Measuring Relationships of Teachers and Students

with Emotional Disturbance

BY

JAIME LYNN ZURHEIDE
B.A. University of Missouri-Columbia, 1999
M.A. University of San Francisco, 2005

THESIS

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Defense Committee:

Dr. Elizabeth Talbott, Chair and Advisor
Dr. Lisa Cushing
Dr. Daniel Maggin
Dr. Michelle Parker-Katz
Dr. Theresa Thorkildsen, Educational Psychology

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SUMMARY

The *Student-Teacher Relationship Scale (STRS)*, a teacher-reported measure of the quality of the relationship between teachers and their students, has been used in numerous studies of students with and without disabilities from preschool to early adolescence. However, evidence for the reliability, validity, and scale structure is notably lacking for students with emotional and behavioral disabilities, for whom positive relationships with adults are critical to preventing poor school outcomes. Thus, the purpose of this study was to examine the dimensional structure and evidence for reliability and validity of *STRS* for elementary students with Emotional Disturbance (ED). I accomplished this by (a) testing the factor structure of the *STRS* for ED students using Exploratory Factor Analysis (EFA) followed by Confirmatory Factor Analysis (CFA); (b) examining evidence for reliability using internal consistency; and (c) examining evidence for validity using concurrent validity measures: the *PIML* (student-reported measure of relationships), the *SDQ* (teacher- and student-reported measure of behavior), and the *EBS* (teacher-reported measure of ED symptoms). Additionally, this study sought responses from teachers on the social acceptability of the *STRS* when used with students with ED.

Study participants included 79 special and general education teachers and 203 of their students with characteristics of ED. Teachers completed a screening measure to identify students who met the basic criteria for ED. All teachers in the study completed the *STRS* for each student who met the eligibility criteria. Twenty-four teachers and 50 students participated in a subsample where a student-rated relationship measures was completed and both teachers and student completed a measure of student behavior.

The factor structure of the *STRS* was analyzed using EFA to determine the best fitting-model, followed by CFA to test the model-fit. Both the 28-item long-form and 15-item short-form of the *STRS* was analyzed using EFA and CFA. Reliability was assessed using internal

consistency (Chronbach's *alpha*) for the overall scale and all subscales. To assess validity, correlations were calculated between individual subscales on the *STRS* and subscales of the *PIML*, *SDQ*, and *EBS*. The student and teacher reports of relationships and behavior were compared to evaluate agreement between the perspectives of teachers and students with ED on the quality of the relationship and associations between relationships and behavior.

Results from this study provide evidence for the factor structure and reliability of the *STRS* short-form and a significantly modified version of the *STRS* long-form. However, this study supports the need for additional revisions to the Dependency subscale of the *STRS* long-form in order to make it more applicable to students with ED. Correlational analyses provided evidence for the convergent and discriminant validity of the *STRS* Conflict and Closeness subscales but limited support for the Dependency subscale. Teachers and students had limited agreement on the quality of their relationship; significant correlations were only found between the *STRS* Conflict subscale and *PIML* Dissatisfaction with Teacher subscale. For correlations between teacher and student-reports of behavior and relationships, same-rater correlations were much stronger than cross-rater. Teachers generally rated the social acceptability of the *STRS* high especially when asked about the amount of time needed to complete the measure. Results from this study highlight the need for continued refinement of relationship measures when used with students with ED and additional research examining relationships for this population of students. Results from this study demonstrate importance of including both student and teacher perspectives in research on relationships.

Key terms: interpersonal relationships, teacher-student relationships, concordance, Confirmatory Factor Analysis, Exploratory Factor Analysis, reliability, validity, emotional disturbance

I: INTRODUCTION

Increasingly, researchers and school professionals are acknowledging the importance of the social aspects of schooling as predictors of student outcomes. This is apparent in the proliferation of the use of Positive Behavior Interventions and Supports (PBIS) and Social and Emotional Learning (SEL) curricula in schools. These programs and interventions seek to improve the social climate of classrooms by encouraging students to develop and use positive strategies for managing their emotions and behavior. In addition, these programs address the importance of building and maintaining relationships between teachers and students for improving student academic and behavioral outcomes. Indeed, positive teacher-student relationships have been associated with improvements in student adjustment, school engagement and bonding, social-emotional functioning, peer relationships, and improvements in math and reading achievement (Baker, Grant, & Morlock, 2008; Decker, Dona, & Christenson, 2007; Hamre & Pianta, 2001; Hughes, Cavell, & Wilson, 2001; Murray, 2009; Murray & Greenberg, 2001; Murray, Murray, & Waas, 2008; Murray & Zvoch, 2010). Positive teacher-student relationships have been found to be especially beneficial for students with aggressive behavior and those considered to be at-risk for academic and behavioral problems (Hughes et al., 2001; Meehan, Hughes, & Cavell 2003; Pianta, Steinberg, & Rollins, 1995).

For students with emotional and behavioral disabilities, positive relationships may be particularly necessary as these students experience the worst school outcomes of any group of students with or without disabilities. They have the highest drop-out rate of all disability categories at 44.9% (U.S. Department of Education, Office of Special Education and Rehabilitative Services, Office of Special Education Programs [OSEP], 2011). They are also much more likely to be placed in restrictive classroom settings than other students with high incidence disabilities (OSEP, 2011) and they have the highest rate of suspensions and expulsions for all students with disabilities (Wagner, Kutash, Duchnowski, Epstein & Sumi, 2005). Students with behavioral disabilities or those considered at-risk based on behavior (e.g.

students with high levels of externalizing or antisocial behavior) also tend to have poorer relationships

with teachers compared to other students (Al-Yagon & Mikulincer, 2004; Blankenmeyer, Flannery, &

Vazsonyi, 2002; Decker et al., 2007; Hamre, Pianta, Downer, & Mashburn, 2008; Hughes et al., 2001;

Murray & Greenberg, 2001; Murray & Murray, 2004; Murray & Zvoch, 2011). However, for these same

students, positive relationships with teachers have been cited as a moderator between behavior or

other risk-factors and potential negative outcomes (Hamre & Pianta, 2001; Tsai & Cheney, 2012). For

students with disabilities and high levels of externalizing behavior, positive relationships with teachers

have been associated with higher ratings of academic and behavioral adjustment (Baker et al., 2008;

Decker et al., 2007; Murray & Greenberg, 2001; Murray & Zvoch, 2011).

        In order to be able to make credible claims about factors influencing relationships and

connections between relationships and student outcomes it is important to use measures that have

evidence supporting their use. Studies examining teacher-student relationships have primarily relied on

one teacher-report measure of relationship quality, the *Student-Teacher Relationship Scale* (*STRS*,

Pianta, 2001). However, limited information exists regarding reliability and validity for the *STRS* with

students who have emotional and behavioral disabilities. The purpose of this study was to examine the

factor structure and evidence for reliability and validity of the *STRS* with a population of students having

Emotional Disturbance (ED) and their general and special education teachers.

        This chapter will provide background information about the construct of teacher-student

relationships, including a theoretical model for understanding relationships between teachers and

students and how that model can be applied to students with ED and their teachers. It will also present

the purpose of this study and its potential to contribute to the literature base for teacher-student

relationships. Chapter II will review the literature related to teacher-student relationships, including

factors that influence relationships and associations between relationships and academic and behavioral

outcomes with a focus on studies utilizing the *STRS*. Chapter II will also discuss measurement issues

related to teacher-student relationships including the development and psychometric properties of the

STRS and recent measurement studies using the *STRS*. Chapter III will detail the methods used in this

study. Chapter IV will present the results of with study with Chapter V as discussion.

Defining Teacher-Student Relationships

Researchers studying teacher-student relationships often define these relationships in terms of

two dimensions: an emotional and a behavioral dimension (Murray & Pianta, 2007). The emotional

dimension can be viewed as the degree of closeness, warmth, affection and/or trust between teachers

and students, with the behavioral dimension including factors such as communication, and the level of

support and involvement provided by the teacher. Researchers measuring teacher-student

relationships have identified several different factors that can be used to describe the quality of the

relationship. Pianta (2001) identifies three dimensions of teacher-student relationships: *conflict*,

closeness, and *dependency*. Other measures describe teacher-student relationships in terms of the

degree of *communication*, *trust*, and *alienation* between teachers and students (Murray and Zvoch,

2010) or the level of *warmth*, *autonomy*, and *negativity* in the relationship (Mantzicopoulos & Neuharth-

Pritchett, 2003). Still other measures emphasize the emotional quality of the relationship (i.e. the child's

feelings about the teacher) or the level of acceptance the teacher has for the child (Al-Yagon &

Mikulincer, 2004; Murray & Greenberg, 2000; Wellborn & Connell, 1987). Common to most of these

relationship constructs is a definition of relationships in terms of both negative (e.g. conflict, alienation,

negativity) and positive (e.g. closeness, communication, warmth) dimensions.

Several theoretical models have been used to frame teacher-student relationships and the

factors used to describe the relationship are closely tied to the theoretical framework used. Many

researchers have relied heavily on the tenets of attachment theory (Al-Yagon & Mikulincer, 2004;

Kesner, 2000; Lynch & Cicchetti, 1997; Riley, 2009.) Attachment theory provides a model for describing

the ways infants and toddlers establish caring relationships with early caregivers, and how that

attachment subsequently transfers over to the relationships they form with teachers upon entering

school (Bowlby, 1988; Howes & Hamilton, 1992). Attachments early in life help the child develop an

internal working model (IWM) of social relationships which can then guide their formation of

relationships with teachers. "The IWM provides mental representations of self and others and is the

mechanism by which early experiences influence the quality of later attachment relationships" (Kennedy

& Kennedy, 2004, p. 248).

Attachment theory as applied to teacher-student relationships tends to place the focus on early

teacher-student relationships in preschool and kindergarten, the time when students are transitioning

from their primary relationships being with parents to the presence of other adults in their lives.

However, researchers examining relationships of older children (e.g. late elementary school to high

school) have also applied the ideas of attachment theory (Al-Yagon & Mikulincer, 2004; Lynch &

Cicchetti, 1997; Murray, 2009; Murray & Greenberg, 2000). Although researchers examining

relationships between teachers and older students still place importance on how relationships with

parents can influence attachments to teachers (e.g. Murray, 2009), there is a difference in opinions

about whether the internal working model developed early in life is stable over time from infancy to

school age or if a child's attachment style can change with later relationships, including those with

teachers (Davis, 2003). Relationships with teachers in early elementary grades can influence later

relationships with other teachers (Birch & Ladd, 1997, 1998; Pianta, 1999; Pianta et al., 1995). However,

additional research is needed to develop a theory about how attachment with teachers develops and

changes over time (Davis, 2003).

Viewing relationships through the lens of attachment theory puts a high degree of importance

on student characteristics for influencing relationships. The attachment style children develop early in

life along with the behavioral and emotional characteristics they bring to relationships are the key

determinants of relationship quality. A great deal of research on teacher-student relationships takes

this perspective. However, it is important to also take into account ways that teachers can influence

their relationships with students. In fact, as the teacher is the adult in the relationship with a greater

degree of influence and power compared to the student, relationships between teachers and students

can be seen as being asymmetrical with the teacher having more control over the quality of the

relationship (Pianta, 1999). Mihalas, Morse, Allsopp, and McHatton put an even greater responsibility

on the teacher, defining teacher-student relationships as "an interaction between adults and students,

whereby the adult does what is best for the student, taking into account the students' developmental

level and associated needs" (2009, p. 110).

Regardless of the amount of influence afforded to different individuals in the relationship,

teacher-student relationships ultimately involve ongoing interactions between teachers and students

that develop over time and affect individuals both within and outside of the relationship (Pianta, 1999).

Developmental systems theory (Ford & Lerner, 1992) helps to explain the impact of the larger social

context on the teacher student relationship (Pianta & Walsh, 1996). According to Myers and Pianta,

"using this theory, the development of the person-in-context is depicted as a function of dynamic

processes embedded in multilevel interactions between person and context(s) over time" (2008, p. 602).

Developmental systems theory places the child in the context of the various systems in which he/she

interacts (e.g. family, school, community, etc.) and in turn places the teacher-student relationship in the

context of these larger systems as well. Relationships are defined not only by the interactions between

individuals but also through their connection to other levels of the system (Hinde, 1987). In the case of

teacher-student interactions, the presence of other children in the class, and the type of discipline and

curriculum used in the classroom are important factors in the relationship (Pianta & Walsh, 1996).

Combining the ideas of relationships as dynamic systems with the idea of attachment as the

basis for relationships can provide a full picture of teacher-student relationships. Teachers and students

each bring their own ideas and beliefs to the relationship along with past attachment histories and

previous interactions with other students/teachers. Their individual characteristics shape the

interactions that occur between them, which, along with external influences (e.g. classroom/school level

factors), shape the relationships that develop.

Pianta (1999) developed a model for adult-child relationship processes. Applied to teachers,

this model includes individual characteristics of children and teachers, the impact of perceptions and

beliefs, interactions between teachers and students, and external influences on the relationship (Figure

1; Myers & Pianta, 2008). This model provides a way of examining the individual, interaction, and

system-level factors that shape the development of relationships between teachers and students.
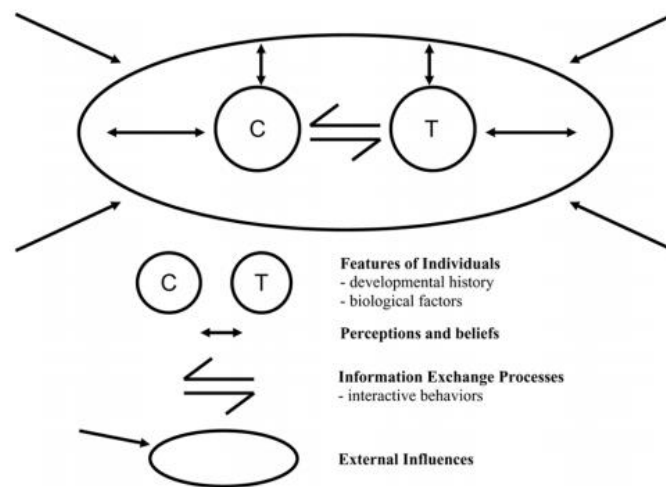
Figure 1. A conceptual model of student-teacher relationships. From "Developmental Commentary: Individual and Contextual Influences on Student-Teacher Relationships and Children's Early Problem Behaviors" by. S. S. Myers and R. C. Pianta, 2008, *Journal of Clinical Child & Adolescent Psychology, 37*, p. 602. Reprinted by permission of Taylor & Francis LLC (www.tandfonlinecom).

Relationships Between Teachers and Students with Emotional Disturbance

A great deal of research currently exists on teacher-student relationships. Studies have

examined how teacher characteristics influence relationship quality (e.g. Baker, 2006; Blankenmeyer et

al., 2002; Ewing & Taylor, 2009; Gest, Welsh, & Domitrovich, 2005; Hughes, Luo, Kwok, & Loyd, 2008;

Jerome, Hamre, & Pianta, 2009; Kesner, 2000; Lynch & Cicchetti, 1997; Murray et al., 2008; O'Connor,

2010; Valiente, Lemery-Chalfant, Swanson, & Reiser, 2008), associations between relationships and

student academic and behavioral outcomes (e.g. Birch & Ladd, 1997, 1998; Croninger & Lee, 2001;

Decker et al., 2007; Demaray & Malecki, 2002; Hamre & Pianta, 2001; Hughes et al., 2001;

Mantzicopoulos & Neuharth-Pritchett, 2003; Rey, Smith, Yoon, Somers, & Barnett, 2007; Silver,

Measelle, Armstrong, & Essex, 2005), how relationships change over time (Doumen, Verschueren ,

Buyse, Germeijs, Luyckx, & Soens, 2008; Gest et al., 2005; Jerome et al., 2009; Lynch & Cicchetti, 1997;

O'Connor, 2010), and differences in teacher and student perceptions of relationships (Al-Yagon &

Mikulincer, 2004; Decker et all., 2007; Doumen et al., 2008; Gest et al., 2005; Harrison, Clarke, & Unger,

2007; Hughes, 2011; Hughes, Cavell, & Jackson, 1999; Murray, Murray, & Waas, 2008; Murray & Zvoch,

2011; Rey et al., 2007; Valeski & Stipek, 2001; Wu, Hughes, & Kwok, 2010). Studies have examined

relationships for students from preschool to high school in the US and many other countries, including

Australia (Harrison et al., 2007), Belgium (Buyse, Verschueren, Verachtert, & Van Damme, 2009;

Doumen et al., 2008; Doumen, Koomen, Buyse, Wouters, & Verschueren, 2012; Doumen, Verschueren,

Buyse, De Munter, Max, & Moens, 2009; Roorda, Verschueren, Vancraeyveldt, Van Craeyvelt, & Colpin,

2014), Greece (Gregoriadis & Tsigilis, 2008; Tsigilis & Gregoriadis, 2008), Holland (Koomen, Verschueren,

van Shooten, Jak, & Pianta, 2012; Spilt & Koomen, 2009; Spilt, Koomen, & Jak, 2012; Thijs & Koomen,

2009), Israel (Al-Yagon & Mikulincer, 2004) and Norway (Drugli, 2008; Solheim, Berg-Nielsen,

Wichstrøm, 2012). Many studies of relationships have focused on students with externalizing,

aggressive, or antisocial behavior (Baker et al., 2008; Decker et al., 2007; Demaray & Malecki, 2002;

Hughes et al., 1999; Hughes et al., 2001; Meehan et al., 2003; Murray & Zvoch, 2011; Tsai & Cheney,

2012) and a few have included students with diagnosed disabilities (Al-Yagon & Mikulincer, 2004;

Murray, 2009; Murray & Greenberg, 2001; Murray & Murray, 2004). However, to date, few studies have

been conducted that specifically address the relationships between teachers and students with ED.

Nevertheless, results from individual studies can be used to gain a picture of different qualities of these

relationships. The model by Myers and Pianta (2008) is a useful tool for exploring relationships between

students with ED and their teachers and the various factors that influence those relationships.

Research related to each of these factors will be reviewed in depth in Chapter II.

   Definition of terms related to ED. Before discussing students with ED and in the context of their

relationships with teachers, it is important to clarify the meaning of the term Emotionally Disturbed and

other related behavioral terms. While students with ED have been included in a few studies on teacher-

student relationships (e.g. Murray & Greenberg, 2001, 2006; Murray & Murray, 2004) most studies on

teacher-student relationships focus on students without special education labels. However, a great deal

of research on teacher-student relationships includes students who are similar to those with ED based

on their behavior. Terms often used to describe these behaviors include: antisocial,

externalizing/internalizing, and aggressive. Aggressive behavior can include verbal, gestural, or physical

attacks on individuals, property, or self (Walker, Ramsey, & Gresham, 2004). Externalizing behavior

refers to behavior that is directed outward, away from the individual, including both aggressive and

delinquent behavior (Achenbach, 1985).   This is compared to internalizing behavior which is behavior

directed inward and can include depression, anxiety, social withdrawal, fear and phobias (Achenbach,

1985).   Antisocial behavior is generally defined as behavior that is hostile and/or aggressive, and

includes defiance towards adult authority and a disregard from accepted rules and standards for

behavior (Walker et al., 2004). Antisocial behavior tends to increase in adolescence as teenagers

experiment with deviant behavior (Moffitt, 1993). However, the majority of these students are

considered "adolescence limited" in their participation in antisocial acts. A much smaller percentage of

students, less than 10%, can be considered "life-course persistent" in their antisocial behavior with the

behavior beginning in early childhood and continuing through school age and into adulthood (Moffitt,

1993).

The term Emotional Disturbance generally refers to the disability label found in the Individuals

with Disabilities Education Act, 20 U.S.C. § 300.8 (2004):

> Emotional disturbance means a condition exhibiting one or more of the following characteristics over a long period of time and to a marked degree that adversely affects a child's educational performance:
> (A) An inability to learn that cannot be explained by intellectual, sensory, or health factors.
> (B) An inability to build or maintain satisfactory interpersonal relationships with peers and teachers.
> (C) Inappropriate types of behavior or feelings under normal circumstances.
> (D) A general pervasive mood of unhappiness or depression.
> (E) A tendency to develop physical symptoms or fears associated with personal or school problems.
> The term includes schizophrenia. The term does not apply to children who are socially maladjusted, unless it is determined that they have an emotional disturbance. (IDEA, 2004, sec. 300.8)

Students with a label of ED have been referred for special education due to concerns with their

behavioral or emotional qualities, and have been evaluated and deemed eligible for special education

services based on the above definition. While emotional disturbance is the federal term for this type of

disability, various states and organizations, along with researchers, have used other terms such as

emotional disability or emotional disorder instead of "disturbed." In addition, many researchers include

the term "behavior," to create the more inclusive term, emotional or behavioral disorder (EBD). The

Council for Children with Behavioral Disorders (CCBD) advocates for the use of this term instead of

emotional disturbance (CCBD, 2000).

One issue commonly mentioned when discussing the legal definition of ED is the exclusion of

students with "social maladjustment". This exclusion can be used to keep students with aggressive,

antisocial, or externalizing behaviors from receiving services under the label of ED (CCBD, 2000; Merrell

& Walker, 2004; Walker et al., 2004). These students may be just considered to have "discipline

problems" and not be in need of special education assistance. However, research has called into

question the distinction between students with ED and social maladjustment (Walker, Nishioka, Zeller,

Severson, & Feil, 2000). While the federal definition may focus more on emotional criteria for inclusion

under the ED label, many of the students in elementary schools with the label of ED can be seen as

having behaviors indicative of social maladjustment (Cullinan, Evans, Epstein, & Ryser, 2003; Walker et

al., 2004). Studies of students with ED have found that these students tend to have higher levels of

externalizing behavior compared to internalizing behaviors (Nelson, Babyak, & Gonzalez, 2003) and

overall high levels of disruptive and aggressive behavior (Cullinan et al., 2003). Research has also

highlighted the high numbers of students with ED who have multiple disabling characteristics including

comorbidity of multiple ED criteria and additional psychiatric diagnoses such as oppositional defiant

disorder, depression, and ADHD (Cullinan & Epstein, 2001; Wagner et al., 2005).

