Development of an instrument designed to measure student perception of school connectedness

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Graduate College Faculty Representative
ABSTRACT

Development of an Instrument Designed to Measure Student Perception of School Connectedness

by

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The purpose of this study was to design and validate an instrument to measure student perception of school connectedness. The intended use for this instrument was to evaluate school-based health interventions such as “Planned Approach to Healthier Schools” (PATHS; Lounsbery, Gast, & Smith, 2005), and to potentially examine other important correlates of student perception of school connectedness, such as attendance in school, referral rates, as well as school drop out and graduation. The development of the instrument included a series of steps which comprised (a) identification of a purpose, (b) specification of an underlying theory, (c) item development, (d) content validity, and (e) item revision.

The second phase of this study was to pilot the instrument for the purpose of validation. Validation included the following four steps: (a) item analysis,
(b) reliability, and (c) construct validity. The instrument was piloted in Clark County School District (CCSD) and students in grades 6-12 were invited to participate. A sample of 363 students participated in the validation of the instrument.

The analysis included descriptive statistics, item analysis and principal components analysis (PCA). Cronbach's Alpha (α) was calculated in order to assess the reliability of items and item characteristics.

A 43 item instrument intending to contain items that would measure student perception of school connectedness according to five characteristics evolved. The characteristics included (a) acceptance, (b) caring, (c) fairness, (d) teacher connectedness, and (e) student connectedness. The results of the item analysis and PCA indicated a two component, 21 item instrument would explain more variance overall, than the original 43 item instrument. The two components identified in the 21 item instrument were determined to be related to student perceptions of teachers and student perceptions of student school connectedness.
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CHAPTER 1

INTRODUCTION

Background

From 1980 to 2000 the prevalence of overweight among adolescents in the United States aged 12-19 years has tripled, increasing from 5% to 15% (CDC, 2004). Critically, while the prevalence of adolescent health risk behaviors such as physical inactivity and poor nutrition has increased (CDC, 2004), the relationship between student perception of school connectedness, student achievement, and health risk behaviors has been established (Blum, 2005; McNeely, Nonnemaker, & Blum, 2002; Resnick et al., 1997).

The recent trends in health behaviors and student achievement inspired researchers representing government, education, and health sectors, to gather for a conference in June 2003 (Blum, 2005). One goal of the conference was for researchers to determine a clear definition for student perception of school connectedness. The “Wingspread Declaration on Student School Connectedness” defined student perception of school connectedness as the belief of students that adults in the school care about their learning in addition to them as individuals (Blum & Libbey, 2004). The “Wingspread Declaration” made a strong statement for the relevance of research involving student perception of school connectedness. The conference put student school connectedness in the
spotlight, highlighting its potential to impact student outcomes including (a) engagement, (b) achievement, and (c) health risk behaviors. Most importantly, the conference identified that a clear definition of connectedness is lacking (Blum, 2005) and measurement tools specifically intending to measure student perception of school connectedness are needed.

In addition to recommendations from the Wingspread conference, pilot results from Planned Approach to Healthier Schools (PATHS; Lounsbery et al., 2005) showed that student perception of (a) acceptance (b) caring (c) fairness, (d) teacher connectedness, and (e) student connectedness were consistently identified in the school setting where desired health behavior changes occurred (e.g. increased physical activity). Based on these findings it is clear that future PATHS intervention studies should incorporate a measure of student perception of school connectedness that specifically includes the characteristics identified in the pilot intervention (acceptance, caring, fairness, teacher connectedness, and student connectedness). Such an instrument, however, could not be located.

Research Problem

Student perception of school connectedness may be related to student outcomes including engagement, student achievement, and health risk behaviors. Being able to identify specific characteristics that may impact student perception of school connectedness using a valid and reliable instrument may help researchers and school officials in school improvement efforts. Additionally,
Research Question

This study intends to answer two questions. First, what are the characteristics of student perception of school connectedness? Second, can a valid and reliable instrument be developed to measure student perception of school connectedness?

Statement of Purpose

The purpose of this study was to develop a valid and reliable instrument to measure student perception of school connectedness. The validated instrument will be used to measure the impact of PATHS on student perception of school connectedness.

Significance

The intent of this project is to collect data that will be used to assess item and instrument characteristics. The data will be used to identify items needing revision or replacement and to verify the number of characteristics which adequately measure student perception of school connectedness. The revised instrument will be used to evaluate the impact of the PATHS intervention by determining the relationship between the intervention, student perception of
school connectedness, and other important variables such as health risk behavior, academic achievement, attendance, and graduation rates.

Limiting Factors

Scope

The scope of this study was to develop and validate an instrument that will measure secondary school students’ perceptions of school connectedness. The instrument evolved from pilot data from “Planned Approach to Healthier Schools” and a thorough review of the literature. The items were developed to measure student perceptions of the following characteristics: (a) acceptance, (b) fairness, (c) caring, (d) teacher connectedness, and (e) student school connectedness.

Assumptions

The assumptions of the study are as follows:

1. Acceptance, fairness, caring, teacher connectedness and student connectedness are characteristics that comprise student perception of school connectedness.

2. Participants interpreted the instrument items accurately.

3. Participants were earnest in their responses (e.g. students read each statement completely and responded genuinely).

4. Principal Components Analysis (PCA) accurately identified the factors and items which belong in an instrument designed to measure student perception of school connectedness.
Limitations

1. In order to validate the 43-item instrument a sample size of 215 to 430 students is recommended (Pallant, 2001; Tabachnick & Fidell, 1996).
2. The instrument was specifically designed for use with secondary school students.
3. High margin of error exists in attempting to measure perception.
4. A number of factors outside of the school context may be influencing student perceptions of school connectedness such as poverty and abuse.
5. Student perception of school connectedness may have predictive qualities whereby students who are older may have strong perceptions of connectedness and older students who do not, drop out of school.

Operational Definitions

1. Student perception of school connectedness - the degree to which students perceive they have membership in the school. It is hypothesized in this study that student perception of school connectedness is affected by characteristics of the learning environment including the following:
   a. Student perception that they are accepted in the learning environment
   b. Student perception that they are cared for in the learning environment
   c. Student perception that they are treated fairly in the learning environment
d. Student perception that their teachers feel connected to the learning environment

e. Student perception that other students feel connected to the learning environment
CHAPTER 2

REVIEW OF LITERATURE

The study of student perception of school connectedness may be important given school principals' and administrators' focus on positively impacting student outcomes. Student perception of school connectedness may play an important role in shaping behavior, thereby impacting school climate and hence, potentially affecting student outcomes. The ability to measure student perception of school connectedness may assist teachers, administrators, and researchers by guiding reform efforts, assisting in teacher training and school improvement, and aiding in the development of interventions designed to improve student outcomes.

While measuring school climate may not be novel, few instruments incorporate the measurement of student perception of school connectedness as a primary dimension. Student perception of school connectedness has been examined from a variety of theoretical contexts (Catalano, Haggerty, Oesterle, Fleming, & Hawkins, 2004; Libbey, 2004). School environment and peers have been examined previously as individual contexts, which influence adolescent's general perceptions of connectedness and their behavioral outcomes (Eccles, Early, Frasier, Belansky, & McCarthy, 1997). However, few studies have examined the two contexts simultaneously (Eccles et al., 1997). Therefore, additional instrumentation that simultaneously (a) focuses on the measurement
of student perception of school connectedness and (b) examines the influence of peers, teachers, and the school environment on student perception of school connectedness is needed.

The intent of this study is to develop an instrument, which incorporates student perception of school connectedness as a primary dimension. Such an instrument could prove useful in the measurement and evaluation of school environments. In this manner, characteristics that impact how students feel about school may be identified in order to assist teachers, administrators, and researchers in school improvement processes. This review intends to (a) examine student perception of school connectedness and its relationship to important student outcomes, (b) show how student perception of school connectedness has been examined in previous studies, and (c) describe theoretical models which may be applied to the measurement of student perception of school connectedness. For organizational purposes this chapter is divided into three sections: (a) introduction, (b) research, and (c) measurement of student perception of school connectedness.

What follows next is the literature review beginning with the first section, introduction, which seeks to characterize how student perception of school connectedness has been referred to in the literature and to clarify why it may be an important variable of concern to school and health officials. The second section of the review, research, examines studies which have identified school connectedness as an important variable. The third section of the review, measurement, introduces the theoretical model of school membership and
examines methodology that has been used in the development and revision of other similar instruments.

Introduction

Student perception of school connectedness has been examined in the literature from a variety of perspectives. In educational research, student perception of school connectedness has been branded both as a construct and as a dimension of a construct. More prevalent in the last decade, student perception of school connectedness has been identified, described, and analyzed using an array of characteristics and definitions. Yet, while student perception of school connectedness has become more established in educational research, a clear practical definition is lacking (Blum, 2005; Libbey, 2004; McNeely & Falci, 2004).

One reason for the lack of a clear definition may be the broad scope of previous studies including connectedness (Eccles, et al., 1997; Eisenberg, Neumark-Sztainer, & Perry, 2003; Mansour et al., 2003; McNeely & Falci, 2004; McNeely et al., 2002; Resnick, et al., 1997; Thomas & Smith, 2004; Wilson, 2004;), disconnectedness (Bonny, Britto, Klostermann, Hornung, & Slap, 2000), bonding to school (Catalano, et al., 2004; Hawkins, Guo, Hill, Battin-Pearson, & Abbott, 2001) identification (Finn, 1989; Voelkl, 1997), engagement (Finn & Voelkl, 1993, Simons-Morton & Crump, 2003), belongingness (Goodenow & Grady, 1993; Ma, 2003), attachment (Mouton & Hawkins, 1996), and sense of school as a community (Battistich & Hom, 1997).
Several studies have described connectedness as the measure of a relationship between students and the school environment (McNeely & Falci, 2004; McNeely et al., 2002; Resnick et al., 1997). The “Wingspread Declaration on School Connections” (2004), based on a comprehensive review of research, defined school connection as the belief of students that, adults in the school care about their learning in addition to them as individuals. According to the literature, the following are prerequisite for student connectedness to occur (a) high academic expectations which are supported in the learning environment (Klem & Connell, 2003; NRCIM, 2004), (b) positive adult relationships (Osterman, 2000), and (c) physical and emotional safety (Lee & Smith, 1999). In contrast, school disconnectedness is described as what happens when students do not feel a sense of caring and a sense of closeness to school personnel and the school environment. Students who are disconnected may also be described as alienated (Bonny et al., 2000).

