and Physical Education. The achievement question was stated as follows:

> What was the grade you received last time you took the following courses?
> a. English
> b. Math
> c. Science
> d. Social Studies
> e. Physical Education (School-Based Prevention Project Questionnaire, 1995, p. 1).

Table C-1

Means and Standard Deviations for Main Variables

Variable	Mean	SD
1. Self-esteem	.005	.987
2. Love-Mastery	-.405	.491
3. Mastery-Love	-.105	.307
4. Love-Freedom	-.413	.493
5. Freedom-Love	-.076	.265
6. Gender	.018	.499
7. Grade level	-.184	1.372
8. SES	.011	.985
9. GPA	.037	.981
10. Dadlov	.023	.986
11. Momlov	.027	.986

Table C-2

Correlations for Predictor and Outcome Variables

	Product-Moment Correlation									
Variable	1	2	3	4	5	6	7	8	9	10
1. Self-esteem	1.000									
2. Love-Mastery	.108	1.000								
3. Mastery-Love	.084	-.284	1.000							
4. Love-Freedom	-.127	-.692	-.288	1.000						
5. Freedom-Love	-.061	-.237	-.099	-.241	1.000					
6. Gender	-.207	(.015)	-.053	.039	(-.037)	1.000				
7. Grade level	.040	(.013)	.073	-.044	(-.028)	(.014)	1.000			
8. SES	.092	.068	(.019)	-.041	-.072	-.047	(.010)	1.000		
9. GPA	.195	.182	.103	-.158	-.164	.098	(.021)	.195	1.000	
10. Dadlov	.333	.146	(.029)	-.109	-.106	-.064	-.046	.123	.173	1.000
11. Momlov	.319	.130	(.027)	-.098	-.092	(-.007)	(-.012)	.085	.153	.655

Note: Correlations computed with pairwise deletion of missing data. Minimum n= 6,207. All correlations significant at p<.001, except those in brackets - ( ).

Table C-3a

Principle Components Analyses Results for Self-Esteem Items with Varimax Rotation

	Love-Mastery				Mastery-Love			
	Males		Females		Males		Females	
	F_1	F_2	F_1	F_2	F_1	F_2	F_1	F_2
Feel Good	.85	.17	.82	.16	.88	.13	.82	.12
Person Worth	.84	.13	.84	.11	.84	.11	.85	.10
Able to do	.70	.04	.71	.08	.77	-.03	.75	.03
Satisf. w/self	.80	.23	.83	.17	.83	.17	.82	.20
Feel Useless	-.03	.85	.00	.89	-.07	.80	-.06	.83
No Good	.17	.83	.27	.82	.13	.85	.17	.87
Not Proud	.31	.64	.54	.43	.21	.77	.44	.57
Eigenvalue	3.19	1.42	3.40	1.26	3.11	1.75	3.24	1.47
Pct of Var.	45.60	20.40	48.50	18.00	44.50	25.00	46.20	21.00

Note: F_1 = Factor 1; F_2 = Factor 2.

Table C-3b

Principle Components Analyses Results for Self-Esteem Items with Varimax Rotation, Continued

	Love-Freedom				Freedom-Love			
	Males		Females		Males		Females	
	F_1	F_2	F_1	F_2	F_1	F_2	F_1	F_2
Feel Good	.86	.17	.85	.18	.89	-.11	.87	.11
Person Worth	.87	.13	.83	.13	.92	.00	.88	.11
Able to do	.74	-.02	.73	.02	.82	-.09	.78	-.08
Satisf. w/self	.81	.23	.82	.25	.89	.06	.81	.26
Feel Useless	-.02	.82	.05	.88	-.17	.82	-.10	.81
No Good	.13	.86	.24	.84	-.04	.90	.14	.86
Not Proud	.26	.72	.55	.42	.11	.87	.24	.72
Eigenvalue	3.22	1.61	3.50	1.24	3.18	2.22	3.16	1.75
Pct of Var.	46.00	23.00	50.00	17.80	45.40	31.80	45.20	24.90

Note: F_1 = Factor 1; F_2 = Factor 2.

Table C-4

Self-Esteem Internal Consistency Values: Gender by RUN Groups

	n	α^*
Love-Mastery Males	1,262	.78
Love-Mastery Females	1,485	.81
Mastery-Love Males	392	.77
Mastery-Love Females	326	.79
Love-Freedom Males	1,253	.79
Love-Freedom Females	1,561	.83
Freedom-Love Males	275	.70
Freedom-Love Females	241	.77
All	6,795	.81

*Cronbach's alpha

Students could choose from the following responses: Don't take, A's, B's, C's, D's, and E's or F's. Each letter grade received a numerical score (e.g., A's = 5). The GPA composite score is comprised of an average of the five subject areas and is standardized so that each student's score is a z-score within the entire sample.

SES. Mother's and Father's level of education were used as a proxy for socioeconomic status. Students were asked: 'Which of the following best describes the highest educational background of your mother (or female guardian)?' and 'Which of the following best describes the highest educational background of your father (or male guardian)?'. Students could then check one of the following responses:

1. never attended school
2. attended or completed elementary school
3. attended high school
4. completed high school
5. attended college/university/trade school
6. completed university
7. don't know (School-Based Prevention Project Questionnaire, 1995, p. 1)

SES was computed by standardizing the mean of the Mother's and Father's standardized education scores. While a more accurate proxy's for SES was preferred, more detailed income-related items were not permitted on the questionnaire.

Parental love. Items were constructed to tap various aspects of love according to the definition in 1 Corinthians 13:4-7 (Christian Bible) that describes love as including several characteristics. These characteristics and their corresponding items are as follows: patience (item a), kindness (item b), perseverance (item c), sincerity (item d,e), protectiveness (item g), hopefulness (item j), trustfulness (item h,i), and an absence of envy (item l), boasting (item k), arrogancy (item l), rudeness (item d), self-centerdness (item m), quick-temperdness (item q), or a counter of wrongs (item p). While there was some overlap in the items and their correspondence to the definition of love, the aim was to capture the essence of the definition and also, through factor analyses and internal consistency analyses, to refine the measure from this piloting stage.

The love question was stated as follows:

> How true are the following statements for your mother (or female guardian), father (or male guardian), and your favourite adult (an adult other than your parents that you really like)? If you do not have one of these adults in your life, draw an X through their column. For each sentence, circle a number for Mother, Father, and Other Adult. The numbers mean the following:
> 1 = Never, 2 = Rarely True, 3 = Sometimes True, 4 = Usually True, 5 = Always True
>
> a. Is there for me to talk to, even when I mess up.
> b. Considers my feelings when I make a mistake.
> c. If I need it, will take time just to be with me.
> d. Will change rules if they think they are unfair.
> e. Is open and honest with me about their feelings.
> f. Is happy for me when I have done something well.
> g. Is a person I go to when I am in trouble.
> h. Points out what is good about me.
> i. Trusts me.
> j. Likes me to make some of my own decisions about my life.
> m. Knows what is happening in my life.
> n. Has fun with me (School-Based Prevention Project Questionnaire, 1995, p. 12).

Principal components analyses analysis with varimax rotation was run for each of the eight groups (four RUN types by two gender groups) to determine the underlying factor structure of the parental love measures. This was followed by testing the internal consistency of each of the factors using Cronbach's alpha. For both Momlov and Dadlov variables and for the eight groups, all items loaded onto one factor (see Tables C-5 and C-6). Internal consistency scores were very high and varied little, with both variables having an alpha ranging from .94 to .96 (see Tables C-7 and C-8).

Reaction to Unmet Needs. The Reaction to Unmet Needs (RUN) scale (based on Horney's theory of self-actualization, 1950) includes the following six statements:

> 'Would you rather...
> 1. Be the best at everything and not be liked by other kids, OR
> 2. Be average at everything and be liked by other kids.
>
> Would you rather...
> 1. Be the best at everything and have to work very hard in life, OR
> 2. Be average at everything and not have to work very hard in life.
>
> Would you rather...
> 1. Have to work very hard in life and be liked by other kids, OR
> 2. Not have to work very hard in life and not be liked by other kids' (School Based Prevention Project Questionnaire, 1995, p 11).

Table C-5

Principle Components Analyses Results for Momlov Items with Varimax Rotation[1]

	RUN Types							
	Love-Mastery		Mastery-Love		Love-Freedom		Freedom-Love	
	Male	Fem	Male	Fem	Male	Fem	Male	Fem
Q57ma[2]	.81	.84	.81	.83	.82	.83	.83	.86
Q57mb	.82	.83	.83	.83	.84	.83	.87	.85
Q57mc	.80	.82	.83	.80	.85	.81	.86	.86
Q57md	.72	.74	.74	.74	.72	.74	.76	.76
Q57me	.71	.73	.78	.77	.77	.74	.81	.82
Q57mf	.72	.70	.79	.72	.74	.74	.84	.77
Q57mg	.77	.81	.82	.79	.76	.81	.81	.78
Q57mh	.84	.81	.87	.82	.84	.83	.89	.80
Q57mi	.77	.78	.79	.77	.77	.77	.82	.81
Q57mj	.75	.75	.79	.77	.74	.76	.81	.78
Q57mm	.70	.74	.73	.77	.70	.76	.78	.79
Q57mn	.80	.83	.82	.85	.78	.81	.78	.82
Eigenvalue	7.09	7.35	7.73	7.51	7.28	7.46	8.12	7.83
Pct of Var.	59.10	61.30	64.40	62.60	60.70	62.20	67.70	65.30

[1] All items listed loaded on one factor for each group.
[2] Letters correspond to items listed under the parental love measure (m = Mom)

Table C-6

Principle Components Analyses Results for Dadlov Items with Varimax Rotation[1]

	RUN Types							
	Love-Mastery		Mastery-Love		Love-Freedom		Freedom-Love	
	Male	Fem	Male	Fem	Male	Fem	Male	Fem
Q57da[2]	.82	.83	.81	.83	.83	.82	.86	.86
Q57db	.83	.84	.84	.84	.85	.85	.88	.84
Q57dc	.82	.82	.84	.82	.85	.83	.88	.88
Q57dd	.74	.75	.73	.75	.77	.75	.77	.80
Q57de	.73	.69	.79	.71	.76	.74	.82	.79
Q57df	.74	.71	.79	.77	.77	.76	.80	.79
Q57dg	.79	.81	.83	.82	.77	.79	.81	.82
Q57dh	.82	.80	.87	.82	.83	.83	.87	.81
Q57di	.79	.74	.78	.75	.78	.77	.82	.79
Q57dj	.74	.72	.69	.73	.71	.75	.79	.79
Q57dm	.74	.75	.74	.74	.72	.77	.79	.80
Q57dn	.81	.81	.83	.79	.80	.81	.77	.86
Eigenvalue	7.36	7.22	7.62	7.34	7.47	7.50	8.11	8.05
Pct of Var.	61.30	60.20	63.50	61.20	62.20	62.50	67.60	67.10

