

CREATING CONNECTEDNESS IN MIDDLE SCHOOL: AN APPLIED
STUDY IN THE RELATIONSHIP BETWEEN TEAM TEACHING MODEL AND
SCHOOL CONNECTEDNESS

BY

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Abstract

School Connectedness is a student's general sense of being supported and accepted by peers and adults in a school, as well as a sense of commitment, engagement, and belonging to the school institution. This variable has been linked to a variety of positive academic and social outcomes. Researchers have identified several dimensions of SC, but evidence suggests the teacher-student relationship may have the greatest impact on student outcomes. Few researchers have studied the impact of different interventions on this specific domain of school connectedness. The current study focuses on the relationship between team teaching configuration and the teacher-student relationship domain of SC. An independent samples design was utilized with a population of 6th grade students at a suburban middle school. One sample of students was taken from a two-teacher team, and a second sample was taken from a four-teacher team. Results showed that students on the two-teacher team reported significantly higher levels of SC than their counterparts on the four-teacher team. In addition, the evidence suggests that there is a likely interaction effect between team teaching configuration and gender on student levels of SC.

Chapter One: Introduction

As students progress through the American educational system they face a variety of difficult transitions. One of the most challenging developmental shifts takes place as students leave elementary school and enter middle school. During this time, new academic demands, added social pressures, and developmental changes impact their social-emotional functioning in many ways. In an effort to support students during this period of growth, many middle schools employ a “Teaming” strategy. Teaming is a hallmark characteristic of middle schools that emphasizes the importance of addressing the social-emotional needs of the student body. In this model, the faculty are organized so that a group of teachers share the same group of students, the responsibility for planning and evaluating curriculum, a common schedule, and a specific area of the building (George & Alexander, 1993). The main goal of Teaming is to break a large school into smaller units of students so that their social-emotional needs can be more adequately monitored and addressed (Clark & Clark, 1997).

Teaming has been shown to have a positive influence on both teachers and students (Erb, 1997). Teachers who work in a Team configuration tend to have more positive professional self-images, feel less isolated, and feel more effective (Gatewood, Cline, Green & Harris, 1992; Mills, Powell & Pollak, 1992). Positive outcomes associated with Teaming include greater student achievement, more positive student attitudes, and fewer behavioral problems (Lee & Smith, 1993; Warren & Muth, 1995). Arhar (1990) studied the relationship between Teaming and the formation of students’ relationships with the members of their school community by comparing a sample of students from schools that practice Teaming to a sample of students from schools that did

not practice Teaming. There were no significant differences between the groups based on perceived levels of social bonding to their peers, but students in schools with Teaming had significantly higher levels of bonding to their school, and to their teachers. Wallace (2007) investigated the impact of team teaching configuration among sixth grade students as it relates to student perceptions of social bonding with their peers, their school, and their teachers. Wallace found that students on 2-teacher teams had significantly higher levels of social bonding in all three areas compared to their counterparts on 4-teacher teams. Social bonding, the variable used by both Arhar (1990) and Wallace (2007), is similar to a variable known as School Connectedness (SC). SC encompasses the bonds that students establish with the people in their schools with an emphasis on the extent to which students feel personally accepted, respected, included, and supported by others in the school social environment (Goodenow, 1993).

Adolescent Development

Adolescence is a developmental period that can be wrought with many challenges in industrialized cultures like the United States. It serves as a transitional time between childhood and adulthood and is associated with a variety of developmental changes. Onset of adolescence typically coincides with the tangible physical and biological changes associated with puberty. However, there are a variety of other less objective changes that occur during this time period which relate to social, emotional, and psychological development. A lack of maturity in any of these areas can cause confusion and stress as they grow into their new roles. At best, adolescents struggle with issues such as peer pressure, increased academic challenges, and changing family dynamics. At worst, American adolescents face a variety of challenges and are at risk of incurring a

range of psycho-social problems including substance abuse, school misconduct, academic failure, juvenile crime, and self-injury or suicide (Simons-Morton et al., 1999).

Schools that educate these students are faced with the challenge of creating an environment that addresses their social-emotional needs, as well as their academic needs. Middle schools in particular bear a great responsibility as their students transition out of childhood and elementary school, and into adolescence and middle school. Schools are challenged with adopting policies that correspond to adolescents' developmental needs. The degree to which schools meet those needs generally impacts student behavior, motivation, and mental health (McNeely, Nonnemaker, & Blum, 2002). The notion of the importance of a school's ability to meet a student's developmental needs is encapsulated in a theory known as the Stage-Environment Fit theory (Eccles, Midgley, Buchanan, Wigfield, Reuman, & Mac Iver; 1993). Eccles et. al. emphasizes the importance for middle schools to provide increasing opportunities for autonomy, opportunities to demonstrate competence, caring and support from adults, developmentally appropriate supervision, and acceptance by peers. When these developmental needs are not met individual students may suffer, which in turn has a dramatic impact on the school climate. Research shows that a student's perception of the school climate contributes greatly to their behavioral and emotional adjustment in middle school (Kuperminc, Leadbetter, & Blatt; 2001). School climate is an integral part of helping these students through this difficult transition because schools that embody stronger senses of community, or connectedness, are associated with a number of positive student outcomes (Battistich, 1997).

Teaming

One measure that is taken by Middle Schools to foster supportive climates during this delicate time of transition is Teaming. As many as 60% of America's middle schools used Teaming as the cornerstone for their educational programs by the late 1990's (Clark & Clark, 1997). Clark and Clark (1994) defined teaming as "two or more teachers from different subject areas working together to plan, instruct, and evaluate groups of students in two or more classrooms while making use of a wide variety of instructional strategies and learning resources in large group, small group and directed study settings. (p. 124)" This model is designed to provide a high level of support for both teachers and students, allows for flexible learning time, provides a better vehicle for instruction and creates opportunities to make connections across various subject areas. In addition, the smaller group setting facilitated by interdisciplinary teams may influence psychosocial development (Epstien, 1981).

School Connectedness

Teaming is an important topic to consider because it contributes to a school's climate in the broader sense. Student perceptions of a school's climate have been shown to contribute significantly to their behavioral and emotional adjustment (Kuperminc et al., 2001). An important part of a school's climate is the degree to which students feel connected to the school, or school connectedness (SC). Baker (1998) found that good-quality school climates cultivate a connection to the school, and subsequently protect youth from negative outcomes. As a concept, and a subject of research, SC is little more than 10 years old. Despite its "novelty," SC has already been found to be positively correlated with several desirable educational outcomes (greater academic achievement, ,

and negatively correlated with a variety of adolescent risk behaviors (smoking, drug and alcohol use, violence). In general, SC has been defined as an individual student's relationship to school (Libbey, 2004). More specifically, SC has been defined as a student's sense of belonging to a school community, and feelings of being cared for by other members of that school community (McNeely, Nonnemaker, & Blum; 2002).

Evidence suggests that Teaming benefits both students and teachers in a variety of ways (Clark & Clark, 1997). Students specifically benefit from increased levels of attention and support that can be provided by smaller focused groups of teachers. Teaming has also been shown to have a positive impact on student levels of social bonding to their school and teachers (Arhar, 1990). There may, however, be differential effects from varying team configurations. Wallace (2007) found that two-teacher teams had a more positive impact than four-teacher teams when outcomes included students' social bonding to peers, teachers, and schools.

The current study seeks to extend this work on team teaching configuration by assessing its effects on the dyadic relationship between students and teachers. The degree to which students engage with teachers has been hypothesized to be more protective than other dimensions of SC, such as teacher support and social belonging (McNeely, 2004). If McNeely is correct, then this particular type of connectedness is an important focus for research. Therefore, the present study investigated the effect of team teaching configuration on connectedness in student-teacher dyads. This was accomplished by answering the following research question: Do students on two-teacher teams demonstrate higher levels of student-teacher connectedness than students on four-teacher teams?

Chapter Two: Review of the Literature

Schools are complex and dynamic systems with many parts. Teachers, administrators, students, parents, staff, policies, curriculum, and the physical environment are just a few of the many factors that interact to create a general school experience for students. “School Climate” has been used to describe the interaction of these variables and has been defined as the quality and frequency of interpersonal interactions that are present within the school system (Kuperminc, Leadbetter, & Blatt, 2001). Kuperminc et al. (2001) conceived school climate as a multidimensional construct encompassing interpersonal, organizational, and instructional dimensions. While student perceptions of the school climate have been measured on the individual level (Loukas, Suzuki, & Horton, 2006), schools may also be judged to have positive school climates or negative school climates based on the aggregation of student perceptions (Wilson, 2004).

The term “School Community” has a similar scope and focuses on the people at school. It refers to an environment characterized by caring and supportive interpersonal relationships, opportunities to participate in school activities and decision making, and shared norms, goals, and values (McMillan & Chavis, 1986). Like school climate, this variable has been aggregated to provide an overall measure of a school’s sense of community by computing a school wide mean score (Battistich & Hom; 1997).

“School Connectedness” (SC) is narrower in its focus and refers to an individual’s experience within the context of school. That is to say that students can experience high or low levels of connectedness within the context of either positive or negative school climates (Wilson, 2004). School connectedness is subordinate to school climate, but evidence suggests that connectedness actually mediates the relationship between school

climate and variables such as aggression and victimization (Wilson, 2004), cohesion with peers, friction with peers, and overall satisfaction with classes (Loukas, Suzuki & Horton, 2006). So while School Climate and School Community are generally used as broad measures of the school, SC is generally used as a narrower measure of the individual.

Theoretical Foundation of School Connectedness

Several researchers have suggested theoretical foundations for SC. Catalano et al. (2004) identified three developmental theories which contribute to the conceptualization of SC including Attachment Theory (Ainsworth, 1978), Control Theory (Hirschi, 1969), and the Social Development Model (Hawkins, 1985). Attachment Theory refers to an individual's tendency to develop connections, or bonds, with others through social interaction. Control Theory refers to an individual's tendency to develop bonds to socialization units (such as schools) which exert informal control over behavior by encouraging adherence to the social norms associated with that unit. The Social Development Model indicates that children learn patterns of behavior from their social environment. Compared to Control Theory, it provides a narrower concept of bonding based on commitment to a socialization unit. Commitment, or involvement, is seen as part of a socialization process that leads to bonding. Beliefs in the social unit's values are seen as a consequence of that bonding, and as a mediator of the effect of bonding on behavioral outcomes (Catalano et al., 2004).