Examination of student perception of school connectedness becomes more complex when additional related studies are considered. A more complete review, revealed several studies which examined constructs similar to school connectedness including attachment (Eccles et al., 1997; Eisenberg et al., 2003; Mouton & Hawkins, 1996; Wilson, 2004), bonding (Catalano et al., 2004; Hawkins et al., 2001; Thomas & Smith, 2004), identification (Finn, 1989; Voelkl, 1997), sense of belonging (Goodenow & Grady, 1993; Ma, 2003), and perception of closeness to school personnel and the school environment (Mansour et al., 2003).
Several of the studies have examined constructs in a different context; however, the case may be made that all have a strong association to student perception of school connectedness (e.g. sense of belonging, identification, valuing, and bonding to school). For example, a sense of belonging is the degree, to which students feel accepted, respected, included, and supported by the school environment (Goodenow & Grady, 1993; Ma 2003). Additionally, belonging has been defined as the perception that one is important (Finn, 1989). Student identification is described as having a sense of belonging and valuing school and the outcomes related to school (Voelkl, 1997). Valuing or student conviction that school related outcomes are important has also been highlighted in the literature (Pintrich & DeGroot, 1990). Valuing has also been identified as the appreciation of success in school-related goals (Voelkl, 1997). Bonding to school is identified synonymously with school connectedness and is characterized by two components, attachment and commitment (Catalano et al., 2004).

Given the attention in the literature relative to student perception of school connectedness and its associated constructs, the potential implications, especially where student outcomes are concerned, should be clear. Today, school principals and administrators are increasingly concerned about factors, which impact student outcomes. Because of this, studies, which identify the potential impact of student perception of school connectedness on positive student outcomes, are meaningful. The need to measure student perception of school connectedness and examine the relationships between student
achievement and health risk behaviors provides additional support for the development of a new instrument.

The scope of outcomes examined by the aforementioned constructs provides detail and depth in understanding complex relationships between student perceptions of their physical and social environment, and student outcomes. Several potential outcomes are identified in the literature as related to student perception of school connectedness including increased academic engagement (Finn & Voelkl, 1993), increased academic achievement (Bonny et al., 2000; Finn & Voelkl, 1993; NRCIM, 2004; Resnick et al., 1997), increased academic motivation (Goodenow & Grady, 1993), and a reduction in delinquent behavior (Battistich & Hom, 1997; Catalano et al., 2004; Finn, 1989; Finn & Voelkl, 1993; Hawkins, Catalano, & Miller, 1992; Hawkins et al., 2001; Hirschi, 1969; Resnick et al., 1997).

In addition to school and academic related outcomes student perception school connectedness has been associated with avoidance in health risk behaviors (Bonny et al., 2000; Eccles et al., 1997; Resnick et al., 1997). Studies involving National Longitudinal Adolescent Health survey data (Longitudinal Add Health; Udry & Bearman, 1994; 1996), consistently find that student perception of school connectedness is associated with a lower incidence of a majority of health risk behaviors (Bonny et al., 2000; Hawkins et al., 1992; McNeely et al., 2002; McNeely & Falci, 2004; Resnick et al., 1997). In one study student perception of school connectedness was found to be protective against every health risk behavior except teen pregnancy (Resnick et al., 1997). More detail about studies
that utilized Longitudinal Add Health data will be presented in the research section of this review.

These studies highlight the importance of designing school health interventions that have the potential to change student health risk behaviors and concurrently, empower students to feel a greater sense of connection to their school. In addition, these studies heighten awareness of the potential relationship between how students feel about school and their engagement in health risk behaviors. When students do not feel connected to their school an increase in negative outcomes related to engagement, student achievement, and health risk behaviors may occur (Battistich & Hom, 1997; Bonny, et al, 2000; Hawkins, et al., 2001; Resnick, 1997). Understanding this important association provides motivation for schools to deliver programs with two specific goals. One, school programs should be designed to help students to feel connected and two, school programs should educate students about health behaviors and the inherent risks involved. Future research should consider how schools impact student perspectives about school in an attempt to increase positive student outcomes.

Research

The next section of the literature review includes a summary of research studies that included constructs and variables related to student perception of school connectedness. The studies are organized contextually according to one of two perspectives, the student or the school. Studies sharing similar characteristics are introduced together. In order to organize this section of the
review, only variables that should potentially be considered in the measurement of student perception of school connectedness are included. In some cases, the results of a study were presented.

A search for literature revealed several studies which examined student perception of school connectedness. A comprehensive review of literature by Libbey (2004) revealed nine constructs related to student perception of school connectedness including (a) academic engagement, (b) belonging, (c) discipline/fairness, (d) extracurricular activities, (e) liking school, (f) student voice, (g) peer relations, (h) safety, and (i) teacher support. The studies reviewed by Libbey (2004) form the foundation of this section of the review.

Most of the studies located examined variables from a student context. The studies which measure student context include (a) attachment, (b) orientation, (c) school bonding, (d) school membership, (e) engagement, (f) involvement, (g) identification and (i) teacher support. The remaining variables are associated with the school context and include (a) school connectedness, (b) school regulation, (c) school autonomy, and (d) school climate. What follows is a synthesis of common themes and variables identified in the literature related to student perception of school connectedness.

Studies examining attachment, orientation to school, school bonding and school membership have been designed based on similar theoretical frameworks. Commitment, attachment, involvement, and belief in school rules are variables that have been used to evaluate school bonding and school membership and are based on Hirschi's social bonding theory (Hirschi, 1969).
and Wehlage's theory (Goodenow, 1993; Hagborg, 1998; Hawkins, et al., 2001; Jenkins, 1997; Wehlage, Rutter, Smith, Lesko, & Fernandez, 1989). An additional study by Brown and Evans (2002), attempts to measure commitment. The variables used to assess commitment in the study include power, belonging, and belief (Brown & Evans, 2002). These studies consistently found that students' sense of membership (Goodenow, 1993; Hagborg, 1998; Hawkins, et al., 2001; Jenkins, 1997; Wehlage et al., 1989) and commitment (Brown & Evans, 2002) are impacted by peer influence.

The relationship between school bonding and student-school relationships has been examined previously (Jenkins, 1997; Hawkins, et al., 2001). Two studies were located (Gottfredson, Fink, & Graham, 1994; Mouton, Hawkins, McPherson, & Copley, 1996) that measured student attachment to school. The studies examined the impact of being liked by people in the school (Mouton et al., 1996) and student perception of teacher respect (Gottfredson et al., 1994) on school bonding and found that students who do not feel they are liked or respected become isolated and lose motivation, potentially leading to failure in school. Another study examined students' positive orientation to school and attempted to measure attitudes toward school and personal value of academic achievement (Jessor, Van Den Bos, Vanderryn, Costa, & Turbin, 1995). The study found student positive orientation toward school to be inversely related to a number of problem behaviors including substance use and delinquency. In addition students who demonstrated positive attitudes toward school were more likely to be engaged in school.

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Additionally, studies focusing on engagement, involvement, and identification with school examined relationships between students and the outcomes of school. Classroom and school academic participation, identification (Finn, 1993; Finn & Voelkl, 1993), self-regulated learning and disruptive behavior (Ryan & Patrick, 2001) have facilitated the measurement of student engagement. Engagement has been defined psychologically as the extent to which students perceive the school environment as warm and supportive (Finn & Voelkl, 1993). Another study employed grades, test scores, homework hours, educational aspirations, and teacher ratings to determine school engagement (Manlove, 1998) and found that a positive relationship existed between homework hours, aspirations and engagement. Student participation in activities has been used to measure student involvement (Caspi, Moffitt, Wright, & Silva, 1998). In a study by Voelkl (1996), identification with school was measured according to a sense of belonging and valuing. The study found that classroom participation and academic achievement were significant predictors of identification with school. The results of the study by Voelkl (1996) highlighted the important relationship between student identification with school and positive student outcomes and provided motivation for the design of an instrument to measure student perception of school connectedness.

Fewer studies could be located which examined student school connectedness from a school context. One study attempts to measure school connection, school regulation, and school autonomy (Eccles et al., 1997). The study identified how much students like school, whether the school program was
effective, and how much involvement students had in decisions affecting them (Eccles et al., 1997). The findings of the study indicated that adolescents with positive interactions were likely to have positive outcomes.

Other studies evaluated school climate, a popular construct in the literature. One such study, attempted to measure several variables including how well students get along with teachers, school spirit, teacher autonomy, and teacher support (Coker & Borders, 2001). The study found the school climate variables significantly influenced the formation of relationships with peers. A review of an additional school climate study showed that support, fairness, and respect appear to be common variables in measuring school climate (Simons-Morton & Crump, 2003). The study found that parental involvement and social support from peers were positively related to school adjustment and engagement. Additional studies related to climate examined teacher support and the extent to which teachers care and are willing to help students (Gottfredson et al., 1994; Mouton et al., 1996) and found that the perception of teacher support was beneficial to the school climate. In summary, the review of research identified potentially important factors and relationships which should be considered in the development of an instrument to measure student perception of school connectedness.

**Description of Studies**

As discussed previously, several studies have utilized the National Longitudinal Adolescent Health Survey to identify factors that may influence adolescent health risk behaviors (Add Health; Bonny et al., 2000; McNeely &
Falci, 2004; McNeely et al., 2002; Resnick et al., 1997). The original Longitudinal Add Health study represented students in grades 7-12 and was conducted in two rounds, two years apart in 1994 and 1996 (Udry & Bearman, 1994; 1996). The survey evaluated the social context including perceived school connectedness or lack thereof, and its effect on a number of variables. The studies utilizing Add Health data consistently identified a strong association between student school connectedness and health risk behaviors (Bonny et al., 2000; McNeely et al., 2002; Resnick et al., 1997; Udry & Bearman, 1994; 1996).