Researchers have suggested that the number of students identified with ED and provided with

special education services, consistently less than 1% of the school population (OSEP, 2011), is much

lower than the actual number of students with emotional disturbance (Walker et al., 2000). Researchers

have estimated that over 20% of students are in need of mental health services for psychiatric disorders

(Hoagwood & Erwin, 1997) while upwards of 15% of the school population exhibit symptoms consistent

with the federal definition of ED (Forness & Kavale, 2001). Students with ED are often diagnosed later

that students with other disabilities, with the percentage of students identified with ED peaking at age

16 (Data Accountability Center, 2011). Additionally, students identified under other disability

categories, namely Learning Disabilities, often exhibit symptoms consistent with emotional disturbance

(Forness & Kavale, 2001; Talbott & Fleming, 2003). For these reasons, many students in elementary

school who exhibit symptoms for ED may not be officially identified until middle or high-school and

those who do begin receiving special education services in elementary school may not have a label of

ED. In this study, I chose to focus on students with emotional disturbance who meet the criteria

specified in the federal definition of ED. However, due to the under identification of students with ED in

elementary schools, I am including students who have an IEP with a label of ED and those who meet

criteria for the federal definition but have been identified with another disability label (e.g. LD, OHI) or

those who have not been identified with a disability.

> **Features of individuals.**

> *Students.* A great deal of research on teacher-student relationships has focused on

characteristics students bring to the relationship. Demographic factors such as age, race, and gender

have all been found to influence the quality of relationships students develop with teachers. However,

the impact of demographic characteristics such as race and gender on teacher-student relationships

may be further complicated for students with ED as boys, students from lower SES backgrounds and

African American students are overrepresented in the group (Wagner et al., 2005). This is especially

true for gender; more than three-fourths of all students with ED are boys (Wagner et al., 2005)

> Special education label and behavioral qualities have also been found to affect teacher-student

relationships. While there is limited research on the topic, studies have found that both teachers and

students report lower quality of relationships between teachers and students with disabilities (Al-Yagon

& Mikulincer, 2004; Murray & Greenberg, 2001; Murray & Murray, 2004). Studies comparing students

with disabilities to those without have found that teachers report greater conflict and less closeness in

their relationships with students with disabilities (Murray & Murray, 2004) and students with disabilities

have self-reported more rejection and less acceptance from their teachers (Al-Yagon & Mikulincer,

2004) compared to their peers without disabilities. However, it should be noted that, samples in these

two studies were comprised almost entirely of students with learning disabilities. Only two studies have

been found that include students with ED in their sample (Murray & Greenberg, 2001, 2006). Using

student-reports of relationships, one found that students with ED have poorer relationships with

teachers when compared to students with other disabilities (Murray & Greenberg, 2001) while the other

found no differences between disability groups on measures of relationship quality (Murray &

Greenberg, 2006).

When examining students with problem behavior (including externalizing, internalizing

behavior, aggression, and hyperactivity) studies have found with students with higher ratings of problem

behavior have poorer relationships with teachers based on both teacher-reports and student self-

reports (Baker, 2006; Blankenmeyer et al., 2002; Decker et al., 2007; Hamre et al., 2008; Hughes et al.,

2001; Murray & Murray, 2004; Murray & Zvoch, 2011; Spilt & Koomen, 2009). When using scales

measuring the levels of conflict in the relationship, researchers have found that students with

externalizing and/or aggressive behavior have higher levels of conflict with teachers (Hamre et al., 2008;

Hughes et al., 2001; Murray & Murray, 2004; Murray & Zvoch, 2011; Spilt & Koomen, 2009). As one of

the defining behavioral characteristics of students with emotional disabilities and externalizing behavior

is frequent conflict with teachers, this is a logical association. Far less research has examined students

with internalizing behaviors, who can also be included under the label of ED. Research with these

students has generally found that teachers and students report greater conflict and dependency in

relationships between teachers and students with internalizing behavior (Baker, 2006; Birch & Ladd,

1998; Murray and Murray, 2004; Nurmi, 2012). However, associations between internalizing behavior

and relationships are generally less robust than associations between externalizing behavior and

relationships (Baker, 2006; Birch & Ladd, 1998; O'Connor, Dearing, & Collins, 2011).

Teachers. Just as students bring their attachment histories and individual characteristics to the

relationship, teacher qualities are an important part of the relationship model. Researchers have

pointed to the importance of teacher social and emotional competence as a key component for

developing healthy relationships, with students while teacher stress and burnout can potentially

contribute to declining relationships (Jennings & Greenberg, 2009). As high rates of stress, burnout, and

teacher attrition are common problem for special education teachers, teacher social and emotional

competence may be especially important for the development of relationships between special

education teachers and students with ED (Boe, Babbit, & Cook, 1997; Wisniewski & Gargiulo, 1997).

   While few studies have directly measured teacher qualities and their effect on relationships, the

research that does exist points to the fact that teacher qualities, just as student qualities, can influence

the quality of relationships between teachers and students (Hamre et al., 2008; Kennedy, 2011; Kesner,

2000; O'Connor, 2010). So far, research has only focused on a limited number of teacher characteristics

such as race, level of experience, and emotional/dispositional qualities including depression and self-

efficacy. In addition, research has begun to examine the importance of teacher attachment histories and

style as and their connections to teacher-student relationships (Kesner, 2000; Riley, 2009).

   Perceptions and beliefs. Researchers examining how teacher perceptions can influence their

actions towards students often use attribution theory to describe how teacher perceptions of students

influence instructional behavior (Heider, 1958; Weiner, 1974). The most commonly cited example of

this is a study by Rosenthal and Jacobson (1968) who found that when teachers were told that random

students had great academic potential, those students performed better than others at the end of the

year. When applied to behavior, attribution theory can explain how teachers respond differently to

student misbehavior based on their perceived cause of the behavior (Dobbs & Arnold, 2009). For

students with aggression or externalizing/antisocial behavior, teacher perceptions can influence not only

how teachers respond to their behavior but also how they interpret student characteristics such as

academic potential (Espinosa and Laffey, 2002).

   Teacher perceptions of students is particularly important for students with ED since teachers

tend to have more negative attitudes towards these students compared to students with other

disabilities or no disability (Cook, 2002; Cook, Tankersley, Cook, & Landrum, 2000; Cook, Cameron, &

Tankersley, 2007; Scruggs & Mastropieri, 1996; Scruggs et al., 2011). Teachers' perceptions about

students based on their behavior can influence the way teachers respond to the behavior of students.

Teachers who are more negative in their perceptions of students are more likely to have negative

interactions with those students (Sthulman & Pianta, 2001). Research suggests that teachers are more

likely to give more commands and negative responses to behavior (e.g. reprimand instead of

redirection) for students with aggression compared to other students even for same behavior, and they

are less likely to respond positively (e.g. praise) for positive behavior (Dobbs & Arnold, 2009; Van Acker,

Grant, and Henry 1996).

Less research has focused on student perceptions of teachers. However, studies that exist point

to the importance of students perceiving teachers as demonstrating care and respect, developing

connections with students outside of academics, providing personal and academic support, and having

strong classroom management skills (Cothran, Kulinna, & Garrahy, 2003; Jeffery, Auger, & Pepperell,

2013; Murray & Naranjo, 2008; Wentzel, 1997). Few studies of how students perceive teachers include

students with disabilities. For students with ED, history of negative interactions towards teachers can

potentially lead to distrust and negative perception of teachers. However, students who receive some

of their instruction from a special education teacher may come to view those teachers more positively.

They may perceive special education teachers as understanding them and their individual needs. An

example of this is found in a study by Murray and Naranjo (2008) on African American students with

learning disabilities. Students interviewed for this study repeatedly mentioned the importance of

support from two special education teachers at the school. Students saw these teachers as a support

system and as an advocate for them in interactions with general education teachers (Murray & Naranjo,

2008).

Information exchange processes. Pianta (1999) discusses how both perception and selective

attention to certain student cues influence the development of relationships between teachers and

students. "Perceptions and selective attending (often related to representations of relationships) act as

filters for information on the other's behavior…These filters can be important in guiding interactive

behavior because they tend to be self-fulfilling"(p. 76-77). In fact, researchers speak of the idea of the

"self-fulfilling" prophesy for how teacher perceptions can lead to student actions (Dobbs & Arnold,

2009). Perceptions influence the interactions (i.e. information exchanges) that take place between

teachers and students. An example of this is found in a study by Nelson and Roberts (2000) of students

who were labeled by the teacher as being "disruptive". When students exhibited disruptive behavior,

teachers were more likely to reprimand instead of redirect the behavior for "disruptive students"

compared to control group, and in-turn, the disruptive students were less likely to follow teacher

redirection thereby fulfilling the teacher's expectation (Nelson & Roberts, 2000).

Patterson's (1982) model of Coercive Family Processes can also be used to help to explain the

importance of interactions between teachers and students especially for antisocial students. Coercive

interactions between parents and children begin with a behavioral demand placed on the child by the

parent (i.e. to start or stop a behavior). When the child does not comply, their behavior is met with

coercive responses from parents. The child, in turn, escalates the interaction until the behavior is

ultimately reinforced either positively or negatively (Patterson, 1982). This cycle is repeated over and

over as the child learns to use behaviors such as aggression, arguing, or whining to control interactions

within the family. When the student begins school, these behaviors are then transferred to interactions

with teachers and peers (Walker, et al., 2004).

Researchers applying this theory to interactions between students and teachers have focused

on the negative reinforcement cycle that can occur in teacher-student interactions (Gunter & Coutinho,

1997; Gunter, Denny, Jack, Shores, & Nelson, 1993). Gunter and Coutinho (1997) describe the negative

reinforcement paradigm in which the behavior of students with ED stems from a desire to avoid or

escape from troubling situations in the classroom (both academic and social). Teachers of students with

ED often provide little positive feedback for student behavior so most interactions between teachers

and students with ED involve negative sequences of behaviors between the teacher and student (Gunter

& Coutinho, 1997). Sutherland and Oswald (2005) extend this idea to a model of transactional

processes between teachers and students with ED, whereby negative student behavior leads to negative

teacher behavior, which over time leads to negative student outcomes. An example of this process,

while not directly including teacher-student relationships, includes teacher avoidance of students due to

the student's disruptive behavior, an action which could negatively impact the closeness of the

relationship (Sutherland & Oswald, 2005).

However, the opposite might also occur for students with ED. Due to students' classroom

behavior, teachers might interact with them more in an effort to control their behavior. If the primary

interactions between teachers and students with ED are negative the teacher would most likely develop

a negative perception towards those students. This could negatively affect the quality of the

relationship as found in the research by Sthulman and Pianta (2001). These negative interactions with

teachers may have greater impact for students with ED or antisocial behavior. For example, Beyda,

Zentall, and Ferko (2002) found associations between teacher practices and student behavior with more

student-centered practices leading to more positive student behavior and vice-versa.   However, this

pattern was only observed for students who were identified by the teacher as having behavioral

problems in the class (Beyda et al., 2002).

Just as researchers have utilized attachment theories for parent-child relationships and applied

them to teachers and students, theories of parent socialization can be used to explain the possible

influence of teacher actions on relationships with students. Baumrind (1971) identified dimensions of

effective parenting including control, maturity demands, democratic communication, and nurturance.

Wentzel (2002) applied these dimensions to teaching relabeling control as rule setting, maturity

demands as high expectations, democratic communication as fairness, and lack of nurturance as

negative feedback. Wentzel found that teachers differ on these dimensions and these dimensions

account for variance in student motivation, behavior, and academic performance (2002).

External influences. School and classroom-level factors including school structure, other

students present in the class, and overall emotional climate of both the school and classroom are also

included in the Myers and Pianta model (2008) for teacher-student relationships (Figure 1) as influences

on the teacher-student relationship. For example, systems such as school-wide PBIS (SW-PBIS), which

seek to improve the overall climate of a school by promoting a positive structure for discipline, can

influence the relationships teachers develop with students. The availability of intervention programs

such as Check and Connect (Sinclair & Christenson, 1998) which focus on increasing school

connectedness for students at risk of dropping out can also influence the quality of relationships for

individual students.

School structures including class arrangements, departmentalization, and scheduling can also

contribute to the ways in which teachers and students interact and form relationship (Murray & Pianta,

2007). For special education teachers working with students with ED, workplace conditions may also

impact the relationships they form with students. As mentioned previously, special education teachers

experience higher levels of stress, burnout, and attrition and research has found that external factors

such as lack of administrative support, paperwork demands, and access additional supports contribute

to this (Albrecht, Johns, Mounsteven, & Olorunda, 2009; Billingsley, 2004). While there is limited

research connecting workplace conditions with relationships, Mantzicopoulos (2005) found that

teachers in who reported higher perceptions of difficulty in their teaching assignments were also

reported more conflict in their relationships with students.

The structure of schools can be especially important when comparing relationships for students

in elementary and secondary schools. The transition to middle school is often marked by students

pulling away from relationships with adults in favor of greater relationships with their peers (Lynch &

Cicchetti, 1997; Roser & Eccles, 1998). However, the structure of middle schools could also contribute

to changes in relationship quality over time. When students transition to middle school they usually

begin changing classes for different subjects instead of remaining with the same teacher all day. Having

less frequent contact with individual teachers could result in a decrease in both the amount of closeness

and conflict experienced between teachers and students (Jerome et al., 2009).

For students with disabilities and special education teachers, the special education program is

another important part of this system. Depending on their individual learning needs, students' level of

participation in the general education environment and their subsequent contact with special education

teachers will vary. Students may spend their entire day in a self-contained classroom with a special

education teacher and other students with disabilities. Others might receive pull-out services with a

small group of students and the special education teacher or be fully included in the general education

classroom with or without direct service from special education teachers. The special education services

a student receives will determine not only the amount of contact the student has with special and

general education teachers but also the nature of their interactions. For students with disabilities

receiving consultation services or services in a co-taught classroom, the special education teacher may

play more of the role of an academic or behavioral support instead of a teacher who delivers direct

instruction.

Another important factor in relationships is the importance of time (Hinde, 1987). Relationships

are shaped by ongoing interactions between individuals and systems over time. For teachers and

students this time period is usually limited to one school year but longer relationships are possible in the

case of multi-grade classrooms common in preschool and special education classes or through

continued contact between teachers and students outside of their primary classroom (e.g. advisory

programs, extra-curricular activities, resource programs).

Relationships and Student Outcomes

Just as student factors can influence the development of relationships with teachers,

relationships with teachers can influence student academic and behavioral outcomes. Detailed

discussion of associations between relationships and student outcomes will be provided in Chapter II.

As mentioned previously, positive teacher-student relationships are associated with a variety of student

outcomes, both academic and behavioral. The connection between relationships and outcomes has

been a consistent finding in research including students with and without disabilities. While research is

limited focusing specifically on students with ED, studies utilizing students with externalizing/aggressive

behavior or at-risk students have found similar connections between positive relationships and

outcomes (Hughes et al., 2001; Meehan et al., 2003; Pianta et al., 1995). Positive relationships can act

as a way of promoting resilience for students who are experiencing difficulties in school due to their

behavior. Fergus and Zimmerman (2005) describe models for adolescent resilience that can be applied

to teacher-student relationships for younger students. One model of resilience, protective factors, helps

reduce the impact of a risk factor on negative outcomes (Fergus & Zimmerman, 2005). When applied to

teacher student relationships, relationships as protective factors can be seen in a study of students at

risk for referral to special education for behavior (Decker et al., 2007). While this group of students is at

greater risk for negative outcomes such as suspensions and office referrals, positive teacher-student

relationships were associated with a decrease in the number of suspensions and referrals (Decker et al.,

2007).

Measuring Teacher-Student Relationships

Studies of teacher-student relationships have used both student and teacher-report measures

as well as peer and observer reports of the relationship quality. However, research on relationships has

relied more heavily on teacher reports of the relationship. There are several potential reasons for this.

It has been argued that researchers may be worried about the reliability and validity or student reports,

especially for younger students (Hughes, 2011; Koomen, Verschueren, & Thijs, 2006). As a great deal of

research on teacher-student relationships is based on attachment theory, most early research on

relationships between teachers and students focused on early grades when students were transitioning

to school (i.e. preschool and kindergarten). At this time children are moving from their key attachments

being with caregivers (e.g. parents), to the inclusion of new adults such as teachers. Additionally, there

are less well-supported measures for student-report of relationships compared to teacher-report

(Koomen et al., 2006).

Teacher-report measures of relationships generally take the form of written surveys completed

with a focus on individual students. A large proportion of research on teacher-student relationships

utilizes one teacher-report measure, the *Student-Teacher Relationship Scale* (*STRS*, Pianta, 2001). A

couple of other teacher report measures have been developed for individual studies: the *Teacher*

Reinforcing Scale used by Hughes and colleagues (1999) in a study of aggressive elementary students

and a version of the *Network of Relationships Inventory* (Furman & Buhrmester, 1985) a student-report

measure modified for use as a teacher measure by Hughes (2011). Additionally, an interview protocol

developed by Pianta (1999) and based on the *STRS* has been used in a few studies to gain a more in-

depth look at teacher perspectives on relationships (Spilt & Koomen, 2009; Sthulman & Pianta, 2001).

Currently, a comparable student-report measure with the same level of widespread use as the *STRS*

does not exist. In contrast to studies using teacher-report of relationships which are dominated by the

STRS, studies using student-reports have utilized a wide variety of measures. Many different student-

report measures exist and most have only been used in a handful of studies. These include *People in*

My Life (Cook, Greenberg, & Kusche, 1995, Murray & Greenberg, 2001), the *Inventory of Teacher-*

Student Relationships (Murray & Zvoch, 2010, 2011), the *Young Children's Appraisals of Teacher Support*

(Mantzicopoulos & Neuharth-Pritchett, 2003; Spilt, Koomen, & Mantzicopoulos, 2010), the *Children's*

Appraisal of Teacher as a Secure Base (Al-Yagon & Mikulincer, 2004) the *Relatedness Scale* (Decker et al.,

2007; Lynch & Cicchetti, 1997; Wellborn & Connell, 1987), the *Network of Relationships Inventory*

(Furman & Buhrmester, 1985; Hughes et al., 1999; Hughes, 2011; Meehan et al., 2003), the *Child and*

Adolescent Social Support Scale (Demaray & Malecki, 2002; Malecki, Demaray, Elliott, & Nolten, 1999),

and the *Survey of Children's Social Support* (Dubow & Ullman, 1989; Hughes et al., 1999; Rey et al.,

2007).

Additionally, a few studies have examined teacher-student relationships from the perspective of

others outside of the relationship. Studies using peer-reports of relationships have generally used

sociometric procedures where peers nominate students who fit certain relationship qualities (Doumen

et al., 2009; Hughes et al., 2001). For example Hughes and colleagues had peers choose the names of

children who "got along well with their teachers" and those who "don't get along well with their

teachers (2001, p. 294). Other studies have utilized ratings of outside observers through programs such

as the *Classroom Assessment Scoring System* (*CLASS*, la Paro, Pianta, & Stuhlman, 2002) which measure

qualities of overall classroom climate including teacher-student interactions (Doumen et al., 2012).

What constitutes a "good" relationship is generally dependent on the scale/subscales used and

whose perspective (e.g. teachers or students) is considered. For example, Lynch and Cicchetti (1997)

identified five patterns of relationships between teachers and students using a student-report measure,

the *Relatedness Scale* (Wellborn & Connell, 1987). The *Relatedness Scale* includes two subscales: the

Emotional Quality scale measures the overall emotional tone of the relationship and the Psychological

Proximity Seeking scale measures the students desire to be closer to the teacher. Optimal patterns

involve high degrees of Emotional Quality and low Psychological Proximity Seeking, while Deprived

patterns demonstrate the opposite. Three additional patterns emerged based on other combinations of

scores: Disengaged, Adequate, and Confused. Disengaged students report low scores on each subscale,

with Confused students reporting high scores on each subscale. Adequate students report average

scores on both subscales.

An earlier version of the *STRS* which included five subscales also grouped relationships in

clusters: Dependent, Positively Involved, Dysfunctional, Functional/Average, Angry/Dependent, and

Uninvolved (Pianta, 1994). For the revised version of the *STRS* currently being used, it is suggested that

a good relationship between teachers and students involves high levels of Closeness with low levels of

both Conflict and Dependency (Pianta, 2001). However, some researchers using the *STRS* have

suggested that a higher level of Dependency is the marker of a good relationship for students of

different ages and cultures (Gregoriadis & Tsigilis, 2008). Because of the prevalence of the *STRS*,

researchers operating from the perspective of attachment theory often use the definition of

relationships as being high in Closeness and low in Conflict (Davis, 2003).

Two student-report measures based on attachment theory take a slightly different perspective.

The *Inventory of Teacher-Student Relationships* (*IT-SR*, Murray & Zvoch, 2011) defines positive

relationships as those high in communication and trust and low in alienation. The *People in My Life*

(*PIML*, Cook et al., 1995) includes subscales for both relationships with teachers and bonds with school.

Murray and Greenberg (2000) identified three clusters of students based on the *PIML*: the

Dysfunctional group had high scores on Dissatisfaction with Teacher and School Dangerousness with low

scores on Affiliation with Teachers and School Bonding; the Positively Involved group had high scores on

Affiliation with Teachers and School Bonding with low scores on Dissatisfaction with Teachers and

School Dangerousness; the Functional/Average group had average scores on all subscales.

Concordance among raters. Concordance concerns the degree of agreement between different

raters of teacher-student relationship usually measured by a correlation between teacher- and student-

report measures. Studies utilizing multiple raters of relationships have found weak to moderate

correlations between raters on the quality of the relationship (Al-Yagon & Mikulincer, 2004; Hughes et

al., 1999; Hughes, 2011; Murray et al., 2008; Murray & Zvoch, 2011; Rey et al, 2007; Valiente et al.,

2008; Wu et al., 2010). Part of this may be due to the fact that most teacher and student reports of

relationships measure relationship quality using different subscales. So while researchers may expect to

have positive correlations between similar subscales (e.g. Closeness on the *STRS* and Emotional Quality

on the *Relatedness scale*), these correlations may be low because the subscales are, in-fact, measuring

different constructs. However, another explanation could be that teachers and students view

relationships differently. As teacher reports are the most commonly used measures employed in the

research, it is important to know if students tend to agree with teachers on their perceptions of

relationship quality or if additional information about the relationship could be gained from adding the

perspective of students. Researchers examining concordance between teacher and student-reports of

relationship have emphasized the importance of student perceptions of relationships as an important

predictor of student outcomes (Hughes, 2011; Murray et al., 2008). Others have examined the

importance of consistency between student reports and the reports of teachers and peers as predictors

of student engagement and achievement (Wu et al., 2010). Studies examining concordance between

teacher and student reports of relationships will be discussed in detail in Chapter II.