[1] All items listed loaded on one factor for each group.
[2] Letters correspond to items listed under parental love measure (d = Dad)

Table C-7

Momlov Internal Consistency Values: Gender by RUN Groups

	n	α*
Love-Mastery Males	1,096	.94
Love-Mastery Females	1,379	.94
Mastery-Love Males	320	.95
Mastery-Love Females	295	.94
Love-Freedom Males	1,075	.94
Love-Freedom Females	1,456	.94
Freedom-Love Males	218	.96
Freedom-Love Females	198	.95
All	6,037	.94

*Cronbach's alpha

Table C-8

Dadlov Internal Consistency Values: Gender by RUN Groups

	n	α^*
Love-Mastery Males	1,054	.94
Love-Mastery Females	1,309	.94
Mastery-Love Males	307	.95
Mastery-Love Females	273	.94
Love-Freedom Males	1,012	.94
Love-Freedom Females	1,373	.95
Freedom-Love Males	205	.96
Freedom-Love Females	186	.96
All	5,719	.95

*Cronbach's alpha

These items attempt to measure an aspect of personality in terms of moving towards, away, and against other people. Statements are presented in pairs, forcing students to choose between one style or another. For example, for the first pair of items, students that check item number one are choosing mastery over love and receive a score of one towards their mastery tally. Alternatively, students that check item number two are choosing love over mastery and receive a score of one towards their love tally.

With all three pairs of items, students may have a total of up to three points (e.g., two for mastery, one for love, and zero for freedom). Students are classified according to their highest and second highest scores, so that if a student has their highest score for mastery and second highest for love, then they are classified as being a mastery-love type. Pilot testing indicated that most students fall into one of four classifications: Mastery-Love, Love-Mastery, and Love-Freedom. Combinations of Mastery-Freedom were rare and not expected given the opposite nature of these two styles.

Preliminary Analyses

Analyses were conducted to eliminate outliers and to examine the assumptions of normality and linearity. The outlier analysis was conduced on the entire sample (N=7,518). Because the data is grouped data (there are grouping variables in the regression and HLM equations) the normality and linearity analyses were conducted for each of the eight groups. A summary of the results of these analyses are presented below.

Outliers

Scores beyond three standard deviations from the mean are traditionally considered to be outliers. As mentioned in Appendix B, with large data sets it is expected to have many scores beyond three standard deviations (Tabachnick & Fidell, 1989). To be consistent with the NELS analyses, the limit for outliers in this sample will also be set to plus or minus four standard deviations.

Self-Esteem

Standardized self-esteem composite scores ranged from -4.06486 to 2.96606. With an outlier limit of |4.00|, 1 case, a grade 12 male, was deleted because of its outlier status. This case was excluded from all subsequent analyses. This brought the range of the self-esteem scores to -3.39614 to 2.96606.

GPA and SES

The range of z-scores for GPA was from -4.59099 to 1.78086. One outlier, a grade 9 male, was dropped to bring the scores within the 4 standard deviation range. This resulted in a GPA z-score range of -3.81430 to 1.78086. The range of scores for SES was from -3.45688 to 1.63208, which is within the outlier limit, therefore, no students were deleted for out of range scores in SES.

Incomplete Self-Esteem Inventories

As discussed in Appendix B, only cases with complete self-esteem data were selected for the study. There were 548 students eliminated from the study because of incomplete self-esteem data. These students were approximately 15% of a standard deviation lower on self-esteem, Father's love, Mother's love, and SES than the rest of the sample. They were also 33% of a standard deviation lower on GPA.

Multiple regression analyses with and without these 548 students were conducted with self-esteem as the predicted variable and GPA and SES as the predictor variables. The beta weights for each set of analyses did not differ than more than .01, therefore, eliminating these students did not change the results of the main analyses. It should be noted, however, that conducting the multiple regression analyses with only the 548 students with incomplete data did yield different results for the Freedom-Love types. Freedom-Love types with incomplete data had a GPA beta weight of -.41 compared to -.08 for those with complete data. This shows that for this group, those excluded had a stronger negative relationship between self-esteem and achievement than those included in the main analyses. While this group did not influence the results of the main analyses, it does show another aspect of this research that may be studied in more detail in the future.

Normality

As discussed in Appendix B, with large sample sizes it is the appearance of the graphed distributions that is important and the extent that the skewness and kurtosis values deviate from zero rather than the values arrived at by dividing by the standard errors (Tabachnick & Fidell, 1989).

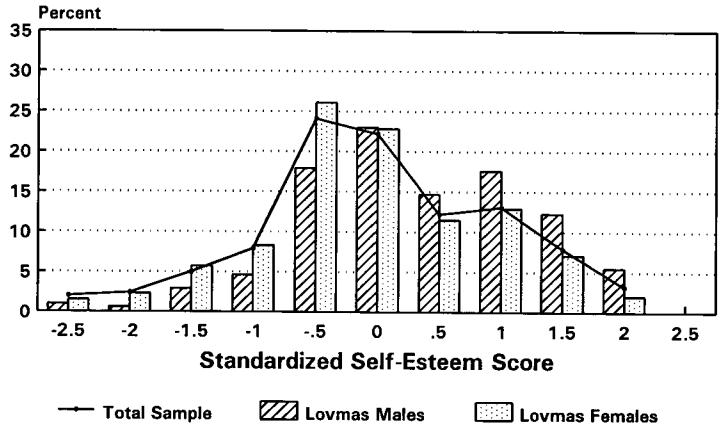
Figure C-1 shows the self-esteem distribution for each RUN Type/gender group with a comparison line including all eight groups. These graphs indicate only minor deviations from normality. The largest deviation from normality is with Mastery-Love males and females where the distribution is appears bimodal. This is also a relatively small sample, therefore, caution will be taken in interpreting the results of this group. There is also a deviation from normality with Freedom-Love females where there is a peak at -.5 standard deviations, however, the variations do not appear large enough to warrant concern.

The distributions for GPA are relatively normal except for Mastery-Love males and females (see Figure C-2), where there is a negative skew. Again, results with this group will be interpreted with caution.

The distributions for SES (see Figure C-3) are somewhat normal across the groups. This rough appearance to these distributions is likely because of the limited proxy that was available for SES (mean Mother and Father education).

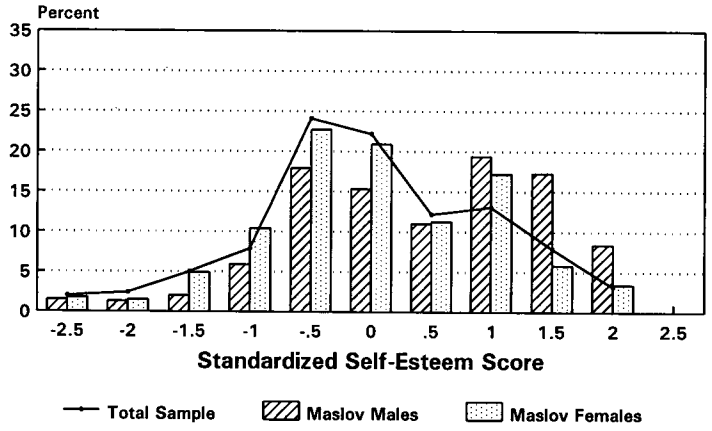
The Mother's and Father's Love distributions in Figures C-4 and C-5 are similar across all groups in the degree of their negative skew. However, there does appear to be sufficient spread in the variables to conduct sufficient analyses with these variables.

