

2007-12-14

Predicting Student Perceptions of School Connectedness: The Contributions of Parent Attachment and Peer Attachment

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UNIVERSITY OF MIAMI

PREDICTING STUDENT PERCEPTIONS
OF SCHOOL CONNECTEDNESS: THE CONTRIBUTIONS OF PARENT
ATTACHMENT AND PEER ATTACHMENT

By

Jennifer Anne Dixon

Submitted to the Faculty
of the University of Miami
in partial fulfillment of the requirements for
the degree of Doctor of Philosophy

Coral Gables, Florida

December 2007

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ATTACHMENT AND PEER ATTACHMENT

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Predicting Student Perceptions
of School Connectedness: The
Contributions of Parent Attachment
and Peer Attachment

(Ph.D., Teaching and Learning)
(December 2007)

Abstract of a dissertation at the University of Miami.

Dissertation supervised by Professor Marjorie Montague.
Number of pages in text. (132)

This study explored the relationship between attachment quality and school connectedness in a high school sample of adolescents. Although there is a literature related to adolescent attachment quality and its effects on adjustment and development, relatively little attention has been paid to the relationship between parent and peer attachment and school connectedness. Further, these attachments and connections have yet to be examined among general and special education populations.

Attachment quality has been correlated with identity development, self-esteem, competence, and psychopathology and has been investigated as a mediator in the relation between risk and resilience. School connectedness centers around the theory that when adolescents perceive consistent personal power, attention, and praise, they develop a sense of attachment to their school environment. Further, school connectedness, attachment to family, and positive peer bonds, respectively, have been viewed as protective factors, i.e., preventing adolescents from engaging in health risk behaviors (i.e., violence, risky sexual behavior, drug use, and dropping out of school) (U.S. Department of Education, 2006).

The present study included 157 students, aged 15 to 18 years who participated in a longitudinal study (The Longitudinal Study of Co-morbid Disorders in Children and Adolescence). Using quantitative methodologies, analyses examined the relationships among gender, ethnicity, risk status and parent attachment, peer attachment, and school connectedness. Measures included self-report questionnaires of attachment quality and school connectedness in adolescence.

Several major findings from the present investigation include: (1) higher ratings of attachment to parents were associated with higher ratings of school connectedness; (2) higher ratings of attachment to peers were associated with higher ratings of school connectedness; (3) students at risk reported less school connectedness than not at risk students; and (4) the effects of peer attachment on school connectedness were moderated by risk group.

For Mom, Dad, Tiffany, Adam, Amar, Zachary, and Jared

Only Connect! That was the whole of her sermon. Only connect the prose and the passion, and both will be exalted, and human love will be seen at its height. Live in fragments no longer. Only connect, and the beast and the monk, robbed of the isolation that is to life to either, will die.

-E. M. FORSTER (1910/1999)

Acknowledgments

With the dissertation complete, it is enormously gratifying to thank all those who helped make this research possible. Many individuals have contributed to this process and I wish to gratefully acknowledge their contributions. From the inception were the school personnel and student participants in Miami-Dade County Public Schools. Their continuous cooperation and support were instrumental in the completion of this project. My deepest gratitude and appreciation extends to Dr. Marjorie Montague for allowing me to be a part of “A Longitudinal Study of Comorbid Disorders in Children and Adolescents.” Her support, guidance, and research acumen throughout this process have been invaluable and she has been a constant source of intellectual and emotional support. To Dr. Samantha Dietz, a good friend and colleague I offer heartfelt thanks for her invaluable counsel, expert handholding, and help in getting my ideas into the world. Talking with her about her ideas and mine have been a tremendous pleasure and help.

My committee members have been influential, not only in the completion of this project, but also in shaping my identity as an professional, as a clinician and as a researcher. Dr. Marjorie Montague, my committee chairperson, has been the key force in moving the process forward. Her patience and willingness to share her valuable time and thoughts have kept me focused, at times helped me redirect while also enabling me time to pursue alternative ideas. From dissertation proposal to project’s end she provided me with a safe haven. Dr. Batya Elbaum’s belief in my abilities and her willingness to nurture my ideas from the start have sharpened by critical thinking and organization skills and given me confidence as a researcher. I am grateful for her

thoughtful suggestions and support. Dr. Kent Burnett's gentle guidance and patience throughout my graduate career have been invaluable. He has been a constant source of intellectual guidance and support, which have nurtured my clinical and research skills. Dr. Randy Penfield's expert statistical advice and his willingness to share his valuable time and knowledge greatly improved the quality of the work. Additionally, their kindness, support, and excellent supervision have been instrumental to the completion of this project.

A special acknowledgement and thanks to those at the University of Miami and throughout the graduate school whose support during this project have enabled me to reach this point. Dr. Wendy Morrison-Cavendish, Dr. Beth Harry, Dr. Blaine Fowers, Dr. Etiony Aldarondo, Dr. William Blanton, Dr. Anne Hocutt, Dr. Robert McMahon, Dr. James Pann, and Dr. Marcelo Castro have all played important roles in my development as a person, as a clinician, and as a researcher.

For their unique contributions to my personal and creative life, I wish to thank my sister and brother-in-law, Tiffany and Munir Adam as well as their three children, Amar, Zachary, and Jared, for their support, patience, and love through the years. Amar, Zach, and Jared's boundless energy kept me on track and motivated to reach my final goal.

Finally, and foremost, I want to thank – but can't ever thank enough – my parents, William and Constance Dixon, whose unconditional love, inexhaustible patience, and sacrifice made this degree possible. It is to William, Connie, Tiffany, Adam, Amar, Zachary, and Jared that this work is affectionately dedicated.

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Chapter One

Introduction

Research in psychology, sociology, and education has generated new insight on understanding adolescent development within various social contexts. Currently, a growing body of evidence supports the contention that adolescent social relationships and contextual experiences are correlated with adjustment and development (Murray & Greenberg, 2006). From an attachment perspective, research has connected parent-adolescent relationship quality with developmental outcomes. Early research on parent attachment has compellingly shown that children internalize relationship experiences with their parents into internal working models that direct their actions in social situations outside the family (Bowlby, 1982; Ainsworth et al., 1978). For instance, Engels, Finkenauer, Meeus, and Dekovic (2001) hypothesize that adolescents learn from their interactions with parents how to initiate and maintain satisfying and affectionate peer relationships. Adolescents learn to detach from their parents, to be more autonomous, and to build social relationships. Parent attachment, thereby plays an important role in adolescents' social and emotional adjustment. Using cross-sectional data, Engels et al. (2001) examined the effects of parental attachment on the development of social skills, relational competence, and emotional adjustment. Correlational analyses revealed that perceived parental attachment was significantly related to adolescents' emotional adjustment, i.e., adolescents who were strongly attached to their parents reported higher levels of self-esteem and lower levels of depression. Further, adolescents who reported higher levels of parental trust and communication indicated that they were less anxious in performance of social skills

and that they performed social skills more frequently. The same pattern was observed for the association between social skills and adolescents' perceived relational competence. Furthermore, using structural equation modeling Engels et al. (2001) found direct effects of parental attachment and relational competence on self-esteem. Relational competence appeared to operate as a mediator between adolescents' anxiety to perform social skills and self-esteem. Adolescents who were anxious to perform social skills were less competent in their peer relations and, in turn, reported lower levels of self-esteem. Further, adolescents who were strongly attached to parents and who were competent in their peer relations reported fewer feelings of depression. These findings suggest that parent-adolescent relationship quality is related to social, emotional, and school-related functioning. More importantly, these findings suggest that parent-adolescent attachment quality continue to have an influence on psychosocial functioning beyond early childhood.

Empirical support also exists for school connectedness and adolescent adjustment and development. Using data from the National Longitudinal Study of Adolescent Health, Anderman (2002) examined school-level differences in the relationship between school belonging and nonacademic outcomes. Specifically, between-school and within-school effects on adolescent psychological adjustment were examined. Anderman suspected that school belonging varied as a function of school characteristics, i.e., school size, school grade configuration, and urbanicity. A series of studies were designed to examine school level differences in perceived school belonging. Study 1 examined individual and school level predictors of perceived school belonging. Results indicate that perceived school belonging vary

across schools. Specifically, higher perceived school belonging was associated with high self-concept. Ethnicity emerged as a predictor of belonging for African and Native Americans, each of whom reported lower levels of school belonging than European Americans. School-level characteristics such as the practice of busing, urbanicity, and attending a kindergarten-Grade 12 type of school were related to lower levels of perceived belonging. Study 2 examined school-level differences in the relationship between school belonging and a variety of psychological outcomes that have been identified as being highly prevalent during adolescence, i.e., social rejection, depression and optimism, and behavioral problems. Findings indicate that higher levels of school belonging were correlated with lower levels of depression, social rejection, and school problems. School size emerged as a significant predictor of the relationship between school belonging and psychological outcomes. Essentially, school size emerged as a predictor of the relationship between belonging and depression, belonging and social rejection, and belonging and school problems. Despite the existing body of literature on the importance of parent attachment and school connectedness to reduced rates of adolescent engagement in health risk behavior, current efforts to determine whether a relationship exists between attachment quality and school connectedness has yet to be empirically established. Further, research in this area has yet to look specifically at students placed in special education programs.

Much of the literature examining parent attachment and school connectedness focuses on student demographic influences, child-rearing practices, school level variables (e.g., class size, school type, discipline policies), and self-report and teacher

observations of adolescent engagement in health risk behavior. The majority of this work has drawn from perspectives that place emphasis on the dynamic interplay between the developing adolescent, family systems (i.e., relationships), neighborhood and school connections, and the broader cultural context (Huebner & Betts, 2002). Several trends characterize recent research on adolescent development.

For instance, ecological approaches to human development (e.g., Bronfenbrenner, 1979) continue to dominate the field. Meta-theoretical approaches focus on understanding interactions among developing adolescents, the context in which development occurs, and the progression of development, have increased awareness beyond the proximal influences of the family (Smetana, Campione-Barr, & Metzger, 2006). Furthermore, due in part to improved statistical methodology, there has been an increased emphasis on studies that explore interactions among and between individuals and various contexts such as the family, school, and neighborhood. Attachment theorists' interest in extending the theory beyond infancy has led to the examination of adolescents' representations of relationships with parents, peers, and other adults. Finally, several longitudinal studies have examined the influence of relationships developed during infancy on social relationships in adolescence and young adulthood.

These investigations facilitate understanding the stressors, risks, and supports that negatively and positively affect adolescent adjustment and development. Research on parent attachment, peer attachment, and school connectedness suggest a relationship with emotional, behavioral, and academic outcomes. These constructs sum to act as protective factors against a variety of health risk behaviors during

adolescence (Hill & Werner, 2006; Anderman, 2002; Najaka, 2001; Resnick, Bearman, Blum, Bauman, Harris, et al., 1997; Goodenow, 1993; Hawkins, Doueck, & Lishner, 1988).

The purpose of this study is to determine whether parent attachment and peer attachment are predictive of school connectedness in a school-based sample of adolescents in general and special education. The secondary purpose is to determine if these attachments and connections differ as a function of gender, ethnicity, and risk status. Specifically, adolescents in this sample have been characterized on a continuum of risk for developing emotional and behavioral disorders (EBD) [i.e., at risk students placed in special education (ARSE), at risk students not placed in special education (ARNSE) and not at risk students (NR)]. Students at risk for developing EBD have an observed difficulty in emotional and behavioral development that often adversely affects academic performance (Lee & Robbins, 1998). Moreover, students at risk generally experience repeated failure establishing interpersonal relationships. Murray and Greenberg (2006) report, for example, that students at risk for developing EBD are more vulnerable to peer rejection, depression, anxiety, behavior problems, delinquency, poor academic adjustment, school dropout, and poor post-school outcomes.

The concepts of attachment and connectedness are not new. Jefferson (1801) advocated that American public schools develop children's ideas of community that underlie self-governing philosophy. According to Jefferson, an educated citizenry was thought to be the only hope for the establishment of social equality. Durkheim (1893) argued that involvement in one's community was a fundamental human experience, a

basic emotional need, which helped individuals develop a sense of meaning and purpose in their lives. Without this experience, individuals were thought to experience alienation or a sense of disconnection from the larger society.

Dewey (1924) had a similar idea that schools were to serve the larger community by producing responsible civil-minded citizens. Moreover, schools were to help individuals develop the ethical, social, and moral reasoning so they could function as responsible members within the community. Schools were to accomplish this by becoming authentic communities in which students developed a sense of autonomy and engaged in moral decision-making. Dewey argued that students could only be mentored through the development of caring relationships with adults and other students in the school, the basis of school connectedness.

Research also suggests that motivation for learning is associated with a feeling of connection to a learning environment (Brown, Leigh, & Barton, 2000). School connectedness, in essence, refers to a student's emotional attachment to the school environment and culture. The school serves as a context for the policies, regulations, and norms that influence the quality of interactions among administrators, faculty, staff, and, ultimately, students. The quality of attachments and connections that adolescents feel as a result of these interactions has implications for their engagement in health risk behaviors (e.g., substance use, delinquency, unprotected sex, depression, suicide ideation) (Resnick, Bearman, & Blum, 1997; Ma, 2003; Center for Disease Control, 2001, 2005), all of which increase the risk of morbidity and mortality.

Two theories guide research on school connectedness. Researchers investigating from a social learning perspective, i.e., social control theory (Hirschi,

1969) and the social development model (Hawkins & Weis, 1985), suggest that adolescents learn social, behavioral, and school-related skills through interactions with peers and adults within social institutions, e.g., a school (Murray & Greenberg, 2006). A second perspective suggests that psychological experiences of having a strong sense of connectedness to a social institution is a basic psychological need that, when met, promotes the sense of comfort, engagement, motivation, and trust. Resnick et al. (1997) found that adolescents with high school connectedness reported lower levels of emotional distress, suicidal ideation, violence, alcohol use, and drug use than did youth with low school connectedness.

Closely related to school connectedness is attachment theory, which hypothesized that interpersonal styles are ingrained through prolonged early childhood interactions with a primary attachment figure (Bowlby, 1969/1982). Interpersonal styles shape how we perceive and respond to others and to various environments across the life span. Bowlby believed that children develop cognitive, affective, and behavioral schemas that are specifically adapted to maintaining proximity to the attachment figure (usually a parent). Due to differences in parental child-rearing practices, the developing schemas band together and form distinctly identifiable patterns (i.e., secure and insecure attachments). These characteristic patterns, referred to as attachment styles, are the internal working models for negotiating social environments and act as self-fulfilling prophecies. Individuals then behave in ways that elicit schema-congruent behaviors from others. The responses from others reinforce the internal working models (i.e., ingrained attachment style) until those models have become deeply ingrained personality structures. Therefore, not only do

attachment styles cultivate positive perceptions of others and our environment, but they also may predispose individuals to experience various forms of psychopathology (e.g., mood disorders, anxiety disorders, physical health problems) and symptom expression (e.g., fear, anxiety, sadness) (Shorey & Snyder, 2006).

A current and contentious issue in the literature considering the mental health of adolescents is the extent of influence of the parental relationship in comparison to other interpersonal relationships (Wilkinson, 2004). Research suggests that a negative relationship quality (i.e., high levels of conflict and low levels of emotional attachment) between parents and adolescents increases the probability that adolescents will engage in health risk behavior and are less likely to internalize parental values and norms (Dornbusch, Erickson, Laird, & Wong, 2001). A positive relationship with a parent functions as a protective factor since these parents usually provide support and reinforcement for conventional and socially acceptable behavior (Dekovic, Wissink, & Meijer, 2004).

Another predictor of adolescent engagement in health risk behavior is time spent with peers without adult supervision. Research has consistently demonstrated that attachment to a deviant peer group is associated with norm-breaking behavior (Brendgen, Vitaro, & Bukowski, 2000), substance use (Aseltine, 1995), and antisocial behavior and school problems (Dekovic et al., 2004). Parent and peer influences that are negative and conflictual, thus, may contribute substantially to adolescent engagement in health risk behavior.

Bowlby (1982) suggested that behaviors of parents toward their children are inextricably linked to the type of attachments that children develop. The cognitive

schemas underlying these attachment styles begin to take on lives of their own once the child internalizes them. Acting as self-fulfilling prophecies, the child's attachment style (e.g., secure, insecure) leads the developing child to behave in ways that are consistent with how he or she expects to be treated by others (Hazan, 1992, cited in Batgos & Leadbeater, 1994). In turn, such behaviors elicit reactions from others that are consistent with the child's expectations (Allen, Coyne, & Huntoon, 1998). Following this notion, an insecure adolescent would expect others to alienate him, thereby confirming his ingrained view of the self as unworthy of care. Accordingly, attachment-related schemas are reinforced throughout the developmental years and they become the internal working models for perceiving, interpreting, and responding to environments as children mature into adolescence (Batgos & Leadbeater, 1994; Mickelson, Kessler, & Shaver, 1997).

Connectedness has several precursors, including attachments to caregivers, relatedness to others, and feelings of belongingness within the social group (Karcher, 2004). Based on this notion, the adolescent's perceived sense of school connectedness is to some extent already established. A sense of connectedness is an individual and structural notion. The feeling of connection to one's environment is based on the perception of the adolescent and is occurring at the individual level. The social institution does not dictate perception; rather, the adolescent's perception is based on the characteristics of the social organization (e.g., feeling cared for, supported, and valued). Connectedness is influenced by societal factors, personal traits, and contextual factors. Therefore, it is hypothesized that students who report positive parent attachment and/or peer attachments will report a sense of school connectedness.

This study adds to the literature on parent and peer attachment and school connectedness. That is, past research has focused primarily on parent and peer attachment and school connectedness and their relationship to adolescent adjustment and development. This study goes beyond the current literature by looking at the constructs of parent attachment and peer attachment and school connectedness concurrently. Additionally, attachment and connectedness are investigated as a function of gender, ethnicity, and risk status.

Status of Adolescent Health Risk Behavior

A review of the literature reveals that at least 25% percent of all adolescents are at high risk for engaging in dangerous behaviors that threaten their health and long-term outcome. What constitutes a health risk behavior? Current statistics indicate that, overall, 10-20% of children experience serious mental health problems. A report from the U.S. Surgeon General (2001) indicates that at least 5% of children and youth have serious mental health needs, and only 1 in 5 receives services. To date, the majority of adolescent morbidity and mortality are the direct result of life-style practices. Current threats are not biomedical in origin; instead, consequences to adolescent health are related to social, environmental, and behavioral risk factors (DiClemente, Ponton, & Hanson, 1996).

For instance, the Youth Risk Behavior Surveillance System (YRBSS) monitors risk factors or categories of priority health risk behavior, ranging from substance use, violence, and suicide among adolescents and young adults. Behaviors included in the YRBSS are those that contribute to unintentional injuries; antisocial behavior; and violence (e.g., delinquency, attempted suicide, and depressive symptomatology);

tobacco, alcohol and drug use; and sexual behaviors that contribute to pregnancy. In addition, the YRBSS monitors general health status including human immunodeficiency virus (HIV) infections, unhealthy dietary behaviors (i.e., prevalence of obesity and asthma), and physical inactivity. The sampling frame consists of public and private schools across the nation for the purpose of obtaining an economic representative sample. Conducted by the Center for Disease Control (CDC), the YRBSS surveys students enrolled in grades 9-12. Overall results indicate that, during October 2004 through January 2006, within the United States, 71% of all deaths among individuals aged 10-24 years resulted from motor vehicle crashes (31%), other intentional injuries (14%), homicide (15%), and suicide (11%) (CDC, MMWR, p 2. 2006).

According to the YRBSS, numerous high school students engage in behaviors that increase their likelihood of mortality. Nationwide, 75% of high school students have tried alcohol with 43% of the sample reporting current alcohol use and 26% reporting episodic heavy drinking (i.e., ≥ 5 or more drinks in a row). Moreover, in the category of behaviors that contributes to unintentional injuries, 10% of the sample reported to have driven in a car or other vehicle one or more times while under the influence of alcohol, 29% had ridden one or more times in a car with a driver who had been drinking alcohol, and 43% reported they had drunk alcohol.

Nationwide, youth and young adults also engage in behaviors that contribute to violence such as carrying a weapon (19%) (i.e., a gun, knife, or club), carrying a weapon on school property (7%), being involved in a physical fight one or more times (36%), and being injured so severely that they had to be treated by a doctor or nurse

(4%). When asked about dating violence, 9% of youth and young adults reported to have been hit, slapped, or physically hurt on purpose by their partner, and 8% of students have been physically forced to have sexual intercourse when they did not want to.

Twenty-nine percent of the sample felt so sad or hopeless almost every day for ≥ 2 weeks in a row that they stopped engaging in some usual activity. Nationwide, 17% had seriously considered attempting suicide and 13% had constructed a plan. Eight percent had actually attempted suicide one or more times with 2% of suicide attempts resulting in injury, poisoning, or overdose requiring treatment by a medical expert. Twenty percent of youth and young adults reported current marijuana use and 4% reported using some form of cocaine (i.e., powder, crack, or freebase).