Add Health contains several questions related to school connectedness (McNeely et al., 2004; Udry & Bearman, 1994; 1996, Wilson, 2004). The Add Health survey attempted to measure social belonging and includes the following statements: 1) I feel close to people at this school; 2) I feel like I am part of this school; and 3) I am happy to be at this school (Bollen & Hoyle, 1991; Udry & Bearman, 1994; 1996, Wilson, 2004). Items measuring student perceptions of teachers included (a) The teachers at this school treat students fairly and (b) I feel like teachers at this school care about me (McNeely, et al., 2004; Udry & Bearman, 1994; 1996). For the purpose of this study, the items will be useful for developing an instrument to measure student perception of school connectedness.

Two projects, the Seattle Social Development Project (SSDP) and Raising Healthy Children (RHC; Catalano et al., 2004) include interventions that seek to reduce risk factors and increase protective factors for adolescent health and behavior problems. SSDP and RHC provide theoretical and empirical support
that student school connectedness is a viable measure. Theoretically, the projects are based on the Social Development Model that is characterized by attachment, commitment, involvement, and bonding. Empirically, the SSDP and RHC studies utilized a quasi-experimental design and evaluated outcomes of intervention groups compared to control groups (Catalano et al., 2004). The SSDP and RHC projects have consistently validated that a strong relationship exists between student perception of school connectedness and positive student outcomes.

Additional Studies

The recent escalation of school violence has led school administrators, teachers, researchers, and legislators to evaluate the relationship between how students feel about school and violent behavior. In 1999, the Safe Communities-Safe Schools Initiative (SCSS) was created by the Center for the Study and Prevention of Violence at the University of Colorado, Boulder as a result of the tragedy at Columbine High School in Littleton, Colorado. An intervention was designed based on Comer's School Development Model (Comer, 1980), that emphasizes creating a school climate where students feel safe, value each other, and feel supported in school (Wilson, 2004).

A study was conducted as part of the analysis of the SCSS model which included an instrument with a school connectedness scale (Wilson, 2004). The study measured the relationship between adolescent violence and how students feel about school. The items were identified and reviewed for this study. The scale contained seven items. (a) "I like school," (b) "I look forward to going to
school,” (c) “My teachers tell me when I do a good job,” (d) “My teachers listen when I have something to say,” (e) “I have a teacher who really cares about me,” (f) “All students who break the rules at this school are treated the same, no matter who they are,” and (g) “When someone breaks the rules, teachers and administrators always take appropriate action (Wilson, 2004).”

Another study examined the relationship between peer harassment, how students feel about school, and academic achievement (Eisenberg et al., 2003). One of the school variables identified in this 221-item survey included how students feel about going to school. The single item included for school connectedness does not adequately measure connectedness and the dynamic influences of peers, teachers, and the school as this study intends to do. However, the statement: “How do you feel about going to school” was evaluated using a five response Likert scale ranging from “I don’t like school at all” to “I like school all the time” and may be a useful item (Birnbaum et al., 2002).

The items included in the two studies highlight the need for an instrument which includes student perceptions from multiple contexts including teachers administrators, and the school environment. This is evident because the studies do not utilize instrumentation that adequately measures student perception of school connectedness.

Another study examined the relationship of students’ sense of belonging to their grade level and school (Ma, 2003). Data for this study were collected using the New Brunswick School Climate Study (NBSCS). In this study, student’s sense of belonging was determined to be an outcome (dependent) variable. At
the student level a sense of belongingness was defined by the extent to which students perceived they were accepted, respected, included, and supported in the school environment. Sample items measuring students' sense of belonging include (a) "I feel like I belong at this school," (b) "Often I feel awkward and out of place," (c) "I feel like the teacher likes me," (d) "Often I feel lonely at school," (e) "I make friends at school easily," and (f) "Other children seem to like me" (Ma, 2003). The scale for items ranges from YES to NO.

It is important to identify the limitations of the sense of belonging scale. First, although the items comprising this instrument may be useful, they do not comprehensively address all the dimensions of student school connectedness. Second, in the event the items in the sense of belonging instrument are duplicated, the Likert choices need revision. Students were able to choose YES, yes, sometimes, no, and NO (Ma, 2003). Students may have a difficult time deciding the difference between YES and yes and NO and no, thereby introducing potential confounds.

However, there are strengths of the sense of belonging study. The scales used to measure sense of belongingness in the NBSCS will be helpful in the development of scales for a new instrument. The sense of belonging scale identifies acceptance, respect, being included, and support as important dimensions of belonging. Student perceptions of school connectedness may be impacted by each of these dimensions.
Measurement

The Psychological Sense of School Membership (PSSM; Goodenow, 1993) instrument formed the basis for this study. A detailed description of the scale development, item analyses, validity, and reliability are explained below, as this process will form the foundation of the methods used in this study.

The PSSM instrument designed by Goodenow (1993) considered a variety of contexts including teachers, school personnel, and peers. The items were developed for scales including being liked, personal acceptance, inclusion, respect, and encouragement. The items were written in first person and were five-point Likert scale (Goodenow, 1993; Goodenow & Grady, 1993). Approximately a third of the items were written in a negative direction to ensure students were actually reading the statements ("response set"). Two of the items from the PSSM instrument included (a) "Most teachers at this school are interested in me" and (b) "I feel like a real part of this school" (Goodenow, 1993). These items were helpful in the development of the instrument to measure student perception of school connectedness.

In order to evaluate school membership as a construct, examination of potential scale items occurred by administering the instrument in a series of three studies to young adolescent participants. In this process, the original 42-item list was shortened to 28 before being administered to three samples of 6th, 7th, and 8th grade students from a variety of backgrounds. During the second study involving two schools, two scales were adopted based on an expectancy-value approach whereby motivation for achievement involves a combination of both
expectations for success and valuing the success (Atkinson, 1964; Pintrich & DeGroot, 1990; Goodenow, 1993). After administering the instrument containing new scales and re-written items a shorter version containing 18 items evolved.

In order to reduce the scale items from 42 items to 28 items, and finally to 18 three important steps were taken. First, items were selected based on their relevance to the initial scales being liked, personal acceptance, inclusion, respect, and encouragement. In the second step, the initial list of 42 items was reviewed and redundant items were eliminated. Next, internal consistency was assessed in order to determine the reliability of each scaled item and items with low variability were removed (Goodenow, 1993). The final result was the 18-item questionnaire with four scales including school belonging, friends’ values, motivation, and effort/persistence (Goodenow & Grady, 1993; Hagborg, 1994, 1998).

Hagborg (1994; 1998) conducted two additional studies, evaluating the psychometric properties of the PSSM questionnaire. First, factor analysis was conducted in order to evaluate how many dimensions the instrument measured and discovered that the scale of the original questionnaire appeared to measure three factors called Belonging, Rejection, and Acceptance (Hagborg, 1994). In the preliminary analysis to determine construct validity it was determined that 11 of the 18 items accounted for 35% of the scales variance. The result of the first study was the creation of the PSSM-Brief, in which the original 18-item PSSM questionnaire was shortened from 18 items to 11 items. A second study by Hagborg (1998) evaluated the psychometric properties of the shortened
questionnaire examining internal consistency and scale criterion validity. The results of the study indicated the PSSM-Brief demonstrated criterion validity by comparing high/low groups for a number of dependent variables including grades, time spent on homework, and motivation. In other words, students who received the highest grades, spent the most time on homework, and received the highest scores for motivation also scored highest on the school membership scale.

The methodology described in Goodenow's (1993) and Hagborg's (1994; 1998) work is consistent with other similar studies. For example, a study by Voelkl (1996) set out to measure student identification with school in order to determine if the construct identification should be assessed as part of a single dimension. The 17 items were composed of ten items representing belonging and the seven items representing valuing school and school related outcomes (Voelkl, 1996). Three of the items were borrowed from the PSSM questionnaire developed by Goodenow (1993). The analysis for the study was conducted in two parts including scale development and a comparison of identification with school among gender and racial groups (Voelkl, 1996).

Factor analysis was conducted in order to refine the scales of the instrument and determine if a dual-factor or single-factor model is best to describe student identification with school (Finn, 1989). In the study Voelkl (1996) ran two separate factor analyses, first loading the items in the two-factor model and next loading all items on one factor for identification. In this manner, the results of the two models are compared in order to determine which model is best.
In order to determine the efficacy of the one and two factor analyses Voelkl (1996) used four indices of fit including Goodness of Fit (GFI), the root mean square error of approximation (RMSEA), the nonnormed fit index (NNFI), and chi square: degrees of freedom ratio. Factor-loadings were examined and one item with a factor loading below .25 was eliminated (Voelkl, 1996). Importantly, the factor analysis was run again after the item was eliminated as a means of cleaning up the scales. The results of the identification analysis indicated that belonging and valuing subscales actually measured the same construct, meaning that a one-dimensional scale may work best (Voelkl, 1996).

Another study conducted a needs assessment for drop out and violence by designing a survey which included a scale for school connectedness (Hunt et al, 2002). The study identified factors related to connectedness such as caring, safety, involvement, and trust. In addition the study recognizes that connectedness is influenced by relationships with teachers, peers, and the school. The study used a principal components analysis (PCA) that included Varimax rotation and a scree test. In the initial analysis a five-factor solution was analyzed and items with a factor loading less than .400 on one of five factors were eliminated. The process was repeated, eliminating items, until 50% of the variance was accounted for by the remaining items. Coefficient alpha (α) was used to assess the internal consistency of the items.

From the review of instruments included in this section, several important methods are clear. First, items must be located and/or written. Second, the instrument should be revised to eliminate redundant, ambiguous, and/or
confusing items. Third, the internal consistency of items should be determined and any items with low variance should be eliminated. Finally, factor analysis will be used to determine the construct validity of the instrument.

Summary

The literature review set out to accomplish the following in regards to student perception of school connectedness (a) examine and identify important relationships (b) describe previous studies, and (c) illustrate measurement models. Through careful examination of the review it is clear that student perception of school connectedness has been measured in many different ways, by many other names and because of this, a clear definition is lacking.