Whitlock (2006) referenced developmental ecological models, Social Capital Theory, and youth development theories as a basis for SC. Developmental ecological models (Lerner, 2002) focus on the interaction between, and within, related levels of organization, individual, social, institutional, and historical systems. Social capital

theorists (Coleman, 1998) identify trust, norms, and exchange as critical community resources. Youth development theories (Damon, 2004) emphasize both the importance of understanding how contexts impact the individual's ability to thrive and the need to recognize young people as active participants in their environments.

Another theory which seems to play a central role in the conceptualization of SC is known as the stage-environment fit theory (Eccles, Midgely, & Wigfield, 1993). This theory suggests that an individual's behavior, motivation, and mental health are all influenced by characteristics of the social environment at school. There are five core developmental needs that schools need to address in this model including increasing opportunities for autonomy, opportunities to demonstrate competence, caring and support from adults, developmentally appropriate supervision, and acceptance by peers. Several researchers who have investigated various aspects of SC have referenced this theory as an important framework for how schools impact the individual's level of connection by meeting their developmental needs (Eccles et al., 1997; McNeely, Nonnemaker, & Blum, 2002; Whitlock, 2006).

It is evident that there is an abundance of psychological and sociological theories that have been used to rationalize the development of SC as a legitimate variable of inquiry. While these theories differ in many ways, the common thread has to do with the individual's tendency to bond with people and institutions through social interactions. There may be disagreement in what psychological or sociological forces underlie this mechanism, but it is generally agreed upon that students develop bonds to the people in the school and the school in general. However, the disagreement in how SC is conceptualized likely leads to differences in how the variable is defined.

Definitions of School Connectedness

Because SC is a relatively new concept consensus has not been reached upon how it should be defined. Part of the confusion over how SC should be defined stems from the fact that it is similar to other related constructs such as School Attachment, School Bonding, and School Engagement (Libbey, 2004). In fact, some researchers have used the terms SC and Social Bonding synonymously (Thomas & Smith, 2004; Catalano et al., 2004). O'Farrell and Morrison (2003) explained that the variability in the definition and measurement of these variables, and other related constructs, is an impediment to research because the lack of consistency makes it difficult to interpret findings and build upon previous research. While some researchers use these terms synonymously, other researchers use the term SC to refer to, and measure, distinctly different constructs. Libbey's (2004) meta-analysis of the literature on SC also revealed that many researchers construct alleged SC variables which actually measure different constructs.

Libbey's review of the literature tackled the confusing definitional spectrum of SC that results from the multiple ways of naming, defining, and measuring this variable. Through this analysis Libbey (2004) found that nine variables are related to SC. These include: academic engagement, belonging, discipline/fairness, extracurricular activities, liking school, student voice, peer relations, safety, and teacher support. There were no conclusions regarding the preeminence of any one variable to measure SC versus the others. Rather, Libbey acknowledged that all of these factors, measured in different ways, were directly related to positive student outcomes such as better academic performance and involvement in healthy behaviors. Libbey's analysis demonstrated the complexity of

SC, and showed the importance of exploring the different dimensions of how young people feel connected to their school.

Libbey's (2004) general description of SC referred to the study of a student's relationship to school. Multiple researchers (Bonny et al., 2000; Thomas & Smith, 2004) have used a more specific definition put forth by Resnick et al. (1997), which defines SC as an adolescent's experience of caring at school and sense of closeness to school personnel and environment. This definition is nearly identical to the one provided by Eccles et al. (1997) and referenced by Hall-Lande et al. (2007), which states that SC is the experience of caring about school and the feeling of a connection to the school environment and school staff. Similarly, Wilson (2004) indicated that SC generally includes the sense of attachment and commitment a student feels as a result of perceived caring from teachers and peers.

Other researchers (Shochet et al., 2006; Shochet et al., 2007) define SC in terms of the degree to which students feel accepted, respected, included, and supported by others in the school social environment. This definition is actually taken from Goodenow's (1993) description of a student's sense of belonging, or psychological membership in the school or classroom. While this definition is merely adopted by Schochet et al. (2006 & 2007), it has some commonalities with the one used by Thompson et al. (2006), who acknowledged the variability in SC definitions but identified some key indicators of SC, including liking school, a sense of belonging at school, positive relations with peers and teachers, and an active engagement in school activities.

While these definitions have some differences, it appears that most researchers define SC as a student's general sense of being supported and accepted by both peers and adults, as well as the sense of commitment, engagement, and belonging that he/she feels with the institution of school itself. This combination of interpersonal and institutional factors contribute to the overall level of connection to his or her school that a student experiences. Within these interpersonal and institutional aspects of SC, there have been a number of more specific dimensions of the variable identified by various researchers.

Dimensions of School Connectedness

As a general concept SC has been treated as a broad construct that combines students' perceptions of safety, support, belonging and engagement (Battistich & Hom, 1997; Resnick et al., 1997; Hawkins et al., 2001). Brown and Evans (2002) also identified four domains of SC including commitment, power, belonging, and belief in values. These researchers disagreed about the importance of how safe students feel, the level of support that they feel from the people in school, the level of autonomy that students experience, and their acceptance of cultural values. There is agreement, however, in the importance of belonging and the similar dimensions of commitment and engagement. Belonging refers to feelings of being an important member of the school, while commitment or engagement refers to the degree to which students invest in relationships with teachers and school policies.

McNeely & Falci (2004) analyzed data from the National Longitudinal Study of Adolescent Health (Add Health). This national longitudinal study surveyed over 80,000 adolescents between 7th and 12th grades from 127 schools between 1994 and 1995. The data showed that the six items previously used by a variety of researchers (Loukas,

Suzuki, & Horton, 2006; McNeely, Nonnemaker, & Blum, 2002; Bonny et al., 2000; Resnick et al., 1997) to measure SC did not measure a single construct. Of the six questions, three actually measured Teacher Support while the other three questions measured Social Belonging with only a moderate correlation between the two ($r = 0.43$). Catalano et al. (2004) also identified two distinct dimensions of SC, including attachment and commitment. Attachment is characterized by close relationships with people at school, while commitment is characterized by investment in school and an interest in doing well.

Other researchers define SC with three dimensions. McNeely & Falci (2004) identified social support, belonging, and engagement as the three most commonly emphasized dimensions of SC. Social support refers to feelings of being accepted by friends, belonging refers to a sense of membership in the school community, and engagement refers to the degree to which students invest in, and are committed to, relationships with their teachers. This third dimension, engagement, refers to a student's reciprocation of Teacher Support. In a practical sense these findings indicate the possibility that a conventional connection to teachers may be able to counteract the negative effects of bonding to peers who engage in non-conventional behaviors. The researchers suggested that middle schools are a particularly important target for promoting supportive teacher relationships, because most middle school students have not yet experimented with health-risk behaviors (McNeely & Falci, 2004).

Measuring SC

Because SC has been defined in several different ways, and several different dimensions of SC have been identified, the variable has been measured in a number of

ways. Some researchers have constructed SC variables based on a few items drawn from large scale surveys through post-hoc analysis (McNeely et al., 2002; Bonny et al., 2000; Resnick et al., 1997). Other researchers have developed specific instruments that prompted students to respond to a varying number of questions aimed at assessing their feelings toward their school and the people in it (Whitlock, 2006; Thomas & Smith, 2004; Battistich & Hom, 1997;). Still others have used standardized instruments such as the Social Bonding Scales from the Wisconsin Youth Survey (Wallace, 2007; Arhar, 1990) or the Psychological Sense of School Membership (Sochet, Smyth, & Homel, 2007; Sochet et al., 2006) to assess SC.

The earliest measure of SC comes from the previously mentioned Add Health data (Resnick et al. 1997). Resnick et al (1997) used five items to construct a SC variable. Several researchers have used these same five items through independent investigations of various aspects of SC (Loukas, Suzuki, & Horton, 2006; McNeely, Nonnemaker, & Blum, 2002; Bonny et al., 2000; Resnick et al., 1997). The items included: “I feel close to people at this school,” “I feel like I am part of this school,” “I am happy to be at this school,” “The teachers at this school treat students fairly,” and “I feel safe in my school.” Responses were scored on a five point Likert scale ranging from “strongly agree” to “strongly disagree.” McNeely & Falci (2004) used six items from Add Health including the five afore-mentioned and a sixth that read “how much do you feel that your teachers care about you?”. Of these Add Health items, only one deals exclusively with teachers. The item that does ask about teachers focuses more on fairness than perceived support or reciprocation of support. Therefore one cannot use these questions in an effort to explore student-teacher engagement.

Thompson et al. (2006) used data from the 2001-2002 Health Behavior in School-Aged Children (HBSC) Study to construct an SC variable. Although the items were slightly different than the ones in the Add Health data base they were able to construct a comparable variable by measuring student responses to six questions including: “I feel safe at this school,” “When a student in my class(es) is feeling down, someone else in class tries to help,” “The students in my class(es) enjoy being together,” “Most of the students in my class(es) are kind and helpful,” “Other students accept me as I am,” and “How do you feel about school at present?” Like the Add Health survey these items were also scored on a five point likert scale (1 = “strongly disagree” and 5 = “strongly agree”) with the exception of the last question which was scored on a 4 point likert scale (1 = “I don’t like it at all” and 4 = “I like it a lot” multiplied by 1.25 to make the scale roughly comparable to the items that used a 5 point scale). These items focus mainly on a students sense of being accepted by peers and do not reveal information about the connection between students and adults. Like the Add Health questions, this assessment cannot be used to investigate student-teacher engagement.

Researchers outside of the United States (Shochet, Dadds, Ham, & Montague, 2006; Shochet, Smyth, & Homel, 2007) have used an instrument developed by Carol Goodenow to measure SC. Goodenow (1993) identified the lack of measures designed to focus on the intersection between the personal and social context in schools as a major impediment to advancing research. In an attempt to rectify this problem she developed the Psychological Sense of School Membership (PSSM) scale (Goodenow, 1993). The instrument was designed to measure adolescent student perceived belonging, or psychological membership in the school environment. Belongingness in this context

resembles the conceptualization of SC quite closely. In fact, belongingness has actually been identified as an important dimension of SC. In this case the similarity is not merely semantic because many items on the PSSM are similar or identical to items used by other researchers to measure SC (Bonny et al., 2000; Loukas, McNeely, Nonnemaker & Blum, 2002; Suzuki & Horton, 2006).