Social morbidity among high school adolescents also results from approximately 831,000 unintentional pregnancies among young persons aged 15-19 years, 9.1 million cases of sexually transmitted diseases (STDs) among individuals aged 15-24 years, and an estimated 4,842 cases of HIV/AIDS among young persons aged 15-24 years that occur annually. Additionally, 47% of the high school sample reported having had sexual intercourse. Nationwide, 43% of students are currently sexually active with 37% of the student sample engaging in intimate relations without the use of prophylactics.

Typically referred to community mental health professionals and services are adolescents who exhibit behaviors similar to those of students with EBD. These students represent 10% or more of the general population and while research findings established for the general population are largely applicable to students with EBD,

such students do differ in significant ways from the general population (e.g., severity of symptomatology, prevalence of learning disability, i.e., LD, and family background) (Mattison, 2004).

The need for a comprehensive look at outcomes for students with EBD has been routinely neglected. In order to fulfill this need, in 1985 Congress directed the Secretary of Education to conduct a longitudinal study. Focusing on adolescents with disabilities, the National Longitudinal Transition Study (NLTS) thus included youth with EBD. These youth have particular trouble finding success in school and in adult life (Wagner, 1995). For students with EBD, the rate of identification is unwavering, remaining at approximately 0.9% since the Office of Special Education Programs (OSEP) began collecting data in 1976. This rate is significantly less than the predicted prevalence rate of EBD within schools (Osher, Cartledge, Oswald, Sutherland, Artiles, & Coutinho, 2004). Many professionals in the fields of education and psychology believe that an identification rate of 3-6% would be more accurate and, in fact, epidemiological studies suggest an even higher rate of diagnosable psychological and psychiatric dysfunction in adolescence.

Problems in current prevalence rates include personal philosophy (e.g., personal distaste for labeling), definitional imprecision (e.g., exclusion of social maladjustment clause causes confusion and controversy), and pragmatic concerns (e.g., suspension or expulsion caused by behaviors related to EBD diagnosis) (Kauffman, Brigham, & Mock, 2004). Moreover, results from most national studies do not differentiate among types of students' behavior (internalizer, externalizer);

nevertheless, results do demonstrate that the majority of health risk behaviors are initiated during adolescence and are ultimately preventable.

Policy and Prevention

Empirical research related to health risk behavior has promoted policy makers to assure a better fit between health and social programs (Kids Count Data Book, 2004; Center for Disease Control, 2001, 2005; Children's Defense Fund, 2005; Resnick, Harris, & Blum, 1993, 1997). For example, in January 2000, the Department of Health and Human Services (DHHS) launched Healthy People 2010, a comprehensive, nationwide health promotion and disease prevention agenda for young people in the United States. The health and well-being of American adolescents have received national attention and, as a result, DHHS encourages schools to provide comprehensive health education to prevent unintentional injury, violence, and suicide. To achieve the outcome of reduced morbidity and mortality in adolescence, Healthy People 2010 includes as an objective the coordination of school health programs, in conjunction with community efforts, to prevent injuries to students in school and help establish lifelong safety skills (Center for Disease Control, 2001/ 2005).

According to the Center for Disease Control (CDC, 2001/2005), schools serve as society's medium for providing young people with the tools for successful transition to adulthood (i.e., establishing healthy behaviors). Approximately 54 million young persons, or one fifth of the United States population, attend over 125,000 schools every day (DeVoe, Peter, Noonan, Snyder, & Baum, 2005). Therefore, school-based programs can effectively reach a majority of the children and adolescents in the United States. Schools can implement strategies to improve the environment (e.g., those

designed to create a culture of feeling respected and listened to) as well as implement selected activities for students at higher risk. To promote safety and prevent health risk behavior, the CDC has recommended the establishment of a social environment that promotes safety and prevents social morbidities. According to the CDC, in order for schools to accomplish this goal, they must encourage a student's sense of connection to the school (CDC, MMWR, p 20. 2001).

Developmental Timing

Adolescents are more likely than young children and older adults to engage in health risk behavior (Kasen, Cohen, & Brook, 1998). The initiation of health risk behavior is occurring at a younger age, and current trends indicate that adolescent health risk behavior is becoming increasingly costly and problematic. According to the Department of Health and Human Services, approximately 5.5 million children (5-14 years) and 7.4 million adolescents (15-24 years) visit emergency rooms annually due to an injury (Center for Disease Control, 2005). Injuries requiring medical attention or resulting in physical inactivity affect approximately 20 million children and adolescents and cost \$17 billion annually in medical cost.

Moreover, research indicates that by high school, as many as 40 to 60 percent of students perceive a sense of disconnection from their school environment (not including those that have dropped out) (U.S. Department of Education, 2006). For adolescents, attachment to others and connections to social institutions can help buffer the negative stressful life events and promote normative adjustment (Murray & Greenberg, 2001).

Theoretical Background

The constructs of parent and peer attachment and school connectedness are best viewed within the theoretical frameworks of attachment theory (Bowlby, 1969) and social control theory (Hirschi, 1969). In general, attachment theory describes a fundamental normative process in early development defined in terms of behavioral and affective regulation. The most fundamental aspect of attachment theory is its focus on the biological basis of attachment behavior (Bowlby, 1969/1982). Attachment behavior has the predictable outcome of increased proximity of the child to the attachment figure. For Bowlby, the strong tie between the attachment figure and child, evident particularly when disrupted, resulted not from an associational learning process, but rather from a biologically based desire for proximity that arose through the process of natural selection (Cassidy, 1999). For instance, some attachment behaviors (crying, smiling) are signaling behaviors that alert the attachment figure to the child's interest in interaction, and thus serve to bring the caregiver to the child. Aversive behaviors (crying) bring the attachment figure to the child in order to terminate the behavior. Approaching and following are active behaviors that move the child to the attachment figure.

Many predictable outcomes beneficial to the child are thought to result from the child's proximity to the parent, such as feeding, learning about the environment, and social interaction. However, the predictable outcome of proximity thought to give particular survival advantage is protection from individuals who wished to harm the child (e.g., predators). Bowlby considered proximity from an evolutionary adaptedness perspective, as the "biological function" of attachment behavior. That is, without

protection from predators, feeding is not necessary and learning cannot take place. Because of this biological function of protection, Bowlby considered humans, beginning at infancy, predisposed to seek out their caregivers in times of distress.

Attachment behaviors are organized within the individual and referred to as the “attachment behavioral system.” Bowlby described the behavioral system as involving inherent motivations leading to certain predictable outcomes. According to Bowlby, the goal of the child is not an object (e.g., the primary attachment figure), but rather a state – a maintenance of the desired distance from the attachment figure (i.e., behavioral homeostasis).

Whereas attachment behavior is behavior that promotes proximity to the attachment figure, and the attachment behavioral system is the organization of the attachment behaviors within the individual, an attachment bond refers to an affectional tie. An attachment bond is a characteristic of an individual, “entailing representation in the internal organization of the individual” (Ainsworth, 1989). Thus, this bond is not between two people; rather, it is a bond that one individual has to another who is perceived as stronger and wiser. A person can be attached to another who in turn is not attached to him or her (Cassidy, 1999).

From an attachment perspective, adolescence is a profound transitional period of specific emotional, cognitive, and behavioral systems. Adolescence brings with it the capacity of formal operational thinking, including logic and abstract reasoning abilities (Allen & Land, 1999). This lets the adolescent begin to construct, from experiences with multiple attachment figures, a more global stance of attachment experiences. That is, the adolescent is beginning to recognize distinctions between

qualities of specific relationships. Moreover, the integration of strategies for approaching attachment relationships that are highly predictive of future behavior in new attachment relationships is emerging. Since a key task of adolescence is to develop autonomy, it is likely that many adolescents treat attachment bonds to parents like ties that strain than like anchors that secure. However, research is increasingly showing that adolescent autonomy is most easily established not at the expense of parent relations, but against a backdrop of secure attachments that are likely to endure beyond adolescence.

It has been posited that the attachment indicators proximity seeking, safe haven, and secure base remain central throughout development, yet change in form during adolescence, resulting in several differences between children and adolescent relationships. Adolescent attachment relationships differ from infant-parent attachments in that they are reciprocal, with both members of the dyad being providers and recipients of care. Another difference in the adolescent attachment relationships is that it is transformed from external, observable interactions to internally represented beliefs and expectations, where felt security becomes central (Sroufe & Waters, 1977). Additionally, the infant's primary attachment figure is typically a parent, whereas the adolescent usually turns to a close friend or romantic partner. The safe haven function also differs. Infants instinctually seek a parent to reduce anxiety or stress, whereas adolescents may turn to a close friend or romantic partner who can offer comfort. Finally, Bowlby believed that adolescence is not a period in which attachment needs and behaviors are relinquished; rather, it is one in which they are gradually transferred

to peers. Interactions with peers have begun to take on many functions that will continue for the remainder of the lifespan.

The second influential theory is social control theory, which is grounded in the belief that human behavior is by nature antisocial and delinquent. Travis Hirschi (1969) believed we are all naturally capable of committing criminal acts, and "people commit crimes because it is in their nature to do so." Criminologists and sociologists might explore why people commit crimes. However, researchers working from a social control perspective are most interested in exploring why people do *not* commit crimes.

Hirschi's (1969) control theory argues that internal motivations predict youth conventional and unconventional behavior. For Hirschi, youth are innately attracted to delinquent behavior, and social bonds (e.g., commitment, belief, attachment, and involvement) restrain youth from engaging in high risk behaviors. A lack of social bonds, on the other hand, enhances the probability that the youth will engage in unconventional behaviors (e.g. delinquency).

Social control theory argues that relationships, commitments, values, norms, and beliefs encourage individuals to comply with conventional rules. Thus, if rules are internalized and individuals are tied into and have an attachment to their community, they will voluntarily limit their proclivity to commit deviant acts. Social bonds contain four elements. First, commitment is the anticipation that observance of the rules and goals of the larger social organization will, in some way, be rewarding. Second, power is the perceived capacity to control aspects of the organization or institution. Third, belonging or attachment is being connected by virtue of personal relationships with

other members of the social institution. Finally, belief is the individual's perception that the social institutions' structure and function are fair and carried out in an efficacious manner, thus promoting an individual's sense of validity. Research supports Hirschi's hypothesized bonds in reducing adolescent engagement in health risk behavior (Huebner & Betts, 2002).

As defined by social control theory, it appears in the literature that both attachment and involvement have the potential to have a positive influence on academic achievement and to be a powerful factor against adolescent delinquency (Huebner & Betts, 2002). In their study of attachment to families, Canter (1982) found that although girls reported stronger bonds to parents than boys did, the protective function of parent attachment was greater for boys. Anderson et al. (1999) found gender differences in that bonds to parents reduced the severity of adolescent boys' delinquency, whereas peer bonds and school connectedness reduced the severity of adolescent girls' delinquency. Researchers working from a social control perspective have also examined the relationship between activity participation and delinquent or antisocial behavior. Eccles and Barber (1999) found that youth involved in prosocial activities such as church or volunteer work were less likely to report engaging in health risk behavior than were their noninvolved peers. Additionally, results indicated that participation in team sports were related to higher grade point average (GPA), college attendance, and positive school connections.

Chapter Two

Literature Review

The primary purpose of this study was to determine whether parent attachment and peer attachment are predictive of school connectedness in a school-based sample of adolescents in general and special education. The secondary purpose was to investigate whether these attachments and connections differ as a function of gender, ethnicity, and risk status [i.e., at risk students placed in special education (ARSE), at risk students not placed in special education (ARNSE) and not at risk students (NR)]. Along with parent attachment, school connectedness has emerged in the literature as an important variable for positive academic outcomes and reduced adolescent engagement in health risk behavior. However, while correlations between these constructs and adolescent health risk behavior have been established, less is known about the relationship between parent attachment and peer attachment and school connectedness. Moreover, general and special education populations have yet to be examined.

With regard to the proposed sample, adolescents were categorized on a continuum of risk for developing emotional and behavioral disorders (EBD). Therefore, the aim of this chapter is to review the federal definition of EBD and review the literature that investigates the relationship between the predictor variables, parent attachment and peer attachment, and the criterion variable, school connectedness, with adolescent engagement in health risk behavior. Specifically, this study will use attachment theory to explore the relationship quality that adolescents perceive with parents and peers and their school environment. Thus, this chapter is

divided under three headings: a review of the federal definition of EBD and special education research, attachment research, and school connectedness research.

Federal Definition of EBD

The 25th annual report to Congress (2003) indicates that a total of 5,867,234 students with disabilities in the 6- through -21 age group were served under the Individuals with Disabilities Education Act (IDEA). Of these, 5,795,334 were served in the 50 states and the District of Columbia. This number represents 9 percent of the general 6- through 21- year old age group served under IDEA in the United States (U.S. Department of Education, 2003). Based on public school enrollment, 12 percent of students were receiving special education and related services in 2001. In particular, almost equal numbers of 6- through 11- and 12- through 17-year-olds received special education services. For the 2001-02 school year, 6- through 11-year-olds with disabilities made up 48 percent of the students served under IDEA and 12- through 17-year-olds made up 48 percent. Students 18- through 21-years with disabilities made up the remaining percent (U.S. Department of Education, Office of Special Education Programs, 2003).

More specifically, 3.9 million children in grades K through 12 were classified as having mental retardation, emotional disturbance, or a specific learning disability and served under IDEA, accounting for 8 percent of the total public elementary and secondary population (National Center for Education Statistics, 2005). The majority of these students were classified as having a specific learning disability (2.8 million), followed by mental retardation (647,000) and emotional disturbance (438,000).

IDEA directs state education administrators to ensure that students identified for special education qualify under one of the U.S. Department of Education categories related to education disability. In 1997, IDEA changed the term “seriously emotionally disturbed (SED)” to “emotionally disturbed (ED)” since the term “serious” implied a negative connotation for children who display characteristics of emotional disturbance (IDEA, 1997). IDEA 2004 has not made any further changes to the definition of ED and still utilizes the exclusionary clause “socially maladjusted” to rule out students from a diagnosis of ED.

Under current decisional law, children and adolescents diagnosed as emotionally disturbed are eligible to receive special education services. “Socially maladjusted” students are not eligible for placement in special education. The IDEA (2004) definition of ED has specific characteristics that must be evident for a student to be considered eligible for special education. In order to be considered ED, a child must exhibit at least one of the characteristics in an enduring and intensive way that adversely affects his or her educational performance. The student must demonstrate:

- An inability to learn which cannot be explained by intellectual, sensory, or health factors; or
- An inability to build or maintain satisfactory interpersonal relationships with teachers and peers; or
- Inappropriate types of behaviors or feelings under normal circumstances; or
- A general pervasive mood of anxiety, unhappiness or depression; or

- A tendency to develop physical symptoms or fears associated with personal or school problems.

The term includes schizophrenia. The term does not apply to children who are *socially maladjusted*, unless it is determined that they have an emotional disturbance.

Children who are placed in special education are typically divided into groups by disability during their initial evaluation, a process called "classification." Although the Individuals with Disabilities Education Act (IDEA, 2004) has 13 official categories for special education participants, states are required to use them only for determining eligibility for services and for reporting. Some states choose to use the federal categories in providing services, while others, such as Massachusetts, do not classify children at all after the eligibility process is complete.

Currently, the acronyms Emotional Behavioral Disorders (EBD), Severely Emotionally Disturbed (SED) (e.g., internalizing disorders such as mood disorders), Emotionally Handicapped (EH) and Emotionally Disturbed (ED) (e.g., emotional disorders such as physical and/or verbal aggression and deviance) are used interchangeably across fields and within the literature—contributing to language confusion among researchers, professionals, and school personnel. The geographic diversity in the labels and definitions used across the country makes comparisons difficult. Currently, Georgia and California utilize the acronym SED to classify students. On the other hand, the state of Florida utilizes the acronym EBD and thus, the acronym EBD will be employed henceforth.

Special Education Research

A literature search of bibliographic databases (Psychinfo, ERIC and Medline) resulted in two investigations that explored the perceptions of school connectedness among special education populations, specifically, students with learning disabilities. Focusing on students at risk and delinquency, Fink (1990) attributed higher rates of delinquency among students with disabilities to patterns of school bonds. School bonding is a construct often found in sociology and delinquency literature; however, bonding as an outcome variable is infrequently investigated among at risk students and/or special education populations. Fink hypothesized that school bonding may differ among special education students since they may be less involved in school activities, more discouraged, and more willing to engage in health risk behavior at the risk of school punishment. Results indicated that adolescents (grades 6-12) with learning disabilities (LD) and mental retardation (MR) reported weaker school bonds and higher levels of fear and victimization at school compared to students without LD. Specifically, students with LD and MR both reported significantly higher perceptions of alienation, less belief in conventional rules, and less liking for school than did students without disabilities. Students with LD and MR also reported feeling afraid within and around the school and community and reported experiencing more victimization than did students without disabilities.

Likewise, Morrison, Furlong, and Smith (1994) predicted that feelings of violence at school decreased feelings of safety, and feelings of safety are related to social support seeking behaviors. The relationship between school safety and school

violence was explored through correlational analyses indicating, as predicting by the authors, that the experience of school violence decreased feelings of safety and feelings of safety are related to social support systems utilized by students. Four groups of high school students were surveyed about their experiences of school violence and perceptions of safety. Student groups included general education students, students attending a leadership class, and students with behavioral and learning difficulties who attended an opportunity class or a special day class. Fundamentally, Morrison et al. (1994) explored the reciprocal impact of the presence of adolescents with emotional and behavioral disorders on the total school environment. Specifically, the issues of school violence, how students with emotional and behavioral disorders may be affected, and how students with emotional and behavioral disorders may contribute to problems of school violence were considered.

Results indicate that students in the opportunity and leadership classes perceived the highest ratings of general violence (i.e., drug use, fighting, bullying, and weapons on campus). Leaders reported experiencing especially high rates of personal violence, i.e., teasing and being stared down. Special day class students experienced similar rates to general education students, with the exception of verbal assaults and bullying. Interestingly, students in the opportunity class perceived the highest levels of campus violence than the special day class students.

Moreover, significant relationships were found between perceptions of safety and violence. For general education students, higher perceptions of safety were related to low ratings of general violence, low ratings of personal violence, and high number

of adult confidants. A similar pattern was observed for students in the leadership class; that is, perceptions of safety were related to low ratings of general violence, low rates of personal violence, and high number of adult confidants. For both general education and leadership groups, their perceptions of general violence were related to their experience of personal violence. High perceptions of safety for students in the opportunity group were related to low rates of personal violence and high number of friends. On the contrary, for the special day class students, perceptions of safety were related to high ratings of general violence. The higher their perception of personal violence, the greater number of teachers they perceived as confidants. In an attempt to explain this finding, the authors note that this group experienced more bullying than the other groups; however, speculations about this findings was thought to be preceded by more thorough information. These findings as well as others suggest that supportive relationships and positive perceptions of the school environment are correlated with social, emotional, behavioral, and academic adjustment.

Students with EBD tend to show deficits in social skills such as awkward initiation of social interactions among teachers and peers, poor perspective-taking ability, and deficits in conflict resolution (Furlong, Morrison, & Jimerson, 2004). While individuals with EBD may experience difficulties in school (e.g., reading difficulty and/or diagnosed disabilities), they also experience distress that carries over into interpersonal relationships. In essence, feelings of detachment, also conceptualized as loneliness, isolation, and alienation, are often longstanding and persist across most social situations (Lee & Robins, 1998). Individuals who feel

disaffiliated report that they are out of touch with the social world around them and, while some report having attachments to parents, teachers, or peers, others report a lack of connection to the social context (e.g., school). Feelings of detachment typically manifest in external health risk behavior (e.g., aggression or fighting) or symptom expressions of anxiety, sadness, or hopelessness.

In their investigation, Murray and Greenberg (2001) measured students' relationships with teachers and their bonds with school. Students and teachers also completed measures related to the students' social and emotional adjustment. Comparisons were made between students receiving services for emotional disturbance (ED), learning disabilities (LD), mild mental retardation (MMR), and other health impairments (OHI), and students without disabilities. Three sets of analyses were conducted – group comparisons, multiple regression, and analysis of teacher reported variables.

A between-groups multivariate analysis of variance (MANOVA) was performed to test differences between students with and without disabilities on self-report measures of student-teacher relationships and school bonds. Results of this analysis indicated that the main effect for disability status was significant, Wilks's $\Lambda(4, 278) = .95, p < .01$, and the corresponding univariate analysis indicated that students with disabilities reported greater dissatisfaction with teachers, $F(1, 281) = 4.0, p < .05$; poorer school bonds, $F(1, 281) = 5.6, p < .05$; and greater perceptions of school dangerousness, $F(1, 281) = 11.1, p < .001$ than did students without disabilities. After finding differences between students with and without disabilities, a second

MANOVA was performed in order to find differences between students among specific disability groups. This MANOVA was also significant, Wilks's Λ (16, 859) = 8.5, $p < .001$, as were all of the univariate analysis that followed (i.e., the Affiliation With Teachers factor, $F(4, 284) = 3.8, p < .001$ and Bonds With School factor, $F(4, 284) = 2.5, p < .05$). Post hoc analysis revealed that students with LD, OHI, and no disabilities had significantly greater affiliation with teachers than did students with ED and students with MMR. Students with ED had significantly greater scores on the Dissatisfaction with Teachers factor than did students with LD, OHI, and students without disabilities (Murray & Greenberg, 2001). As for school bonding, students without disabilities had significantly higher scores than students with ED.

