

RELATIONSHIPS AMONG BELONGINGNESS, BEHAVIORAL AND
ENVIRONMENTAL FACTORS, AND ACADEMIC ACHIEVEMENT

by

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A DISSERTATION

IN

EDUCATIONAL PSYCHOLOGY

Submitted to the Graduate Faculty

of Texas Tech University in

Partial Fulfillment of

the Requirements for

the Degree of

DOCTOR OF PHILOSOPHY

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ACKNOWLEDGEMENTS

I express my heartfelt gratitude to the members of my graduate committee. I especially thank my co-chairs Dr. William Lan and Dr. Tara Stevens, to whom I owe a great deal of my academic success, for their meticulous guidance, encouragement, support, and assistance during the preparation of the manuscript. Their open- door policy, patience, tolerance, constructive criticism, and allowance of me are deeply appreciated. I also extend thanks to Dr. Doug Simpson for his patience, support, suggestions, and constructive criticism throughout this process.

I am extremely indebted to Dr. William Allen Watson, for his continued support, encouragement, thoughtfulness, and keen interest in my academic pursuits. I thank him for always taking time to assist me, listen to me, and provide me invaluable feedback. I would not have been able to complete this process in a timely fashion without his help. I would also like to thank all those with whom I have worked and interacted in the College of Education (COE).

I am deeply obliged to Dr. Charles Davidson for his assistance in the dissertation process. His feedback and knowledge are invaluable. I want to thank Dr. Peggy Johnson for providing me an assistantship during my final semester as well as Dr. Janet White for her encouragement, advice, and support during most of the dissertation process. I also must thank Dr. Hartmeister for his allowing me to tailor my doctoral program in order to meet my needs for future employment.

I am greatly indebted to my mother, father, and my grandfather for their financial assistance during this long process. Their financial assistance enabled me to handle the stress during the entire process. My parents, especially, were a great source of encouragement and strength during this challenging academic pursuit. Words simply cannot express my love for them as well as my deep appreciation for all that they have done for me. Their unwavering support, sacrifice, guidance, and love have made me the person that I am today.

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ABSTRACT

This study used data collected from seniors at a large public high school in the state of Mississippi to examine the predictors that are related to high school seniors' perceptions of their sense of belonging and their perceptions of how the predictors influence their academic achievement. The same variables were also used to examine the predictors on seniors' perceptions across race and gender. Finally, the predictor variable's influence on academic achievement was measured using sense of belonging as a mediating variable.

Eight multiple regression analyses were conducted. These eight regression analyses used the forward regression method to enter the variables as predictors for sense of belonging and academic achievement. The final analysis used Baron and Kenny's procedure to test for mediation. Specifically, mediation was also test using the MAP test which determined if sense of belonging served as a full mediating variable or a partial mediating one.

The results indicated that teacher, peer, student, and environmental factors independently did not significantly influence student perceptions of his/her academic achievement. The predictor variables teacher behaviors, peer behaviors, and environmental factors did significantly influence student perceptions of his/her sense of belonging. Gender was a significant predictor of student perceptions of his/her sense of belonging as females were more likely to be influenced by their perceptions of their sense of belonging than males.

Regarding race, race was not a significant predictor of student perceptions of their sense of belonging. Finally, sense of belonging served as a partial mediator among peer, teacher, environmental factors and academic achievement.

The findings of this study provide information to educators, researchers, parents, teacher, and policy makers. The findings indicate that student perceptions of teacher, peer, and environmental factors independently influence their perceptions of their sense of belonging. The predictor variables as a whole do significantly influence student perceptions of their level of academic achievement, yet none of the predictor variables independently influence student perceptions of their level of academic achievement. Teachers, administrators, and parents need to be aware of how student perceptions of their sense of belonging influence their motivation to achieve academically, especially among females. Teachers also need to be sensitive to students from lower socioeconomic backgrounds whose level of academic motivation and academic achievement sometimes is not as strong compared to other pupils from middle and higher socioeconomic backgrounds. Limitations and future research are also discussed.

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CHAPTER I

INTRODUCTION

Rationale for the Study

Academic achievement among high school students is influenced by a number of factors (Schunk, 2008). One factor is the extent to which students feel a sense of connectedness or relatedness at school (Juvonen, 1996). According to multiple research studies (e.g., Battistich & Horn, 1997; Brendtro, Brokenleg, & Bockern, 1990; Finn, 1989; Goodenow, 1993) students who identify with school and consider it a place where they belong are more motivated to achieve academically. They are also more likely to engage in fewer disruptive behaviors, miss school less often, and perform better academically than students who do not feel a sense of belonging.

Given the empirical linkages between a student's sense of belonging and his/her achievement-related outputs in school, several different theories regarding the development of sense of belonging have been proposed and tested. One such theory that has received considerable attention over the years was proposed by Juvonen (1996). According to Juvonen (1996), students develop a sense of belonging in school through social relationships with their teachers and peers. Specifically, when students view their relationships with their teachers as supportive, non-conflictual, and fair, they are more likely to feel that they belong in school. Likewise, when students view their relationships with their peers as supportive, nonaggressive,

and accepting, they are more likely to feel a sense of belonging in their school.

Although empirical studies have found support for several basic tenants of Juvonen's (1996) theory (e.g., positive relationships between perceptions of teacher supportiveness and sense of belonging, negative relationships between perceptions of peer aggressiveness and sense of belonging), overall research on Juvonen's (1996) model has been limited in a number of ways. First, few studies have investigated the impact that *student* behaviors have on sense of belonging - directly or indirectly through their impact on student-teacher/student-peer relationships (e.g., Ladd, 1990; Wentzel, McNamara, & Caldwell, 2004). Instead, more attention has been paid to teacher behaviors and peer behaviors (or students' perceptions of such behaviors). This is surprising given the fact that Juvonen (1996) recognizes the significant impact that student behaviors can have on the actions and perceptions of teachers and peers. Second, as noted by Juvonen (2006) herself in a recent review of sense of belonging research, few studies to date have attempted to compare the predictive power of teacher behaviors versus peer behaviors on sense of belonging; instead, research has tended to focus on one or the other. A third limitation of the research on sense of belonging relates to the number and specificity of teacher and peer behaviors investigated. Most studies have investigated a relatively small number of behaviors, many of which have been poorly operationalized (e.g., aggression, bullying) (Juvonen, 2006).

A fourth and final limitation relates to the lack of research on other factors that might impact sense of belonging. As noted previously, Juvonen's (1996) model

focuses on the behaviors of students, peers, and teachers; it does not explicitly recognize the potential impact that other *environmental* factors within and/or outside the classroom may have on sense of belonging (e.g., the degree to which a student's school values achievement). Although this limitation should not necessarily be viewed as a criticism of Juvonen's (1996) model, it does highlight the need to investigate other possible motivational determinants of sense of belonging, particularly considering the theoretical role(s) that such environmental factors play in other important theories of motivation (e.g., social cognitive theory).

Purpose(s) of the Study

There were three objectives of this study. The first was to investigate the influence of student behaviors, teacher behaviors, peer behaviors, and scholastic environment on students' sense of belonging. The second was to investigate the influence of these same four variables on student academic achievement. The final objective was to investigate the mediating influence if any, of sense of belonging on the relationships among student behaviors, teacher behaviors, peer behaviors, scholastic environment, and academic achievement.

Research Questions

This study addressed the following key research questions:

1. Do student behaviors, teacher behaviors, peer behaviors, and a student's scholastic environment predict a student's sense of belonging in an academic environment? If so, which of these variables is the strongest predictor?
2. Do student behaviors, teacher behaviors, peer behaviors, and a student's

scholastic environment predict a student's level of academic achievement? If so, which of these variables is the strongest predictor?

3. Finally, does a student's sense of belonging mediate relationship(s) among his/her behaviors, the behaviors of his/her peers and teachers, his/her scholastic environment, and his/her level of academic achievement?

CHAPTER II

LITERATURE REVIEW

This literature review is organized as follows. First, a description of Juvonen's (1996) Sense of Belonging Model is provided. Second, behavioral determinants of sense of belonging (and related constructs) identified by Juvonen (1996) and other education researchers are discussed. Third, non-behavioral determinants of sense of belonging not explicitly recognized by Juvonen's (1996) model are identified and discussed. Finally, a research model outlining relationships among variables of interest to this study is presented.

Sense of Belonging Model

Research on student motivation has a long history. One factor that has been shown to influence student motivation is the degree to which a student feels that he/she belongs to, or feels connected to, others at school. One perspective on this topic that has generated considerable research is Juvonen's (1996) Sense of Belonging Model. According to Juvonen (1996), the extent to which a student feels that he/she belongs at school is determined by the quality of relationships that he/she has with his/her classroom peers and teachers. When students perceive these relationships to be positive and supportive, they are likely to feel a strong sense of belonging. In contrast, when students perceive these relationships to be negative and less supportive, they are less likely to feel a strong sense of belonging. Understanding what factors contribute to these feelings of belonging has become an important goal

for Juvonen (1996) and other educational researchers, as sense of belonging has been positively linked to a number of different school outcomes, including, but not limited to, academic engagement and achievement(Beck & Malley, 1998; Juvonen, 1996).

According to Juvonen (1996), these aforementioned relationships do not form quickly, nor do they result from the individual actions of students, peers, and/or teachers. Instead, consistent with Bandura's Theory of Reciprocal Causation (1986), these relationships are formed gradually over time as the result of complex interactions among the behaviors of students, teachers and peers. From this perspective, in order to understand the impact of individual student, peer, and teacher behaviors on sense of belonging (and subsequent outcomes), one must first understand the effects these factors have on another.

Juvonen's (1996) model does not specify which behaviors interact most significantly (or often) with one another to impact sense of belonging. However, the model does formally recognize several broad behaviors that have an impact on the quality of these aforementioned relationships. For example, according to Juvonen (1996), students who ask their teachers for advice and direction in connection with both social and academic matters are more likely than those who don't to form positive, supportive relationships with their teachers (and in turn, develop a stronger sense of belonging). Likewise, students are more likely to form positive relationships with teachers whom they perceive as fair and willing to address conflict among peers/other students in the classroom. Finally, students are most likely to form

positive, supportive relationships with classmates when they share school supplies with their classmates, do not act aggressively toward other classmates, and do not engage in gossiping.

