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ACCEPTANCE

This dissertation, THE MODERATING ROLE OF ADULT CONNECTIONS IN HIGH SCHOOL STUDENTS' SENSE OF SCHOOL BELONGING, by AMY DUTTON TILLERY, was prepared under the direction of the candidate's Dissertation Advisory Committee. It is accepted by the committee members in partial fulfillment of the requirements for the degree Doctor of Philosophy in the College of Education, Georgia State University.

The Dissertation Advisory Committee and the student's Department Chair, as representatives of the faculty, certify that this dissertation has met all standards of excellence and scholarship as determined by the faculty. The Dean of the College of Education concurs.

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ABSTRACT

THE MODERATING ROLE OF ADULT CONNECTIONS IN HIGH SCHOOL STUDENTS' SENSE OF SCHOOL BELONGING
by
Amy Dutton Tillery

Researchers have demonstrated that students who had a strong sense of school belonging exhibited greater academic motivation and performance (E. Anderman, 2002; Faircloth & Hamm, 2005), had fewer emotional and behavioral difficulties (Furrer & Skinner, 2003; McMahon, Singh, Garner, & Benhorin; 2004), and were less likely to dropout of school (Fredricks, Blumenfeld, & Paris, 2004; Knesting, 2008). Limited attention has been given to the potential factors that promote school belonging, especially in high school students. The purpose of this research was to examine the unique influence of adult connections on high school students' sense of school belonging utilizing the framework of self-determination theory. The role of adult connections was examined as a moderator of the relations between five student risk factors (behavior problems, peer problems, minority ethnicity, male gender, and poverty) and school belonging. This cross-sectional study analyzed data from a survey completed by 368 ninth grade students. The survey consisted of items from existing instruments, including the *Psychological Sense of School Membership* (Goodenow, 1993a), the *Strengths and Difficulties Questionnaire* (Goodman, Meltzer, & Bailey, 2003), and the *Basic Need Satisfaction in Relationships Scale* (La Guardia, Ryan, Couchman, & Deci, 2000). Hierarchical regression analyses confirmed study hypotheses by indicating that adult connections was a significant predictor of the students' sense of school belonging and significantly

moderated the relationship between school belonging and behavior problems ($p < .05$). Additional analyses indicated that adult connections accounted for more of the variance in school belonging for males than for females. These findings supported the importance of adult connections in high school students' sense of school belonging. Future research should address the relationship between adult connections and school belonging as it evolves over students' high school careers.

THE MODERATING ROLE OF ADULT CONNECTIONS IN HIGH SCHOOL STUDENTS' SENSE OF SCHOOL BELONGING

by
Amy Dutton Tillery

A Dissertation

Presented in Partial Fulfillment of Requirements for the
Degree of
Doctor of Philosophy
in
School Psychology
in
the Department of Counseling and Psychological Services
in
the College of Education
Georgia State University

Atlanta, GA
2009

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ACKNOWLEDGMENTS

There are so many individuals who have been instrumental in supporting and guiding me through this process. First, I would like to thank my family for being a wonderful and never failing support system. My mother, Cherry Dutton, instilled in me a desire for learning, value for education, and a strong work ethic. Because of you and your unwavering love and support, this was possible. My husband, Craig, has been a patient and faithful partner for 14 years. Your love and encouragement helped keep me going when the stress almost became too much to bear. My daughter, Mary Beth, began her first day of kindergarten on the same day as I began classes at GSU and grew up watching me go to school. My hope is that I have been a good role model for you and an example of what it means to persevere even when things get tough. You have encouraged me more than you will ever know. Thank you for your sacrifice and understanding. I love you so much. Thank you to my brother, Andy Dutton, for your many words of encouragement throughout this process. You have been such an inspiration to me. To have your admiration means the world to me! My sister, Mary Hammond, and her husband Mac have always been an endless source of optimism in my life. Thank you. Your cheerfulness has sustained and strengthened me.

I want to express much gratitude to my dissertation chair, Kris Varjas. Thank you for understanding and giving me what I needed to get through and succeed in this program. You helped me grow in knowledge and confidence. Thank you for believing in me even when I didn't seem to believe in myself. I am also grateful to my committee members, Dr. Joel Meyers, Dr. Andrew Roach, and Dr. Gabriel Kuperminc for your expertise and assistance. I deeply appreciate your collaboration and enthusiasm. In addition, I want to acknowledge Dr. Catherine Cadenhead for her kindness and compassion.

I also want to thank my GSU cohort, Amanda Collins, Janell Brooks, and Donna Kreskey, as well as Brandi Wells, Sherrie Proctor, and countless others that have been such special friends and a tremendous source of support along this path.

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ABBREVIATIONS

PSSM	Psychological Sense of School Membership
SDQ	Strengths and Difficulties Questionnaire
SES	Socioeconomic Status

CHAPTER 1

THE IMPORTANCE OF ADULT CONNECTIONS IN ADOLESCENTS' SENSE OF SCHOOL BELONGING

Introduction

Social belonging has long been considered a fundamental human motivation, representing an innate desire for relatedness with others (E. Anderman, 2002; Baumeister & Leary, 1995; Maslow, 1943; McMahon, Wernsman, & Rose, 2009; Osterman, 2000). Baumeister and Leary's "belongingness hypothesis" asserts that individuals seek relationships from a variety of sources including family, peers, and school in order to meet the need for a sense of attachment or connection with others. The fulfillment of the need for school belonging is associated with increased academic motivation and performance (Furrer & Skinner, 2003; Goodenow, 1993a; Sánchez, Colón, & Esparza, 2005) and healthier psychological functioning (Pittman & Richmond, 2007; Shochet, Dadds, Ham, & Montague, 2006). School belonging, that is, "the extent to which students feel personally accepted, respected, included, and valued by others within the school social environment" (Goodenow, 1993a, p. 80) has a number of implications for adolescents' school outcomes.

Researchers have demonstrated that students' sense of belonging to school was influenced by characteristics, such as gender, ethnicity, and socioeconomic status, as well as situational and contextual factors including school organizational practices, discipline

codes, and student-teacher interactions (Osterman, 2000; Uwah, McMahon, & Furlow, 2008). Each of these factors influences the quality of adolescents' interpersonal relationships within the school, which are at the core of school belonging (L. Anderman, 2003; Goodenow, 1993a). Relationships with others in the school, specifically adults, contribute significantly to adolescents' sense of belonging and have the potential to strengthen their' experiences of belonging (Davis, 2003; McMahon et al., 2009, Murdock, Anderman, & Hodge, 2000). In fact, the strength of supportive adult relationships adolescents experience within the school environment may not only bolster their sense of school belonging, but also serve as a protective factor for at-risk students (Croninger & Lee, 2001).

Adolescence may be a time in which adult connections have added significance for students' sense of school belonging (L. Anderman, 2003; Murdock et al., 2000). Adolescents have often been considered as actively seeking separation from adults having less of a need for adult support (Davis, 2003). However, researchers have recently shown that relationships with nonparental adults, such as teachers, may be more important for adolescents than for younger students and potentially exert even stronger effects on motivation (L. Anderman, 2003; Wigfield & Wagner, 2005). Adolescents need adult involvement in their lives in such a way that allows them to pursue their desires for self-expression and autonomy that is characteristic of adolescent development (Davis). Unfortunately relationships among adolescents and school personnel can become strained by school practices and policies that may not be conducive to building and maintaining a strong sense of belonging in adolescents (Baker et al., 2001; Eccles, 2004). Adolescents

may experience declines in their sense of school belonging that potentially results from weakened adult connections (Eccles; Roeser, Eccles, & Sameroff, 1998; Sideman, Allen, Aber, Mitchell, & Feinman, 1994).

The intent of this article is to inform practitioners of the significance of adult connections in supporting adolescents' needs for school belonging as students navigate the expectations and social pressures of school. First, a perspective of school belonging that emphasizes the importance of adult connections is presented. This section will include the perspectives of self-determination theory and social capital and research on student-teacher attachment. Next, the impact of various school practices on adult connections and school belonging are reviewed. This is followed by a discussion of school improvement practices that hold promise for enhancing adult connections and school belonging. Finally, future directions for research and practice are suggested.

Adult Connections

The perspective presented in this article regarding the role of adult connections in adolescents' sense of school belonging is shaped by the theory of self-determination (Deci, Vallerand, Pelletier, & Ryan, 1991), research using a social capital framework (Coleman, 1990; Stanton-Salazar, 1997), and the work of Pianta and colleagues regarding student-teacher attachment (Hamre & Pianta, 2001; Pianta, 1999; Pianta & Stuhlman, 2004; Pianta, Stuhlman, & Hamre, 2002). These literature bases detail mechanisms through which adult connections successfully promote school belonging and positive outcomes, illustrate the power of adult relationships as a protective force against disadvantages, and describe the significance of positive student-teacher relationships.

First, self-determination theory is explored as it relates to the influence of adult connections on school belonging and motivation. This is followed by the presentation of adult connections as a form of social capital that demonstrates their importance for students' sense of school belonging. Finally, the significance of student-teacher attachment on school belonging is reviewed.

Self-determination Theory

The theory of self-determination is a theory of motivation and personality development that states that individuals will be propelled toward a natural propensity for growth when their basic psychological needs to feel autonomous, have a sense of competence in their abilities, and have meaningful connections with others are met (Niemiec & Ryan, 2009; Ryan & Deci, 2000). In an educational sense, students will be more interested in learning and have greater appreciation for school when their needs to be autonomous, competent, and related are supported by adults within the school (Deci et al., 1991; Niemiec & Ryan). In a school environment that supports these needs, the students are motivated toward intentional behavior rather than behavior that is controlled by external forces (Davis, 2003; Deci & Ryan, 2000; Deci et al.; Ryan & Deci). That is, students whose needs for autonomy, competence, and relatedness are met will internalize the behaviors and values of school and exhibit self-determined behavior (Davis).

Adult connections that support students' needs for autonomy, competence, and relatedness allow partnerships to be built with students that motivate them toward academic endeavors and potentially promote a sense of school belonging (Baker et al., 2001; Davis, 2003; Finn, 1989; Skinner, Furrer, Marchland, & Kindermann, 2008). A

study conducted with Korean high school students provided support for self-determination theory as well as the application of the theory cross-culturally (Jang, Reeve, Ryan, & Kim, 2009). Findings from that study indicated that satisfaction of students' needs for autonomy, competence, and relatedness within the classroom was associated with greater satisfaction with school (Jang et al.). According to self-determination theory, needs for autonomy, competency, and relatedness are intertwined in such a way that self-directed behavior is facilitated only to the extent that interpersonal contexts are autonomy supportive (Deci et al., 1991). Therefore, adults at school must attend to all three needs to maximize motivation and educational outcomes. For example, adults promote developmentally appropriate autonomy when students are provided with the opportunity to share control and take responsibility for their learning and outcomes (Baker et al., 2001; Davis). Perceived competence is enhanced when students are afforded opportunities to take chances that are accompanied by positive feedback from adults (Roeser et al., 1998). Finally, adults' expressions of interest in and caring about the students provides a sense of relatedness (Baker et al., 2001; Davis). Thus, self-determination theory supplies adults in the school with a process for facilitating strong connections with students that can positively affect school belonging (Skinner et al.).

Social Capital

The relationship between adult connections and school belonging also is important from a social capital perspective (Croninger & Lee, 2001). The concept of social capital is generally regarded as the degree and quality of social support in an individual's interpersonal network (Stanton-Salazar, 1997). Social capital consists of the

social ties among individuals and can be converted into socially valued resources, thus facilitating the actions of individuals within a social structure, such as school (Coleman, 1990; McNeal, 1999; Stanton-Salazar). That is, as a form of social capital, teachers and other adults within the school environment can serve as extensions of the students' personal resources by providing them with interpersonal assistance to navigate school; thereby allowing students to achieve goals that otherwise might have been unattainable (Coleman; Croninger & Lee; Stanton-Salazar). The social capital framework suggests that students draw resources from the relationships they have with peers, teachers, and family members; however those with fewer relationships have lower capital and are at-risk for poorer school outcomes (Croninger & Lee; Nettles, Mucherah, & Jones, 2000; Stearns, Moller, Blau, & Potochnick, 2007). Therefore, adults in the school that provide students with guidance and support supply students with social capital that can potentially reduce the effects of disadvantages students face in other areas of their lives (Croninger & Lee). In fact, a recent study conducted to evaluate outcomes of students in an ethnically diverse public high school indicated that social capital contributed to student success by providing students with a sense of school belonging (Gore, 2005). Thus, adult connections have significant implications for students' school belonging from a social capital perspective.