Finally, intercorrelations among all variables tested whether students' ratings of their relationship with teachers and school bonds correlated to indicators of social, emotional, and school-related adjustment. In general, results indicated that students with higher scores on the positive relationship and bond scales (Affiliation with Teachers and School Bonding) were more likely to have positive social and emotional adjustment. Students with lower scores on these variables were more likely to have poor social and emotional adjustment.

The findings from multiple regression analyses resulted in associations between students' relationships with teachers; their bonds with school; and indicators of social, emotional, and academic adjustment. That is, for children with and without disabilities, attachment to teachers made the largest unique contribution to the variance in delinquency scores. This and prior research suggest that when children feel

positive support and active involvement from teachers, they may be less likely to engage in delinquent behavior. Due to the relationship quality, children hesitate to risk the consequences that engaging in inappropriate behaviors will have on their relationships with others. Some support for this assertion was provided in Murray and Greenberg's finding that dissatisfaction with teachers was significantly correlated with delinquency among friends.

School dangerousness made the largest unique contribution to children's ratings of emotional adjustment. For students with and without disabilities, feeling unsafe at school predicted increased levels of depression and anxiety. Across the sample, those who reported feeling uncomfortable or scared at school also reported higher levels of internalizing symptoms compared to students who reported lower perceptions of school dangerousness. Finally, for both groups of students, school bonding made the largest unique contribution (4% for students with disabilities, 11% for students without disabilities) to the variance in school competence. Students who reported greater school bonds also reported higher school competence (i.e., students' academic ability to participate and focus in class) than did students with lower school bonding.

Building on previous work, Murray and Greenberg (2006) examined the perceptions children had of their parents, teachers, and peer relationships; their bonds with school and neighborhood; and their social, behavioral, and emotional adjustment. Participants were in fifth and sixth grades and receiving special education services for learning disabilities (LD), emotional disturbance (ED), mild mental retardation

(MMR), and other health impairments (OHI). Overall, results indicated that both positive and negative aspects of participants' relationships and school and neighborhood bonds were associated with social, behavioral, and emotional adjustment.

Three analyses were utilized to examine the associations between aspects of children's perceptions of their relational and contextual experiences and socio-emotional adjustment (two are discussed below). First, preliminary analyses were conducted and no differences among groups (i.e., disability status, gender, and race) were observed. Therefore, all groups were combined for the remaining analyses.

Second, zero-order correlations among all variables resulted in specific outcomes related to the study. Results suggest that the relationship quality the student perceives with others was associated with both emotional and behavioral outcomes. For instance, perceptions of parent trust were negatively associated with delinquency and depression. Likewise, parent communication was negatively correlated with conduct problems, delinquency, and depression. Perceptions of parent alienation made a unique contribution in that it was positively associated with student conduct problems, anxiety, and depression.

Student perceptions of their relationship with teachers follow similar patterns as those just described. Attachment to teachers was negatively correlated with student delinquency and positively associated with school competence. Alternately, alienated student-teacher relationships were positively associated with conduct problems,

delinquency, anxiety, and depression, and negatively correlated with school competence.

Trust and communication among peers also contribute to emotional and behavioral adjustment. Peer alienation accounted for a significant amount of variance on conduct problems, delinquency, anxiety, and depression. This finding is not surprising since students with disabilities are more likely to experience peer rejection, perceive peer alienation, and thus develop aggressive behavior patterns.

Finally, students who perceived a sense of school connectedness, i.e., felt like they belonged, rated themselves as having higher school competence. Murray and Greenberg (2006) found attachment to the school environment to be the strongest contributor to student ratings of school competence. This finding is not surprising since past research has correlated (positive, linear) students' sense of school connectedness to academic engagement (Goodenow, 1993).

Attachment Research

Attachment theory offers a way to explore how maladaptive thought processes or cognitions originate in early experiences, and research has given rise to an extensive literature investigating how early attachment can produce forms of psychopathology (e.g., anxiety disorder, major depressive disorder) and symptom expression (e.g., social stress, anxiety, and sadness) in later adolescence (Hammen, Burge, Daley, Davila, Paley, & Rudolph, 1995). Bowlby (1969, 1980) argued that maintaining attachments to others is a universal and fundamental survival need. That is, as an adaptive necessity for maintaining bonds, humans develop internal working

models (i.e., cognitive schemas) of interactions with others based on early attachment relationships with primary attachment figures. These internal working models are considered “operable” models of the self and attachment figure, based on their joint relationship history. They serve to regulate, interpret, and predict the self and other attachment-related behaviors, thoughts, and feelings (Bretherton & Munholland, 1999). Internal working models are related to the perceived stability and security of attachment across adolescence and for subsequent psychosocial functioning in adulthood.

Moreover, internal working models may be particularly useful in identifying pathways to emotional and/or behavioral maladjustment. That is, dysfunctional internal working models may guide how individuals interpret and experience apprehensive life events, which, in turn, may eventually result in feelings of sorrow or despair. For example, a dysfunctional internal working model (i.e., insecure attachment style) that is based on experiences of parental rejection and inconsistencies throughout childhood will eventually result in the belief that one is not worthy. In turn, the individual begins to view others as unavailable, detached, and unworthy and hence is not capable of achieving satisfying relationships with others. Despite the need for consistent attachments with others, the individual anticipates and is highly sensitized to rejection and experiences unsteady, insecure attachments (Hammen et al., 1995). Individuals with dysfunctional attachment cognitions would be especially likely to interpret stressful events as alienating and as further evidence of personal

unworthiness, eventually resulting in symptom expression of depression, social anxiety, or aggression.

For instance, Hammen and colleagues (1995) hypothesized that individual differences in vulnerability to depression may be uniquely coupled with interpersonal functioning. Therefore, the authors tested a cognitive-interpersonal hypothesis of depression associated with responses to interpersonal stress. Specifically, the authors were interested in testing whether certain interpersonal cognitions (e.g., close, depend, and anxiety) proposed by attachment theory moderated the link between negative social life events (e.g., transition from high school and work related events) and depressive symptoms in a sample of female young adults. Post school transitions, although developmentally appropriate, can be stressful events nonetheless.

Cognitive representations of attachment relationships were measured under the notion that beliefs and attitudes about adult relations are analogous to those thought to be important in early attachment relationships. Moreover, it was predicted that individuals who scored in the dysfunctional domain (i.e., insecure attachment) would be more likely to experience depressive symptoms following stressful social events. For Hammen et al. (1995) an insecure attachment style describes an individual who has a fear of abandonment, does not trust others, and would not depend on them to be available when needed. Alternatively, the link between dysfunctional cognitions and anxiety symptoms and other non-depressive symptoms such as antisocial and conduct problems, substance use, and general pathology (all symptoms combined) was explored.

Using hierarchical multiple regression analyses in order to predict severity of changes in depression from the contribution of attachment cognitions, prior interpersonal stress, and their interaction (controlling for initial depression), results specify the importance of interpersonal attachment cognitions as a factor in predicting psychological disorder. Specifically, results suggest that dysfunctional attachment cognitions contribute to both onset and severity of symptom expression (e.g., depression, stress, anxiety) (Hammen et al., 1995).

In predicting the onset of significant depression following interpersonal stressors (e.g., contextual threat assessment of events), two of the three attachment cognition scales were significant as main effects ($p = .03$), or in interaction with stress levels ($p = .001$). For the prediction of onset of psychopathology, all three cognition scales were significant as main effects or interaction effects ($p = .003$). In predicting severity of symptoms at the end of one year, two of the three attachment scales similarly predicted anxiety disorders as main effects or interaction effects ($p = .01$), and two of three attachment scales predicted externalizing disorders ($p = .02$). These disorders included any diagnosis except depressive and anxiety disorders (e.g., substance use and conduct-antisocial personality disorder).

Overall, these results and prior research support the conclusion that vulnerability in attachment style, as indicated by fear of abandonment and insecurities about one's ability to maintain caring relations with others, is highly predictable of maladjustment and symptomatic expression to negative interpersonal events. Hammen and colleagues (1995) concluded that women with cognitions about relationships

representing concerns about rejection or untrustworthiness of others were especially challenged by normative changes and typically responded by becoming depressed or experiencing other symptoms.

Attachment directly affects interpersonal behavior. Individuals engage in a self-evaluation process in order to help manage their feelings and needs, showing a tendency to verify self-other views in either a positive or negative framework. It is hypothesized that individuals with weak attachments and connections will report feeling more distant from the social world and are less likely to take interpersonal risks to satisfy their need to belong. Instead, these individuals are more likely to avoid support seeking behaviors, display dysfunctional interpersonal behaviors (e.g., externalizing or internalizing behaviors) and exhibit symptom expression (e.g., fear, alienation and depression) (Lee and Robbins, 1998).

Shirk, Gudmundsen, and Burwell (2005) assessed whether self-evaluative and support-seeking processes mediated the relationship between adolescent perceptions of maternal attachment and depressive symptomatology. Following Bowlby's theory, Shirk and colleagues proposed that continuities between early attachment experiences and later interpersonal functioning are moderated by representations or working models derived from recurrent interactions between attachment figure and child. Working models are operationalized as the mental representation that contain "expectations of the accessibility and responsiveness of attachment figures" and the "complementary and mutual confirming view of the self as worthy or unworthy of care" (Bowlby, 1973 p. 238). It was hypothesized that children, who experienced

parental availability and responsiveness, particularly in times of distress, would likely develop internal working models of their attachment figures as reliable and supportive (e.g., secure attachment model). Moreover, a complementary model of the self as valuable and worthy of care would develop. In contrast, insecure attachment models reflect experiences of parental unavailability and lack of responsiveness. A view of the self as devalued and unworthy is consistent with an insecure attachment model.

Moderation tests revealed that the association between the adolescents' perception of parental representation and depressive symptoms varied as a function of stress level. Consistent with previous research, Shirk et al. (2005) concluded that representations of parental figures as unavailable, unresponsive, and unsupportive were significantly associated with higher levels of depressive symptoms in adolescents ($\beta = -.35$, $F(1, 83) = 11.79$, $p < .05$). It was proposed that negative parental representations were associated with high contingent self-worth and low social support seeking behavior. Results support the predicated association with adolescents who perceived negative parental representations reported low levels of social support seeking behavior ($\beta = .41$, $F(1, 83) = 16.27$, $p < .01$).

Shirk and colleagues found evidence that parental representations were associated with self-worth contingencies. Adolescents who expected lower responsiveness to distress were more inclined to rely on external feedback, performance, or physical appearance for increasing self-worth than those who expected greater responsiveness. In order to explain this finding, the authors hypothesized that parental detachment necessitates a corresponding view of the self as

unworthy of care. In turn, the adolescent compensates and strategies emerge to counter this “unworthy” core belief about the self. Overall, the results of this study suggest that the link between indicators of attachment insecurity, that is, representations of the parent as unresponsive, unavailable, and unsupportive and depressive symptomatology can be understood in terms of self-evaluative processes and social support-seeking behavior.

Empirical studies have identified a compilation of family factors, including low socioeconomic status (SES), residing in a single headed household, and marital discord, as consistent covariates of problems during adolescence. However, among these factors, it appears from recent studies that the quality of the parent-adolescent relationship, a factor most proximal to adolescents’ everyday experience, bears an especially strong association to adolescents engaging in health risk behavior (Dekovic, Wissink, & Meijer, 2004).

For example, Dekovic et al. (2004) found that adolescents who characteristically perceive positive parental attachment tend to communicate more with their parent(s), tell them about their day, and disclose their thoughts and feelings, i.e., resulting in lower levels of sadness and depression. Poor communication with parents was shown to be an important predictor of adolescent norm breaking behavior and delinquency. Adolescent disclosure (i.e., parent communication) has been shown to be a strong predictor of parental knowledge related to adolescent whereabouts, which, in turn, has been consistently linked to lower levels of adolescent engagement in health risk behavior. Moreover, involvement with a deviant peer group was

correlated with higher levels of antisocial behavior ($p < .001$). Specifically, adolescents who reported peers engaging in behaviors they perceived to be antisocial also reported engaging in misbehavior themselves.

According to Bowlby (1969, 1982), once the child has transitioned from the initial stage of attachment and has been provided a sense of security and likeness to others, the adolescent transitions into group membership and peer affiliations that allow for the affirmation of the self. That is, individuality develops by identifying with others who share similarities in appearance, interest, academia, and talents.

Traditional attachment theory views adolescence as a transitional period in which the adolescent is making a tremendous effort to become less dependent on care giving from primary attachment figures. In adolescence, profound transformations in specific emotional, cognitive, and behavioral systems evolve as the adolescent moves from being the receiver of care to being the potential caregiver. Although adolescence is no longer portrayed as an intense period of turmoil, it is still an important transitional period. Cognitive, biological, and social changes heighten the risk for depression, conduct disorder, and drug and alcohol use. While many navigate this transitional period with relative success, one important factor that distinguishes adolescents who transition successfully from those who do not is the relationship quality that the adolescent has with parents and peers.

Research related to adolescents' peer context indicates that attachment to peers can do much for an adolescent's perception of emotional support, opportunity for validation, acceptance, and clarification of interactions that guide self-other

definitions (Barber & Olsen, 1997). In a two-year longitudinal study, Wentzel, Barry, and Caldwell (2004) explored having a reciprocated peer relationship and characteristics of a reciprocated peer relationship to students' prosocial behavior, academic achievement, and emotional distress in middle school. Reciprocated peer relationship was operationalized as a mutually agreed upon friendship or shared relationship and school adjustment reflects prosocial behavior and classroom grades. The authors theorized that these adjustments reflect important competencies necessary for school success and are dimensions of behavior with which peers tend to be similar.

To test the effects of peer relationship status on school adjustment, an analysis of variance (ANOVA) was conducted. Differences in school adjustment between groups of students with and without reciprocated peer relations resulted in friendless students scoring significantly lower on prosocial behavior and GPA (i.e., averaged final grades) than students with reciprocated friendships ($p < .01$). Moreover, students without mutual peer relationships reported significantly higher levels of emotional distress ($p < .001$). Overall, analysis of first year data indicated that students without mutual peer relationships displayed lower levels of cooperating and helping behaviors, received low cumulative grade point averages, and reported higher levels of depression and negative sense of self-worth compared to students with reciprocal peer relationships. Likewise, implications for adjustment over two years indicated that not having a mutual peer relationship was predictive of emotional distress ($p < .001$).

Furthermore, the authors report two noteworthy findings. First, students who reported a reciprocated peer relationship at the inception of the study displayed better

social and academic adjustment at the end of the first year compared to students without a mutual friendship. However, for students without mutual relationships, their academic performance improved over the course of the study. The authors suggested that these students might only be at initial risk of adjustment since they take longer in establishing friendships. Findings from this study provide support for a model in which a lack of emotional welfare has implications for multiple aspects of adolescent adjustment, including the ability to establish peer relationships, behave in a prosocial manner, and perform academically (Wentzel, Barry, & Caldwell, 2004).

Using discriminate function analyses, Laible, Carlo, and Raffaelli (2000) investigated the differential relations of parent and peer attachment to adolescent adjustment among four groups of adolescents (M age = 16.1 years, SD = 1.8 years). Adjustment indices included depression, anxiety, aggression, sympathy, and academic efficacy. Previous studies have connected attachment to parent and peers and similar adjustment indices to adolescent development. The authors expected high levels of both parent and peer attachment would be associated with positive adolescent adjustment. Therefore, it was hypothesized that adolescents with secure attachments to both parents and peers would show the most positive adjustment, and those with the least secure relationships would show the least positive adjustment. Results from the study support the prediction.

Correlations between parent and peer attachment and adjustment indices resulted in parent attachment significantly related to age, depression, and aggression (p < .05). Adolescents who were older reported lower levels of parent attachment.

Conversely, adolescents who reported higher levels of parent attachment reported lower levels of aggression ($p < .05$) and depression ($p < .001$). Adolescents who reported higher levels of peer attachment reported higher levels of sympathy ($p < .001$) and lower levels of depression and aggression ($p < .001$).

In order to examine the relationship of parent and peer attachment to adjustment among groups, a linear discriminant function model was built. Results from the first discriminant function reliably differentiated among the four groups ($\lambda = .43$, $\chi^2 = 63.5$, $p < .001$) with the variables aggression, depression, gender, and sympathy contributing to the discrimination. The group with high (i.e., secure) parent and peer attachment scores were typically females, scored low on depression and aggression, and had the highest sympathy scores. The group with low (i.e., insecure) parent and peer attachment scores were typically male, had the highest scores on depression and aggression, and the lowest on sympathy. The remaining groups (i.e., adolescents who reported only one attachment) had moderate scores on depression, aggression, and sympathy. Interestingly, adolescents who perceived high peer attachment, and reported low parent attachment, reported better adjustment (in terms of depression, aggression, and sympathy) than those who reported parent attachment without perceived peer attachment.

Findings from Laible et al. (2000) suggest that while parent and peer attachments serve similar functions; these relationships may not necessarily be equal in relation to adolescent adjustment. This finding is supported in the fact that the four groups of adolescents (i.e., those reporting secure parent and peer relations, those

reporting insecure parent and peer relations, those reporting secure parent and insecure peer, and those reporting secure peer and insecure parent) differed along one dimension in the linear discriminant function analysis – adolescent adjustment. Likewise, results from this study tend to support a hierarchical organization of attachment relationships in which peers appear to be more influential on adolescent adjustment than parents. This finding was evidenced by the fact that parent and peer attachment scores had differential relations with adolescent adjustment. Peer attachment was significantly associated with adolescent adjustment over and above parent attachment.

The social experiences of adolescents do not occur in a vacuum. Socialization occurs within the family, among peers, and along the hallways at school. Schools influence social and academic development by structuring curricula and learning (Johnson, Crosnoe, & Elder, Jr., 2001). As developmental theorists have emphasized the importance of the larger context, it is significant to note that these institutions shape not only academia but also the social development by organizing peer relationships. Therefore, researchers have begun to examine how variations in school resources, structures, and other factors affect student-peer related outcomes.

School Connectedness Research

School connectedness refers to the belief by students that administration, staff, and teachers in the school care about their learning experience, value them as individuals, feel listened to, and overall, feel a sense of connectedness with the school environment. The majority of research on school connectedness has almost

exclusively focused on academic performance of middle school students. There is limited research on school connectedness and the high school population. High school students are a population that can benefit from increased research since developmental tasks (e.g., Erickson's stage of identity vs. role confusion) are distinctively different from middle school students (Booker, 2006).

To date, researchers operationalize the construct of connectedness as an umbrella term. Defined as a larger construct, connectedness has sometimes been restricted to participation in team sports, extracurricular activities, or involvement in interpersonal relationships such as a peer group. However, the public's broader use of the term includes connectedness as an act of giving back to, being involved in, and being affectively invested in other people, places, and activities. Within the literature, it is generally agreed upon, that connectedness occurs when a person is actively involved with another person, object, group, or environment, and that involvement promotes a sense of comfort, well-being, and reduces anxiety (Karcher, 2004).

School connectedness, school attachment, school bonding, school climate, school engagement, and school involvement are terms used to describe a student's relational bond to the school environment. Over the past decade, school connectedness has emerged in the literature and across disciplines as an important variable that when present increases the likelihood of positive educational outcomes and reduces health risk behavior among adolescence. Moreover, research has shown that school connectedness is negatively correlated with emotional distress, violence, suicide attempts, and drug use (Blum & Libbey, 2004).

Historically, measurement of a student's relationship with school has been based on theoretical and measurement interrelatedness. For instance, Gottfredson, Fink, and Graham (1994) first used the term *attachment to school* to measure students' respect for teachers and the extent to which students cared about what teachers think of them as individuals. Jessor, Van Den Bos, Vanderryn, Costa, and Turbin (1995) used the term *positive orientation toward school* to describe students' attitudes toward school and motivation toward learning. These measures were intended to tap into students' attitudes about going to school and the extent to which they were committed to academia.

Mouton, Hawkins, McPherson, and Copley (1996) used the term *school attachment* to represent a student's sense of connectedness. School attachment was used as a single variable and theoretically, was part of a larger construct. In order to determine attachment, Moody and Bearman (2002) (Moody and Bearman, 2002, cited in Libbey, 2004) refined Moutons and colleagues initial work in the National Longitudinal Study of Adolescent Health (Add Health) by creating the School Connectedness Scale (*SCS*). The *SCS* measures the degree to which students feel close to people within school, are happy to be at school, and feel as though they are a part of the school environment.

Likewise, Goodenow (1998) (Goodenow, 1998, cited in Libbey, 2004) saw *school attachment* as part of a larger construct. However, based on Wehlage's theory of social membership, Goodenow viewed *school attachment* within the framework of the student-teacher relationship. The Psychological Sense of Membership Survey

measures student perceived sense of school attachment. Questions are designed to explore whether students care what others think as well as tap into their investment in meeting other people's expectations (Libbey, 2004).

School bonding represents an umbrella term used to describe a student's relationship to school. Jenkins (1997) based his measure on Hirschi's social control theory and included school attachment as a subscale under school bonding. The Social Development Research Group defined school bonding as the presence of attachment and commitment. In this sense, attachment represents the emotional link and commitment reflects investment in the group (Hawkins, Guo, Hill, Battin-Pearson & Abbott, 2001).