As evidenced by the preceding discussion, Juvonen (1996) focuses on behavioral determinants of sense of belonging; she recognizes student, peer, and teacher behaviors that impact sense of belonging as a result of their impact on one another. In contrast to other motivational theorists (e.g., Bandura, 1996), Juvonen (1996) focuses less on environmental determinants of student motivation. Specifically, her model does not formally recognize non-behavioral factors within and/or outside the classroom that have the potential to influence sense of belonging. This represents a potential limitation of Juvonen's (1996) model, particularly when one considers the wide range of environmental factors that have the potential to impact a student's sense of belonging (either directly and/or through their impact on student/teacher and student/peer relationships). An example factor includes the degree to which a school generally emphasizes the importance of teamwork and supportive relationships among students and teachers. Other examples include the availability and quality of a school's learning resources (e.g., computers, textbooks) and the degree to which students experience stress at home (e.g., Richman, Rosenfield, & Bowen, 1998; Sarason & Sarason, 1988; Wentzel, 1997; Wentzel, McNamara, & Caldwell, 2004).

In closing, Juvonen's (1996) model was not formulated to investigate causes

of academic achievement. Again, Juvonen's (1996) model focuses on peer, teacher, and student behaviors that impact sense of belonging; it makes no formal mention of non-behavioral environmental factors. However, given the theoretical relationships among academic achievement and many of the predictors of sense of belonging recognized by Juvonen (1996) (e.g., student aggression, peer helping behaviors, teacher fairness), a considerable amount of research on *other* predictors and outcomes of sense of belonging and related constructs has been conducted. A summary of these research findings is provided in the discussion that follows.

Behavioral Determinants of Sense of Belonging

As noted previously, most of the research on determinants of sense of belonging to date has focused on behaviors demonstrated by teachers and peers – most notably, those identified in Juvonen's (1996) model. Fortunately, as interest in the topic of student motivation has progressed, research on related constructs such as connectedness, psychological readiness and academic engagement has revealed a number of other behaviors, including those demonstrated by students, that should, in theory, impact sense of belonging as well. More specifically, according to Juvonen (1996), perceived support is a defining characteristic of sense of belonging such that students who feel supported socially, emotionally, and/or academically are more likely to feel a strong sense of belonging than those who do not feel supported. Each of the behaviors identified in this review can be viewed as falling into one of these three 'support' categories (i.e., social, emotional, and/or academic).

Teacher Behaviors

Teachers are in a strong position to influence a student's sense of belonging. Research on the relationship between teacher behaviors and student motivation supports this proposition. For example, Juvonen (1996) indicated that students are more likely to feel that they belong in school when their teachers demonstrate fairness (e.g., grade homework fairly) and a willingness to talk with students about social problems they might be having.

Other behaviors that should have a positive impact on sense of belonging relate to teachers' expectations of students (Wentzel, 1997). In short, students whose teachers voice high social and academic expectations of their students are more likely to feel a sense of belonging and engagement at school than students whose teachers voice lower expectations. In addition, teachers who provide a safe environment for their students to learn, as well as avoid conflict with their pupils are more likely to have students who enjoy school and cooperate more with one another (Birch & Ladd, 1997). Over time, such cooperation among students leads to higher perceptions of overall support, which in turn has a positive impact on students' sense of belonging (Juvonen, 1996).

Other teacher behaviors that have been shown to influence sense of belonging (via perceptions of overall support) include demonstrating patience, expressing empathy, listening attentively, and encouraging students to solve academic problems within the classroom (Alder, 2002; Beck, 1995; Bondy & Davis, 2000;

Bosworth, 1995; Carson, 1999; Ferreira & Bosworth, 2001; Goldstein & Lake, 2000; Halldorsdottir, 1990; Horsch, Chen, & Wagner, 2002; Huebner, 1996; Knobloch, 2002; Larrivee, 2000; McCray et al., 2002; Noblit, Rogers, & McCadden, 1995; Noddings, 1992; Smith, 2000; Tronto, 1993; Vogt, 2002; Weinstein, 1998; Zimmerman & Phillips, 2000). Research also indicates that teachers who enable students to work together collaboratively are more likely to foster a sense of belonging among students (Wegerif, 1998). Students are also more likely to feel supported by teachers who listen to them and refrain from judging them (Christenson & Anderson, 2002).

Teaching style has also been shown to influence feelings of belonging and motivation to achieve. For example, several studies have found that teachers who scaffold students are more likely to motivate students to achieve academically by their positive impact on students' self-perceptions (e.g., Deci & Ryan, 1985; Grolnick, Ryan, & Deci, 1989; Lepper & Green, 1975; Ryan, 1982; Ryan, Connell, & Deci, 1985). Further, as students begin to learn new things from and about their teachers, their relationships with their teachers improve; the end result is an increase in sense of belonging and academic achievement (Chall, 2000; Christenson & Anderson, 2002; Vygotsky, 1978).

Other teacher behaviors that can affect a student's sense of belonging are goal setting and strategy development. Several studies, for example, have found that students perceive teachers who set challenging goals and offer advice regarding goal

accomplishment strategies to be more supportive and caring than teachers who do not (e.g., Christenson & Anderson, 2002). Students who feel this way are likely to experience a greater sense of belonging. Related studies have found that students whose teachers set high performance goals are likely to feel more supported academically and emotionally than students whose teachers set easy performance goals (e.g., Bandura, 1986; Ladd, 1990; Wentzel, 1997).

Finally, research indicates that there is a positive relationship between social support and the degree to which students perceive that their teachers support and prevent other students from victimizing them. Most notably, several studies have found that students whose teachers permit bullying and classroom teasing are less likely to feel connected to their teachers and peers than students whose teachers address bullying and related behaviors head-on (Banks, 1997). Other studies have found that students whose teachers encourage them to seek assistance from other classmates are more likely to feel connected with and related to others at school than students whose teachers do not encourage such feedback-seeking behavior (Bandura, 1986; Ladd, 1990; Wentzel, 1997). However, it should be noted that classmate feedback must be perceived as helpful and not harmful in order for students to feel that they are connected and are safe (Juvonen, 1996; Banks, 1997).

Peer Behaviors

In addition to teacher behaviors, peer behaviors have been shown to be strong determinants of a student's sense of belonging. For example, research on social

exclusion indicates that students whose peers exclude them from social and/or academic discussions at school rarely feel a strong sense of belonging at school and are prone to experience anxiety (McDonald & Leary, 2005). Social exclusion is the product of not fitting into peer groups. Many peer groups or clichés form in school with status structures. These status structures lead to some groups of students being considered higher status than others (Crick et al., 2001; Kinney, 1993). Many higher status clichés snub and/or gossip about students in lower status groups (Baumeister & Tice, 1990; Gray & McNaughton, 2000; Adler & Adler, 1998). Although status groups do provide a sense of belonging for different students of different status, some students never find a suitable cliché, and it these specific individuals who experience the weakest sense of belonging (Adler & Adler, 1998).

In addition to behaviors associated with social exclusion, the extent to which students' peers demonstrate aggressive behaviors within and outside the classroom can also have a significant impact on a student's sense of belonging. For example, several studies have found that students who slap, kick, and/or punch their peers are less likely to feel connected to school compared to students whose peers do not demonstrate these behaviors (Alsaker, 1993; Kochenderfer & Ladd, 1996; Olweus, 1993; Paquette & Underwood, 1999). Other studies have found that students whose peers engage in behaviors designed to damage students' social relationships (e.g., gossip, friendship manipulation) report lower levels of sense of belonging and motivation to achieve than students whose peers do not engage in such behaviors

(Paquette & Underwood, 1999).

In contrast, pro-social behaviors demonstrated by students' peers have been shown to have a positive impact on a student's sense of belonging. For example, several studies have found that students who have peers who proactively seek their academic and social feedback, assist them with social endeavors, and share study strategies and school supplies with them are more likely to feel supported emotionally and socially, and in turn report a greater sense of belonging (e.g., Richman, Rosenfeld, & Bowen, 1998; Wentzel, 1991). Still other studies have found that students who have peers that provide them emotional support during difficult emotional times both within and outside the classroom are more likely to feel a sense of belonging or general feeling of connectedness at school than students who do not receive such emotional support from peers (Ladd, 1990; Wentzel, McNamara, & Caldwell, 2004).

A final set of peer behaviors found to relate to sense of belonging involves the application of classroom tutoring. Research has found that peers who serve as tutors to other students, and couple this tutoring with immediate reinforcement and positive feedback, help improve students' sense of belonging and academic performance (Greenwood, 1991; Greenwood et al., 1988; Hops & Cobb, 1973). Other studies have found that students who take advantage of free tutoring services report improvements in academic performance relative to students who do not capitalize on such services (e.g., Amenkhienan & Hogan, 2004).

Student Behaviors

Compared to teacher behaviors and peer behaviors, student behaviors that impact sense of belonging have received little research attention. This is somewhat surprising given the role that the ‘person’ plays in several important theories of motivation (e.g., Theory of Reciprocal Causation, Expectancy Theory, Reinforcement Theory). Those behaviors that have been studied are reviewed as follows.

When demonstrated by students rather than peers, many of the same behaviors noted previously have been empirically and/or theoretically linked to sense of belonging. For example, research indicates that students who actively attempt to cooperate with and act friendly toward their classmates and peers are more likely than those who do not to feel a sense of belonging at school (Berman, 1997). Likewise, students who do not bully or criticize other students are likely to feel a stronger sense of belonging than those who do (Juvonen & Graham, 1998a; Juvonen, Graham, & Schuster, 2003). In addition, students who serve as tutors are hypothesized to gain more than personal self-esteem; they are also hypothesized to develop – through the process of tutoring and developing meaningful relationships with others whom they tutor– a stronger sense of belonging and connectedness to school (Noll, 1997). Sharing study tips is another related behaviors hypothesized to positively impact sense of belonging.

Students who exclude other students from academic and social discussions are less likely to feel a sense of belonging in the long-run. More specifically, as noted

previously, social exclusion is a form of relational exclusion which researchers have found can have effects similar to those of bullying. The end result in either case is that both the bully and the bullied are harmed. The bullied students are less likely to feel a sense of belonging, and the bullies, as previously mentioned, often become unpopular as they do not feel as if they belong (Wheeler, 2004).