   The *Student-Teacher Relationship Scale*. Designed by Pianta (2001), the *Student-Teacher*

Relationship Scale is the most widely used measure of relationships. The *STRS* includes three factors for

measuring teacher-student relationships: Conflict, Closeness, and Dependency. Conflict measures the

negative qualities of the teacher's relationship with the student. Teachers who report a high degree of

conflict in their relationship with a student experience frequent struggles with the student, perceive the

student to be angry or unpredictable, and feel that they are ineffective in dealing with the student

(Pianta, 2001). Alternatively, relationships with a high level of closeness are characterized by warmth,

trust, affection, and open communication (Pianta, 2001). Dependency measures the degree of student

reliance on a teacher with a focus on an unhealthy level of over-reliance. The *STRS* was initially designed

for use with children from preschool to grade 3 but has been utilized in studies with young adolescents

up to 8th grade (Decker et al., 2007; Murray & Murray, 2004; Murray & Zvoch, 2010, 2011.) It is

currently distributed by the University of Virginia and is recommended for use with students from age 3 to 12 (University of Virginia, 2013).

Studies using the *STRS* have examined the connection between positive relationships and student academic and behavioral outcomes (Baker et al., 2008; Decker et al., 2007; Hamre & Pianta, 2001; Murray & Zvoch, 2011). The *STRS* has also been used in longitudinal research examining the impact of students' early relationships with teachers and their long term outcomes (Hamre & Pianta, 2001). For students with learning and behavioral disabilities, the *STRS* has been used to show connections between relationships and special education referrals, and differences between students with and without disabilities on the degree of attachment to teachers (Al-Yagon & Mikulincer, 2004; Murray & Murray, 2004; Pianta et al., 1995).

The *STRS* has been recommend as a tool for school psychologists to use in diagnostic screening of students and for targeting students and teachers for more intensive interventions (Koomen et al., 2006; Kennedy & Kennedy, 2004). The Collaborative for Academic, Social, and Emotional Learning (CASEL) also recommends the *STRS* in its guide for assessing school context related to social and emotional learning calling it a "gold standard" in the field (Denham, Ji, & Hamre, 2010, p. 8). The *STRS* is also recommended by the American Psychological Association (APA) website for teachers to assess the strengths and weaknesses of their relationships with students (Rimm-Kauffman, 2013). The *STRS* has been used extensively in research in the United States and a number of other countries particularly Greece, the Netherlands, Norway, and Belgium (Doumen et al., 2009; Doumen et al., 2012; Gregoriadis & Tsigilis, 2008; Koomen et al., 2012; Roeden, Maaskant, Koomen, Candel, & Curfs, 2012; Solheim et al., 2012; Spilt & Koomen, 2009; Tsigilis & Gregoriadis, 2008).

Although the *STRS* is not marketed specifically as a tool for use with students with emotional disabilities, the *STRS* professional manual does describe the use of the scale with students who are in the special education referral process (i.e. RTI) or who have been identified by the teacher as having

particularly challenging behavior (Pianta, 2001). The *STRS* has been used in several studies with

elementary and middle school students with externalizing behavior, or who are at risk for referral to

special education due to behavior (Baker et al., 2008; Decker et al., 2007; Murray & Zvoch, 2011; Spilt &

Koomen , 2009; Tsai & Cheney, 2012). The *STRS* has also been used with populations of elementary

students with disabilities other than ED, specifically students with learning disabilities (Al-Yagon &

Mikulincer, 2004; Murray & Murray, 2004). However, to date, the *STRS* has not been used specifically

with a population of students with emotional disturbance. Additionally, the *STRS* has exclusively been

completed by general education teachers as opposed to special education teachers.

When it was originally developed, the *STRS* was found to have the three factor structure

described previously with adequate measures of reliability using both test-retest and internal

consistency estimates. Subsequent studies have generally found acceptable reliability for the *STRS* total

score and the Conflict and Closeness subscales (generally above .8). The Dependency subscale has been

more problematic with internal consistency estimates generally much lower (averaging around .6). The

Dependency subscale is not included on the *STRS* short form and many studies using the long form of

the *STRS* choose to eliminate this subscale focusing on just Conflict and Closeness.

Early research examining the structure of the *STRS* generally focused on pre-K to 1st grade

students (e.g. Birch & Ladd, 1998; Pianta & Steinberg, 1992; Pianta et al., 1995). However, recent

measurement studies have focused on extending the use of the *STRS* to upper elementary grades

including students up to 12 years old (Koomen et al., 2012). Studies have also focused on examining

measurement invariance for different subgroups of students. Measurement invariance involves

comparing the functioning of the scale with different groups (e.g. males vs. females and African

American students vs. Caucasian students) to see if the scale works in a similar manner for each group.

These studies have cast some doubt on the three factor structure, specifically items that load on the

Dependency subscale, and have found that the scale functions differently for different populations of

students, namely females, African Americans, and older students (Koomen et al., 2012; Solheim et al., 2012; Webb & Neuharth-Pritchett, 2011). Understanding how the scale functions for different populations of students is important to ensure that conclusions made about teacher-student relationships overall and comparisons among subgroups are accurate.   Studies examining the factor structure, reliability, and validity of the *STRS* will be discussed in detail in Chapter II.

Overview of the Study

      Significance of the problem. Since the *STRS* has such widespread use with a wide variety of students and teachers, it is important to ensure that the scale functions in a similar manner for each population with whom it is used. For non-research uses of the *STRS* (e.g. use by school psychologists or teachers) it is important to have information about how the *STRS* works with specific groups of students and teachers. According to the *Standards for Educational and Psychological Testing* (American Educational Research Association, American Psychological Association, National Council on Measurement in Education [AERA, APA, NCME], 2014) when selecting a psychological instrument it is important to match the normative sample of the test with the sample for which it is intended. This is problematic for the *STRS* since students with disabilities, including students with ED, and special education teachers were not specifically included in the normative group (Pianta, 2001).

      For research uses of the *STRS*, it is important to establish evidence of scale structure and functioning for each sample for which is it used. Reliability and validity are not a property of a measure itself, i.e. the *STRS* cannot be considered a "reliable" or "valid" measure. Instead, reliability and validity evidence is judged by the intended user of a scale for the sample and purposes for which the scale is used (AERA, APA, NCME, 2014). While many studies report reliability estimates using internal consistency for their individual samples, additional tests of factor structure and validity for the *STRS* have generally not been conducted for each study. If the *STRS* is to be used with diverse samples of students and teachers, further evidence is needed to determine how the scale functions with these

groups. Recent research has highlighted this need as it pertains to student gender, race, age, and

nationality (Koomen et al., 2012; Solheim et al., 2012; Webb & Neuharth-Pritchett, 2011). Based on

recent measurement studies, researchers have proposed refinements to the scale to make it more

applicable to a broader range of students and teachers. However, to date, no research has analyzed the

functioning of the *STRS* with a population of students with disabilities and none have included reports

from special education teachers.

Additionally, there is little information on concordance between the *STRS* and student report

measures in general and specifically for students with disabilities. The research that exists points to

differences in teachers and students in their perceptions of relationship quality (Al-Yagon & Mikulincer,

2004; Murray & Zvoch, 2011; Rey et al, 2007; Valiente et al., 2008). When relationship measures and

behavioral measures are used in a study, primarily teacher report measures for both are used.

However, studies utilizing both teacher and student ratings of relationships and behavior have found

differences in associations based on informant (Harrison et al., 2007; Murray & Zvoch, 2011; Rey et al.,

2007). Further research is needed to address the role of informant for relationships and behavior for

students with ED.

Significance of the study. In order to address the need for evidence for the applicability of the

STRS for populations of students with disabilities and special education teachers, the purpose of this

study was to examine the dimensional structure of *STRS* for students with emotional disturbance (ED).

Since students with disabilities are a heterogeneous group it would be unwise to sample a group of

"students with disabilities" in general. Additionally, as certain disabilities are more represented in

schools, a random sample of students with disabilities would disproportionally include specific types of

disabilities such as students with learning disabilities (OSEP, 2011). Students with emotional disturbance

were selected for this study due to the prevalence of including behavior measures in the literature on

teacher-student relationships. Students with ED and those with characteristics of ED (e.g.

aggressive/externalizing behavior) have also been cited as having especially poor relationships with

teachers and poor academic and behavioral outcomes. As positive-teacher student relationships have

been cited as a moderator between behavior and outcomes there is a strong need for research focusing

on this group of students. Additionally, students with ED would be potential targets for interventions

designed to improve relationships (e.g. Murray & Malmgren, 2005).

   To fully understand the concept of teacher-student relationships for students with ED it is also

necessary to explore how teacher and student perceptions of relationships may differ. This is important

not just from a theoretical standpoint, but also a more practical concern. When choosing relationship

measures for research or to evaluate interventions a decision needs to be made whether to use a

teacher-report, student-report, or both. If there is strong agreement between raters on the quality of

the relationship, the use of a single measure for relationships could be justified.

   Therefore, this study attempted to answer six research questions:

1) What is the 3 factor structure of the *STRS* for a population of students with Emotional

   Disturbance?

2) What are reliability estimates for the *STRS* for an ED population?

3) Is the construct validity of the *STRS* for ED students supported?

4) How do teachers and students with ED differ in their agreement of the quality of the

   relationship using attachment-based measures of teacher-student relationships?

5) How do associations between behavior and teacher-student relationships vary based on

   student and teacher reports for each?

6) How do teachers rate the social acceptability of the *STRS* when rating students with ED?

II: Review of the Literature

Research examining teacher-student relationships has generally focused on either connections between relationship quality and student outcomes or factors influencing relationships. Student behavior has played a central role in both lines of research. Studies have demonstrated associations between teacher-student relationships and student behavioral outcomes and how these associations may differ for students with high levels of externalizing or aggressive behavior. Studies have also shown how student behavioral characteristics may influence the quality of relationships that students develop with teachers over time. Research relating to both of these topics will be discussed in this chapter.

Additionally, this literature review will discuss research focused on measuring teacher-student relationships including the development of measures, concordance of reports of relationships from different raters, and considerations for reliability and validity for relationship measures. Particular attention will be placed on research using the *Student-Teacher Relationship Scale* as it is the focus of this study.

Teacher-Student Relationships and Student Outcomes

Studies examining the impact of teacher-student relationships on student outcomes have generally found associations between positive teacher-student relationships and outcome variables such as academic and behavioral adjustment, school engagement and bonding, social-emotional functioning, academic performance, and peer relationships (e.g. Decker et al., 2007; Hamre & Pianta, 2001; Hughes et al., 2001; Murray & Greenberg, 2001; Murray et al., 2008; Murray & Zvoch, 2010; Silver et al., 2005; Silver, Measelle, Armstrong, & Essex, 2010; Tsai & Cheney, 2012). Many of these studies have relied on cross-sectional samples and have measured associations between the *STRS* and outcome variables using correlations (e.g. Murray et al., 2008; Harrison et al., 2007; Hughes, 2011). However, several longitudinal studies have been conducted using growth curve and structural equation modeling to trace the impact of relationships on trajectories of student outcomes over several years (e.g. Berry &

O'Connor, 2010; Hughes et al., 2008; Maldonado-Carreño & Votruba-Drzal, 2011; McCormick, O'Connor,

Cappella, & McClowry, 2013; O'Connor et al., 2011; O'Connor & McCartney, 2007; Rudasill, Reio,

Stipanovic, & Taylor, 2010; Silver et al., 2005, 2010). See Table I for a summary of studies examining

teacher-student relationships and student outcomes.

   Attitudes towards school. Several studies have examined associations between teacher-

student relationships and student feelings about school. In a study of a diverse group of kindergarten

students, Murray and colleagues (2008) found that students who reported greater social support from

teachers reported liking school more, while students with less support reported more of a desire to

avoid school. Similarly, in a study of 6 year old students in Australia, Harrison and colleagues (2007)

found that when students reported greater acceptance from teachers, those students also reported

greater school liking and less school avoidance. Teacher-reports of relationships were also associated

with student-reports of school liking. When teachers reported less conflict in the relationship, those

students reported greater school liking (Harrison et al., 2007).   Hughes (2011) also examined teacher

and student-reports of relationships and their associations with the student feelings about school.

Teacher-reports of relationship support were positively associated with student-reports of school

belonging, while teacher-reports of conflict were negatively associated with the student's feelings of

belonging to school. Student-reports of the relationship were also positively associated with self-reports

of school belonging (Hughes, 2011). When examining middle school students, Roeser and Eccles (1998)

found that students who felt that their teachers held them in high regard placed a greater value on

education and skipped class less in 8th grade. In one of the few studies to use measures of dependency

in relationships, Birch and Ladd (1997) found that students who were rated by teachers as more

dependent self-reported being more lonely in school. Additionally, students with higher closeness

reported liking school more, while students with more conflict or dependency liked school less and

expressed a greater desire to avoid school (Birch & Ladd, 1997).

Behavioral outcomes. Other studies have examined associations between teacher-student relationships and student emotional and behavioral adjustment. Positive teacher student relationships have been associated with positive ratings of emotional, behavioral and school adjustment for elementary students (Baker et al., 2008; Berry & O'Connor, 2010; Birch & Ladd, 1998; Buyse et al., 2009; Decker et al., 2008; O'Connor et al., 2011; Pianta et al., 1995; Roorda et al., 2014; Rudasill et al., 2010; Silver et al., 2005, 2010; Tsai & Cheney, 2012) and middle school students (Murray & Greenburg, 2001; Murray & Zvoch, 2011; Wang, Brinkworth, & Eccles., 2013), and decreases in depressive symptoms and school maladjustment for adolescents (Demaray & Malecki, 2002; Roeser & Eccles, 1998). Several of these studies have specifically focused on students identified as having externalizing or aggressive behavior (Baker et al., 2008; Hughes et al., 1999; Murray & Zvoch, 2011) or considered "at-risk" based on their behavior or academic skills (Decker et al., 2008; Pianta et al., 1995; Roorda et la., 2014; Tsai & Cheney, 2012) and one focused on students with high-incidence disabilities (Murray & Greenberg, 2001).

In the Murray and Greenberg (2001) study, teacher-student relationships were associated with a decrease in instances of delinquency for 5th and 6th grade students with and without disabilities. For all students, more positive relationships with teachers and closer bonds with school, as measured by student-report, were associated with greater social and emotional adjustment. In addition, greater affiliation with teachers was associated with lower reports of delinquency for all students. For students with disabilities, self-reported dissatisfaction with teachers was associated with an increase in conduct problems and greater delinquency rates for the student's peer group (Murray & Greenberg, 2001).

Table I: Associations Between Relationships and Student Outcomes

Article	Design	Students	Relationship Measure (who rated the relationship)	Associations Between Relationships and Outcomes	
				Behavioral Outcomes	**Academic and Other Outcomes**
Baker (2006)	Cross-sectional	Kg-5th 57% African American, 29% White, 10% Latino, 4% other	selected items from the *STRS* (teachers)	Positive relationships predicted positive social and behavioral outcomes (small to moderate effect size.)	Relationship quality associated with higher reading achievement (weak association.) Students with high level of internalizing or externalizing behavior but close relationships with teachers had better reading scores than students with similar behavior but poorer relationships.
Baker et al. (2008)	Cross-sectional	Kg-5th 63% African American, 21% White, 9% Latino Rated as having high externalizing behavior	selected items from the *STRS* (teachers)	Students with more positive relationships had better school adjustment.	Students with externalizing behavior and close relationships with teachers had better reading achievement than those with poorer relationships.
Berry & O'Connor (2010)	Longitudinal	preK-6th 84% White, 9% African American, 7% other	*STRS* (teachers)	Students with higher quality relationships had better social skills. This association increased over time from kindergarten to 6th grade. Students with low levels of internalizing behavior who had high quality relationships had the best growth of social skills over time.	
Birch & Ladd (1997)	Cross-sectional	Kg 73% White, 20% African American, 2% Latino	*STRS* (teachers)	Students who were rated as more dependent reported being lonelier.	Students with higher closeness liked school more. Students with more conflict or dependency liked school less and reported more school avoidance.
Birch & Ladd (1998)	Longitudinal	Kg-1st 81% White, 15% African American, 1% Latino, 3% mixed race	*STRS* (teachers)	Students with conflictual relationships in kindergarten less likely to have prosocial behavior in 1st grade. Relationships did not predict antisocial or asocial behavior. Conflict in relationships in kindergarten associated with peer ratings of aggression in 1st grade (weak association.)	

Buyse et al. (2009)	Longitudinal	1st-3rd Belgian (from Flanders region, Dutch speaking)	*STRS* short form – Dutch translation	Closeness in 1st grade associated with better adjustment. Conflict associated with poorer adjustment. Associations lasted through 3rd grade but were most pronounced in 1st.	Conflict in 1st grade associated with poorer academic achievement in math across 3 years of school (but associations much weaker than for behavioral outcomes.)
Davidson et al. (2010)	Longitudinal	5th-7th 99% White	selected items from the *STRS* (teachers)		Students with positive relationships with teachers had higher academic self-concept and school bonding. Closeness in 6th grade positively associated with higher academic skills but not 7th grade. Closeness in 6th grade predicted academic self-concept in 7th grade over and above the level of academic self-concept in 6th grade.
Decker et al. (2007)	Cross-sectional	Kg-6th All African American At risk for referral to special education for behavior	*STRS* (teachers) *Relatedness Scale* (students)	Students with more positive relationships had less behavior referrals and suspensions. Positive relationships associated with greater social skills.	Students with more positive relationships had greater engagement and on-task time. Teacher-report of relationship had no association with academic performance.
Demaray & Malecki (2002)	Cross-sectional	6th-8th 71% Latino, 16% African American, 11% White Considered at risk based on school characteristics	*Child and Adolescent Social Support Scale* (students)	Students with greater support from teachers had lower school maladjustment scores.	
Hamre & Pianta (2001)	Longitudinal	Kg-8th 60% White, 40% African American	*STRS* (teacher)	Students with high levels of conflict in kindergarten had less positive work habits in elementary grades and more discipline problems in upper elementary grades. Negative relationships predicted behavioral problems in upper elementary particularly for children who had most problem behavior in kindergarten.	Students with more conflict and overdependency with kindergarten teachers had poorer math and language arts grades. Associations not as strong as for behavioral outcomes.

Article	Design	Students	Relationship Measure (who rated the relationship)	Associations Between Relationships and Outcomes	
				Behavioral Outcomes	Academic and Other Outcomes
Harrison et al. (2007)	Cross-sectional	6 year olds Australian	*STRS* (teachers) Child drawings and relationship questions (students)	Student and teacher-reports of the relationship associated with positive adjustment. Student reports of the relationship were a stronger predictor of student-rated outcomes.	Student reports of teacher acceptance associated with greater school liking and less school avoidance.
Hughes (2011)	Cross-sectional	3rd 38% Latino, 34% White, 23% African American, 5% other Academically at risk	*Network of Relationships Inventory* (students and teachers)		As relationship quality increased, teacher-reported engagement and student-reported school belonging increased. Teacher and student reports of relationship quality positively associated with reading and math achievement. Student-reports of support positively associated with math and reading self-efficacy.
Hughes et al. (1999)	Longitudinal	Kg-1st 49% African American, 38% White, 11% Latino, 3% other Rated as having high levels of aggression	*Teacher Reinforcing Scale* (teachers) *Network of Relationships Inventory* and *Social Support Appraisals Scale* (students)	Students with positive relationship in year 1 of the study (reported by teachers and students) had lower levels of aggression in year 2. Positive student-reported relationships in year 2 associated with lower peer-rated aggression in year 3.	
Hughes et al. (2001)	Cross-sectional	3rd-4th Classroom demographics: 44% White, 31% Latino, 24% African American Behaviorally at risk students	Sociometrics (peers)	Students with higher levels of teacher support had greater social preference ratings from peers.	

Hughes et al. (2008)	Longitudinal	1st-3rd 37% Latino, 5% White, 24% African American, 5% Asian Academically at risk	*Teacher Student Relationship Inventory* (teachers)		Relationships in year 1 of the study had a positive effect on reading and math achievement in year 3.
Maldonado-Carreño & Votruba-Drzal, 2011	Longitudinal	Kg-5th	*STRS* (teachers)	Improvement in teacher-student relationships associated with decrease in internalizing and externalizing behavior from kindergarten to 5th grade.	Improvement in relationships associated with improvements in math, literacy, and language skills from kindergarten to 5th grade.
Mantzicopoulos & Neuharth-Pritchett (2003)	Cross-sectional	preK-1st 78% White, 18.5% African American, 2.2% Latino	*Young Children's Appraisals of Teacher Support* (student)	Students with higher conflict were rated by teachers as having lower social skills in all grades and more problem behavior in preschool and 1st grade.	Students with higher conflict scores did less well on academic measures.
McCormick et al. (2013)	Longitudinal	Kg-1st 72% African American, 19% Latino, 8% biracial	*STRS* (teachers)		Relationships in kindergarten has a positive effect on math achievement in 1st grade but no effect on reading.
Meehan et al. (2003)	Cross-sectional	2nd-3rd 41% African American, 37% White, 22% Latino Nominated based on aggression	*Network of Relationships Inventory* (students)	Increased teacher support in year 2 of the intervention predicted lower levels of aggression.	
Murray (2009)	Cross-sectional	Middle School 91% Latino, 5% African American, 4% White 11% with disabilities	*Research Assessment Package for Schools* (students)		Students with higher closeness and trust with teachers had higher school engagement. Students with better relationships with teachers had higher math and language arts grades (weak association.)
Murray et al. (2008)	Cross-sectional	Kg 59% African American, 26% Latino, 7% White	*My Family and Friends* (teachers and students)		Students with higher ratings for support from teachers reported liking school more. Students with less support reported more school avoidance.