The complexity and variety of constructs and dimensions related to student perception of school connectedness make it difficult to identify a clear definition and determine how related factors may be impacting student outcomes from a variety of contexts; because of this new measurement tools are needed which incorporate student perception of school connectedness as a primary dimension. Importantly, the development of new instruments is requisite to a deeper understanding of the degree to which factors impact how students feel about school (Goodenow, 1992; 1993; Ma, 2003). In addition, such tools may enable researchers to develop a distinct definition of student perception of school connectedness (Weiner, 1990; Wilson, 2004).

It has been demonstrated in the literature that students who feel more connected to their school experience an increase in positive student outcomes
(Resnick et al., 1997) and that students who feel disconnected experience an increase in negative student outcomes (Bonny et al., 2000). A valid and reliable instrument is needed which considers the many contexts which impact student perceptions so that when students are feeling disconnected the factors which are impacting student outcomes may be targeted for change.
CHAPTER 3

METHODOLOGY

Summary of Procedures

Two distinct processes were undertaken in the study. First, an instrument was developed to measure student perception of school connectedness. Second, the instrument was validated. The procedures for developing and validating the instrument included the following steps: (a) identification of a purpose, (b) specification of an underlying theory, (c) item development, (d) content validity (e) item revision, (f) field test, (g) item analysis, (h) reliability, and (i) construct validity. Each procedure is explained in detail below.

Instrument Development

Following a process described by Crocker and Algina (1986), items were written, revised, evaluated, and organized. First, the purpose for the instrument's use was determined. Second, a review of literature and research related to connectedness revealed the scope of variables and characteristics that define connectedness. An initial pool of items was compiled, using five categories determined from the literature to be characteristics that may have a significant impact on student perceptions of school connectedness (e.g. acceptance, fairness, caring, teacher connectedness, and student connectedness). The items were reviewed and revised. Next, four experts with backgrounds in
educational psychology, education, health, and physical activity evaluated the instrument in order to edit and revise items. In addition, 21 public school faculty who were enrolled in graduate coursework were asked to examine the instrument for the purpose of content validity. What follows is a detailed description of the processes summarized above.

**Identification of a Purpose**

The instrument titled “Student School Climate Survey” was designed to provide empirical evidence about characteristics that may indicate student perception of school connectedness. The purpose of the current study is to develop a valid and reliable instrument that measures student perception of school connectedness. The intended use for the validated instrument will be to measure student perception of school connectedness in relation to a number of correlates (e.g. student attendance, referrals, drop-out, and graduation rates).

**Defining the Construct**

Student perception of school connectedness has been described as the measure of a relationship between students and the school environment (McNeely & Falci, 2004; McNeely, et al., 2002; Resnick, et al., 1997). The review of literature identified several characteristics, potentially impacting student perception of school connectedness. The characteristics included (a) acceptance, (b) caring, (c) fairness, (d) teacher school connectedness, and (e) student school connectedness.
Specification of an Underlying Theory

In the process of developing an instrument intending to measure student perception of school connectedness, the theoretical relevance of the construct was considered. The relationships between school membership, identification, and engagement highlighted in the review of literature, provided a framework for the new instrument. Wehlage's theory of school membership was applied as a theoretical foundation for scale development of student perception of school connectedness. The theory considers four components of school membership including attachment, commitment, valuing, and involvement (Wehlage, et al., 1989). Further, the notion of school as a community highlighted in the Carnegie Council report “Turning Points” (Jackson & Davis, 2000) emphasized the role of creating a community of learning for middle school students involving close trusting relationships with adults and peers. The ability to identify and measure the degree to which factors involving peers, teachers, and the school may impact student perceptions of acceptance, fairness, caring, and connectedness may enable schools to improve their overall climate and improve student outcomes.

Item Development

The review of literature highlighted multiple contexts, which impact how students feel about school. It was determined from the literature that teachers, school, and students potentially impact student perception of school connectedness. In this manner, five important characteristics evolved including: (a) teacher caring, (b) teacher connectedness, (c) values, (d) student connectedness, and (e) acceptance. Instruments were located and items were
identified in the literature or were written by the research team and were placed into one of the five categories. In order to satisfy content validity, it was determined that there would be 8 to 10 items per category.

**Content Validity**

The main objective of assessing content validity is to determine whether or not the items appear to have been placed in the appropriate category. Content validity of the items was assessed in two ways. First, four individuals from a variety of educational backgrounds including educational psychology, education, health, and physical activity reviewed items and determined the corresponding category (e.g. acceptance, fairness, caring, teacher connectedness, and student connectedness) for each item. Second, as an additional measure of content validity, a panel of 21 public school faculty, who were concurrently enrolled in university graduate course work, reviewed a draft of the 43 item instrument. The panel identified several items that potentially fit into more than one category. The conclusions were noted and will be useful to help make decisions in revising the 43 item instrument. The items included (a) “I want to be friends with other students,” (b) “Teachers are available,” (c) “Teachers stand up for me,” (d) “Teachers encourage me to do better,” (e) “I seek advice from other kids” and (f) “Teachers talk down to me.” The results of the panel were recorded and will be included as part of the analysis and discussion.

**Item Revision**

Items that were determined to be ambiguous, redundant, or confusing were either eliminated or re-written. It was determined that statements would be
written in first person and that a majority of the items would have positive orientation. A few items were included from a negative orientation to ensure that the subjects were actually reading the items and attempting to answer them accurately. This technique in item writing has been identified in the literature as “response set” (Goodenow, 1993).

Design

The initial draft of the instrument contained forty-three items. The instrument items were thought to represent five characteristics of student perception of school connectedness, including (a) acceptance, (b) teacher caring, (c) teacher fairness, (d) teacher connectedness, and (e) school connectedness. The items were written in such a manner as to consider the multiple contexts such as the student, the teachers, and school environment that may impact how students feel about school. It was estimated that the instrument would take students approximately fifteen to twenty minutes to complete. Each item was scored using a four-choice Likert-scale with possibilities ranging from “Strongly Agree” to “Agree” to “Disagree” to “Strongly Disagree.” Demographic information was collected for each student including age, gender, and ethnicity.

Validating the Instrument

Participants and Setting

The 43-item instrument was piloted during the 2004-05 school year. Institutional Review Board (IRB) for human subjects and Clark County School District (CCSD) superintendent approval were sought and received (see
appendices). Upon receiving the approval of the CCSD East Region Superintendent, support was received at three middle schools and two high schools in the East region.

The instrument was intended for diverse middle school and high school student populations. In all cases, the principal designated a school administrator to expedite the selection of the participants for the study. The administrator targeted a teacher or group of teachers with students from a variety of backgrounds. Additionally, the principal was asked to use their judgment to utilize teachers who would have high participation in the study. The eligible participants ranged from grade six through twelve.

In order to successfully recruit the desired number to participate, nearly 2,500 permission slips were distributed. The permission forms and instrument were translated into Spanish to increase the likelihood of parent/guardian permission and student participation. Only those students who returned the required forms with parent/guardian consent and youth assent were administered the survey.

A total of 363 students participated in the study. The sample was representative of both middle school (n = 202; 55.6%) and high school level (n=161; 44.4%) students. The rate of return was 14.5%.

**Item Analysis**

The results of the survey were analyzed using ITEMAN (Weiss, 1986), a statistical program used in item analysis. The purpose of item analysis is to create a valid and reliable instrument of minimum length (Crocker & Algina, 1986). In the item analysis of the “Student School Climate Survey” parameters of
the instrument will be analyzed using item reliability index. The first step in this process is to determine the specific properties of total test scores that are of greatest interest and to identify the item parameters that will have the most impact on these properties (Crocker & Algina, 1986). From this, it was determined that two important statistical processes should comprise the item analysis for the instrument including (a) item-scale intercorrelation, and (b) scale intercorrelations.

The item-scale intercorrelations will be reviewed in order to identify items in need of revision or that may be eliminated from the instrument altogether. In this manner any item with a correlation of < .3 will be reviewed. It is important to note that the key for item categories must be correct to ensure accuracy in correlation scores. Therefore if an item scores below .3 in item-scale correlation, the ITEMAN key should be evaluated to ensure the item is measured correctly. If the item appears to be keyed correctly, then items scoring below .3 may be revised.

In determining the categories measuring student perception of school connectedness for the validated instrument (e.g. acceptance, fairness, caring, teacher connectedness, and student connectedness), scale correlation was identified as useful. The item-scale correlation will be analyzed in order to determine whether or not each of the five categories for items is unique. Importantly, if the inter-correlations do not significantly differ it may be determined that they are actually measuring the same thing.
Item Reliability

The reliability of the categories of items will be assessed using a correlational statistic called Cronbach's Alpha (\(\alpha\)). This is a common statistic used to assess the internal consistency of items. The value of Cronbach's Alpha will range from 0 to 1 and the higher the value the greater the reliability. The homogeneity of the sample will be considered in the analysis due to its potential to impact the value of Cronbach's Alpha.

Determining Construct Validity

Principal components factor analysis will be conducted using the pilot data in order to identify the important characteristics that appear to be impacting student perception of school connectedness. The sample size and the internal consistency of items determined previously will be considered. The recommended ratio of items to subjects is between 5:1 and 10:1 (Pallant, 2001; Tabachnick & Fidell, 1996). Inspection of the intercorrelation between items should be > .3 in order for factor analysis to be appropriate (Pallant, 2001). Bartlett’s test of sphericity (sig p< .05) and Kaiser-Meyer-Olkin (KMO; sig > .06) will be run in order to determine if factor analysis is adequate.

In order to determine the number of factors to be retained for the instrument a Scree Test will be run. In this manner the eigenvalues of the factors will be plotted and inspected. An examination for the point at which the shape of the curve changes direction and becomes horizontal will be a significant landmark. Any factor above the elbow, or change in the plot should be retained because the
points above the elbow contribute to most of the explanation of variance in the data (Pallant, 2001).