The impact of adult connections as a form of social capital has been demonstrated in the mentoring literature (e.g., Rhodes, Grossman, & Resch, 2000). Mentors are a source of social capital when they build relationships with students that are characterized by supportive and encouraging interactions (Rhodes, Bogat, Roffman, Edelman, &

Galasso, 2002). Researchers have shown that students engaged in mentoring relationships experienced improvements in academic competence and the value that they placed on school (Rhodes et al., 2000). In addition, as social capital, mentors provided students with a sense of importance and served as role models, which has been shown to predict psychological well-being (McMahon, Singh, Garner, & Benhorin, 2004). Mentors from various vocations in the school, including administrators, school counselors, school psychologists, librarians, office staff, custodians, and bus drivers have the potential to serve as a source of social capital by providing students' with guidance and support, thus building relationships among students and adults (Blum, 2005; DuBois, Holloway, Valentine, & Cooper, 2002; Grossman & Rhodes, 2002).

Student-teacher Attachment

The significance of trusting and supportive student-teacher relationships in students' learning and psychological adjustment at school has received considerable attention within the field of attachment theory (e.g., Birch & Ladd, 1997; Hamre & Pianta, 2001; Pianta & Stuhlman, 2004). According to attachment theory, the student-teacher relationship is an extension of the parent-child relationship, which provides a foundation for students' social, emotional, and cognitive regulation at school (Davis, 2003; Myers & Pianta, 2008). The quality of the student-teacher attachment provides a basis for interpreting and influencing students' future social interactions that could potentially affect their perceptions of the school as a psychologically healthy environment (Baker, Dilly, Aupperlee, & Patil, 2003; Davis). Specifically, attachment theory views the quality of student-teacher attachments through three dimensions: emotional closeness, conflict,

and dependency (Davis; Hamre & Pianta; Pianta & Stuhlman). Ideally, student-teacher attachments are characterized by emotional closeness, which is shown through warmth and open communication, rather than conflict or dependency (Hamre & Pianta; Pianta, 1999).

Research on student-teacher attachment has highlighted the importance of adult connections as an important contributor to school belonging that enhances students' school experiences (Klem & Connell, 2004; LaRusso, Romer, & Selman, 2008; McNeely, 2005; Ozer, Wolf, & Kong, 2008; Roeser, Midgley, & Urdan, 1996). For example, student-teacher attachment was predictive of first grade students' academic and social competencies above and beyond the effects of demographic variables, such as gender and poverty (Pianta & Stuhlman, 2004). Similarly, student-teacher attachment was related to academic self-concept and was a significant predictor or academic motivation in a sample of rural high school students (Learner & Kruger, 1997). Other fields of study that have examined student-teacher relationships are consistent with the findings within the domain of attachment theory. For example, researchers have found that students whose teachers treated students fairly, held all students to high standards, and communicated that each student was a valued member of the classroom had increased levels of engagement in academic endeavors and greater satisfaction with school (Baker, 2006; Montalvo, Mansfield, & Miller, 2007). Further, researchers have demonstrated that students who had caring teachers that communicated high expectations and provided students with constructive feedback were more likely to behave in a prosocial and responsible manner (Decker, Dona, & Christenson, 2007; Wentzel, 2003). The student-teacher relationship

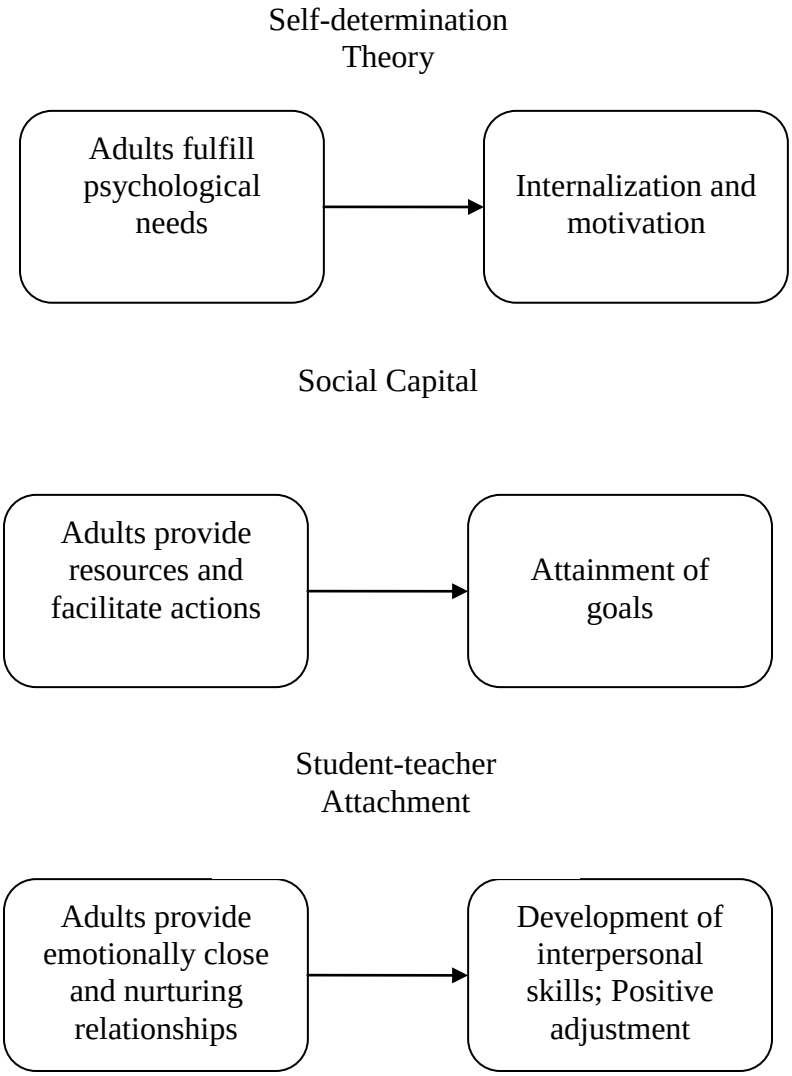
not only affects students' behavior, but also impacts their self perceptions, which was demonstrated in a recent qualitative study conducted with a sample ethnically diverse urban high school students. The findings indicated students considered their relationships with teachers as an influence on their views of self, their interests, and their academic goals (Ozer et al., 2008). Because of the extensive influence of the student-teacher attachment, this adult connection may be the key to understanding adolescents' experiences of school belonging (Murdock et al., 2000).

Comparison of Theories

Self-determination theory, social capital, and student-teacher attachment each emphasize the importance of strong, positive relationships with significant adults during adolescence, although each emphasizes different elements. In many respects, the theories are similar in that at their core they stress relationships that promote positive adjustment (Davis, 2003). For example, through self-determination theory, individuals are motivated toward intentional behavior (Deci & Ryan, 2000; Deci et al., 1991); social capital facilitates the actions of individuals toward goal attainment (Coleman, 1990; Stanton-Salazar, 1997); and student-teacher attachments provide a foundation for interpreting and influencing social interactions (Davis; Myers & Pianta, 2008). A comparison of how the theories promote positive adult connections highlights important differences which are found in their theoretical underpinnings. Self-determination theory, which evolved from cognitive disciplines, promotes adult connections through the provision of basic psychological needs for autonomy, competence, and relatedness (Davis). Social capital developed out of the field of sociology and regards adults as available resources that

facilitate the actions of individuals (Coleman; Croninger & Lee, 2001). Developmental psychology gave rise to student-teacher attachment which describes adult connections by the quality of the relationships (Hamre & Pianta, 2001; Pianta, 1999). Table 1 illustrates these differences by highlighting the role of adults and the effect of these relationships for each theory.

Figure 1. Comparison of Self-determination Theory, Social Capital, and Student-teacher Attachment.



While each of these theories illustrate the power of adult connections for adolescents' adjustment, self-determination theory may be the most appropriate framework for understanding how adult connections can affect adolescents' sense of school belonging. Self-determination theory extends beyond social capital and student-teacher attachment by providing adolescents with more than simply a good relationship and in addition provides for basic psychological needs at a time in which they may become more important (Niemiec & Ryan, 2009; Ryan & Deci, 2000). The need for autonomy becomes heightened during adolescence as does the need to feel competent in one's endeavors (Van Ryzin, Gravely, & Roseth, 2009). Adolescents also have greater interest in interpersonal relationships (Booker, 2006; Newman, Lohman, Newman, Myers, & Smith, 2000). Self-determination theory provides practitioners with a process for developing strong connections with adolescents that meet these basic psychological needs. Further, self-determination theory has been supported in cross-cultural studies (e.g., Chirkov, 2009; Jang et al., 2009) making it applicable to all students. As the more comprehensive of the perspectives, self-determination theory provides adolescents with specific factors that can foster connections with adults and enhance school belonging.

School Belonging Influences on Student Outcomes

Adults that facilitate the development of school belonging have the potential to influence a number of positive student outcomes. Researchers have indicated that students who have a strong sense of belonging to school have increased academic engagement (Goodenow, 1993a; McMahon, Parnes, Keys, & Viola, 2008; Roeser et al., 1996), better psychological functioning, and greater prosocial behavior (McMahon et al.,

2004; Pittman & Richmond, 2007). The opposite is also true; students who have a weak sense of school belonging have poorer school-related outcomes (Baker et al., 2001; Newman, Newman, Griffen, O'Connor, & Spas, 2007). Much of the research on school belonging has centered on academic variables, such as motivation and self-efficacy. Therefore, the following section first explores the influence of school belonging on these academic outcomes. This is followed by a discussion of how failure to sufficiently promote school belonging may lead to withdrawal from school that results in dropout. Finally, the contribution of school belonging to psychological and behavioral outcomes is discussed.

Academic Motivation and Self-efficacy

The literature connecting school belonging with academic outcomes has concentrated largely on student motivation, self-efficacy, and achievement (Faircloth & Hamm, 2005; Goodenow, 1993a; Sánchez et al., 2005). Researchers have suggested that students experience increases in their sense of school belonging through positive social interactions, such as those with adults, that propel them towards increased enthusiasm, participation, and interest in academic endeavors (Furrer & Skinner, 2003). This increase in engagement fosters greater effort and persistence that is followed by improved mastery and self-efficacy or competency (Furrer & Skinner; Montalvo et al., 2007).

There is evidence to suggest that school belonging is connected to positive school outcomes by influencing adolescents' motivation and improving academic achievement and self-efficacy (Goodenow, 1993a; Goodenow, 1993b). For example, McMahon et al. (2009) demonstrated that greater school belonging was associated with higher academic

self-efficacy among fourth and fifth grade students. Similarly, Uwah et al. (2008) found that school belonging positively predicted self-efficacy among male African American high school students. These findings were consistent with other studies that have found school belonging to be predictive of better school attendance, higher grade point average, and increased school completion rates (E. Anderman, 2002; McNeely & Falci, 2004; Pittman & Richmond, 2007; Sánchez, et al., 2005). Further, as a significant aspect of school belonging, adult connections that were accessible and available to students also were associated with increased academic motivation and enhanced school belonging even in at-risk students (L. Anderman, 2003; McMahon et al., 2008; Ryan & Patrick, 2001).