The PSSM consists of 18 items with strong internal consistency ($r = .875-.884$) and acceptable construct validity. Despite the development of this survey, few researchers have extended its use into investigations of SC. Interestingly, Goodenow (1993) posed the question of whether belongingness should be a dichotomous variable rather than a continuous variable because there seemed to be a tipping point at 3.0 on a 5 point scale. She observed that any student who scored below this threshold for sense of belonging was more negative than positive in their responding regarding the school. In her estimation there is a possibility that either students feel that they belong or don't belong, and that a critical level of belongingness must be reached before students will expand energy and risk failure by engaging in school.

Of the 18 items used in the PSSM only four of them deal with teacher-student relationships. Of those four items, two were virtually the same but reverse coded. Of the three items that assessed the teacher-student relationship only one references the reciprocal nature of student engagement with teachers ("There's at least one teacher or adult in this school that I can talk to if I have a problem.") The other items focus more on student perceptions of teacher support rather than engagement with teachers: "Most teachers at (name of school) are interested in me;" "Teachers are not interested in people like me;" "The teachers here respect me." While perceived levels of teacher support is an

important dimension of SC this instrument is likely not appropriate for an investigation into student-teacher engagement.

Wilson (2004) examined the interaction between SC and school climate as they relate to aggression and victimization. SC was assessed with seven items including: “I like school,” “I look forward to going to school,” “my teachers tell me when I do a good job,” “my teachers listen when I have something to say,” “I have a teacher who really cares about me,” “all students who break the rules at this school are treated the same no matter who they are,” “when someone breaks the rules, teachers and administrators take appropriate action.” Means for each student were calculated and then compared to the mean of the overall sample. Students who scored above the mean were considered to have High Connectedness while students who were equal to, or below, the mean had Low Connectedness. This way of conceptualizing the variable is similar to Goodenow’s (1993) suggestion, in her development of the PSSM, to treat SC as a dichotomous variable rather than a continuous variable. As in many other measures of SC, the items which explore student – teacher relationships focus primarily on perceived levels of support with the exception of “my teachers listen when I have something to say.”

Some researchers (Thomas & Smith, 2004) have investigated the relationship between youth violence and SC in the United States. Thomas and Smith conducted a national on-line survey of students from 47 states and Washington, DC. Considering the breadth of their study, the sample was relatively small and consisted of 282 girls and boys between the ages of 7-19 with a mean of 15.3. SC was assessed with a single question: “How do you feel about school?” They also measured relationships with classmates with a single question (“Do your classmates like you?”). Other feelings about school were

assessed with a question about the perceived fairness of discipline procedures at their school, general feelings about adult fairness toward kids, and feelings of loneliness or sadness. It is difficult to compare this measure to others because these questions were not included in the calculation of an SC score and were considered separate from SC.

Whitlock (2006) used a seven item scale that assessed three dimensions of SC including dyadic youth-adult relationships, the extent to which individual youth respondents felt that they and other youth were respected, trusted, and cared for by the collective community of adults, and the extent to which youth care about and trust adults in their school. The Chronbach's alpha for this scale was .81. The 7 items included "Adults at my school care about people my age." "Adults at my school don't respect what people my age think," "At school there is a teacher or some other adult who believes that I will be a success," "Adults in my school listen to what I have to say," "Adults in my school push me to do my best," "I care about the school I go to," and "I trust the adults in my school." Each question was scored on a 5 point Likert scale ranging from 1 (Strongly Disagree) to 3 (Not Sure) to 5 (Strongly Agree). This measure of SC provides the best assessment of Engagement because three of the seven items deal with student-teacher commitment rather than just perceived levels of teacher support.

Predictors of School Connectedness

A number of variables have been found to be predictive of SC. Bonny et al. (2000) identified several socio-demographic factors that are associated with SC through analysis of Add Health data. Their goal was to target school based interventions to those students at the highest health risk. They found that boys tend to feel more connected than girls, white students tend to feel more connected than black students, and suburban

students tend to feel more connected than urban students. In addition, students whose parents are less educated, and students who have been retained, tend to feel less connected to their schools.

McNeely et al. (2002) also identified variables which predict SC by extracting data directly from Add Health. Results indicated that students who participate in extra-curricular activities, get higher grades, and do not skip school all tend to have higher levels of SC. However, as students grow older they tend to feel less connected to school so students in higher grades had lower levels of SC. McNeely et al. (2002) references the stage environment fit theory in an effort to explain this phenomenon. As students get older the gap between their developmental needs, and the schools efforts to meet those needs, tends to widen as students get older and desire more autonomy than schools typically provide. More specifically, adolescents are less likely to feel connected to their school if they are not provided with opportunities for autonomy, opportunities to demonstrate competence, caring and support from adults, developmentally appropriate supervision, and acceptance by peers (Eccles, Midgely, & Wigfield, 1993).

McNeely et al. (2002) also found that SC has strong correlations with certain school characteristics. SC tends to be lower in schools with difficult classroom management climates. Likewise, SC is lower in schools that temporarily expel students for relatively minor infractions such as possessing alcohol, compared to schools with more lenient discipline policies. Students in smaller schools tend to feel more attached to school than students in larger schools. In addition, SC is higher in racially or ethnically segregated schools, and lower in integrated schools.

Other researchers have investigated the relationship between peer harassment and levels of school connectedness and school achievement (Eisenberg, Neumark-Sztainer & Perry, 2003). Students who experience less peer harassment tend to feel more connected to their schools. However, the school connectedness variable that was used was based on a single survey item scored on a 5 point Likert scale that asked how much a student “likes” school. In essence, the SC variable used in this study referred to a student’s general feeling about school rather than the degree to which they feel attached to other students, adults, school rules, etc. As a result, this study offers more insight into the harmful effects of peer harassment as it relates to a student’s general feelings about school rather than specific dimensions of SC.

Qualitative data gathered by Thomas & Smith (2004) regarding SC indicated that many students resented schools’ emphasis on surveillance, conformity, and regimentation; schools’ inequitable discipline of athletes and other high-status groups, schools’ overreaction to trivial offenses, and schools’ lack of action regarding reports of bullying and harassment. They found that a substantial percentage of youth who perpetrate violence did not perceive themselves to be liked by classmates. Of those who reported that they were not liked by their classmates, 80% also reported that they hated school. They concluded that more attention needs to be paid to disliked and lonely students who feel alienated because many students who are victims of violence go on to perpetrate violence. While their measures of SC were limited in scope compared to other researchers, these findings do support Eisenberg, Neumark-Sztainer & Perry’s (2003) research which indicates that students who are more frequently victimized, and/or perpetrators of violence, tend to have lower levels of SC.

Thompson et al. (2006) found that SC was greater among younger students, students in two-parent households, students who performed well in school, students who participated in many extracurricular activities, and students with large numbers of friends. They also found that school factors played an important role. Larger schools had lower levels of SC and a U-shaped curvilinear relationship was observed between percent of African American students and connectedness. Schools with either high percentages or low percentages of black students had the highest levels of SC, while schools with a more diverse racial mix tended to have lower levels of SC.

Thompson et al. (2006) also found that SC was higher for girls. In addition, SC was not significantly associated with being an African American, living in an urban area, or having highly educated parents. These findings contrast some earlier research but due to differences in methodology (the sample, data collection methods, wording of survey items, and statistical analysis) the true source of the differences in these findings cannot be determined.

New findings from Thompson et al. (2006) that were not investigated in previous research included direct associations between SC and parental involvement, good looks, wealth, and percent of non US citizens. While friendships with other females were a strong predictor of SC for girls, friendships with boys and girls explained an equal amount of the variance in SC for males. Not surprisingly, SC varied inversely according to the percentage of renters. Schools in communities with a high percentage of renters tended to have lower levels of SC while schools with lower percentages of renters tended to have higher levels of SC.

Shochet et al. (2007) used the PSSM as a measure of SC in a study aimed at examining how parental attachment predicts both adolescents' perception of the school environment and SC. They focused on the interplay between external factors such as the school environment and internal factors such as their attachment to parents. The study utilized a sample of 171 students between the ages of 12 – 18 years old who attended a high school in an upper-middle class suburb of Brisbane. They found that SC is predicted both by attachment to parents as well as school environment factors. In fact, parental attachment accounted for approximately 25% of the variance in both SC and a students' perception of the school environment. Furthermore, the effect of attachment to parents on SC is mediated by school environment factors. In essence, students who have a stronger connection to their parents are more likely to have a strong connection to their teachers, which in turn, contributes to their overall level of SC. Conversely, the results showed that the degree to which students like teachers is not fully controlled by the teacher due to a students' attachment predisposition. In addition, students who had a secure attachment with their parents were more likely to participate in different activities at the school which also contributed to their overall level of SC. These findings supported the need for multisystemic approaches to increasing SC that involve the individual, the school, and the family.

Outcomes Associated with School Connectedness

Previous research has investigated the relationship between student outcomes and different variables such as autonomy, regulation, and connection across social contexts such as family, peer group, and the school (Eccles et al., 1993; Eccles et al., 1997). But before SC was a popular topic of research Battistich and Hom (1997) explored the

relationship between a variable they termed “students’ sense of school as a community,” and problem behaviors. Sense of school as a community was measured with a 38 item scale composed of two subscales measuring caring and supportive interpersonal relationships, and student autonomy and influence. While this variable is not identical to SC, it is similar in its focus on the importance of interpersonal relationships. They found that elementary schools with higher sense-of-community scores had significantly lower incidences of student drug use and delinquent behaviors.

In Resnick et al.’s (1997) initial analysis of Add Health data researchers found that SC has a protective effect against a variety of adolescent risk behaviors. Similar to Battistich and Hom (1997), Resnick et al. found that SC protected against drug use and delinquent behaviors such as school violence and sexual activity. Resnick et al. also found that SC had an indirect effect on emotional distress and suicidality.