The next step in principal components factor analysis will be to rotate the factors in order for interpretation. The goal is to identify which factors cluster together. Varimax (orthogonal) rotation will be used. Varimax rotation reduces the number of variables that have the greatest factor loadings on each of the factors. In this manner, the most variance is explained by the least number of components.

Conclusion

Instrument development is a dynamic process involving several important steps. The development of the instrument's components and the items they comprise should be guided by theoretical frameworks established in the literature. The purpose and audience for which the instrument is intended should be considered. Finally, the instrument should be evaluated statistically to determine whether the components and items are reliable and valid measures. The correlation of items verifies the components. For this study, a principal components analysis (PCA) should identify the components and items from the instrument that explain a majority of the variance.
CHAPTER 4

DATA ANALYSIS

The purpose of this chapter is to present the results of the item and principal component analysis (PCA). First, the results of the panel review are presented. Second, the results of a preliminary item analysis are presented including item-category correlations of items, category intercorrelations ($p$), and Cronbach's Alpha ($\alpha$). Finally, the results of the PCA are presented in two phases. In phase one, the results of preliminary tests including examination of correlation matrix, Kaiser-Meyer-Olkin, and Bartlett's Test of Sphericity are presented. Next, the results of the initial PCA run on the 43 item instrument are reviewed. The results of the scree-test, eigenvalues, and varimax rotation are presented. The second phase of the analysis is presented last and includes a PCA run on a two-component model that resulted from the first phase of the PCA.

Results

Content Validity

Again, content validity consisted of a panel review of the instrument to determine agreement between each item and the characteristic it intended to measure (e.g., acceptance, caring, fairness, teacher connectedness, and student connectedness). Results of the panel review showed that of the 43 items, 7
could be related to more than one characteristic; these items are presented in Table 1. These discrepant characterizations were recorded and contrasted with results from the principal component analysis.

### Table 1

**Number of Item Endorsements According to Characteristic**

<table>
<thead>
<tr>
<th>Item # Statement</th>
<th>A</th>
<th>C</th>
<th>F</th>
<th>TC</th>
<th>SC</th>
<th>O</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 I want to be friends with other students</td>
<td>7</td>
<td>7</td>
<td>7</td>
<td>7</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>12 Teachers are available</td>
<td>7</td>
<td>6</td>
<td>8</td>
<td>7</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>16 I talk to kids I do not know</td>
<td>9</td>
<td>3</td>
<td>6</td>
<td>3</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>22 Teachers discipline fairly</td>
<td>13</td>
<td>7</td>
<td>6</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>27 Teachers stand up for me</td>
<td>7</td>
<td>7</td>
<td>7</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>41 Teachers encourage me to do better</td>
<td>15</td>
<td>3</td>
<td>3</td>
<td>7</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>42 I seek advice from other kids</td>
<td>15</td>
<td>5</td>
<td>1</td>
<td>5</td>
<td>3</td>
<td>3</td>
</tr>
</tbody>
</table>

*Note.* A = Acceptance; C = Caring; F = Fairness; TC = Teacher Connectedness; SC = Student Connectedness; O = More than one characteristic endorsed.

### Item Analysis

A preliminary item analysis in ITEMAN (Weiss, 1986) was conducted in order to determine item-characteristic correlations for all 43 items and to determine which items might be retained for the principal components analysis. In the first analysis item 26 was re-keyed due to a low factor loading. "I do not hang out with kids who are different than me" was originally keyed as a positive statement and loaded poorly ($p<.3$). Once the key was corrected, item analysis was run a
second time and factor loadings for items \( p < .6 \) were identified. Table 2 includes the items with factor loadings \( p < .6 \).

Table 2

*Item-Characteristic Correlation*

<table>
<thead>
<tr>
<th>Item</th>
<th>Factor loading (p)</th>
<th>Statement</th>
</tr>
</thead>
<tbody>
<tr>
<td>22</td>
<td>.368</td>
<td>Teachers talk down to me</td>
</tr>
<tr>
<td>26</td>
<td>.445</td>
<td>I do not hang out with kids who are different than me</td>
</tr>
<tr>
<td>28</td>
<td>.455</td>
<td>Teachers play favorites</td>
</tr>
<tr>
<td>10</td>
<td>.483</td>
<td>I go to school plays</td>
</tr>
<tr>
<td>4</td>
<td>.491</td>
<td>Teachers show respect for other teachers</td>
</tr>
<tr>
<td>40</td>
<td>.527</td>
<td>I feel students value each other's opinions</td>
</tr>
<tr>
<td>1</td>
<td>.588</td>
<td>I care about other students</td>
</tr>
<tr>
<td>13</td>
<td>.589</td>
<td>My teachers' expectations are realistic</td>
</tr>
<tr>
<td>12</td>
<td>.590</td>
<td>Teachers are available</td>
</tr>
<tr>
<td>42</td>
<td>.591</td>
<td>I seek advice from other kids</td>
</tr>
</tbody>
</table>

*Note.* The items are in ascending order from lowest factor loading to greatest.

Next, the item characteristic intercorrelations were examined (Table 3). A high correlation between two characteristics may indicate little or no difference between the two. Low correlations between characteristics indicate the categories may be unique. The item-category intercorrelations indicated that characteristics two and three (\( p = .800 \)) appear to be measuring the same thing. Additionally, correlation between categories two and four (\( p = .757 \)) and three
and four ($p = .655$) demonstrate the three categories may not be unique from one another. This may assist with naming the components in the final PCA.

Table 3

*Item-Characteristic Intercorrelations* ($\rho$)

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1.00</td>
<td>.533</td>
<td>.479</td>
<td>.502</td>
<td>.621</td>
</tr>
<tr>
<td>2</td>
<td>.533</td>
<td>1.00</td>
<td>.800</td>
<td>.757</td>
<td>.575</td>
</tr>
<tr>
<td>3</td>
<td>.479</td>
<td>.800</td>
<td>1.00</td>
<td>.655</td>
<td>.470</td>
</tr>
<tr>
<td>4</td>
<td>.502</td>
<td>.757</td>
<td>.655</td>
<td>1.00</td>
<td>.510</td>
</tr>
<tr>
<td>5</td>
<td>.621</td>
<td>.575</td>
<td>.470</td>
<td>.510</td>
<td>1.00</td>
</tr>
</tbody>
</table>

*Note.* 1 = Acceptance; 2 = Caring; 3 = Fairness; 4 = Teacher Connectedness; 5 = Student Connectedness.

*Reliability*

*Internal Consistency*

Finally, Cronbach’s Alpha ($\alpha$) was calculated in order to determine the average correlation among all the items that were meant to measure the intended characteristic. The value for Cronbach’s Alpha for each of the five characteristics was above .7. The results indicated that each of the categories contains items that appear to be highly correlated with one another.
Table 4

Cronbach's Alpha (α)

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Cronbach's Alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acceptance</td>
<td>.791</td>
</tr>
<tr>
<td>Caring</td>
<td>.848</td>
</tr>
<tr>
<td>Fairness</td>
<td>.828</td>
</tr>
<tr>
<td>Teacher Connectedness</td>
<td>.819</td>
</tr>
<tr>
<td>Student Connectedness</td>
<td>.813</td>
</tr>
</tbody>
</table>

Note. α > .7 is desired.

Determining Construct Validity

Principal Components Factor Analysis

In order to determine the suitability of the data for a principal components analysis (PCA), three preliminary analyses were run (a) inspection of the correlation matrix, (b) KMO test, and (c) Bartlett's Test of Sphericity. First, the correlation matrix was inspected which revealed the many correlation coefficients greater than .3. Second, the Kaiser-Meyer-Olkin value was .923 which exceeded the recommended value of .6. Third, Bartlett's Test of Sphericity was determined to be within the bounds of statistical significance (p<.05). The results of the three analyses demonstrated the sufficiency of PCA as an analytic technique.

Next, the 43 items of the Student School Climate Survey were subjected to PCA using SPSS (version 12.0). The PCA was conducted in two phases so that items with low factor loadings in phase one could be identified and eliminated from the second phase of the analysis. The desired outcome of the analysis was to increase the amount of cumulative variance explained by the items by a
number of components to be determined at the end of the analysis. What follows is a description of the results in each phase.

*Phase One.* The results of the initial PCA revealed the presence of ten characteristics with eigenvalues exceeding 1.00, explaining 60.031% of the variance cumulatively. It was determined upon reviewing the component matrix, however, that ten characteristics would yield poor results. Further analysis was conducted in order to determine the number of factors to retain.

Two considerations were made in order to determine that two of the characteristics should be retained for additional analysis. First, using Catell’s (1966) scree test it is clear that the elbow in the graph falls below the second characteristic (Figure 1). Second, the total variance explained by the first two characteristics, and the decline in variance explained by the characteristics thereafter (Table 5) provide additional evidence to retain the two characteristics for further analysis.
Table 5.