Self-Esteem Distribution
Lovmas and Total Sample



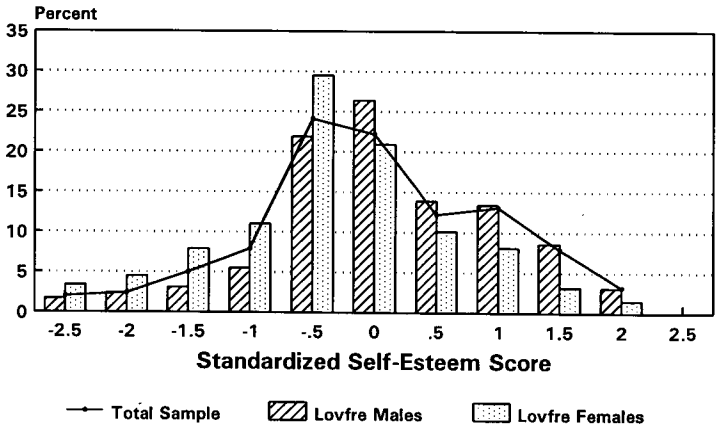
N = 1,262mal;1,484fem;6,792tot

Self-Esteem Distribution
Maslov and Total Sample



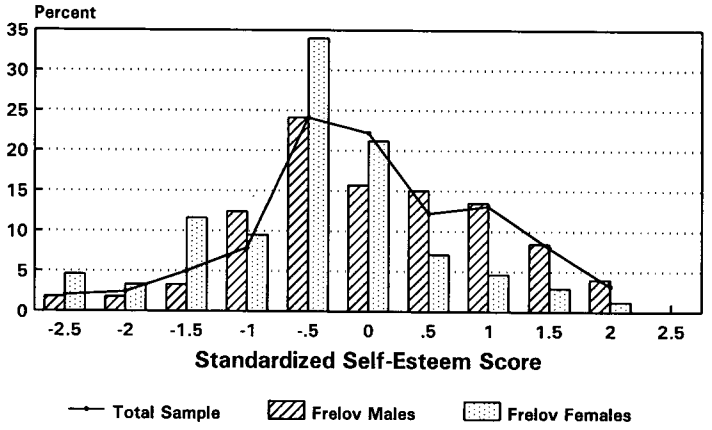
N = 392mal;326fem;6,792tot

Self-Esteem Distribution
Lovfre and Total Sample



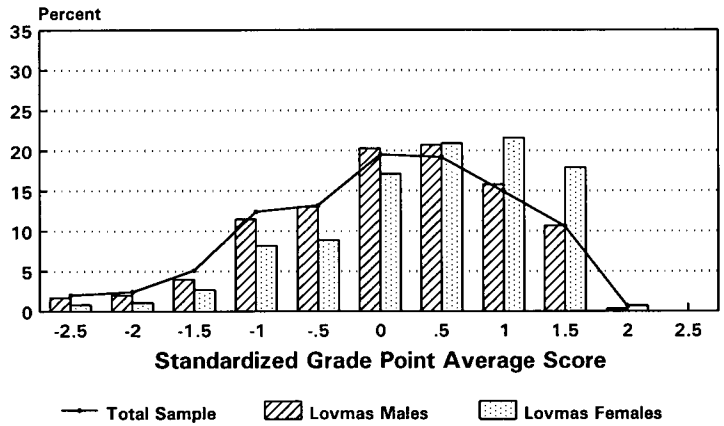
N = 1,252mal;1,561fem;6,792tot

Self-Esteem Distribution
Frelov and Total Sample



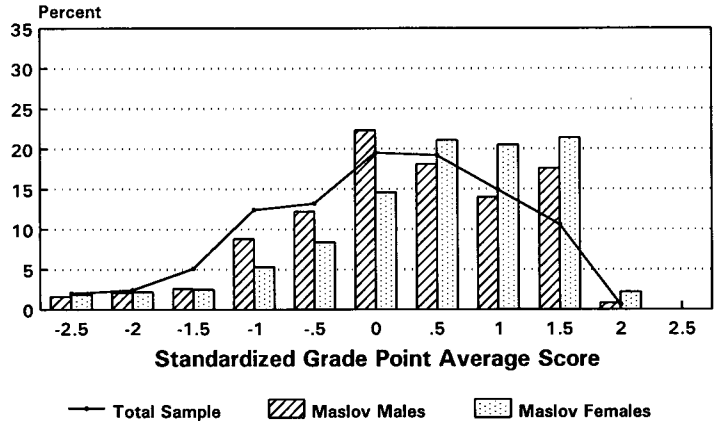
N = 274mal;241fem;6,792tot

GPA Distribution
Lovmas and Total Sample



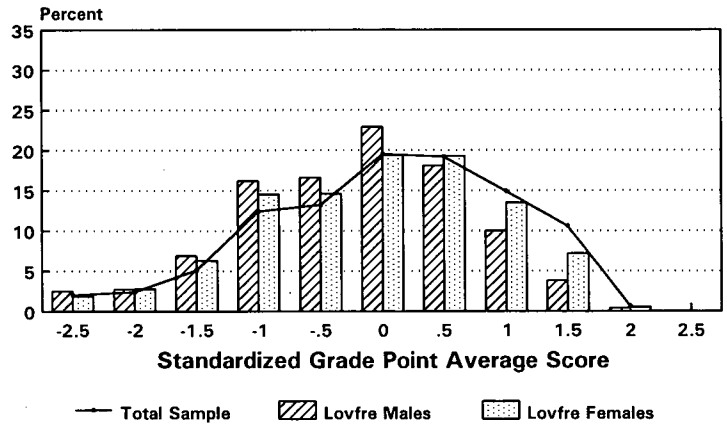
N = 1,249mal;1,476fem;6,726tot

GPA Distribution
Maslov and Total Sample



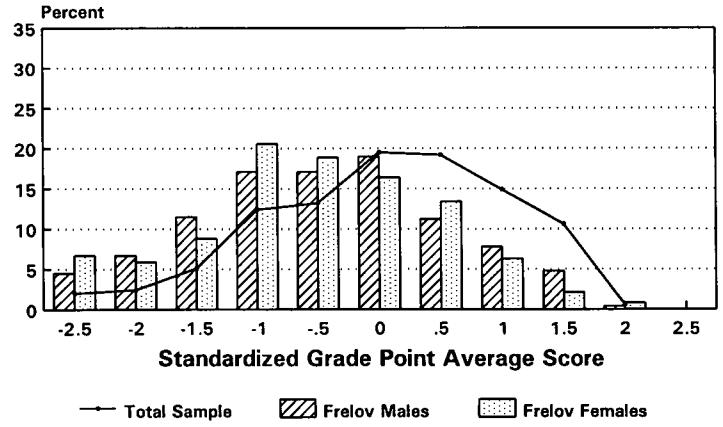
N = 386mal;322fem;6,726tot

GPA Distribution
Lovfre and Total Sample



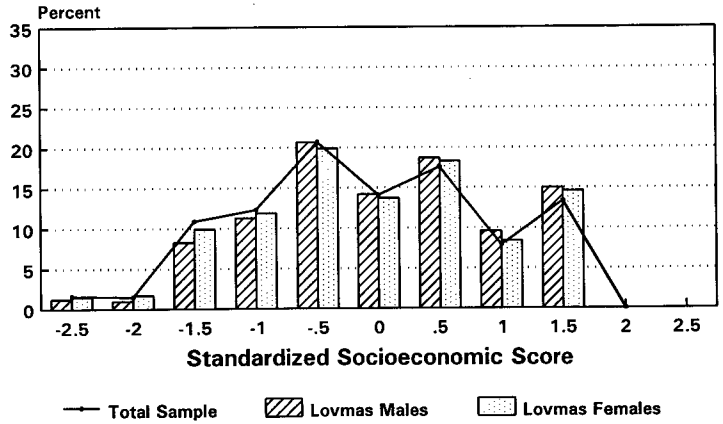
N = 1,236mal;1,550fem;6,726tot

GPA Distribution
Frelov and Total Sample



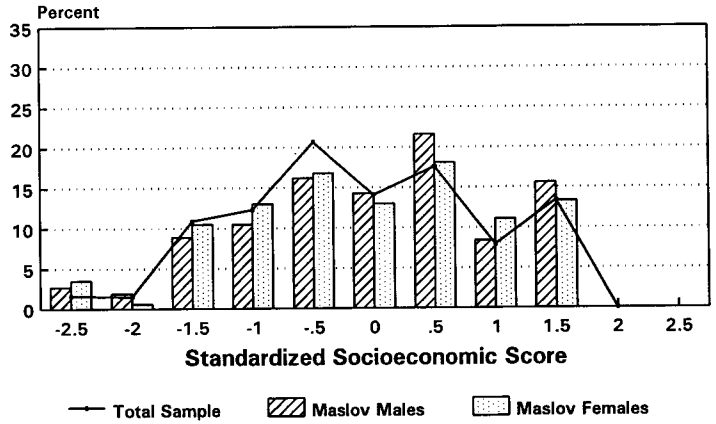
N = 269mal;238fem;6,726tot

SES Distribution
Lovmas and Total Sample



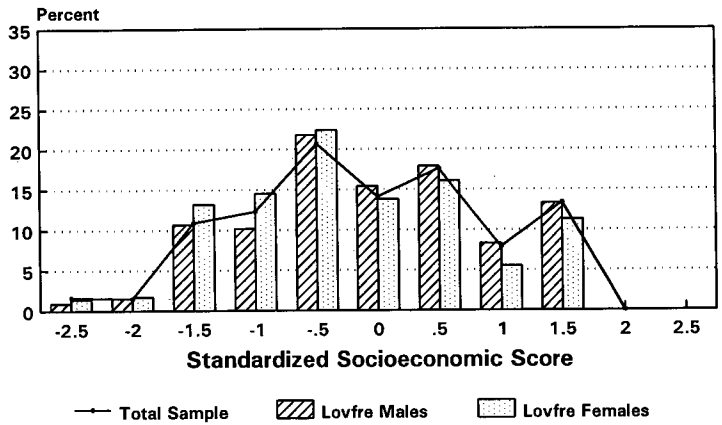
N = 1,201mal;1,434fem;6,447tot

SES Distribution
Lovmas and Total Sample



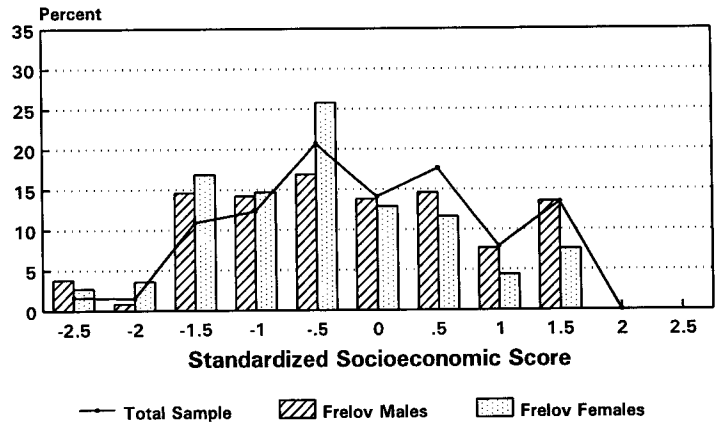
N = 371mal;315fem;6,447tot

SES Distribution
Lovfre and Total Sample



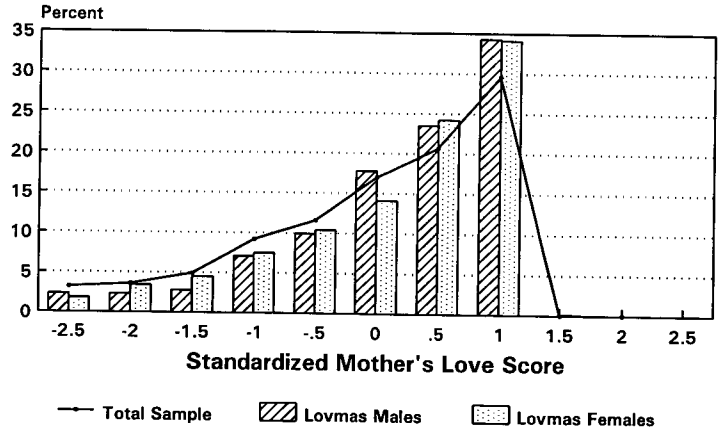
N = 1,160mal;1,481fem;6,447tot

SES Distribution
Frelov and Total Sample



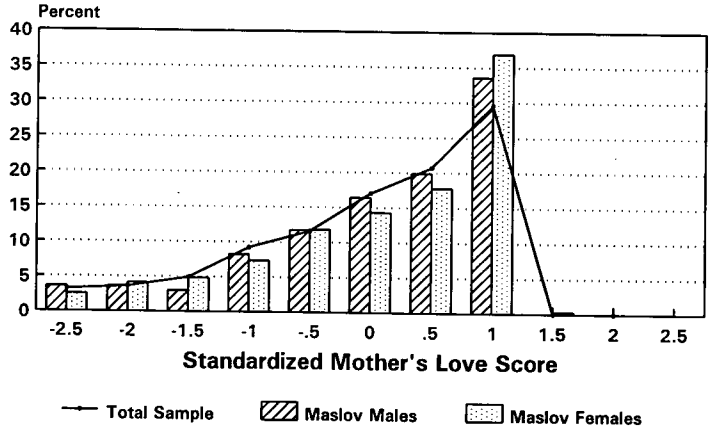
N = 260mal;225fem;6,447tot

Mother's Love Distribution
Lovmas and Total Sample



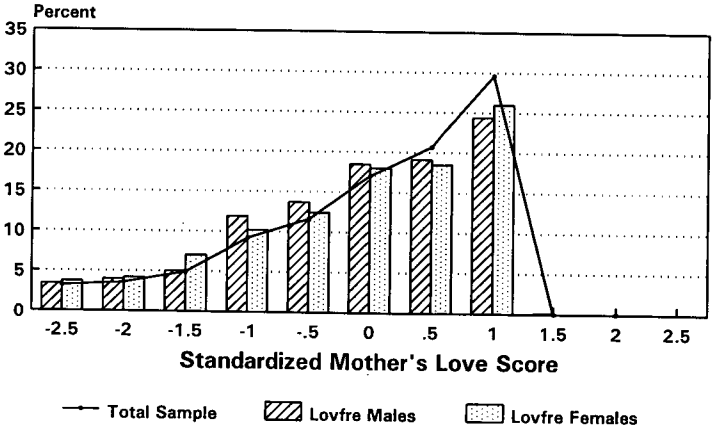
N = 1,180mal;1,436fem;6,456tot

Mother's Love Distribution
Maslov and Total Sample



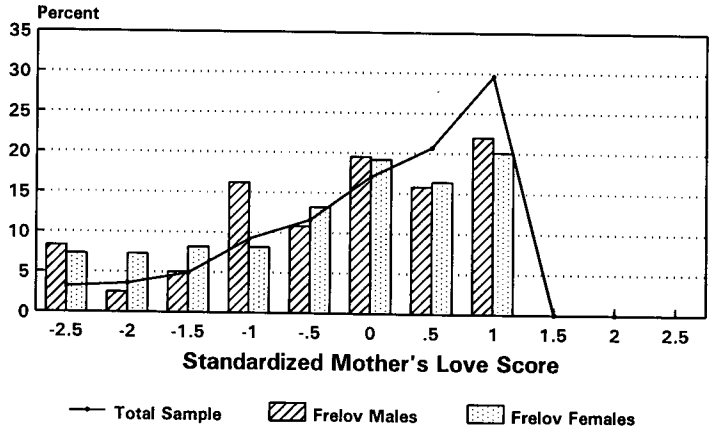
N = 366mal;314fem;6,456tot

Mother's Love Distribution
Lovfre and Total Sample



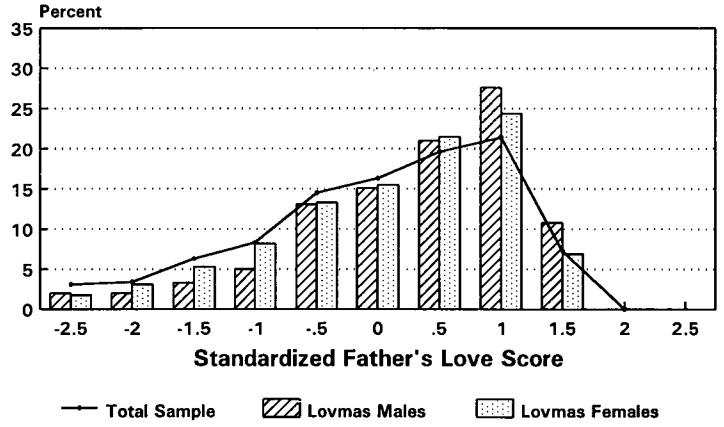
N = 1,181mal;1,519fem;6,456tot

Mother's Love Distribution
Frelov and Total Sample



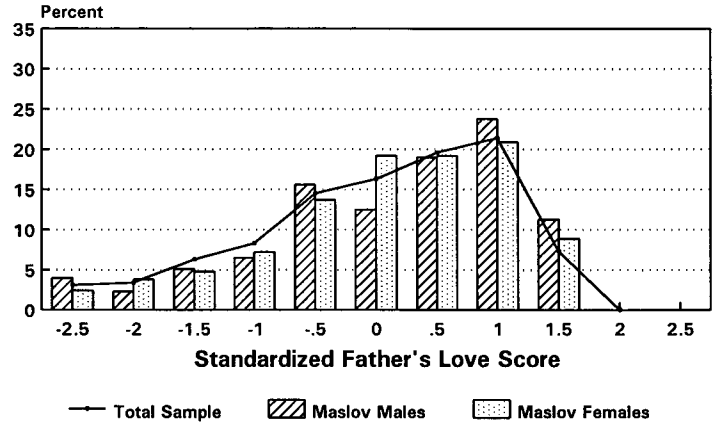