School Dropout

Fewer positive relationships with teachers and peers, negative school climates and exclusionary discipline practices, and individual risk factors such as poor achievement, attendance problems, or grade retention, weaken students' sense of school belonging (Baker et al., 2001; Christle, Jolivette, & Nelson, 2007; Stearns et al., 2007). There is evidence to suggest that students who have a weak sense of school belonging and low academic self-efficacy are at risk for dropping out of school (Finn, 1989; Hunt et al., 2002; Osterman, 2000; Vallerand, Fortier, & Guay, 1997). Researchers have indicated that dropping out of school is the result of a cumulative process of disengagement (Finn). Over a period of time, students take advantage of fewer resources, such as adult connections, that could enhance school belonging, thus contributing to a declining sense of school belonging and resulting in a gradual withdrawal from school (Murdock et al.,

2000; Suh & Suh, 2007; Vitaro, Larocque, Janosz, & Tremblay, 2001; Worrell & Hale, 2001).

Inadequate instructional and emotional support from adults in school may contribute to students' disaffection (Finn, 1989). Theories of school dropout suggest that when schools fail to provide adequate support for students' academic and belonging needs, students may develop an impaired self-esteem from an increasing sense of frustration with academic tasks (Finn; Stearns et al., 2007). As a result, students may seek a sense of belonging outside the school and their feelings of frustration can lead to resistance toward school and less participation in school activities (Finn). Students may become engaged in other behaviors that will improve self-esteem, which often results in behavior that is in opposition to successful school performance and may take the form of classroom disruption, truancy, or delinquency (Finn; Stearns et al.). Students who are disengaged from school participate less in clubs and extracurricular opportunities and have poor school attendance, thus resulting in lack of identification with and weak sense of belonging to school (Finn; Jennings, 2003). Further, delinquent behavior and withdrawal from school separates students from available sources of social support, such as adult connections, within the school environment (Hamre & Pianta, 2001; Skiba, 2008; Skiba & Knesting, 2001).

Psychological and Behavioral Outcomes

In addition to students' academic motivation and achievement, school belonging influences the psychological functioning of the students. Adult connections contribute to the psychological outcomes of school belonging because they have the capacity to

provide for the social and emotional needs of students. However, in comparison to academic motivation and school withdrawal, schools have given less attention to students' social and emotional needs and related outcomes (Osterman, 2000). Nonetheless, researchers have demonstrated associations between a strong sense of school belonging and positive psychological and behavioral health (Furrer & Skinner, 2003; Goff & Goddard, 1999). In fact, the frequency and quality of interactions among individuals at school had a substantial influence on the emotional well-being of the students (E. Anderman, 2002; Kuperminc, Leadbeater, & Blatt, 2001; Kuperminc, Leadbeater, Emmons, & Blatt, 1997). Facilitating positive development, adult connections that promoted school belonging through trust and supportive interactions were predictive of fewer symptoms of psychological distress in students (Roeser et al., 1998) and greater school satisfaction (Baker, 2006; Birch & Ladd, 1997). In a longitudinal study of eighth grade students' school connectedness, a concept similar to school belonging, Shochet et al. (2006) found a predictive link between school connectedness and future depressive symptoms. Similar results concerning the link between school belonging and psychological adjustment were found in other studies. For example, students who had a strong sense of belonging to school experienced fewer problems with depression and anxiety, had greater self-worth, and were more confident (E. Anderman, 2002; Ma, 2003; McMahon et al., 2004; Pittman & Richmond, 2007). Therefore, strong adult connections not only enhance school belonging, but also have important implications for students' psychological well-being (Baker et al., 2003).

In addition to influencing emotional well-being, students' relationships with adults and sense of school belonging also affect their behavior (Osterman, 2000). In particular, when students' needs for belonging were met by adults within the school, their sense of belonging increased and they began to internalize the norms and expectations valued by their teachers which subsequently influenced their behavior (Catalano, Haggerty, Oesterle, Fleming, & Hawkins, 2004; Loukas, Ripperger-Suhler, & Horton, 2009). Researchers that have examined the effects of school belonging on externalizing behaviors have found that students who had a strong sense of belonging to school engaged in less problem behavior, such as rule breaking or drug use (Battistich & Hom, 1997; Goff and Goddard; 1999; Resnick et al., 1997). Even after controlling for preexisting adjustment problems, school connectedness evaluated in middle school adolescents predicted lower levels of conduct problems a year later (Loukas et al., 2009). However, this effect may be stronger for males than females. For example, Kuperminc et al. (2001) found a stronger association between school social climate, one aspect of which was student-teacher relationships, and externalizing problems in males than in females. Nevertheless, school belonging has been found to be a significant predictor of problem behavior for students most at-risk for such problems. Napoli, Marsiglia, and Kulis (2003) reported that Native American students, who were at higher risk for substance use, were less likely to use alcohol and drugs across the lifetime when they reported a strong sense of belonging to school.

In contrast, negative relationships between students and teachers, marked by conflict and stress, can perpetuate challenging student behavior and contribute to a poor

sense of school belonging and related outcomes (Baker, Grant, & Morlock, 2008; Brendgen, Wanner, Vitaro, Bukowski, & Tremblay, 2007; Hamre & Pianta, 2001; Myers & Pianta, 2008). A weak sense of school belonging has been associated with increased emotional difficulties and involvement in health-risk behaviors. For example, Newman et al. (2007) reported that declines in school belonging were associated with an increase in depressive symptoms. Ma (2003) found that students who reported low levels of school belonging also reported low self-esteem. In addition, poorer school relationships were related to subsequent conduct problems, decreased health status, and less participation in extracurricular activities (Bonny, Britto, Klostermann, Hornung, & Slap, 2000; Brookmeyer, Fanti, & Henrich, 2006; Loukas, Suzuki, & Horton, 2006; McNeely & Falci, 2004; McNeely, Nonnemaker, & Blum, 2002).

Barrier and Facilitators to Adult Connections and School Belonging

Adult connections and school belonging are influenced by school practices, as well as the organizational structure of the school (Baker et al., 2003; Davis, 2003; Turner & Meyer, 2000). In particular, school belonging and students' relationships with adults can be made stronger or weaker as a result of school policies and practices. This section begins with a discussion of potential barriers to school belonging by focusing on how particular aspects of schools can undermine the development of strong adult connections. This is followed by a discussion of selected school improvement initiatives that have proven successful in promoting positive student outcomes potentially through their influence on adult connections and school belonging.

Barriers to Adult Connections and School Belonging

Certain school characteristics that are prevalent during middle and high school can impose barriers to sustaining a strong sense of school belonging. School organizational structures, instructional practices, school transitions, and discipline policies that foster less access to positive adult connections and fail to meet students' needs for belonging can lead to disengagement and disaffection (Baker et al., 2001; Eccles, 2004; Isakson & Jarvis, 1999; Ma, 2003; Newman et al., 2007). These school characteristics and their impact on adult connections and school belonging are discussed in more detail below.

Organizational structure. A potential threat to adult connections and school belonging is the organizational structure of schools during adolescence. The bureaucratic nature of some middle and high schools that are characterized by departmentalization and larger student bodies can limit students' opportunities to build strong adult relationships and negatively impact their motivation and sense of belonging to school (Eccles, 2004; Newman et al., 2007). The departmental specialization of curriculum typically found in middle and high school results in students' frequent movement between teachers and classes throughout the school day (Baker et al., 2001). Furthermore, teachers in the departmental model teach a greater number of students each day compared to elementary school teachers. Students are afforded fewer opportunities to establish strong relationships with teachers because this teaching model presents students with increased student-teacher ratios and more teachers with whom to interact (Baker et al., 2001; Eccles; Roeser et al., 1998; Ryan & Patrick, 2001; Seidman, Allen, Aber, Mitchell, &

Feinman, 1994). Faced with these obstacles, students are more likely to feel anonymous and without connections to others which can lead to alienation (Eccles).

Tracking students, another common occurrence in high school that is designed to maximize performance by matching instruction with ability, has been found to be detrimental to students, especially those in lower tracks (Baker et al., 2001; Eccles, 2004). Students in lower tracks often received less support from adults and were subject to lower expectations for learning and performance (Osterman, 2000). Internalization of these lower expectations can erode the students' sense that they are valued members of the school and increase their likelihood of dropping out (Baker et al., 2001). Consequently, organizational practices such as these conflict with the belonging needs of adolescents and foster less access to adult connections that can build a sense of belonging (Eccles).

Instructional practices. As teachers, adults influence students' interest in academic tasks through their instructional practices. Instruction that is neither relevant to student interests and experiences nor sufficiently rigorous can negatively impact motivation and school belonging (Eccles, 2004). Coinciding with a declining sense of school belonging in adolescence are traditional middle and high school instructional practices that emphasize performance rather than mastery and employ teaching strategies that are passive (e.g., lecturing) rather than engaging (L. Anderman, 2003; Eccles; Osterman, 2000). Competition in learning is often emphasized while students are experiencing heightened levels of self-consciousness and social comparison (Roeser et al., 1998; Ryan & Patrick, 2001). Not only can these practices undermine student motivation, but they also are associated with declines in academic competence (Ryan & Patrick).

Students facing these realities have reported feeling distance in their relationships with teachers (Davis, 2003). In sharp contrast to the cooperative and hands-on learning in earlier grades, these instructional practices in middle and high school contribute to the declining sense of school belonging. Further, such practices may intensify students' feelings that school is not personally relevant and that adults are out of touch with adolescents (L. Anderman; Eccles; Ryan & Patrick).

School transition. Another potential barrier to building adult connections and sustaining school belonging is the transition from middle school to high school (Davis, 2003). Some consider the ninth grade transition critical to the remainder of students' high school academic careers (Fulk, 2003; Neild, Stoner-Eby, & Furstenberg, 2008). During this transitional year all students are more vulnerable because of increased social and academic demands. Incoming ninth grade students often have limited understanding of the concept of earning credits toward graduation, they must navigate multiple teachers and schedules usually in the context of a larger student body, and they may lack basic academic skills that teachers may no longer have the training to remediate (Fulk; Neild et al.).

The obstacles that students encounter during transitions could potentially undermine their connections with adults. The transition to high school is often accompanied by disruptions in teacher, parent, and peer support, yet students continue to be in need of strong relationships with others at school (Newman et al., 2007). As a result of the changes students encountered during the transition, many students experienced declines in motivation, grades, and school belonging (Eccles, 2004; Heck & Mahoe,

2006; Isakson & Jarvis, 1999). Researchers contend that these declines contributed substantially toward dropout (Baker et al., 2001; Heck & Mahoe; Zvoch, 2006). Therefore, supporting students though this transition when the impact of school belonging may be the strongest is a potentially important means for preventing alienation (Furrer & Skinner, 2003; Murdock et al., 2000).

Discipline policies. Often more prevalent during middle and high school than elementary and primary school, strict school disciplinary practices also can exert a negative influence on students' relationships with adults and sense of belonging to school (Ma, 2003). School disciplinary practices with unclear behavioral rules and expectations, inconsistent application of reinforcement and consequences, and punitive policies have been associated with a negative school climate (Ma; Skiba, 2008; Stewart, 2003). Suspension, a widely used technique under zero tolerance policies, has been commonly applied to rather minor infractions such as disobedience, disrespect, and classroom disruption (Gregory & Ripski, 2008; Skiba; Skiba & Knesting, 2001). Such harsh discipline for relatively minor offenses may give some students the impression that they are not wanted at school, can foster distrust of teachers and other school staff, and fracture adolescents' sense of school belonging (Eccles, 2004; Haynes, Emmons, & Ben-Avie, 1997; McNeely et al., 2002; Skiba; Skiba & Knesting; Way, Reddy, & Rhodes, 2007). Suspension removes students from the general population and excludes them from participation in extracurricular activities and other forms of social interaction at school, which may make it more difficult for adolescents to develop and maintain adult connections within the school (Skiba). Therefore, adolescents who experience a high rate

of suspension or other exclusionary discipline practices may be left to navigate school without the guidance provided by supportive adult connections (Finn, 1989).