Article	Design	Students	Relationship Measure (who rated the relationship)	Associations Between Relationships and Outcomes	
				Behavioral Outcomes	Academic and Other Outcomes
Murray & Greenberg (2001)	Cross-sectional	5th-6th 61% White, 31% African American, 4% Asian American, 2% Filipino, 1% Native American, .5% Latino 33% with disabilities (14% LD, 7% OHI, 6% ED, 6% CI)	*People in My Life* (students)	Students with more positive relationships and bonds with school had more positive social and emotional adjustment. Greater affiliation with teacher was associated with lower reported delinquency for all students. Higher dissatisfaction with teachers associated with greater delinquency of peer group for students with disabilities.	Greater school bonding associated with greater school competence. No association for relationships with teachers.
Murray & Zvoch (2011)	Cross-sectional	5th-8th All African American Subset of students with externalizing behavior	*Inventory of Teacher-Student Relationships* (students) *STRS* (teachers)	Students with more positive relationships (rated by both teachers and students) had greater emotional, behavioral, and school adjustment.	
O'Connor et al. (2011)	Longitudinal	birth-6th 24% ethnic minority	*STRS* (teachers)	Students who had high levels of internalizing behavior in early childhood but strong relationships with teachers from 1st to 5th grade, by 5th grade had levels of internalizing behavior similar to peers with low internalizing behavior in early childhood. Relationship had not effect on students with externalizing behavior.	
Pianta et al. (1995)	Longitudinal	Kg-2nd 65% White, 35% African American, less than 1% Asian or Latino	*STRS* (teachers)	Students with positive relationship in kindergarten had higher levels of adjustment and lower levels of problem behavior in 1st and 2nd grade. Students considered at-risk for retention or referral to special education, but who ended up not being retained or referred, had more positive relationships with teachers compared to students who were retained or referred.	

Rey et al. (2007)	Cross-sectional	3rd-6th All African American	*STRS* (teachers) *Survey of Children's Social Support* (students)	Positive relationships associated with greater rule compliance and school adjustment. Student-ratings and teacher-ratings both predicted outcomes. Teacher ratings of the relationships were better predictors of teacher-rated outcomes, while student-ratings were better predictors of student-rated outcomes.	Positive relationships associated with greater school interest, school attachment, and school involvement.
Roorda et al. (2014)	Longitudinal	PreK Belgian (from Flanders region, Dutch speaking) At-risk for externalizing behavior problems	*STRS* – Dutch Adapted version (teachers)	Higher conflict at time 1 predicted lower levels of prosocial behavior at time 2, which predicted to higher levels of conflict at time 3. Bidirectional relationship between conflict and externalizing/internalizing behavior during first half of the school year. Bidirectional relationship between dependency and internalizing behavior. Positive association between closeness and internalizing behavior but high closeness did not predict lower levels of internalizing behavior over time.	
Roser & Eccles (1998)	Longitudinal	5th-8th 67% African American, 33% White	Measure of student perceptions including teacher relationships (student)	Students who felt that their teachers held them in high regard placed a greater value on education and skipped class less in 8th grade.	
Rudasill et al. (2010)	Longitudinal	4th-6th 82% White, 12% African American, 1.6% Asian/Pacific Islander, .4% Native American, 6% other	*STRS* (teachers)	Conflict in relationships associated with risky behavior (greatest association in 6th grade). Students with closer relationships with teaches had less risky behavior in 6th grade.	

Article	Design	Students	Relationship Measure (who rated the relationship)	Associations Between Relationships and Outcomes	
				Behavioral Outcomes	Academic and Other Outcomes
Rudsill et al. (2013)	Longitudinal	PreK-3rd 80% White, 13% African American, 7% Other	STRS short form (teachers)	Students with more closeness in Kg-2nd had more prosocial behavior in 3rd grade. Students with more conflict in Kg-2nd had more negative peer behavior in 3rd.	
Silver et al. (2005)	Longitudinal	Kg-3rd 90% White	STRS (teachers)	Conflict with kindergarten teachers predicted increases in externalizing behavior from kindergarten to 3rd grade. For students with high levels of externalizing behavior, higher levels of closeness predicted slower increases in externalizing behavior.	
Silver et al. (2010)	Longitudinal	Kg-5th 90% White	selected items from the STRS (teachers)	Students with higher levels of conflict more likely to have chronically high or increasing levels of externalizing behavior.	
Tsai & Cheney (2012)	Longitudinal	2nd-5th At risk based on behavior, in Tier 2 intervention	STRS (teachers)	As relationship increased, student social skills increased and problem behaviors decreased.	As relationship increased, student engagement and academic competence increased (weak association.)
Wang et al. (2013)	Longitudinal	13-18 year old	relationship scale adapted from the School Climate Survey (teachers)	Students with more positive relationships at age 13 were less likely to have depressive symptoms and engage in misconduct from ages 13 to 18.	

In their study of behaviorally at-risk African American students, Decker and colleagues (2007) found that positive teacher-student relationships were associated with a decrease in the number of suspensions and behavioral referrals. Teacher-reports of the relationship quality were associated with both suspensions and referrals, while student-reports of the relationship were associated with referrals only (Decker et al., 2007). In a similar study of elementary students with high levels of externalizing and internalizing behavior, Baker and colleagues (2008) found that positive relationships (based on teacher reports of warmth, trust, and conflict) were associated with positive school adjustment for all students. However, the level of conflict in the relationship appeared to have particular significance for students with high levels of internalizing behavior. For these students, those who had high levels of conflict with teachers had lower levels of adjustment compared to students with similar levels of internalizing behavior and lower levels of conflict (Baker et al., 2008).

Mantzicopoulos and Neuharth-Pritchett (2003) found that for preschool and first grade students, those students with higher teacher-reported conflict were also rated by teachers as having lower social skills and more problem behavior. Similarly, in a study of 6 year old students by Harrison and colleagues (2007), students with higher ratings of relationship quality had greater teacher-reported adjustment. However, while both teacher- and student-reports of relationships confirmed this association, the results were stronger for teacher-reports (Harrison et al., 2007). For middle school students, Demaray and Malecki (2002) found that student perceptions of social support from teachers correlated negatively with school maladjustment; as support increased, measures of school maladjustment decreased. Similarly, Murray and Zvoch (2011) found that middle school student-reports of relationships were associated with self-reports of adjustment and teacher-reported externalizing behavior. Students who reported more trust and communication in their relationships with teachers reported greater adjustment to school and had lower levels of externalizing behavior (Murray & Zvoch, 2011).

The previous studies all use cross-sectional data and measured concurrent associations between relationships and outcomes. However, many longitudinal studies of teacher-student relationships and outcomes have been conducted demonstrating the effect early relationships can have on later outcomes. An early study by Pianta and colleagues (1995) examined academic and behavioral trajectories for students from kindergarten to 2nd grade. Students who were rated by teachers as having positive relationships with teachers in kindergarten (characterized by high closeness and low conflict and dependency) had higher ratings for behavioral adjustment and lower levels of problem behavior in 1st and 2nd grade. Additionally, students in this study considered at-risk for retention or referral to special education, but who ended up not being retained or referred, had more positive relationships with teachers compared to those students who were eventually retained or referred. (Pianta et al., 1995).

In a study of students in kindergarten to 1st grade, Birch and Ladd (1998) found that students with relationships high in conflict (as measured by teacher-reports) in kindergarten were less likely to exhibit prosocial behavior in 1st grade. However, the study also measured antisocial (externalizing) and asocial (internalizing) behaviors but found that relationships in kindergarten did not predict either of these behaviors in 1st grade. Ratings of prosocial, antisocial, and asocial behaviors were provided by teachers. The study also examined peer reports of aggression, finding that increased conflict in kindergarten was related to higher peer-rated aggression in 1st grade (Birch & Ladd, 1998).

Hamre and Pianta (2001) examined the connection between teacher-student relationships in kindergarten and a student's behavioral and academic outcomes up to 8th grade. In their study, students with high levels of conflict with teachers in kindergarten had less positive work habits in elementary school and more discipline problems in upper elementary school. Teacher-student relationships were stronger predictors of behavioral outcomes for students who had the most behavior problems in kindergarten. According to the researchers: "children who, despite significant behavior

problems, were able to develop relationships with kindergarten teachers marked by low levels of

negativity, were in turn more likely to avoid future behavioral difficulties than were their peers who had

high negativity ratings" (Hamre and Pianta, 2001, p. 635).

Many studies have examined the effect of relationships on growth of internalizing and

externalizing behavior over the course of elementary school. A study by Silver and colleagues (2005) of

students in kindergarten to 3rd grade found that while externalizing behavior increased over the course

of early elementary school, this increase was associated with reports of teacher-student relationship.

Teacher-reported conflict with students in kindergarten predicted increases in externalizing behavior up

to 3rd grade. Students who had more conflict with teachers had a more rapid escalation in externalizing

behavior. However, teacher-reported closeness was a protective factor against increases in

externalizing behavior especially for students with high initial levels of externalizing behavior (greater

than 1 SD above than mean). Increased closeness was associated with less rapid escalation of

externalizing behavior. While boys in the study had more conflict and externalizing behavior, behavior

trajectories and associations between relationships and behavior did not differ based on gender (Silver

et al., 2005).

A second study by Silver and colleagues (2010) compared students in three groups based on

levels of externalizing behavior. Students in the Chronic High group had high levels of externalizing

behavior from preschool through 5th grade. Students in the Low group had consistently low levels of

externalizing behavior throughout elementary school, while students in the Low Increasing group began

school with low levels of externalizing behavior but their behavior increased over time. The researchers

found that higher levels of teacher-reported conflict predicted membership in both the Chronic High

group and Low Increasing group (Silver et al., 2010). By controlling for relationship with parents and

peers, the researchers demonstrated that relationships with teachers contribute to development of

externalizing behavior over and above other relationships. Additionally, they found that kindergarten

relationships were more important predictors of externalizing behavior than preschool relationships

highlighting the importance of relationships during transition to elementary school (Silver et al., 2010).

A study of students in kindergarten to 5th grade found that students with more positive teacher-

student relationships have lower levels of internalizing and externalizing behavior as reported by both

mothers and teachers (Maldonado-Carreño & Votruba-Drzal, 2011). Improvement in the teacher-

student relationship was associated with decreases in both internalizing and externalizing behavior over

the course of elementary school. However, while both mother and teacher reports of relationships

were associated with declines in internalizing behavior, only teacher-reports were associated with

declines in externalizing behavior (Maldonado-Carreño & Votruba-Drzal, 2011).

In a short term longitudinal study of preschool students at risk for developing externalizing

behavior problems, Roorda and colleagues (2014) found that conflict with teachers in the early part of

the school year predicted a decrease in prosocial behavior by the middle of the school year which, in

turn, predicted more conflict in relationships at the end of the school year. Their study also found

recriprocal relationships between conflict and externalizing behavior and dependency and internalizing

behavior. However, while closeness was positively associated with internalizing behavior (e.g. students

with higher levels of internalizing behavior also had closer relationships with teachers), an increase in

closeness over the school year did not predict lower levels of internalizing behavior (Roorda et al.,

2009).

O'Connor and colleagues (2011) examined interactions between externalizing and internalizing

behavior and relationships for students from preschool to 5th grade.   Students who did not have strong

relationships with teachers over the course of elementary school were more likely to exhibit more

externalizing behavior. Relationships did not predict levels of internalizing behavior (O'Connor et al.,

2011). However, the researchers did find that relationships act as a protective factor for students with

internalizing behavior. Students who had high levels of internalizing behavior in early childhood but

consistently strong relationships from 1st to 5th grade by 5th grade had levels of internalizing behavior comparable to their peers who began school with low internalizing behavior.   However, relationships were not a buffer for students with early externalizing behaviors (O'Connor et al., 2011).   Berry & O'Connor (2010) also examined interactions between relationships and internalizing behavior. In their study, students with higher quality relationships, as measured by teacher-report, had better social skills. This association increased over time from preschool to 5th grade. However, students with low levels of internalizing behavior who also had high quality relationships had best the growth of social skills over time (Berry & O'Connor, 2010).

Hughes and colleagues (1999) examined associations between relationships and behavior in elementary students with high levels of aggression. Students began the study in 2nd or 3rd grade and were followed through elementary school for 3 years. For these students, relationship quality in year one of the study measured by both teacher and student reports, predicted levels of aggression for the next year. Positive relationships in year one were followed by less aggression in year two of the study. Additionally, teacher reports of relationships in year two predicted levels of peer-rated aggression in the third year (Hughes et al., 1999).

Rudasill and colleagues (2010) examined relationships between teachers and upper elementary students in grades 4-6. Teacher-reported conflict in the relationship was related to student reports of risky behavior in all three grades with the greatest association in 6th grade. Students who had less conflict in their relationships with teachers reported engaging in less risky behavior throughout early adolescence. Teacher-reported closeness was also related to risky behavior in all three grades but the associations were not as strong compared to conflict. While student demographic factors such as family income and gender were related to engaging in risky behavior, conflict appeared to be a mediator between these factors and student behavior. Students who were male and from low income families

were more likely to have conflictual relationships with teachers; students with conflictual relationships

were, in turn, more likely to engage in risky behavior (Rudasill et al., 2010).

        While many studies have focused on early relationships and behavior trajectories throughout

elementary school, Wang and colleagues focused on the middle and high school years (Wang et al.,

2013). In their study, students who had more positive relationships at age 13 were less likely to have

depressive symptoms and engage in misconduct from ages 13-18. Teacher reports were used for

relationships, while student reports were used for both depression and misconduct (Wang et al., 2013).

        Two studies have examined relationships for students enrolled in specific behavior intervention

programs. Tsai and Cheney (2012) studied a group of 2nd-5th grade students enrolled in a Tier 2 behavior

intervention program due to being at risk for emotional and behavioral disabilities. The researchers

found that for these students, improvements in teacher-student relationships over a two year period

were associated with both improvements in social skills and decreases on measures of problem behavior

(Tsai & Cheney, 2012). While these students were initially enrolled in the program based on high levels

of problem behaviors, initial levels of problem behavior were no longer significant predictors for post-

intervention behavioral outcomes after relationships were entered into the model (Tsai & Cheney,

2012).

        Meehan and colleagues (2003) also examined relationships in the context of an intervention. In

their examination of a two-year intervention program for aggressive 2nd and 3rd grade students, the

researchers found that an increase in teacher support (as rated by student reports) in the second year of

the program predicted lower levels of teacher-reported aggression after controlling for initial levels of

aggression. However, student race was found to interact with the effect of teacher-student

relationships had on behavioral outcomes. The researchers found that while higher levels of teacher

support predicted lower levels of aggression for African American, Latino, and Caucasian students, this

relationship was much stronger for African American and Latino children compared to Caucasian

students.

Only two studies examined the impact of teacher-student relationships on peer interactions.

Hughes and colleagues (2001) obtained peer measures of teacher-student relationships and peer-rated

liking of students. They found that peer ratings of teacher support were associated with ratings of social

preference. Students who were identified as being liked the most were also rated as having a

supportive relationship with the teacher. Students who were liked least by their peers were rated as

having more conflict with the teacher and less support (Hughes et al., 2001). A study by Rudasill and

colleagues (2013) used teacher ratings instead of peer and found that an increase in closeness between

students and teachers in kindergarten through 2nd grade was associated with increased prosocial

behaviors in 3rd grade. In contrast, an increase in conflict in across the grades was associated with an

increase in negative peer behaviors in 3rd grade.

Academic outcomes. Significantly fewer studies have examined associations between teacher-

student relationships and student academic outcomes, and those looking at both academic and

behavioral outcomes have generally found associations with behavioral outcomes to be much stronger

(Buyse et al. 2009; Decker et al., 2007; Hamre & Pianta, 2001; Murray, 2009).   For early elementary

students, reports of associations between relationships and academic outcomes have been mixed. Birch

and Ladd (1997) found benefits of relationships for achievement of early elementary students. In their

study of kindergarteners, students with higher teacher-reported closeness or lower teacher-reported

dependency had higher visual and language skills compared to students with lower levels of closeness

and higher levels of dependency (Birch & Ladd, 1997). Another study found higher levels of conflict for

students in preschool to first grade associated with lower scores on measures of overall academic skills

(Mantzicopoulos & Neuharth-Pritchett, 2003). However, Decker and colleagues (2007) found that

teacher ratings of relationships were not associated with teacher-reported academic performance for

kindergarten students. In contrast, student-reports of relationships in kindergarten were associated

with reading achievement; as the quality of the relationship increased, student letter-naming fluency

also increased (Decker et al., 2007).

Studies focusing on middle and upper elementary students found similar results. For third grade

students, Hughes (2011) found that teacher reports of support and conflict in relationships and student

reports of conflict predicted reading and math achievement; students with lower levels of conflict and

higher levels of teacher-reported support had higher achievement. Baker and colleagues (2008) found

that for elementary students with externalizing behavior problems, those with a close relationship with

their teacher performed better in reading than students without a close relationship. Similarly, Baker

(2006) found that students with high level of externalizing and internalizing behaviors but close

relationships with teacher had better reading scores than similar students with poorer relationship.

However, for students with learning problems, relationships were not associated with increased

academic achievement for students with learning problems.

A few studies have examined the impact of early teacher-student relationships on later

academic achievement. McCormick and colleagues (2013) found that positive relationships (teacher-

reported) in kindergarten had a positive effect on math achievement (based on standardized test score)

in 1st grade but no effect on reading. Buyse and colleagues (2009) found that as conflict with teachers

increased in first grade, academic achievement in math decreased across grades 1st-3rd. Similarly, Hamre

and Pianta (2001) found that conflict and overdependency in kindergarten were associated with lower

grades in both math and language arts up to middle school.   In a study by Maldonado-Carreño and

Votruba-Drzal (2011), improvements in teacher-reports of relationships were associated with

improvements in academic skills including math, literacy and language from kindergarten to 5th grade.

In a longitudinal study of academically at-risk 1st -3rd grade students Hughes and colleagues (2008) found

that relationships in 1st grade had an effect on reading and math achievement in 3rd grade, moderated

by the students' level of engagement in 2nd grade.   O'Connor and McCartney (2007) examined

trajectories of relationships and achievement for students in preschool to grade 3. Students that had

low quality relationships that declined over early elementary had significantly lower achievement

compared to students with more positive relationship patterns.

For middle school students, Murray (2009) found that teacher relationships had a small but

significant contribution to reading and math grades. Davidson and colleagues (2010) found that

teacher-reported closeness in 6th grade was associated with higher academic skills in 6th grade but

these results did not carry over to later grades; 6th grade relationships had no association with

achievement in 7th grade.

Other studies have examined the impact of relationships on student academic qualities such as

engagement, work habits, and academic self-concept instead of, or in conjunction with, academic

achievement. In longitudinal study of students across middle school grades, Davidson and colleagues

(2010) found that teacher-reported closeness in 6th grade predicted a student's academic self-concept in

7th grade over and above the effect of their academic self-concept in 6th grade. Murray (2009) found

that middle school students with higher closeness and trust with teachers self-reported higher

engagement in school. These results were found even after controlling for relationships with parent,

demonstrating that the teacher-student relationship had a unique contribution to school engagement.

Similar results were found in a study of K-6th grade students (Decker et al., 2007). However,

what is unique about this study is that the association between engagement and teacher-student

relationships was confirmed using both teacher and student reports of the relationship and teacher,

student, and observer reports of engagement. In a study of 2nd-5th grade students, Tsai and Cheney

(2012) found that as the teacher reports of relationships improved, student levels of academic

competence and engagement in school increased. Similarly, a study of third grade students found that

child reports of teacher support predicted their academic self-confidence as measured by levels of self-efficacy in math and reading (Hughes, 2011).

Student qualities such as academic engagement have also been found to be a moderator between the effect of relationships on student achievement. In a study of early elementary students, O'Connor and McCartney (2007) found that students with high quality relationships had higher levels of classroom engagement. Higher levels of engagement were, in turn, associated with higher levels of academic achievement.

Summary of research on relationships and student outcomes. Research on teacher-student relationships has demonstrated connections between relationship quality and student academic and behavioral outcomes. While the majority of the research on relationships and outcomes has focused on early and middle-elementary grades, similar results have been found in studies with students up to high school. Students with high levels on measures of problem behavior (e.g. externalizing, antisocial) have been included in research examining student outcomes. However, students with disabilities, including ED, have been absent from the majority of research on outcomes.

Studies examining behavioral outcomes and academic qualities, such as engagement, have generally found stronger results compared to those examining outcomes for academic achievement. When examining behavioral outcomes, research has consistently found positive associations between relationships and behavior; as relationship quality improves, behavioral outcomes also improve. These results have been found in both cross-sectional and longitudinal studies with students across grades. Similar patterns have been found in research on academic outcomes. However, results have not been as consistent (e.g. some studies have found associations between relationships and reading achievement, while others have found no associations). Additionally, as there is much less research examining relationships and academic outcomes, no clear conclusions can be made.

Factors Influencing Relationships

Most research examining teacher-student relationships has focused on how student

characteristics (as opposed to teacher/school characteristics) can potentially affect the relationship

quality. Student characteristics such as gender, race, disability, behavioral qualities, and academic

ability have all been found, to varying degrees, to affect the quality of relationships students form with

teachers. Teacher qualities such as race, experience, and classroom management skills have also been

found to influence relationships they form with students. Studies have also examined the complex ways

these characteristics can interact in their associations with relationships. See Table II for a summary of

studies examining factors that influence teacher-student relationships.

Student characteristics.

Gender. While a few studies have found no effect of gender on relationships (Lynch & Cicchetti,

1997; Meehan et al., 2003; Murray & Greenberg, 2006; Murray et al., 2008) the vast majority of

research supports the idea that girls and boys form relationships differently with teachers. In general,

teachers tend report more positive relationships overall with girls, rating relationships with girls as

higher in closeness and relationships with boys higher in conflict (Baker, 2006; Birch & Ladd, 1997, 1998;

Drugli, 2013; Ewing & Taylor, 2009; Hamre, et al., 2008; Hamre & Pianta, 2001; Harrison et al., 2007;

Hughes et al., 2001; Hughes et al., 2008; Jerome, et al., 2009; Kesner, 2000; Murray & Murray, 2004;

O'Connor, 2010; Rudasill et al., 2010; Silver, 2005; Spilt et al., 2012; Valiente et al., 2008, Wu et al.,

2010). Similar results have been found for studies using student-report measures of relationships, with

girls rating their relationships with teachers more positively than boys (e.g. closer relationship, less

conflict, more support from teachers etc.) (Gest et al., 2005; Harrison, et al., 2007; Mantzicopoulos &

Neuharth-Pritchett, 2003; Valeski & Stipek, 2001; Valiente, et al., 2008; Wu et al., 2010).