N = 241mal;219fem;6,456tot

Father's Love Distribution
Lovmas and Total Sample



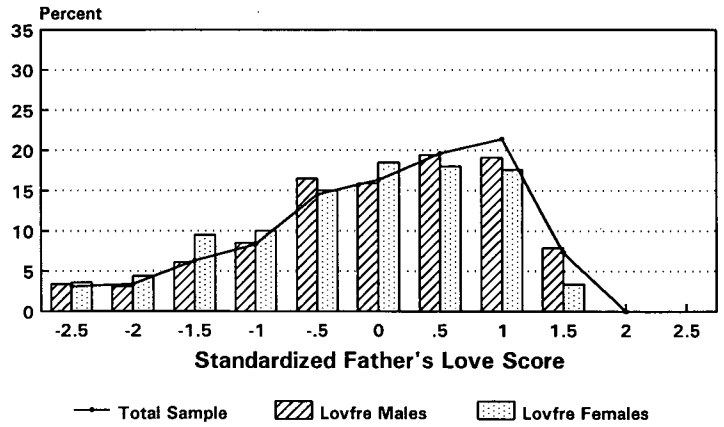
N = 1,136mal;1,383fem;6,146tot

Father's Love Distribution
Maslov and Total Sample



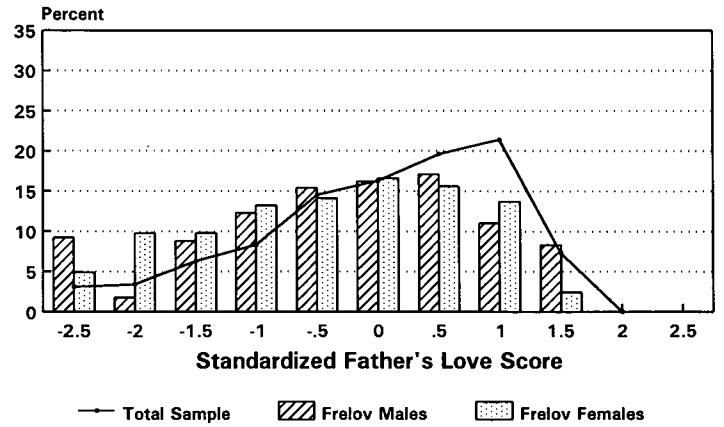
N = 353mal;292fem;6,146tot

Father's Love Distribution
Lovfre and Total Sample



N = 1,124mal;1,425fem;6,146tot

Father's Love Distribution
Frelov and Total Sample



N = 228mal;205fem;6,146tot

Linearity

Linearity was assessed with bivariate plots of the variables. The graphics program used to examine linearity could not manage all cases, therefore, where group n's exceeded 1000, a sample of 1000 cases were selected from that group. The following combinations were necessary to meet linearity requirements:

(1) Self-esteem and GPA,

(2) Self-esteem and SES,

(3) Self-esteem and Dad's love,

(4) Self-Esteem and Mom's love,

(5) GPA and Dad's Love,

(6) GPA and Mom's Love,

(7) GPA and SES,

(8) Dad's Love and Mom's Love

(9) Dad's Love and SES,

(10) Mom's Love and SES.

All other variables in the analyses have only two values, therefore, have only linear relationships with the continuous variables. Each of the above 10 combinations of plots were assessed for each RUN Type/gender group. Due to the large number of graphs (80), these are not included here, but are available upon request. Figures C-6 to C-15 present sample plots.

Only three group plots (not shown here) indicated nonlinear relationships. The first two were with Freedom-Love males in the relationship between GPA/Father's love and GPA/Mother's love. For both plots there is a positive relationship between these two sets of variables from negative values of parental love to -1, then flattens out somewhat from -1 and beyond. However, there were only a small number of cases at the lower end of the distribution which may have altered the linearity plot. To assess