Facilitators of Adult Connections and School Belonging

In recent years, schools have approached reform through comprehensive agendas that incorporated systemic change by enhancing adult and peer relationships and personalizing the school environment (Baker et al., 2001; Conchas & Rodriguez, 2008; Comer, 1993). These school improvement initiatives have the potential to facilitate the development of adult connections and enhance school belonging for adolescents. Specifically, approaches that build personal competencies and autonomous thinking, encourage active student participation, promote positive relationships among teachers and peers, and provide engaging and relevant instruction lead to a greater sense of school belonging (Baker et al., 2003; Roeser et al., 1998). In the following section, selected initiatives that have successfully improved school outcomes for adolescents by directly or indirectly promoting and enhancing adult connections and school belonging are reviewed. The discussion will include Small Learning Communities, Comer's School Development Program, and Positive Behavior Interventions and Supports.

Small learning communities. Reform practices that encouraged active student participation, promoted positive relationships among teachers and peers, and provided engaging and relevant instruction led to a greater sense of school belonging (Baker et al., 2003; Roeser et al., 1998). One such approach to school improvement during adolescence is the small schools movement. The small schools movement incorporates Small Learning Communities (SLC), which provide students with the benefits of smaller

schools (i.e., personalization, smaller student-teacher ratio) within the larger school context in order to meet students' behavioral, motivational, emotional, and cognitive needs (Baker et al., 2001; Conchas & Rodriguez, 2008; David, 2008; Felner, Seitsinger, Brand, Burns, & Bolton, 2007). SLC are typically subdivisions within a larger high school in which the same grade level students often have a common area of the school where most of their classes are held (Conchas & Rodriguez; David; Oxley, 2001). Variations of SLC, such as freshmen academies, have been employed to aid the high school transitional period. Unfortunately, the research base is relatively new and there are few well controlled outcome studies (Baker et al., 2001). Nonetheless, existing research studies have suggested that the organizational structure of SLC promoted relatedness among students and staff and led to improved academic achievement in adolescents (Fulk, 2003; Oxley; Zvoch, 2006).

School development program. Schools have adopted models such as the Comer School Development Program to create a warm school climate that facilitates students' learning and development (SDP; Comer, 1993). SDP is a school improvement initiative that focuses on developing the whole child by enlisting all pertinent individuals, such as the students, teachers, administrators, and parents, with the task of supporting the developmental needs of all students (Comer, Joyner, & Ben-Avie, 2004). SDP has been implemented with a range of ages, from elementary through high school, and is a promising model for school improvement that emphasizes adolescent health by building supportive bonds among the individuals within the school (Comer & Emmons, 2006). SDP promotes healthy development by providing students with supportive work

environments, building positive relationships among students, school personnel, and parents, and engaging collaborative data-based decision making (Comer; Comer et al.; Levine, 1994). Teachers in SDP schools strive to deliver instruction that is interesting to students and employ hands on learning opportunities (Levine). Collaborative decision making teams meet regularly to develop school plans and policies, monitor and evaluate activities, and analyze social and behavioral patterns (Comer). The objective of these instructional and collaborative strategies centered on developing students' social skills and willingness to accept responsibility for their actions (Levine). Researchers have reported that SDP schools have accomplished these goals (Borman, Hewes, Overman, & Brown, 2003; Comer & Emmons; Cook, Murphy, & Hunt, 2000). Students in SDP schools exhibited greater academic achievement and less misbehavior compared to students in other schools (Cook et al.). Further, SDP schools have demonstrated improvements in school climate (Comer & Emmons). Instructional strategies and collaborative decision making employed by SDP have the potential to build student competencies, foster stronger relationships among students and school personnel, and strengthen students' sense of school belonging.

School-wide positive behavior support. Gathering support in the research literature as an approach to reform school discipline, Positive Behavior Interventions and Supports (PBIS) is a prevention-focused model that employs a problem-solving framework for reducing behavioral difficulties for students at all grade levels (Sugai & Horner, 2002; 2006). Utilizing tiered levels of support, PBIS identifies at-risk students, seeks to remediate problem behaviors with standard interventions such as anger

management groups or social skills training, and provides intense individualized treatment for students requiring additional support. The foundation of this approach is the emphasis on prevention through teaching expectations, providing incentives, and utilizing evidence-based classroom management strategies (Sugai & Horner, 2002, 2006). Compared to zero-tolerance policies, PBIS uses graduated systems of consequences for misbehavior paired with reinforcement of prosocial behaviors and is a positive alternative for disciplining adolescent students that can promote school belonging (Sprague, 2006). This encourages more reasonable responses to students' minor offenses, thus providing students with opportunities to learn alternatives to misbehavior (Skiba & Knesting, 2001). Schools that implemented PBIS fostered positive school climates that were inclusive of all students, afforded students opportunities for positive interactions with teachers and other school personnel, and experienced decreases in disruptive behavior and suspensions (Bohannon et al., 2006; McCurdy, Mannella, & Eldridge, 2003; Scott, 2001). The positive school climate created by PBIS can be observed in student-teacher interactions that emphasize student successes instead of failures, thus preserving adolescents' trust in adults and enhancing their sense of belonging.

Future Directions for Research and Practice

Adult connections hold significance for adolescents' sense of school belonging and can greatly affect school-related outcomes. Therefore, it is important to consider the influence of adults on students' school adjustment in future research and practice. In particular, there are several areas that should be addressed: examination of the significance of adult connections for at-risk students, conceptualization of school

belonging as an outcome variable, investigation of self-determination theory as a process for student and staff interactions that can improve adult connections, emphasis on school belonging during high school and during the transition to high school, as well as exploration of the role of adult connections and school belonging in school improvement initiatives. Each of these points will be discussed in the following section.

Adult Connections and At-risk Students

Adolescent students at-risk for school failure, such as those that are economically disadvantaged or an ethnic minority, may benefit most from supportive adult connections. Strong relationships with adults may supply these students with important tools for navigating school. Supporting this argument is the perspective of social capital and research in the field of mentoring (Rhodes et al., 2000; Stanton-Salazar, 1997). Researchers have reported that providing students with adult support was associated with greater educational and mental health outcomes (DuBois and Silverthorn (2005). Further, research on mentoring has often cited the benefits of having at least one supportive relationship for building resilience in at-risk students (Rhodes et al., 2002). Therefore, adult connections may be a key factor in school belonging and school success for at-risk adolescent students (Ozer et al., 2008). Positive adult connections extend the at-risk students' personal resources thus allowing them to reach goals that may have been unattainable otherwise (Coleman, 1990). Research that examines these relationships holds promise for promoting more positive outcomes for at-risk youth.

In addition, it would be beneficial to have an increased understanding regarding any differential influences that adults may have on adolescents' school belonging. For

example, researchers have suggested that ethnic minority and socioeconomically disadvantaged students were less likely to report a strong sense of school belonging (Booker, 2006; Felner et al., 2007; Ryan & Patrick, 2001). Moreover, males have reported less belonging in school than females (Furrer & Skinner, 2003; Osterman, 2000). Exploration of these risk factors may uncover sources of support, such as adult connections, that contribute to the differences.

School Belonging as an Outcome

The perspective of school belonging presented in this article demonstrated that school belonging is important for positive student outcomes and that students' relationships with school personnel are related to their perceptions of school satisfaction (Baker, 2006; Murdock et al., 2000); however, it may be more meaningful to evaluate school belonging as an outcome rather than a cause. That is, more attention should be given to the investigation of variables that result in an increased sense of school belonging in addition to examining how school belonging impacts student outcomes. Determining factors that strengthen school belonging, such as adult connections, has important implications for student outcomes and school improvement practices. For example, shifting the focus to promoting school belonging could lead school improvement initiatives to spend fewer resources on curricular improvement and more on relationship building. Researchers have demonstrated the importance of engaging students psychologically in order to motivate them academically, thus supporting such a paradigm shift (Baker et al., 2001). Further, although research implicates a number of factors, such as social interactions, instructional practices, and discipline policies, as

influencing school belonging, further exploration would be valuable to build stronger arguments for targeted interventions. In particular, it would be beneficial to have a greater understanding of factors that increase school belonging so that specific interventions targeted to at-risk students can be developed. This would ensure that all students would have access to the greater educational outcomes associated with a strong sense of school belonging.

Self-determination Theory and Adult Connections

The potential influence of adult relationships on students' school experiences is evident, however further exploration of the development of such relationships is warranted. In particular, self-determination theory presents a process of interaction through which adults can enhance students' sense of school belonging by providing for students' needs for autonomy, competency and relatedness (Ryan & Deci, 2000). Self-determination theory provides adolescents with these specific needs within a supportive relationship which makes it more appropriate than the social capital or student-teacher attachment frameworks for fostering school belonging in adolescents. An evaluation of the influence of adult connections on school belonging through this theoretical orientation could provide insight into the core elements of this relationship and supply practitioners with a process for improving adult and student interactions. Specifically, the implications of such an investigation would provide adults with specific and practical tools for building relationships with students. Not only would stronger relationships be forged between adults and students, but the benefits of increases in students' motivation could improve school belonging and school completion rates (Deci et al., 1991).

There is support in the literature for researching the relationship between self-determination and adult connections in view of school dropout prevention. A recent theoretical article outlined a model of dropout prevention using self-determination (Eisenman, 2007). According to Eisenman, the principles of self-determination theory meet the criteria of successful dropout prevention programs set forth in previous research by supporting adolescents' needs to experience academic success, have caring and supportive adult relationships, and take part in personally relevant learning opportunities. Practical implications of self-determination theory in the schools include incorporation of adolescents' perspectives into learning objectives, acknowledgment of adolescents' feelings and opinions, provision of opportunities for adolescents to make choices and experience the outcomes of such choices, and minimization of teacher controls on goal formation (Eisenman; Hardre & Reeve, 2003; Niemiec & Ryan, 2009). As a theory that is considered to cross all cultures, implementation of strategies to facilitate self-determined behavior could be extended to all students; however the interventions should be adapted to cultural contexts (Eisenman; Deci & Ryan, 2000).

School Belonging, Adult Connections, and High School

Relatively few studies have examined school belonging and student-teacher interactions at the high school level. However, high school may be a time in which adult connections hold special significance for school belonging (L. Anderman, 2003; Murdock et al., 2000). During adolescence, declines in school belonging and motivation coincide with traditional high school practices that may not be conducive to student adjustment (Roeser et al., 1998; Seidman et al., 1994). Students' relationships with adults

in school can become strained as students begin to view school staff as an obstacle to establishing themselves as autonomous individuals (Davis, 2003). However, adult connections do not become any less important for adolescent development than for younger children. Strong adult connections during adolescence provide students with opportunities for self-expression and risk taking within trusting relationships, thus allowing students the opportunity to seek autonomy with developmentally appropriate supports (Davis). Research regarding adult connections and school belonging in high school students is warranted, especially with the significance of the consequences present in adolescence, such as school dropout.

Adult Connections and School Improvement

The influence of adult connections on school belonging merits further exploration in consideration of the school improvement initiatives presented in this article. Programs such as SLC, SDP, and PBIS have demonstrated promising results for adolescents (Borman et al., 2003; Comer, 1993; Felner et al., 2007; Sugai & Horner, 2002; 2006), yet further evaluation of these programs that focuses on identifying core elements responsible for the successful outcomes, such as the influence on school belonging, is an important and needed avenue for further exploration. For example, it is possible that the positive student and adult interactions that are fostered by these programs may be the driving force for their success. In addition, it is important to have a greater understanding of how these programs influence students' sense of school belonging. Although it seems likely that these programs have a positive influence on school belonging, research is needed to confirm this hypothesis. Increased support in the literature regarding the

capacity of comprehensive and systemic school improvement efforts to enhance school belonging and ensuing outcomes could conceivably result in these efforts becoming standard school practice. Further, with evidence of the power of adult connections to improve student outcomes, added emphasis can be placed on building strong connections within schools.