Studies examining gender and student-teacher relationships have generally focused on gender

in isolation and not examined its interaction with other variables. However, studies that have

attempted to explore associations among gender, behavior, and relationships have yielded some

interesting results. Murray and Zvoch (2011) examined the combination of gender and externalizing

behavior and associations with relationships with teachers (measured by the level of trust,

communication, and alienation reported by students). They found that boys with externalizing behavior

had lowest ratings of communication compared to girls and students without externalizing behavior.

      A study by Hamre and colleagues (2008) provided some evidence as to a possible cause of the

discrepancy between relationships for boys and girls. While they found differences between boys and

girls on their level of conflict with teachers, after controlling for levels of problem behavior this

difference disappeared. Since boys in their study had higher levels of problem behavior, it is possible

that conflict in relationships with teachers was a result of the behavior and not a direct result of the

student's gender. Blankenmeyer and colleagues (2002) compared ratings of school adjustment and

teacher-student relationships and found that low scores on adjustment measures were associated with

poorer relationships more so for boys than girls. In a meta-analysis by Roorda, Koomen, Spilt, and Oort

(2011), effect sizes for the associations between both positive and negative relationships and

engagement was larger for boys, while effect sizes for positive relationships and achievement was larger

for girls.

Table II: Factors Influencing Relationships

Article	Participants		Relationship Measure (who rated the relationship)	Factors Influencing Relationships	
	Students	Teachers		Student Characteristics	Teacher, Class, and School Characteristics
Al-Yagon & Mikulincer (2004)	3rd-5th Israeli 50% with LD	Israeli	*Children's Appraisal of Teacher as a Secure Base* (students) *STRS* – Closeness only (teachers)	Students with LD reported that teachers were more rejecting and less accepting than students without disabilities. Teachers rated relationships as less close for students with LD. Students with LD rated their attachment to teachers as less secure than students without disabilities.	
Baker (2006)	Kg-5th 57% African American, 29% White, 10% Latino, 4% other	84% White, 14% African American 98% female	selected items from the *STRS* (teachers)	Girls had more closeness and less conflict. No differences based on grade.	
Birch & Ladd (1997)	Kg 73% White, 20% African American, 2% Latino	All White and female	*STRS* (teachers)	Girls had more closeness and boys had more conflict.	
Birch & Ladd (1998)	Kg-1st 81% White, 15% African American, 1% Latino, 3% mixed race	All White and female	*STRS* (teachers)	Girls had more closeness and boys had more conflict. No differences on dependency for gender. Students with antisocial behavior had greater conflict and less closeness in kindergarten and 1st grade and greater dependency in 1st grade (weak association for dependency.) Students with asocial behavior had greater conflict, less closeness, and greater dependency (association for dependency stronger than for asocial students.) Students with antisocial behavior in kg more likely to have poor relationships in 1st grade. Students with asocial behavior in kg more likely to have dependent relationships in 1st grade.	
Blankenmeyer et al. (2002)	3rd-5th	n/a	Relationship scale developed	Students with higher levels of aggression had poorer ratings of relationships. Aggressive children with better	

	School demographics: 55% Latino, 26% White, 14% Native American, 4% African American		for the study (teachers)	school adjustment had more positive relationships than those with poor adjustment.	
Buyse et al. (2008)	Kg Belgian (from Flanders region, Dutch speaking)	Belgian	*STRS* – adapted Dutch version (teachers)	Students with higher levels of externalizing and internalizing behavior had lower levels of closeness and greater conflict. Externalizing behavior was a greater predictor of conflict, while internalizing behavior was a greater predictor of closeness.	Teaching style (level of emotional support and classroom management) did not affect relationships.
Davidson et al. (2010)	5th-7th 99% White	n/a	selected items from the *STRS* (teachers)	Students with aggressive behavior more likely to have poor relationships with teachers.	
Decker et al. (2007)	Kg-6th All African American At risk for referral to special education for behavior	92% White, 8% African American 92% female	*STRS* (teachers) *Relatedness Scale* (students)	Teachers rated this sample of students (at risk due to behavior) more negatively for relationships compared to the *STRS* normative sample.	
Drugli (2013)	1st-7th Norwegian	n/a	*STRS Short Form* – Norwegian translation *(teachers)*	Girls and younger children (grades 1st-3rd) had more positive relationships (higher closeness, lower conflict) Students with externalizing problems had higher levels of conflict.	Female teachers had higher levels of closeness and lower levels of conflict (association stronger for closeness.)
Ewing & Taylor (2009)	PreK 41.2% Mexican, 29.6% White, 20.3% bi-ethnic, 2% African American, 1% Asian, 1% Native American	50% Latino, 43% White, 4% African American, 4% bi-ethnic All female	*STRS* (teachers)	Girls rated higher in closeness. No differences based on ethnicity.	
Fowler et al. (2008)	Kg-3rd 93% African American	47% African American	*STRS Short Form (teachers)*	Students with externalizing behavior who also had high levels of prosocial behavior had more positive relationships (comparable to students with high levels of prosocial behavior and low levels of externalizing behavior.)	Teachers from different racial groups rated students differently on behavior but that did not translate to different ratings on relationship quality.

| Article | Participants | | Relationship Measure (who rated the relationship) | Factors Influencing Relationships | |
	Students	Teachers		Student Characteristics	Teacher, Class, and School Characteristics
Gest et al. (2005)	3rd-5th 99% White	n/a	Created for study, based off the *STRS* Closeness scale (teachers and students)	Girls reported higher levels of teacher supportiveness than boys. Students with aggression had less supportive relationships.	
Hamre & Pianta (2001)	Kg-8th 60% White, 40% African American	92% White, 8% African American	*STRS* (teachers)	Kindergarten teachers reported more conflict and less closeness for boys. Teachers had greater relational negativity (i.e. conflict and dependency) with African American students.	
Hamre et al. (2008)	Preschool 44% White, 26% Latino, 18% African American	n/a	*STRS* (teachers)	Teachers reported less conflict with girls and more with boys. No difference between girls and boys after controlling for problem behavior. Teachers reported less conflict with Latino students compared to white. No significant difference for African American students. Teachers reported less conflict with children who had higher academic skills, greater conflict with older children, and greater conflict with students with higher ratings of problem behavior.	No significant difference for race. Teachers with lower self-efficacy and more depression had more conflict. More conflict in classes with lower quality emotional support.
Harrison et al. (2007)	6 year-olds Australian	n/a	*STRS* (teachers) Child drawings and relationship questions (students)	Boys rated teachers more negatively than girls. Teachers reported more conflict and less closeness with boys. Students with more learning/behavior problems had more negativity in relationship drawings. No difference based on student language ability. More relational negativity in drawings from younger students.	
Hughes et al. (2001)	3rd-4th Classroom demographics: 44% White, 31% Latino, 24% African American	n/a	Sociometric nominations (peers)	Peers rated girls as having greater support from teachers and boys as having higher conflict. Students rated by teachers as having more aggression had greater peer nominations for conflict.	

Behaviorally at risk

Hughes et al. (2008)	1st-3rd 33% Latino, 5% White, 24% African American, 5% Asian Academically at risk	81% White, 15% Latino, 3% African American All female	*Teacher Student Relationship Inventory* (teachers)	Girls had greater support and less conflict. No significant differences based on race.	
Jerome et al. (2009)	Kg-6th 11% African American, 5.5% Latino, 4.2% Other	88-94% White (across grades) 96-97% female	*STRS* (teachers)	Teachers reported greater conflict with boys and greater closeness with girls. Differences between boys and girls in the level of closeness increased in later elementary years. African American students had more conflict. No differences based on race for closeness. Students with lower academic ability had greater conflict and lower closeness. Conflict increased rom Kg to 5th grade and declined after 5th grade. Closeness decreased all 7 years.	
Kesner (2000)	Average age 7.5 46% African American, 26% White, 7% Latino	74% White, 17% African American, 4% Latino, 5% Asian American 96% Female	*STRS* (teachers)	Teachers reported more conflict with boys.	Latino and Asian teachers reported more dependency in relationships with African American students. White teachers reported more dependency with all minority students. No difference based on age of teacher.
Lynch & Cicchetti (1997)	2nd-8th 84% White, 5% African American, 4% Asian, 1% Latino	n/a	*Relatedness Questionnaire* (students)	No differences based on gender. Students in middle school reported much more disengaged relationships with teachers than elementary students.	
Mantzicopoulos (2005)	Kg 71% White, 23% African American, 3.9% Latino	n/a	*Young Children's Appraisal of Teacher Support* (students)	No significant differences based on gender or race. Students rated high on hyperactivity and problem behavior more likely to have higher levels of conflict. Students with greater academic achievement reported less conflict.	Teachers who reported more workload stress had greater conflict. When classrooms were more developmentally appropriate students were less likely to report conflict in relationships

Article	Participants		Relationship Measure (who rated the relationship)	Factors Influencing Relationships	
	Students	**Teachers**		**Student Characteristics**	**Teacher, Class, and School Characteristics**
Mantzicopoulos & Neuharth-Pritchett (2003)	preK-1st 78% White, 18.5% African American, 2.2% Latino	n/a	*Young Children's Appraisal of Teacher Support* (students)	Boys had greater conflict than girls. African American males had higher conflict than all other groups. African American females had lowest levels of conflict.	
Mashburn et al. (2006)	PreK 47% White, 17% Latino, 26% African American, 10% Other	64% White, 18% African American, 18% Other	*STRS* short form		Between-rater differences accounted for between .8 of the variance in conflict ratings and .12 of closeness ratings. Teachers with more years of experience reported less closeness. Teachers with greater self-efficacy reported closer relationships. Students in classes with longer school days had more conflict.
Murray & Murray (2004)	3rd-5th 40% Latino, 34% African American, 14% White, 11% Asian American 19% with disabilities (mostly LD)	50% White, 33% African American, 17% Latino 50% Female	*STRS* (teachers)	Teachers reported greater closeness with girls. Teachers reported greater conflict with African American students compared to Latino and Asian American, and greater dependency with African American and White students compared to Latino students. Teachers reported greater conflict and lower closeness for students with disabilities, greater conflict for students with externalizing and internalizing behavior, and greater dependency for students with internalizing behavior.	
Murray et al. (2008)	Kg 59% African American, 26% Latino, 7% White	67% White, 17% Latino, 8% African American, 8% Asian American All female	*My Family and Friends* (teachers and students)	No differences based on gender. No differences on total score based on race. For subscales, teachers rated emotional support higher for Latino students compared to African American students and companionship higher for Latino students compared to African American or mixed race students.	Teachers whose race matched the student's rated the relationship more positively with a greater total score for the relationship, greater emotional support, and greater companionship. No differences in child reports for race match.

Murray & Greenberg (2001)	5th-6th 61% White, 31% African American, 4% Asian American, 2% Filipino, 1% Native American, .5% Latino 33% with disabilities (14% LD, 7% OHI, 6% ED, 6% CI)	n/a	*People in My Life* (students)	Students with disabilities reported more dissatisfaction with teachers and poorer bonds with school. Students with ED and CI reported less affiliation with teacher than students with LD, OHI and no disability. Students with ED had greater dissatisfaction with teachers than students with LD, OHI and no disability. Students with ED reported less school bonding than students without disabilities.
Murray & Greenberg (2006)	4th-5th 73% White All with disabilities (42% LD, 21% OHI, 19% ED, 19% CI)	n/a	*People in My Life* (students)	No differences based on gender, race, or disability.
Murray & Zvoch (2011)	5th-8th All African American Subset of students with clinical levels of externalizing behavior.	95% African American All female	*STRS* (teachers) *Inventory of Teacher-Student Relationships* (students)	Boys with externalizing behavior had lowest ratings of communication (student report). Students with externalizing behavior reported less trust in relationships than those in non-clinical group. Teachers reported less closeness and more conflict for students with externalizing behavior.
Nurmi (2012) * Meta-Analysis including 19 studies	Study samples included grades prek-5th	n/a	Many studies used the *STRS* but not all	For students with externalizing behavior, teachers reported less closeness, more conflict, and more dependency. Students with pro-sociability had more closeness and less dependency with teachers. Students with internalizing behavior (or shyness) had more conflict, more dependency, and less closeness. For students with high levels of motivation and engagement, teachers reported more closeness and less conflict. Students with good academic performance had more closeness, less conflict and less dependency.

Article	Participants		Relationship Measure (who rated the relationship)	Factors Influencing Relationships	
	Students	Teachers		Student Characteristics	Teacher, Class, and School Characteristics
O'Connor (2010)	birth-6th 24% ethnic minority	n/a	*STRS* (teachers)	Girls had more positive relationships. African American students had poorer quality relationships compared to White students. Students with more behavior problems in kindergarten had lower relationship scores in 5th grade. Relationship quality decreased from 1st to 5th grade.	Higher teacher salaries associated with higher relationship scores. Teacher self-efficacy associated with a lower decline in relationships from 1st to 5th grade and more positive relationships in 5th grade. Students in classes with better classroom management and more positive emotional climate had better relationships.
O'Connor et al. (2011)	birth-6th 24% ethnic minority	n/a	*STRS* (teachers)	Students with more externalizing behavior less likely to have strong relationships with teachers. No difference for students with internalizing behavior.	
Rudasill et al. (2010)	4th-6th 82% White, 12% African American, 1.6% Asian/Pacific Islander, .4% Native American, 6% other	n/a	*STRS* (teachers)	Boys had more conflict and less closeness. No differences based on race. Students who received special services (e.g. special education, bilingual, title 1) in 6th grade had more conflict. Students who were rated as having a difficult temperament at age 4.5 had greater conflict in 4th, 5th, and 6th grade. Students from lower income families had more conflict. Students from higher income families had more closeness	
Rudsill et al. (2013)	PreK-3rd 80% White, 13% African American, 7% Other	74-93% White (across grade levels)	*STRS* short form (teachers)	Students rated by mothers at age 4.5 as having a more difficult temperament had higher conflict in relationships with teachers in elementary school.	

Saft & Pianta (2001)	PreK-Kg 63% White, 15% African American, 13% Latino	71% White, 14% African American, 10% Latino, 5% other 99% Female	*STRS* (teachers)	n/a	Teachers whose race matched student's rated the relationship more positively especially for Latino teachers/students. Teachers rated the relationship higher in closeness when their race matched the student's and higher in conflict when it didn't match.
Silver et al. (2005)	Kg-3rd 90% White	n/a	*STRS* (teachers)	Boys had more conflict and less closeness. Students with more externalizing behavior in all grades had more conflict and less closeness.	
Spilt & Koomen (2009)	Kg All Dutch Group of students with externalizing behavior.	Dutch 98% female	*Teacher Relationship Interview* and *STRS* (teachers)	Externalizing group had significantly more conflict and dependency than non-externalizing group. Teachers expressed more helplessness and anger towards students in externalizing group. Being in the externalizing group was the strongest predictor for conflict and the only predictor for dependency. Levels of positive affect and closeness were similar for externalizing and non-externalizing group. Groups did not differ on the positive dimensions of the relationships.	No teacher variables were significant.
Spilt et al. (2012)	1st-6th Dutch	47% Male	28% Male	Overall, teachers reported better relationships with girls. Both male and female teacher reported more conflict and less closeness with boys.	Female teachers reported more positive relationships with students overall. Boys and male teachers had the most conflict.
Stuhlman & Pianta (2001)	Kg-1st 88% White, 6% African American, 6% other	96% White, 4% African American All female	*Teacher Relationship Interview* (teachers)	For students who were observed to have more positive affect, teachers expressed more positive attitudes towards their relationship with those students. For students with more negative behavior in the class, teachers expressed more negative affect in their relationship. Teachers were less positive about their relationships with students who had less compliant behavior.	Teachers with a Master's degree less likely to express negativity towards relationships. For teachers with more than 14 years of experience the more negative they were in the relationship interview, the less sensitive they were in interactions with the child.

Article	Participants		Relationship Measure (who rated the relationship)	Factors Influencing Relationships	
	Students	Teachers		Student Characteristics	Teacher, Class, and School Characteristics
Thijs & Koomen (2009)	Kg Dutch	Dutch 88% female	*STRS* – adapted Dutch version (teachers)	Students who were rated as having social and behavior problems were rated as having less closeness, more dependency, and more conflict in their relationships. Inhibited and hyperactive children had less closeness and more dependency. Hyperactive children had more conflict.	
Valeski & Stipek (2001)	Kg-1st 35% African American, 34% White, 28% Latino, 2% Asian, 1% Native American	n/a	*Feelings about School* (students) selected items from the *STRS* (teachers)	Girls had more positive feelings about their relationships with teachers. No differences based on race. First graders had more positive feelings about the relationship than kindergarteners. No differences based on academic qualities or engagement.	
Valiente et al. (2008)	7-12 year old 47% Mexican, 30% White, 8% Native American, 5% African American, 10% other	n/a	*STRS* (teachers) modified *STRS* created for student use (students)	Teachers and students reported closer relationships for girls.	

Race.   Research examining the impact of student race on teacher-student relationships has highlighted the complex way race, relationships, and other variables interact. Several studies have found that teachers report higher quality relationships with Latino students compared to both African American and Caucasian students (Hamre et al., 2008; Murray et al., 2008; Wu et al., 2010). Researchers comparing African American students to other groups have generally found teachers rate African American students more negatively (Hamre & Pianta, 2001; Murray & Murray, 2004; O'Connor, 2010; Wu et al., 2010). However, Mantzicopoulos and Neuharth-Pritchett (2003) found that while African American boys had the highest level of conflict (compared to girls and boys in other ethnic groups), African American girls had the lowest levels of conflict compare to all other groups. When examining a subsample of aggressive students, Meehan and colleagues (2003) found that aggressive Latino and African American students both had poorer relationships with teachers compared to aggressive Caucasian students.   Jerome and colleagues (2009) found that while African American students had higher levels of conflict with teachers, there were no differences among ethnic groups in measures of teacher-reported closeness.   In contrast, other studies have found no association between race and relationships (Ewing & Taylor, 2009; Hughes et al., 2008; Murray & Greenberg, 2006; Valeski & Stipek, 2001).

Age. The age of the student has also been found to affect the quality of teacher-student relationships with both teachers and students generally reporting lower quality relationships as students get older. A longitudinal study of students from kindergarten to 6th grade by Jerome and colleagues (2009) found that levels of closeness decreased over all 7 years with a greater decrease from late elementary to middle school compared to early to late elementary. When examining conflict, a similar pattern of declining quality of relationship over time was found from kindergarten to 5th as levels of teacher-reported conflict increased. However, levels of conflict then declined from 5th to 6th grade. According to the researchers, these results may be explained by the structure of schooling as children

get older. As students transition to middle school, they often have less contact with individual teachers

which would result in a decrease in the amount of conflict experienced between teachers and students

(Jerome et al., 2009). Additionally, the transition to middle school is often marked by students pulling

away from relationships with adults in favor of greater relationships with their peers (Lynch & Cicchetti,

1997; Roser & Eccles, 1998). The study by Jerome and colleagues (2009) also found differences based

on gender over the course of elementary school. While differences between boys and girls in

relationship quality was similar to other studies (i.e. boys had more conflict, girls had more closeness),

these differences increased in later years of school (Jerome et al., 2009).

A study by Drugli and colleagues (2013) compared younger and older students groups (1st-3rd vs.

4th-7th) and found that students in the younger group had more positive relationships with teachers.

Another study found that increased conflict with older students persisted even after controlling for

behavioral characteristics (Hamre et al., 2008). For student reports, Lynch and Cicchetti (1997) found

that middle school students reported much more disengaged relationships with teachers compared to

elementary students. However, a study by Baker (2006) found no differences in relationships for

kindergarten to 5th grade students and studies focusing on very early elementary age (kindergarten-1st

grade) students have found that older students may rate the relationship more positively (Harrison et

al., 2007; Valeski & Stipek, 2001).

Disability. Very few studies have specifically included students with disabilities. However,

those studies that have compared students with high-incidence disabilities, including Emotional

Disturbance (ED), Learning Disabilities (LD), Other Health Impairment (OHI), and Cognitive Impairment

(CI), have found that these students generally have poorer relationships with teachers than students

without disabilities (Al-Yagon & Mikulincer, 2004; Murray & Greenberg, 2001; Murray & Murray, 2004).

For teacher-reports of relationships, a study including 3rd-5th grade students with LD (and one student

with ED) found that these students had greater conflict and lower closeness than students without

disabilities (Murray & Murray, 2004). For student-report of relationships, Murray and Greenberg (2001)

found that students with disabilities reported more dissatisfaction with teachers and poorer bonds with

school compared to students without disabilities. When comparisons were made among the different

disability categories they found that students with ED and mild CI reported less affiliation with teachers

than students with LD, OHI and no disability. Students with ED also had greater dissatisfaction with

teachers than students with LD, OHI and no disability (Murray & Greenberg, 2001). However, a later

study by Murray and Greenberg (2006) including a sample comprised entirely of students with high

incidence disabilities found no differences among the disability groups with regard to student-reports of

relationship quality.

Using both teacher and student-reports of relationships, Al-Yagon and Mikulincer (2004) found

that students with LD reported that teachers were more rejecting and less accepting of them compared

to students without disabilities. In addition, general education rated their relationships with students

with LD as less close compared to students without disabilities. Students with LD had less secure

attachment than students without.   Decker and colleagues (2007) examined a sample of students who

were considered "at risk" for referral to special education for ED. They found that teachers generally

rated students negatively in terms of their relationships with these students and when comparing

relationships of these students to the ratings for the normative sample for the *STRS* these students had

significantly poorer relationships.