*Eigenvalues and total variance explained by 10 component model*

<table>
<thead>
<tr>
<th>Components</th>
<th>Eigenvalue</th>
<th>% of Variance</th>
<th>Cumulative %</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>12.811</td>
<td>29.792</td>
<td>29.792</td>
</tr>
<tr>
<td>2</td>
<td>2.693</td>
<td>6.263</td>
<td>36.055</td>
</tr>
<tr>
<td>3</td>
<td>1.647</td>
<td>3.830</td>
<td>39.884</td>
</tr>
<tr>
<td>4</td>
<td>1.572</td>
<td>3.655</td>
<td>43.540</td>
</tr>
<tr>
<td>5</td>
<td>1.429</td>
<td>3.324</td>
<td>46.863</td>
</tr>
<tr>
<td>6</td>
<td>1.261</td>
<td>2.932</td>
<td>49.795</td>
</tr>
<tr>
<td>7</td>
<td>1.192</td>
<td>2.772</td>
<td>52.567</td>
</tr>
<tr>
<td>8</td>
<td>1.119</td>
<td>2.601</td>
<td>55.169</td>
</tr>
<tr>
<td>9</td>
<td>1.071</td>
<td>2.492</td>
<td>57.660</td>
</tr>
<tr>
<td>10</td>
<td>1.019</td>
<td>2.371</td>
<td>60.031</td>
</tr>
</tbody>
</table>
The last step of the PCA in phase one was to conduct a varimax orthogonal rotation of the two characteristics in order to more clearly interpret the results of the scree plot. The results of the varimax rotation indicated 12 items that loaded above .6 on characteristics one and 9 items that loaded above .500 for characteristic two. These items were retained for the PCA analysis in phase two.
Phase Two. In order to improve the cumulative variance explained by the two characteristics, a second PCA was run including the 21 items that loaded the highest from the first analysis. In this manner the same procedures were followed as in the first phase with the exclusion of the 22 items which loaded poorly on each of the two characteristics. The cumulative % of variance explained increased from 36.055% in phase one to 47.19% in phase two. The increase in variance demonstrates that eliminating the items which loaded poorly in phase one improved the total amount of variance explained considerably. Although the cumulative % of variance explained in the two component model is reduced from the ten component model in the preliminary PCA (60.031%), the benefit of having items that load more uniformly and can be identified with a unique component is worth the cost.
Table 6

Two Component Solution for Student School Climate Survey

<table>
<thead>
<tr>
<th>Item</th>
<th>Component 1</th>
<th>Component 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teachers are fair to me.</td>
<td>.774</td>
<td></td>
</tr>
<tr>
<td>Teachers accept me the way I am.</td>
<td>.767</td>
<td></td>
</tr>
<tr>
<td>Teachers discipline fairly.</td>
<td>.709</td>
<td></td>
</tr>
<tr>
<td>Teachers respect me.</td>
<td>.705</td>
<td></td>
</tr>
<tr>
<td>Teachers grade other kids fairly.</td>
<td>.700</td>
<td></td>
</tr>
<tr>
<td>Teachers treat me the same as other kids.</td>
<td>.686</td>
<td></td>
</tr>
<tr>
<td>Teachers are fair when I mess up.</td>
<td>.678</td>
<td></td>
</tr>
<tr>
<td>Teachers encourage me to do better.</td>
<td>.672</td>
<td></td>
</tr>
<tr>
<td>Teachers want me to be successful.</td>
<td>.670</td>
<td></td>
</tr>
<tr>
<td>Teachers understand me.</td>
<td>.660</td>
<td></td>
</tr>
<tr>
<td>Teachers stand up for me.</td>
<td>.655</td>
<td></td>
</tr>
<tr>
<td>Teachers are involved in the school outside of class time.</td>
<td>.606</td>
<td></td>
</tr>
<tr>
<td>I want to be involved with school clubs, sports, and other school activities.</td>
<td>.766</td>
<td></td>
</tr>
<tr>
<td>I have school spirit.</td>
<td>.710</td>
<td></td>
</tr>
<tr>
<td>I go to school events after school.</td>
<td>.658</td>
<td></td>
</tr>
<tr>
<td>I look forward to school assemblies.</td>
<td>.618</td>
<td></td>
</tr>
<tr>
<td>I want to be friends with other students.</td>
<td>.564</td>
<td></td>
</tr>
<tr>
<td>I talk to kids I do not know.</td>
<td>.564</td>
<td></td>
</tr>
<tr>
<td>I respect other students.</td>
<td>.552</td>
<td></td>
</tr>
<tr>
<td>I get along with other students.</td>
<td>.546</td>
<td></td>
</tr>
<tr>
<td>I am proud of my school.</td>
<td>.533</td>
<td></td>
</tr>
<tr>
<td>% of variance explained</td>
<td>29.565</td>
<td>18.349</td>
</tr>
</tbody>
</table>

Note. The results of the final PCA explain 47.914 % of the total variance.

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The results of the item and principal component analysis indicated that two components and 21 items were a more valid means of measuring student perception of school connectedness. Initially, the 43 item instrument was designed with items thought to represent five characteristics (e.g. acceptance, caring, fairness, teacher connectedness, and student connectedness). Through extensive item analysis and a two phase principal components analysis, a 2 component, 21 item instrument evolved that explained 47.914% of the total variance.

A review of the 12 items that loaded $p > .6$ on component 1 revealed items that intend to measure student perceptions of teacher connectedness. Therefore, the first component will be labeled “teacher connectedness.” (Refer to Table 6). “Teacher connectedness,” is comprised of items that are about acceptance, caring, fairness, and connectedness (e.g., “teachers treat me the same as other kids” [acceptance], “teachers encourage me to do better” [caring], “teachers are fair to me” [fairness], and “teachers are involved in school outside of class time” [connectedness]).
A review of the 9 items that loaded \( p > .5 \) on component 2 revealed items that intend to measure student perception school connectedness. The items appear to be about the relationship between other students and school. Therefore the second component will be labeled "student connectedness." The items represent the characteristic student school connectedness. (refer to Table 6; e.g., "I want to be involved with school clubs, sports, and other school activities").

What is of further interest here is that the PCA results corresponded with item analysis in three ways. First, the content validity analysis conducted by the panel suggested that several items appeared to measure more than one characteristic (refer to Table 1). Findings from the PCA supported this in that the instrument was reduced to a two component model. Second, items with low factor loadings for item-characteristic correlations (Refer to Table 2) were determined to be unrelated to the intended characteristic in the initial item analysis. The PCA also eliminated each of the items included in Table 2 from the validated instrument (Refer to Table 6). Third, the item-characteristic intercorrelations calculated in the item analysis (Refer to Table 3) indicated items that intended to measure caring and fairness \( (p = .800) \), caring and teacher connectedness \( (p = .757) \), as well as fairness and teacher connectedness \( (p = .655) \) were highly related to one another.

As was previously explained, the PCA was conducted in two phases. In the first phase, a 10 factor model evolved which explained 60.031\% of the total variance (Refer to Table 5). It would have been nearly impossible to identify unique relationships between the items loading on ten components. In fact, it is
not clear whether 10 independent components measuring student perception of school connectedness could have been identified at all. For this reason, the second phase of the PCA was conducted which derived a two factor model. Even though the two factor model accounted for less cumulative variance explained, the items that loaded for each component appeared to share obvious characteristics (e.g. acceptance, caring, fairness, teacher connectedness, and student connectedness).

Summary

Based on pilot findings from Planned Approach to Healthier Schools (PATHS; Lounsbery et al., 2005) student perception of school connectedness has important implications for changing health risk behavior including physical inactivity. Given specific findings from the PATHS study, the original intention of this study was to develop a student perception of school connectedness instrument that incorporated (a) acceptance, (b) caring, (c) fairness, (d) teacher connectedness, and (e) student connectedness for future use. While the results of this study produced a 2 component model, the 21 items that comprise it incorporate all five of the desired characteristics. Therefore, this instrument will be utilized in future PATHS intervention studies.

The literature supports the need for instruments that may be able to identify factors that influence student perception of school connectedness (Blum, 2005; Blum & Libbey, 2004). The relationship between student perception of school connectedness and student engagement, achievement, and health risk behaviors
has been established (Resnick, et al, 1997). Therefore, this instrument may also have broader utility in a variety of educational research contexts.
Appendix A

Student School Climate Survey

Age: ______ Gender: Male Female
Ethnicity: White African American Hispanic Asian
Native American Other

This survey asks you to express your opinion about a variety of things regarding school. Please read each statement carefully. There are no right or wrong answers. Fill in the choice that best describes how you usually think or feel about the statement.

Example:

I like PE when we play ball outside.

Strongly agree ③ Agree ② Disagree ① Strongly Disagree ②

If you always like to play ball outside, you would completely fill in “③” for strongly agree. If you like to play ball outside most of the time, you would completely fill in “②.” If you do not like to play ball outside most of the time, you would fill in “①.” If you never like to play ball outside, you would fill in “②” for strongly disagree. If you are uncertain how to answer, please ask your teacher for help. Thank you for helping with our survey.

Information collected in the study will remain strictly confidential. No identifying personal information is requested or recorded.
<table>
<thead>
<tr>
<th>YOUR PERCEPTION OF SCHOOL:</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 I care about other students.</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>2 Teachers care about me.</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>3 Teachers treat me the same as other kids.</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>4 Teachers show respect for other teachers.</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>5 I go to school events after school.</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>6 I want to be friends with other students.</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>7 Teachers respect me.</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>8 Teachers are fair when I mess up.</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>9 Teachers like the school.</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>10 I go to school plays.</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>11 I get along with other students.</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>12 Teachers are available.</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>13 My teachers' expectations are realistic.</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>14 Teachers show school spirit.</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>15 I look forward to school assemblies.</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>16 I talk to kids I do not know.</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>17 Teachers understand me.</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>18 Teachers give me the grades I deserve.</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>19 Teachers are involved in the school outside of class time.</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>20 I am proud of my school.</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>21 I talk to kids who are different than I am.</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>22 Teachers talk down to me.</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Item</td>
<td>Statement</td>
<td>Strongly Agree</td>
<td>Agree</td>
<td>Disagree</td>
</tr>
<tr>
<td>------</td>
<td>-----------</td>
<td>----------------</td>
<td>-------</td>
<td>----------</td>
</tr>
<tr>
<td>23</td>
<td>Teachers discipline fairly.</td>
<td>3</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>24</td>
<td>Teachers like to come to school.</td>
<td>3</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>25</td>
<td>I have school spirit.</td>
<td>3</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>26</td>
<td>I do not hang out with kids who are different than me.</td>
<td>3</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>27</td>
<td>Teachers stand up for me.</td>
<td>3</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>28</td>
<td>Teachers play favorites.</td>
<td>3</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>29</td>
<td>Teachers wear school colors.</td>
<td>3</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>30</td>
<td>I want to be involved with school clubs, sports, and other school activities.</td>
<td>3</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>31</td>
<td>I respect other students.</td>
<td>3</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>32</td>
<td>Teachers know a lot about me.</td>
<td>3</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>33</td>
<td>Teachers are fair to me.</td>
<td>3</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>34</td>
<td>Teachers like to support student activities.</td>
<td>3</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>35</td>
<td>I look forward to going to school.</td>
<td>3</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>36</td>
<td>I respect the opinions of other kids.</td>
<td>3</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>37</td>
<td>Teachers accept me the way I am.</td>
<td>3</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>38</td>
<td>Teachers grade other kids fairly.</td>
<td>3</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>39</td>
<td>Teachers display school pride in their classroom.</td>
<td>3</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>40</td>
<td>I feel students value each other's opinions.</td>
<td>3</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>41</td>
<td>Teachers encourage me to do better.</td>
<td>3</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>42</td>
<td>I seek advice from other kids.</td>
<td>3</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>43</td>
<td>Teachers want me to be successful.</td>
<td>3</td>
<td>3</td>
<td>2</td>
</tr>
</tbody>
</table>
Appendix B

Informed Consent

TITLE OF STUDY: Measuring Secondary Students' Perception of School Climate
INVESTIGATOR/S: Monica Lounsbery Ph.D.
PROTOCOL NUMBER: OPRS # 0403-1210

Your student is invited to participate in a research study. The purpose of this study is to develop a survey instrument that will measure middle school and high school student perceptions of belonging at school. Your student is being asked to participate in the study because he or she is a middle or high school student. If your student volunteers to participate in this study, he/she will be asked to complete a survey.