Finally, gossiping about other students in an attempt to harm their reputations can lead to students feeling as if they do not belong. Historically, in some honor societies, gossiping was part of a repertoire of behaviors that not only dishonored students but actually contributed to students being removed from universities. Further, current research identifies gossip as a form of social relational aggression that is utilized to harm a student's self-esteem and/or social standing. Many of the victims of social aggression, especially girls, feel rejected or lose some of their sense of belonging in the school community (Burnett & Walz, 1994; Galen & Underwood, 1997; Kaplan & Johnson, 1992).

Environmental Determinants of Sense of Belonging

It is evident from the preceding review that there are a number of behaviors demonstrated by students, peers, and teachers that can impact a student's sense of belonging. It is also evident that the potential impact of these behaviors stems from their impact on students' perceptions of emotional, social, and/or academic support. As noted previously, however, research on non-behavioral predictors of constructs related to sense of belonging (e.g., connectedness, psychological engagement)

indicates that sense of belonging may be influenced by more than just behaviors. A second factor may be the overall context, or scholastic environment, within which a student interacts with his/her teachers and peers. A review of the empirical research in this area is provided in the discussion that follows.

One potential environmental determinant is physical safety. Students who feel physically safe at school are more likely to feel a sense of belonging than students who do not feel safe (e.g., Beebe & Beebe, 2010; Juvonen & Graham, 1998a; Juvonen, Graham, & Schuster, 2003). Related studies have found that students who perceive their school environments to be ‘emotionally safe’ (i.e., students feel accepted by students and teachers alike for being who they are, and nothing more) are more likely to feel a sense of belonging than students who feel less emotionally safe and connected (Johnson, 2009; Olweus, 1987).

Another potential environmental determinant involves the use of technology. Many schools are now emphasizing the use of computers and software programs to maximize efficiency and the overall quality of student learning. Some researchers believe that such technology might actually have a negative impact on sense of belonging via their impact on students’ innate social needs (e.g., the desire to bond on an emotional level with other students) (Kagan, 1990; Glasser, 1986). Unfortunately, little empirical research in this area has been conducted.

Other studies have found that classroom goal structure influences students’ perceptions of academic support, and in turn students’ sense of belonging. More

specifically, research indicates that students respond differently to mastery versus performance goals (Bandura, 1991; Locke & Latham, 1990). While mastery goals often spurn from students' intrinsic levels of motivation, performance goals, although frequently associated with extrinsic motivation, typically culminate with higher grades in school. However, this depends sometimes on whether the student's performance goal is related to his/her approach or avoidance behavior. In short, if the student wants to avoid negative consequences, he/she may become more motivated to earn a higher grade in order to avoid adverse consequences (Skinner, 1953; Tolman, 1932; Locke & Latham, 1990).

Student perceptions of their schools' reward practices have also been shown to influence sense of belonging (e.g., Anderman & Anderman, 1999; Midgley, 2001). For example, several studies have found relationships between student motivation and a school's perceived use of rewards. Students who believe their schools allocate or withhold rewards based on behaviors or outcomes perceived to have little value tend to be less enthusiastic about learning, reporting lower levels of overall connectedness to school (Coleman, 1987).

Additional non-behavioral determinants of sense of belonging include the availability and quality of school learning resources. For example, although there is relatively little empirical data on this topic, it is reasonable to think that students will be more motivated to learn, and experience higher levels of perceived academic support, if their school is up-to-date technologically (e.g., it provides effective

computers), offers need-based academic counseling, and provides quality textbooks at a reasonable price (Hirsch, 1996; Midgley, 2001; Tyson & Woodward, 1989).

The degree to which schools encourage collaborative learning is another variable that should impact sense of belonging. For example, students who are frequently asked to work together with other students on projects tend to develop higher levels of perceived social and academic support, and in turn a stronger sense of belonging to school, than students who work independently (Rovai, 2002). Research further indicates that such collaborative/consensus-based learning is more prevalent in some schools than others. Additional research on the relationship between a school's collaborative learning environment and sense of belonging is therefore warranted (Weinberger & Fischer, 2006).

An additional environmental variable relates to student tutoring services. Research indicates that students who receive tutoring and participate in tutoring programs as tutors themselves are likely to feel a stronger sense of belonging than students who do neither (Noll, 1997). For this reason, it is reasonable to think that students who attend schools that offer formal tutoring services are likely to feel more supported academically, and in turn experience higher levels of sense of belonging, than students who attend schools that do not offer tutoring programs.

Another potential environmental determinant of sense of belonging involves parental expectations of academic success. For example, several studies have found

positive relationships between student achievement and the degree to which students perceive their primary caregiver(s) as supportive of their academic pursuits. Other studies have found relationships between academic engagement and the amount and type of academic discussion that is generated and received at home (Bempechet, Graham, & Jimenez, 1999).

A final environmental factor with the potential to impact student sense of belonging is student stress rooted in activities and events at home. Two specific examples include stress brought on by financial hardship and the death of a close friend or family member. When a student loses a parent to death, he/she loses a key source of potential emotional support that can comfort, empathize, and assist him/her when he/she is faced with difficult academic challenges (Fontana, 1989). Without such support, students are less likely to feel that they belong at school. With respect to financial hardships, research indicates that family financial problems are negatively correlated with a student's sense of belonging.

Conclusions and Restatement of Purpose

The primary objective of this study was to investigate the influence of student behaviors, teacher behaviors, peer behaviors, and scholastic environment on sense of belonging. However, given the presumed importance of sense of belonging and related constructs as a determinant of motivation to achieve in general, a secondary objective was to determine which, if any, of these determinants impact academic achievement (a logical outcome of motivated students) through their influence on

sense of belonging. To this end, this study addressed several key research questions. The conceptual model that was used to investigate these questions is presented in Figure 1. A description of this model, along with examples of hypotheses to be tested, is provided in the discussion that follows.

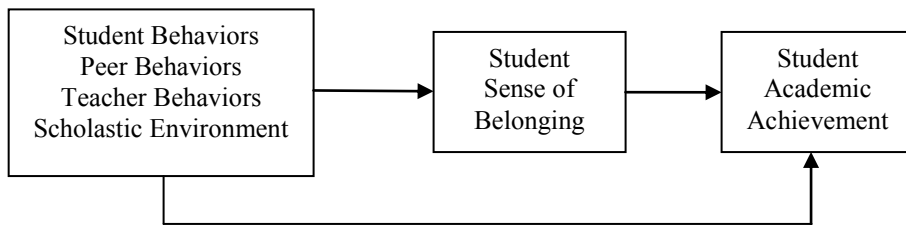


Figure 1: Proposed Relationships Among Study Variables of Interest

As shown in Figure 1, student behaviors, teacher behaviors, peer behaviors and scholastic environment were hypothesized to predict sense of belonging. Given the hypothesized impact of these variables on a student’s overall motivation to achieve (through their influence on perceptions of academic support), they were also hypothesized to directly predict academic achievement. In addition, student behaviors, teacher behaviors, peer behaviors and scholastic environment were hypothesized to predict academic achievement through their influence on sense of belonging.

Consistent with the largely exploratory nature of this study, the model presented in Figure 1 made no formal predictions regarding the strength of

relationships among specific predictor variables, specific predictor-outcome variable pathways, etc. Nonetheless, based on the entire body of research on these variables, it was reasonable to predict that certain study results were more likely than others. Example predictions, framed within the context of this study's three objectives, are provided in the discussion that follows.

The first objective of this study was to investigate the influence of the behaviors of students, peers, and teachers, and scholastic environment on students' sense of belonging. According to Juvonen (1996), although the behaviors of students, peers, and students should all have a significant impact on sense of belonging, student behaviors should have the most significant effect, as it is these behaviors and related cognitive processes of students that influence how information (e.g., feedback) from peers and teachers is absorbed and processed. Further, given the impact of peer pressure and the strong desire to 'fit it' with ones' peers in most school settings, it was reasonable to think that both student behaviors and peer behaviors would likely have the most positive influence on sense of belonging.

The second objective was to investigate the effects of the aforementioned behaviors and scholastic environment on academic achievement. As noted previously, most of the behaviors and environmental factors to be studied had been shown to have a positive impact on overall motivation to achieve. For this reason, it was reasonable to think that all three behavior 'types,' particularly student behaviors (for reasons noted above) would positively correlate with sense of belonging.

The third and final objective was to investigate the mediating effects(s), if any, of sense of belonging on the relationships among student behaviors, teacher behaviors, peer behaviors, scholastic environment, and academic achievement. From Juvonen's (1996) perspective, sense of belonging is perhaps the most critical determinant of academic achievement. That is, in order for students to achieve academically, they must first feel accepted by and supported by their classmates and scholastic surroundings. From this perspective, sense of belonging – as a mediator of academic achievement - should be predicted by each of the predictor variables noted in Figure 1 (although perhaps less so by scholastic environment, as it is reasonable to believe based on research that behavioral stimuli might exert a stronger impact on achievement through sense of belonging than environmental stimuli).

CHAPTER III

METHODOLOGY

Participants

Three-hundred forty-two (342) high school seniors participated in the study. Each participant attended the same large public high school located in the South. Of these participants, 54.2% were female, 64.5% were white, 29.2% were Black, and 53.2% came from families earning less than \$100,000 per year.

The school district was located in a city of approximately 16,436 people. The median household income of the district was \$63,744. The median age of the city's residents was 31.9 years. All participating students had to have completed their junior year in order to participate.

Students from this particular school were sampled for two key reasons. First, the school was selected for convenience; the researcher lived and worked in close proximity to the school. Second, the school shared a relatively diverse student body with respect to socioeconomic status, sex, and race. Participants were high school seniors enrolled in special education, vocational education, regular track education, and advanced track/gifted education programs.

Measures

Academic Achievement

Academic achievement was measured using a 1-item self-report measure developed for this study. Each student was asked to indicate his/her cumulative grade

point average (G.P.A.). As it was possible that some participants did not know their specific G.P.A., participants were also asked to estimate their G.P.A. and/or overall letter grades by selecting one of the following response categories: (1) A = 3.5 - 4.0, (2) B = 2.7 - 3.4, (3) C = 2.0 - 2.6 (4) D = 1.0 - 1.9, and (5) F = 0.0 - 0.9. Overall G.P.A.s were then converted into numerical scores (e.g., 90, 87, etc.). In situations where students did not report a numerical score for their overall G.P.A., the researcher looked to see if students marked a “letter grade” according to the categorical ranges. In situations where students did mark a letter grade, the mid-point of the letter grade range was used as the reported G.P.A. for student academic achievement.