Behavior. Although few studies have included students specifically diagnosed with disabilities,

several studies have included students with academic and behavioral characteristics that may be similar

to students with learning disabilities and emotional disturbance. When examining samples of students

considered to have "challenging" or "problem" behavior, most studies use measures of behavior (e.g.

externalizing, hyperactivity, aggression) instead of focusing specifically on students with

emotional/behavioral disabilities. Studies have consistently found that students with higher levels of

externalizing behavior, aggression, or antisocial behavior have poorer relationships than students with

lower levels (Birch & Ladd, 1998; Drugli et al., 2013; Gest et al., 2005; Harrison et al., 2007; Hughes et al.,

2001; Mantzicopoulos, 2005; Murray & Murray, 2004; O'Connor, et al., 2011; Spilt & Koomen, 2009;

Stuhlman & Pianta, 2001; Thijs & Koomen, 2009). These associations have been found for students in

early elementary through middle school using both teacher and student reports of relationship quality

and various methods of measuring behavior (e.g. teacher, student, peer, and observer).

Studies using teacher reports of relationships for early elementary students to examine

relationships between students with externalizing behavior, aggression, or antisocial behavior have

found that these students have higher levels of conflict and lower levels of closeness (on the *STRS* or

measures with similar constructs) compared to students without problem behavior. In a study of

kindergarten students, Buyse, Verschueren, Doumen, Van Damme, and Maes (2008) found that students

with higher levels of externalizing behavior had lower levels of closeness with teachers and greater

conflict.   Similarly, Silver and colleagues (2005) found that students in kindergarten to 3rd grade who

had more externalizing behavior had more conflict and less closeness across all grades. However,

associations were higher for the negative aspect of the relationship (i.e. conflict) compared to closeness.

A study by Fowler, Banks, Anhald, Der, & Kalis (2008) found that for students with externalizing behavior

problems, those with more prosocial behavior had more positive relationships. The relationships of

these students was similar to students who had high levels of prosocial behavior but without

externalizing problems.

Spilt and Koomen (2009) found that when students with high levels of externalizing behavior

were compared to those with low levels, students in the externalizing group had significantly more

teacher-reported conflict compared to those in the non-externalizing group. Interestingly, the

externalizing and non-externalizing groups did not differ on positive dimensions of relationships (i.e.

closeness), just conflict.   Additionally, in interviews where they discussed their relationships with

students, teachers expressed more helplessness and anger towards students in externalizing group.

Another study to use interviews to assess relationships between teachers and young students found

similar results. For students who were observed to have more positive behavior in the classroom,

teachers expressed more positive affect towards their relationship with that student, while for students

with more negative behavior in the class, teachers expressed more negative affect in their interview

(Stuhlman & Pianta, 2001).

While many studies of relationships for young students and their teachers rely on teacher-

reports of relationships, a study by Harrison and colleagues (2007) utilized student drawings as a

measure of relationship quality. In their study of 6 year-old students, those students who were rated by

their teachers as having more learning and behavior problems had more negativity in their drawings of

their relationship with their teacher. Another study using student reports of relationship quality, this

time a survey, students with higher levels of teacher-rated problem behavior reported more conflict in

their relationships with teachers (Mantzicopoulos, 2005).

Studies of students in later elementary grades through middle school have found similar results.

Gest and colleagues (2005) found that students with higher levels of teacher-rated aggression self-

reported lower levels of support in their relationships with teachers. Hughes and colleagues (2001)

instead used peer measures of relationships for 3rd and 4th grade students. Peers nominated students

who had supportive relationships with teachers and those with conflictual relationships with teachers.

For students who were rated by their teachers as having high levels of aggression, peers were more

likely to rate these students as having more conflictual relationships with teachers (Hughes et al., 2001).

For middle school students, Murray and Zvoch (2011) examined students in clinical and non-

clinical groups for externalizing behavior and found that students with clinical levels of externalizing

behavior self-reported less trust in relationships with teachers than students in the non-clinical group.

Additionally, teachers reported less closeness and more conflict in their relationships with students in the clinical group compared to non-clinical students.

In a study of 5th-7th grade students, Davidson , Gust, and Welsh (2010) divided students into groups based on their level of relationships with teachers and peers. Students in the Low Relatedness group had poor relationships with both teachers and peers, those in the Peer-Oriented group had average closeness with teachers and strong relationships with peers, while those in the High Relatedness had strong relationships with teachers and peers. Students with more prosocial behavior more likely to be in Peer-Oriented or High Relatedness groups compared to Low Relatedness group, while increases in aggressive behavior increased odds of students being in the Low Relatedness group (Davidson et al., 2010). Interestingly, the researchers did not find a Teacher-Oriented group with students who had poor relationships with peers but strong relationships with teachers. Similar to other researchers examining relationship patterns for middle-school students, relationships with peers appear to take on more importance for this age group. The only students in this study who had poor relationships with peers were students who had an overall pattern of poor relationships.

While many studies of associations between behavioral characteristics and relationships have utilized cross-sectional samples, a few longitudinal studies have examined how early behavior predicts future relationships. Birch and Ladd (1998) found that students with antisocial behavior in kindergarten, as rated by both teachers and peers, were more likely to have poor teacher-rated relationships (i.e. more conflict, more dependency, and less closeness) in 1st grade. Indeed, kindergarten antisocial behavior was a greater predictor of the students' relationships with 1st grade teachers than the students' relationships with their kindergarten teachers (Birch & Ladd, 1998). However, prosocial behavior in kindergarten did not predict 1st grade relationships (i.e. students who had more prosocial behavior in kindergarten did not have more positive relationships with teachers in 1st grade.)

Other studies have examined associations between early behavior and relationships through later elementary grades. O'Connor (2010) found that students with more behavior problems (as measured the parent version of the *Child Behavior Checklist*, Achenbach, 1991) in kindergarten had lower relationship scores in 5th grade. Similarly, Rudasill and colleagues (2010) measured student temperament at age 4 ½ and found that students identified as having a difficult temperament prior to kindergarten had higher levels of conflict with teachers in grades 4th-6th. Doumen and colleagues (2008) took this one step further and examined the transactional relationship between behavior and relationships across the kindergarten year. In their study, aggressive behavior at the beginning of kindergarten lead to increased conflict at the middle of the kindergarten year. This conflict then led to increased aggressive behavior at the end of the year. However, the opposite relationship was not found; conflict at the beginning of kindergarten did not lead to aggressive behavior at the middle of the year and aggressive behavior at the middle of the year did not lead to conflict at the end of kindergarten. According to the authors, "it seems to be particularly the child aggressive behavior that starts the accumulation of negative processes throughout the year" (Doumen, et al., 2008, p. 596). Birch and Ladd (1998) came to similar conclusions finding that behavior in kindergarten was a greater predictor of the 1st grade relationship than the kindergarten relationship.

Far fewer studies have examined students with other behavior characteristics such as internalizing behavior or hyperactivity. Murray and Murray (2004) found that similar to students with externalizing behavior, students with internalizing behavior also had higher levels of conflict with teachers. Birch and Ladd (1998) used a measure of "asocial" behavior, which could be compared to internalizing, and found that these students had less closeness and greater conflict than students without. Buyse and colleagues (2008) found that similar to kindergarteners with externalizing behavior, those with internalizing behavior had relationships characterized by lower levels of closeness and greater conflict. When comparing internalizing and externalizing behaviors they found that internalizing

behavior was a greater predictor of closeness in the relationship and externalizing behavior a greater

predictor of conflict. In contrast, while O'Connor (2011) found that students with externalizing

behaviors from kindergarten to 6th grade were more likely to have lower quality relationships with

teachers across elementary school, no associations were found between levels of internalizing behavior

and relationships.

Two studies have examined students with high levels of hyperactivity finding that these students

have poorer relationships with teacher (i.e. less closeness, more conflict) than students with lower levels

(Mantzicopoulos, 2005; Thijs & Koomen, 2009). Compared to students with more negative behavior

qualities (e.g. externalizing, internalizing, hyperactivity), students with more prosocial behavior (e.g.

greater effort control, higher social skills, etc.) are generally rated higher on the quality of their

relationships with teachers (Birch & Ladd, 1998; Nurmi, 2012; Stuhlman & Pianta, 2001; Valiente et al.,

2008).

Results for studies examining Dependency (a *STRS* subscale) have found similar results to

measures of conflict, with students demonstrating higher levels of "problem" behavior (i.e.

externalizing, antisocial, hyperactive, etc.) having more dependent relationships with teachers (Birch &

Ladd, 1998; Nurmi, 2012; Thijs and Koomen,2009). Spilt and Koomen (2009) found that students in the

externalizing group had significantly more dependent relationships than those in other groups.

However, Birch and Ladd (1998) found that while both antisocial (externalizing) and asocial

(internalizing) behavior were associated with higher levels of dependency, this association was greater

for students with asocial behavior.

Finally, a meta-analysis of over 90 studies examining student characteristics and teacher-student

relationships had several key findings related to student behavioral characteristics (Nurmi, 2012). The

analysis found that for students with either externalizing or internalizing behavior, teachers reported

less closeness, more conflict, and more dependency. In contrast, students with more prosocial behavior

had more closeness and less dependency with teachers, while for students with high levels of

motivation and engagement, teachers reported more closeness and less conflict (Nurmi, 2012).

Interactions between behavior and other variables (e.g. gender, academic ability, etc.) are also

important to consider when examining associations between behavior and relationships. Blankenmeyer

and colleagues (2002) found that low scores on school adjustment scales were associated with poorer

relationships more so for boys than girls. Similarly, Roorda and colleagues (2011) found that effect sizes

for positive and negative relationships and school engagement were larger for boys. Effect sizes for

associations between negative relationship and both student engagement and academic achievement

were also stronger in samples with more students with learning difficulties (Roorda et al., 2011). When

examining interactions between race and behavior, Meehan and colleagues (2003) found that higher

teacher support predicted lower levels of aggression for all students but the association was stronger for

African American and Latino students compared to Caucasian students. Combinations of different

behavior measures have also been found to interact in their associations with relationships.

Blankenmeyer and colleagues (2002) examined a sample of aggressive 3rd and 4th graders and found that

while aggressive students generally had more conflict in their relationships with teachers, those children

who had better school adjustment had more positive relationships than those with poor adjustment.

Academic ability. While a number of studies have examined the associations between behavior

and relationships, fewer studies have looked at academic characteristics and teacher-student

relationships. Studies measuring student academic ability have generally found that students with lower

ability have poorer relationships with teachers (i.e. greater conflict) and those with higher academic

ability have closer relationships with less conflict (Hamre et al., 2008; Jerome et al., 2009;

Mantzicopoulos, 2005). Murray and Murray (2004) used a measure of student effort instead of

achievement and found that students with greater effort had less conflict with teachers. Two meta-

analyses of teacher-student relationships found that higher academic ability was associated with more

positive relationships (Nurmi, 2012; Roorda et al., 2011). However, Roorda and colleagues (2011) found the association between ability and relationships to be small to medium with the association between academic engagement and relationships medium to large. Additionally, two studies found no association between academic ability and relationships (Harrison et al., 2007; Valeski & Stipek, 2001).

Teacher, class, and school characteristics and teacher-student relationships. Significantly less research has included measures of teacher characteristics when looking at teacher-student relationships. However, studies have shown that teacher factors can contribute to relationships with students. A study by Hamre and colleagues (2008) found that 18% of the variance in relationship quality could be attributed to between-classroom (i.e. teacher and class) factors. The authors concluded that "some teachers tend to, on average, report higher levels of conflict with students than do other teachers" (Hamre et al., 2008, p. 131). Unfortunately, few studies have attempted to look at what qualities of teachers and classrooms lead to the development of more positive relationships with students.

Only two studies have examined the impact of teacher gender on relationships and only a few studies have examined the impact of teacher race. One possible reason for this is the lack of diversity in samples of teachers. In most of the research on teacher-student relationships, the teachers included in the study have been primarily Caucasian and female, mirroring the composition of the teaching force in the United States (US Department of Education, National Center for Education Statistics, Schools and Staffing Survey, 2008). Kesner (2000) found dependency was affected by combinations of teacher and student race. Latino and Asian American teachers reported greater dependency in their relationships with African American students, while Caucasian teachers reported greater dependency with all ethnic minority students. When examining a sample of primarily African American students and White and African American teachers, Fowler and colleagues (2008) found that while teachers from different racial groups rated students differently on their levels of prosocial behaviors, and while prosocial behavior was

associated with higher levels of closeness in relationships, there was no difference between White and

African American teachers on ratings of relationship quality.

Saft and Pianta (2001) examined the impact of race match between teachers and students and

found that when teachers and students shared the same race, the teacher rated the child more

positively. This was especially true for Latino children/teachers. Teachers tended to rate children higher

in closeness when their race matched and higher in conflict when it did not (Saft & Pianta, 2001.)

Murray and colleagues (2008) found that when student and teacher race matched, teachers rated the

relationship higher with greater emotional support and companionship. However, there were not

differences in child reports of relationships when the race of pairs matched. Other studies found that

race or teacher-student race match did not make a difference in teacher-student relationships (Ewing &

Taylor, 2009; Hamre et al., 2008). As with results when examining the impact of student race, results for

teacher race yield a similarly complex picture. However, based on these studies it can be concluded that

student and teacher demographic factors such as race, can affect the way teachers and students

interact and view their relationships with each other.

In the two studies examining teacher gender and relationships, both found that female teachers

had stronger relationships with students marked by greater levels of closeness and lower levels of

conflict when compared to male teachers (Drugli et al., 2013: Spilt et al., 2012). Spilt and colleagues

took their analysis one step further and examined both teacher and student gender, finding that both

male and female teachers had greater conflict and less closeness with male students. Additionally, in

their study, male teachers and boys had the greatest amount conflict in their relationships (Spilt et al.,

2012).

When examining teacher dispositional qualities, Hamre and colleagues (2008) found that

teachers with lower levels of self-efficacy and greater reports of depression had more conflict in their

relationships with students. Similarly, Mashburn, Hamre, Downer, and Pianta (2006) found that

teachers with higher levels of self-efficacy had greater closeness in their relationships with students. A longitudinal study examining the impact of self-efficacy on relationships found that teacher self-efficacy was associated with a lower decline in relationship quality from 1st to 5th grade and better relationships for students in 5th grade (O'Connor, 2010).

Other studies have examined teacher skills including classroom management and the ability to set a positive classroom climate. While not direct measure of teacher characteristics, these skills have been found to influence teacher-student relationships. A study by O'Connor (2010) found that students in classes with better classroom management and more positive emotional climate were found to have better relationships with teachers. Similarly, Hamre and colleagues (2008) found that preschool teachers had more conflict with students in classrooms that had lower emotional support, and a study of kindergarten teachers and students found that when classrooms were more "developmentally appropriate" students were less likely to report conflictual relationships with teachers (Mantzicopoulos, 2005). In a study by Valeski and Stipek (2001) the researchers found that measures for students' attitudes towards school (including a subscale for relationships with teacher) were associated with classroom environment. In kindergarten classrooms with highly structured, teacher-dominated styles of teaching, students had more negative attitudes towards school and reported lower quality relationships with their teachers.

In contrast, in a study of kindergarten teachers, Buyse and colleagues (2008) found that teachers' style including the level of emotional support provided in the classroom and their classroom management skills did not affect the overall relationships they formed with students. However, for students with internalizing and externalizing behavior, having a teacher who provided a high level of emotional support (based on observer report using the *CLASS*) acted as a protective factor in relationship development. While students with internalizing behavior were at risk for developing less close relationships with teachers and students with externalizing behavior were at risk for developing

more conflictual relationships, these risks were eliminated in classrooms with a high level of emotional

support. Interestingly, this same pattern was not observed for students with internalizing and

externalizing behavior and the teacher's classroom management abilities (Buyse et al., 2008).

      While the vast majority of the studies on teacher-student relationships have utilized

quantitative methods, a study by Murray and Naranjo (2008) focused on gathering qualitative data from

African American students with learning disabilities who had been successful at completing high school.

Although the focus of their study was much broader than teacher-student relationships, several

important themes emerged when students discussed the support they received from teachers. All

students in the study identified support from teachers as being important to their success in school.

Two special education teachers in particular were repeatedly mentioned by students as being influential

in their lives. The researchers found this interesting because there were a total of 16 special education

teachers at the school. Obviously there was something unique about these two teachers and the way

they approached relationships with students that enabled them to build such close relationships with

the students. Students mentioned the importance of teachers demonstrating caring and concern, being

actively involved in their lives, and building relationships with their families.

      Few studies have examined the impact of teacher experience on relationships. Mashburn and

colleagues (2006) found that teachers with more years of experience had lower levels of closeness in

their relationships. Sthulman and Pianta (2001) used an interview for measuring relationships and

found that teachers with a Master's degree were more positive in their feelings towards students. Years

of experience also had a significant interaction with other variables teachers reported particularly for

teachers with greater than 14 years of experience. For those teachers, the more negative they were in

the relationship interview, the less sensitive they were in their interactions with the student (Sthulman

& Pianta, 2001).

Classroom and school-level factors have also been found to affect teacher-student relationships. O'Connor (2010) found that higher teacher salaries were associated with higher relationship scores. Mantzicopoulos (2005) found that teachers' perception of the difficulty of their teaching assignment was associated with the level of conflict they reported in relationships. As a teacher's workload increased, the conflict in his/her relationships with students increased (Mantzicopoulos, 2005). Another study found that preschool students in schools with a longer school day had higher levels of conflict in their relationships with teachers (Mashburn et al., 2006).

Teacher and school characteristics have also been found to be important in interactions between relationships and student outcomes. In a large meta-analysis examining relationships and outcomes, Roorda and colleagues (2011) found the effect sizes for positive relationships and student achievement were higher for samples with teachers with more experience and with more ethnic majority teachers. The term "ethnic majority" was used since the meta-analysis included studies from several different countries. For studies in the United States, ethnic majority could be assumed to refer to teacher race (i.e. White teachers would be considered the majority). However, as many studies included in this analysis used samples from European countries, ethnic majority might not correspond directly to race. For example, in studies taking place in Holland, only teachers of Dutch descent would be considered ethnic majority regardless of race.

Summary of research on factors influencing relationships. Student gender, race, age, and behavior have all been found to affect the quality of relationships they form with teachers. Of these, student gender and behavior appear to have the strongest association with relationships. Research has consistently found that boys and students with higher levels of problem behavior (e.g. externalizing, antisocial, aggressive) have lower quality of relationships compared to girls (e.g. more conflict and less closeness) and students with average levels of these behaviors. However, as boys are more likely to display externalizing and aggressive behaviors, there may be connections between gender and behavior

and associations with relationships. While teacher, classroom, and school qualities have been

associated with teacher-student relationships, these results are generally not as robust as those for

student characteristics.

Overall, teacher and student characteristics appear to have a greater impact on negative

qualities of teacher-student relationships (Murray & Murray, 2004; Saft and Pianta, 2001). Using

regression to predict relationship qualities based on student characteristics, Murray & Murray (2004)

found that student characteristics (demographics, academic skills, and behavioral orientations)

accounted for 47% of the variance in conflict, 27% of the variance in dependency, and 14% of the

variance in closeness, while Saft and Pianta (2001) found that demographic characteristics of teachers

and students accounted for 27% of the variance in conflict, 20% of the variance in dependency, and 5%

in closeness. The same study also found that combinations of child and teacher characteristics including

student and teacher race and student age and gender were better predictors of relationship quality than

individual characteristics (Saft & Pianta, 2001). More research is needed to examine how individual

student and teacher characteristics interact to influence relationship development.

Measuring Relationships

As mentioned previously, the vast majority of research on teacher-student relationships has

relied on teacher reports of the relationship. The *Student-Teacher Relationship Scale* (*STRS*; Pianta,

2001) is the most commonly used measure of relationship quality for preschool through middle

elementary age students. Almost all studies utilizing written questionnaires to measure teacher

assessments of relationships with students have utilized the *STRS* or a measure derived from the *STRS*

(e.g. selected items from *STRS* subscales). One additional teacher-report written questionnaire, the

Teacher Reinforcing Scale, has been used in studies of relationships (Hughes et al., 1999). This scale

measures the amount of warmth/acceptance the teacher feels for the child, how much the teacher

liked/enjoyed working with the child, and how angry/resentful the teacher is toward the child (Hughes et al., 1999).

A few student-report surveys have been adapted to teacher versions. Murray and colleagues (2008) adapted the *My Family and Friends* survey for use with teachers and two studies have used a version of the *Networks of Relationships Inventory* adapted for teachers (Hughes, 2011; Meehan et al., 2003). Additionally an interview based measure developed by Pianta (1999), the *Teacher Relationship Interview* (*TRI*), codes teacher interviews to identify several key features of the teacher's relationship with individual students including the affect a teacher expresses when discussing the student.

Fewer studies have utilized student-report measures of relationships. However, as no student measure exists with as much widespread use as the *STRS*, many different student-report measures have been used. To measure student perceptions of teacher-student relationships, several measures have been utilized including *Inventory of Teacher-Student Relationships* (*IT-SR*, Murray & Zvoch, 2010), the *Young Children's Appraisals of Teacher Support* (*Y-CATS*, Mantzicopoulos & Neuharth-Pritchett, 2003), and the *Children's Appraisal of Teacher as a Secure Base* (*CATSB*, Al-Yagon & Mikulincer, 2004). Other student measures evaluate the student's perception of support from a variety of individuals (e.g. parents, peers, etc.) including teachers. These measures include *Relatedness Scale* (Wellborn & Connell, 1987), the *People in My Life* (*PIML*, Cook et al., 1995), the *Network of Relationships Inventory* (*NRI*, Furman & Buhrmester, 1985), the *Child and Adolescent Social Support Scale* (*CASSS*, Malecki et al., 1999), and the *Survey of Children's Social Support* (*SOCSS*, Dubow & Ullman, 1989). Finally, measure of teacher-student relationships may be included in scales measuring a student's perception of several factors related to schooling. For example, the *Feelings About School* (*FAS*, Valeski & Stipek, 2001) measures a student's perceived competence in math, perceived competence in literacy, general attitudes toward school, and relationship with teacher.

For younger students, in pre-k to early elementary, measures have taken different forms. The *Network of Relationships inventory* (*NRI;* Furman & Buhrmester, 1985) is a structured where the student rates the emotional quality of relationships with different individuals including teachers. The *Young Children's Appraisals of Teacher Support* (*Y-CATS*, Mantzicopoulos & Neuharth-Pritchett, 2003) utilizes true/untrue cards that students use to respond to survey questions. Additionally, analysis of student drawings have been used to code dimensions of their relationship with teachers (Harrison et al., 2007).