Schochet et al. (2006) also investigated associations between SC and mental health. These researchers conducted a longitudinal survey over a 12 month period of over 2,000 students in Australia between the ages of 12 and 14. They found that SC predicted future depressive symptoms in both boys and girls even after controlling for previous symptoms. When the analysis was reversed, previous mental health symptoms did not predict levels of SC when prior levels of SC were controlled. In essence, SC predicts future mental health problems rather than mental health predicting future SC. SC was not found to be a significant predictor of anxiety indicating that depressive symptoms and symptoms of anxiety should be analyzed separately when future studies investigate their links to SC. The researchers concluded that the association between SC

and adolescent depressive symptoms is actually stronger than had previously been reported.

Wilson (2004) built on previous work regarding school violence by examining the interaction between SC and school climate as they relate to aggression and victimization. A sample of over 2,000 students was analyzed from data collected in Colorado by the Safe Communities – Safe Schools Initiative. Wilson utilized seven scales commonly thought of as dimensions of school climate including: Feelings and Attitudes Toward School, Knowledge and Fairness of Discipline Policies, Student-Teacher Relationships, Student Peer Relationships, Respect for Authority, Presence of Gangs, and Condition of Campus. A school climate mean was aggregated for each school that participated and was assigned to each member of that school. Schools with averages above the total mean of the sample were designated schools with positive climates while schools that averaged below the sample mean were identified as negative climates.

Wilson (2004) found that school climate does not predict a significant amount of the variance in the likelihood of perpetration of aggression and victimization. The level of SC that a student feels, however, appeared to be a significant predictor of the likelihood of both aggression and victimization. While school climate is certainly an important variable that predicts other variables such as academic achievement, it appears that focusing on SC is a more profitable endeavor if one wishes to decrease the amount of aggression and victimization in a school. Wilson concluded that school climate appears to be an antecedent, although not a precondition, of SC.

Loukas, Suzuki, & Horton (2006) added to research on the relationship between school climate and SC. These researchers defined school climate as a multidimensional

construct encompassing interpersonal interactions, organizational, and instructional dimensions. They investigated how cohesion, friction, competition among students, and overall satisfaction with classes (four characteristics of school climate) related to early adolescent conduct problems and depressive symptoms through SC. Their sample consisted of 489 students, between the ages of 10 and 14 years, attending three different middle schools in a suburban school district in central Texas. The authors hypothesized that high levels of cohesion among students, low levels of friction between students, low levels of competition between students, and high levels of satisfaction with classes would result in higher levels of SC. Higher levels of SC would, in turn, lead to lower levels of conduct problems and depressive symptoms. Their results partially confirmed these hypotheses. SC accounted for the relationships between student perceived cohesion, friction, and overall satisfaction with classes and subsequent early adolescent conduct problems. Perceived competition was not associated with SC, and SC did not predict future levels of depressive symptoms. They attributed this to the fact that depressive symptoms tend to naturally become more prevalent during adolescence regardless of levels of SC. Nevertheless their findings supported the idea that perceived school climate contributes to levels of SC which in turn contributes to the likelihood of engaging in conduct problems in the future.

While many researchers have focused on the association between SC and negative behaviors, Bonny et al. (2000) focused on SC's impact on desirable behaviors. These researchers found that SC has also been shown to have strong direct correlations with a variety of healthy behaviors including better academic performance, more extra-curricular involvement, better health status, fewer visits to the nurse, and less use of

cigarettes and alcohol. These findings indicate that SC contributes to the engagement in positive behaviors as well as the avoidance of negative behaviors.

McNeely & Falci (2004) found that two different dimensions of SC, social belonging and teacher support, have different effects on the initiation of several health risk behaviors. Adolescents who perceive their teachers as individuals who are fair and care about them were less likely to initiate health-risk behaviors such as cigarette use, “getting drunk,” marijuana use, violent behavior, sexual behaviors, and suicide. However, students who enjoy going to school, and feel part of a school (i.e., social belonging) are not necessarily protected from these behaviors because their sense of belonging and enjoyment in school may be derived from spending time with peers who engage in similar health-risk behaviors. Essentially, a positive student-teacher relationship was more protective than peer relationships.

To reconcile this finding McNeely & Falci (2004) made an important distinction between “conventional” connectedness, and “unconventional” connectedness. Students who feel socially accepted by peers who engage in prosocial behaviors, they explain, are said to have “conventional” connectedness and are more likely to avoid a variety of risk behaviors. Students who feel socially accepted by peers who engage in behaviors that do not conform to prosocial norms, however, are said to have “unconventional” connectedness and are actually more likely to engage in certain risk behaviors.

Arhar (1990) similarly claimed that attachments to peers whose values are in keeping with school values enhance school performance, while attachments to groups that are counterproductive to learning threaten academic performance. Kirby (2001) found that the same principle held true with regard to risk-taking behaviors. His

exhaustive review of 300 studies on risk and protective factors for sexual risk taking in adolescence revealed that sexual risk taking in adolescence could be explained, in large part, by two factors: an individual's peer group, and the social norms to which their peer group adheres. Other researchers have also hypothesized that the behavior of the individual will be prosocial, or antisocial, depending on the predominant behaviors and values endorsed by the people and institutions to which they are bonded (Catalano et al., 2004).

McNeely & Falci (2004) identified a third dimension of SC known as Engagement which refers to the degree to which students invest in their relationships as teachers. They could not investigate the degree to which this dimension of SC protects against the initiation of risk-behaviors because they were unable to construct a measurement of engagement from the Add Health data. McNeely & Falci (2004) suggested however, that Engagement may actually be the key component of SC and possibly more influential in the reduction of risk behaviors than either Teacher Support or Social Belonging. Therefore, investigating student-teacher engagement will significantly add to the research base.

School Connectedness Interventions

In addition to the descriptive research that has been done, researchers have also made valuable contributions regarding the efficacy of different interventions that were aimed at increasing SC. King et al. (2002) investigated participation in a mentoring program for 4th grade students that focused on relationship building, self-esteem enhancement, goal setting, and academic assistance. They found that students who participated in this multidimensional mentoring program had significantly higher levels

of self-esteem, as well as positive connections to family, peers, and school. They concluded that establishing mentoring programs for students is one way to increase their connectedness to their school.

Catalano et al. (2004) summarized the findings of two longitudinal studies that utilized comprehensive interventions in an effort to increase levels of SC as well. The effects of both the Seattle Social Development Project (SSDP), and Raising Healthy Children (RHC) were investigated in Catalano et al.'s research. The SSDP studied the effects of an intervention which consisted of teacher, student, and parent training. Results showed that school bonding during middle and high school had a significant indirect relationship with substance abuse, delinquency, gang membership, violence, academic problems, and sexual activity. The RHC was a reproduction of the SSDP which employed similar interventions and found similar improvements in positive development and reductions in problem behaviors. These studies suggest that general levels of SC can successfully be improved through teachers, parent and student training which is aimed at making students feel more engaged, more competent, and more accepted.

Team Teaching

Traditionally middle level education was organized around departments in the same way that high schools continue to be organized. In this setting the emphasis is on curriculum and content rather than meeting the developmental or social-emotional needs of students. These schools were called junior high schools because they mirrored high schools so closely. Educational reformers began calling for reform, however, in the 1960's through the institution of interdisciplinary teaching teams (Alexander, 1995).

Organizing middle schools around interdisciplinary teams is an approach that has evolved over the past 40 years, and has become the most common way of serving young adolescents since the mid 1990's (McEwin, Dickinson & Jenkins, 1996). In 1988, about 40% of early adolescents received instruction from interdisciplinary teams (MacIver, 1990) but that number had risen to about 60% by 1993 (Valentine, Clark, Irvin, Keefe & Melton, 1993). In this model, two or more teachers share common planning time, a common group of students, a common schedule, and a specific area of the school building. The goal behind using this type of organization is to provide a structure in which teachers can meet the individual needs of students more quickly, personally, and consistently (MacIver, 1990).

Successful interdisciplinary teams allow for flexible schedules, curriculum integration, grouping practices, and developmentally appropriate instruction (Clark & Clark, 1997). When larger blocks of time are created by scheduling at least two core classes back to back there is increased flexibility to modify the length of periods to meet the particular needs of different instructional tasks. Teams have the freedom to create instructional groups within the team to meet more general educational needs. Small and large groups can be developed to offer specialized instructional support which is particularly relevant in today's atmosphere of Response to Intervention (RTI). When team teachers plan activities which integrate the skills and curriculum from different disciplines, students end up having a richer learning experience. Finally, team teaching allows teachers the flexibility and support to collaborate in the exploration and implementation of teaching strategies that are engaging and challenging in creative ways that fit their student's developmental needs.

Team teaching benefits both students and teachers in multiple ways (Clark & Clark, 1997; MacIver, 1990; Erb, 1997). Students who attend interdisciplinary teams tend to experience higher levels of achievement in both math and reading (Lee & Smith, 1993) and improved attitudes toward school (Warren & Muth, 1995). Teachers who are parts of interdisciplinary teaching teams tend to have more positive professional self-images (Gatewood, Cline, Green & Harris, 1992), feel less isolated (Mills, Powell & Pollack, 1992), and are more satisfied professionally (Arhar, Johnston & Markle, 1989).

Teams may be organized in several ways but many are organized around the four core subjects required at the middle school level including language arts, social studies, mathematics, and science (Clark & Clark, 1997). In this model one teacher teaches each subject, there is a ration of no more than 30 students to one teacher, and teachers have one common planning period. Another popular configuration described by Clark & Clark (1997) occurs most commonly at the 6th grade level and involves a two teacher team where each teacher teaches two of the core classes. Other team teaching configurations include a special education teacher to offer support in full-inclusion classes. Special area teachers, such as art, music, and technology may also play integral team roles whenever possible. While the number of teachers on teams varies greatly, two to four member teams are the most common (Clark & Clark, 1994, MacIver, 1990).