Conclusion

This paper presented a perspective of school belonging that emphasized the significance of adult connections for students. There is compelling evidence regarding the impact adult connections have on students' adjustment in school (e.g., Birch & Ladd, 1997; Brendgen et al.; Hamre & Pianta, 2001; Myers & Pianta, 2008). Positive connections with adults at school that enhance motivation and meet students' needs for relatedness are significant determinants in students' sense of belonging and may be the key to understanding students' disaffection toward school (Klem & Connell, 2004; Murdock et al., 2000). Shaping this viewpoint, are theories of human motivation, psychological needs, and social influences (Deci et al., 1991; Hamre & Pianta; Ryan & Deci, 2000; Maslow, 1943; Stanton-Salazar, 1997). The guidance and assistance provided by teachers and other adults in the school environment are a source of support that some students may not have available in other aspects of their lives, the presence of which can potentially alter educational trajectories (Croninger & Lee, 2001). However, such relationships do not occur in isolation, but instead are influenced by school policies and organizational practices (Baker et al., 2001). Therefore, conscious efforts to foster adult

connections that fully provide for students' needs for belonging is a practice that school personnel should support in order to ensure positive outcomes for all students.

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CHAPTER 2

THE MODERATING ROLE OF ADULT CONNECTIONS IN HIGH SCHOOL STUDENTS' SENSE OF SCHOOL BELONGING

Introduction

Recognizing the importance of social influences on students' academic and psychological adjustment, researchers have focused their attention on the roles of school personnel and peers in students' school-related outcomes (Goodenow, 1993a; Uwah, McMahon, & Furlow, 2008). A growing body of research has demonstrated that having a strong sense of school belonging, defined as the feeling of being accepted, respected, included, and supported by others in the school environment, is a construct that is relevant to all students' well-being and may hold particular relevance during high school (Goodenow, 1993b; Osterman, 2000). School belonging has been linked to a number of positive academic (Faircloth & Hamm, 2005; Sánchez, Colón, & Esparza, 2005), psychological (LaRusso, Romer, & Selman, 2008; Pittman & Richmond, 2007), and behavioral outcomes (Osterman; Napoli, Marsiglia, & Kulis, 2003).

Connections with adults in school may be among the most important contributors to students' sense of school belonging and school-related outcomes (Murdock, Anderman, & Hodge, 2000). Murray and Greenberg (2000) reported that elementary age students who perceived their teachers as emotionally supportive also reported more favorable views of school and had more positive social and emotional adjustment compared to

students who reported negative views of teachers and school. Similarly, Rodriguez (2008) and Ozer, Wolf, and Kong (2008) demonstrated that meaningful relationships with adults in school led to greater student engagement among ethnically diverse high school students. Positive adult connections also diminished the influence of risk factors associated with poor school belonging (LaRusso et al., 2008; Murdock et al.). Buyse, Verschueren, Doumen, Van Damme, and Maes (2008) reported that emotionally supportive teachers who exhibited warmth and sensitivity reduced the risk of future conflictual relationships with teachers among children with internalizing and externalizing behavior problems. Significant adult connections clearly are an important influence on students' adjustment across a variety of age levels. However, less is known about the relationship between adult connections and school belonging in high school students, specifically for students who have risk factors that may interfere with their maintaining a strong sense of school belonging. The present study investigated the relationship between adult connections and high school students' sense of school belonging and the extent to which adult connections moderated the relationship between risk factors associated with poor school adjustment and school belonging.

Self-Determination, Adult Connections, and School Belonging

Self-determination theory maintains that students have three basic psychological needs: (a) to have developmentally appropriate autonomy, (b) to be competent in their abilities, and (c) to have meaningful social connections with others (Baker et al., 2001; Davis, 2003; Deci, Vallerand, Pelletier, & Ryan, 1991; Skinner, Furrer, Marchland, & Kindermann, 2008). The extent to which supportive adult connections meet these needs

positively influences the students' level of self-determined motivation and sense of school belonging (Deci et al.; Eisenman, 2007; Goodenow, 1993b; Ryan & Deci, 2000; Martin, Marsh, McInerney, Green, & Dowson, 2007; Roeser, Eccles, & Sameroff, 1998; Zimmer-Gembeck, Chipuer, Hanisch, Creed, & McGregor, 2006). Self-determined motivation is an internal process that propels students toward intrinsically regulated behavior and healthy development (Ryan & Deci). The positive social interactions students experience with significant adults in the school that are supportive of autonomy and competence promote the students' internalization of the value of school which is associated with greater school belonging and academic performance (Martin et al.; McMahon, Wernsman, & Rose, 2009; Murray-Harvey & Slee, 2007; Roeser et al., 1998; Roeser, Eccles, & Sameroff, 2000; Samdal, Nutbeam, Wold, & Kannas, 1998). Further, school environments that provide for these needs through supportive adult relationships have beneficial effects for students including increased enthusiasm and effort toward academic goals (Furrer & Skinner, 2003; Goodenow, 1993b; Roeser, Midgley, & Urdan, 1996).

Self-determination theory is relevant to students' interactions with adults in school, specifically during adolescence when students may place greater value on interpersonal relationships and opportunities to feel autonomous and competent in their actions (Booker, 2006; Newman, Lohman, Newman, Myers, & Smith, 2000; Van Ryzin, Gravely, & Roseth, 2009). According to self-determination theory the types of interactions students have with adults in school influence how the students perceive themselves within the school environment (Niemiec & Ryan, 2009; Roeser et al., 1998).

Adults influence students' feelings of autonomy by minimizing external controls on behavior (i.e., close supervision, reward, punishment) and allowing students to have a voice in their choice of academic activities. Perceptions of competence are enhanced when adults place more emphasis on students' success and efficacy rather than evaluation (Legault, Pelletier, & Green-Demers, 2006; Niemiec & Ryan). Feelings of relatedness are found in students' perceptions that adults in the school value and respect them (Eisenman, 2007). Adult connections that satisfy autonomy, competence, and relatedness needs promote internalization of the value of school by positively influencing students' beliefs and feelings about their abilities and their personal value within the school (Niemiec & Ryan). The students' perceptions about themselves are then reflected in their academic engagement, self-regulated learning, and sense of school belonging (Eisenman; Osterman, 2000). Interactions with a variety of adults in school (e.g., teachers, administrators, counselors, janitors, librarians, office assistants, lunchroom workers) have the potential to influence students' perceptions and enhance school belonging by helping students establish a sense of acceptance and inclusion, develop autonomous thinking, and experience academic and social competence (DuBois & Silverthorn, 2005; McMahon, Parnes, Keys, & Viola, 2008; Roeser et al., 1998; Rhodes, Grossman, & Resch, 2000). Although there is support in the research literature for applying self-determination theory to student and teacher interactions, the influence of adult connections through the lens of self-determination theory on high school students' sense of school belonging has not been addressed.

School Belonging in High School

School belonging may be more important for students during high school because students place greater value on interpersonal relationships and they face more social pressures including finding their place within a larger student body and coping with developing their own identities (Booker, 2006; Neild, Stoner-Eby, & Furstenberg, 2008; Newman et al., 2000; Walker & Greene, 2009). Unfortunately, the high school environment can lower students' sense of school belonging by reducing the availability of adult social support and failing to adequately provide for students' needs for autonomy, competence, and relatedness (Eccles, 2004; Legault et al., 2006; Neild et al.; Vallerand, Guay, & Fortier, 1997). High school students' autonomy needs are often undermined by the presence of external controls (e.g., teacher imposed goals) and few opportunities for participation in decision making (e.g., choices in learning activities) which can decrease the students' sense of school belonging (Eisenman, 2007; Mitra, 2009; Niemiec & Ryan, 2009; Osterman, 2000). For academically at-risk students, curricular tracking and increased competition among students can diminish opportunities to build competence by reinforcing self-consciousness and frustration (Deci et al., 1991; Eccles; Roeser et al., 1998). Increases in class size and frequent transitions between classes provide all students with fewer opportunities to build strong relationships with teachers (Baker et al., 2001; McNeal, 1997). Discipline techniques often implemented in high schools contribute to poor school belonging by excluding students' from interacting with peers and adults through in-school or out-of-school suspension (Epp & Epp, 2001; Skiba, 2008). These high school educational practices often coincide with declines in students' sense of

school belonging during adolescence potentially placing students at greater risk for poor school-related outcomes (L. Anderman, 2003; Eccles; Newman, Newman, Griffen, O'Connor, & Spas, 2007; Roeser et al., 1998; Ryan & Patrick, 2001).

The first year of high school, typically ninth grade, may be a critical period in students' sense of school belonging (Fulk, 2003; Neild et al., 2008). Researchers have suggested that during ninth grade some students move increasingly toward a trajectory of school success or failure (Fulk; Isakson & Jarvis, 1999). In ninth grade, students' existing social networks from middle school may be disrupted and students must acclimate themselves to new social norms and relationships (Eccles, 2004; Newman et al., 2007). Researchers contend that disruptions in these relationships may contribute toward declines in students' sense of school belonging during the first year of high school (Isakson & Jarvis; Newman et al., 2007). A decrease in the social support provided by peers and adults may leave students with fewer resources for navigating the high school environment placing the students at higher risk for poor school outcomes (Baker et al., 2001; Croninger & Lee, 2001). Therefore, ninth grade students are a population of students that may be at greater risk for experiencing a poor sense of school belonging. Unfortunately, compared to middle school students, less research has addressed school belonging in high school students, especially those that are at risk for poor school outcomes.

Risk Factors Associated with Poor School Belonging

Researchers have indicated that a number of student risk factors were associated with a poor sense of school belonging (E. Anderman, 2002; Osterman, 2000). Poor

relationships with adults, problems with peer interactions, and behavior difficulties may reduce available sources of social support that can build a sense of school belonging (Murray-Harvey & Slee, 2007). In addition, background variables such as ethnicity, gender, and socioeconomic status (SES) may place students at greater risk for school failure (Baker, Grant, & Morlock, 2008; Finn, 1989; Neild et al., 2008; Voelkl, 1997). Typically these risk factors tend to cluster together within the same individuals making their impact even greater (Gutman, Sameroff, & Cole, 2003). The interaction of these risk factors with sources of support, such as adult connections, may be an important avenue to examine given the potential of adult connections to improve students' sense of school belonging. The following section explores the influence of each of these risk factors on students' sense of school belonging and related outcomes.

Poor Adult Connections

Students who have difficulty forming positive relationships with adults in school (e.g., teachers, administrators) are at higher risk for a multitude of poor outcomes that can negatively impact school belonging and lead to school failure (Brendgen, Wanner, Vitaro, Bukowski, & Tremblay; 2007; Myers & Pianta, 2008; Osterman, 2000). Negative relationship with adults in school are associated with greater anxiety and depression (Baker et al., 2008; Murray & Greenberg, 2000) and increased behavior problems (Brendgen et al., 2007). Not only are conflictual relationships between teachers and students detrimental to students' school belonging, but relationships between school personnel and students characterized by distance or indifference also can lead to alienation (Davis, 2003). For example, researchers reported that students who did not

develop strong relationships with teachers and other school personnel had poorer motivation that negatively affected the quality of their work and perceptions of their ability (Montalvo, Mansfield, & Miller, 2007). Thus, the lack of strong adult connections reduced a potential source of support that left students more vulnerable to a weak sense of school belonging and potential dropout (Murray-Harvey & Slee, 2007; Osterman).