Student, Peer, and Teacher Behaviors

There were a number of student, peer, and teacher behaviors that had the potential to influence student academic achievement. In addition, a review of the research that there does not exist one commonly used or widely accepted specific scale, or set of scales, designed to measure these behaviors. For these reasons, three different situationally-specific measurement scales were developed for this study. Following is a brief description of how these scales were developed.

First, based upon the literature review, twenty-five specific and unique student, peer, and teacher behaviors that have been shown to positively or negatively influence academic achievement were identified. These behaviors were then by source (i.e., student, peer, or teacher), and three corresponding measurement scales

were developed. Finally, after the scales had been administered to participants, a factor analysis of each scale was conducted to determine if the scales' constituent items loaded on more than one factor. Because the presence of one single factor for each scale was expected and this research study was more interested in the influence of different behavior types (rather than individual behaviors) on academic achievement, this study did not utilize traditional subjective methods (e.g. the "eigenvalue [greater than] 1" rule) to determine the number of factors to retain. For purposes of theoretical comparison, however, the minimum average partial (MAP) test was conducted for each analysis. The MAP test has been shown to be superior to the aforementioned traditional methods in part because it tends not to over-extract factors (Zwick & Velicer, 1982, 1986).

Results of the three factor analyses are presented in Tables 1, 2, and 3. Although results of each analysis suggested the presence of two factors, in each case one factor accounted for a significantly larger (and more practically meaningful) portion of the total variance. In addition, given the objectives of this study, a review of the cross-loaded items from each analysis did not support the creation of additional scales beyond the original three. Finally, in all three cases, the MAP test indicated the existence of one component. The original three behavior scales were retained for these reasons. Following is a brief description of these measures. Responses to each measure were measured on a five-point scale (1 = *never* to 5= *always*).

Student Behaviors. The Student Behavior scale (n = 8, $\alpha = .69$) measured the

perceived frequency of positive behaviors demonstrated by students proposed to have a positive influence on sense of belonging and/or academic achievement (Appendix A). Compared to students who score low on this measure, students who score high on this measure are more likely to proactively engage socially and academically with their classmates. An example item is, “When I don’t understand something I have reviewed or studied in class, I ask my classmates for help.”

Peer Behaviors. The Peer Behavior scale ($n = 7$, $\alpha = .74$) measured student perceptions of the frequency with which their classmates/peers demonstrated behaviors, inside and outside the classroom, proposed to affect sense of belonging and academic achievement.

Table 1
Factor Analysis of Student Behaviors

Item	Factor 1	Factor 2
When I don't understand I have reviewed or studied in class, I ask my classmates for help.	.71	.11
I provide emotional support to my classmates when they are going through difficult times.	.65	.18
I share school supplies with my classmates.	.58	.27
I seek out and talk with classmates about matters that don't relate directly to schoolwork.	.58	.02
I take advantage of tutoring services when they are made available to me.	.25	.81
I share study tips with my classmates.	.44	.59
I offer advice to classmates of mine who don't get along well with others.	.39	.57
When I don't understand something I have reviewed or studied in class, I ask my teachers for help.	.40	.47

Note. Principal components analysis with varimax rotation. Total variance attributable to Factor 1 = 36%. Total variance attributable to Factor 2 = 10%.

Table 2
Factor Analysis of Peer Behaviors

Item	Factor 1	Factor 2
My classmates help me with classwork when I need help.	.81	.11
My classmates share school supplies with me.	.77	.02
My classmates share study tips with me.	.62	.32
My classmates provide tutoring to other students and me.	.45	.29
My classmates ask me for help when they don't understand something we have studied in class.	.40	.28
My classmates help me handle social problems I have with others.	.34	.67
My classmates support me emotionally when I go through difficult times.	.13	.72

Note. Principal components analysis with varimax rotation. Total variance attributable to Factor 1 = 40%. Total variance attributable to Factor 2 = 11%.

Factor Analysis of Teacher Behaviors

Item	Factor 1	Factor 2
My teachers listen attentively when I ask them questions about schoolwork.	.80	.03
My teachers grade homework fairly (i.e., they do not play favorites).	.71	.21
My teachers provide me with tips and strategies for performing well academically.	.67	.25
My teachers are understanding when I tell them I don't understand something we have studied or covered in class.	.64	.07
When teaching, my teachers take into account the individual-level learning styles and abilities of my classmates and me.	.53	.34
My teachers listen attentively to me when I ask them questions or voice concerns about social relationships.	.50	.34
My teachers tell me that they have high expectations for my academic performance within the classroom.	.46	.35
My teachers set challenging academic goals for my classmates and me.	.43	.41
My teachers encourage me to address social problems I might have with others.	.08	.69
My teachers support my activities outside the classroom.	.14	.69

Note. Principal components analysis with varimax rotation. Total variance attributable to Factor 1 = 36%. Total variance attributable to Factor 2 = 9%.

Compared to students who score low on this measure, students who score high on this measure are likely to feel more supported academically and socially by their peers.

An example item is, "My classmates ask me for help when they don't understand something we have studied in class."

Teacher Behaviors. The Teacher Behavior scale ($n = 10$, $\alpha = .76$) measured student perceptions of the frequency with which their teachers demonstrated behaviors proposed to affect sense of belonging and/or academic achievement (Appendix C). Compared to students who score low on this measure, students who

score high on this measure are likely to feel more supported academically and socially by their teachers. An example item is, “My teachers listen attentively to me when I ask them questions about schoolwork.”

Environmental Factors

As with student, peer, and teacher behaviors, there are many non-behavioral factors within and outside the classroom that have the potential to influence student academic achievement. To measure these factors, a new measurement scale, the Scholastic Environment scale ($n = 15$, $\alpha = .78$), was developed (Appendix D). This scale measured student perceptions of the extent to which their overall scholastic environment was supportive of, and conducive to, learning and academic achievement within the classroom. Responses to this 15-item measure were measured on a 5-point Likert-style scale (1 = *strongly disagree* to 5 = *strongly agree*). An example item is, “Students in my school environment are recognized for academic achievement.”

To develop this scale, the same steps that were followed to develop the three behavior scales were followed. First, the literature on predictors of academic achievement was reviewed, and fifteen non-behavioral determinants were identified. These ‘factors’ were then converted to survey items, and the measurement scale was developed. Finally, participants’ responses to the scale were factor analyzed to assess the scale’s factor structure. Results of this analysis are presented in Table 4 (pg. 29). Although results indicated the presence of more than one factor, for purposes of this

particular study, the scale was treated as one-dimensional for reasons similar to those noted previously. For one thing, this study was more interested in investigating the influence of overall scholastic environment on academic achievement compared to student, peer, and teacher behaviors than individual determinants of academic achievement. Second, the MAP test indicated the existence of only one component.

Sense of Belonging

Sense of belonging was measured using the 18-item Psychological Sense of School Membership (PSSM) questionnaire (Goodenow, 1993) (Appendix E). Responses to this measure were measured on a five point Likert-style scale (1 = *not at all true* to 5 = *completely true*). An example item is, “Other students in this school take my opinions seriously.” Research indicates that the PSSM is a measure of adolescent belonging and acceptance associated with valid and reliable scores (Goodenow, 1993; Hagborg, 1994, 1998). The scale is also straightforward and easy to understand (Goodenow, 1993).

Procedures

Before any study data were collected, a human subject’s review of the study was conducted by the Institutional Review Board (IRB) at Texas Tech. This process was required for all students who planned to collect data from human subjects in any field. A copy of the Human Subjects Review Form for the correlation study is provided in Appendix F.

All study data were collected in the spring of 2011. After the IRB approved

the study, a proposal of the study was sent to the school district. This proposal explained the purpose and procedures of the study. After the school district approved the proposal, the researcher collaborated with the participating high school's principal and school teachers to recruit high school seniors to participate in the study. A day was set for the researcher to meet with students and distribute the measurement instrument: a 66-item pencil-and-paper survey that contained items from the study's aforementioned five core measurement scales.

After gaining permission from the high school principal, the researcher met with the students as a group to explain the purpose of the study; during this time, the researcher emphasized the voluntary base of student participation (Appendix F). Students were informed that the survey was to be completed within 25 minutes, and they could terminate their participation at any time during the research process without any consequences.

At this same meeting, the researcher distributed an envelope that contained a consent form for parents (see Appendix G) and an assent form for students (see Appendix H). Students were instructed to show the forms to their parents and ask their parents' permission to participate. If the parents permitted the students to participate, one of the parents was asked to sign the consent form, and the student was asked to sign the assent form. Students were instructed to bring both forms back to the school and submit them to their homeroom teacher. By doing this, no one other than the researcher had any knowledge of which individual students were going to

participate in the study.

After examining the submitted assent and consent forms, the researcher distributed the surveys to students on January 12, 2011. The participants completed the surveys during their homeroom class period. At the end of the period, the researcher collected the surveys. All survey data were entered into an SPSS file. This data will be stored for approximately four years. After four years, all data will be discarded.

Data Analyses

Several sets of statistical analyses were conducted on the data. First, means, standard deviations, and ranges for all study variables (e.g., demographic variables) were computed. Correlations among variables were also computed. Second, multiple regression procedures were used to examine the impact of Student Behaviors, Teacher Behaviors, Peer Behaviors, and Scholastic Environment on Sense of Belonging and Academic Achievement. Results of these analyses addressed research questions one and two. Lastly, Baron and Kenny's (1986) four-step regression procedure for assessing mediation was applied to the data to determine if Sense of Belonging mediated relationships among the study's four predictor variables and Academic Achievement. Results of these analyses addressed research question three. For all regression analyses, resulting F-values, adjusted R^2 , and B-weights obtained for the overall model and respective steps were put in tabular format.