While the size of teaching teams varies there is evidence which suggests that smaller teams are better. Bishop and Stevenson (2000) claim that the size of interdisciplinary teams in general needs to be reduced. Other researchers have shown that smaller teams of 90 or fewer students are better equipped to incorporate best teaching practices (Flowers, Mertens, & Mulhall, 2000). Clark & Clark (1997) assert that the two

teacher team is an ideal configuration for 6th grade because it facilitates a smoother transition from the one teacher self-contained classrooms they attended in elementary school. In the two-teacher model 6th grade students have more opportunities to engage with their teachers because they encounter fewer during the day than they would on a four-teacher team.

Team Teaching's Effect on School Connectedness

Arhar (1990) investigated the relationship between teaming and social bonding to peers, teachers, and the school. Schools which utilized team teaching were compared to schools which maintained the more traditional school organization that is organized around departments rather than teams. While no significant differences were found between the groups based on perceived levels of social bonding to peers, perceived levels of social bonding to teachers, and to the school, were higher in schools that utilized interdisciplinary team teaching.

A more recent study investigated the relationship between Team Teaching models and a variable termed Social Bonding (Wallace, 2007). As previously mentioned, Social Bonding and SC have been used synonymously by multiple researchers (Thomas & Smith, 2004; Catalano et al., 2004). While Social Bonding is not clearly defined by Wallace the implication is that it refers to the degree to which students feel connected to their peers, their school, and their teachers. In this respect the similarity between the variables is not merely semantic. These three areas have been identified by several researchers as principal components of SC (Catalano et al., 2004; McNeely & Falci, 2004; Wilson, 2004). Therefore, it appears that Wallace investigated three specific aspects of SC, a student's attachment to their peers, their school, and their teachers.

Wallace compared two teacher team configurations to four teacher team configurations based on how they relate to the three measures of social bonding previously mentioned. The sample was comprised of approximately 500 6th grade students from ten schools. Five of the schools employed four-teacher teams while five of the schools employed two-teacher teams. Wallace found that the students on the two-teacher teams scored significantly higher on all three measures of social bonding.

The current study differs in that the conception of SC is slightly different from Wallace's conception of Social Bonding. This study will investigate the degree to which students feel connected to students, peers, teachers, and school using an established measure of SC (Whitlock, 2006), rather than a measure of Social Bonding. It will also differ in that the samples that will be used in this study will be drawn from the same school. The students in these samples will be very similar in terms of their exposure to variables other than team teaching model that might affect SC because they actually attend the same school and live in a fairly homogeneous community.

Chapter Three: Method

Design

This study utilized an independent measures (between-subjects) research design. One sample of students from a two-teacher team was compared to another independent sample taken from a four-teacher team. This design differs from other researchers who have investigated the association between social bonding and team teaching (Arhar, 1990; Wallace, 2007). Arhar (1990) compared schools that practiced interdisciplinary Teaming to schools that did not. Wallace (2007) compared schools that utilized two-teacher teams to schools that utilize four-teacher teams. In each case, the researchers attempted to control for confounding variables by matching schools on location, size, ethnicity, and percentage of students on free or reduced-price lunch. The technique of matching was unnecessary in the current study because all participants were in the same grade and attended the same school. Demographic data was collected, however, and was used to judge the similarity of the samples based on these possible confounds.

Variables that are used by school officials to distribute students among the 6th grade teams were also collected and analyzed to ensure that the samples were similar. These variables are discussed in the following section. Efforts are taken to ensure that there are comparable percentages of students on each team who receive reading/writing support, math support, 504 support, and speech support.

Participants

The participants in this study were sixth grade students at a suburban middle school outside of Rochester, NY. The community in which the school is located is relatively affluent with only small pockets of poverty. The median income of the town is

approximately \$88,323 and the district reports a per pupil cost of \$17,141. The subjects in this study were drawn from one of the two middle schools in the district which houses grades six through eight. The two-teacher team sample consisted of 23 males and 18 females for a total of 41 students. There was a total of 46 students on the two-teacher team but one student's parents did not provide consent for their child to participate, and five other students were absent on the day the survey was administered. The four-teacher team sample consisted of 39 males and 46 females for a total of 85 students. There was a total of 93 students on the four-teacher team but four students' parents did not provide consent and four other students were absent on the day that the survey was administered.

Prior to every school year efforts are taken to equally distribute 5th grade students from three different elementary schools. Administrators and counselors place 5th grade students among the three 6th grade teams based on 9 factors. Each team had roughly the same percentage of students who were part of the Urban/Suburban program, receiving general education reading/writing support, receiving general education math support, receiving speech services, spoke English as a second language, had a 504 accommodation plan, took ADHD medication through the nurses office, and have been nominated by their 5th grade teachers for the Peer Helper program. Students in the Urban/Suburban program are bussed from the Rochester City school district to this middle school. There were fewer than five 6th grade students in this program who are distributed among the three teams. The Peer Helper program is a group of students who were identified by their 5th grade teachers as class leaders based on characteristics of empathy, respect, responsibility, and leadership skills. General education math support and general

education reading/writing support are classes which are provided to students who fail to meet standards on New York State tests of Math and/or English language Arts.

While the teachers of these teams are not the actual participants, a discussion of the teachers involved is warranted because they represent the other half of the student-teacher relationship which is being measured. The two-teacher team consists of two female teachers who each have elementary education certification, master's degrees in education, and over 15 years of experience. The four-teacher team consists of four female teachers who each have elementary education certification, master's degrees in education, and over 15 years of teaching experience. The composition of the teaching teams is actually quite similar and should help control for teacher characteristics that may impact student levels of SC such as gender, experience, and educational level.

The teachers were placed on the teams through a process of self-selection which was determined in large part, by their desire to teach, or not teach, certain subjects. As sixth grade teachers, they all have elementary education teaching certification and are qualified to teach any of the four core subjects. Most teachers, however, prefer to specialize in one subject. The teachers on the two-teacher team report that they volunteered because they were willing to teach more than one core subject. They were also attracted to the increased opportunities for integrating the curriculum across core subjects, and the increased freedom that results from teaching the same students two subjects in back – to – back periods.

The sixth grade consists of 237 students and is broken into three teams. One team consists of two general education teachers and 46 general education students. The second team consists of four general education teachers and 93 general education students. The

third team consists of four general education teachers, a special education teacher, and a mix of 98 general education and special education students. Survey data and demographic data were collected on all 41 students on the two-teacher team and all 85 students on the four-teacher team. There are a variety of confounding variables associated with the third team due to the presence of special education students and different supports utilized in classrooms that could affect the SC of all the students on the team. As a result students on the five teacher team were not included in the sample.

The teachers with whom students interact outside of their teams through “special classes,” or electives, may also present a possible confound. All students on both teams are randomly distributed into special classes such as Music, Art, Health, and Home & Careers. They go “off team” for these classes and may attend them with other students from different teams. Because there are multiple teachers for each of the special area subjects it would be difficult to identify subgroups that have similar experiences “off team.” As a result, it is difficult to quantify the impact that special area teachers have on student levels of SC. However, students either attend these special classes every other day, or for only half the year. They have far less contact with these teachers than they do with the teachers on their team whom they see every day for the entire school year. It is likely that the teachers whom students interact with every day on their team have a greater impact on student perceptions of SC.

Because team teachers all possess different personalities and different learning styles, their classrooms were observed to evaluate the learning environment that each teacher cultivates. Criteria identified in the TIES – II (The Instructional Environment System – Second Edition) as important aspects of the learning environment were assessed

through direct observation. While the teachers on the two-teacher team appeared to use humor more than the teachers on the four-teacher team, the classes appeared to be fairly similar in several areas including classroom environment, instructional presentation, motivational strategies, informed feedback, academic engaged time, and student understanding. That is to say that both teams generally utilized clear and consistent rules and procedures, clear instruction, methods to increase student effort, constructive feedback of student performance, methods to increase student participation and attention, and measures to ensure that students know what needs to be done as well as how to do it.

Instruments

Previous research (McNeely & Falci, 2004) has raised questions about the beneficial effects of a strong connection to peers, and has emphasized the importance of investigating the degree to which students feel engaged to, not just supported by, adults in the school. As a result, the current study utilized a previously established measure of SC that focuses on the reciprocal interplay of caring and support between students and adults in the school (Whitlock, 2006). Whitlock (2006) used a seven item scale that assessed (a) dyadic youth-adult relationships; (b) the extent to which individual youth respondents felt that they and other youth were respected, trusted, and cared for by the collective community of adults, and (c) the extent to which youth care about and trust adults in their school. The Cronbach's alpha for this scale was quite strong at .81. The 7 items are listed below with their factor loading in parentheses:

1. Adults at my school care about people my age (0.772)
2. Adults at my school don't respect what people my age think (reverse worded and coded) (0.786)

3. At school there is a teacher or some other adult who believes that I will be a success (0.701)
4. Adults in my school listen to what I have to say (0.598)
5. Adults in my school push me to do my best (0.766)
6. I care about the school I go to (0.587)
7. I trust the adults in my school (0.598)

Each question was scored on a 5 point Likert scale ranging from 1 (Strongly Disagree) to 3 (Not Sure) to 5 (Strongly Agree).

Findings which point to the importance of student-teacher engagement (McNeely & Falci, 2004) are fairly new. As a result there is a limited research base available regarding how best to measure this aspect of SC. Whitlock (2006) developed this scale specifically for her study so there is not an extensive “track record” of its reliability or validity with other populations. This is, however, one of the few instruments in the literature that aims to focus on student-teacher engagement. While it would be ideal to use a measure that has been established as both a valid and reliable assessment of student-teacher engagement, there are few options available. Because the instrument has good internal validity, and because Whitlock’s sample included over 300 participants from three school districts, this survey is an acceptable measure of SC. In addition, using Whitlock’s survey may help add to this research base and provide added support for future use of this instrument.

Variables

This study focuses on the relationship between two variables: Team Teaching Model and School Connectedness. Team Teaching model is the independent variable. It is a

discrete variable that is measured on a nominal scale with two levels: (1) Two Teacher Team or (2) Four Teacher Team. School Connectedness is the dependent variable. SC is a continuous variable that will be measured on an ordinal scale.