Poor Peer Connections

Another risk factor that may interfere with students' sense of school belonging is poor peer relationships. During adolescence peer relationships become more significant for students and may be an important source of support in sustaining school belonging (Giordano, 2003; Newman et al., 2007). For example, researchers have reported that peer approval and acceptance are important elements in students' sense of school belonging and that friendships have the potential to strengthen school belonging (Booker, 2004; Hamm and Faircloth, 2005). Although peer relationships become increasingly important during adolescence, their instability can be a negative influence on students' school adjustment (Brown, 2004). Poor peer relationships characterized by rejection or harassment often result in lower school belonging and academic performance (Eisenberg, Neumark-Sztainer, & Perry, 2003; Osterman, 2000). Students who were rejected or suffered mistreatment by peers were found to demonstrate less classroom participation and more school avoidance behaviors (Buhs & Ladd, 2001). Less participation in the school social climate limited the students' opportunities to take part in relationships that could build a sense of school belonging (Goodenow, 1993a). The influence of peer relationships is important to students' sense of school belonging because students who

feel alienated by their peers in school may turn to other sources to meet their needs for belonging, which may include negative peer groups and delinquent activities that may further weaken their sense of belonging to school (Finn, 1989). Although poor peer relationships is indeed a risk factor for poor school belonging and adjustment, the relative contribution of poor peer connections to high school students' sense of school belonging compared to other risk factors has not received much attention in the literature and needs further exploration.

Behavior Problems

Students exhibiting behavior problems are at greater risk of having a weak sense of school belonging and experiencing poor school-related outcomes (Baker et al., 2008; Finn 1989; Thomas, Bierman, Thompson, & Powers, 2006; Vitaro, Brendgen, Larose, & Tremblay, 2005). Researchers have shown that students with behavioral difficulties were more likely to experience conflictual interactions with school personnel, poor peer relationships, punitive discipline, lower academic achievement, and eventual school dropout (Baker et al., 2001; Buyse et al., 2008; Osher et al., 2004; Sutherland & Welby, 2001; Vitaro, Larocque, Janosz, & Tremblay, 2001; Vitaro et al., 2005). The social difficulties that students with behavior problems experience may be most detrimental to their sense of school belonging. For example, a study conducted by Greene, Beszterczey, Katzenstein, Park, and Goring (2002) indicated that teachers reported significantly more stress in teaching students with attention deficit hyperactivity disorder and oppositional behavior compared to students without such difficulties. This increased stress on teachers may fracture the student-teacher relationship and have a negative impact on the students'

sense of school belonging (Baker et al., 2008). Behavior problems, therefore, may make it difficult for some students to benefit from sources of support, such as adult connections, that may enhance school belonging. However, students that do experience positive adult connections may be protected from the negative influence of behavior problems, though this has not been examined.

Demographic Characteristics

The specific influence that ethnicity, gender, and SES have on students' sense of school belonging is unresolved. However, some researchers contend that ethnic minority, male, and low SES students are at greater risk of experiencing a poor sense of school belonging and negative school-related outcomes (E. Anderman, 2002; Lee & Smith, 1995; Murray-Harvey & Slee, 2007; Roeser et al., 1996). Researchers have reported that male students and socioeconomically disadvantaged students reported a weaker sense of belonging to school compared to their counterparts (E. Anderman; Goodenow, 1993a; Lee & Smith; Murray-Harvey & Slee; Smerdon, 2002). Researchers also have reported that even when ethnic minority students reported similar levels of school belonging as ethnic majority students, they did not necessarily experience the positive outcomes (i.e., increased academic self-efficacy) commonly associated with a strong sense of school belonging (Booker, 2004; Uwah et al., 2008; Voelkl, 1997). Overall, students with these demographic characteristics are less likely to experience the benefits of a strong sense of school belonging, which increases the likelihood of school failure (Booker, 2006; Finn, 1989). The overlap of these demographic characteristics in individuals may compound the risk for poor outcomes which further increases the likelihood that students will

experience low classroom engagement, disruptive behavior, delinquency, and school dropout (Christle, Jolivette, & Nelson, 2007; Finn; Gutman et al., 2003).

The association between ethnicity, gender, and SES and students' receptiveness to and participation in positive connections with adults and peers may be a key factor in their sense of school belonging (Appleton, Christenson, & Furlong, 2008; Booker, 2006; Lee & Smith, 1995). For example, male students have reported less affiliative motivation (desire for forming close relationships with others) than females (Hill & Werner, 2006). Males' lower desire for relatedness with adults may have a negative impact on their sense of school belonging (Martin et al., 2007). Similarly, students of lower SES have been found to participate (e.g., attend school regularly, participate in extracurricular activities) less in school, which could result in fewer opportunities for building relationships with adults and peers (Appleton et al.). Less involvement and interest in school or developing relationships with others in the school compounds the risks of minority ethnicity, male gender, and low SES on students' school-related outcomes (Lee & Smith; Finn, 1989). Given the potential that being of minority ethnicity status, male gender, or low SES can negatively influence participation in the school social climate, further exploration of these risk factors is needed.

Rationale for Study

Adult connections that meet the basic psychological needs for autonomy, competence, and relatedness may be an important source of support for students and potentially one of the more significant aspects of high school students' perceptions of school belonging, especially for students facing risk factors that may interfere with their

sense of school belonging (L. Anderman, 2003; Deci et al., 1991; LaRusso et al., 2008; Montalvo et al., 2007; Neild et al., 2008). The purpose of the current study was to examine the role of risk factors associated with poor school outcomes in students' sense of school belonging, the relationship between adult connections and students' sense of school belonging, and to investigate whether supportive relationships with adults at school would moderate the relationship between the risk factors and school belonging (Hughes, Cavell, & Jackson, 1999). The current research literature concerning school belonging has focused more on middle school students than high school students and has failed to fully explore the relative contribution of risk factors associated with poor school adjustment to students' sense of school belonging taking into consideration the presence of strong adult connections. Researchers have found support for the application of self-determination theory for educational practices (e.g., Eisenman, 2007; Niemiec & Ryan, 2009), but an explicit association between adult connections that provide for autonomy, competence, and relatedness and students' sense of school belonging has not been established. Therefore, the following research questions were posed: (a) were behavior problems, peer problems, ethnic minority status, male gender, and low SES significantly associated with poorer school belonging; (b) were greater adult connections uniquely associated with stronger school belonging beyond the variance accounted for by the aforementioned risk factors; and (c) did adult connections moderate the relationship between the risk factors and school belonging?

Method

Context

This study was conducted in a largely rural school system located in the southeastern United States. The system educates approximately 10,000 students per year in 21 schools, four of which are high schools (9th grade to 12th grade). Each high school was representative of a geographic area of the school system and the student populations at each school ranged from 639 to 903. Students in this system are predominately Caucasian (87%) and almost half qualify for free or reduced lunch (46%). Students in this system have consistently demonstrated high levels of achievement, scoring above state and national averages on achievement tests each year.

The Freshman Academy concept, a variation of the smaller schools movement (Conchas & Rodriguez, 2008), was utilized at each of the high schools in the school system, to support the ninth grade students' transition into high school. As part of this design, ninth grade students attend classes separately from upperclassmen as much as the schools' designs permit. They are taught by a "freshmen only" faculty that meets daily to discuss student progress. The Academy is complemented with a course titled High School 101 (Foster, 1997) that focuses on test taking skills, money management, communication skills, and relationship building. The Freshman Academy design facilitates the development of adult connections by providing students with opportunities for advisement and building sustainable relationships with their teachers.

Students at three of the four high schools participated in a school survey that was designed to evaluate the Freshman Academy program. The school provided notification

via passive consent to parents prior to the administration of the survey. None of the consent forms were returned; therefore all students present on the designated dates of the survey were included in the sample. The primary researcher was employed with the system during the administration of the survey. The system agreed to release data to the researchers and university Institutional Review Board (IRB) approval was granted to conduct data analysis.

Participants

Ninth grade students participated in the survey designed to examine Freshman Academy during their High School 101 classes. A total of 374 surveys were completed. Participants ranged in age from 14 to 18 (M = 14.88, SD = .65). The sample was evenly divided in terms of gender (49.7% female, 50.3% male). The ethnicity of the participants in the sample was reflective of the ethnic breakdown of the school system population (75.4% Caucasian, 7.5% multiracial, 7.2% Hispanic/Latino, 6.1% African American, 1.3% American Indian, 1.6% Asian, .8% native Hawaiian). Six students were missing portions of the data used for the analyses that prevented calculation of total scores for these students on some of the variables. Therefore, these cases were excluded from the study, leaving a total of 368 participants in the present study.

Students' responses on the survey provided data on gender (males coded 1; females coded 2), ethnicity, and poverty. Their students' selected their ethnicity from the following options: American Indian or Alaska Native, Asian, Black or African American, Hispanic or Latino/Latina, Native Hawaiian or Other Pacific Islander, or White. Two dummy variables to indicate the students' status as either White (ethnic majority; coded

1) or other (ethnic minority; coded 2) were created to examine the effects of minority group status. Commonly used as an indicator of socioeconomic status (e.g., Kuperminc, Leadbeater, & Blatt, 2001; Sánchez et al., 2005), students reported whether they qualified for free or reduced price (coded 1) or full price lunch (coded 2).

Measures

Psychological Sense of School Membership (PSSM). The Psychological Sense of School Membership (Goodenow, 1993b) was used to measure individual students' perspectives of school belonging. The PSSM has 18 items, five of which are reverse scored, that evaluate perceived liking, personal acceptance, inclusion, respect, and encouragement for participation. Responses are based on a 5-point likert scale ranging from "not at all true" to "completely true." Example items include "I feel like a real part of the school" and "I feel proud of belonging to this school." Responses to the items were totaled together to form an index of school belonging which ranged from 18 to 90. The PSSM has good construct validity and internal consistency reliability yielded a Cronbach's alpha ranging from .82 to .88 (Goodenow, 1993b). In this study, internal consistency reliability (coefficient alpha) was .89.

The Strengths and Difficulties Questionnaire (SDQ). The Strengths and Difficulties Questionnaire, self-report version (Goodman, Meltzer, & Bailey, 2003) was used to assess the students' behavioral difficulties and peer relationships. The SDQ is a 25 item self-report questionnaire designed to assess emotional problems, conduct problems, hyperactivity, peer problems, and prosocial behaviors among youth. The items were each answered on a 3-point likert scale, five of which are reverse scored, ranging

from “not true” to “certainly true” with higher scores reflecting more difficulties. For this study, only the conduct problems, hyperactivity, and peer problems scales were analyzed. Items from the conduct problems (e.g., “I fight a lot. I can make other people do what I want.”) and hyperactivity scales (e.g., I am constantly fidgeting or squirming.”) were summed to create the behavior problems variable. The total score for peer problems was derived by summing the five items that comprised that scale (e.g., “I get along better with adults than with people my own age.”). The SDQ has demonstrated sound psychometric properties for 11 to 16 year olds in both clinical and nonclinical settings (Goodman, 1997). Goodman et al. reported internal consistency reliability (Cronbach’s alpha) coefficients of .72 for the conduct problems scale, .69 for the hyperactivity scale, and .61 for the peer problems scale. In the present study, the Cronbach’s alpha was .74 for the behavior problems variable (sum of conduct problems and peer problems) and .51 for peer problems.

Basic Need Satisfaction in Relationships Scale. The Basic Need Satisfaction in Relationships Scale was designed to evaluate basic need satisfaction of autonomy, competence, and relatedness in significant relationships (La Guardia, Ryan, Couchman, & Deci, 2000). The scale consists of nine items in which the respondents rate, on a 7-point likert scale ranging from “not at all true” to “very true”, how well their basic needs are met with a target figure. For this study the target figure was an adult at school. Two items from this scale were adapted to school settings. Items that referred to love, closeness, and intimacy were modified so that they reflected more accurately the types of relationships students have with adults in high school. For example, “When I am with

___ I feel loved and cared about" was modified to exclude the words "loved and." Another item which read, "When I am with ___ I feel a lot of closeness and intimacy" was changed to read "When I am with ___ I feel we have a good relationship." The nine items, three of which were reverse scored, were averaged so that a total need satisfaction score could be derived. La Guardia et al. reported that internal consistency reliability for this scale for significant adults was .90. The present study found a Cronbach's alpha of .82.