Table 4
Factor Analysis of Scholastic Environment

Item	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
My school environment encourages supportive relationships between my classmates and their teachers.	.82	.20	.11	.00	.15
My school environment encourages supportive relationships between my teachers and me.	.82	.07	.10	.07	.20
I feel physically safe and secure at my school.	.56	.03	.45	.11	-.13
Students' families appear to be supportive of academic achievement at our school.	.37	.34	.15	-.12	.37
My school offers enough textbooks for every student to use.	.09	.83	.19	.09	-.08
My school offers quality textbooks for students to use.	.08	.82	.19	-.05	.07
My school environment encourages students to work together to learn.	.33	.56	.01	-.07	.42
My school offers computer resources to help students learn.	.20	.15	.78	-.07	.13
My school offers tutoring programs for students who need them.	.12	.29	.60	.01	.15
Problems with my parents represent a source of stress for me.*	.16	-.08	-.01	.82	.00
Poor health and/or the death of a family member is a source of stress within my family.*	.01	.07	-.17	.79	.17
Money is a source of stress within my family.*	-.09	-.06	.25	.72	-.16
My school environment emphasizes competition among students.	.11	-.03	.06	-.00	.78
Students in my school are recognized for academic achievement.	.01	.06	.55	.13	.59
My school environment emphasizes the importance of learning.	.21	.20	.46	.05	.54

*Note.**Reverse-scored. Principal components analysis with varimax rotation.

CHAPTER IV.

RESULTS

Descriptive Statistics

Table 5 presents means, standard deviations, and reliability coefficients for all study variables. Table 6 provides the correlations among the study variables. All of the study's independent variables (i.e., Student Behaviors, Teacher Behaviors, Peer Behaviors, Scholastic Environment) related positively with one another; in addition, they all related positively with Sense of Belonging and Achievement. Sense of Belonging related most positively with Teacher Behaviors and Peer Behaviors, whereas Academic Achievement related most positively with Sense of Belonging and Student Behaviors.

Regression Analyses

Several different regression analyses were conducted on the data. The objective of these analyses was to investigate the following three research questions: (1) How do Student Behaviors, Peer Behaviors, Teacher Behaviors, and Scholastic Environment independently predict Academic Achievement?; (2) How do Student Behaviors, Peer Behaviors, Teacher Behaviors, and Scholastic Environment independently predict Sense of Belonging?; and (3) Does Sense of Belonging mediate relationship(s) among Student Behaviors, Peer Behaviors, Teacher Behaviors, Scholastic Environment, and Academic Achievement? Results of these analyses are provided in the discussion that follows.

Influence of Student Behaviors, Peer Behaviors, Teacher Behaviors, and Scholastic Environment on Academic Achievement.

First, Academic Achievement was regressed onto all the study's demographic variables (i.e., age, sex, race, and socioeconomic status). Academic Achievement was then regressed onto all the study's independent variables (i.e., Student Behaviors, Peer Behaviors, Teacher Behaviors, and Scholastic Environment)

Table 5

Descriptive Statistics for Study Variables

Study Variables	<i>N</i>	<i>M</i>	<i>SD</i>	Minimum	Maximum	α
1. Student Behaviors	324	3.38	.59	1.38	5.00	.69 _a
2. Peer Behaviors	325	3.25	.66	1.25	5.00	.74 _a
3. Teacher Behaviors	328	3.36	.61	1.50	5.00	.76 _a
4. Scholastic Environment	331	3.69	.54	2.20	5.00	.78 _a
5. Sense of Belonging	332	3.55	.62	1.56	5.00	.88 _a
6. Academic Achievement	340	84.9	7.3	64.0	98.0	-

Note. α = Cronbach's alpha coefficient.

Table 6

Zero-Order Correlation Coefficients Among Study Variables

Study Variables	1	2	3	4	5	6
1. Student Behaviors	(.69)					
2. Peer Behaviors	.75*	(.74)				
3. Teacher Behaviors	.55*	.54*	(.76)			
4. Scholastic Environment	.34*	.30*	.48*	(.78)		
5. Sense of Belonging	.41*	.46*	.51*	.49*	(.88)	
6. Academic Achievement	.23*	.19*	.17*	.14*	.26*	-

Note. * $p < .01$.

Scholastic Environment). As seen in Table 7, Step 1 was statistically significant ($F(4, 227) = 4.64, p < .01$), meaning that the group of demographic variables as a whole accounted for a significant amount of variance in Academic Achievement (6%). Specifically, female students reported higher levels of Academic Achievement than male students ($\bar{x} = 86.2$ and 84.3 , respectively). In addition, results indicated a positive linear relationship between students' self-reported socioeconomic status and Academic Achievement ($r = .20, p < .01$).

Step 2 was also statistically significant ($F(4, 223) = 3.89, p < .01$), meaning that the group of four IVs as a whole accounted for a significant amount of variance in Academic Achievement (6%) above and beyond that explained by the

demographic variables. However, findings indicated that none of the IVs predicted unique variance. In conclusion, results of this analysis indicated that sex and socioeconomic status were the strongest demographic predictors of Academic Achievement. When controlling for these and all other demographic variables, none of the IVs predicted unique variance in Academic Achievement, although the group of IVs as a whole did predict variance in Academic Achievement.

Influence of Student Behaviors, Peer Behaviors, Teacher Behaviors, and Scholastic Environment on Sense of Belonging. First, Sense of Belonging was regressed onto all the study's demographic variables (i.e., age, sex, race, and socioeconomic status). Sense of Belonging was then regressed onto all the study's independent variables (i.e., Student Behaviors, Peer Behaviors, Teacher Behaviors, and Scholastic Environment). As seen in Table 8, Step 1 was not statistically significant ($F(4, 222) = 1.83, p > .10$), meaning that the group of demographic variables as a whole did not account for a significant amount of variance in Sense of Belonging (1%). Nonetheless, it should be noted that female students reported higher levels of sense of belonging than male students ($\bar{x} = 3.60$ and 3.49 , respectively).

Table 7

Regression Results: Predicting Academic Achievement

Step	Predictor	β	R^2	ΔR^2
1	Age	-.12	.06*	-
	Sex	.15*		
	Race	-.08		
	Socioeconomic Status	.21*		
2	Student Behaviors	.14	.11*	.06*
	Peer Behaviors	.11		
	Teacher Behaviors	.00		
	Scholastic Environment	.03		

Note. Beta is the standardized regression coefficient. Increments for variables entered at the ΔR^2 significance levels are based on *F* tests for that step. * $p < .05$.

Table 8

Regression Results: Predicting Sense of Belonging

Step	Predictor	β	R^2	ΔR^2
1	Age	.08	.03	-
	Sex	.16*		
	Race	-.04		
	Socioeconomic Status	.05		
2	Student Behaviors	-.07	.38*	.37*
	Peer Behaviors	.31*		
	Teacher Behaviors	.27*		
	Scholastic Environment	.25*		

Note. Beta is the standardized regression coefficient. Increments for variables entered at the ΔR^2 significance levels are based on *F* tests for that step. * $p < .05$. ** $p < .01$.

Step 2 was statistically significant ($F(4, 218) = 17.96, p < .01$), meaning that the group of four IVs as a whole accounted for a significant amount of variance in Sense of Belonging (37%) above and beyond that explained by the demographic variables. Specifically, findings indicated that increases in Sense of Belonging corresponded with increases in Peer Behaviors ($\beta = .31, t = 3.75, p < .01$), Teacher Behaviors ($\beta = .26, t = 3.69, p < .01$), and Scholastic Environment ($\beta = .25, t = 3.91, p < .01$). In conclusion, results of this analysis indicated that sex was the only demographic predictor of Sense of Belonging. When controlling for sex and all other demographic variables, Peer Behaviors, Teacher Behaviors, and Scholastic Environment predicted unique variance in Sense of Belonging. Student Behaviors was the only IV that did not predict unique variance in Sense of Belonging.

The Mediating Influence of Sense of Belonging. According to Baron and Kenny (1986), four conditions must be met for mediation to be supported. First, the independent variable must predict the dependent variable. Second, the independent variable must predict the mediator. Third, the mediator must predict the dependent variable when controlling for independent variable. Finally, the mediator must predict the dependent variable when controlling for the independent variable. Not all researchers agree that all four conditions must be met for mediation to be supported (MacKinnon, Fairchild, & Fritz, 2007). However, most researchers do believe that mediation is not possible, or at least not likely, if Steps two, three, and four are not met.

This study followed Baron and Kenny's (1986) approach for investigating mediation (along with prevailing sentiment regarding conditions of mediation held by most researchers). Results of the aforementioned two regression analyses addressed Baron and Kenny's (1986) first two conditions (or steps) of mediation. Specifically, findings indicated that, although none of the study's IVs independently predicted Academic Achievement (condition one), three of the four IVs (Peer Behaviors, Teacher Behaviors, Scholastic Environment) independently predicted Sense of Belonging (condition two).

In response to these findings, several additional regression analyses were conducted. First, to determine if Sense of Belonging predicted Academic Achievement when not controlling for Peer Behaviors (condition three), Academic Achievement was regressed onto all the study's demographic variables (i.e., age, sex, race, and socioeconomic status), Student Behaviors, Teacher Behaviors, Scholastic Environment and Sense of Belonging (but not Peer Behaviors). Results indicated that Sense of Belonging did indeed predict Academic Achievement when not controlling for Peer Behaviors ($\beta = .23$, $t = 2.95$, $p < .01$). To determine if Sense of Belonging predicted Academic Achievement when controlling for Peer Behaviors (condition four), Academic Achievement was again regressed onto all the study's demographic variables (i.e., age, sex, race, and socioeconomic status), Student Behaviors, Teacher Behaviors, Scholastic Environment, Sense of Belonging and Peer Behaviors. Results indicated that Sense of Belonging again predicted Academic Achievement when

controlling for Peer Behaviors ($\beta = .19, t = 2.41, p < .01$). According to Baron and Kenny (1986), these findings supported partial mediation. Specifically, the perceived supportiveness of students' peers impacts students' levels of academic achievement in part through its influence on students' sense of belonging.