Procedures

The student survey was administered to the whole student body in the month of May on a day which did not interfere with state tests, or preparation for state tests. Teachers handed out paper surveys to all students during one of their core classes. Students whose parents requested that their child not participate were called down to the counseling office so that they were not present in the classrooms when surveys were administered. All teachers read the following standardized script:

“This survey asks questions regarding your feelings about the adults in your school. Your responses will be confidential so please put your student ID number rather than your name at the top of this survey. There are no right or wrong answers, but please take your time and give thoughtful responses. Circle one of the following options for each question: 1 for ‘strongly disagree’, 2 for ‘somewhat disagree’, 3 ‘for not sure’, 4 for ‘somewhat agree’, or 5 for ‘strongly agree.’”

The surveys were administered and collected by classroom teachers. The whole process took roughly 10 minutes of class time, and presented only a minor disruption to the normal classroom routine. Teachers then returned the completed surveys to the researcher for data analysis.

Chapter Four: Results

A factor analysis was conducted with the seven item survey in order to evaluate its validity. Principal component analysis showed that only one component could be extracted so the solution could not be rotated. Of the seven items included in the scale six had acceptable factor loadings of .4 or above (see Table 1). Item three, however, had a factor loading of .336, indicating that it does not correlate well with the other items contributing to the scale. This finding suggested that item three should be removed from the scale in order to strengthen the claim that the scale is measuring a single psychological construct, or factor.

Before the decision to remove item three was made, reliability analysis was conducted. The Cronbach's Alpha for the 7 item scale was .734 which is acceptable, but lower than Whitlock's (2006) .81 with the same survey. Further analysis showed, however, that the Cronbach's Alpha would increase to .753 if item three was deleted. Removing any of the other items would not add to the instruments reliability. As a result, item three was removed based on the low factor loading and the fact that the overall reliability of the scale increased when it was not included. All following analyses are based upon SC means that are generated from the remaining six items on the scale.

Independent samples *t*-tests were conducted to investigate possible differences based on race, 504 support, reading/writing support, parental marital status, academic achievement, and gender (see Table 2.). These tests were carried out to determine how similar the samples were. If SC varied significantly based on any of these factors the samples would not be considered similar. Therefore, using a *t*-test to analyze the simple main effect of team teaching model on student levels of SC would not be justified, and a

multiple regression would be necessary in order to analyze the effects of each variable. If the samples did not differ significantly based upon these variables a simple *t*-test could be used to analyze the differences in SC between the students on the two-teacher team and students on the four-teacher team.

The overall sample was fairly homogenous with 107 white participants and only 17 minority participants including Asian, African American, and Hispanic. Because there were 4 categories for race, but so few minority participants, race was combined into white, and nonwhite, levels so that a *t*-test could be carried out. The test for race was not significant, $t(124) = -.442, p = .659$. The mean SC score for white students ($M = 4.185, SD = .6221$) was not significantly different from minority students ($M = 4.255, SD = .4899$).

Levels of SC were also compared among students who receive support through a 504 plan ($N = 5$) to students who do not receive support through a 504 plan ($N = 121$). The *t*-test which compared these groups was not significant, $t(124) = -1.282, p = .202$. Although students who receive 504 support ($M = 4.5233, SD = .4472$) scored higher on the survey than the students who do not receive 504 support ($M = 4.1804, SD = .6076$) the difference in means did not reach significant levels.

The same analysis was carried out for students who receive reading/writing support ($N = 2$). The *t*-test for this subgroup was not significant either, $t(124) = -1.14, p = .267$. Students who receive reading/writing support ($M = 4.667, SD = .4714$) appeared to feel more connected to school than their counterparts who did not receive reading/writing support ($M = 4.187, SD = .605$). Like the previous analysis, however, the differences in means did not reach significant levels.

A *t*-test was also conducted to compare student levels of SC based on the marital status of their parents. Students who shared primary residence with both biological parents ($N = 116$) were compared to students who do not live with both biological parents ($N = 20$). While students living with both parents scored slightly higher ($M = 4.2186$, $SD = .5911$) than students who do not ($M = 4.067$, $SD = .67408$) the results were not significant ($t(124) = 1.031$, $p = .305$).

Academic achievement was measured by combined final averages in all classes for individual students. Scores ranged from 82 to 97 with the majority of students (99 out of 126) obtaining final averages above 90. As a result, rather than treating academic achievement as a continuous variable, two categories were created with a cut-off score of 90. The difference between these two groups approached significance, $t(124) = 1.967$, $p = .051$. The students who earned final averages below 90 ($N = 27$) scored lower ($M = 3.994$, $SD = .6363$) than the students who earned final averages above 90 ($N = 99$) ($M = 4.249$, $SD = .5873$).

When student achievement is treated as a continuous variable (represented by the student's cumulative grade point average at the end of the year) the trend line indicates that higher levels of SC are associated with higher achievement (see Figure 1.). Although the *t*-test indicates that there is not a significant difference between the groups this finding is consistent with previous research (McNeely et al., 2002; Thompson et al., 2006). If academic achievement were not distributed evenly between the two groups it would be a confounding variable. The cumulative student average on the four-teacher team was 92.6 while the cumulative student average on the two-teacher team was 93.0. A *t*-test which compared the levels of academic achievement between the two teams

indicated that the students did not differ significantly in their levels of achievement, $t(124) = -.754, p = .452$. Therefore achievement is not a confounding variable.

When the mean for males on both teams was compared to the mean for females on both teams the t -test for gender approached significance, $t(124) = -1.851, p = .067$. Male levels ($M = 4.094, SD = .5880$) of SC in the entire sample were slightly lower than female levels ($M = 4.2917, SD .6093$). This would lead one to believe that the gender composition of the two teams could have an impact on the overall mean SC score for each sample. In fact, the gender composition on the two teams was slightly different. While the four-teacher team had more girls than boys, the two-teacher team had more boys than girls (see Figure 2.). Although the t -test for gender was not significant one might expect that the four teacher team would have higher levels of SC because of the greater proportion of females. This raised questions about the possible impact of gender differences on SC independent of, or in conjunction with, team teaching model. Table 3 displays the descriptive statistics of the sample based on gender and team configuration which indicated that further analysis was necessary after testing of the central hypothesis.

Although some t -tests approached significance the preceding analyses indicated that the two samples were not significantly different based on race, 504 support, reading/writing support, parental marital status, academic achievement, or gender. As a result, an independent samples t -test was conducted to evaluate the hypothesis that students on the two-teacher team perceive higher levels of SC than students on the four-teacher team. The test was significant, $t(124) = -3.097, p = .002$ and supported the hypothesis. Students on the two-teacher team ($M = 4.427, SD = .549$) perceived

significantly higher levels of SC than their counterparts on the four-teacher team ($M = 4.082$, $SD = .6013$).

Because the gender differences in SC approached significance, and because gender was not evenly distributed between the two teams, further analysis was conducted to investigate possible difference in gender between, and within the samples. Several independent samples t-tests were carried out in an effort to compare levels of SC among the different subgroups created by gender and team (see Table 3.).

A comparison of SC levels between girls on both teams was carried out through a t-test, and the same comparison was conducted for males on both teams. Males on the two-teacher team ($N = 23$) had a mean of 4.246 while the males on the four-teacher team ($N = 39$) had a mean of 4.0043. The t-test revealed that this difference in means is not significant, $t(60) = -1.585$, $p = .118$.

When the same analysis was conducted for females an interesting finding came to light. The girls on the two-teacher team ($N = 18$) had a mean of 4.657, while the girls on the four-teacher team ($N = 46$) had a mean score of 4.1486. The t-test which compared these two groups was significant, $t(62) = -3.219$, $p = .002$, and indicated that although no significant difference in SC levels were observed in males on both teams, there was a significant difference observed between females on both teams.

This raised the question of how SC means differed within the groups based on gender. There was no significant difference between males ($M = 4.0043$, $SD = .59664$) and females ($M = 4.1486$, $SD = .6037$) on the four teacher team, $t(83) = -1.104$, $p = .273$. There was, however, a significant difference between the male ($M = 4.246$, $SD = .55247$) and female ($M = 4.6574$, $SD = .46256$) means on the two-teacher team, $t(39) = -2.535$, p

= .015. Although gender did not make a significant difference in SC scores on the four-teacher team it did make a significant difference on the two-teacher team.

This analysis indicates that the females on the two-teacher team were the notable sub-group within the sample. They had significantly higher SC means than the boys on their own team, as well as the girls, and the boys, on the four-teacher team. None of the other subgroups had significant differences when compared to each other.

Because results of the *t*-tests indicate that gender and academic achievement approach significant levels of difference in SC, a multiple regression was conducted. The variables which reached, or approached, significance during the initial *t*-tests were included in the model as predictor variables. These variables included gender, achievement, and team teaching model. The criterion variable was individual student means on the SC survey. Using the simultaneous, or standard method, a significant model emerged: $F(3,122) = 5.328, p = .002$. The model explains 9.4% of the variance (Adjusted $R^2 = .094$) in SC. Table 4 displays information for the predictor variables that are included in the model. Team teaching model (Beta = .277, $p = .002$) had the greatest impact on SC. Gender approached significance (Beta = .162, $p = .074$) while achievement (Beta = .093, $p = .304$) did not contribute significantly to levels of SC.

The *t*-test comparisons of SC suggest that there is a possible interaction effect between gender and team teaching model. To test the significance of this interaction an interaction term was created and added into the multiple regression described above. The new model remained significant ($F = 4.409, p = .002$) but the interaction term did not reach significant levels (Beta = .161, $p = .211$). This was most likely due to the small

number of females on the two-teacher team ($n = 18$ out of a total of 126 participants). As a result, the model which included the interaction term appeared to lack power

A post-hoc between-subjects ANOVA was conducted to investigate the power present in the interaction between gender and team (see Table 4.). Results indicated that gender ($F = 6.38, p = .013$) and team configuration ($F = 11.67, p = .001$) both have a significant main effect on SC. The interaction of these two variables, however, failed to reach significant levels ($F = 1.47, p = .227$) in this study. The power of gender (.707) and team (.923) were significantly higher than the power of the interaction of these two variables (.226). This analysis supported the theory that an interaction was taking place but that it was not being demonstrated statistically due to a lack of power which resulted from the small number of female participants on the two-teacher team.