There may be no direct benefits to your student as a participant in this study. However, we hope to collect information that will help to validate the survey so that it can be used for research purposes. There are risks involved in all research studies. However, the risks in this study are minimal and consist of taking up to 15 minutes to complete the survey. There will be no financial cost to participate in this study. Since the study will take place during school hours, it will not require any additional time. The University of Nevada, Las Vegas may not provide compensation or free medical care for an unanticipated injury sustained as a result of participating in this research study.

If you have any questions or concerns about the study, you may contact Monica Lounsbery Ph.D. at 895-4629. For questions regarding the rights of research subjects, any complaints or comments regarding the manner in which the study is being conducted you may contact the UNLV Office for the Protection of Research Subjects at 895-2794.

Your student's participation in this study is completely voluntary. If you do not wish your student to participate in this study, no one will be angry with you and it will not affect your student's grade in any of his/her classes.

All completed surveys will remain completely anonymous. The name of your student's school and any information which could identify him/her will be kept completely confidential. In addition, no reference will be made in written or oral materials that could link your student to this study. All completed surveys will be stored in a locked file cabinet in a secure room at UNLV for at least 3 years after completion of the study and then destroyed.
INFORMED CONSENT (continued)

TITLE OF STUDY: Measuring Secondary Students' Perception of Belonging
INVESTIGATORS: Monica Lounsbery Ph.D.
PROTOCOL NUMBER: OPRS# 0403-1210

Parent/Guardian Consent:
I have read the above information and agree to allow my student to participate in this study.

A copy of this form has been given to me.

________________________________________________________________________
Signature of Parent/Guardian Date

________________________________________________________________________
Parent/Guardian Name (Please Print)
Appendix C

Youth Assent

MEASURING SECONDARY STUDENTS’ PERCEPTION OF SCHOOL CLIMATE
PROTOCOL NUMBER: OPRS# 0403-1210

We are inviting you to participate in this study because you are a student in either a middle or high school and we are interested in measuring how students your age feel about school.

If you decide to participate, you will be asked to complete a survey. The survey will take you about 15 minutes or less to complete.

Completing this survey will not have any direct benefits to you, but it will help researchers be able to measure how students’ feel about their school.

Your responses to questions on the survey will be confidential. There will be no way for us to know which responses belong to you or someone else. We may publish a summary of everybody’s responses or present such a summary at a scientific meeting, but your identity and your responses will be confidential.

We will also ask your parents for their permission for you to complete the survey. Please talk this over with them before you decide whether or not to participate.

If you have any questions at any time, please ask your teacher.

If you check "yes," it means that you have decided to participate and have read everything that is on this form. You and your parents will be given a copy of this form to keep.

_____ Yes, I would like to participate in the study.

_____ No, I do not want to participate in the study.

Signature ___________________________ Date __________
Using the format below, provide the following information:

**DESCRIPTION OF STUDY**

**Name:** Monica F. Lounsbury

**Department:** Sports Education Leadership

**Title of Study:** Measuring Student Perception of School Climate

1. **SUBJECTS:** Participants will be middle school and high school students.

2. **PURPOSE, METHODS, PROCEDURES:** Describe in detail the purpose, research methods, and procedures of the study.

**Purpose:**

The purpose of this study is to develop an instrument with acceptable reliability and validity to measure grade 6-12 students' perceptions of school climate variables. The goal is to develop an instrument that can be used to estimate the relationships among students' school climate variables and a variety of at-risk and health risk behaviors.

**Method**

The draft instrument is composed of 43 items. Items are grouped into five scales: peer acceptance, teacher caring, teacher fairness, student perception of teacher connectedness, and student school connectedness. The items were constructed specifically for the development of this instrument by the research team and reviewed by professionals with expertise in health, counseling, education, and measurement.

**Sampling and procedure**

Cooperation from eight to ten middle school or high school teachers will be solicited to disseminate the informed consent and youth assent forms to students in their classes. Upon receipt of properly executed consent and assent forms, the teachers will distribute the instrument. Because the questionnaire will only take approximately 15 minutes, the teacher will provide an appropriate alternative activity for non-consenting/assenting students (e.g., reading or relevant activity in preparation for the next lesson). Teacher will inform students that while some students will be completing the questionnaire, others will be preparing for the next lesson presentation.

We anticipate the participation of at least 300 student volunteers.
Analysis

Within scales item analysis including item endorsements, variances, and item-scale total correlations will be determined. The same statistics for the ungrouped item set will be determined. Item statistics will be inspected to identify poorly performing statements. Confirmatory factor analysis will be conducted to determine the degree of agreement between the theoretical item-scale assignment and empirical item-scale fit.

Item revision and scale refinement will be based on the results of these analyses. The same subject recruitment process will be repeated and the revised instrument be disseminated to a new sample of volunteers.

The actual use of the instrument in research will be addressed in subsequent proposal submissions.

3. RISKS: Risks associated with participation in this study are minimal and are associated with the time needed to complete the instrument. It is anticipated that students' will need approximately 15 minutes to complete the instrument.

4. BENEFITS: Results of this study will support the development of an instrument that will provide a measure of student perception of school climate. This instrument will benefit researchers, school administrators, faculty, and staff so that they may better understand the relationship between students' sense of belonging to issues such as academic achievement, health risk behavior, school violence, attendance, and drop-out.

5. RISK-BENEFIT RATIO: Risks are minimal to participants and there may be no immediate or direct benefit to participants in this study. However, the results of this study will assist researchers in the development of an instrument that will measure students' perception of school climate.

6. COSTS TO SUBJECTS: There is no cost to participants.

7. INFORMED CONSENT: On behalf of the research team, teachers will be asked to disseminate two informed consent forms to students (one copy and one to be returned) and go over it with them. Students will be encouraged to ask questions. The informed consent form will have both youth assent and parental consent. Students will be asked to return the informed consent to school the following day and teachers will collect them and disseminate the instrument to those who volunteer.

8. CHILD/YOUTH ASSENT: Both youth assent and parental consent will be obtained. Only those students who have signed parental informed consent and youth assent to participate in the study will be asked to complete the. Signed informed consent and youth assent forms will stored in a locked file cabinet in a secure room on the campus of UNLV for three years and then destroyed.

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Appendix E

Review Approval Notice

To: monica.lounsbery@ccmail.nevada.edu
X-Mailer: Lotus Notes Release 5.0.12 February 13, 2003
From: OPRSHumanSubjects@ccmail.nevada.edu
Date: Thu, 15 Apr 2004 13:32:56 -0700
X-MIMETrack: Serialize by POP3 Server on DOMINO6/UNLV(Release 5.0.13 March 9, 2004) at 04/15/2004 01:33:31 PM

Social/Behavioral IRB - Full Board
Review Approval Notice

DATE: April 15, 2004

TO: Dr. Monica F. Lounsbery Educational Leadership

FROM: Office for the Protection of Research Subjects

RE: Status of Human Subject Protocol Entitled: Measuring Student Perception of School Climate OPRS# 0403 - 1210

Notification of IRB Action by Dr. Paul Jones
Chair, UNLV Social/Behavioral Sciences Institutional Review Board

This memorandum is notification that the UNLV Social/Behavioral Sciences Institutional Review Board reviewed and approved the subject protocol. Research on the project may proceed once you receive a hardcopy of this memo from OPRS. This approval is effective from April 15, 2004, the date of IRB approval, through April 7, 2005 a period of one year from the initial IRB review.

Should the use of human subjects described in this protocol continue beyond April 7, 2005, it will be necessary for you to request an extension and undergo continuing review. Should you initiate any changes to the protocol, it will be necessary to request additional approval for such change(s) in writing through the Office for the Protection of Research Subjects.

If you have questions or require any assistance, please contact the Office for the Protection of Research Subjects at OPRSHumanSubjects@ccmail.nevada.edu or call 895-2794.

Office for the Protection of Research Subjects (OPRS)
4505 Maryland Parkway Box 451037
Las Vegas, NV 89154-1037
Office (702) 895-2794 Fax (702) 895-0805
Research Administration Building 103 M/S 1037
OPRSHumanSubjects@ccmail.nevada.edu Website:
http://www.unlv.edu/Research/OPRS/
PART A: APPLICANT INFORMATION FORM

Name of requester/researcher: Monica Lounsbery, Ph.D.
Title of Project: Validation of a Student School Climate Inventory

CCSD personnel: Yes _____ No ______
If CCSD Personnel:
Your work location:
Location number:
Postal Address:

Research is to be conducted as a student seeking:
Bachelors _____ Masters _____ Doctorate _____ Part of work duties _____

Research is to be conducted as:

_____ An individual only
X _____ A faculty member of an institution of higher education
_____ A researcher contracted by CCSD to perform the research
_____ A vendor of products to the CCSD
_____ Other (Please identify the organization) _______________________

Funding Source for this research: Funding is pending (Fund for a Healthier Nevada)
If your research is to be conducted as a student seeking a degree, please complete the following sections:

A. Research advisor/director information:
B. Research/research design courses completed by applicant (by title)

Sponsorship by CCSD Department/Division Administrator

Yes _____ X _____ No _____ If yes:
Name of sponsor: Dr. Maurice Flores
Title: Region Superintendent
Department/Division: East Region
Instructions:
This is a word processing document (Microsoft Word). To complete, simply compose your responses below each section heading as is appropriate or fill in cells in tables. Please be as concise as possible.