Figure C-6

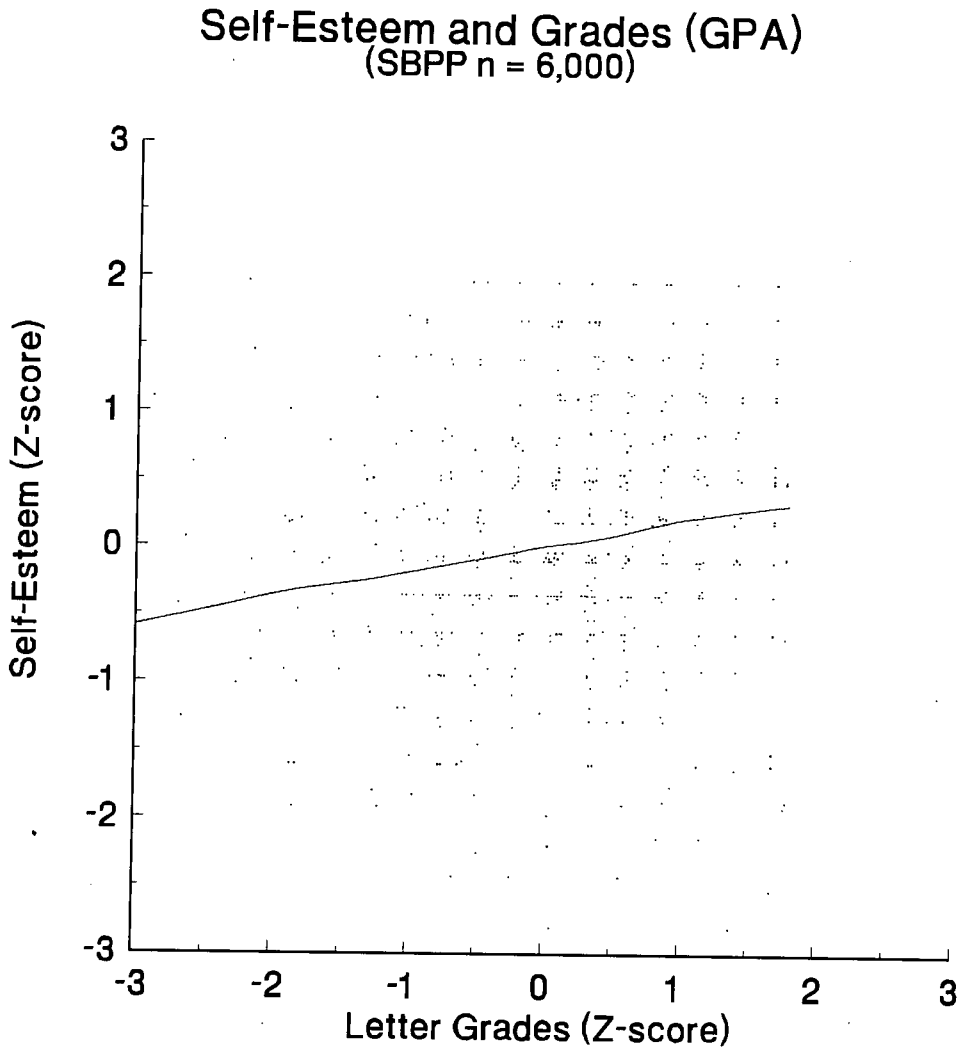

Self-Esteem and Grades (GPA)
(SBPP n = 6,000)
Self-Esteem (Z-score)
3
2
1
0
-1
-2
-3
-3
-2
-1
0
1
2
3
Letter Grades (Z-score)

Figure C-7

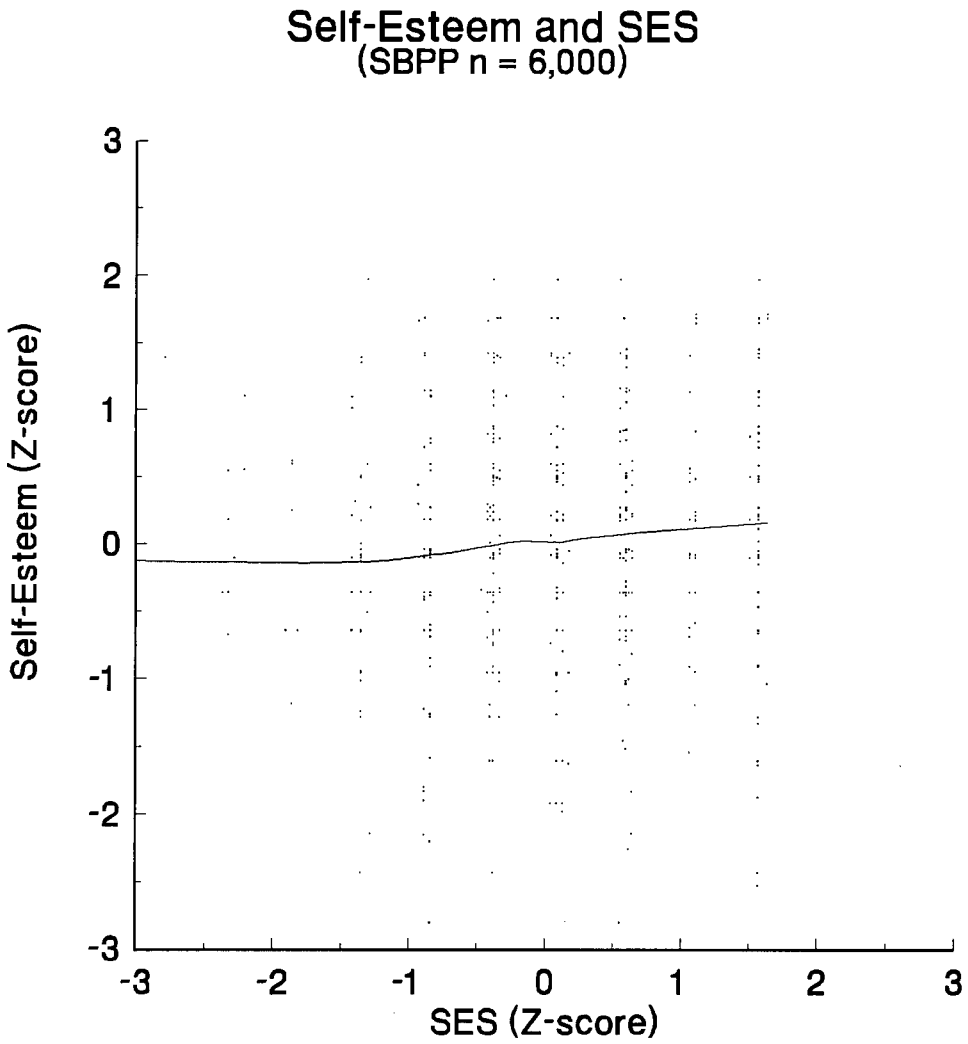

Self-Esteem and SES
(SBPP n = 6,000)
Self-Esteem (Z-score)
3
2
1
0
-1
-2
-3
-3
-2
-1
0
1
2
3
SES (Z-score)

Figure C-8

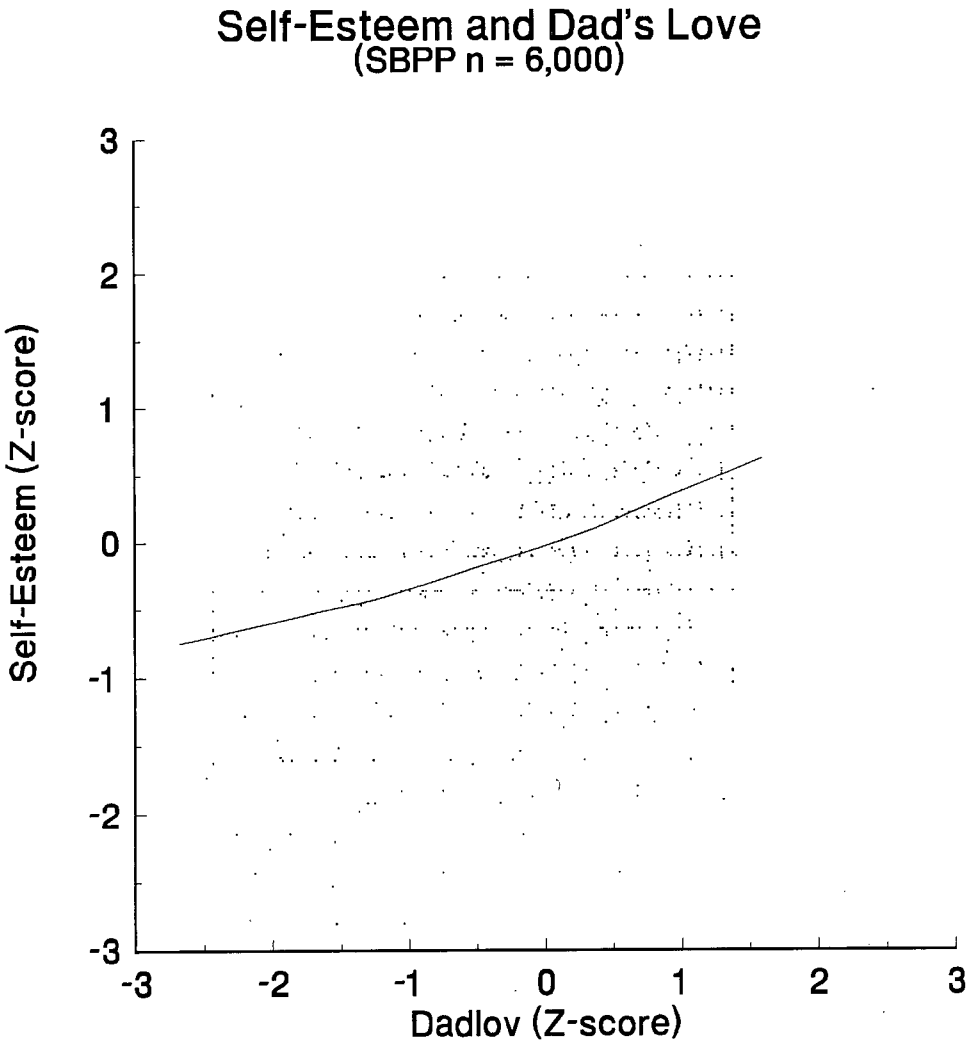

Self-Esteem and Dad's Love
(SBPP n = 6,000)
Self-Esteem (Z-score)
Dadlov (Z-score)
3
2
1
0
-1
-2
-3
-3
-2
-1
0
1
2
3