As conceptualized by Brown and Evans (2002), *school connection* is an overarching concept with four aspects: commitment, power, belonging, and belief in rules. Within these domains, *school connectedness* explores students' willingness to follow rules, teacher support, and students' feeling a sense of belonging at school. Eccles, Early, Frasier, Belansky, and McCarthy (1997) viewed *school connection* as part of a larger construct. Under the heading *school context*, Eccles et al. (1997) measured school connection, school regulation, and school facilitation of autonomy in order to derive an understanding of a student's sense of connection to the school.

Conversely, *school connectedness* was originally constructed to aid in analysis of The National Longitudinal Study of Adolescent Health (Add Health) data (Resnick et al., 1997). As defined by Resnick et al. (1997) the original eight-item measure used

in Add Health consisted of items examining a student's sense of safety, fairness for rules, teacher support, and overall, a sense of school connectedness.

School engagement is another common term used to describe a student's relationship with school, specifically, student academic motivation (Simons-Morton & Crump, 2002). *School engagement* was operationalized as students' attention in class, taking school seriously, and the desire to do well academically. Finally, *school involvement* is used in the literature as a single variable and at times as part of a larger construct.

In the present study, *school connectedness* is operationalized as the student's perceived sense that the school fosters an atmosphere in which the student feels fairly treated, close to others, and a part of the school environment. Research on school connectedness has typically focused on scholastic variables such as academic achievement, dropping out, and grade point average, as well as health risk behavior, rather than psychological outcomes (Anderman, 2002). In recent years, a small literature across disciplines has emerged, and there is a general consensus that a perceived sense of school connectedness is a basic psychological need, and when met, produces positive psychological outcomes. Baumeister and Leary (1995) suggest connectedness is related to all aspects of adolescent adjustment and development. That is, deprivation of connection, throughout and across development, often results in a variety of negative outcomes (e.g., decreased motivation, increased social stress, increased health problems, symptom expression, and psychopathology).

Experiences of connection, regulation, and autonomy are hypothesized to be critical characteristics in adolescent adjustment and development. Eccles et al. (1997) explored adolescent functioning in relation to experiences of connection at home, in school, and among peers. Specifically, they assessed whether different contexts are more or less central to differing aspects of adolescent social development. Using longitudinal data from the Maryland Adolescent Growth in Context (MAGIC) study, the authors hypothesized that schools may be more central in adolescent intellectual development than socioemotional development. Conversely, characteristics related to the family context may be more central to socioemotional development rather than to academic competence. If this were true, characteristics of each context may be associated differently with respect to successful adolescent functioning. Therefore, in order to test this hypothesis, the authors compared the associations of connection (i.e., perceived psychological closeness), regulation (i.e., caretaking and helping roles), and autonomy (feelings of being listened to and respected) to academic alienation, grade point average (GPA), depressive affect, and problem behaviors across four context (i.e., family, siblings, peers, and school). Overall, findings suggested that family socioeconomic status (SES) emerged as a significant predictor for academic performance ($p < .05$), regulation was most strongly related to externalizing behaviors ($p < .001$), and experiences with siblings emerged as an important predictor of mental health.

Zero-order correlation analyses revealed moderate positive correlations between the three socialization constructs (i.e., connection, regulation, support) within

most contexts (family, school, peers) and the comparable constructs across contexts (sibling relations and peer relations). That is, participants who reported positive school connections also reported positive family connections ($p < .001$), peer connections ($p < .001$), and sibling connections ($p < .001$).

Multiple regression analyses were utilized to assess the relationship of connection, regulation, and support for psychological autonomy to the indicators of adolescent functioning. It was predicted that regulation would be related primarily to externalizing (problem behaviors) and self-regulation (learning and achievement behaviors) outcomes. Results provide support for this prediction. Positive regulation and support for autonomy in the family were predictive of lower involvement in problem behavior for boys $F(11, 546) = 5.62, p < .001$ and girls $F(11, 579) = 14.34, p < .001$. Positive and consistent regulation by parents, peers, and teachers was strongly related to low levels of problem behavior. Positive regulation in school, among the family, and with peers, was related to higher academic achievement (as measured by grade point average).

Conversely, Eccles et al. (1995) found excessive psychological control (i.e., few experiences of autonomy) was related to poor adolescent functioning. For instance, problem behavior was linked to the interactional constructs in the parent-child and peer group context. Adolescents who were more involved in problem behavior also had parents who provided little behavioral regulation and psychological autonomy. These adolescents were also more likely to be a part of a peer group that was highly involved in problematic behaviors. Research has shown that a strong sense

of connection with such a peer group is likened with involvement in delinquent behaviors, especially for boys. Once this connection is in place, it is quite difficult to remediate (Eccles et al., 1995). Overall, results suggest that perceived school connectedness and parent-child emotional support are positively correlated with both psychological and behavioral indicators of successful adolescent development and functioning.

Educational and psychological researchers hypothesize that families who promote healthy attachments ensure the development of societal connections, as well as provide an emotional climate in which children feel comfortable exploring their social world while acquiring competencies needed for becoming a productive young adult. Evidence continues to support this prediction.

Using cross-sectional data at the middle school level, Ma (2003) explored how the school context and climate affected students' sense of belonging. Specifically, Ma investigated variations in students' sense of school belonging between students and among schools. Additionally, if so, what student and school characteristics are responsible for the differences? Overall, findings supported the conclusion that students' sense of belonging was mainly a within schools, rather than a between schools discrepancy, with 96% of the variance related to a sense of belonging.

Hierarchical linear modeling (HLM) was utilized since this technique allows for analysis of nested data, in this case, students nested in schools. Two HLM models were tested. The null model contained only the outcome measure, without any explanatory variables at either the student (self-esteem, gender, SES) or school level

(school mean SES, school size, parent involvement). The full model contained student level and school level variables that modeled within-school and between-school variations in sense of belonging. Although there were not many statistically significant predictors at the school level, and differences at the student level were relatively small, an important finding between students' self-esteem and their sense of connectedness was empirically established.

According to Ma (2003), students in the sample with higher self-esteem showed a more positive and statistically significant sense of belonging than students with lower self-esteem ($ES = 0.51 SD$, a large effect). Moreover, students with better general health demonstrated a positive and statistically significant sense of belonging than did students with worse general health ($ES = 0.44 SD$, a practically moderate effect). Students with higher levels of academic achievement showed a positive and statistically significant sense of belonging than did students with lower levels of academic achievement ($ES = 0.06 SD$, a practically small effect). Overall, Ma (2003) concluded that student-level characteristics play a critical role in school belonging.

Self-esteem emerged as the single most important predictor variable affecting students' sense of school belonging. This finding suggests that students' view of themselves is transferable to their attitude toward school. Ma (2003) speculated that individuals with higher confidence in their abilities (i.e., athletic, academic, or social) are more likely to engage in school activities, which reiterate a sense of self-worth. Individuals with low self-esteem and low self-worth may doubt one's abilities and

may alienate themselves in school activities. Alienation is likely to contribute to a student's sense of disconnect from the school environment.

Negative school experiences largely account for adolescents becoming alienated or disconnected from school (Bond, Butler, Thomas, Carlin, Glover, Bowes, & Patton, 2007). Research focusing on school connectedness has emphasized relationship quality (teacher, peer), academic engagement, and health and well-being. While each of these experiences highlights a different outcome, there is clearly a need to understand school connectedness beyond temporal associations. That is, less is known about perceived parent and peer attachments in adolescence and whether these attachments are predictive of school connectedness. The present study addresses this need.

The following research questions will guide this study:

1. Do parent attachment, peer attachment, and school connectedness differ as a function of gender and ethnicity [i.e., Hispanic, African American, and White non-Hispanic]?
2. Do parent attachment, peer attachment, and school connectedness differ as a function of gender and risk status [i.e., at risk students placed in special education (ARSE), at risk students not placed in special education (ARNSE), and not at risk students (NR)]?
3. What is the relationship between parent attachment and school connectedness?
Stated more formally, after controlling for peer attachment, gender, and

ethnicity, how much of the variance in school connectedness is explained by parent attachment?

4. What is the relationship between peer attachment and school connectedness?
Stated more formally, after controlling for parent attachment, gender, and ethnicity, how much of the variance in school connectedness is explained by peer attachment?
5. After controlling for gender and ethnicity, how much of the variance in school connectedness is explained by student risk status [i.e., at risk students placed in special education (ARSE), at risk students not placed in special education (ARNSE) and not at risk students (NR)]?
6. Does risk status [i.e., at risk students placed in special education (ARSE), at risk students not placed in special education (ARNSE) and not at risk students (NR)] moderate the relationship between parent attachment and school connectedness?
7. Does risk status[i.e., at risk students placed in special education (ARSE), at risk students not placed in special education (ARNSE) and not at risk students (NR)] moderate the relationship between peer attachment and school connectedness?
8. Does ethnicity [i.e., Hispanic, African American, and White non-Hispanic] moderate the relationship between parent attachment and school connectedness?

9. Does ethnicity [i.e., Hispanic, African American, and White non-Hispanic] moderate the relationship between peer attachment and school connectedness?

Chapter Three

Methodology

Secure parental attachment, positive peer attachment and a sense of school connectedness may increase academic success and reduce adolescent health risk behavior. Yet there is limited research investigating the relationship among and between parent attachment and peer attachment and school connectedness. The primary purpose of this study was to determine whether parent attachment and peer attachment are predictive of school connectedness in a school-based sample of adolescents in general and special education. The secondary purpose is to determine whether these attachments and connections differ as a function of gender, ethnicity, and risk status [i.e., at risk students placed in special education (ARSE), at risk students not placed in special education (ARNSE) and not at risk students (NR)].

The predictor variables under investigation are student demographics (i.e., gender and ethnicity), risk status, parent attachment, and peer attachment. Parent and peer attachment were measured during fall 2004 using the Inventory for Parent and Peer Attachment (*IPPA*) (Armsden & Greenberg, 1987). The criterion variable is school connectedness and this was measured during fall 2005 using the *School Connection Scale (SCS)* (Brown & Evans, 2002). This chapter describes the sampling procedure, sample characteristics, instrumentation, design, and analytic methodology.

Participants

As part of a follow-up investigation, participants in the proposed study were drawn from a federally funded six-year study [2001-2007] entitled, “A Longitudinal

Study of Co-morbid Disorders in Children and Adolescents.” Specifically, the at risk participants were originally identified in kindergarten or first grade as at risk for developing emotional and behavioral disorders (EBD). A no risk cohort was later added to represent a continuum of risk. The Longitudinal Study, directed by Marjorie Montague, Ph.D., the principal investigator, is supported by a grant from the Office of Special Education Programs in the U.S. Department of Education.

Sampling Procedures

The present study is a continuation of a previously funded project (1994-1998) that screened 628 students in 24 kindergarten and first-grade classrooms at two schools in a large southeastern school district. The *Systematic Screening for Behavioral Disorders (SSBD; Walker & Severson, 1992)* was used to screen students. The *SSBD* is a three-stage multiple gating procedure that utilizes a dimensional approach for identifying both the nature (externalizing and internalizing) and degree (high, moderate, and low) of children’s emotional and behavioral problems. Children who are identified as having externalizing behaviors characteristically display aggressive or delinquent behaviors (e.g., defiant, steals, hits others, destroys property, lies). Children who internalize behaviors typically manifest shy or withdrawn behaviors (e.g., cry frequently, play alone, easily hurt). Of the 628 children screened, 206 were identified as high, moderate, and low risk for developing emotional and behavioral disorders (EBD).

The at risk students in the original study were predominately minority and poor. Approximately 85% of the students’ qualified for the free and reduced lunch program. One school was composed largely of Hispanic students (79%) and, the other,

African American students (72%). Following the *SSBD* guidelines, 206 (33%) students were eventually identified as at low, moderate, and high risk for the development of EBD, 62% were boys and 38% were girls; 43% were African American, 50% Hispanic, and 5% White-non-Hispanic. English was the home language for 48%, Spanish, the home language for 48%, and Creole, the home language for 4% of the children. During the initial screening, 115 (18%) of the children were identified as low risk, 63 (10%) were identified as moderate risk, and 28 (5%) were classified as high risk. Across risk levels, 54% were identified as externalizers and 46% as internalizers.

With the cooperation of school district's database, the original risk sample of 206 students was located in the 2001-2002 academic year, when the students were in middle school. Of the original risk sample ($n = 206$), 100 students agreed to participate in the longitudinal study. Of the non-participants ($n = 106$), 37 declined to participate, 26 did not return consent forms, and 43 could not be located through the school district's database. The demographics for adolescent participants and non-participants appear in Table 3.1. A group of no risk students (NR, $n = 112$) were then recruited from general education language arts classes between August 2002 and December 2003 to provide a continuum of risk. Students returning signed parent permission consent forms and meeting criteria for inclusion (no history of referral for special education) were recruited for the longitudinal study. The total n for the longitudinal study is 212 (100 at risk students and 112 not at risk students).

Table 3.1 Demographics of Longitudinal Participants and Non-participants

Variable	Participants <i>n</i> = 212 <i>n</i> (%)	Non-participants <i>n</i> = 106 <i>n</i> (%)
Gender		
Male	96 (45)	75 (71)
Female	116 (55)	31 (29)
Risk Level		
High	16 (8)	17 (16)
Moderate	45 (21)	36 (34)
Low	39 (18)	53 (50)
No Risk	112 (53)	0 (0)
Exceptionality		
Learning Disabilities	24 (11)	19 (18)
Emotional Disturbance	6 (3)	7 (7)
Mentally Handicapped	2 (1)	0 (0)
Speech Impaired	1 (<1)	3 (3)
Ethnicity		
Hispanic	119 (56)	46 (43)
African-American	72 (34)	51 (48)
White non-Hispanic	21 (9)	7 (7)
Asian	0 (0)	2 (2)

Sample Characteristics

The participants in the present study were drawn from two longitudinal data waves. Currently, eleven waves of data have been collected (Wave 1, *n* = 74; Wave 2, *n* = 144; Wave 3, *n* = 157; Wave 4, *n* = 176; Wave 5, *n* = 166; Wave 6, *n* = 176; Wave 7, *n* = 151; Wave 8, *n* = 158; Wave 9, *n* = 137; Wave 10, *n* = 111; Wave 11, *n* = 108). Data have been collected twice-yearly beginning in the spring of 2002. This study utilized data from wave six (*n* = 176, August 2004 to January 2005) and wave eight (*n* = 158, August 2005 to January 2006). Since longitudinal studies are characterized by a changing *n* due to missing data (i.e., attrition), a brief discussion of this sample is warranted. As previously mentioned, the total number of participants in the

longitudinal study is 212; however, data are available for 176 participants at wave six and 158 participants at wave eight. Participants at wave 6 ($n = 176$) include students who were identified as at risk (46%), not at risk (54%); female (57%), male (43%); Hispanic (55%), African American (36%), and White non-Hispanic (10%). The demographics for the participant sample at data wave six and eight appear in Table 3.2.

Table 3.2 Participants for fall 2004 (wave 6) and fall 2005 (wave 8)

Variable	Wave 6 Participants $n = 176$ n (%)	Wave 8 Participants $n = 158$ n (%)
Gender		
Male	74 (43)	65 (41)
Female	101 (57)	93 (59)
Risk Level		
High	12 (07)	10 (06)
Moderate	36 (21)	30 (19)
Low	32 (18)	30 (19)
No Risk	95 (54)	88 (55)
Exceptionality		
Learning Disabilities	21 (12)	16 (10)
Emotional Disturbance	3 (2)	3 (2)
Mentally Handicapped	1 (<1)	0 (0)
Speech Impaired	1 (<1)	1 (<1)
Ethnicity		
Hispanic	96 (55)	85 (54)
African-American	62 (36)	56 (35)
White non-Hispanic	17 (10)	17 (11)

The sample does not alter significantly at wave eight ($n = 158$) and consisted of participants who were identified at risk (44%), not at risk (55%); female (59%), male (41%); Hispanic (54%), African American (35%), and White non-Hispanic (11%). By wave eight, 2% of the sample dropped out of school and were assessed in

the community. Students at waves six and eight primarily attended large, urban high schools.

Although the samples do not significantly alter demographically between these waves, 9% of the sample is missing data at either point in time. That is, one student did not complete the *IPPA* administered during wave six and eight students did not complete the *SCS* administered during wave eight. Therefore, in an attempt to avoid attrition as a limitation when interpreting results, the final sample consisted of 157 participants who completed assessment sessions at both waves six and eight (Table 3.3). Demographically, 59% were female, 41% male; 44% Hispanic, 35% African American, and 11% White non-Hispanic; 55% are not at risk (NR), 45% at risk. Across risk levels, 7% are high risk, 19% moderate risk, and 19% low risk. More specifically, 16% are classified as at risk students placed in special education (ARSE) and 29% at risk students not placed in special education (ARNSE). All students primarily attended large, urban high schools and were assessed on school site.

Table 3.3 Final participant sample ($n = 157$)

Variable	$n = 157$ n (%)
Gender	
Male	65 (42)
Female	92 (59)
Risk Level	
High	10 (7)
Moderate	30 (19)
Low	30 (19)
No Risk	87 (55)
At Risk	70 (45)
At risk special education	25 (16)
At risk no special education	45 (29)
Exceptionality	
Learning Disabilities	16 (10)
Emotional Handicapped	2 (2)
Emotional Disturbance	1 (<1)
Speech Impaired	1 (<1)
Ethnicity	
Hispanic	84 (54)
African-American	56 (36)
White non-Hispanic	17 (11)

Instrumentation

An overview of the assessments used for this study is provided below. Measures include: 1) The *Inventory of Parent and Peer Attachment (IPPA)* and 2) The *School Connection Scale (SCS)*.

Predictor variables

The *Inventory of Parent and Peer Attachment (IPPA)* (Armsden & Greenberg, 1987) was originally developed to measure attachment in older adolescents. Its purpose is to measure the positive and negative affective and cognitive dimensions of adolescents' relationships with their parents and peers. Specifically, the *IPPA* taps into how well these figures serve as sources of psychological security. Based on Bowlby's

theory of attachment, three broad dimensions are assessed: degree of mutual trust; quality of communication; and extent of alienation and anger.

The original scale included 28 items to assess parent attachment and 25 for assessing peer attachment. For the present study, a short version of the *IPPA* was used consisting of 24 items tapping into the quality of communication, the degree of trust, and alienation in parent and peer relationships. The *IPPA* was used in this study to measure parent attachment and peer attachment, yielding two attachment scale scores. The Parent Attachment scale consists of 12 items and the Peer Attachment scale 12 items. Respondents are asked to rate each item on a 4 point scale (1 = almost always or always to 4 = almost never or never). The *IPPA* is summed by reverse-scoring negatively worded items. Total scores are derived by summing Parent and Peer Communication and Trust subscales, then subtracting the respective Alienation subscale (see Armsden & Greenberg, 1987, for details).

Reliability of the Parent Attachment scale has been reported in the literature at 0.78 (attachment to father) and 0.83 (attachment to mother) which is comparable to other research findings (Dekovic, Buist, & Reitz, 2004). Furthermore, the Peer Attachment scale has been reported as having a reliability of 0.84. Armsden and Greenberg (1987) found moderate to high correlations among parental attachment scores and Family and Social Self scores from the Tennessee Self Concept Scale and to most subscales on the Family Environment Scale. Likewise, peer attachment has been shown to be positively correlated to social self concept as assessed by the Tennessee Self Concept Scale and Family Expressiveness subscale on the Family Environment Scale and is strongly negatively correlated with loneliness.

Peer attachment is modestly correlated with parent attachment as assessed by the *IPPA* (Armsden & Greenberg, 1987). For the purpose of this study, the modified version of the *IPPA* was utilized where items are summed to acquire a parent attachment total score and a peer attachment total score. Reliability coefficients for each subscale resulted in Cronbach's alpha of 0.83 for the Parent Attachment scale and 0.82 for the Peer Attachment scale. Overall, the internal consistency (coefficient alpha) for the 24-item scale was 0.74. A copy of the 24-item modified version of the *Inventory of Parent and Peer Attachment Scale* is provided in Appendix A.

Gender. Gender was used as a categorical predictor variable. Gender was dummy-coded (1) for male and (0) for female. Because the categorical variable has two levels ($k = 2$), dummy coding requires the construction of $k - 1 = 1$ coded variables. The first coded variable (D_1) is constructed by setting the first level of the categorical variable equal to 1 (i.e., male) and D_2 (female) equal to 0. Since the relationship between parent attachment, peer attachment, and school connectedness may differ for males and females, a *t*-test was performed a priori to examine differences between groups. No group differences were found across groups.

Ethnicity. Ethnicity was used as a categorical predictor variable in all analyses. Because this variable has three levels ($k = 3$), regression using dummy-coded variables requires the construction of $k - 1 = 2$ coded variables. Therefore, the first coded variable ($Ethdum_1$) is constructed by setting the first level of the categorical variable equal to 1 and all others equal to 0. The first coded variable, ($Ethdum_1$) represented Hispanic students and for purposes of interpretation, $Ethdum_1$ compared Hispanic students with White non-Hispanic students. The second coded variable ($Ethdum_2$) is

constructed by setting the second level of the categorical variable equal to 1 and all others equal to 0. The second coded variable, (Ethdum₂) represented African American students and for purposes of interpretation, Ethdum₂ compared African American with White non-Hispanic students. The third level of the categorical variable is always equal to 0, this group, White non-Hispanic students served as the baseline group to which all others are compared. The pattern of coded variables is shown below.