Analyses

Preliminary analyses, using *t* tests, examined potential mean level differences between gender, ethnicity, and SES and the students' adult connections, behavior problems, peer problems, and school belonging. Correlations among these variables were then examined for the total sample and then for males and females separately. A series of three-step hierarchical regression analyses were then used to evaluate the relative contributions of the independent variables to the explained variance in school belonging. The risk factors (behavior problems, peer problems, ethnicity, gender, and poverty) were entered in the first step of the hierarchical regression analyses. Adult connections was entered in Step 2 to assess the unique association with school belonging while controlling for each of the risk factors. Two-way interactions between adult connections and the significant predictor variables (risk factors) were entered in Step 3. Interaction terms were the product of two variables that were centered by subtracting the mean from all observations to avoid problems with multicollinearity (Aiken & West, 1991). Interactions were assessed in separate models to determine whether adult connections moderated the

relationship between significant predictor variables (risk factors) and school belonging. Nonsignificant predictors were trimmed from the final models. The Bonferroni correction procedure was applied to reduce the likelihood of type one error. The desired alpha was divided by the number of comparisons which yielded the adjusted alpha of .016. A power analysis (Cohen & Cohen, 1983) indicated that based on the sample size and alpha level; there was sufficient power (.80) for rejecting the null hypotheses. Follow-up regression analyses examined the influence of gender on adult connections related to students' sense of school belonging because of the mean level difference between gender and adult connections. The data file was split by gender and the three-step hierarchical regression analysis was performed. To facilitate comparison of the beta weights that each of the regression analyses yielded, additional regression analyses were conducted to test for an interaction effect for gender.

Results

The *t* test results comparing males' and females' means showed significant differences for adult connections, $t(372) = 5.08$, $p < .05$. Females reported greater adult connections, consisting of support for autonomy, competence, and relatedness, compared to males. However, there were no gender differences for behavior problems $t(369) = .38$, $p = .71$, peer problems $t(370) = .70$, $p = .49$, or school belonging $t(372) = -.88$, $p = .38$. The *t* test examining SES indicated no significant differences for adult connections $t(370) = .74$, $p = .46$, behavior problems $t(367) = 1.28$, $p = .20$, peer problems $t(368) = 1.77$, $p = .08$, or school belonging $t(370) = -1.95$, $p = .05$. T-tests examining ethnicity also failed to reveal significant differences between adult connections $t(372) = 1.16$, $p = .22$,

behavior problems $t(369) = -.33$, $p = .61$, peer problems $t(370) = .14$, $p = .82$ and school belonging $t(372) = .48$, $p = .22$. Table 1 presents the means, standard deviations, and potential ranges for the total sample, males, and females.

Table 1

Range, Mean, and Standard Deviations for Total Sample, Males, and Females

		Total Sample		Males		Females	
Variable	Potential Range	*M*	SD	*M*	SD	*M*	SD
BP	0 – 20	6.86	3.57	6.92	3.57	6.79	3.60
PP	0 – 10	2.11	1.69	2.04	1.61	2.17	1.76
AC	0 – 54	39.57	12.41	36.40	13.05	42.71	10.90
SB	0 – 72	46.63	13.24	46.03	12.69	47.23	13.76

Note. BP = behavior problems; PP = peer problems; AC = adult connections; SB = school belonging.

Correlations among the predictor variables and dependent variable for the total sample and each gender (Tables 2 and 3) indicated that stronger adult connections was related to greater school belonging. There was a small, but significant positive association between behavior problems and peer problems. Greater levels of behavior problems and peer problems were each associated with significantly less school belonging. There was a

strong negative relationship between adult connections and behavior problems, but not peer problems. Consistent with previous research (Hill & Werner, 2006), females reported stronger adult connections than males.

Table 2

Zero-Order Correlations for All Study Variables for Total Sample (N = 368)

Variable	Ethnicity[a]	Gender[b]	SES[c]	BP	PP	AC	SB
Ethnicity[a]	-	.03	-.21*	.02	-.01	-.06	-.02
Gender[b]		-	.03	-.02	.04	.26*	.05
SES[c]			-	-.07	-.09	.04	.10
BP				-	.18*	-.28*	-.45*
PP					-	-.08	-.44*
AC						-	.40*
SB							-

Note. BP = behavior problems; PP = peer problems; AC = adult connections; SB = school belonging.

[a]Ethnicity was dummy coded: White = 1; Other = 2. [b]Gender was dummy coded: males = 1; females = 2. [c]SES was dummy coded: free/reduced price lunch = 1; full price lunch = 2.

*$p < .01$

Table 3

Zero-Order Correlations for All Study Variables for Males (n = 184) and females (n = 184)

Variable	Ethnicity[a]	SES[b]	BP	PP	AC	SB
Ethnicity[a]	-	-.21**	.02	-.01	-.14	.02
SES[b]	-.22**	-	-.07	-.06	.10	.06
BP	.02	-.06	-	.16*	-.32**	-.35**
PP	-.01	-.12	.19**	-	-.11	-.42**
AC	.01	-.05	-.26**	-.09	-	.42**
SB	-.06	.14	-.54**	-.47**	.40**	-

Note. Results for males are presented above the diagonal. Results for females are presented below the diagonal.

BP = behavior problems; PP = peer problems; AC = adult connections; SB = school belonging.

[a]Ethnicity was dummy coded: White = 1; Other = 2. [b]SES was dummy coded: free/reduced price lunch = 1; full price lunch = 2.

*$p < .05$. **$p < .01$.

The initial regression analysis results indicated that ethnicity, gender, and poverty were not significant predictors of school belonging. In subsequent regression analyses, ethnicity, gender, and poverty were removed as predictors and behavior problems and peer problems were the only predictors evaluated for interaction effects.

Table 4 includes the unstandardized (B) and standardized beta (β) coefficients for the combined sample. Partially confirming the hypothesis for research question one, that the risk factors would be associated with poorer school belonging, behavior problems and peer problems were significant predictors of poorer school belonging. The risk factors in Step 1 explained 33.7% of the variance in the students' sense of school belonging. As expected, greater levels of behavior problems and peer problems had a negative effect on school belonging. The hypothesis for the second research question, that stronger adult connections would be uniquely associated with greater school belonging beyond the variance accounted for by the risk factors, was confirmed with adult connections accounting for a significant portion of the variance in school belonging (8.3%). Adult connections had a positive effect on school belonging. The students reported greater school belonging when they also reported stronger adult connections.

To evaluate the third hypothesis, the moderator effects, each of the interaction terms (behavior problems x adult connections, peer problems x adult connections) was evaluated in a separate model. As shown in Figure 2, the results indicated a significant interaction effect for adult connections and behavior problems. The negative association between behavior problems and school belonging was weaker for students with greater adult connections. Students with low adult connections have much lower school

Table 4

Summary of Hierarchical Regression Analyses for Variables Predicting School Belonging

(N = 368)

Variable	B	SE B	β
Step 1			
Behavior Problems	-1.43	.16	-.38**
Peer Problems	-2.95	.34	-.37**
Step 2			
Adult Connections	.32	.05	.30**
Step 3[a]			
Adult Connections x Behavior Problems	-.04	.01	-.12*
Adult Connections x Peer Problems	-.02	.03	-.02

Note. $\Delta R^2 = .34$ for Step 1; $\Delta R^2 = .08$ for Step 2; $\Delta R^2 = .01$ for Step 3 behavior problems interaction; $\Delta R^2 = .00$ for Step 3 peer problems interaction.

[a] Interactions included separately in Step 3.

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

belonging regardless of the level of behavior problems; however, those students with behavior problems that experience strong adult connections benefit significantly in terms of the effect on their sense of school belonging. The interaction between adult connections and peer problems was not significant.

Figure 2. Interaction of adult connections with behavior problems predicting school belonging.

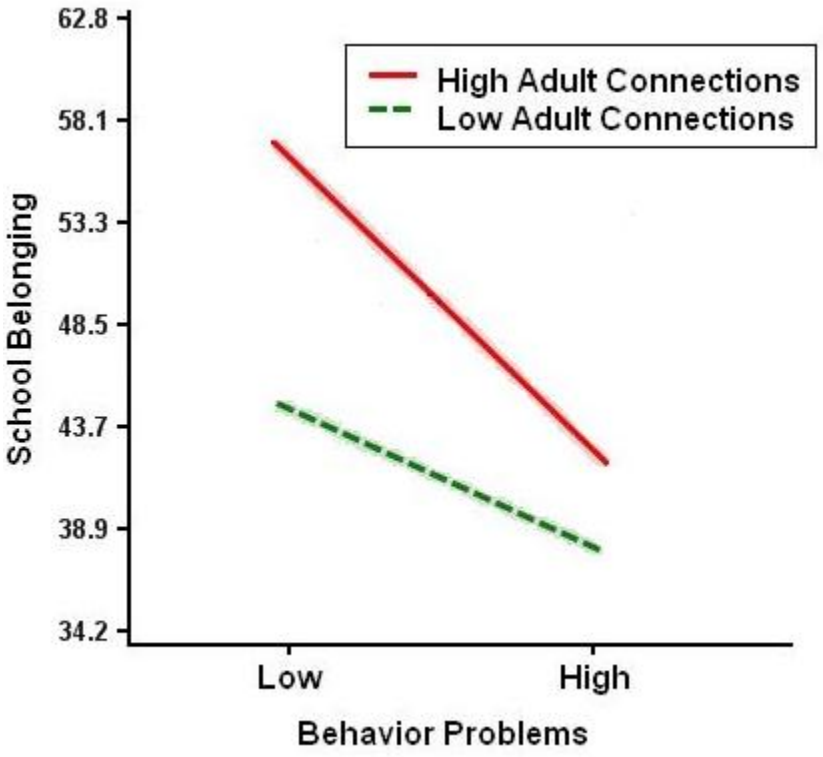

Table 5 includes the unstandardized (B) and standardized beta (β) coefficients for the combined males and females. The three-step regression analyses for the males indicated that peer problems and behavior problems accounted for a significant portion of

Table 5

Summary of Hierarchical Regression Analyses for Variables Predicting School Belonging by Gender (males n = 184, females n =184)

		Males		Females	
	Variable	B	β	B	β
Step 1					
	Behavior Problems	-1.05	-.29*	-1.80	-.47*
	Peer Problems	-2.98	-.38*	-2.91	-.37*
Step 2					
	Adult Connections	.34	.34*	.33	.27*
Step 3[a]					
	Adult Connections x Behavior Problems	-.02	-.09	-.04	-.09
	Adult Connections x Peer Problems	.01	.01	-.05	-.06

Note. Males $\Delta R^2 = 0.26$ for step 1; $\Delta R^2 = 0.11$ for step 2; $\Delta R^2 = 0.01$ for step 3 behavior problems interaction; $\Delta R^2 = 0.00$ for step 3 peer problems interaction. Females $\Delta R^2 = 0.42$ for step 1; $\Delta R^2 = 0.07$ for step 2; $\Delta R^2 = 0.01$ for step 3 behavior problems interaction; $\Delta R^2 = 0.00$ for step 3 peer problems interaction.

* $p < .05$.

the variance in school belonging in Step 1 (26.2%) with greater levels of the risk factors associated with poorer school belonging. In Step 2 adult connections, which was associated with greater school belonging, explained 10.2% more of the variance. No interaction effects were found for behavior problems and adult connections or peer problems and adult connections. For females, behavior problems and peer problems accounted for 42.3% of the variance in Step 1. Adult connections accounted for 6.5% more of the variance in Step 2. Again, no interaction effects were found. The failure to find interaction effects for these regression analyses may have been because splitting the sample reduced power. The examination of gender differences (two-way interactions of gender x behavior problems, gender x peer problems, gender x adult connections) revealed that the association between the risk factors (behavior problems, peer problems) and school belonging was stronger for females than males, which left more of the variance in school belonging available for adult connections for the males.