In addition to teacher and student reports of relationships, some studies have utilized peer reports of relationships based on sociometric nominations. Hughes and colleagues had 3rd-4th grade students nominate students in their class who "got along well with teachers" and children who "didn't get along well with teachers". Students were given a list of all students in the class and were told to circle all students who met the criteria for each statement. Similarly, Doumen and colleagues (2009) gave kindergarten students photos of classmates and had them select 3 students who met each criteria for closeness, conflict, and dependency (modeled after the *STRS*).

Reliability and validity of attitudinal measures. In order for judgments made based on attitudinal assessments to be trusted, evidence for reliability and validity is needed. Reliability refers to the consistency of a measure and the error in how a measurement functions (Crocker & Algina, 1986). Repeated measures of an assessment with an individual should yield consistent results with a little error as possible. The reliability of an assessment is a measure of the error in the assessment. Evidence for reliability can take multiple forms but most often takes the form of one of three types of reliability coefficients: alternate forms, test-retest, or internal consistency (Crocker & Algina, 1986). Test-retest reliability and internal consistency estimates are both commonly used in measures of teacher-student relationships. Test-retest reliability involves administering a measure over multiple occasions to the same sample and calculating correlations between administrations. For example, the *STRS* Professional Manual describes administering the *STRS* twice during a 4-week interval (Pianta, 2001). Internal

consistency estimates involve a single administration and are often calculated using Chronbach's *alpha* method (1951).

There are no set criteria for acceptable reliability. The level of reliability deemed acceptable for a measure depends on decisions being made based on the measure. Measures being used in situations with high consequence (e.g. medical research) a higher level of reliability may be necessary than for measures of attitudes (Kerlinger & Lee, 2000; Webb, Shavelson, & Haertel, 2006). Many researchers consider a reliability coefficient of .8 or above to be acceptable (Webb et al., 2006). In literature on teacher-student relationships, scales or subscales that fall below .8 are generally deemed to be less reliable.

Validity refers to the accuracy and appropriateness of interpretations made based on an assessment (Messick, 1989). Validity is not a concept of a test itself (e.g. a test cannot be considered "valid"). Instead, validity is dependent on how a test is used (AERA, APA, & NCME, 2014). While researchers often refer to many different types of validity (e.g. content, criterion, construct), Messick (1989, 1995) refers to validity as a unified concept with all aspects of validity falling under the framework of construct validity. In order to make a case for the validity of an assessment, researchers present evidence for different aspects of construct validity.

The Standards for Educational and Psychological Testing (AERA, APA, & NCME, 2014) describes several types of validity evidence including: evidence based on internal structure and evidence based on relationships to other variables. For measures of teacher-student relationships, evidence based on internal structure can include an examination of different dimensions measured in the scale (e.g. for the *STRS*, Conflict, Closeness, and Dependency). Dimensionality of a measure is generally assessed through factor analysis. The purpose of factor analysis is to determine the number of unobserved factors that are measured by scale. Items that load on a particular factor are correlated because they are assumed to be part of the same underlying construct (Brown, 2006). For example, the 28-items on the *STRS* can

be divided into three factors: Conflict, Closeness, and Dependency. Two types of factor analysis can be used. Exploratory Factor Analysis is most often employed in the early stages of test development to determine the optimal number of factors in a scale and how individual items can be grouped into common factors or subscales (Brown, 2006). Confirmatory Factor Analysis (CFA) is used when the researcher has an existing idea of how items load on different factors but wants to confirm that structure with a specific population (Brown, 2006).

Recent applications of CFA with teacher-student relationship measures have also assessed measurement invariance. Measurement invariance measures the extent to which a scale functions differently for different subgroups of individuals (Millsap & Olivera-Aguilar, 2012). For example, recent measurement studies using the *STRS* have examined how the scale functions with populations of African American students compared to Caucasian students (Webb & Neuharth-Pritchett, 2011) or younger students compared to older (Koomen et al., 2012).

Evidence based on internal structure can also include intercorrelations between *STRS* subscales. Subscales should correlate based on established theory about relationships among constructs (e.g. Conflict and Closeness should be negatively correlated since they represent opposite patterns in relationship quality.) Additionally, correlations between individual subscales should not be too high if the subscales are assumed to measure different constructs. For example if Dependency and Conflict have a correlation above .8 or .9 it can be assumed that they are not measuring two distinct facets of the relationship.

Evidence based on relations to other variables includes comparing a measure to other measures of similar constructs (convergent evidence) and those measuring different constructs (discriminant evidence) (AERA, APA, & NCME, 2014). For teacher-student relationship measures, convergent evidence could take the form of correlations between two different measures of relationship quality or between similar relationship subscales (e.g. Closeness and Trust). Discriminant evidence for teacher-student

relationship measures could involve comparing relationship measures to measures of student behavior. While behavior measures are often associated with relationship measures, especially Conflict subscales, they should be measuring different constructs (Hamre et al, 2008). For that reason, discriminant evidence should show that relationship measures are not redundant with measures of student behavior (Pianta, 2001).

Evidence based on relations to other variables can also take the form of concurrent or predictive validity evidence which measure how well a scale is predicts some criterion performance. Concurrent validity evidence measures associations between a measure and criterion at the same time while predictive validity evidence measures how well a scale predicts future performance (AERA, APA, & NCME, 2014). As described previously, teacher-student relationship measures have been found to predict several different student outcomes and this evidence is often cited for scale validity.

Concordance between raters on reports of relationships. Concordance refers to level of agreement between different raters of teacher-student relationship. While most studies of teacher-student relationships rely on only one report of relationship quality, some have used multiple raters, usually teacher and student reports. However, a few studies have utilized teacher reports in conjunction with either peer or observer reports of relationships. As the *STRS* is the most commonly used relationship measure, most studies utilizing a teacher report of relationships have used this measure. Studies utilizing both the *STRS* and student reports of relationships have found weak to moderate correlations between raters on the overall quality of the relationship, generally in the range of .3 to .4 (Al-Yagon & Mikulincer, 2004; Murray & Zvoch, 2010, 2011; Rey et al, 2007; Valiente et al., 2008). However, correlations vary greatly when individual subscales are considered.

A study of behaviorally at-risk African-American elementary students using the *Relatedness* scale found positive correlations between the total *STRS* and the Emotional Quality subscale of the *Relatedness* scale (r=.42) but a non-significant correlation between the *STRS* and the Psychological

Proximity Seeking subscale of the *Relatedness* scale (Decker et al., 2007). However, this subscale

measures a student's desire to be closer to the teacher, a construct that is somewhat different from the

subscales of the *STRS*. The researchers also noted that teachers in the study tended to rate the

relationship more negatively, while students were more positive in their assessment of the relationship.

In particular, student ratings on the Psychological Proximity Seeking subscale were above the average

for that scale indicating that students wanted to be closer to their teachers (Decker et al., 2007).

Murray and Zvoch (2010) developed the Inventory of Student-Teacher Relationships (*IT-SR*) an

attachment-based student-report measure of relationships for adolescents. The *IT-SR* contains items

related to three factors: Communication, Trust, and Alienation.   In a study of 5th-8th grade students with

and without externalizing behavior, Murray and Zvoch (2011) found modest correlations between

scores on the *IT-SR* as reported by students and teacher reports of the relationships using the *STRS*.

Significant positive correlations were found between the Closeness subscale on the *STRS* and both the

Communication and Trust subscales of the *IT-SR* (r = .31 and r = .38 respectively). A significant negative

correlation was found between the Conflict subscale of the *STRS* and the Trust subscale of the *IT-SR* (r = -

.24).

In the only study to include both teacher and student measures with a sample of students with

learning disabilities (LD), Al-Yagon and Mikulincer (2004) compared teacher ratings using the closeness

subscale *STRS* and ratings by 3rd-5th grade students on the *CATSB*. Scores on *CATSB* Acceptance subscale

were mildly correlated with STRS closeness (r = .24). Small correlations were found between the

Availability and Rejection subscales on the *CATSB* and the *STRS* Closeness (r =.16 and r = -.14)

respectively. Furthermore, the researchers found similar patterns comparing students with LD to those

without when comparing scores across raters. Students with LD were rated by teachers as having a less

close relationship compared to students without. Similarly, students with LDs self-reported more

rejection, less acceptance, and less availability from teachers compared to students without disabilities

(Al-Yagon & Mikulincer, 2004).

One study used child drawings in addition to ratings from both teachers and students (Harrison

et al., 2007). Teacher-rated conflict using the *STRS* correlated positively with the degree of relational

negativity in the student drawings (r = .28) and negatively with student-rated teacher acceptance (r = -

.20). Additionally relational negativity in student drawings correlated negatively with teacher-rated

Closeness (r = -.28). However, student-reported teacher acceptance as measured by rating-scale

questions did not significantly correlate with teacher-rated Closeness on the *STRS* (Harrison et al, 2007).

A study by Koomen and colleagues (2012) compared teacher-ratings on the *STRS* to observer

reports of relationships using the *CLASS* for a sample of students followed from kindergarten to first

grade. While the *CLASS* measures the emotional climate and teacher sensitivity to the needs of the

entire class, the researchers modified it to focus on the teacher's relationship with individual students

and to parallel the *STRS* subscales of Closeness, Conflict, and Dependency. Relationship ratings were

obtained at three different time periods over the course of the study. Correlations between teacher and

student ratings were generally low but the researchers attributed this to the lack of stability of observer

ratings of the relationship. While teacher ratings were very stable from the beginning of kindergarten to

first grade, observer reports of the relationship varied widely. However, when overall cross-informant

agreement was calculated over the course of the study, mild to moderate correlations were found

among the different teacher and student subscales (r's ranged from .02 to .36).

Studies using scales other than the *STRS* have found varying results on concordance between

teacher and student reports. In a study of kindergarten students using *My Family and Friends*, a

measure assessing support, closeness, and conflict in teacher student relationships, Murray and

colleagues (2008) found that teacher and student reports did not match up for ratings of teacher

support. Correlations between teacher and student subscales yielded only one significant pair; teacher

reports of conflict negatively correlated with student reports of closeness (Murray et al., 2008).

Hughes and colleagues (2008) used two student-report measures, the *Networks of Relationships*

Inventory and the *Social Support Appraisal Scale* along with the *Teacher Reinforcing Scale*, a teacher-

report measure of relationship quality in a longitudinal study of 2nd and 3rd graders identified as having

high levels of aggressive behavior. Comparing teacher and student reports across the three years of the

study found very little agreement between teachers and student on their perceptions of the

relationship. Average correlations between teacher and student reports across the three years yielded a

small (r = .16) but nonsignificant correlation. A second study to use the NRI, created a teacher-report

version of the measure to use with teachers and academically at-risk 3rd grade students (Hughes, 2011).

The researcher found that teachers and students had moderate agreement on the level of conflict in the

relationship (r = .43). Additionally, student ratings of conflict were negatively correlated with teacher

ratings of support (r = -.25). However, teacher reports on relationship subscales were more highly

correlated with each other than with student reports.

Wu and colleagues (2010) used the *NRI* teacher and student versions along with a peer report of

the relationship. Peers were told to nominate students who "get along well with their teachers."

Comparing reports of relationship quality, the researcher found moderate correlations between student

and teacher reported conflict (r = .43), modest correlations between student-reported conflict and

teacher-reported warmth (r = -.25). Additionally, teacher-reported warmth and conflict both modestly

correlated with peer-reported support (r = .29 and r = -.27 respectively). Correlations between student

reports of warmth and conflict and peer-reports of the support were weak (r = .09 and r = -.18

respectively) (Wu et al, 2010).

Concordance and student outcomes. Studies examining associations between teacher-student

relationships and student outcomes have generally relied on either teacher or student reports of the

relationship quality. However, studies that have utilized both teacher and student reports have found

different patterns based on whether teachers or students rated the relationships and outcomes. Studies

using both teacher and student relationship reports have generally found that student reports can add

additional strength to prediction of behavioral and academic outcomes over and above teacher-report

measures such as the *STRS* (Harrison et al., 2007; Murray & Zvoch, 2011; Rey et al., 2007). However, the

additional variance explained by student reports is often quite low. For example, in a study of 6 year old

students, Harrison and colleagues (2007) found that student-report measures of relationships including

rating scales and student drawings, only explained an additional 2% of the variance for negative

outcomes and 3.5% of the variance for positive outcomes over and above the *STRS*.

Hughes (2011) found student reports of relationships to be more important when predicting

outcomes based on student attitudes or views such as perceived school belonging or academic self-

efficacy. However, when predicting engagement and achievement, student reports of relational conflict

only predicted outcomes when they were used as the sole measure of relationships in the model. When

included along with teacher reports of the relationship, student reports of conflict did not add to the

prediction of engagement and achievement (Hughes, 2011). Similarly, a study by Rey and colleagues

(2007) examining outcomes for a sample of 3rd-8th grade African-American students highlighted the

importance of student ratings of relationship in predicting student-rated outcomes. While teacher

ratings of the relationship using the *STRS* predicted all teacher-rated outcomes, the student report of

the relationship predicted student-rated outcomes including rule compliance, school interest,

adjustment, school attachment, and school involvement over and above the STRS.

When comparing student and teacher-reports of relationships and outcomes for middle-school

students including a subset with externalizing behavior, Murray and Zvoch (2011) found that student

ratings of the relationship (using the *IT-SR*) were associated with student ratings of adjustment, and

teacher ratings of competence, engagement, and externalizing behavior. However, teacher ratings of

the relationship (using the *STRS*) were only associated with teacher ratings of adjustment but not

student ratings. This highlights the importance of student ratings of relationships for the prediction of

outcomes for older students.

Researchers have also examined if concordance between teacher and student reports of

relationships is important when predicting student outcomes. A study by Decker and colleagues (2007)

utilized the *STRS* and the *Relatedness* scale, a student report of relationship quality in a study of

behaviorally at-risk elementary students. Based on teacher and student ratings of the relationship, each

student teacher pair was assigned to one of four groups: low/low, low/high, high/low, or high/high.

Pairs assigned to the low/low and high/high groups agreed on the quality of the relationship (negative

or positive concordance), while those in the low/high and high/low groups differed in their ratings of the

relationship (discordance). When comparing relationship patterns to student outcomes the researchers

found that as the pattern in concordance improved (moving from negative concordance to discordance

to positive concordance) teacher and student-reports of engagement improved as well (Decker et al,.

2008).

Wu and colleagues (2010) also analyzed student outcomes based on patterns in rater

concordance. Using cluster analysis they divided students into four groups based on the level of

agreement between student reports of the relationship quality and the reports of others (i.e. teachers

and peers). Students in the Congruent Positive and Congruent Negative groups agreed with others on

the quality of the relationship (either positive or negative). Students in the Incongruent Child Positive

group rated the relationship more positively than teachers and peers, while students in the Incongruent

Child Negative group rated the relationship more negatively. When examining differences in these

groups, the researchers found that students in the Incongruent Child Negative group (i.e. those who

viewed the relationship more negatively than others) were similar to students in the Congruent Positive

group in their levels of internalizing, externalizing, and aggressive behavior. In this case, negative

student perceptions of the relationships did not correspond to increases in negative behavior. These

two groups also had similar academic growth trajectories, highlighting the importance of the positive

perceptions of others for predicting student's academic growth. However, these groups were different

in levels of teacher-rated engagement, student-rated self-concept, and social preference as rated by

peers (Wu et al., 2010). Students who view their relationships more negatively have more negative

views about their competence, less engagement in school, and are not as well liked by peers. In

contrast, students who viewed the relationship more positively than others (Incongruent Child Positive

group) had higher student-rated self-worth and higher perceived math and reading competence than

the Congruent Negative group. It appears that students who tend to view their relationships more

positively than teachers and peers also view themselves more positively. However, students in this

group were similar to the Congruent Negative group on most teacher and peer rated outcomes (Wu et

al., 2010).

The *Student-Teacher Relationship Scale*

Psychometric properties of the *STRS*. The original version of the *STRS*, developed in 1991 by

Pianta and Nimetz, contained 16 Likert-type items developed from research on parent-child attachment

and the Attachment Q-sort (Waters & Deane, 1985). Initial pilot testing conducted using kindergarten

teachers and students, found that the items loaded on three factors, one measuring positive features of

the relationship, one measuring improvement in the relationship over time, and one measuring over-

dependency. This version of the *STRS* was revised and a second, 31 item, version was developed. Initial

studies using this version identified 5 factors measured by the scale: conflict/anger, warmth/closeness,

open communication, dependency, and troubled feelings (Pianta & Steinberg, 1992). Later research

refined the scale to the current 28 item long-form and 15 item short-form (Pianta, 2001).

These versions of the *STRS* (the long-form) in particular have been used extensively in research

on teacher-student relationships. Evidence for factor structure, reliability, and validity, while

established in early measurement studies (e.g. Pianta, 2001; Pianta & Steinberg, 1992; Saft, 1994;

Steinberg, 1993), has been reexamined as the scale is used with increasingly diverse populations (Fraire,

Longoobardi, Prino, Sclavo, & Settanni, 2013; Gregoriadis & Tsigilis, 2008; Koomen et al., 2012; Solheim

et al., 2012; Webb & Neuharth-Pritchett, 2011). For a summary of measurement studies using the *STRS*

see Table III.

Table III: Measurement Studies using the STRS

Article	Purpose	Analysis	Sample	STRS form and subscales used	Results
Doumen et al. (2009) study 1	Examine convergent and discriminant validity using peer reports of relationships.	Multi-trait, Multi-method Approach	Kg Belgian (from Flanders region, Dutch speaking)	Dutch translation – long form[1]	Reliability: Good reliability for Conflict and Closeness subscales (.92 for both.) Lower reliability for Dependency (.74.) Validity: Some evidence for convergent and discriminant validity for the Closeness and Conflict subscales, and convergent validity of the Dependency subscale. No evidence for discriminant validity of the Dependency subscale.
Doumen et al. (2009) study 2	Examine convergent and discriminant validity using observer reports of relationships.	Multi-trait, Multi-method Approach	Prek-Kg Belgian (from Flanders region, Dutch speaking)	Dutch translation – long form	Reliability: Good reliability for Conflict (.86) and Closeness subscales (.89.) Low reliability for Dependency (.53.) Validity: Evidence for convergent validity for all three subscales. Support for discriminant validity of conflict scale but not closeness. Discriminant validity for dependency not examined.
Drugli & Hjemdal (2013)	Examine factor structure for a Norwegian setting.	CFA	1st-7th grade Norwegian	Norwegian translation – long and short form	Factor Structure: Three factor model not supported. Two factor model of the short form supported. Reliability: Good reliability for the Conflict (.84) and Closeness (.82) subscales.
Fraire et al. (2013)	Examine factor structure for an Italian setting.	EFA – Parallel Analysis and CFA	Age 3-9 Italian	Italian translation – long form	Factor Structure: Support for three factor model with 6 items (4, 6, 12, 19, 21, and 25) removed. Reliability: Good reliability for Conflict (.86) and Closeness (.91) subscales, lower for Dependency (.69).
Gregoriadis & Tsigilis (2008)	Examine factor structure for Greek setting.	EFA - Principal Component Analysis	Kg Greek	Greek translation – long form	Reliability: Good reliability for all three subscales (ranging from .79 to .9.) Factor Structure: Support for three factor model measuring conflict, closeness, and dependency with 2 items (6 and 25) removed.
Koomen et al. (2012)	Examine factor structure and invariance based on age and gender using an adapted version	CFA	mean age 8.1 Dutch	Dutch adapted version –long form	Reliability: Good reliability for Conflict (.9) and Closeness (.88). Lower reliability for Dependency but adapted version improved reliability (.78 for adapted version, .64 for original version.) Factor Structure: Support for 3 factor model with adapted items.

					Closeness subscale was a better fit than Conflict or Dependency. Invariance: Support for invariance across gender but only partially for age. Some non-invariance for Conflict for older group - measuring a different construct. Some issue with closeness but did not affect conclusions about differences between groups. Strong invariance for dependency for age.
Roeden et al. (2012)	Examine applicability for STRS for caregivers and adults with ID including factor structure, validity, and reliability.	EFA - Principal Factor Analysis Correlations	Adults with intellectual disabilities Dutch	Dutch adapted version – long form	Factor Structure: Support for 3 factor structure. Two items (17 and 20) loaded on different subscales and one removed. Reliability: Good reliability for all subscales using internal consistence and test-retest reliability (ranging from .81 to .92.) Validity: Correlations between STRS and temperament scale supported construct validity.
Solheim et al. (2012)	Examine factor structure and invariance based on gender	CFA Correlations	Kg Norwegian	Norwegian translation – long form	Factor structure: Three dimensional model had best fit but fit only considered marginal. Acceptable fit with three items (6, 21, 12) removed. Validity: Support for concurrent and discriminant validity based on correlations with behavior measures. Some issues with discriminant validity of Dependency subscale compared to Conflict subscale. Invariance: Girls had higher mean on closeness scale, and one item (4) functioned differently for boys and girls.
Spilt et al. (2012)	Examine measurement invariance based on gender	Multilevel Structural Equation Modeling and Multgroup Factor Analysis	1st-6th	Dutch adapted version – selected items	Invariance: Overall sufficient measurement invariance but issues with individual items based on gender.
Tsigilis & Gregoriadis (2008)	Examine factor structure and invariance for gender	CFA	Kg Greek	Greek translation – short form	Reliability: Adequate reliability for both subscales (Conflict .82, Closeness .71.) Factor structure: One dimensional model rejected. Two independent factors had marginal fit. Two correlated factors had reasonable fit.

				Invariance: Scale functioned similarly for boys and girls.
Webb & Neuharth-Pritchett (2011)	Examine factor structure and invariance based on race	CFA (and EFA)	Preschool 58% White, 42% African American	Long form (English)	Reliability: Good reliability for Conflict (.91-.92) and Closeness (..82-.86.) Lower reliability for Dependency (.55-.65). Factor structure: Hypothesized model did not fit based on CFA. Model fit improved by removing two items (6 and 21). Invariance: Factor structure different for African American and European American students. Factor loadings different for African American population on dependency subscale (loadings all negative except for item 6 for African American students, all positive for European American population)

[1] Long form refers to the 28-item version including subscales for Conflict, Closeness, and Dependency. Short form refers to the 15-item version with subscales for Conflict and Closeness only.