Table 3.4 Pattern of dummy coding for ethnicity

	Level of Categorical Variable		
	1	2	3
	Hispanic	African American	White non-Hispanic
Ethdum ₁	1	0	0
Ethdum ₂	0	1	0
	Baseline Category		

Risk status. Risk status was used as a categorical predictor variable in several analyses. As previously discussed, because this variable has three levels ($k = 3$), regression using dummy-coded variables requires the construction of $k - 1 = 2$ coded variables. Therefore, the first coded variable (Riskdum₁) was constructed by setting the first level of the categorical variable equal to 1 and all others equal to 0. The first coded variable, (Riskdum₁) represented at risk students placed in special education (i.e., ARSE) and for purposes of interpretation, is comparing ARSE with NR students. The second coded variable (Riskdum₂) was constructed by setting the second level of the categorical variable equal to 1 and all others equal to 0. The second coded variable, (Riskdum₂) represented at risk students not placed in special education (i.e., ARNSE) and for purposes of interpretation, is comparing ARNSE with NR students. The third

level of the categorical variable is always equal to 0. Not at risk students (i.e., NR) served as the baseline group to which all others are compared. The pattern of coded variables is shown below.

Table 3.5 Pattern of dummy coding for risk status

	Level of Categorical Variable		
	1 At risk special education (ARSE)	2 At risk no special education (ARNSE)	3 No risk (NR)
Riskdum ₁	1	0	0
Riskdum ₂	0	1	0
	Baseline Category		

Although age appears in the school connectedness literature as an area requiring further research, there was little variability in age among the sample across both data points. That is, the majority of students assessed at wave 6 were 15 (45%) and 16 (45%) years of age. Naturally, when students were assessed one year later there was little variability in the sample with the majority of the participants 16 (53%) and 17 (41%) years of age. Therefore, age was not included as a predictor variable in any regression analyses.

Criterion variable

Brown and Evans (2002) conceptualized the *School Connection Scale (SCS)* as an overarching measure with four components: commitment, power, belonging, and belief in rules. Survey questions explore students' perceptions of teacher support, willingness to follow rules, and students' feelings of belonging at school. Building on the traditions of social control theorists (Hirschi, 1969), the *School Connection Scale* was developed with four subscales. The first subscale, power, measures perceived

power within the school context, reflecting the students' ability to influence the context. A second subscale measures belief, or the perceived view of the validity of the institution (Brown, Leigh, & Barton, 2000). A third subscale measures commitment, or the students' view of the school as important or useful to individual goals. Finally, the fourth subscale, belonging, measures the social or emotional attachment to others within the school context. Students were asked to rate 21 questions on a 4-point scale. Ratings include "strongly agree," "agree," "disagree," and "strongly disagree." A total score was obtained by summing all responses. Higher scores indicate students' perceived connectedness to the school environment. Brown et al. (2000) tested the internal reliability of responding and obtained a coefficient alpha of .86 at initial assessment indicating the instrument is reliable. For the present study, the *SCS* was summed across items to acquire a total school connectedness score. The internal consistency (coefficient alpha) for the 21-item scale was .87. A copy of the 21-item *School Connection Scale* is provided in Appendix A.

Procedures

Approval of the Miami-Dade County Public School district and the University of Miami Internal Review Board has been obtained. Prior to data collection, parental consents and students' assents were collected by trained graduate assistants and research associates. Trained graduate assistants conducted all student assessments during waves 6 through 8 (fall 2004 and fall 2005). The *IPPA* was administered to students individually across school sites at wave six (fall 2004). The *SCS* was administered at wave eight (fall 2005).

Each academic semester, students who could be located at schools or within the community completed several rating scales including the *IPPA* and *SCS*. Community students who dropped out of school were contacted by graduate research assistants and interviewed at a convenient location (e.g., at the student's home, work, or local library). Students were given a \$25 gift card for participating in each assessment session.

Analytic Methodology

A series of two-way ANOVA procedures were conducted to determine whether parent attachment, peer attachment, and school connectedness differ as a function of ethnicity and risk status by gender. Results yielding in significant main and interaction effects resulted in follow-up analyses. Next, correlational analyses were conducted to investigate convergent validity among measures and between theoretically similar factors. For instance, the Pearson-moment correlation coefficient (r) determined the degree that the Parent Attachment and Peer Attachment scales and subscales as measured by the *Inventory of Parent and Peer Attachment (IPPA)* were linearly related. However, the primary analytical method of analysis utilized in this study is multiple regression. Since several research questions include multiple qualitative (i.e., ethnicity and risk status) and quantitative predictor variables dummy-regression was utilized for several analyses. The analytical methods used to address each research question are briefly described below.

Multiple Regression

Inference for multiple regression is analogous to that for simple linear regression (Kerlinger & Pedhazur, 1973). However, because there are multiple slope

coefficients, the null hypothesis concerning any combination of slope coefficients can be tested. That is, it is possible to test whether any single slope coefficient equals zero, or whether any combination of slope coefficients equals zero. These tests permit statements about the relationship between each predictor variable and the criterion variable, holding constant (controlling for) every other predictor variable included in the regression specification. However, specific to this study, it is of interest to know whether one or more predictor variable helps improve the prediction of school connectedness (i.e., \hat{Y}) over and above the prediction obtained with them. Therefore, a proportion reduction in error and the F test or (PRE) approach was utilized. More specifically, a full and reduced regression model was used in these analyses.

Parent Attachment outcomes. In order to determine whether there is a relationship between parent attachment and school connectedness, a multiple regression analysis was conducted. Stated more formally, after controlling for peer attachment, gender, and ethnicity, how much of the variance in school connectedness is explained by parent attachment total scores? The full regression model contains parent attachment total scores, peer attachment total scores, gender, and ethnicity and the reduced model contains peer attachment total scores, gender, and ethnicity.

Gender was dummy-coded (1) for male and (0) for female. Ethnicity has three levels ($k = 3$) and regression using dummy-coded variables requires the construction of $k - 1 = 2$ coded variables. Therefore, the first coded variable, (Ethdum₁) compared Hispanic and White non-Hispanic students. The second coded variable (Ethdum₂) compared African American and White non-Hispanic students.

In equation form:

$$\text{Reduced Model: } \hat{Y} = \alpha + \beta_1(X_1 \text{Peer Attachment}) + \beta_2(X_2 \text{Gender}) + \beta_3(X_3 \text{Ethdum}_1) + \beta_4(X_4 \text{Ethdum}_2)$$

$$\text{Full Model: } \hat{Y} = \alpha + \beta_1(X_1 \text{Parent Attachment}) + \beta_2(X_2 \text{Peer Attachment}) + \beta_3(X_3 \text{Gender}) + \beta_4(X_4 \text{Ethdum}_1) + \beta_5(X_5 \text{Ethdum}_2)$$

In essence, the reduced model is predicting school connectedness from peer attachment while statistically controlling for gender and ethnicity. The full model is, in effect, predicting school connectedness from parent attachment, while statistically controlling for peer attachment, gender, and ethnicity. In order to determine whether a relationship exists between parent attachment and school connectedness, after controlling for peer attachment, gender, and ethnicity the residual sums of squares (RSS) full and the RSS reduced must be obtained. Once these values have been calculated, the proportion reduction in error can be computed, as well as an F test of the associated null hypothesis.

Peer Attachment outcomes. In order to determine whether there is a relationship between peer attachment and school connectedness, a multiple regression analysis was conducted. Stated more formally, after controlling for parent attachment, gender, and ethnicity, how much of the variance in school connectedness is explained by peer attachment total scores? The full model contains peer attachment scores, parent attachment scores, gender, and ethnicity and the reduced model contains parent attachment scores, gender, and ethnicity.

In equation form:

$$\text{Reduced Model: } \hat{Y} = \alpha + \beta_1(X_1\text{Parent Attachment}) + \beta_2(X_2\text{Gender}) + \beta_3(X_3\text{Ethdum}_1) + \beta_4(X_4\text{Ethdum}_2)$$

$$\text{Full Model: } \hat{Y} = \alpha + \beta_1(X_1\text{Peer Attachment}) + \beta_2(X_2\text{Parent Attachment}) + \beta_3(X_3\text{Gender}) + \beta_4(X_4\text{Ethdum}_1) + \beta_5(X_5\text{Ethdum}_2)$$

The reduced model is predicting school connectedness from parent attachment, gender, and ethnicity, while the full model is, in effect, predicting school connectedness from peer attachment, parent attachment, gender, and ethnicity. In order to determine whether a relationship exists between peer attachment and school connectedness, after controlling for parent attachment, gender, and ethnicity the residual sums of squares (RSS) full and the RSS reduced must be obtained. Once these values have been calculated, the proportion reduction in error can be computed, as well as an F test of the associated null hypothesis.

School connectedness may in part, depend on students' attachment to parents and peers. It may be the case that students who perceive relatively low attachments may differ as a function of risk status. That is, the relationship between school connectedness and parent and peer attachment may differ among the three risk statuses. Students who report low attachment to parents and peers may also report low school connectedness. Hypothetically, students who report lower parent and peer attachment may be students at risk not placed in special education (ARNSE), while those who report higher parent and peer attachment may be students not at risk (NR) and/or at risk placed in special education (ARSE).

Risk status outcomes. In order to determine whether risk status differs as a function of school connectedness, while statistically controlling for gender and ethnicity, a regression using dummy-variables was used in this analysis.

In this analysis, risk status has three levels ($k = 3$), and regression using dummy-coded variables requires the construction of $k - 1 = 2$ coded variables. Therefore, the first coded variable (Riskdum_1) represented at risk students placed in special education (i.e., ARSE) and for purposes of interpretation, Riskdum_1 compared ARSE with NR students. The second coded variable (Riskdum_2) represented at risk students not placed in special education (i.e., ARNSE) and for purposes of interpretation, Riskdum_2 compared ARNSE with NR students. The third level of the categorical variable is always equal to 0. As mentioned, the not at risk students (NR) served as the baseline group to which all others are compared.

Ethnicity also has three levels in this equation ($k = 3$). Therefore, the first coded variable, (Ethdum_1) represented Hispanic students and for purposes of interpretation, Ethdum_1 compared Hispanic with White non-Hispanic students. The second coded variable (Ethdum_2) represented African American students and for purposes of interpretation, Ethdum_2 compared African American with White non-Hispanic students.

In order to determine how much of the variance in school connectedness is explained by risk status, after controlling for gender and ethnicity, a comparison of the full model containing the dummy-coded variables was compared with the reduced model which contains gender and ethnicity. In this equation, school connectedness

was regressed on student risk status to determine whether risk status was a predictor of school connectedness.

In equation form:

$$\text{Reduced Model: } \hat{Y} = \alpha + \beta_1(X_1\text{Ethdum}_1) + \beta_2(X_2\text{Ethdum}_2) + \beta_3(X_3\text{Gender})$$

$$\text{Full Model: } \hat{Y} = \alpha + \beta_1(X_1\text{Riskdum}_1) + \beta_2(X_2\text{Riskdum}_2) + \beta_3(X_3\text{Ethdum}_1) + \beta_4(X_4\text{Ethdum}_2) + \beta_5(X_5\text{Gender})$$

The reduced model is, in effect, predicting school connectedness from ethnicity and gender, while the full model is predicting school connectedness from risk status, ethnicity, and gender. Stated differently, the reduced model is supporting the null hypothesis that ethnicity and gender in combination do not account for any of the variance in school connectedness over and above risk status. In order to answer this research question, the residual sums of squares (RSS) full and the RSS reduced were obtained. Once these values have been calculated, the proportion reduction in error were computed, as well as the F test of the associated null hypothesis. The F statistic reports any significant differences, while examining t tests determined groups differences.

For purposes of interpretation, β_1 in the reduced model corresponds to the mean school connectedness score for Hispanic compared to White non-Hispanic students; while β_2 corresponds to the mean school connectedness score for African American compared to White non-Hispanic students. Additionally, β_1 in the full model corresponds to the mean school connectedness score for at risk students placed in special education (ARSE) compared to not at risk students (NR); while β_2 corresponds to the mean school connectedness score for at risk students not placed in special

education (ARNSE) compared to not at risk students (NR). The intercept corresponds to the expected or mean school connectedness value for students in the baseline categories (i.e., NR and White non-Hispanic students).

The regression models utilized, up to this point, specify the effects of one or more predictor variable(s) on the outcome variable. Theoretically, each regression model was attempting to explore the relationship (or predictive ability) in a variable, X (i.e., parent attachment, peer attachment, and risk status), with another variable, \hat{Y} (i.e., school connectedness). The following research questions explore a moderated causal relationship in which the relationship between X (i.e., parent and peer attachment) and \hat{Y} (i.e., school connectedness) is moderated by a third variable, Z (i.e., risk group and ethnicity).

Moderation focuses on factors that influence the strength and/or direction of the relationship between the treatment or predictor variable and the criterion variable. In contrast, mediator variables focus on intervening mechanisms that produce and explain the outcome. In essence, mediator variables focus on factors that affect the magnitude of the treatment effect or outcome. This study utilized moderation analysis, which attempt to identify individual differences (e.g., risk group and ethnicity) or contextual variables that strengthen or change the direction of the relationship between the predictor and outcome variable. Gender was not included as a moderator variable since preliminary analyses were not significant.

Risk status as potential moderator between Parent Attachment and School Connectedness. Does risk status [i.e., at risk students placed in special education (ARSE), at risk students not placed in special education (ARNSE) and not at risk

students (NR)] moderate the relationship between parent attachment and school connectedness?

Risk status was dummy-coded as a categorical predictor variable in this analysis. The first coded variable (Riskdum₁) represented the ARSE group. The second coded variable (Riskdum₂) represented the ARNSE group. The third level of the categorical variable represented the NR group and served as the baseline to which all others are compared.

In equation form:

$$\hat{Y} = \alpha + \beta_1(X_1\text{Parent Attachment}) + \beta_2(Z_1\text{Riskdum}_1) + \beta_3(Z_2\text{Riskdum}_2) + \beta_4(X_1Z_1\text{Parent Attachment} \times \text{Riskdum}_1 \text{ interaction regressor}) + \beta_5(X_1Z_2\text{Parent Attachment} \times \text{Riskdum}_2 \text{ interaction regressor})$$

With the quantitative predictor variable risk status, one interaction regressor for each product of a dummy regressor is required. In this case, the regressors X_1Z_1 and X_1Z_2 capture the interaction between parent attachment (i.e., X_1) and risk status (i.e., Z_1 and Z_2). Interactions with polytomous predictor variables therefore permit different intercepts and slopes and among the three risk statuses. The parameters α and β are, respectively, the intercept and slope for the regression of school connectedness on parent attachment among the three risk statuses. In particular, the null hypothesis is testing the interaction $H_0 = \delta = 0$. That is, there are no group differences or interactions among parent attachment scores and student risk statuses.

A hierarchical regression analysis was performed where the continuous predictor variable, parent attachment, was entered first. Second, categorical predictor variables (i.e., risk status) were entered. Finally, the interaction regressor or product

terms was entered (Fox, 1997). F tests are used to compute the significance of each added variable or set of variables to the explanation reflected in R -squared, that is, the proportion of the variance of school connectedness accounted for by student risk status.

Risk status as a potential moderator between Peer Attachment and School Connectedness. Does risk status [i.e., at risk students placed in special education (ARSE), at risk students not placed in special education (ARNSE) and not at risk students (NR)] moderate the relationship between peer attachment and school connectedness?

Risk status was dummy-coded as a categorical predictor variable in this analysis. The first coded variable (Riskdum₁) represented at risk students placed in special education (ARSE). The second coded variable (Riskdum₂) represented at risk students not placed in special education (ARNSE). The third level of the categorical variable is always equal to 0. The no risk status (NR) served as the baseline group to which all others are compared.

In equation form:

$$\hat{Y} = \alpha + \beta_1(X_1\text{Peer Attachment}) + \beta_2(Z_1\text{Riskdum}_1) + \beta_3(Z_2\text{Riskdum}_2) + \beta_4(X_1Z_1\text{Peer Attachment} \times \text{Riskdum}_1 \text{ interaction regressor}) + \beta_5(X_1Z_2\text{Peer Attachment} \times \text{Riskdum}_2 \text{ interaction regressor})$$

For the quantitative predictor variable, risk status, one interaction regressor for each product of a dummy regressor is required. Similar to the previous analysis, the interaction regressors X_1Z_1 and X_1Z_2 capture the interaction between peer attachment (i.e., X_1) and risk status (i.e., Z_1 and Z_2). Interactions with polytomous predictor

variables therefore permit different intercepts and slopes and the three risk statuses. The parameters α and β are, respectively, the intercept and slope for the regression of school connectedness on peer attachment among the three risk statuses. Overall, the null hypothesis is testing the interaction $H_0 = \delta = 0$. That is, there are no group differences or interactions among peer attachment scores and risk status.

A hierarchical regression analysis was performed where the continuous predictor variable peer attachment was entered first. Second, categorical predictor variables (i.e., risk status) were entered into the model. Finally, the interaction regressor or product terms were entered (Fox, 1997). F tests are used to compute the significance of each added variable or set of variables to the explanation reflected in R -squared, or the proportion of the variance of school connectedness accounted for by risk status.

Ethnicity as a potential moderator between Parent Attachment and School Connectedness. Does ethnicity [i.e., Hispanic, African American, and White non-Hispanic] moderate the relationship between parent attachment and school connectedness?

Ethnicity has three levels ($k = 3$) and regression using dummy-coded variables requires the construction of $k - 1 = 2$ coded variables. Therefore, the first coded variable, (Ethdum₁) represented Hispanic students and for purposes of interpretation, Ethdum₁ compared Hispanic with White non-Hispanic students. The second coded variable (Ethdum₂) represented African American students and for purposes of interpretation, Ethdum₂ compared African American with White non-Hispanic

students. The third level of the categorical variable is always equal to 0, this group; White non-Hispanic served as the baseline group.

In equation form:

$$\hat{Y} = \alpha + \beta_1(X_1\text{Parent Attachment}) + \beta_2(Z_1\text{Ethdum}_1) + \beta_3(Z_2\text{Ethdum}_2) + \beta_4(X_1Z_1\text{Parent Attachment x Ethdum}_1 \text{ interaction regressor}) + \beta_5(X_1Z_2\text{Parent Attachment x Ethdum}_2 \text{ interaction regressor})$$

For the quantitative predictor variable ethnicity, one interaction regressor for each product of a dummy-coded regressor is required. In this case, the regressors X_1Z_1 and X_1Z_2 captured the interaction between parent attachment (i.e., X_1) and ethnicity (i.e., Z_1 and Z_2). Interactions with polytomous predictor variables therefore permit different intercepts and slopes and ethnicity. The parameters α and β are, respectively, the intercept and slope for the regression of school connectedness on parent attachment among the three ethnic groups. Overall, the null hypothesis is testing the interaction $H_0 = \delta = 0$. That is, there are no group differences or interactions among parent attachment scores and ethnicity.

A hierarchical regression analysis was performed where the continuous predictor variable, parent attachment, is entered prior to the categorical variable ethnicity and interaction regressors (i.e., $\delta_{11}X_1D_1$ and $\delta_{12}X_1D_2$). F tests are used to compute the significance of each added variable or set of variables to the explanation reflected in R -squared, that is, the proportion of the variance of school connectedness accounted for by ethnicity.

Ethnicity as a potential moderator between Peer Attachment and School Connectedness. Does ethnicity [i.e., Hispanic, African American, and White non-

Hispanic] moderate the relationship between peer attachment and school connectedness?

As previously mentioned, ethnicity has three levels ($k = 3$) and regression using dummy-coded variables requires the construction of $k - 1 = 2$ coded variables. Therefore, the first coded variable, ($Ethdum_1$) represented Hispanic students and for purposes of interpretation, $Ethdum_1$ compared Hispanic with White non-Hispanic students. The second coded variable ($Ethdum_2$) represented African American students and for purposes of interpretation, $Ethdum_2$ compared African American with White non-Hispanic students. The third level of the categorical variable is always equal to 0, this group; White non-Hispanic students served as the baseline group.

In equation form:

$$\hat{Y} = \alpha + \beta_1(X_1 \text{Peer Attachment}) + \beta_2(Z_1 \text{Ethdum}_1) + \beta_3(Z_2 \text{Ethdum}_2) + \beta_4(X_1 Z_1 \text{Peer Attachment} \times \text{Ethdum}_1 \text{ interaction regressor}) + \beta_5(X_1 Z_2 \text{Peer Attachment} \times \text{Ethdum}_2 \text{ interaction regressor})$$

For the quantitative predictor variable, ethnicity, one interaction regressor for each product of a dummy regressor is required. In this case, the regressors $Z_1 D_1$ and $Z_1 D_2$ capture the interaction between peer attachment (i.e., X_1) and ethnicity (i.e., Z_1 and Z_2). The parameters α and β are, respectively, the intercept and slope for the regression of school connectedness on peer attachment among the three ethnic groups. Overall, the null hypothesis is testing the interaction $H_0 = \delta = 0$. That is, there are no group differences or interactions among peer attachment scores and ethnicity.