Figure C-9

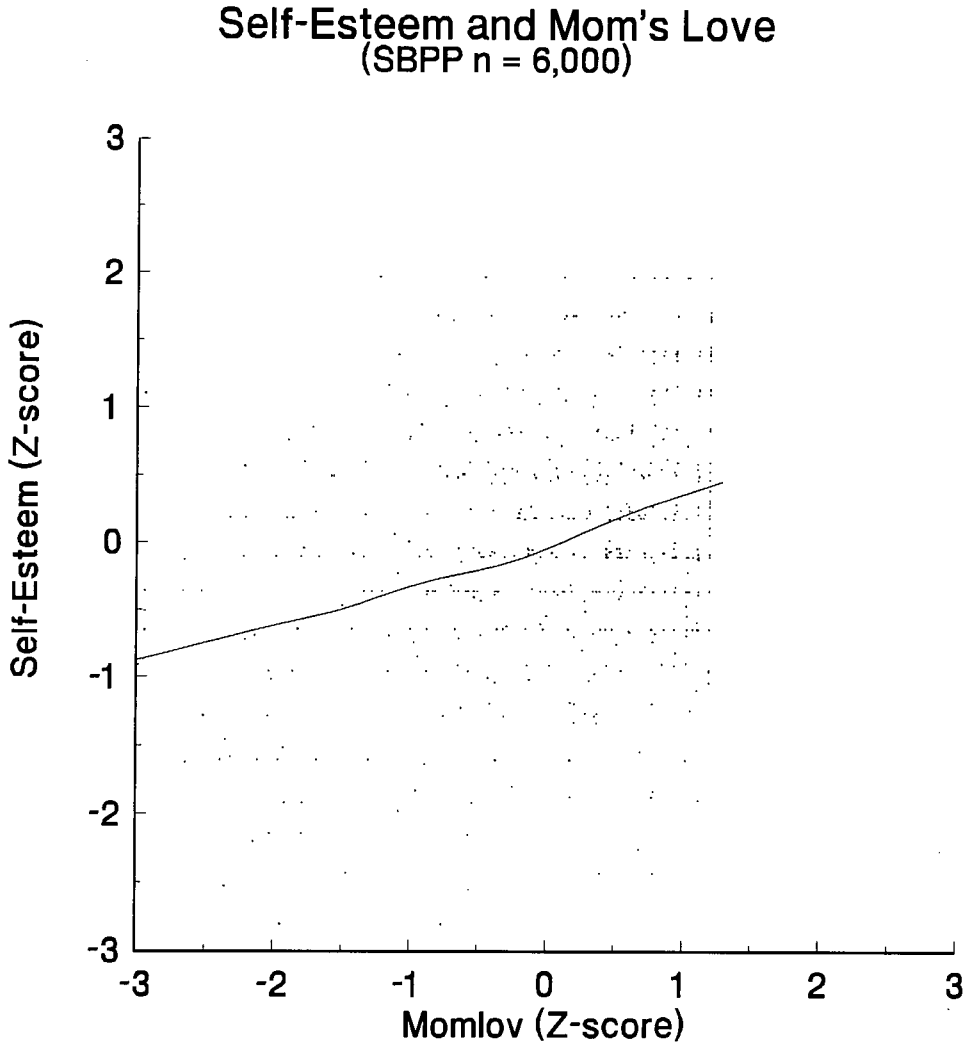

Self-Esteem and Mom's Love
(SBPP n = 6,000)
Self-Esteem (Z-score)
Momlov (Z-score)
3
2
1
0
-1
-2
-3
-3
-2
-1
0
1
2
3

Figure C-10

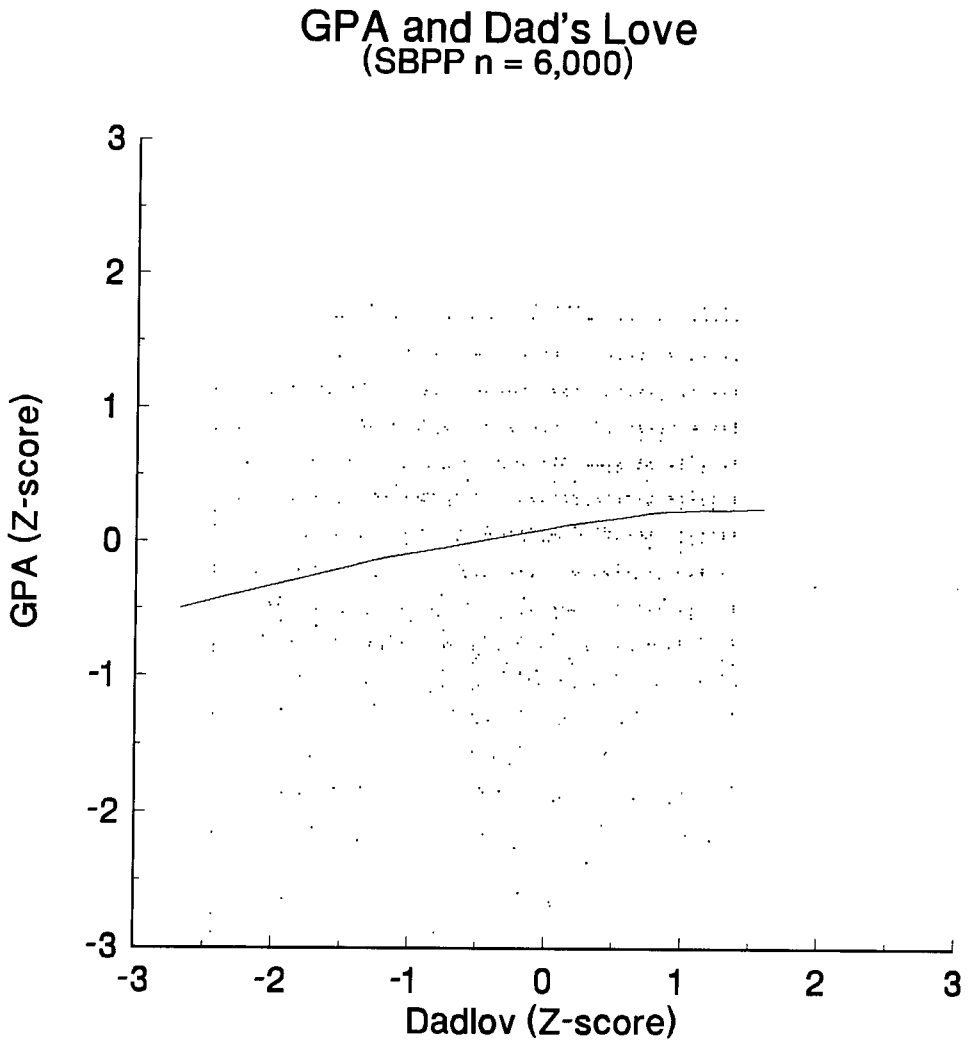

GPA and Dad's Love
(SBPP n = 6,000)
GPA (Z-score)
3
2
1
0
-1
-2
-3
-3
-2
-1
0
1
2
3
Dadlov (Z-score)

Figure C-11

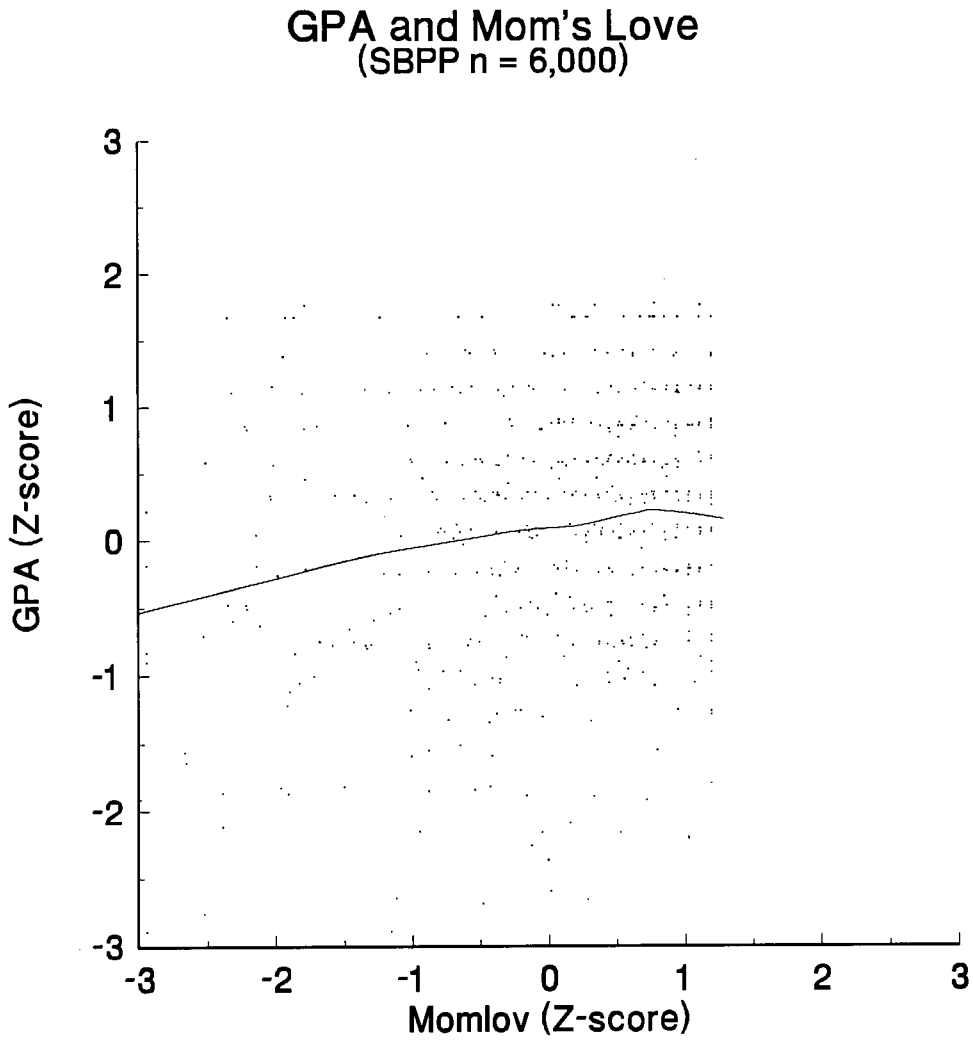

GPA and Mom's Love
(SBPP n = 6,000)
GPA (Z-score)
3
2
1
0
-1
-2
-3
-3
-2
-1
0
1
2
3
Momlov (Z-score)