Due to the lack of power in the gender-team interaction, two multiple regressions were conducted. First a regression was conducted for just the males in the study to investigate the impact of team teaching configuration on male levels of SC. This model included only team teaching configuration and academic achievement as predictor variables because gender was being controlled for by selecting only males cases for the analysis, and because these were the only variables which reached, or approached, significance during the t -tests. The overall model was not significant $F(2,59) = 2.342, p = .105$, and accounted for only 4.2 percent of the variation within SC (Adjusted $R^2 = .042$). When the same analysis was conducted for just females the model did reach statistical significance, $F(2,59) = 5.105, p = .009$, and accounted for 11.5 % of the variation in SC (Adjusted $R^2 = .115$). Within the model, the variable of team teaching

configuration reached significant levels among the female participants with a *Beta* of .379 ($t = 3.194, p = .002$). The other variables did not reach significant levels.

Because the post-hoc analyses showed that team teaching configuration explained a significant amount of variance in SC among girls, but not boys, there is a likely interaction effect between gender and team on SC. If there were more female participants on the two-teacher team the power of the model would increase and would likely bear this out. Due to the lack of power this study cannot conclusively state that the interaction effect is present. It does, however, provide important implications for future research.

Chapter Five: Discussion

Summary of Results

T-tests showed that the samples did not differ significantly based on gender, race, parental marital status, reading/writing support, 504 support, or achievement. While gender and achievement approached significance, Team status was the only factor that had a significant impact on SC. Students on the two-teacher team reported significantly higher levels of SC than did their counterparts on the four-teacher team.

Closer analysis, however, showed that the female students on the two-teacher team possessed the highest levels of SC. This finding suggested a possible interaction effect between team-teaching status and gender. A one-way between-subjects ANOVA was carried out which showed that gender and team teaching status both had significant main effects. The interaction was not significant, however, because there was a lack of power due to the small number of female participants on the two-teacher team.

Because these variables approached, or reached, significance during t-tests, achievement, gender, and team teaching model were entered into a multiple regression which yielded a significant model that explained almost 10% of the variance in SC. Although the interaction effect between gender and team was suspected, but not demonstrated in the previous analyses, Post-hoc analyses were conducted through two different regression analyses based on gender. A regression which included just male participants showed that neither team nor achievement accounted for a significant amount of variability in SC among males. A regression that included only females showed that team teaching model was a significant predictor of SC for females. This indicates that there was an interaction effect that was not demonstrated because of the lack of power

identified by the ANOVA. It is very possible that the interaction between team and gender would have been observed if there were more female participants on the two-teacher team.

Limitations of the Study

There are a number of limitations in this study. One of the major confounding variables is teacher personality and/or teaching style. The teachers on the two teacher team volunteered because they were willing, and confident enough, to take on the challenge of teaching two core classes. That in itself speaks to their attitude toward teaching and the possibility of a self-selection bias which may account for possible differences between the teachers. Although efforts were made to qualitatively describe the learning environments of both teams, a quantitative measurement was not obtained. It is possible that SC is impacted by teacher personality and/or teaching style. Because these variables were not assessed quantitatively it is difficult to definitively evaluate their impact on SC.

The results of this study may not generalize very well to other populations because all students in this study attend the same school and live in the same community. Ideally, a larger sample of students drawn from a number of schools which employ each team-teaching model would improve the degree to which the current results would generalize to other populations. In addition, this study cannot speak to populations of students who are not in 6th grade.

Implications for Theory

The stage-environment-fit theory (Eccles et. al, 1993) suggests that students may crave a less sheltered setting as they get older and their developmental needs change. It

appears that when students spend more time with their teachers they develop higher levels of SC (especially among girls). It is important, however, to keep the developmental needs of the students in mind. As students get older higher levels of SC are likely fostered by meeting the developmental needs such as increased autonomy, and acceptance by peers. The extra time that 6th grade students spend with their teachers may benefit 6th graders, but it may have less of a benefit as students get older and their developmental need change. By 7th grade, students may feel that they do not need, or want, the smaller environment that is cultivated by the two-teacher team.

An individual's propensity to develop relationships is mediated by a number of factors. Shochet et al. (2007), for example, showed that students who reported closer connections to their parents also reported closer connections to their teachers and their schools. Many of the control variables used in this study are external factors which only accounted for a small percentage in the variance of SC. It is quite possible that the development of SC is driven more by internal factors than external factors.

Students on two-teacher teams spend twice as much class time with their teachers than their counterparts on four-teacher teams. This dynamic, however, is likely a double edged sword. The team-teaching model is merely a context within which student-teacher relationships develop. When the student – teacher relationship is a positive one, it is logical to assume that spending more time with that teacher will foster a stronger connection and benefit students in a variety of ways. However, Wallace (2007) suggests that teachers who lack interpersonal skills probably present a detriment to the social bonding of their students. One might expect students to suffer in a variety of ways

because they are forced to spend twice as much time with a teacher to whom they do not feel a strong connection.

Characteristics such as teacher personality, teacher style, disciplinary techniques, and classroom management may all impact the student-teacher relationship apart from the team teaching model within which they develop. All the teachers in this study have, by and large, demonstrated the ability and propensity to develop positive relationships with their students. The outcomes could have been vastly different if those same teachers were not as gifted at, or motivated to, develop positive relationships with their students. Teachers who lack the interpersonal skills to connect with their students certainly do not cultivate an environment that promotes connectedness.

Implications for Research

Future research should focus on the interaction between gender and team interaction. Several researchers (Bonny et al., 2000; Thompson et al., 2006) have found that there are gender differences in levels of SC so it is plausible that gender moderates the impact of other variables such as team teaching configuration. Future research may be able to provide more conclusive evidence about the benefits of two-teacher teams for girls in 6th grade.

Researchers may also focus on the impact of teaching style and/or teacher personality. While classroom management (McNeely et al., 2002) and disciplinary methods (Thomas & Smith, 2004) have been shown to have significant impacts on the development of SC, few researchers have investigated how a teacher's personality affects SC. This variable was a confound in the present research due to the relatively small sample size, but it could also cloud the results of research studies that utilize larger

samples with more teachers. Explaining how a teacher's personality and perhaps how the student-teacher personality match, or mismatch, impact student levels of SC would add valuable information to the research base.

Future researchers who use the same instrument should consider how younger students interpret questions. While Whitlock's survey was very reliable, it was used with samples of students in the eighth, tenth, and twelfth grades. These older students certainly have more advanced cognitive ability, and likely have more experience reading and interpreting surveys. These factors may have led to higher validity of the instrument.

Future researchers may also examine the relationship between SC and other variables related to team teaching such as "looping Teams." A looping team is one in which there are four teachers who teach two grade levels. Students stay on the team for two years and have the benefit of not having to transition to new teachers in their second year. Instead they are able to build on their relationships with those teachers for a second year.

Implications for Practice

Middle Schools that utilize team teaching should consider implementing the two-teacher team model. This model has a clear benefit for females and does not appear to harm males in any way. Because 6th grade is a transitional year from elementary school to secondary school it is a logical step to ease that transition by moving from one teacher in fifth grade, to two teachers in sixth grade, before transitioning to four teachers in seventh grade.

Teaching on a two-teacher team may be more challenging for teachers to teach two different core classes because they are forced to teach two subjects rather than one,

but doing so is not outside of their qualifications. Sixth grade teachers in the state of New York maintain elementary teaching certification which allows them to teach all four core subject areas to students between kindergarten and sixth grade.

Conclusion

The present research demonstrates that team teaching configuration explains a significant amount of the variance in SC among 6th grade students in a suburban school. In addition, there is a likely interaction effect between team teaching configuration and gender which allows females, in particular, to benefit from smaller teaching teams. This is valuable information for middle schools that wish to increase their ability to meet the needs of their students because higher levels of SC are associated with a number of positive academic and social-emotional outcomes.

As a hallmark characteristic of middle schools, team teaching is employed in an effort to meet the social-emotional needs of students. It stands to reason, then, that middle schools would be interested in knowing which team teaching model does the best job of meeting those needs. Using two teacher teams, instead of four teacher teams, is quite practical at the 6th grade level because 6th grade teachers have elementary certification which allow them to teach all four core area subjects.

Because secondary teachers lack certification which allows them to teach all four subject areas two teacher teams are not a viable option in the upper grade levels. There are, however, different team teaching models which may have similar impact. Looping teams, for example, consist of four teachers who each teach two grade levels. They keep the same students for two years which allow students to start their second year on the team with already established connections to their teachers.

There are a number of variables which impact a student's feeling of connectedness to school. Many of these variables are demographic in nature and are outside of the control of schools. Socio-economic status, parental marital status, and racial status are but a few of factors which schools have no control over, but which have an established impact on SC. Team teaching model, however, is certainly a viable option that is both practical and within the control of schools.

Team teaching configuration, however, is but one factor that can have an impact on a student's level of SC. Because teams are only commonly used at the middle school level researchers, and schools, must expand the knowledge base to discover other measures that can be taken by schools to facilitate higher levels of SC among all grade levels of students. Schools must take measures to ease the loneliness and hopelessness of students in all grade levels who lack a strong connection to their school.

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Tables

Table 1

Survey Item Factor Loadings

Item	Factor Loading
1. Adults at my school care about people my age.	.696
2. Adults at my school don't respect what people my age think. (reverse worded and coded)	.629
3. At school there is a teacher or some other adult who believes that I will be a success.	.336
4. Adults in my school listen to what I have to say.	.810
5. Adults in my school push me to do my best.	.528
6. I care about the school I go to.	.513
7. I trust the adults in my school.	.785

Table 2

t-test Comparisons of SC Means Between Groups Within the Sample.

Variables Compared	<i>t</i>	<i>p</i>	SC Mean	SD
Race	-.442	.659		
White			4.185	.622
Minority			4.255	.489
504 Support	-1.28	.202		
Support			4.533	.447
None			4.18	.608
Reading/Writing Support	-1.11	.267		
Support			4.667	.471
None			4.187	.605
Parental Marital Status	1.08	.281		
Divorced			4.067	.674
Married			4.219	.591
Academic Achievement	1.97	.051		
High			4.249	.587
Low			3.994	.636
Gender	-1.85	.067		
Female			4.292	.609
Male			4.094	.588

Note. *p* values below .05 are considered significant.