A hierarchical regression analysis was performed where the continuous predictor variable, peer attachment, is entered prior to the categorical variable

ethnicity and interaction regressors (i.e., $\delta_{11}X_1Z_1$ and $\delta_{12}X_1Z_2$). F tests are used to compute the significance of each added variable or set of variables to the explanation reflected in R -squared, that is, the proportion of the variance of school connectedness accounted for by ethnicity.

Chapter Four

Results

The primary purpose of this study was to determine whether parent attachment and peer attachment are predictive of school connectedness in a school-based sample of adolescents in general and special education. The secondary purpose was to determine whether these attachments and connections differ as a function of gender, ethnicity, and risk group, [i.e., at risk students placed in special education (ARSE), at risk students not placed in special education (ARNSE) and not at risk students (NR)].

This chapter is organized by research procedure. Correlational analyses were conducted to investigate convergent validity among measures. Next, descriptive statistics are presented, that is, analysis of variance (ANOVA) procedures were conducted to investigate whether parent attachment, peer attachment, and school connectedness differ as a function of ethnicity and risk group by gender (i.e., research questions 1 – 2). Finally, results for the multiple (i.e., research questions 3 – 5) and hierarchical regressions (i.e., research questions 6 – 9) are discussed.

Correlational Analyses

Correlation coefficients were computed in order to establish convergent validity, that is, to evaluate the degree to which any two theoretically similar measures (or factors) were related to each other. For example, the *Inventory of Parent and Peer Attachment (IPPA)* was developed in order to assess adolescents' perceptions of the positive and negative affective/cognitive dimensions of relationships with their parents and close friends. Therefore, correlations between theoretically similar factors should

be relatively “high” while correlations between theoretically dissimilar factors should be “low.” For each of the Parent and Peer Attachment scales of the *IPPA*, items are included to assess three aspects of attachment, including Trust, Communication, and Alienation (Armsden & Greenberg, 1987). Inter-correlations among the Parent and Peer Attachment scales, and their respective Trust and Communication subscales, are theoretically similar and were expected to be positive, while correlations among these scales and the Parent and Peer Alienation subscales are theoretically dissimilar. The direction of the relationship among these scales was expected to be negative.

Total score for each of the *IPPA* Parent and Peer Attachment scales is derived by summing Trust and Communication subscales and then subtracting the Alienation subscale score (see Armsden & Greenberg, 1987, for details). Correlation coefficients were computed using the Alienation subscale raw data, since using recoded data necessary for acquiring total attachment scores would result in positive and thus misleading correlation coefficients. Table 4.1 shows the inter-correlation coefficients between the Parent and Peer Attachment scales and subscales. The within scale (i.e., Parent Attachment, Peer Attachment) correlations were consistently higher than those across scales (i.e., Parent Attachment scores with Peer Attachment scores). Likewise, each of the Parent and Peer Attachment scales correlated highly with their respective subscales. Correlations between subscales were also consistently moderately high. For instance, the Parent Attachment scale and the Peer Alienation scale resulted in a moderate negative correlation ($r = -.41, p \leq .01$). Inter-correlations between the Alienation subscale and the Parent Attachment scale ($r = -.72, p \leq .01$) and Peer Attachment scale ($r = -.56, p \leq .01$) are working in the correct theoretical direction.

Table 4.1 Inter-correlation coefficients between the *IPPA* scales and subscales

Measure	Parent Attachment			Peer Attachment		
	Trust	Communication	Alienation	Trust	Communication	Alienation
Parent Attachment	.84**	.87**	-.72**	.14	.15	-.41**
Trust		.63**	-.43**	.17*	.16	-.31**
Communication			-.47**	.02	.18*	-.34**
Alienation				-.21**	-.07	.40**
Peer Attachment				.85**	.82**	-.56**
Trust					.56**	-.33**
Communication						-.17*

** Correlation significant at the 0.01 level.

* Correlation significant at the 0.05 level.

To further investigate the validity of the *Inventory of Parent and Peer Attachment (IPPA)* correlational analyses between these measures and other self-report measures were conducted. As previously mentioned, in each academic semester, with six-month intervals between assessments, student participants completed several rating scales. During waves six (fall 2004) and eight (fall 2005), students completed not only the *IPPA* and the *School Connection Scale (SCS)*, but they also completed the *Multidimensional Self-Concept Scale (MSCS)* (Bracken, 1992), the *Family Environment Scale (FES)* (Moos & Moos, 2002), and the *Behavioral Assessment System for Children – Self-Report of Personality Adolescent (BASC-SRP-A)* (Reynolds & Kamphaus, 1998).

Briefly, the *Multidimensional Self-Concept Scale (MSCS)* is based on a theoretical model that addresses six context-based dimensions of self-concept: Social, Competence, Affect, Academic, Family, and Physical. Reliabilities range across scales (.89 to .98) and good concurrent validity with other measures of self-concept have been reported (Bracken, 1992).

The *Family Environment Scale (FES)* is a measure of a family's social environment across three dimensions: Relationship Dimension (Cohesion, Expressiveness, and Conflict), Personal Growth Dimension (Independence, Achievement Orientation, Intellectual-Cultural Orientation, Active-Recreational Orientation, and Moral-Religious Emphasis), and System Maintenance (Organization and Control). Test-retest reliabilities have ranged from .68 to .86 across subscales during standardization (Moos & Moos, 2002).

Previous research has reported convergent validity based on moderate correlations between the *IPPA* and other measures, including the Family Self-Concept Scale ($r = 0.78$ with Parent attachment; $r = 0.28$ with Peer attachment) and the Social Self-Concept Scale of the *MSCS* ($r = 0.46$ with Parent attachment; $r = 0.57$ with Peer attachment). In addition, significant positive and negative correlations have been recorded between the Parent Attachment scale and the Cohesion ($r = 0.56$), Expressiveness ($r = 0.52$) and Organization ($r = 0.38$) subscales of the *FES* (Gullone & Robinson, 2005). Additionally, significantly negative correlations with the Conflict ($r = -0.36$) and Control ($r = -0.20$) subscales of the *FES* have been reported (Armsden & Greenberg, 1987).

Correlation coefficients were computed for the Parent Attachment and Peer Attachment scales and theoretically similar *FES* subscales. Table 4.2 shows the results of the correlational analyses, which reveal statistically significant relationships across scales. In relation to the *IPPA*, five significant correlations were found between the Parent Attachment scale and the *FES*: (a) Cohesion ($r = 0.64$, $p \leq .01$); (b) Expressiveness ($r = 0.55$, $p \leq .01$); (c) Organization ($r = 0.43$, $p \leq .01$); (d) Conflict (r

= -0.56, $p \leq .01$); and (e) Control ($r = -0.24$, $p \leq .01$). Only four significant correlations were found between the Peer Attachment scale and the *FES*: (a) Cohesion ($r = 0.23$, $p \leq .01$); (b) Expressiveness ($r = 0.25$, $p \leq .01$); (c) Organization ($r = 0.17$, $p \leq .05$); and (d) Conflict ($r = -0.22$, $p \leq .01$).

Table 4.2 Inter-correlation coefficients between the *IPPA* scales and *FES* subscales

Measure	<i>(IPPA)</i>	Family Environment Scale (<i>FES</i>)				
		Cohesion	Expressiveness	Organization	Conflict	Control
	Peer Attachment					
Parent Attachment	.29**	.64**	.57**	.43**	-.56**	-.24**
Peer Attachment		.23**	.22*	.17*	-.22**	-.11

** Correlation significant at the 0.01 level.

* Correlation significant at the 0.05 level.

Finally, correlation coefficients were computed for the Parent Attachment and Peer Attachment scales and the Family Self-Concept and Social Self-Concept scales of the *MSCS*. Table 4.3 shows the results of the correlational analyses, which reveal significant relationships between: (a) the Parent Attachment scale and the Family Self-Concept subscale ($r = .65$, $p \leq .01$); (b) Peer Attachment scale and Family Self-Concept subscale ($r = .27$, $p \leq .01$); (c) Parent Attachment scale and the Social Self-Concept scale ($r = .45$, $p \leq .01$); and (d) the Peer Attachment scale and the Social Self-Concept ($r = .46$, $p \leq .01$).

Table 4.3 Inter-correlation coefficients between the *IPPA* scales and *MSCS* subscales

Measures	<i>Inventory of Parent and Peer Attachment (IPPA)</i>	Multidimensional Self-Concept Scale (<i>MSCS</i>)	
		Family subscale	Social subscale
Parent Attachment	.29**	.65**	.45**
Peer Attachment		.27**	.46*

** Correlation significant at the 0.01 level.

* Correlation significant at the 0.05 level.

To investigate the validity of the *School Connection Scale (SCS)*, inter-correlation coefficients between the subscales and overall connection score were conducted. A total school connection score is derived by summing the Power, Belief, Commitment, and Belonging subscales. Table 4.4 shows the inter-correlation coefficients. Inter-correlations were consistently high with overall School Connection ($r \geq .01$). Likewise, inter-correlations between each subscale were consistently moderately high ($r \geq .01$).

Table 4.4 Inter-correlation coefficients between the *SCS* scale and subscale scores

Measure	School Connection subscales (<i>SCS</i>)			
	Power	Belief	Commitment	Belonging
School Connection (Overall)	.73**	.85**	.83**	.78**
Power		.58**	.41**	.33**
Belief			.60**	.53**
Commitment				.63**

** Correlation significant at the 0.01 level.

* Correlation significant at the 0.05 level.

To further assess the validity of the scale, correlational analyses were conducted between the *SCS* subscales and overall connection score and the Attitude to School subscale of the *Behavioral Assessment System for Children – Self-Report of Personality Adolescent (BASC-SRP-A)*. The *Behavioral Assessment System for Children – Self-Report of Personality Adolescent (BASC-SRP-A)* is multidimensional, meaning that it measures aspects of both personality and behavior [i.e., positive (adaptive) and negative (clinical)] and was developed in an attempt to assist in the identification and differential diagnosis of emotional and behavioral disorders.

Reliabilities range from .80 to the mid .90s for the subscale and composite scores (Reynolds & Kamphaus, 1998).

The Attitude to School scale on the *BASC-SRP-A* surveys students' general opinion of the utility of the school. That is, high scores on this scale indicate feelings of alienation, hostility, and, overall, regard school experiences as dissatisfying. Significant negative correlations were found between the Attitude to School scale and the *School Connection Scale* overall connection score ($r = -.44, p \leq .01$). Thus, the *School Connection Scale* is working in the correct theoretical direction. The results suggest, within this sample, students who report a sense of school connectedness tend to regard school experiences as satisfying.

Descriptive Statistics for Gender, Ethnicity, and Risk group

The secondary purpose of this study was to determine whether parent and peer attachment and school connectedness differ as a function of gender, ethnicity, and risk status [i.e., at risk students placed in special education (ARSE), at risk students not placed in special education (ARNSE) and not at risk students (NR)]. A series of two-factor ANOVA analyses was utilized.

The ANOVA conducted to evaluate the effects of gender and ethnicity on attachment and connectedness indicated no significant interaction on the Parent Attachment scale $F(2, 148) = .77, p = .98$, partial $\eta^2 = .00$; Peer Attachment scale $F(2, 148) = .46, p = .27$, partial $\eta^2 = .00$; and overall School Connectedness $F(2, 148) = .02, p = .98$, partial $\eta^2 = .00$. A significant main effect was observed for gender on the Peer Attachment scale $F(1, 148) = 7.25, p = .00$, partial $\eta^2 = .00$. Female students reported higher levels of attachment to peers ($M = 40.17, SD = 4.87$) than males ($M = 37.20$,

$SD = 6.20$). Although no gender differences were found for parent attachment or school connectedness, the difference for school connectedness was nearly significant ($p = .055$). Females reported higher mean levels of school connectedness ($M = 48.09$, $SD = 6.42$) than males ($M = 46.08$, $SD = 6.37$). The means and standard deviations are given in Table 4.5.

A significant main effect was observed for ethnicity on the Parent Attachment scale $F(1, 148) = 3.07$, $p = .05$, partial $\eta^2 = .04$. Hispanic students reported higher parent attachment than African American and White Non-Hispanic students.

Table 4.5 ANOVA Analysis by Gender and Ethnicity

	Hispanic			African American			White Non-Hispanic		
	<i>M</i>	<i>SD</i>	<i>n</i>	<i>M</i>	<i>SD</i>	<i>n</i>	<i>M</i>	<i>SD</i>	<i>n</i>
	Parent Attachment scale								
Males	39.68	5.82	34	36.09	5.88	23	37.13	7.06	8
Females	37.84	6.76	49	36.63	7.09	32	33.86	6.40	8
	Peer Attachment scale								
Males	37.79	6.10	34	36.17	6.35	23	37.63	6.63	8
Females	40.33	4.38	49	40.09	5.30	32	40.25	6.27	8
	School Connection scale								
Males	46.18	6.51	34	45.61	6.05	23	47.00	7.39	8
Females	48.02	6.07	49	47.72	7.17	32	48.38	5.85	8

The ANOVA conducted to evaluate the effects of gender and risk group on attachment and connectedness indicated no significant interaction on the Parent Attachment scale $F(2, 148) = 1.07$, $p = .35$, partial $\eta^2 = .01$; the Peer Attachment scale $F(2, 148) = .84$, $p = .44$, partial $\eta^2 = .01$; and overall School Connectedness $F(2, 148) = .80$, $p = .45$, partial $\eta^2 = .00$. Consistent with the previous analyses, simple main

effects for gender were observed with female students reporting higher levels of attachment to peers than males $F(1, 148) = 9.76, p = .00$, partial $\eta^2 = .06$. There was no significant difference for risk group on the Parent Attachment scale $F(2, 148) = .17, p = .84$, partial $\eta^2 = .00$; the Peer Attachment scale $F(2, 148) = 2.40, p = .10$, partial $\eta^2 = .00$; and the School Connection scale $F(2, 148) = 2.32, p = .10$, partial $\eta^2 = .03$, suggesting that risk group does not influence parent and peer attachment and school connectedness. The means and standard deviations are given in Table 4.6.

Table 4.6 ANOVA Analysis by Gender and Risk group

	No Risk			At Risk Special Education			At Risk No Special Education		
	<i>M</i>	<i>SD</i>	<i>N</i>	<i>M</i>	<i>SD</i>	<i>n</i>	<i>M</i>	<i>SD</i>	<i>n</i>
	Parent Attachment scale								
Males	38.87	5.51	31	36.71	6.32	14	37.85	6.34	20
Females	36.36	7.25	55	37.64	5.41	11	38.39	6.59	23
	Peer Attachment scale								
Males	38.77	5.52	31	36.29	5.06	14	35.40	7.47	20
Females	40.56	4.68	55	39.45	7.20	11	39.83	4.00	23
	School Connection scale								
Males	47.13	6.04	31	46.43	5.92	14	44.20	7.03	20
Females	48.84	6.05	55	45.27	6.96	11	47.09	6.77	23

Multiple Regression Analyses

The analytic method used to answer the first multiple regression analysis slightly differs from questions four and five; accordingly, a brief description is necessary. As previously mentioned, the values of the regression coefficients depend

upon the variables in the model. The way predictors are entered into the model can have an impact on the outcome as related to the value of the regression coefficients.

Initially, analysis one was run using a forced entry method in which all predictors were entered into the regression model simultaneously. As previously mentioned, the entry method does not allow the experimenter to make decisions about the order in which variables are entered. The assessment of the regression model resulted in one significant predictor of school connectedness (i.e., parent attachment). Previous research has shown that gender is a consistent and significant predictor of school connectedness. Therefore, the analysis was rerun, again including all predictors; however, a stepwise method was utilized. In stepwise regressions, decisions about the order in which predictors are entered are based purely on mathematical criteria. Resulting parameters and the second analysis revealed a second significant predictor of school connectedness (i.e., gender). Therefore, the first analysis utilizes a stepwise regression method. Subsequent analyses will utilize the forced entry method in which all predictors are forced into the regression model simultaneously.

Parent and Peer Attachment and Risk Status Outcomes

Three multiple regression analyses were conducted to predict students' overall sense of school connectedness. For the first analysis, a multiple regression was conducted to evaluate how much the variance in school connectedness is reduced by predicting school connectedness from parent attachment, while statistically controlling for peer attachment, gender, and ethnicity. The predictors were parent attachment total scores, peer attachment total score, gender, and ethnicity, while the criterion variable

was school connection total score. The results of this analysis indicated that parent attachment and gender accounted for a significant amount of the variance in school connectedness $R^2 = .11$, $F(2, 153) = 9.35$, $p < .00$.

The regression coefficients for each predictor are of interest since the b values for each predictor provide the individual contribution of each predictor to the outcome in the model. That is, the regression coefficient b is the average amount the criterion (i.e., school connectedness) increases when the predictor (i.e., parent attachment) increase one unit and other independents (i.e., gender and ethnicity) are held constant (Field, 2005). In the case of two or more predictors, the b coefficient is a partial regression coefficient. Of all the predictors in this analysis, parent attachment total score was most strongly related to overall school connectedness. Supporting this conclusion was the strength of the zero-order correlation between parent attachment and school connectedness, which was $.29$, $p < .00$, as well as the comparable partial regression coefficient partialling out the effects of other predictors, which was $.30$, $p < .00$.

Although not statistically significant in this equation, ethnicity and its relationship to school connectedness is worth noting. Hispanic and African American students, compared to White Non-Hispanic students, reported lower levels of school connectedness.

Next, a multiple regression analysis was conducted to evaluate how much the variance in school connectedness is reduced by predicting school connectedness from peer attachment, while statistically controlling for parent attachment, gender, and

ethnicity. The predictors were peer attachment, parent attachment, gender, and ethnicity, while the criterion variable was the total school connection score.

The regression was significant ($p \leq .00$). The linear combination of peer attachment, parent attachment, gender, and ethnicity, accounted for a significant amount of the variance in school connectedness $R^2 = .12$, $F(5, 153) = 4.02$, $p \leq .00$. Of all the predictors, parent attachment was most strongly related to school connectedness. Peer attachment scores were not significantly correlated with school connectedness. Supporting this conclusion is the strength of the zero-order correlation between peer attachment and school connectedness, which was $.19$, $p \leq .40$. The addition of parent attachment as a predictor ($\beta = .29$, $t = 3.49$, $p \leq .00$), however, made a significant contribution to the prediction of school connectedness. Similar to the previous analysis, parent attachment correlates best with the *School Connection Scale*, and so it is likely that this variable will be a good predictor of school connectedness. Zero-order and partial correlations support this conclusion as parent attachment has the highest partial correlation, controlling for peer attachment, gender, and ethnicity ($r = .29$, $p \leq .00$).

For the third analysis, a multiple regression was conducted to evaluate how much the variance in school connectedness is reduced by predicting school connectedness from risk group, while statistically controlling for gender and ethnicity. The predictors were risk group, gender, and ethnicity, while the criterion variable was school connection total score. For purpose of interpretation, NR, female, and White Non-Hispanic students served as the baseline category. The regression was not significant $F(5, 155) = 1.54$, $p = .18$, suggesting there are no mean differences among

risk groups on levels of school connectedness, despite the statistical control for gender and ethnicity. Therefore, risk group is not a predictor of school connectedness.

The regression models utilized, up to this point, specify the effects of one or more predictor variables on the outcome variable. Statistically, each regression model was attempting to explore the predictive ability in a variable, X (i.e., parent attachment, peer attachment, risk status), with another variable, Y (i.e., school connectedness). The remaining research questions utilize a moderator causal relationship in which the relationship between X (i.e., parent and peer attachment) and Y (i.e., school connectedness) is moderated by a third variable, Z (i.e., risk group and ethnicity).

Hierarchical Regression Analyses

In the case of qualitative and continuous predictor(s), a hierarchical regression analysis was performed. That is, the continuous predictor variable(s) are entered first into the regression model, followed by categorical predictor variable(s) and, finally, the interaction regressor or product terms (i.e., X_1Z_1 and X_1Z_2) (Kerlinger & Pedhazur, 1973). As previously mentioned, with qualitative predictor variables, one interaction regressor for each product of a dummy variable is required. For the purpose of interpreting questions 6-9, the risk group interaction regressor X_1Z_1 , captures the interaction between the Parent Attachment scale and Peer Attachment scale and NR and ARSE students, respectively, where X_1Z_2 captures the interaction between the Parent Attachment scale and Peer Attachment scale and NR and ARNSE students, respectively. Likewise, the ethnicity interaction regressor X_1Z_1 captures the interaction between the Parent Attachment scale and Peer Attachment scale and Hispanic and

White Non-Hispanic students, respectively, where X_1Z_2 captures the interaction between the Parent Attachment scale and Peer Attachment scale and African American and White Non-Hispanic students, respectively.