Figure C-12

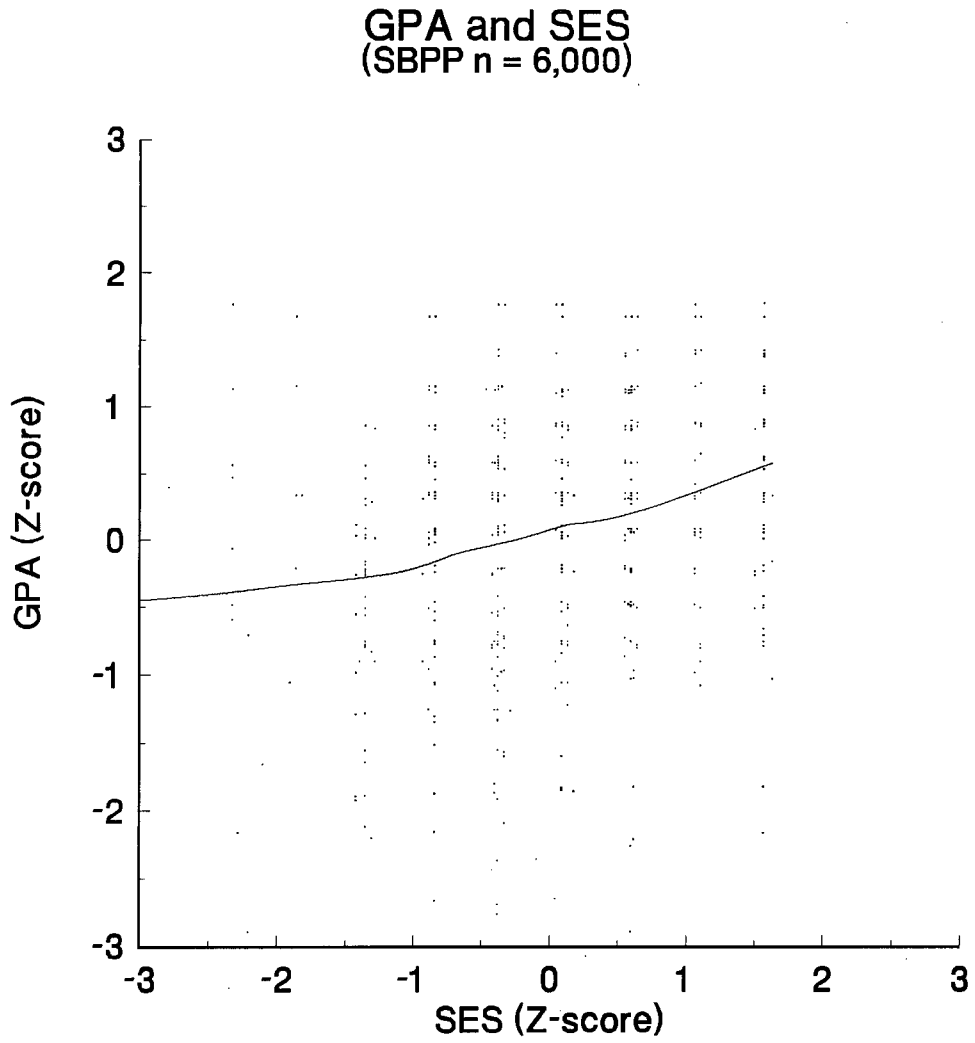

GPA and SES
(SBPP n = 6,000)
GPA (Z-score)
SES (Z-score)
3
2
1
0
-1
-2
-3
-3
-2
-1
0
1
2
3

Figure C-13

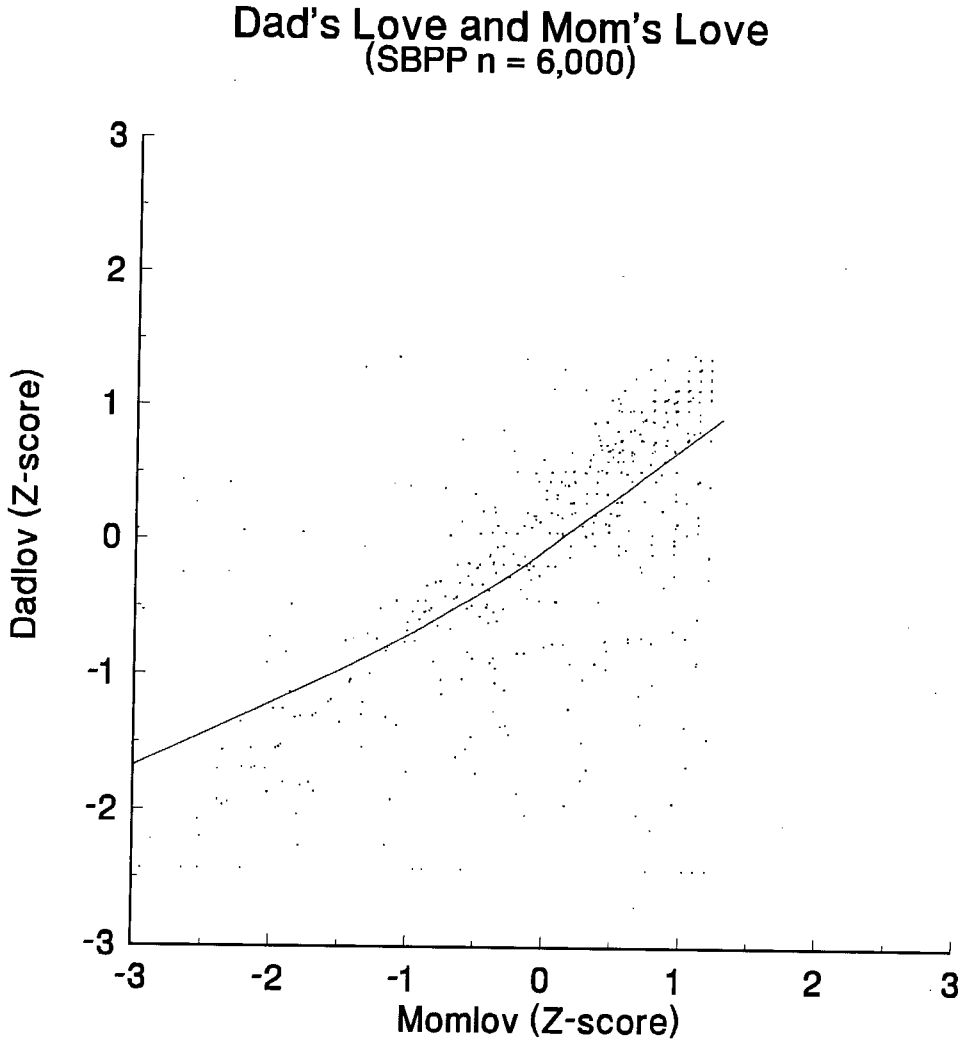

Dad's Love and Mom's Love
(SBPP n = 6,000)
Dadlov (Z-score)
Momlov (Z-score)
3
2
1
0
-1
-2
-3
-3
-2
-1
0
1
2
3

Figure C-14

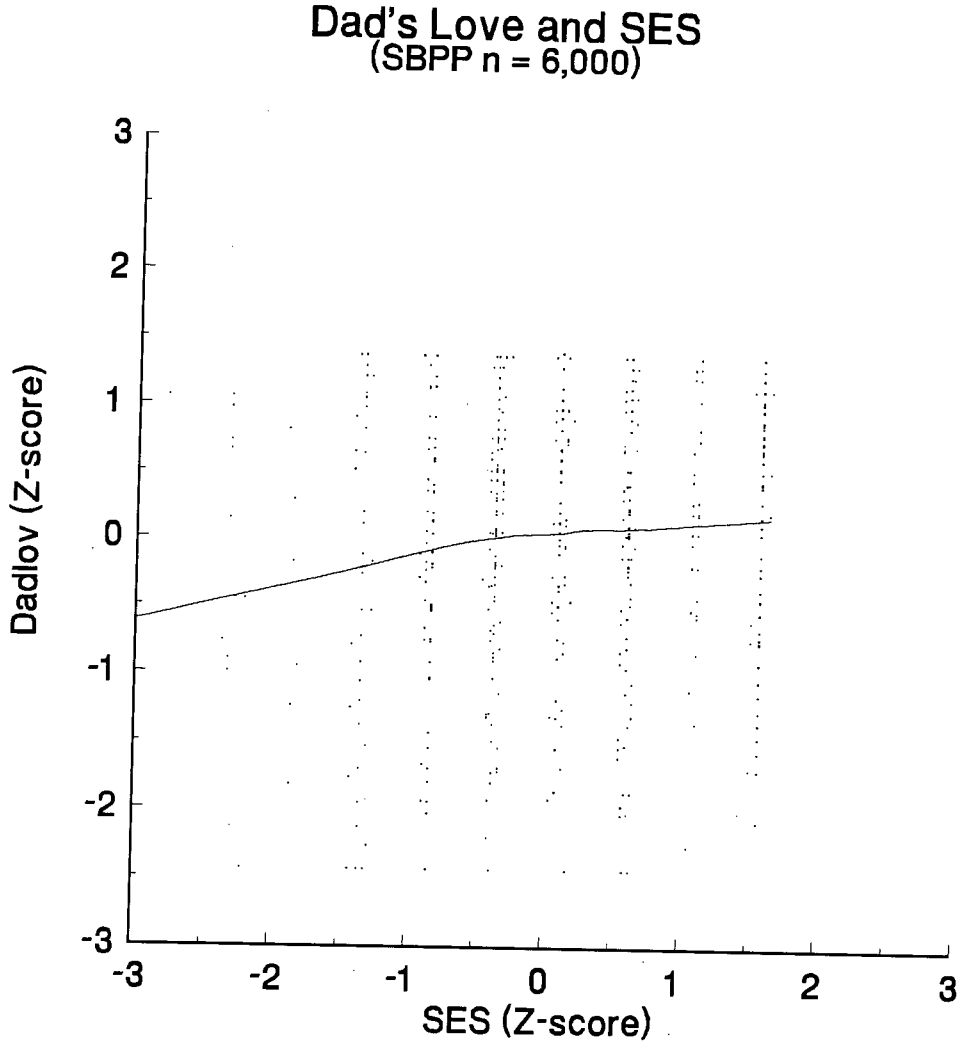
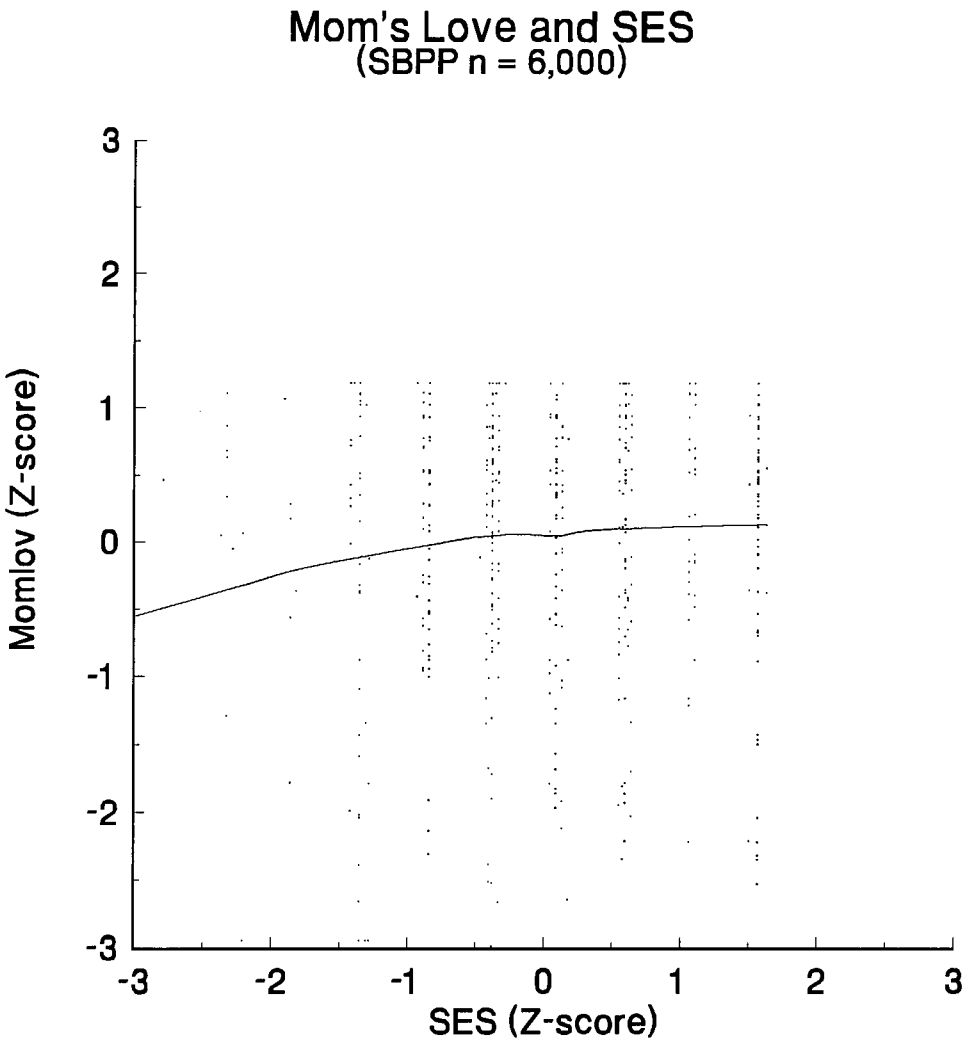