Table 3

Descriptive Statistics by Gender and Team

Team	Male			Female		
	M	SD	N	M	SD	N
Two Teacher	4.246	.552	23	4.657	.465	18
Four Teacher	4.004	.597	39	4.149	.604	46

Table 4

Regression Analysis of SC by Team teaching Model and Control Variables

Variable	<i>Beta</i>	<i>t</i>	<i>P</i>
Gender	.162	1.802	.074
Achievement	.093	1.032	.304
Team Model	.277	3.225	.002

Table 5

ANOVA of Between – Subjects Main effects and Interaction Effects

Source	F	<i>p</i>	<i>Observed Power</i>
Gender	6.379	.013	.707
Team	11.666	.001	.923
Gender*Team	1.472	.227	.226

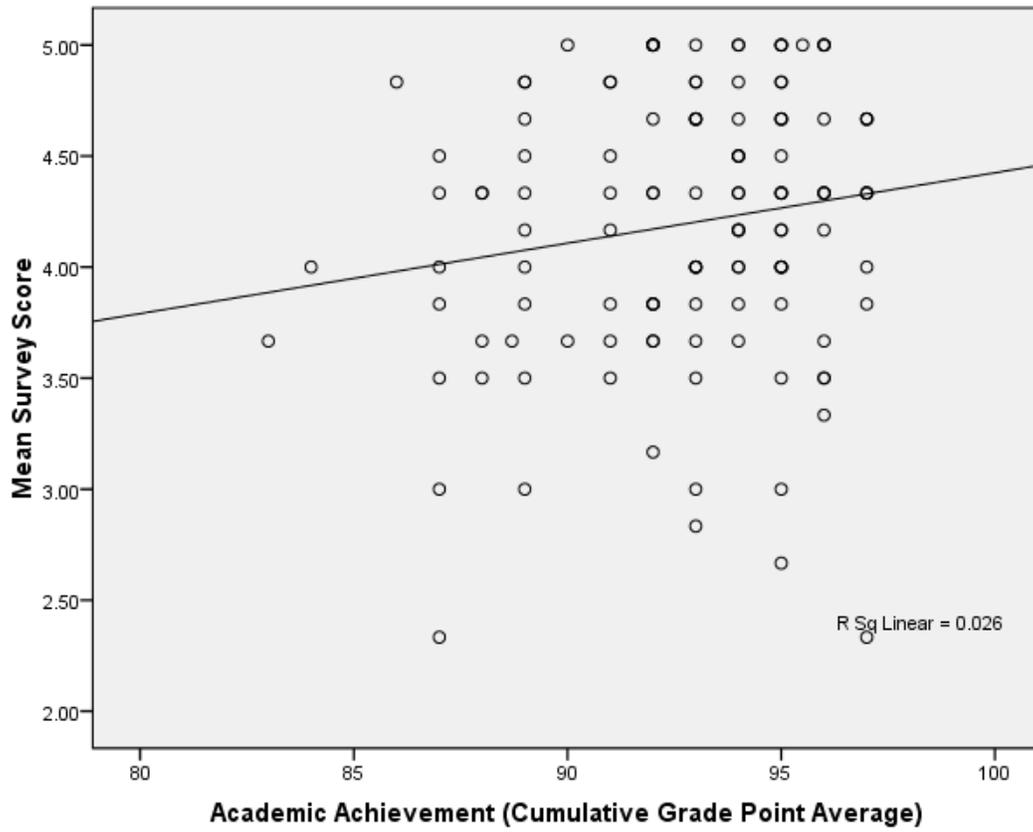


Figure 1. Relationship Between Academic Achievement and School Connectedness

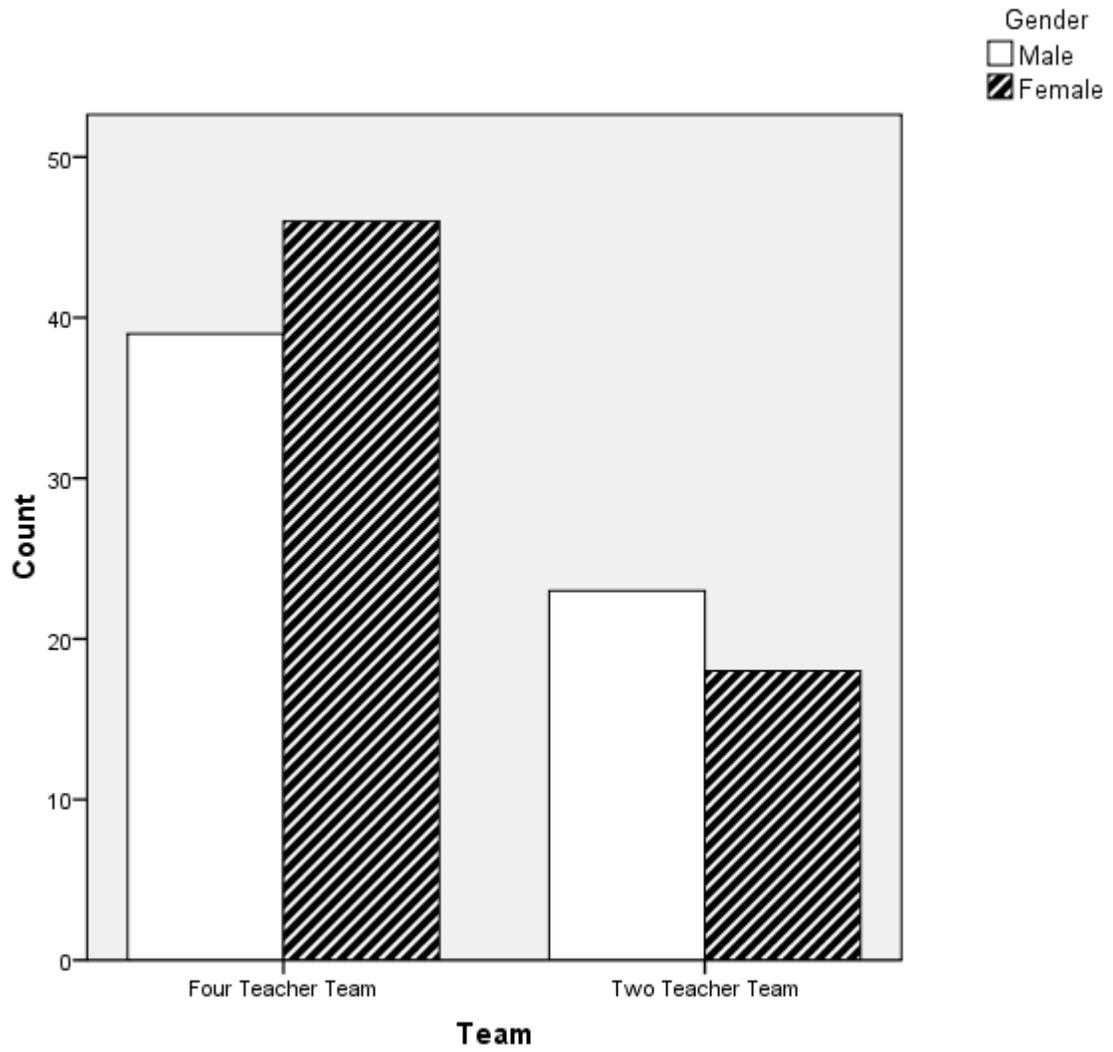


Figure 2. Gender Composition of Each Team

Appendix A

Research Consent Form

Dear Parent/Guardian:

My name is Geoff Bones and I am the school psychologist at Calkins Road Middle School (CRMS). In addition to my duties at CRMS I am currently working on attaining a doctorate in school psychology through Alfred University. One of the requirements of this program is completion of a doctoral dissertation. I would like to invite your student to participate in my study of their perceptions about the adults in their school. The goal of the research is to understand how, if at all, team teaching configuration impacts those perceptions.

In this study, students will be asked to fill out a short seven question survey that should take approximately ten minutes to complete. The disruption to their normal class schedule will be minimal. Demographic data will be collected through the school's database to describe the sample in general, but individual student's characteristics will not be identified. In addition, students will use ID numbers rather than names to preserve confidentiality, and data will only be analyzed by group averages rather than individual responses.

This research proposal has been approved by Alfred University, the CRMS building principal, Scott Reinhart, and Pittsford School District Pupil Services Director, Jackie Roblin. Student participation in the study is completely voluntary, however. If you do not want your student to participate in this study please contact me via phone (267-3859) or e-mail at geoffrey_bones@pittsford.monroe.edu. If you do not contact me by May 3rd it will be assumed that consent is implied, and your student will be included in the study.

If you have any questions please feel free to contact me, my research advisor, or the chairperson of the Human Subjects Review Committee (HSRC) at Alfred University.

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Appendix B

Student ID Number _____

This survey asks questions regarding your feelings about the adults in your school. Your responses will be confidential so please put your student ID number rather than your name at the top of this survey. There are no right or wrong answers, but please take your time and give thoughtful responses. Circle one of the following options for each question: 1 for 'strongly disagree', 2 for 'somewhat disagree', 3 'for not sure', 4 for 'somewhat agree', or 5 for 'strongly agree'.

1. Adults at my school care about people my age.

Strongly Disagree		Not Sure		Strongly Agree
1	2	3	4	5

2. Adults at my school don't respect what people my age think.

Strongly Disagree		Not Sure		Strongly Agree
1	2	3	4	5

3. At school there is a teacher or some other adult who believes that I will be a success.

Strongly Disagree		Not Sure		Strongly Agree
1	2	3	4	5

4. Adults in my school listen to what I have to say.

Strongly Disagree		Not Sure		Strongly Agree
1	2	3	4	5

5. Adults in my school push me to do my best.

Strongly Disagree		Not Sure		Strongly Agree
1	2	3	4	5

6. I care about the school I go to.

Strongly Disagree		Not Sure		Strongly Agree
1	2	3	4	5

7. I trust the adults in my school.

Strongly Disagree		Not Sure		Strongly Agree
1	2	3	4	5

Appendix C

Debriefing Statement

Thank you for your thoughtful participation in this study. Your answers will help us understand how connected you feel to the adults in your school. If this survey has raised any questions, or concerns, about the adults in your school please feel free to contact Mr. Bones, or your school counselor, in the counseling office (C13). Thank you again for your participation.