The interaction regressors were created by multiplying each dummy-coded risk and ethnic group by parent or peer attachment total scores. F tests were used to compute the significance of each added variable or set of variables to the explanation reflected in R -squared. That is, the proportion of variance of school connectedness accounted for by parent attachment as a single predictor, followed by the linear combination of predictors (i.e., parent attachment, peer attachment, risk group, and ethnicity). The R -square change statistic at each step is of interest.

Two sets of hierarchical regression analyses were conducted to predict whether risk group and ethnicity moderate the effects of parent attachment and peer attachment on school connectedness. The first series of analyses was conducted to predict whether risk group moderates the effects of parent attachment on school connectedness, the second, to determine whether risk group moderates the effects of peer attachment on school connectedness. The last series of analyses was conducted to determine whether ethnicity moderates the effects of parent attachment and peer attachment on school connectedness, respectively.

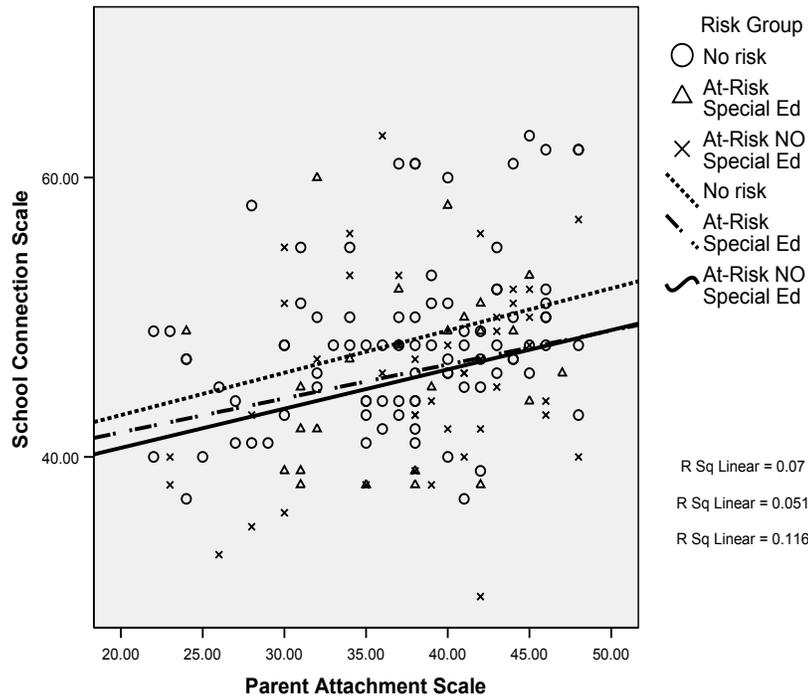
Regression of School Connectedness on Parent and Peer Attachment by Risk Group

The first analysis was conducted to evaluate whether risk group moderates the effects of parent attachment on school connectedness. The predictors were parent attachment total score, risk group [i.e., at risk students placed in special education (ARSE), at risk students not placed in special education (ARNSE) and not at risk

students (NR)], and the risk group x parent attachment interaction regressors, while the outcome variable was school connection total score. For an interaction effect to exist in the moderator framework, the effect of the parent attachment on school connectedness must differ depending on the level of the moderator variable, i.e., risk status. For purposes of interpretation, if the slopes are identical, then the effects of parent attachment on school connectedness are the same for students at risk and not at risk. Thus, there are no interaction effects. However, if the slopes differ, risk group moderates the effect of parent attachment on levels of school connectedness.

A scatterplot of overall school connection regressed on parent attachment by risk group is presented in Figure 1. The sample appears to start at the same initial intercept on the vertical (Y) axis (i.e., mean school connection total score) as verified by the significant F change statistic ($p \leq .05$). Although not significant, ARNSE students started at the lowest point on the vertical (Y) axis followed by the ARSE students. Mean differences on the School Connection scale were found with the effects of parent attachment varying between NR and ARNSE students ($\beta = -2.73$, $t = -2.40$, $p \leq .05$).

Figure 4.1 School Connectedness Regressed on Parent Attachment by Risk Group



The regression analysis revealed that of the 3 predictors, Parent Attachment and risk group (Model 2, Table 4.7) was significantly related to school connection total scores, $R^2 = .12$, $F(3, 150) = 6.94$, $p \leq .05$. The sample multiple correlation coefficient was .34, indicating that approximately 12% of the variance of school connectedness in the sample can be accounted for by the combination parent attachment and risk status. The b coefficient for the Parent Attachment scale ($b = .29$) reflects a positive effect of parent attachment on school connectedness and was significant $F(1, 152) = 13.63$, $p \leq .01$, while the squared semipartial correlation is equal to .08, indicating that the effect of parent attachment as a single predictor accounted for 8% of the variance in school connectedness (Model 1, Table 4.7).

Differences were observed among risk groups. All the bivariate correlations between risk group and overall school connectedness were negative. However, only

the partial correlation between NR and ARNSE students and school connection total score was significant. The b coefficient for ARNSE students was equal to -2.73 ($t = -2.40$, $p \leq .05$), suggesting that overall school connectedness decreased for ARNSE students compared to NR students. The R -square for the product terms or interactions between risk groups on levels of parent attachment was not significant ($p = .97$). As such, the slopes between risk groups are not significantly different, suggesting that risk group does not moderate the effects of parent attachment on levels of school connectedness.

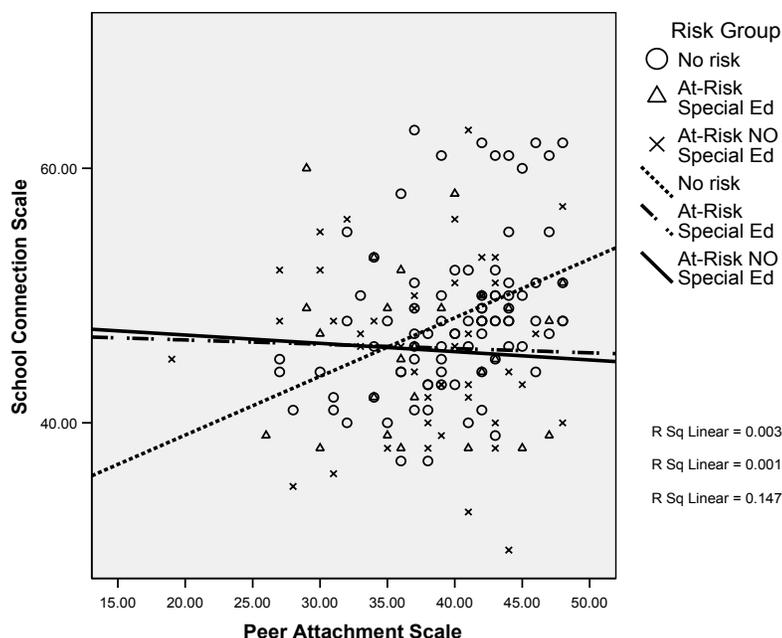
Table 4.7 Risk Group as a moderator of Parent Attachment on School Connectedness

	Regression Equations					
	Model 1		Model 2		Model 3	
	b	t	b	t	b	t
Step 1						
Parent Attachment scale	.28	3.69	.29	3.85	.30	3.11
Step 2						
Risk Group						
ARSE (Riskdum ₁)			-2.26	-1.63	-.04	-.00
ARNSE (Riskdum ₂)			-2.73	-2.40	-1.93	-.29
Step 3						
Interaction Regressor ₁					-.06	-.25
Interaction Regressor ₂					-.02	-.12
R^2	.08		.12		.12	
Adj. R^2	.08		.04		.00	
Overall F	13.63***		3.39*		.03	
* $p \leq .05$; *** $p \leq .001$						

The second analysis, was conducted to evaluate whether risk group moderates the effects of peer attachment on overall school connectedness. The predictors were peer attachment total scores, risk group, and risk group x peer attachment interaction regressors, while the outcome variable was school connection total score.

A scatterplot of the School Connection scale regressed on the Peer Attachment scale by risk group is presented in Figure 2. Greater slope differences were observed for NR students compared to at risk students. Specifically, a positive relationship between school connectedness and peer attachment was observed for NR students ($b = .46, t = 3.47, p \leq .00$), and a negative relationship between school connectedness and peer attachment for ARNSE ($b = 18.38, t = 2.32, p \leq .05$). Moreover, there is an interaction effect present, meaning that peer attachment does not have the same effect for risk groups on levels of school connectedness.

Figure 4.2 School Connectedness Regressed on Peer Attachment by Risk Group



The regression analyses revealed that the common regression slope hypothesis (Model 1, Table 4.8) in which peer attachment has an influence on the outcome variable, school connectedness, was significant $F(1, 152) = 5.74, p \leq .05$. A common regression line fits the data (as seen by the significant F change statistic), and there appears to be a positive relationship between peer attachment and school

connectedness ($b = .22$, $t = 2.40$, $p \leq .05$). Peer attachment as a single predictor explains 4% of the variance in school connectedness.

Model 2 revealed no significant differences among intercepts between risk groups $F(2, 150) = 1.87$, $p = .16$. Thus, the intercepts among risk groups start at similar points on the vertical (Y) axis. The additive model is not sufficient in describing the outcome. That is, the addition of risk group does not enhance the prediction of school connection over and above that obtained from just using peer attachment total scores.

The R -square in Model 3 is significant ($p \leq .05$). This indicates that the interaction or product terms between risk groups on levels of peer attachment are significantly different. As such, the slopes between groups are significantly different. Specifically, levels of peer attachment for NR students appear superior to that of the risk students ($p \leq .05$). The regression coefficient for ARNSE students was 18.38, and had an estimated standard error of 7.94, and a 95% confidence interval of 2.70 to 34.06. The t test of the coefficient was statistically significant ($t = 2.32$, $p \leq .05$), suggesting that there is a significant difference in school connection scores between NR and ARNSE students. The squared semi-part correlation for this product term was .04, indicating that the interaction effect accounted for 4% of the variance in school connectedness.

The interaction regressor can be interpreted as the slope difference for the regression of Y onto X between the groups coded 1 on the dummy variable minus the baseline or reference group on the dummy variable (Jaccard & Turrisi, 2003). The regression coefficient for the ARNSE interaction term was -.53, and had an estimated

standard error of .20, and a 95% confidence interval of -.93 to -.125. The t test of the coefficient was statistically significant ($t = -2.59, p \leq .01$), suggesting the presence of an interaction between NR (coded 0) and ARNSE (coded 1) students. The squared semi-part correlation for this product term was -.21, indicating that the interaction effect accounted for 4% of the variance in school connectedness. Overall, for every one-unit increase in peer attachment, school connectedness is expected to decrease for ARNSE students.

The regression coefficient for the ARSE interaction term was -.49, and had an estimated standard error of .24, and a 95% confidence interval of -.98 to -.01. The t test of the coefficient was statistically significant ($t = -2.03, p \leq .05$), suggesting the presence of an interaction between NR (coded 0) and ARSE (coded 1) students. The squared semi-part correlation for this product term was -.16 indicating that the interaction effect accounted for 3% of the variance in school connectedness. Overall, for every one-unit increase in peer attachment, school connectedness is expected to decrease for ARSE students.

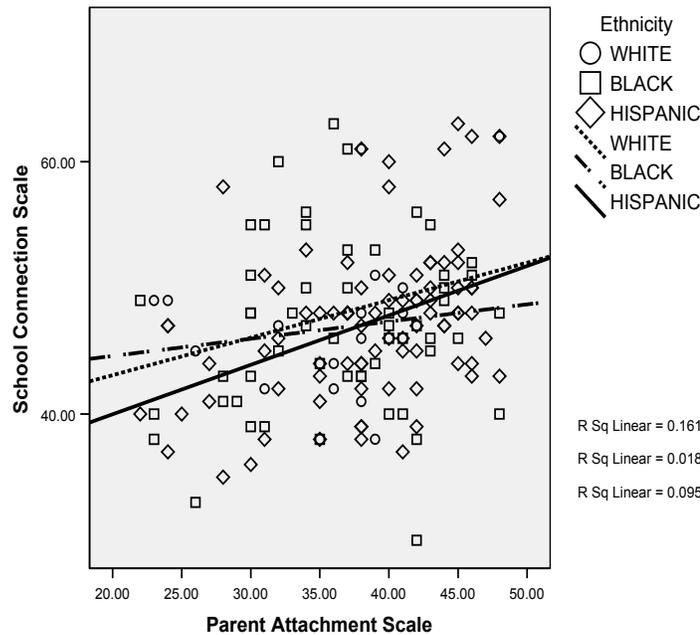
Table 4.8 Risk Group as a moderator of Peer Attachment on School Connectedness

	Regression Equations					
	Model 1		Model 2		Model 3	
	<i>b</i>	<i>t</i>	<i>b</i>	<i>t</i>	<i>b</i>	<i>t</i>
Step 1						
Peer Attachment scale	.22	2.40	.18	2.00	.46	3.47
Step 2						
Risk Group						
ARSE (Riskdum ₁)			-1.89	-1.31	17.40	1.84
ARNSE (Riskdum ₂)			-2.08	-1.75	18.38	2.32
Step 3						
Interaction Regressor ₁					-.49	-2.03
Interaction Regressor ₂					-.53	-2.59
<i>R</i> ²	.04		.06		.11	
Adj. <i>R</i> ²	.04		.02		.05	
Overall <i>F</i>	5.74*		1.87		4.06*	
* <i>p</i> < .05; *** <i>p</i> < .001						

Regression of School Connectedness on Parent and Peer Attachment by Ethnicity

The first analysis was conducted in order to evaluate whether ethnicity moderates the effects of parent attachment on school connectedness. The predictors include parent attachment total score, ethnicity (Hispanic, African American, and White Non-Hispanic) and the ethnicity x parent attachment interaction regressors. The scatterplot presented in Figure 4 reveals no mean differences on the vertical (*Y*) axis, suggesting no variation among school connection total scores ($p = .73$).

Figure 4.3 School Connectedness Regressed on Parent Attachment by Ethnicity



The regression analyses revealed that of the three models, model 1 (Table 4.9) the common regression slope hypothesis, was significant $F(1, 155) = 13.23, p \leq .001$. As with previous analyses, a common regression line fits the data and a relationship is observed between parent attachment and school connectedness ($b = .27, t = 3.64, p \leq .00$). The difference in intercepts among ethnic groups was not significant $F(2, 153) = .320, p = .73$ (Model 2). Thus, the regression lines between groups start at similar points on the vertical (Y) axis. The R -square in Model 3 was also not significant, suggesting that the interactions among ethnic groups on levels of parent attachment are not significant ($p = .23$). As such, the slopes among ethnic groups are not significantly different. Since the interaction model and main effect model were not significant, we can conclude that a common regression model is sufficient in describing the relationship between parent attachment and school connection for

ethnicity. That is, the effects of parent attachment on school connectedness are not moderated by ethnicity.

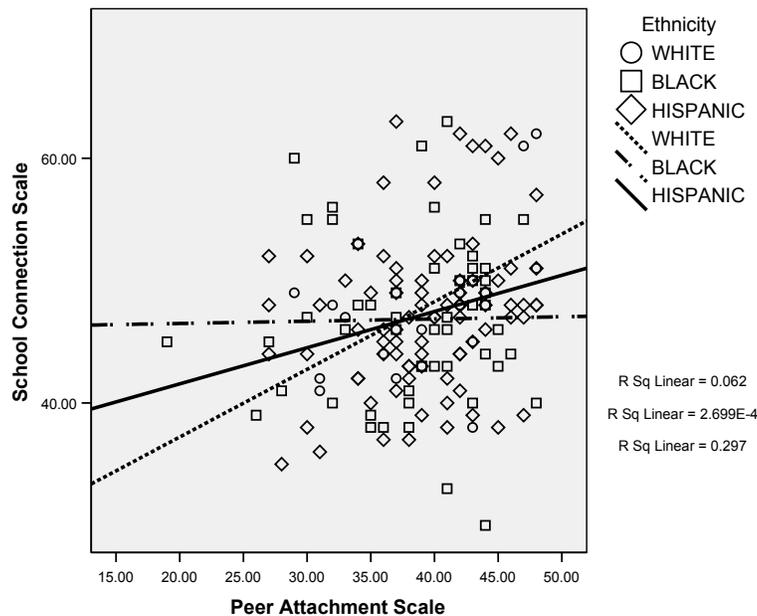
Table 4.9 Ethnicity as a moderator of Parent Attachment on School Connectedness

	Regression Equations					
	Model 1		Model 2		Model 3	
	<i>b</i>	<i>t</i>	<i>b</i>	<i>t</i>	<i>b</i>	<i>t</i>
Step 1						
Parent Attachment scale	.27	3.64	.28	3.65	.51	2.52
Step 2						
Ethnicity						
Hispanic (Ethdum ₁)			-1.32	-.79	4.23	-.54
African American (Ethdum ₂)			-1.20	-.70	12.52	-1.44
Step 3						
Interaction Regressor ₁					-.16	-.76
Interaction Regressor ₂					-.38	-1.61
<i>R</i> ²	.08		.08		.10	
Adj. <i>R</i> ²	.08		.00		.02	
Overall <i>F</i>		13.24***		.32		1.50

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

The final analysis was conducted to evaluate whether ethnicity moderates the effects of peer attachment on school connectedness. The scatterplot of school connectedness regressed on peer attachment presented in Figure 4 reveal no mean differences on overall connectedness scores and no significant effects of peer attachment scores among ethnic groups.

Figure 4.4 School Connection Regressed on Peer Attachment by Ethnicity



The regression analyses revealed one significant model. Model 1 (Table 4.10), the common regression slope hypothesis, was significant and peer attachment was observed to have an influence on the outcome variable school connectedness $F(1, 152) = 5.74, p \leq .05$. The common regression line fits the data (as seen by the significant F change statistic) and there appears to be a positive relationship between peer attachment, when used as a single predictor, and school connectedness ($b = .22, t = 2.40, p \leq .05$). Results for Model 2 indicate that the difference in intercepts among ethnic groups is not significant $F(2, 150) = .09, p = .92$. Thus, the regression lines for all students start at similar points on the vertical (Y) axis. Finally, Model 3, the R -square, was not significant $F(2, 148) = 2.00, p = .14$, indicating that the ethnic by peer attachment interaction terms are not significant. As such, the slopes are not significantly different. Overall, from this analysis we can conclude the effects of peer

attachment on school connectedness are not moderated by ethnicity. These and the other results will be discussed in chapter five.

Table 4.10 Ethnicity as a moderator of Peer Attachment on School Connectedness

	Regression Equations					
	Model 1		Model 2		Model 3	
	<i>b</i>	<i>t</i>	<i>b</i>	<i>t</i>	<i>b</i>	<i>t</i>
Step 1						
Peer Attachment scale	.22	2.40	.22	2.36	.55	2.16
Step 2						
Ethnicity						
Hispanic (Ethdum ₁)			-.50	-.29	9.48	.83
African American (Ethdum ₂)			-.75	-.41	19.96	1.73
Step 3						
Interaction Regressor ₁					-.26	-.89
Interaction Regressor ₂					-.53	-1.82
<i>R</i> ²	.04		.04		.06	
Adj. <i>R</i> ²	.04		.00		.03	
Overall <i>F</i>	5.74*		.08		.14	
* <i>p</i> < .05; *** <i>p</i> < .001						

Chapter Five

Discussion

Decades of research in psychology, sociology, and education correlate adolescent adjustment and development with emotional, behavioral, and academic outcomes. Students who experience school as a place where they feel a sense of connectedness, a sense of purpose and community, are absent less often, engage in fewer health risk behavior, and have higher academic motivation and achievement compared to students who do not experience school as such a place (Battistich & Hom, 1997). Despite an existing body of literature on parent attachment, peer attachment, and school connectedness, the relationship between these attachments and connections has yet to be empirically investigated. Further, research has yet to look specifically at adolescents placed in special education programs.

The present study examined: (1) the convergent validity of its measures; (2) the effects of parent attachment, peer attachment, and school connectedness as a function of ethnicity and risk group by gender; (3) the relationship between overall school connectedness and parent attachment, peer attachment, and risk status; and (4) whether risk group and ethnicity moderate the relationship between parent attachment and peer attachment and school connectedness, respectively. Statistically, this study sought to identify a linear combination of predictors that correlated maximally to the outcome variable, school connectedness. This chapter is organized into four sections: correlational outcomes, descriptive outcomes, multiple regression outcomes, and hierarchical regression outcomes. Finally, study limitations and recommendations for future areas of research are discussed.

Correlational Outcomes

Investigations of convergent validity for the *Inventory of Parent and Peer Attachment (IPPA)* and *School Connection Scale (SCS)* resulted in the establishment of their psychometric soundness. That is, the present study found significant correlations between these measures and other self-report measures. Correlations between the *IPPA* scales and subscales indicated that adolescents who report a degree of mutual understanding, trust, and spoken communication with parents (i.e., perceived a secure parental attachment) were likely to report a degree of mutual trust and communication with peers. Likewise, if students reported feelings of anger and interpersonal alienation with parents, they tend to report feeling interpersonally alienated from peers. Correlation coefficients between the *IPPA* Parent and Peer Attachment scale and *Family Environment Scale (FES)* Cohesion and Expressiveness subscales were moderately high. Results from the present study suggest that students who reported parent and peer attachment were likely to report a degree of commitment, help, and family support (Cohesion) and a direct expression of feelings among family members (Expressiveness). Further, students who reported parent attachment tended to report that family members did not openly express anger (Conflict) and that parents were less likely to set rules and procedures utilized to govern family life (Control).