Dad's Love and SES
(SBPP n = 6,000)
Dadlov (Z-score)
3
2
1
0
-1
-2
-3
-3
-2
-1
0
1
2
3
SES (Z-score)

Figure C-15


Mom's Love and SES
(SBPP n = 6,000)
Momlov (Z-score)
3
2
1
0
-1
-2
-3
-3
-2
-1
0
1
2
3
SES (Z-score)

the magnitude of these two non-linear plots, Freedom-Love males were first divided into two groups: those with Dadlov scores of -1.00 or less and those with Dadlov scores of -1.001 or more. Correlations between GPA and Father's love were computed for each group. The correlations for those low and high on Dadlov are .25 (n=52; p=.075) and .05 (n=171; p=.477), respectively. Although the correlations do differ by .20, as neither of them are significant, this should not affect the main analyses.

Freedom-Love males were also divided into two groups based on their Momlov scores (those below and those above -1.00). Correlations between GPA and Mother's love were conducted for each group. The correlations are .32 (n=48; p=.024) and .08 (n=188; p=.286). In this case the relationship between GPA and Mother's love is significant for those with Momlov scores below -1.00 and nonsignificant for those with Momlov scores above -1.00. Because these n's are small they will not significantly affect the main analyses, but they will alter the interpretation of data for Freedom-Love males. This will be considered in the main text.

The third plot indicating non-linearity was with Freedom-Love females in the relationship between self-esteem and Father's Love. In this plot, the relationship is flat from negative Dadlov values to zero, and beyond zero there is a positive relationship. As above, Freedom-Love females were separated into two groups, those with Dadlov scores below zero and those with Dadlov scores above zero. Because this non-linearity included the main variable of interest, self-esteem, correlations were computed between self-esteem and Dadlov variables as well as with self-esteem/Momlov and self-esteem/GPA for both groups. All three correlations proved to be very different between the low and the high Dadlov groups for Freedom-Love females. These correlations are presented in Table C-9.

These correlations indicate that not only is there is a definite non-linear relationship for Freedom-Love females between self-esteem and Father's love, but that levels of Father's love moderates the relationship between self-esteem and achievement and also relates to self-esteem and Mother's love. Again, because the n's in these groups are relatively small, they will not affect the main analyses.

Table C-9

Self-Esteem correlations for Females' Dadlov scores below and above 0.

	Dadlov < 0 r (n)	Dadlov > 0 r (n)
Self-Esteem/Dadlov	.05 (123)	.32** (82)
Self-Esteem/Momlov	.10 (120)	.24* (80)
Self-Esteem/GPA	.10 (122)	.33** (81)

*p<.05; **p<.01.

HLM Interaction Model

An HLM model with interaction terms for grouping variables was tested, but all interactions were nonsignificant and, thus, were not used for group estimates. Because of this, all HLM estimates for the different groups were equal. This HLM interaction model is presented in Tables C-10a and C-10b.

Table C-10a

HLM Results for Student-Level Variables on Self-Esteem: Interactions

	Model 12: GPA		Model 13: Parent Love	
Fixed Effects	Coeff.	SE	Coeff.	SE
Grand mean	.106**	.020	.064*	.018
Gender	-.458**	.036	-.427**	.035
Grade level	.015**	.008	.021*	.008
Love-Mastery	.191**	.026	.119**	.025
Mastery-Love	.264**	.041	.204**	.040
Freedom-Love	-.048	.050	-.007	.047
Love-Mastery * Gender	.004	.052	.013	.049
Mastery-Love * Gender	-.016	.080	-.047	.076
Freedom-Love * Gender	-.022	.090	-.033	.086
SES	.014	.012	-.004	.011
GPA	.194**	.019	.161**	.019
GPA * Gender	.011	.024	.011	.023
GPA * Love-Mastery	.044	.027	.047	.026
GPA * Mastery-Love	-.007	.041	.038	.039
GPA * Freedom-Love	-.025	.043	-.039	.041
Momlov			.194**	.014
Dadlov			.128**	.014

*p<.05; **p<.01.

Table C-10b

HLM Results for Student-Level Variables on Self-Esteem: Interactions

Continued

	Model 12: GPA			Model 13: Parent Love		
Random Effects	Rel.[1]	Var.[2]	χ^2	Rel.	Var.	χ^2
Grand mean	.247	.0009	27.80	.066	.0002	22.94
Within-school		.8762			.7979	
Variance in Self-Esteem Explained			%			%
Between-school			25.00			83.33
Within-school			9.74			18.05
Total			10.03			18.13

[1] Rel = Reliability.
[2] The degrees of freedom for the χ^2 tests are 19.
*p<.05; **p<.01.

APPENDIX D: COMPARISON OF HORNEY'S COPING STYLES AND BARTHOMEW'S ATTACHMENT TYPES

Below is a comparison of Bartholomew and Horney's different classifications. Quotations for Bartholomew's types are taken from Bartholomew and Horowitz (1991) and those for Horney's types are taken from Horney (1950).

(1) Bartholomew's Secure (a) and Horney's loving environment (b):

(a) '...sense of worthiness (lovability) plus an expectation that other people are generally accepting and responsive' (p.227).

(b) Possible: A lack of anxiety

(2) Bartholomew's Preoccupied (a) and Horney's Love style (strong self-effacing drive) (b).

(a) '...sense of unworthiness (unlovability) combined with a positive evaluation of others' (p.227).

(b) '...foremost element ... is self-criticism' (p.77); '...must <u>not</u> feel consciously superior to others... tends to subordinate himself to others, to be dependent upon them, to appease them' (p.215).

(2) Bartholomew's Fearful (a) and Horney's Freedom style (tries to immobilize the competing self-effacing/mastery drives) (b).

(a) '...sense of unworthiness (unlovability) combined with an expectation that others will be negatively disposed (untrustworthy and rejecting)' (p.227).

(b) 'Their dreams unequivocally show emotional depth and turbulence. These dreams, and often they only, reveal a deeply buried sadness, self-hate and hate for others, self-pity, despair, anxiety... there <u>is</u> a world of conflicts and passionate feelings under the smooth surface.. They seem to live in two worlds, entirely disconnected (p. 289).

(2) Bartholomew's Dismissing (a) and Horney's Against style (strong mastery drive) (b).

(a) '...sense of love-worthiness combined with a negative disposition toward other people' (Bartholomew & Horowitz, 1991, p.227).

(b) '...the need to excel and to be superior in some way. He tends to manipulate or dominate others and to make them dependent upon him....(p. 214).

APPENDIX D: COMPARISON OF HORNEY'S COPING STYLES AND BARTHOMEW'S ATTACHMENT TYPES

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(a) '...sense of worthiness (lovability) plus an expectation that other people are generally accepting and responsive' (p.227).

(b) Possible: A lack of anxiety

(2) Bartholomew's Preoccupied (a) and Horney's Love style (strong self-effacing drive) (b).

(a) '...sense of unworthiness (unlovability) combined with a positive evaluation of others' (p.227).

(b) '...foremost element ... is self-criticism' (p.77); '...must not feel consciously superior to others... tends to subordinate himself to others, to be dependent upon them, to appease them' (p.215).

(2) Bartholomew's Fearful (a) and Horney's Freedom style (tries to immobilize the competing self-effacing/mastery drives) (b).

(a) '...sense of unworthiness (unlovability) combined with an expectation that others will be negatively disposed (untrustworthy and rejecting)' (p.227).

(b) 'Their dreams unequivocally show emotional depth and turbulence. These dreams, and often they only, reveal a deeply buried sadness, self-hate and hate for others, self-pity, despair, anxiety... there is a world of conflicts and passionate feelings under the smooth surface.. They seem to live in two worlds, entirely disconnected (p. 289).

(2) Bartholomew's Dismissing (a) and Horney's Against style (strong mastery drive) (b).

(a) '...sense of love-worthiness combined with a negative disposition toward other people' (Bartholomew & Horowitz, 1991, p.227).

(b) '...the need to excel and to be superior in some way. He tends to manipulate or dominate others and to make them dependent upon him....(p. 214).