To determine if Sense of Belonging predicted Academic Achievement when not controlling for Teacher Behaviors (condition three), Academic Achievement was regressed onto all the study's demographic variables (i.e., age, sex, race, and socioeconomic status), Student Behaviors, Peer Behaviors, Scholastic Environment and Sense of Belonging (but not Teachers Behaviors). Results indicated that Sense of Belonging did indeed predict Academic Achievement when not controlling for Teacher Behaviors ($\beta = .18, t = 2.34, p < .01$). To determine if Sense of Belonging predicted Academic Achievement when controlling for Teacher Behaviors (condition four), Academic Achievement was again regressed onto all the study's demographic variables (i.e., age, sex, race, and socioeconomic status), Student Behaviors, Peer Behaviors, Scholastic Environment, Sense of Belonging and Teacher Behaviors. Results indicated that Sense of Belonging again predicted Academic Achievement when controlling for Teacher Behaviors ($\beta = .19, t = 2.40, p < .01$). According to Baron and Kenny (1986), these findings supported partial mediation. That is, the perceived supportiveness of students' teachers impacts students' levels of academic achievement in part through its influence on students' sense of belonging.

Finally, to determine if Sense of Belonging predicted Academic Achievement

when not controlling for Scholastic Environment (condition three), Academic Achievement was regressed onto all the study's demographic variables (i.e., age, sex, race, and socioeconomic status), Student Behaviors, Peer Behaviors, Teacher Behaviors and Sense of Belonging (but not Scholastic Environment). Results indicated that Sense of Belonging did indeed predict Academic Achievement when not controlling for Scholastic Environment ($\beta = .20$, $t = 2.67$, $p < .01$). To determine if Sense of Belonging predicted Academic Achievement when controlling for Scholastic Environment (condition four), Academic Achievement was again regressed onto all the study's demographic variables (i.e., age, sex, race, and socioeconomic status), Student Behaviors, Peer Behaviors, Teacher Behaviors, Sense of Belonging and Scholastic Environment. Results indicated that Sense of Belonging again predicted Academic Achievement when controlling for Scholastic Environment ($\beta = .19$, $t = 2.39$, $p < .01$). According to Baron and Kenny (1986), these findings supported partial mediation. Specifically, the perceived supportiveness of students' overall scholastic environment impacts students' levels of academic achievement in part through its influence on students' sense of belonging.

CHAPTER V.

DISCUSSION

The objective of this study was to investigate behavioral and non-behavioral predictors of academic achievement and sense of belonging among high school students. This study was one of the first empirical attempts to simultaneously investigate the effects of multiple behaviors (i.e., student, peer, and teacher behaviors) and environmental factors. Overall, findings indicated that sense of belonging is a moderately strong predictor of academic achievement. Findings also indicated that sense of belonging is predicted by some, but not all, of these behaviors. Finally, findings indicated that none of the independent variables predicted academic achievement independently, although the group of variables as a whole (student behaviors, peer behaviors, teacher behaviors, and scholastic environment) did significantly predict academic achievement.

An analysis of the results of this study coupled with theoretical support is provided in the discussion that follows. Findings regarding the relationship between sense of belonging and academic achievement are discussed first, followed by a discussion of the behaviors that were found to predict sense of belonging. The effects of peer behaviors, teacher behaviors, student behaviors, and scholastic environment on academic achievement are then discussed. Finally, findings regarding the mediating effects of sense of belonging are discussed.

Sense of Belonging and Academic Achievement

Juvonen (1996) reported that student perceptions of sense of belonging impact their level of academic engagement along with their social behaviors such as level of aggression. In this study, sense of belonging was found to be a moderate, but not strong, predictor of academic achievement. According to Juvonen (1996), one possible reason for this finding relates to the relationship between marginal students who do not feel a strong sense of belonging. In short, marginal students who do not feel a sense of belonging often develop friendships with other marginal students. This relationship has the potential to contribute to a cycle of underperforming in the classroom and/or lack of motivation to achieve altogether.

Related, as noted by Juvonen (1996), although student relationships with their peers can influence sense of belonging in the classroom, students who feel a sense of belonging do not automatically become academically engaged. For example, research indicates that middle school students are more likely to stray from the norms of academic achievement since their peer norms are often the opposite of their parental and/or teacher goals/aspirations (Juvonen & Cadigan, 2002). This study sampled seniors who might have been more mature than middle school students and, therefore, might have already established peer friendships (i.e., the behaviors of their peers might not have been that influential at that point in their educational careers).

Peer Behaviors, Teacher Behaviors, Student Behaviors, Scholastic Environment, and Sense of Belonging

Although student behaviors did not predict sense of belonging, peer behaviors, teacher behaviors, and scholastic environment did predict. With respect to peer behaviors, peers play a powerful role in influencing a student's feelings of belonging as well as his/her motivation to achieve (Goble, 2004; Stephens, 2000). Peer behaviors influence a student's sense of belonging, as evidenced theoretically by Triadic Reciprocal Causation (1986). In addition, peer behaviors, as perceived by students, should logically affect a student's behavior. When peers react positively towards other students, other students are more likely going to feel a strong sense of belonging (and vice versa). This sense of belonging, in turn, will likely positively influence their academic achievement (Juvonen, 1996; Bandura, 1986).

This study's findings regarding teacher behaviors likewise supported Juvonen's (1996) model. Most notably, teacher support, empathy, fairness, and care are all significant factors that impact a student's sense of belonging and academic achievement (Farmer, Friedrich, Michalowski, Minch, Suldo & White, 2009). Each of these traits (and related behaviors) was measured by this study's measure of teacher behaviors. It is therefore logical that teacher behaviors would positively predict sense of belonging.

In addition, teacher support is the most influential quality that stimulates academic motivation and classroom interest in the subject matter (Malecki &

Demaray, 2003). Since peer behaviors may pull students in different directions, teacher support is regarded as a more consistent predictor of academic engagement. For example, Ryan and Patrick (2001) found that teachers who encouraged their students to display mutual respect for all of their classmates were the best predictor of student's level of motivation to achieve. Juvonen's model (1996) likewise portrays social relationships between teachers and students as the defining factors for students to develop a sense of belonging in school. Therefore, social behaviors among students, separate from academic behaviors, do impact student motivation to achieve. Therefore, future research may entail predicting how social behaviors, apart from academic behaviors, influence student's sense of belonging among high school students.

With respect to scholastic environment, a student's scholastic environment influences his/her sense of belonging. Bandura (1989) reiterated that students select social environments that complement their perceived self-efficacious beliefs. Stated differently, students will select scholastic environments where they evaluate their perceived sense of belonging as part of their overall decision to attend. From a logical standpoint, this research makes sense as evident by the variety of school environments that exist around the world in many places, especially in America. Parochial, public, and private schools exist partly for this purpose (Goodenow, 1993).

Related, Bandura's theory of Triadic Reciprocal Causation (1986) supports the influences of the scholastic environment on sense of belonging. The interaction

of student, teacher, and peer behaviors influences each other and the scholastic environment. Students who do not establish rapport with their teachers and peers often act inappropriately as a result. This inappropriate behavior, in turn, creates tension in the environment. The social environment reciprocally becomes disruptive as the teacher cannot instruct his/her students due to disciplining the student. The student, if teased by other peers, continues to misbehave, and this misbehavior further creates a hostile learning environment. The hostile learning environment stimulates the teacher to implement more disciplinary actions such as detention, calling of parents, and or a writing assignment, in addition to taking away instruction time. Overall, the misbehaving student and the class of students suffer from lack of instruction time as well as disruptions in learning.

Finally, results of this study indicated no relationship between student behaviors and sense of belonging; that is, students who perceived themselves as highly supportive of their peers and teachers did not report higher levels of belonging than those who perceived themselves as less supportive. As noted previously, one possible explanation relates to the way in which student behaviors were measured. A second explanation relates to the specific number of social behaviors that were measured. Juvonen's (1996) model references only one student behavior (aggressiveness). Although this study's student behaviors scale tapped multiple behaviors (both social and academic), there are likely many more positive student social behaviors with the potential to impact sense of belonging. Finally, a third more

simple and straightforward explanation is that, relative to the behaviors of teachers and peers, the behaviors of students themselves have little effect on a student's sense of belonging. Theoretical support for this explanation is provided in part by research on egocentrism in adolescents. In short, many adolescents are egocentric, and some of them might not want to perceive that their personal behaviors contributed to their sense of belonging in any form or fashion (Erikson, 1950). From this perspective, these students might not have wanted to take personal responsibility for their own behaviors as contributing to their perceived sense of belonging (Glasser, 1986; Goble, 2004).

In closing, it should also be noted that, in addition to the fact that three of the four independent variables measured independently predicted sense of belonging, the group of variables as a whole explained 37% of the total variance in sense of belonging (above and beyond that explained by the study's demographic variables). This is an important finding in that it highlights the need for additional research on other variables that predict sense of belonging. Other factors may actually revolve around student behaviors since there is a strong theoretical basis from researchers like Bandura (1986).

Mediating Effects of Sense of Belonging

One of the objectives of this study was to determine if sense of belonging mediated the relationships among peer behaviors, teacher behaviors, student behaviors, scholastic environment and academic achievement. According to this

study, the answer to this question is “Yes.” Specifically, sense of belonging partially mediated relationships among teacher behaviors, peer behaviors, scholastic environment and academic achievement. Sense of belonging did not, however, mediate the relationship between student behaviors and academic achievement, as student behaviors did not exert a significant influence on sense of belonging. For the most part, these findings are consistent with both research and theory on sense of belonging and related outcomes.

With respect to teacher behaviors, the degree to which a teacher is perceived as fair, empathetic, and so forth has a significant impact on a student’s sense of belonging and subsequent academic achievement (Farmer, Friedrich, Michalowski, Minch, Suldo & White, 2009). Each of these traits was measured by this study’s measure of teacher behaviors. It is therefore logical that sense of belonging would mediate the relationship between this measure and academic achievement.

Regarding peer behaviors, as noted previously, peers also play a very powerful role in influencing a student’s feelings of belonging as well as his/her motivation to achieve (Goble, 2004; Stephens, 2000). Peer behaviors influence a student’s sense of belonging, as evidenced theoretically by Triadic Reciprocal Causation (1986). In addition, peer behaviors, as perceived by students, should logically affect a student’s behavior. If/when peers react positively toward other students, other students are more likely to feel a stronger sense of belonging (and vice versa). This sense of belonging, in turn, will likely positively influence their

motivation to achieve academically (Bandura, 1986; Juvonen, 1996).