Title of Project: Validation of a Student School Climate Inventory

1.0 Define the problem to be investigated in this proposed study:

Student perspective of school climate has been identified as a variable that may influence the health risk behavior of students as well as be related to student achievement, attendance, as well as drop-out/graduation rate. In order to assess the effects of interventions expected to impact perception of school climate, an instrument with acceptable psychometric properties is needed. Available instruments are either dated and/or limited in the dimensions of school climate measured. Therefore, the problem is to develop and validate a contemporary measure of students' perspective of school climate that taps the important dimensions of this trait. Namely, the dimensions to be measured are student perceptions of school connectedness, peer acceptance, teacher caring, teacher fairness, and teacher connectedness.

2.0 List the question(s) to be answered or the hypothesis(es) to be tested by the research:

The purpose of this study is to develop an instrument with acceptable reliability and validity to measure grade 6-12 students' perceptions of school climate variables. The goal is to develop an instrument to measure important dimensions of school climate for use in estimating the relationships among these students' school climate variables and a variety of at-risk and health risk behaviors. We anticipate that in future studies, the instrument may also be used to examine the relationships between student school climate variables and academic achievement, attendance in school, referral rates, and dropout and/or graduation rates.

3.0 Describe the research design to be used in the research, including a description of the sampling plan:

The nature of this research is descriptive. Permission from two middle school and two high school principals will be obtained to disseminate the instrument among a sample of students within their schools. Once permission is obtained, the researcher will work cooperatively with the school principals to identify teachers' classes in which the instrument will be disseminated. Through the advisement of the building principals, cooperation from a total of eight to ten teachers will be solicited to distribute the informed consent and youth assent forms to students in their classes.

4.0 Describe the data collection methods in detail:

The draft instrument is composed of 43 items. Items are grouped into five scales: peer acceptance, teacher caring, teacher fairness, student perception of teacher connectedness, and student school connectedness. The items were constructed specifically for this instrument by the research team and reviewed by professionals with expertise in health, counseling, education, and measurement.
Part B Data Collection Methods Cont’d.

Upon receipt of signed consent and assent forms on the date specified, the teachers will distribute the instrument. Because the questionnaire will take approximately 15 minutes, the teacher will provide an appropriate alternative activity for non-consenting/assenting students (e.g., reading or relevant activity in preparation for the next lesson). Teachers will inform students that while some students will be completing the questionnaire, others will be preparing for the next lesson presentation.

5.0 SUMMARIZE THE DATA COLLECTION METHODS:

Mark “x” in space beside all that apply.

<table>
<thead>
<tr>
<th>RESEARCHER OBTAINED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Academic tests</td>
</tr>
<tr>
<td>Observation</td>
</tr>
<tr>
<td>Student records</td>
</tr>
<tr>
<td>Psychological intervention/treatment records</td>
</tr>
<tr>
<td>Medical records</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SUBJECT SELF-REPORT</th>
</tr>
</thead>
<tbody>
<tr>
<td>X Survey/questionnaire</td>
</tr>
<tr>
<td>+ Interview</td>
</tr>
<tr>
<td>+ Personal interaction with subjects</td>
</tr>
</tbody>
</table>

6.0 List the sources of data that are dependent on school/district records.
General school demographics

7.0 INDICATE THE OFFICE/SCHOOL LEVEL(S) TARGETED BY RESEARCH

___ District office ___ Region ___ Alternative School ___ Exceptional Students School ___
___ Elementary School ___ Middle School ___ High School

8.0 INDICATE THE NUMBER OF PARTICIPANTS AND/OR SUBJECTS IN THE RESEARCH.

Use the total column if the grade designation is not applicable.

Numbers are approximated

<table>
<thead>
<tr>
<th>Participants</th>
<th>Pre-K</th>
<th>K</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students</td>
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<td></td>
<td>315</td>
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<tr>
<td>Teachers</td>
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</tr>
<tr>
<td>Principals</td>
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<tr>
<td>Others</td>
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</tbody>
</table>

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PART B: DESCRIPTION OF THE STUDY CONT’D.

9.0 ESTIMATE THE AMOUNT OF TIME THE RESEARCH PROJECT WILL REQUIRE OF EACH TYPE OF PARTICIPANT.

List the time units in decimal parts of an hour (e.g., 1.5 hours).

<table>
<thead>
<tr>
<th>Participant</th>
<th>Testing/Assessment</th>
<th>Interview</th>
<th>Observation</th>
<th>Training</th>
<th>Other</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
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<td>Parents</td>
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<tr>
<td>Other</td>
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</tr>
</tbody>
</table>

10.0 EXPLAIN THE EXPECTED VALUE OF RESEARCH TO EDUCATION IN GENERAL:

The intent of this project is to collect data that will be used to assess the item and instrument characteristics of a student school climate survey. The data will be used to identify items needing revision or replacement and to verify the dimensionality of the measure. The revised instrument will be used measure dimensions of school climate and relate these to other important variables such as health risk behavior, academic achievement, attendance, and graduation. Additionally, the instrument will be used to assess the impact of interventions designed to enhance school climate and healthy behaviors.

11.0 EXPLAIN THE EXPECTED VALUE OF RESEARCH TO CCSD IN PARTICULAR:

The value for CCSD is that the instrument will be developed and preliminary data analysis will be shared with the district.

DURATION OF STUDY:

START: LAST WEEK OF SEPTEMBER 2004    DISSEMINATE INFORMED CONSENT FORMS AND YOUTH ASSENT FORMS

End: Mid-October 2004 Collect Informed Consent Forms and Youth Assent Forms
     Distribute the instrument to students turning in signed forms

By December 2004 a written report will be sent to CCSD

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Using the format below, provide the following information:

1. **SUBJECTS**: The population this study intends to sample is specific to adolescent aged students in school. Therefore, as function of current enrollment status in participating school sites, all adolescent students, irrespective of ethnic or minority status will be eligible for selection and inclusion in this study.

2. **RISKS**: Risks associated with participation in this study are minimal and are associated with the time needed to complete the instrument. It is anticipated that students will need approximately 15 minutes to complete the instrument.

3. **BENEFITS**: Results of this study will support the development of an instrument that will provide a measure of student perception of school climate. This instrument will benefit researchers, school administrators, faculty, and staff so that they may better understand the relationship between students' sense of belonging to issues such as academic achievement, health risk behavior, school violence, attendance, and dropout.

4. **RISK-BENEFIT RATIO**: Risks are minimal to participants and there may be no immediate or direct benefit to participants in this study. However, the results of this study will assist researchers in the development of an instrument that will measure students' perception of school climate.

5. **COSTS TO SUBJECTS**: There is no cost to participants.

6. **INFORMED CONSENT**: On behalf of the research team, teachers will be asked to disseminate two informed consent forms to students (one copy and one to be returned) and go over it with them. Students will be encouraged to ask questions. The informed consent form will have both youth assent and parental consent. Students will be asked to return the informed consent to school the following day and teachers will collect them and disseminate the instrument to those who volunteer.

7. **CHILD/YOUTH ASSENT**: Both youth assent and parental consent will be obtained. Only those students who have signed parental informed consent and youth assent to participate in the study will be asked to complete the instrument. Signed informed consent and youth assent forms will be stored in a locked file cabinet in a secure room on the campus of UNLV for three years and then destroyed.

Signatures (as appropriate):

Investigator: ______________________________ Date: __________
CCSD Sponsor: ______________________________ Date: __________
Faculty advisor: ______________________________ Date: __________
Monica,

I have a reply from Jon Herring stating that Dr. Maurice Flores, East Region Superintendent, supports the research project Measuring Student Perception of School Climate. What this means for you and us is that the application will be reviewed by the Research Review Committee for approval. I will send this to the committee members as soon as Dr. Parker has reviewed all of the documentation that I now have.

I will keep you informed.

Cheryl King
Administrative Clerk, Research & Evaluation
CLARK COUNTY SCHOOL DISTRICT
Nedra Joyce Communication Center
(702) 799-5195 Fax 799-0292 (internal: 0099-5958)
August 5, 2004

Monica Lounsbery, Ph.D.
Department of Educational Leadership
University of Nevada Las Vegas
4505 Maryland Parkway, Box 453002
Las Vegas, NV 89154-3002

Dear Dr. Lounsbery:

The Research Review Committee of the Clark County School District has reviewed your request entitled: Validation of a Student School Climate Inventory. The committee is pleased to inform you that your proposal has been approved with the following provisos:

1. Participation is strictly and solely on a voluntary basis.
2. Provide letter of acceptance from principals who agree to be involved with the study.

Should the use of human subjects described in the referenced protocol continue beyond a year from the approval date, it will be necessary to request an extension. Should any change(s) be made to the protocol, it will be necessary to request additional approval for such change(s) in writing through the Research Review Committee.

Please provide a copy of your research findings to this office upon completion. We look forward to the results. If you have any questions or require assistance please do not hesitate to contact Robert P. Parker, Ph.D. at 799-1041 ext. 5957 or e-mail at rmparker@interact.ccsd.net.

Sincerely,

Arlene Lewis
Director
Research and Accountability
Chair, Research Review Committee

Cc: Maurice Flores
    Rosanna Gallagher
    Robert Parker
    Research Review Committee
REFERENCES


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VITA

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Recreation, and Dance. 76(3). 34-37.

activity opportunity in Nevada K-12 schools. The Nevada Journal for
Health Physical Education, Recreation, and Dance. 16(1). 18-20.

Thesis Title: Development of an Instrument to Measure Student Perception of
School Connectedness

Thesis Examination Committee:
Chairperson, Dr. Monica Lounsbery, Ph.D.
Committee Member, Dr. Gerald Landwer, Ed.D.
Committee Member, Dr. RR Apache, Ph.D.
Committee Member, Dr. Timothy Bungum, Dr.P.H.

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