Discussion

Relatively little attention has been given to school belonging in high school compared to research conducted on middle school age students even though school belonging may be more important to students' academic and psychological adjustment during the high school years (LaRusso et al., 2008; Murdock et al., 2000; Walker & Greene, 2009). The current study evaluated the influence of adult connections on the students' sense of school belonging in consideration of the presence of risk factors (behavior problems, peer problems, ethnic minority status, male gender, low SES) commonly associated with poor school adjustment (Baker et al., 2008; Eisenberg et al.,

2003; Finn, 1989; Osterman, 2000). Consistent with self-determination theory, findings demonstrated that adult connections which provided for students' needs for autonomy, competence, and relatedness were associated with a greater sense of school belonging in high school students. Further, the results of the study confirmed and expanded existing research on school belonging in several areas that included the significance of adults in school belonging (Davis, 2003; LaRusso et al.; Murray-Harvey & Slee, 2007), the presence of gender differences regarding significant influences on students' sense of school belonging (Smerdon, 2002), and additions to the research literature regarding the influence of ethnicity and socioeconomic status on school belonging (Booker, 2004; Voelkl, 1997). The findings from this study also validated the importance of examining school belonging in high school students and emphasizing school belonging as an outcome variable. Potential limitations to this study point to areas for future research to expand upon the nature of the relationship between adult connections and school belonging. These points are discussed in greater detail below.

This study confirmed the hypothesis that the connections students have with adults at school would significantly influence their sense of school belonging. As described in this study, self-determination theory (Niemiec & Ryan, 2009; Ryan & Deci, 2000) provided a framework for viewing adults' relationships with high school students by demonstrating that strong adult connections that provided for autonomy, competence, and relatedness was a significant predictor of high school students' sense of school belonging. Further, the students' perceptions of adult connections accounted for a significant portion of the variance in their sense of school belonging beyond the variance

explained by behavior problems and peer problems. The significance of a self-determination framework for viewing students' connections with adults in school is an important contribution to the school belonging literature. Although self-determination theory has a strong research base, the application of self-determination to adult connections with respect to school belonging had not been investigated empirically. The findings in this study demonstrated support for the relevance of self-determination to examining pathways through which adult connections can enhance school belonging.

The satisfaction of autonomy, competence, and relatedness that characterized students' connections with adults was a significant contributor to the students' sense of school belonging and may have important implications for prevention and intervention. Adult connections that foster self-determination in students exceed simply providing supportive relationships and in addition supply students with psychological needs that may be at heightened levels during adolescence. Self-determination theory provides a framework through which practitioners in the schools can forge relationships that encourage students to take a more active role in their education. For example, existing research has called for schools to foster positive interactions among school personnel and students by reducing external contingencies (i.e., reward, punishment), encouraging autonomy through providing opportunities for choice in learning and school activities, and acknowledging students' perspectives and interests (Niemiec & Ryan; Vallerand et al., 1997). Practices that build students' self-determination would likely improve school belonging and lead to increased academic performance and improved psychological well-being (Eisenman, 2007; Ryan & Deci). The results from this study highlighted the

importance of adult connections that promote self-determination in students' sense of school belonging and point to the need for further research to evaluate the influence of interventions designed to improve self-determination and their effect on school belonging.

Previous research which found that students with behavior problems were more likely to have poor relationships with adults was confirmed in the present study (Brendgen et al., 2007; Myers & Pianta, 2008). However, findings from this study extended prior research by demonstrating a significant interaction effect of adult connections and behavior problems on school belonging. The students with behavior problems that perceived their relationships with adults as sufficiently providing for autonomy, competence, and relatedness did not show the same low level of school belonging as those whose connections with adults were low in autonomy, competence, and relatedness. Students with high adult connections and low behavior problems had the highest level of school belonging, whereas those with low adult connections and high behavior problems had the lowest level of school belonging. The moderation effect of adult connections may suggest that students with behavior problems are protected from having very poor school belonging when they have high adult connections. However, the present study cannot prove this definitively and a study that can evaluate the effect of adult connections on school belonging would be needed to further clarify this relationship.

Although high levels of behavior problems were demonstrated as a risk factor for having a poor sense of school belonging, those students who had both low behavior problems and low adult connections also had low school belonging and are a group of students that may be at-risk for poor school outcomes. These students may not exhibit

behavior problems and may not have conflictual relationships with adults in school, yet a lack of relationships with adults in the school that are supportive of autonomy, competence, and relatedness may put them in jeopardy. These relationships may be characterized by indifference, which can lead to alienation and withdrawal from school (Davis, 2003). These students may be overlooked because they do not demand the level of attention that is given to students that exhibit high levels of behavior problems. Nonexistent relationships with adults in school are potentially as equally important as conflictual relationships with regards to the effect on students' sense of school belonging. Future research is necessary to understand the nature of the association between low adult connections and school belonging for students with low levels of behavior problems, as such could potentially point to the development of successful interventions designed to increase autonomy, competence, and relatedness supportive interactions among students and adults.

These findings regarding the association between behavior problems and adult connections may have implications for school discipline policies. Schools that rely on punitive discipline practices may want to consider the negative impact such policies may have on the relationships between students and adults in school (Eccles, 2004; McNeely, Nonnemaker, & Blum, 2002). Punitive practices that diminish adult connections may have a negative impact on school belonging for all students and especially for some students exhibiting behavior problems. For students at-risk for poor school belonging, it may be important to avoid using any discipline strategies that would inhibit adult connections (Epp & Epp, 2001; Skiba & Knesting, 2001). Instead, schools may consider

implementing intervention strategies that will restore poor relationships with adults and build new adult connections. For example, the use of positive intervention strategies (i.e., Positive Behavior Interventions and Supports [PBIS]) or the facilitation of structured or natural mentoring opportunities could improve adult connections, school belonging, and school-related outcomes in at-risk high school students (Bohannon et al., 2006; Rhodes et al., 2000; Sugai & Horner, 2002). Future research that directly investigates the influence of schools using positive strategies on students' connections with adults and school belonging should be addressed.

There were no gender differences in the students' sense of school belonging identified in this study which was discrepant from previous research that reported a greater sense of school belonging among females (E. Anderman, 2002; Murray-Harvey & Slee, 2007). However the results revealed that the variance in school belonging explained by the predictors varied by gender. Adult connections, behavior problems, and peer problems were significant predictors for both genders; yet, adult connections was a stronger predictor of school belonging for males than females even though males reported significantly lower adult connections than females. This finding departs from a previous study that found the effects of adult connections on academic and behavioral outcomes were less robust for male students than female students (Martin et al., 2007) and is supported by evidence in the research literature regarding school engagement. Furrer and Skinner (2003) reported that male students reported less relatedness (i.e., perceived social support) to teachers than females yet the effect of relatedness to teachers on school engagement was more pronounced for males. In the present study, although males'

relationships with adults may have been less autonomy, competence, and relatedness supportive than females', the relationships were a stronger predictor of school belonging and may have been more meaningful to males' school experiences.

Males and females also differed with respect to the variance in school belonging explained by behavior problems and peer problems. Although the males and females reported similar levels of behavior problems and peer problems in this study, the variance accounted for by these risk factors was greater for females than males. This study contradicted earlier findings which indicated that males were more likely than females to experience disruptive behavior problems (Thomas et al., 2006; Vitaro et al., 2005) and extended the research to indicate that the relationship between behavior problems and school belonging may be stronger for females than males. In addition, the present study offers support for prior research that has indicated females may be more vulnerable to peer conflicts than males because females' relationships with peers are often characterized by greater intimacy and sensitivity (Giordano, 2003).

The findings from this study did not reveal differences in students' sense of school belonging based on gender, ethnicity, and SES. Differences in school belonging and adult connections among these demographic variables was predicted based on previous research (i.e., Booker, 2004; 2006; Lee & Smith, 1995). This finding adds to the unresolved discourse regarding the influence of demographic variables on school belonging and related outcomes. Further research is necessary to fully understand individual differences in students' perceptions of school belonging and factors that are significant influences.

In addition, the present research findings indicated that perceptions of adult connections were similar across ethnicity and SES. This suggested that adult connections that provide for autonomy, competence, and relatedness may provide for the specific school belonging needs of students from all ethnic and socioeconomic backgrounds. This is consistent with self-determination theory, which maintains that the needs for autonomy, competence, and relatedness are universal (Ryan & Deci, 2000; Chirkov, 2009; Jang, Reeve, Ryan, & Kim, 2009). The findings in this study provide researchers with an opportunity to extend the self-determination framework in school belonging research with an emphasis on cross-cultural application.

This study further contributed to the school belonging literature by focusing on high school students. Much of the research on school belonging has been examined at the middle school level (e.g., L. Anderman, 2003; Nichols, 2006). However, like middle school, the nature of the high school environment, traditionally characterized as impersonal and bureaucratic, may contribute toward declines in school belonging when it may be most critical for students' academic engagement (Eccles, 2004). The present findings regarding the relationship between adult connections and school belonging are similar to findings that have been demonstrated in middle school students in which teacher promotion of mutual respect predicted a smaller decline in school belonging over time (L. Anderman, 2003). Recent school improvement initiatives that have attempted to improve the learning environment, such as small learning communities (SLC) like those used by the high schools in this study, create a school context that promotes school belonging (Deci, 2009; Fulk, 2003). Researchers have demonstrated that SLC have the

potential to personalize the high school experience by facilitating a sense of relatedness among students and school personnel (Felner, Seitsinger, Brand, Burns, & Bolton, 2007). Future research should continue to concentrate on high school students' sense of belonging and specifically how initiatives like SLC influence school belonging.

This study extended the school belonging literature by emphasizing school belonging as an outcome variable rather than a predictor (e.g., Goodenow, 1993a; Sánchez et al., 2005; Uwah et al., 2008). The majority of school belonging research has examined school belonging as a predictor in order to determine outcomes that are associated with either a weak or strong sense of school belonging (e.g., McMahon et al., 2009; Nichols, 2006). Instead, this study explored the potential factors that influenced students' sense of school belonging, which is important because of the influence school belonging has on students' achievement, self-efficacy, and psychological health. The knowledge about school belonging predictors that was gained by exploring school belonging as a dependent variable provided researchers and practitioners with information that may be a catalyst for a research agenda that can better inform interventions. As a result, practitioners would be able to target specific areas for improvement through empirically supported practices that would ultimately lead to improved academic, social, and behavioral outcomes for all students (E. Anderman, 2002; Osterman, 2000; Napoli et al., 2003).

The data in this study demonstrated an interesting relationship between adult connections and behavior problems in relation to school belonging, however more work is needed to fully understand the nature of the influence of adult connections. The design

of this study was cross-sectional in which the data were collected at a single point in time, and prevented the establishment of temporal precedence. The study showed a significant positive association between school belonging and adult connections that were supportive of autonomy, competence, and relatedness; however more needs to be revealed about this relationship. The findings may have shown that adult connections resulted in greater school belonging, as predicted by the hypotheses, or the findings may have indicated that students' with a stronger sense of school belonging perceived their relationships with adults more favorably. Future research that builds upon these findings is needed in order to understand how adult connections influence school belonging for at-risk students. A mediational model that demonstrates support for adult connections to alleviate the effect of behavior problems and other risk factors on students' sense of school belonging would provide further explanation of this process and inform intervention designed to improve school belonging. Another way to build upon the current study's findings may be to obtain collateral data from adults and school records regarding the students' level of problem behavior or other risk factors when examining these constructs in future studies. The students may have either inflated positive aspects or minimized negative aspects of the study constructs, therefore information from multiple informants may be helpful in future research.

Conclusion

The findings from this study indicated that adult connections were a significant influence on high school students' sense of school belonging. Strong adult connections

that meet students' needs for autonomy, competence, and relatedness have the potential to compensate for weaknesses in the sense of school belonging of behaviorally at-risk students. In particular, this study added to a growing body of research that supports strategies that seek to strengthen relationships among students and school personnel and prevent school failure (Deci, 2009; Sugai & Horner, 2002). Future research should continue to emphasize relationships that support students' psychological needs in examining school belonging.

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