Bandura's theory of Triadic Reciprocal Causation (1986) reinforces this peer-sense of belonging relationship. According to Bandura (1986), a student's behaviors affect the behaviors of his/her peers. Further, as students and peers interact with one another, these behaviors affect personal feelings of belonging. However, Bandura's theory (1986) does not specifically target how specific student behaviors will affect a student's feelings of belonging. Similarly, Juvonen (1996) indicates that student behaviors influence their relationships with teachers and peers, but she notes few specific student behaviors. In turn, although sense of belonging is influenced by students' relationships with their teachers and peers, sense of belonging, as previously mentioned, is inconclusive as a significant factor that impacts a student's level of academic engagement. In addition, student behaviors did not significantly predict their sense of belonging in this study which is puzzling as it refutes research supported by Bandura (1986) and Juvonen (1996).

Finally, with respect to scholastic environment, there are a number of environmental factors that have been shown to positively impact sense of belonging. This study measured several of these factors, both general and specific, at the group level. Examples include quality and quantity of textbooks, availability of computer resources and tutoring resources, and the perceived extent to which a school generally values academic achievement (Hirsch, 1996; Kagan, 1990; Midgley, 2001; Tyson & Woodward, 1989). Given the vast amount of research in support of the positive

impact of these variables on academic achievement, it is again not surprising that sense of belonging mediated the relationship between these variables (via scholastic environment) and academic achievement.

Conclusion

This study found several statistically significant predictors of sense of belonging. It also found that most of these same variables significantly predicted academic achievement. This latter finding should be interpreted with caution, however, as all of the predictor variables measured explained only 6% of the variance in academic achievement above and beyond that explained by the study's demographic variables. Further, although the group of demographic variables did not statistically predict sense of belonging, females did report a stronger need for sense of belonging than males. This finding is consistent with past research which indicates that females tend to operate instinctively based on feelings, whereas males tend to operate instinctively based on their rationale (Glasser, 1984).

This study's findings can help educators better understand the factors that influence students' feelings of belongingness as well as their level of academic achievement. They can also help future researchers explore other factors that might have an influence on students' sense of belonging and/or their level of academic achievement. Perhaps most importantly, this study makes an important contribution to the field, as previous studies have not thoroughly investigated the broad range of variables that have the potential to predict sense of belonging and academic achievement among high school students. Moreover, this study's variables were

chosen carefully based on theoretical relevance. For this reason, future researchers in this area should consider using this study's variables with other factors to predict twelfth grade students' sense of belonging and academic achievement.

Practical Implications

Results of this study fortify the need for educators to pay more attention to students' feelings of belonging and connectedness in a scholastic environment.

Educators can influence students' feelings of belonging by ensuring that they are treated fairly, showing empathy and concern for their learning, both academically and socially, preventing bullying and/or harassing among students in the scholastic environment, and incorporating other practical strategies (Farmer, Friedrich, Michalowski, Minch, Suldo & White, 2009; Olweus, 1987).

As noted previously, this study found that teacher behaviors and peer behaviors impact sense of belong equally. For this reason, moving forward, educators who attempt to positively impact students' levels of belonging should focus on both teacher and peer behaviors. Given findings regarding the impact of scholastic environment on sense of belonging, they should also continue to focus on the importance of environmental factors such as possessing up-to-date technology, adequate textbook resources, and an eager attitude to promote scholastic achievement among both students and educators (Tyson & Woodward, 1989).

The impact of student behaviors also needs to be re-evaluated. Although this study did not find significant relationships among student behaviors, sense of

belonging, and academic achievement, both Juvonen (1996) and Bandura (1986) have empirically tested and produced models which emphasize how student behaviors impact sense of belonging and/or academic achievement. Further, student behaviors are a significant component in developing friendships, creating clichés, fostering relationships with teachers and other administrators, as well as contributing to the process of learning both individually and with teachers/peers (Dion, Fuchs, & Fuchs, 2005).

Limitations

One limitation of this study is that it was conducted in only one large school in one large school district in the southern part of the United States. Although the sample was large and diverse, it was only one school in one school district. However, this particular public school contained more national merit semi-finalists and finalists than any other public or private school in the state where it resided. Academic achievement was therefore probably emphasized, yet the large graduating classes with diverse arrays of students from socioeconomic backgrounds might have presented challenges for some students feeling a sense of belonging, especially if there were a large number of clichés.

Another limitation of this study is that it only sampled seniors. Although this was my targeted age for sampling, seniors are often more mature than juniors, sophomores, and freshmen. In addition, many students have already somewhat found

their sense of belonging with other peers, and as a result, finding a sense of belonging among other niches of friends might not be as important to seniors at this point. In essence, some of them are probably just looking forward to graduation.

A third potential limitation might be the presence of socially desirable responses. Many students might have responded to the survey in a positive or favorable light not only to please me, the researcher, but also as a way to complete the survey in a positive manner. On the other hand, some students might have responded in a negative manner as a means to express apathy and/or vent their anger toward the school, principal, teachers, and/or me. Some students might have just answered the questions without considering their meaning; in other words, they just wanted to complete the survey as quickly as possible.

A fourth potential limitation relates to the nature of the scale items themselves. Few of the scales' items assessed culture. Sense of belonging might be perceived from a cultural standpoint differently. In some cultures, students might perceive that they feel a sense of belonging in the school with just one friend and a strong relationship with a single teacher. Some students might also perceive a sense of belonging differently from their peers, according to the structure of their family life. If their family life is stable, they might not need to feel such a strong sense of belonging among their peers and their teachers. The survey asked only a couple of questions in regard to family life.

In addition, this study's 66-item questionnaire was administered during a time

period that lasted only 25 minutes. Some students who wanted to put more thought into questions might not have had enough time to do so. Such “rushing” on the part of some student could have skewed the data.

Finally, the study was correlational in nature; it measured only associations among perceived behaviors, scholastic environment, academic achievement and sense of belonging. This type of study did not allow for tests of causation. Nonetheless, this study’s findings did illustrate potentially meaningful relationships among the variables of interest.

Future Directions

Results of this study have a number of implications for future research. First, this research needs be broadened by sampling students from larger and smaller schools throughout different regions of the United States. In addition, the sampling body needs to include both rural and urban schools, both private and public, as well as parochial schools. Moreover, freshmen, sophomores, juniors, and seniors would be an interesting sample of students who could add to the literature base.

Another implication involves future research on specific behaviors and/or environmental factors that impact sense of belonging and academic achievement. For reasons noted previously, this study focused on broad types or categories of behaviors and environmental behaviors. Future research should compare and contrast specific behavioral and/or behavioral determinants of sense of belonging and academic achievement – with respect to both their independent and interactive effects.

A third area of future research involves research on person-level factors that potentially impact sense of belonging and academic achievement. According to Bandura (1986), for example, academic self-efficacy is a critical determinant of academic achievement. Future research should investigate self-efficacy as a predictor of sense of belonging and academic achievement independently and/or in conjunction with the other key behaviors/variables investigated in this study.

Finally, as noted previously, this study was largely exploratory in nature. It made no formal predictions regarding the relative strength of the effects of student, teacher, and peer behaviors on sense of belonging. Future researchers in this area should utilize the results of this study and generate more refined hypotheses regarding these relationships. They should then empirically test these hypotheses within the context of emerging theory so as to provide future researchers and practitioners in this area a better understanding of the different predictors and related outcomes of sense of belonging within the classroom.

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APPENDIX A

STUDENT BEHAVIORS SCALE

1. When I don't understand something I have reviewed or studied in class, I ask my classmates for help.
2. I seek out and talk with classmates about matters that don't relate directly to schoolwork.
3. When I don't understand something I have reviewed or studied in class, I ask my teachers for help.
4. I offer advice to classmates of mine who don't get along well with other classmates.
5. I share study tips with my classmates.
6. I share school supplies with my classmates.
7. I provide emotional support to my classmates when they are going through difficult times (e.g., write them a letter, tell them I am thinking about them).
8. I take advantage of tutoring services when they are made available to me.

APPENDIX B

PEER BEHAVIORS SCALE

1. My classmates ask me for help when they don't understand something we have studied in class.
2. My classmates share study tips with me.
3. My classmates support me emotionally (e.g., they call me, they listen to me) when I go through difficult times.
4. My classmates help me handle social problems I have with others.
5. My classmates share school supplies with me.
6. My classmates help me with classwork when I need help.
7. My classmates provide academic tutoring to other students and me.

APPENDIX C

TEACHER BEHAVIORS SCALE

1. My teachers support my activities outside the classroom (e.g., they attend my sporting events).
2. My teachers listen attentively when I ask them questions about schoolwork.
3. My teachers listen attentively to me when I ask them questions or voice concerns about social relationships.
4. My teachers tell me that they have high expectations for my academic performance within the classroom.
5. My teachers provide me with tips and strategies for performing well academically.
6. When teaching, my teachers take into account the individual-level learning styles and abilities of my classmates and me.
7. My teachers set challenging academic goals for my classmates and me.
8. My teachers grade homework fairly (i.e., they do not play favorites).
9. My teachers are understanding when I tell them I don't understand something we have studied or covered in class.
10. My teachers encourage me to address social problems I might have with others.

APPENDIX D

SCHOOL ENVIRONMENT SCALE

1. My school environment emphasizes the importance of learning.
2. My school environment encourages supportive relationships between my teachers and me.
3. I feel physically safe and secure at my school.
4. Students' families appear to be supportive of academic achievement at our school.
5. My school offers enough textbooks for every student to use.
6. My school offers quality textbooks for students to use.
7. My school environment encourages students to work together to learn.
8. My school offers computer resources to help students learn.
9. My school offers tutoring programs for students who need them.
10. Problems with my parents represent a source of stress for me. (R)
11. Poor health and/or the death of a family member is a source of stress within my family. (R)
12. Money is a source of stress within my family. (R)
13. My school environment encourages supportive relationships between my classmates and their teachers.
14. Students in my school are recognized for academic achievement.

Note. R = Reversed scored item.