Results from the inter-correlational analysis of the *SCS* overall scale and subscales signify that students who experience a personal sense of school connectedness (i.e., experience social support, empathy, praise, and attention in a clear and consistent manner) consistently reported a sense of perceived power within the

school context, reflecting their capacity to influence the school environment. These students believed in the validity of the school as a formal institution, perceived schooling as important and useful to their individual goals, and perceived a social and emotional attachment to others within the school setting. Understanding how school relations, as described by adolescents, are associated with their personal values and behaviors is necessary for fostering and successfully establishing a sense of school connectedness.

Descriptive Outcomes

The descriptive analyses resulted in two simple main effects: one for gender and one for ethnicity. Gender is discussed first. Much of the research on parent attachment, peer attachment, and school connectedness consider gender differences. In the present study, female students reported higher peer attachment than males. This finding was not surprising and is consistent with attachment literature. Wentzell and Caldwell (1997) found that female students reported significantly higher peer attachment than male students. The authors concluded that males develop significantly more negative relationships with peers than females, suggesting that females have more friends and appear to value adolescent friendships more so than males. In an attempt to explain this behavior, Ryan, Stiller, and Lynch (1994) reported that males were less likely to utilize peers for emotional concerns and report that they have no one to turn to for emotional support and school concerns. The authors suggest that these behaviors are linked with poor school adaptation and motivation (i.e., school connectedness), as well as lower self-esteem and identity integration.

Research has sought to better comprehend the uniqueness of the adolescent-peer relationship (Blyth & Traeger, 1988; Blyth, 1982; Reisman, 1985; Armsden, 1986; Faust, Baum, & Forehand, 1985). Claes (1992) found that females and males had a similar number of peer attachments; however, females reported significantly stronger attachment to peers than males. Cotterel (1994) examined how attachment strengthens during adolescence in specific areas of functioning, specifically areas of academic adjustment. He found that in boys there is a relationship between peer attachment and self-image, particularly in terms of academic adjustment. In an attempt to explain this behavior, Cotterel suggested that peer relationships may impact future academic plans as peer attachment becomes more critical to the self-image of vocational and educational outcomes.

Little research has been conducted comparing attachment across racial or ethnic groups (Wei, Russell, Mallinckrodt, & Zakalik, 2004). In the present study, Hispanic students reported significantly higher parent attachment than African American and White non-Hispanic students. Greenberg et al. (1983) examined the effects of parent and peer attachment to overall well-being in a sample of adolescents. Results indicated that parent attachment had a stronger relationship to well-being than peer attachment. According to Greenberg et al. (1983), the strong parent-adolescent attachment relationship allowed adolescents to independently seek out and thrive in new situations. Greenberg explained this behavior by concluding that attachment to parents depended not on proximity to the parent, but, rather, on the emotional ties that bind them.

Exploring ethnic differences in college students, Rice, Cunningham, and Young (1997) found no differences in parent attachment between African American and White non-Hispanic students. Further, it was found that African American students reported lower scores than did White non-Hispanic students on ratings of their fathers' emotional self-expression. Lopez, Melendez, and Rice (2000) examined parental attachment as perceived by African American, Hispanic, and White non-Hispanic college students. In general, the authors found no differences among the three ethnic groups, except that African Americans reported significantly greater overprotection from their mothers relative to their White non-Hispanic peers. In another study, Greenberger and Chen (1996) found that Asian American students reported significantly lower levels of parental warmth and acceptance than did White non-Hispanic students. Thus, there is some evidence suggesting differences between African American and White non-Hispanic students and between Asian American and White non-Hispanic students. Because racial-ethnic differences in attachment and school connectedness may vary from school to school, additional research is required. Further, research is needed in order to understand whether ethnic differences moderate the relationship between students' attachment and school connectedness and, thus, have an impact on academic engagement.

Multiple Regression Outcomes

Three multiple regressions were conducted to predict how much the variance in school connectedness is reduced by predicting overall school connectedness from parent attachment, after controlling for peer attachment, and risk group. According to the first analysis, the linear combination of parent attachment and gender accounted

for a significant amount of the school connectedness variance. This finding was not surprising and is consistent with previous research. There is merit in the theory that connectedness, particularly as a school level variable, may reflect an extension and reciprocation of basic attachment and bonding processes (Bowlby, 1969/1982). Like attachment indicators, connectedness reflects proximity seeking behavior and positive affect for people, places, and activities. Carter, McGee, Taylor, and Williams (2007) explored the effects of attachment relations on adolescent health outcomes. Results indicated that adolescents who report secure parent attachment were likely to report overall psychological health, fewer negative life events, and experience less distress than adolescents who report insecure parent attachment.

Further, connectedness has, as its source, relationships and experiences with others in which one experiences and thus develops esteem and competence. Early in life, secure attachment to a primary care giver provides children with their initial foundation of support, esteem, and praise (Ainsworth, 1989). In turn, deprived or disruptive attachments can produce aversive effects (Margalit & Levin, 1994). The degree to which connectedness promotes or protects against the initiation of health risk behavior depends upon the type of connectedness adolescents experience at school. As the child develops, other forms of social support enter the lives of youth, such as interpersonal relationships with peers and teachers and affiliations with groups. Consequently, attachment, initiated by a primary caregiver, is the initial source of relating positively or negatively to others, which adolescents reciprocate through connectedness or disconnectedness. In general, adolescents who report secure attachments also report greater connectedness in contexts with which they feel praise

(and thus competent), empathized with (and thus understood), and attended to (and thus important) whether at home, in school, or in the neighborhood (Karcher, 2004). This study lends support to previous research in this area.

The national average level of school connectedness in schools where students report a sense of connectedness is 3.6, suggesting a moderate to high level of connectedness (Blum, McNeely, & Rinehart, 2002). However, recent studies suggest that by high school, as many as 40 to 60 percent of students are disconnected from school (U.S. Department of Education, 2006). This sense of disconnection has consistently worried educators, researchers, and policy makers since school connection is vital for adolescent social, emotional, and academic engagement. The present study found comparable findings to national averages in that half of the sample reported moderate to high levels of overall school connectedness. Specifically, more than half the sample felt committed, viewing the school environment as important or useful to individual goals as well as reporting social and emotional attachment to others within the school context. As such, students perceived school connectedness as a positive source of influence in their lives. Still, 31 percent, or the national average of students who do not feel connected to school, are those who are more likely to engage in health risk behavior (Blum et al. 2002). The present study found comparable findings to national averages. Specifically, less than half of the sample did not perceive a strong sense of power within the school context, reflecting their ability to personally influence the school environment, and less than half viewed the school as an invalid institution.

The concept of parent and peer attachment as contributors to adolescent well-being has been discussed in the literature (Sartor & Youniss, 2002; Youniss & Smollar, 1985; Blyth, 1982; Cauce, Felner, & Primavera, 1982; Greenberg et al., 1983; Raja, McGee, & Stanton, 1992). According to Youniss, attachment relationships and connections are the means through which adolescents begin to develop their own perceptions, belief systems, and values about themselves and their world. Intense and long-lasting attachment relationships based on secure affectional bonds have been found, in particular, to have positive effects on self-esteem (Cassidy, 1988) and emotional adjustment (Sroufe, Fox, & Pancake, 1983). The role of attachment on adjustment, first introduced by Bowlby (1982), has recently not only included examinations of attachment to parents but also attachment to peers during adolescence (Kahn & Antonucci, 1980; Greenberg et al., 1983).

The present study also examined the relationship between peer attachment and school connectedness. Results indicate a linear combination of peer attachment, parent attachment, gender, and ethnicity accounted for a significant amount of the school connectedness variance, suggesting that secure attachments with peers and parents during adolescence are related to school connectedness. According to the literature, adolescents who experience these attachments and connections tend to feel better about themselves in a variety of areas of functioning. Therefore, finding ways to strengthen these relationships, particularly through institutional groups, should be explored in order to enhance adolescent development.

Finally, the present study examined whether school connectedness was a function of risk group [i.e., at risk students placed in special education (ARSE), at risk

students not paced in special education (ARNSE) and students not at risk (NR)]. Results from this analysis revealed no mean differences on levels of school connectedness, suggesting risk group was not a function of school connectedness. However, when the risk groups were combined (i.e., ARSE and ARNSE), findings from this investigation resulted in this group reporting significantly lower school connectedness than NR students. Results from this study lend merit to previous research in that, when risk group is taken into consideration, students at risk tend to report weaker school connectedness than NR peers. This finding was not surprising. Fink (1990) observed students at risk to be less involved in school activities, more discouraged, and more willing to engage in health risk behavior. Murray and Greenberg (2001) lend support to this conclusion suggesting that students with disabilities who spent time in special education programs tend to report greater dissatisfaction with teachers, poorer school connections, and greater perceptions of school danger. In general, students with disabilities tend to report that they do not experience the social and relational context of schools the same way as students without disabilities.

Hierarchical Regression Outcomes

Hierarchical regression analyses were conducted to predict whether risk group and ethnicity moderate the effects of parent attachment and peer attachment on school connectedness. The analyses resulted in simple main effects and risk group as a moderator between peer attachment and school connectedness.

Risk group as a Moderator between Parent and Peer Attachment and School Connectedness.

Attachment theory assumes that parent attachment and peer bonds affect adolescent health risk behavior. Risk group was hypothesized to moderate this relationship since, as previously mentioned, students at risk have been connected with poor attachments to parents, greater dissatisfaction with teachers, and poor school connectedness. This study examined the relationship between parent attachment and school connectedness. The proposed model, which predicted that risk group would indirectly moderate the relationship between parent attachment and school connectedness, was not validated by the present study. Consistent with earlier findings, parent attachment was significantly correlated with school connectedness and the addition of risk group only slightly enhanced the prediction of school connection.

The proposed model, which predicted that risk group moderates the relationship between peer attachment and school connectedness, was validated by this study. Present findings suggest that peer attachment does not have the same effect among risk groups on levels of school connectedness. Particularly, higher ratings of attachment to one's peers resulted in an expected decrease in school connectedness for students at risk (i.e., ARNSE and ARSE). On the other hand, higher ratings of peer attachment resulted in higher ratings of school connectedness for NR students. This study lends support to previous research contending that peers are an important source of influence for developing youth.

Positive peer attachments have been linked to higher grades, test scores, and more school involvement (Wentzel, Barry, & Caldwell, 2004). Moreover, when they

are at school, adolescents who have friends display prosocial behavior more frequently and engage in less antisocial behaviors than do classmates without friends. In an attempt to explain this behavior, research suggests that significant associations between positive peer attachments and adjustment partly reflect the fact that those adolescents who demonstrate competence in one domain (i.e., establishing friendships) often are successful in other domains.

As children enter adolescence, the nature of their peer relationships undergoes significant changes. Adolescent friendships gradually deepen in terms of levels of commitment, trust, intimacy, and acceptance. Functioning in these evolving friendships has been linked with both maladjustment ranging from depression to delinquency and positive adjustment including prosocial behavior and academic achievement. Specific factors that might help explain why some adolescents succeed whereas others struggle to develop increasingly supportive, adaptive peer relations during adolescence has yet to be empirically understood (Marsh, Allen, Ho, & McFarland, 2006). Research on the specific pathways of influence that might explain relations between peer attachments and school connectedness has been sparse, especially related to at risk youth.

Peers seem to influence the trajectory of delinquent behavior, and seem to support behaviors considered normative among students with EBD, in particular, externalizing disorders. Moreover, students considered externalizers tend to carry the personal impact of the peer group, even after their peer affiliation changes. Research has found that peer social networks can influence negative and positive behaviors. Negative peer relations can influence behaviors such as aggression, bullying, and

ostracism. However, they can also influence positive behaviors in the academic and social context. Specifically, a prosocial peer group that provides social support can serve as a stress-buffering function for students with EBD.

Ethnicity as a Moderator between Parent and Peer Attachment and School Connectedness.

Parallel analyses were conducted to determine whether parent attachment and peer attachment interacted with ethnicity in the prediction of school connectedness. The proposed models, which predicted that ethnicity moderates the relationship between parent and peer attachment and school connectedness, were not validated by this study. These models posit an indirect path suggesting that parent and peer attachment has an indirect influence on school connectedness through ethnicity. These analyses failed to yield any significant interactions between Hispanic, African American, and White non-Hispanic students.

Research findings seems to favor the model of parent and peer influences presuming that a negative parent-adolescent relationship contributes to adolescent engagement in health risk behavior directly and indirectly through negative peer attachments. However, the dominant theories that attempt to explore the nature and impact of adolescent attachments are cross sectional in nature and are based almost entirely on studies conducted with white, Western, middle-class adolescents from the dominant culture (Dekovic et al., 2004). Minority adolescents constitute growing segments of the population; thus, the generalizability of this model to members of various ethnic groups needs to be tested.

Findings from the present study support associations, that is, simple main effects between students' attachments to parents, relationships with peers, and

connections with school. Although these findings do not offer evidence of causality, and should be interpreted as correlational, they are consistent with the findings from previous investigations of similar students.

Interestingly, for adolescents in general and special education settings, parent attachment made the largest unique contribution to the variance in school connectedness. Parent-adolescent relationship quality may play an especially important role in the promotion of school connectedness.

In considering these findings, it is apparent that some adolescents are more connected to their school environment than others, while some adolescents are more attached to parents and peers than others. It has been suggested that these attachments and connections have a significant impact on adolescent health risk behavior (Nada Raja, McGee, & Stanton, 1992; Resnick, Harris, & Blum, 1993; McGee, Carter, Williams, & Taylor, 2005). Therefore, the mechanisms underlying school connectedness need to be further explored, in particular among students at risk.

The findings related to the interaction between peer attachment and school connectedness between at risk and no risk students deserve comment since on the surface they appear paradoxical. Students not at risk reported a positive relationship between peer attachments and school connectedness. On the contrary, students at risk reported a negative relationship between peer attachments and school connectedness. At the very least, one would hypothesize that having a peer attachment or friendship as a source of emotional support, trust, and intimacy would serve as a protective factor among adolescents. In turn, peer attachments as a source of social support would be correlated with school connectedness. The results from this investigation suggest the

very opposite for students at risk. The present study found risk group moderating the relationship between peer attachment and school connectedness. Peer attachments have been associated with delinquent activity and health compromising behaviors. Such findings are often interpreted as evidence of peer pressure; however, they may equally be interpreted as reflecting the way adolescents become involved in friendship groups with like-minded adolescents. Nonetheless, more research needs to be directed at the causal relationship operating here.

Research on adolescent attachment quality and school connectedness among general and special education populations is beginning to emerge. The findings here suggest that it may be important to consider the specific nature of student-parent and student-peer relationship quality as a predictor of school connectedness. When adolescents feel positive communication, trust, and involvement from parents and peers they may be more likely to report a personal sense of school connectedness. Therefore, they are less likely to engage in health risk behavior, which increase the risk of adolescent morbidity and mortality.

Ultimately, adolescence of this generation are agents of their own adjustment and development, and many would report that transition, although inevitable, leave them feeling like puppets on life's stage. As with every generation, adolescents are faced with the harsh challenges of creating their own journey, a journey in a world where the knowledge and experience of parents and past generations, viewed from their perspective, is disconnected from the adolescents reality. Thus, offering little guidance. From this perspective, it would make sense, then, that peers become increasingly significant during adolescence, as guides, as sources of emotional

support, in establishing identity, since they too are also fellow agents and travelers of life's journey.

Limitations

Several limitations should be discussed when evaluating this study's findings. First, the current sample was composed of mostly Hispanic and African American students. Results may not extend to non-minority, non-urban populations. Second, the sample size is small. Furthermore, no causal relationships are claimed. That is, any statistical associations cannot be determined to be causal and instead should be interpreted as relationships or associations between variables. For example, this study found a relationship between parent attachment scores and increased school connectedness scores. Due to the nature of the design, it cannot be concluded that attachment to one's parent increases school connectedness. Additionally, the *IPPA* is a self-report measure and may yield answers that are biased. As with any self-report measure, answers may reflect a certain level of social desirability. Attachment is thought to be a mental representation of one's emotional bond related to past experiences. This has been a controversial issue and it is thought that the best way to measure attachment is through narratives that tap into the internal representations in the mind (for a review see Cassidy & Shaver, 1999). Finally, findings from this study suggest the need to further explore the early development of school connectedness longitudinally such as with middle school students as they transition to high school.

Recommendations for Future Research

School connectedness research examining ethnic differences has little to do with innate ability or environmental outcomes. Rather, a variation among ethnic

groups' sense of connectedness, especially as it relates to academic achievement, concludes that minority students have a poor sense of school connectedness, academic achievement, and motivation. However, these studies typically correlate school connectedness with academic outcomes and conclude that minority students, especially African American students' lack of connectedness develops from a sense of alienation, or feeling devaluated, which serves to disallow academic achievement outcomes from affecting their self-view (Steele, 1992).

Because racial-ethnic differences in attachment and school connectedness vary across schools, additional research is required. Further, research is needed in order to understand whether ethnic differences moderate the relationship between students' attachment relations and school connectedness as well as subsequent effects on academic motivation and engagement. Attention to these issues may provide a framework for understanding the educational experiences among various ethnic groups.

Further research should try to gain a better understanding of the relationship between students' sense of school connectedness and the teachers' role in fostering connections among students. When adolescents become disconnected from school, they may cope by avoiding school. These students are at risk for truancy and dropping out. Attendance is one of the key indicators of school connection. Research focusing on school disconnection has reported that although adolescents may value education they can feel left out or isolated. Research needs to further explore the relationship among school disconnection, social experiences, and subsequent behavior.

Appendix A: Measures

Modified Inventory of Parent and Peer Attachment (IPPA)

Administrator: _____
 Subject Code: _____
 Birth Date: _____
 School: _____

Date: _____
 Age: _____
 Sex: ___ M ___ F
 Grade: _____



Directions: Please read each question carefully. There is no right or wrong answer. Just rate each statement according to how you honestly feel. To mark your answer, simply circle the letter(s) that corresponds with your feelings toward the statement. Each statement should be rated.

KEY:	Almost never or never (AN)	Sometimes (ST)	Often (O)	Almost always or always (A)
1. I tell my parents about my problems and troubles	AN	ST	O	A
2. My parents help me to understand myself better	AN	ST	O	A
3. If my parents know something is bothering me, they ask me	AN	ST	O	A
4. My parents have their own problems, so I don't bother them with mine	AN	ST	O	A
5. My parents respect my feelings	AN	ST	O	A
6. When I'm angry about something my parents try to be understanding	AN	ST	O	A
7. I wish I had different parents	AN	ST	O	A
8. My parents accept me as I am	AN	ST	O	A
9. I rarely get a lot of attention at home	AN	ST	O	A
10. I get easily upset at home	AN	ST	O	A
11. Talking over my problems with my parents makes me feel ashamed or foolish	AN	ST	O	A
12. I feel angry with my parents	AN	ST	O	A
13. My friends encourage me to talk about my difficulties	AN	ST	O	A
14. My friends are concerned about my well-being	AN	ST	O	A
15. I tell my friends about my problems and troubles	AN	ST	O	A
16. I like to get my friends point of view on things I'm concerned about	AN	ST	O	A
17. My friends listen to what I have to say	AN	ST	O	A
18. I feel my friends are good friends	AN	ST	O	A
19. I wish I had different friends	AN	ST	O	A
20. When I am angry about something my friends try to be understanding	AN	ST	O	A
21. I get upset a lot more than my friends know about	AN	ST	O	A
22. I feel alone or apart when I am with my friends	AN	ST	O	A
23. It seems as if my friends are irritated with me for no reason	AN	ST	O	A
24. Talking over my problems with my friends makes me feel ashamed or foolish	AN	ST	O	A

Updated: 9/9/04

The School Connection Scale

SubCode_____ Administered by _____ Date_____ Gender_____

School_____ Grade_____

SA = Strongly Agree A = Agree D = Disagree SD = Strongly Disagree

- | | | | | |
|--|----|---|---|----|
| 1) Adults at this school listen to students concern. | SA | A | D | SD |
| 2) Adults at this school act on student's concerns. | SA | A | D | SD |
| 3) I have many opportunities to make decisions at decisions at my school. | SA | A | D | SD |
| 4) The principal asks students about their ideas. | SA | A | D | SD |
| 5) When there is an emergency at the school someone is there to help. | SA | A | D | SD |
| 6) We do not waste time in my class. | SA | A | D | SD |
| 7) Students of all ethnic groups are respected. | SA | A | D | SD |
| 8) The rules at my school are fair. | SA | A | D | SD |
| 9) I can be a success at this school. | SA | A | D | SD |
| 10) I can reach my goals through this school. | SA | A | D | SD |
| 11) My schoolwork helps in things that I do outside of school. | SA | A | D | SD |
| 12) It pays to follow the rules at my school. | SA | A | D | SD |
| 13) I am comfortable talking with adults at this school about my problems. | SA | A | D | SD |
| 14) I feel like I belong at this school. | SA | A | D | SD |
| 15) I have friends at this school. | SA | A | D | SD |
| 16) I can be myself at this school. | SA | A | D | SD |

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