APPENDIX E

PSYCHOLOGICAL SENSE OF SCHOOL MEMBERSHIP (PSSM)

1. I feel like a real part of my high school.
2. People here notice when I'm good at something.
3. It is hard for people like me to be accepted here. (R)
4. Other students in this school should take me seriously. (R)
5. Most teachers at my school are interested in me.
6. Sometimes I feel as if I don't belong here. (R)
7. There's at least one teacher or other adult in this school I can talk to if I have a problem.
8. People at this school are friendly to me.
9. Teachers here are not interested in people like me. (R)
10. I am included in lots of activities at (school).
11. I am treated with as much respect as other students.
12. I feel very different from most other students here. (R)
13. I can really be myself at this school.
14. The teachers here respect me.
15. People here know I can do good work.
16. I wish I were in a different school. (R)
17. I feel proud of belonging to (school).
18. Other students here like me the way I am.

APPENDIX F

HUMAN SUBJECTS REVIEW FORM

Statement of Project Goals

The purpose of this study is to collect data from seniors in a large high school in a large public school district in the state of Mississippi. The data will be collected to test how four constructs, student behaviors, peer behaviors, teacher behaviors, and environmental factors, affect student academic achievement among high school seniors. The independent effects of these constructs will be determined that occur between these constructs which may moderate the effects of these constructs on academic achievement. In addition, sense of belonging will serve as a mediating variable between these constructs and academic achievement. The independent effects of these constructs on a student's sense of belonging will also be determined.

Protocol

Participants

Participation will be solicited from approximately 470 high school seniors from one large high school in one separate school district in the state of Mississippi. Participation is expected to take between 20 and 25 minutes; participants will receive some form of reward. This form of positive reinforcement will be determined by the researcher who will supervise the students as they complete the measurement scales. There will be only one restriction for participating in this study. Participants will have

to have finished the eleventh grade at least once in order to participate, whether they passed all required subjects or not.

Tasks

Participants will be asked to complete a questionnaire. This questionnaire will contain all of items found in Appendices A through E. It will also measure several demographic variables. Participants will be asked to rate each of the non-demographic items using a 5-point Likert scale. Some items will be reverse scored.

Procedures

All participants will be told in advance by their teachers that they will earn some form of reward. Participants will be informed of their rights as test takers according to the American Psychological Association (APA). Then, participants will be told that the purpose of this study will be to determine how participants' reported behaviors, peer behaviors, teacher behaviors, and environmental factors independently affect participant's sense of belonging. In addition, participants will be told that a second purpose will be to determine how these factors affect students' academic achievement in a school environment. Following the second purpose, students will be told that the third purpose will be to determine the mediating effects of sense of belonging on student academic achievement.

At this point, the questionnaire will be distributed to each participant. Participants will be told that they have approximately 20-25 minutes to complete the questionnaire. Once participants complete it, they will be instructed to sit quietly until

the testing time expires. The instructors will then collect the questionnaires, after which time they will thank the students for their participation. Finally, the researcher will formally thank all participants, school administrators, and teachers for their cooperation. Students, in turn, will receive their reward in full.

Measures

Student Behaviors Scale

Students will be asked questions regarding their exclusion of classmates from academic discussions, social discussions and social activities. Other questions pertain to asking other classmates for help regarding academic and social matters along with asking teachers for help regarding academic and social matters. Finally, questions inquiring about providing emotional support, sharing of school supplies and study tips, and tutoring other classmates are included. The answers are in a Likert scale format, ranging from “1=Never” to “5=Always.” There are 8 questions regarding “student behaviors” located in Appendix A.

Teacher Behaviors Scale

Students will be asked questions regarding their perceptions of their teachers’ patience, their perceptions of their teachers’ level of empathy, their perceptions of teacher support outside of the classroom, their perceptions of their teachers listening to them concerning school work and social relationships with other classmates, their perceptions of their teachers’ expectations, their perceptions of their teachers’ providing study tips and strategies, and their perceptions of teachers taking

into account students' individual learning styles and abilities. This scale will be in Likert style format, ranging from "1=Never" to "5= Always," and contains 10 questions. It is located in Appendix C.

Peer Behaviors Scale

This scale will be identical to the "Student Behaviors" scale except it will list questions in third person format. This scale will ask students to rate their perceptions of their classmates' behaviors toward students individually. This scale will contain 8 questions, and the answers will be listed in a Likert scale format, ranging from "1= Never" to "5=Always." This scale is located in Appendix B.

School Environment Scale

The School Environment Scale inquires about student learning both academically and socially within the school context. Questions will ask students if they are recognized for academic achievement in their school, if the school will emphasize mastery or performance based learning, as well as if students will have supportive relationships with their teachers, and if students' classmates will have supportive relationships with their teachers. Other questions will inquire about school safety, availability of computer resources, availability of tutorial programs, availability of quality textbooks, valuing of academic achievement, collaborative learning, and family support for academic achievement. Finally, the last three questions will ask students about the stressfulness of the family environment due to financial difficulties, parental problems, and/or deaths of family members. There will

be a total of 15 questions on this scale with answers listed in Likert format, ranging from “Strongly Disagree” to “Strongly Agree”. This scale will be listed in “Appendix D.”

Psychological Sense of School Membership

The Psychological Sense of School Membership questionnaire will ask students about their psychological sense of feeling a part of a school. Questions will pertain to friendliness of teachers and students in the school, feelings of belonging in the school, feelings of respect, inclusion, and acceptance among classmates and teachers, feelings of likableness, feelings of being different from other students, and feelings regarding whether students wish that they are at another school. This scale will contain a total of 18 questions. The scales’ answers will be listed in a Likert format, ranging from “1=Not True at All” to “5= Completely True.” This scale will be listed in Appendix E.

Benefits

The information obtained in this study will not directly benefit participants. However, participants will be informed that the results of this study may help teachers, administrators, parents, and other researchers in the field of education to better understand those factors that contribute to academic achievement both inside and outside of the classroom. Participants will be provided with an abbreviated version of the results of the study upon their request.

Risks

Potential risks to study participants are extremely minimal. In addition, participation is voluntary, and anyone who participates will have the option of withdrawing from the study at any time. Participants will be given the opportunity to contact the Principal Investigator if participation in the study results in distress of any nature.

Confidentiality

Confidentiality and anonymity of responses from all procedures will be assured. No personal identifying information will be requested or retained in any form during the procedures. Once data from all measures are collected and inputted into respective data files, all relevant materials will be stored in a file drawer of the researcher and in a file drawer in the College of Education at Texas Tech University for approximately four years. After four years, the data will be destroyed.

Informed Consent

Informed consent will be achieved by having student participants and parents sign a consent form prior to testing. However, in certain cases, Mississippi public schools recognize the doctrine of *en loco parentis* which may allow a researcher to conduct his/her research without the consent of parents. In this case, parents will not be required to sign the consent forms, but students will have to sign the consent forms. This consent form will explain the overall nature of the study and requirements of the participants. The address and telephone numbers of the Principal Investigator will also be provided if any questions or concerns associated with the study surface.

APPENDIX G
TEXAS TECH UNIVERSITY
PARENTAL CONSENT FORM

Dear Sir/Madam,

I am Richard (Rick) W. Parker, a doctoral student of the Educational Psychology program in the College of Education at Texas Tech University. I am conducting a study entitled "Relationships among belongingness, academic self-efficacy, behavioral and environmental factors, and academic achievement." My advisor, Dr. William Lan, Professor of Educational Psychology at Texas Tech University, is responsible for the research. He can be reached at (806) 742-1998, ext. 436, and will answer any question you may have about this study. In addition, I can be reached at (601) 953-7060 or e-mailed at rick.parker@ttu.edu.

In this study, we are trying to understand the relationship that high school students have with their classmates and teachers and how this relationship affects students' academic performance in school. We will ask your son or daughter to complete a questionnaire regarding his/her experiences in the school, including his/her interaction with peers and teachers, perceptions of the school environment, and his/her ability to perform academic tasks. We will also ask for information on your child's grade, age, gender, grade point average, socioeconomic status, and ethnicity. The survey can be completed within 20 minutes. Surveys can be completed once your son/daughter returns **both your signed parental consent and his/her signed assent form.**

Questions in the survey have been reviewed by other faculty members and The Human Subjects Review Board, and they have determined that answering these questions does not pose any risks. All answers to surveys are confidential and anonymous.

If you allow your son or daughter to assist in the research project, please sign on the bottom of the form. If your son or daughter is willing to participate, please let him or her sign the other form enclosed that is prepared for him/her. Your son/ daughter is to bring these two forms back to school and hand them to their homeroom instructor on January 12, 2010, the day that the survey is administered.

Students have to have both signed forms returned on January 12, 2011. This is the day that the surveys will be administered in their homeroom class. Your son/daughter's participation is strictly voluntary, and he/she can choose to discontinue his/her participation at any time without any consequences. In appreciation for your son/daughter's participation, Rick Parker will him/her \$10.00

Parental/Guardian Signature _____ Date _____

APPENDIX H
TEXAS TECH UNIVERSITY
STUDENT ASSENT FORM

Participant's Name _____

I agree to participate in the research study. All instructions and their purposes were explained by the researchers and/or teachers.

I understand that the purpose of this research is to measure how certain factors affect my motivation to learn and improve my grades. I understand that I will be completing a questionnaire that takes approximately 20-25 minutes overall to complete. I understand that my responses to all scales and all task related data will remain completely confidential.

I understand that I may not benefit directly by participating in this study. However, I understand that the results of this study may help teachers, students, parents, school administrators, and researchers in the field of Education better understand factors that contribute to students feeling a sense of belonging, followed by improvements in motivation and achievement.

I understand that my participation is voluntary, and I may withdraw from this study at any time without being punished in any way. However, I am aware that participation in this study will be greatly appreciated.

Richard (Rick) W. Parker and Dr. William Lan, Texas Tech University, are responsible for ensuring that participants in this study are protected from injury or harm resulting from their participation. There are no such risks in this study.

Questions concerning the research, at any time during or after the project, should be directed to Rick Parker, (601) 953-7060. This project and this consent form have been reviewed by the Human Subjects Protection Review Committee, which ensures that research projects involving human subjects follow federal regulations. Any questions about rights as a research participant should be directed to Mrs. Donna Peters (806) 742-3905, TTU, Office of the Vice President of Research Services, Mail Stop 1075, Lubbock, Texas 79409.

I have read and understand the above statements and agree to participate in this project. I have also earned enough high school credits to have completed at least my junior year of high school.

Participant's Signature _____

Date _____