[2] Dutch adapted version refers to version created by Koomen, Verschueren, & Pianta (2007) and described in Koomen et al. (2012). Items were added and removed from the Closeness and Conflict subscales. Dependency subscale was changed significantly.

Reliability. The long form of the *STRS* contains 28 items with subscales for Conflict, Closeness,

and Dependency, while the short-form contains 15 items measuring just Conflict and Closeness. The

professional manual for the *STRS* reports reliability estimates for the long-form using both test-retest

and internal consistency (Pianta, 2001). Test-retest correlations for the total scale, Closeness, Conflict,

and Dependency were .89, .88, .92, and .76 respectively. Internal consistency estimates were similarly

high with the exception of the Dependency subscale (.89 total, .86 Closeness, .92 Conflict, .64

Dependency). Reliabilities for subgroups based on gender and ethnicity were similar to the full

normative sample for the Conflict and Closeness subscales, and for boys and girls on the Dependency

subscale. However, all subgroups (i.e. boys, girls, Caucasians, African Americans, and Latinos) had lower

reliability for the total scale (.74-.76) and samples of African American and Latino students had lower

alpha values for the Dependency subscale (.55 and .56 respectively) compared to Caucasian students

and the entire sample. Based on reliability estimates for the Dependency subscale, Pianta recommends

that this subscale "be interpreted with caution, and that users do not interpret

Dependency subscale scores in isolation from the other *STRS* scale and subscale scores" (2001, p. 22).

Other studies using the *STRS* have found similar estimates for reliability (using internal

consistency estimates only). *Alpha* values for the total scale, and the closeness and conflict subscales

have generally ranged from .8 to .9 for both the short and long-form versions of the *STRS*. Reliability

estimates for the Dependency subscale have been substantially lower, ranging from .57 to .69.

However, a study by Birch and Ladd (1998) using a sample of students from kindergarten to first grade

found *alpha* estimates as high as .8 for Dependency.

Validity. Evidence for validity for the *STRS* reported in the professional manual and other

research has generally focused on three types of validity: 1) construct validity evidence based on the

factor structure of the *STRS* and the relationships between the *STRS* scale and subscales; 2) concurrent

and predictive validity evidence based on associations between the *STRS* and behavioral and academic

outcomes; and 3) discriminant validity evidence based on comparing correlations between the *STRS*

scale and subscales and measures of behavior and adjustment (Pianta, 2001).

Studies examining the factor structure of the *STRS* using both Exploratory and Confirmatory

Factor Analysis have generally found support for the three factors of Conflict, Closeness, and

Dependency for the long-form (Fraire et al., 2013; Gregoriadis & Tsigilis, 2008; Koomen et al., 2012;

Pianta, 2001; Pianta & Steinberg, 1992; Saft, 1994; Solheim et al., 2012; Steinberg, 1993; Webb &

Neuharth-Pritchett, 2011) and the factors of Conflict and Closeness for the short-form *STRS* (Drugli &

Hjemdal, 2013; National Institute of Child Health and Human Development, 2000; Tsigilis & Gregoriadis,

2008). However, several recent studies have found issues with specific items on the *STRS* when

examining factor structure (e.g. an item on the Closeness subscale instead loaded on the Dependency

subscale). In these cases, the three factor solution was only supported with specific items removed or

reworded. It should also be mentioned that one of these studies used a Greek translated version

(Tsigilis & Gregoriadis, 2008), one used an Italian translated version (Fraire et al., 2013), and two used a

Dutch translated and adapted version of the *STRS* (Koomen et al., 2012; Solheim et al., 2012). The Dutch

version adapted by Koomen and colleagues (2007) includes additional items on the Closeness subscale

focused on the security of the child in the relationship. This version also added 3 items to the

Dependency scale in an effort to increase reliability of the scale. Additionally, with the exception of one

study (Koomen et al., 2012) all of these studies used a sample of kindergarten or pre-school age

students.

When instabilities were found with the factor structure of the *STRS* it could generally be

attributed to the performance of a few individual items. Item 6 from the dependency subscale, "This

child appears hurt or embarrassed when I correct him/her," and item 21 from the closeness subscale,

"I've noticed this child copying my behavior or ways of doing things" were the most problematic. Both

items were found to have low factor loadings (Koomen et al., 2012; Solheim et al., 2012; Webb &

Neuharth-Pritchett, 2011), low item-total correlation (Webb & Neuharth-Pritchett, 2011), high residuals

(Koomen et al., 2012), and low levels of communality (Fraire et al., 2013; Gregoriadis & Tsigilis, 2008).

Additionally, in a study by Gregoriadis and Tsigilis (2008) item 21 loaded on Dependency instead of

Closeness.

Other items that have shown some issues include item 4, "This child is uncomfortable with

physical affection or touch from me" and item 12 "This child tries to please me." In a study by Solheim

and colleagues (2012), item 4 was invariant based on gender and item 12 had low factor loadings. A

study by Koomen and colleagues (2012) found issues with item 9, "This child spontaneously shares

information about himself/herself" and item 19, "When this child is misbehaving, he/she responds well

to my look or tone of voice," both of which had low factor loadings and a high residuals. Fraire and

colleagues (2013) found that items 4, 12, 19 all had low levels of communality. Additionally, Koomen

and colleagues (2012) found that item 9 and item 27, "This child openly shares his/her feelings and

experiences with me" had a high covariance, which they attributed to similar wording of the two items.

Webb and Neuharth-Pritchett (2011) found low item-total correlations and low factor loadings for item

14, "This child asks for my help when he/she really does not need help." The same study found low item

factor loadings for item 25, "This child whines or cries when he/she wants something from me."

Gregoriadis and Tsigilis (2008) and Fraire and colleagues (2013) also had issues with item 25 but instead

found that it loaded equally on two factors.

Recent studies of the structure of the *STRS* have also begun to examine measurement invariance

for different populations. Studies have compared the functioning of the *STRS* with groups of students

based on gender, race, and age. Webb and Neuharth-Pritchett (2011) examined measurement

invariance with populations of African American and Caucasian preschool and kindergarten students,

finding that the factor structure of the *STRS* was different for the two groups of students. Factor

loadings were different for the African American population specifically on the Dependency subscale.

For the Caucasian population all factor loadings on the Dependency scale were positive, while for

African American students all but one item loaded negatively on that scale (Webb & Neuharth-Pritchett,

2011).

Three studies examined measurement invariance across gender. Koomen and colleagues (2012)

found support for invariance across gender for a sample of students age 3 through 12. Similarly, Spilt

and colleagues (2012) found support for invariance based on both student and teacher gender.

However, they did find several problematic items that functioned differently across groups. Solheim

and colleagues (2012) examined invariance across student gender and, while they found overall support

for measurement invariance, in their study, girls had higher mean on the Closeness scale and item 4 on

the Closeness scale functioned differently for boys and girls.

Koomen and colleagues (2012) also examined measurement invariance across age. As the *STRS*

was originally intended for students up to age 8, the researchers chose to break their sample into two

groups at the age of 8 years, 8 months. When comparing groups of younger and older students, the

researchers found partial support for invariance across age.   For the older group, the subscale of

Conflict had the most problems with noninvariance with specific items on the Conflict scale appearing to

function differently for older students. There were similar problems with a few Closeness items as well.

However, for both the Conflict and Closeness scales the items of concern appeared to "cancel each

other out". For example, item 25 on the Conflict scale was higher for younger students while items 13

and 16 were higher for older students. Because of this, overall scores on these subscales were not

affected by the non-invariance. Interestingly, there were not issues with invariance for the Dependency

subscale. However, it should be noted that this study used an adapted version of the STRS with a

modified version of the Dependency scale (Koomen et al., 2012)

Additional evidence for construct validity of the *STRS* has been found by examining the

correlations among the *STRS* scale and individual subscales. Initial testing with the normative sample

found correlations between all subscales and the total *STRS* score. Both Conflict and Dependency

negatively correlated with the total score (-.91 and -.35 respectively), while Closeness had a positive

correlation with the total scale (.73) (Pianta, 2001). Additionally, significant correlations were found

between the different subscales. Closeness correlated negatively with Conflict (-.45), and both

Closeness and Conflict correlated positively with Dependency (.13 and .28 respectively) (Pianta, 2001).

While later studies have generally supported the negative correlation between Conflict and Closeness,

ranging from -.25 to -.73, and the positive correlation between Conflict and Dependency, ranging from

.26 to .69, the correlations between Closeness and Dependency have not followed the pattern

presented by Pianta (2001). Most studies measuring correlations between the Dependency and

Closeness scales have found small to moderate negative correlations between the Closeness and

Dependency subscales. However, quite a few studies have found non-significant correlations, with few

confirming the positive correlation found in the professional manual (Gregoriadis & Tsigilis, 2008; Rey et

al., 2007). Gregoriadis and Tsigilis (2008) attributed this discrepancy to the way the idea of dependency

is constructed in different cultures. Whereas in North American culture, with its focus on individualism,

dependency may be seen as a negative quality of the relationship, correlating with conflict, in more

collectivist cultures, dependency may be seen in a more positive light and would therefore correlate

with closeness (Gregoriadis & Tsigilis, 2008).

Evidence for concurrent and predictive validity of the *STRS* generally takes the form of

correlations between the *STRS* and outcome measures such as academic and behavior measures. As

described previously in this chapter, teacher-student relationship measures (including the *STRS*) have

been found to correlate with current academic and behavioral skills and predict future performance in

these areas. Associations between the *STRS* and behavior measures, in particular, have been cited as

evidence for validity of the measure. As one of the subscales of the *STRS* measures the level of conflict

in the relationship, it would be expected that students with a higher degree of problem behavior (e.g.

externalizing, antisocial, aggressive) would experience higher levels of conflict in the relationship, and,

as discussed in previous sections of this review, those associations have been found in research using

the *STRS*. However, it is also important that the *STRS* is not too highly correlated with behavior

measures so as not to be redundant with those measures (Pianta, 2001). For example, if the *STRS*

conflict scale correlated highly with a measure of aggressive behavior then it could be seen as measuring

the construct aggressive behavior instead of relational conflict. This provides evidence for discriminant

validity of the *STRS*.

Campbell and Fiske (1959) describe a method for assessing validity of a measure using both

convergent and discriminant evidence. Applying this concept to the *STRS*, Doumen and colleagues

(2009) provide a good description of how validity evidence can be gathered comparing the *STRS*

subscales and subscales on a relationship report from a different rater:

> The associations between the *STRS* scales and independent measurements of theoretically
> similar constructs (e.g. between *STRS* - and peer-reports of conflict) should be higher than
> associations between *STRS* scale scores and scores for different relationship dimensions, either
> measure (s) by a different instrument (e.g. *STRS* conflict and peer-rated closeness), or (b) by
> means of the same instrument (e.g. *STRS* conflict and closeness). (p. 503)

In their study of preschool and kindergarten students, the researchers evaluated the validity of the *STRS*

by comparing teacher-reports on the *STRS* to student, observer, and peer-reports of relationship quality.

Comparing the Closeness and Conflict scales on the *STRS* to peer-reports of closeness and conflict, the

researchers found that correlations between the similar relationship dimensions (i.e. peer-reported

closeness and *STRS* Closeness) were higher than correlations between different relationship dimensions

(e.g. peer-reported conflict and *STRS* Closeness) lending support to the convergent and discriminant

validity of the Closeness and Conflict subscales (Doumen et al., 2012). Similar results were found when

comparing the *STRS* scale to observer reports of the relationship. However, evidence for discriminant

validity for the *STRS* Closeness scale was not supported. Additionally, the researchers found only some

support for the convergent validity of the Dependency subscale and no evidence for discriminant

validity. Correlations between dependency as measured by the *STRS* and peer-reports were not higher

than correlations between the *STRS* Dependency scale and other relationship dimensions (e.g. *STRS*

Closeness, peer-rated conflict, etc.) (Doumen et al., 2012).

Evidence for discriminant validity has also been provided by examining how different subscales

of the *STRS* relate to outcome variables. As the subscales of Closeness, Conflict, and Dependency are

designed to measure different facets of the teacher-student relationship, they should correlate

differently with outcome measures. For example, a study by Solheim and colleagues (2012) examined

the discriminant validity of the Dependency and Conflict subscales based on correlations with subscales

of the Teacher Report Form (Achenbach & Rescorla, 2000). Conflict and Dependency differed in

correlations with aggressive behavior, oppositional defiant behavior, and externalizing problems for

boys with higher correlations between Conflict and those behavioral outcomes (Solheim et al, 2012).

This lends support for the conclusion that Conflict and Dependency measure distinct aspects of the

teacher-student relationship.

Use of the *STRS* with students with disabilities. While the *STRS* has not been marketed

specifically for use with students receiving special education services, the professional manual describes

the use of the *STRS* for the special education pre-referral intervention process (now commonly referred

to as RTI) as a way of providing "an indicator of the level of severity of the teacher's concerns" and

identifying qualities of the relationship in order to help teachers more effectively work with student,

potentially eliminating the need for special education referral (Pianta, 2001).   The *STRS* has been used in

studies for students "at risk" for special education referral (Decker et al., 2007; Pianta et al., 1995; Tsai &

Cheney, 2012) and a few studies containing students receiving special education or other special

services (Al-Yagon & Mikulincer, 2004; Murray & Murray, 2004; Rudasill et al., 2010). Additionally, many

studies have included students with high levels of externalizing behavior, some of whom could have the

potential of being referred for special education for emotional disturbance (Baker et al., 2008; Murray &

Zvoch, 2011; Spilt & Koomen, 2009). However, testing for factor structure, reliability, and validity has

been conducted on, what appears to be, exclusively general education teachers and students without

disabilities or high levels of externalizing, antisocial, or aggressive behavior.

The *STRS* professional manual makes no mention of special education when discussing the

characteristics of students and teachers in the normative sample (Pianta, 2001). Similarly, recent

measurement studies using the *STRS* have not mentioned the use of students with disabilities or special

education teachers in their sample (Doumen et al, 2009; Koomen et al., 2012; Solheim et al., 2012; Spilt

& Koomen, 2009; Tsigilis & Gregoriadis, 2008; Webb & Neuharth-Pritchett, 2011). The only study

examining the use of the *STRS* for individuals with disabilities included adults with intellectual disabilities

and caregivers in a community setting (Roeden, et al., 2012).

Social Acceptability

While reliability and validity are important to ensure interpretations made using a measure are

trustworthy, it is also important that a measure has practical value for the intended users. This idea is

often referred to as social acceptability or usability. The concept of social acceptability for interventions

began in the 1970s with the work of Kadzin (1977). Since then, this idea has primarily been used in

intervention research. For example, researchers may assess teachers' perceptions of an intervention

including their understanding of the intervention, the feasibility of implementing the intervention, and if

they feel it is beneficial to students (Chafouleas, Briesch, Riley-Tillman, & McCoach, 2009). However,

researchers have begun to apply this same idea to behavioral and attitudinal measures. In their review

of screening instruments for behavior, Harrison, Vannest, and Reynolds (2013) identify six criteria for

social acceptability of measures including the time required for use, costs, infrastructure for

administration, readability, social importance, and psychometric properties. Three of these criteria in

particular, time required, readability, and social importance, can be applied to the use of the *STRS* by

teachers of students with ED. For the *STRS* to have a high level of social acceptability, teachers must feel

that the time required to complete it is reasonable, that they are able to read and understand the

questions being asked, and that the questions on the *STRS* are relevant to their practice. However, to

date, no research on the *STRS* has addressed its social acceptability when used with any population of

students.

Summary of Research

This review summarized the literature on teacher-student relationships including studies

examining connections between relationships and student outcomes and the influence of student and

teacher characteristics and external factors on relationship quality. Research on relationships and

student outcomes has provided evidence for connections between relationship quality and student

behavioral and academic outcomes. Furthermore, student characteristics, particularly behavioral

characteristics, have been found to influence the formation of student relationships with teachers.

Research in both of these areas is well established. However, what is lacking is a focus on students with

disabilities and the inclusion of special education teachers in study participants.

Additionally, this review discussed measuring teacher-student relationships with a focus on the

Student-Teacher Relationship Scale (*STRS*, Pianta, 2001). Evidence for reliability and validity of the STRS

for populations of early elementary age students without disabilities was established through early

research involving the *STRS*. However, recent measurement studies have called into question the

reliability and validity of the *STRS* especially when examining the functioning of the scale with different

populations of students (e.g. based on age, race, and gender). Again, what is notably lacking in this

research is inclusion of students with disabilities and special education teachers. Additionally, these

studies tended to focus primarily on early elementary students with only one including students in

grades 2 and above (Koomen et al., 2012)

The following chapter will detail methods used in the present study to address part of this gap in

the research based for teacher-student relationships by gathering evidence for the reliability and validity

of the *STRS* with a population of students with ED and both general and special education teachers.

Chapters IV and V describe the results of this study and how it may contribute to both research and

school-based uses of the *STRS* with students with ED.

III: METHODS

Participants

This study consisted of two participant groups: elementary general and special education teachers and students with emotional disturbance (ED) with whom they worked. Seventy-eight teachers participated in the study. As all teachers completed measures describing their students with ED, students were included as secondary participants. However, for a subsample of the teachers, their students with ED were also full participants in study, completing surveys of their own. A total of 79 teachers and 203 students participated in the full sample with 24 teachers and 50 students in this subsample.

In order to be included in the study, teachers had to be a licensed general or special education teacher working in an inclusive general education classroom, resource classroom, or self-contained special education classroom containing students with ED. Teachers did not have to work primarily with students with ED but needed to have at least one student with characteristics of ED in their class or on their caseload. Teachers who worked at schools that primarily served students with disabilities (e.g. therapeutic day and residential schools) were also eligible for participation assuming they had students with ED in their classes. The study originally planned to include teachers who worked with students ages 8 to 12 or in 2nd through 7th grade. However, several teachers in the study had students who were close to turning 8. Therefore, if students were going to be 8 years-old in the current semester, they could be included. If a teacher worked with students in grade levels outside of the study parameters (e.g. in a 6th-8th grade self-contained classroom), the teacher was eligible for participation, provided the students with ED met study requirements. For this reason, several teachers who worked with students in grades outside of the original study parameters (e.g. 1st grade or 8th grade) were included in the study.

The majority of teachers in the study were special education teachers ($n = 67$) and the majority of special education teachers in the study worked in self-contained classrooms ($n=41$). About two-thirds

of teachers in the study worked in traditional public schools serving students with and without

disabilities, with the remaining third working in schools serving students with disabilities. Most teachers

in the study had been teaching for between 5 and 10 years with an average of 8.7 years teaching

experience. The majority of teachers in the study were White (n = 71) and female (n = 64) and most

taught in suburban schools (n = 46). However, it should be noted that for teachers who worked in

therapeutic/special education schools, although the school itself may have been located in the suburbs,

students attended could come from surrounding areas, including urban settings. Full demographic

information for teachers can be found in Table IV.

Teachers who agreed to participate in the study identified students in their classes or on their

caseloads for participation. In order to be included in the study, students needed to exhibit symptoms

of emotional disturbance consistent with the definition provided in IDEA and confirmed by a screening

measure, the *Emotional and Behavioral Screener* (*EBS*, Cullinan & Epstein, 2012). To initially determine

potential student participants, teachers were asked to identify any students in their classes or on their

caseloads who had an Individualized Education Plan (IEP) with emotional disturbance/disability listed as

either a primary or secondary disability. Additionally, teachers were asked to identify students who met

the description of ED but who may not have been specifically identified for special education services. A

short description of behaviors was created using criteria from the federal definition for ED and the *EBS*

for teachers to use when identifying potential students for the study.

Table IV: Teacher Demographics

Variable		Full Sample (N = 79)	Subsample (*n* = 24)
		N (%)	N (%)
Position	General Education	12 (15)	1 (4)
	Special Education	67 (85)	23 (96)
Special Education Setting[1]	Inclusion	19 (24)	4 (17)
	Resource/Pull-out	24 (30)	3 (13)
	Self-contained classroom	41 (52)	19 (79)
	Consultation	5 (6)	2 (8)
	General Education Alternative Classroom[2]	1 (1)	1 (4)
School Type	Traditional Public School	52 (66)	9 (38)
	Therapeutic/ Special Education School	27 (34)	15 (63)
Grades Taught	Kg	9 (11)	3 (13)
	1st	10 (13)	4 (17)
	2nd	17 (22)	6 (25)
	3rd	28 (35)	10 (42)
	4th	31 (39)	10 (42)
	5th	35 (44)	11 (46)
	6th	43 (54)	15 (63)
	7th	33 (42)	10 (42)
	8th	27 (34)	9 (38)
Years teaching experience	1st year	5 (6)	2 (8)
	2-5	40 (51)	11 (46)
	6-10	12 (15)	3 (13)
	11-15	9 (11)	3 (13)
	16-20	5 (6)	2 (8)
	>20	8 (10)	3 (13)
Gender	Female	64 (81)	21 (88)
	Male	15 (19)	3 (13)
Race/ Ethnicity	European American/White	71 (90)	22 (92)
	African American	0 (0)	0 (0)
	Latino/Hispanic	6 (8)	1 (4)
	Middle Eastern	1 (1)	0 (0)
	Declined to state	1 (1)	1 (4)
School Location	Large Urban Area	27 (34)	0 (0)
	Suburban	46 (58)	24 (100)
	Small City	5 (6)	0 (0)
	Rural	1 (1)	0 (0)

[1] For special education setting and grades taught, teachers could select multiple options.
[2] The one general education teacher who participated in the study worked in a therapeutic school in a classroom for students with severe behavioral difficulties. While this teacher and classroom were not considered special education, the class functioned similarly to a self-contained special education classroom in a therapeutic setting.

Students in the study had to be between the ages of 7 and 12. While teachers who worked in grades 2nd through 7th were contacted for potential participation in the study, the age of students was the criteria used for student participation regardless of the student grade. For example, a student who was in a 7th grade class but was 14 years old would not be included in the study but a student who was 8 years old and in 1st grade would be included. This age range was selected to include elementary students in the age range that has been used with the *STRS* in previous studies, while focusing on the middle to upper elementary age range which contains a greater number of students with ED (Data Accountability Center, 2011). While the *STRS* was originally designed for use with students in preschool and early elementary grades, it has been used with students up to middle school age and it is currently recommended for use with students from age 3 to 12 (University of Virginia, 2013).

In order to ensure that students chosen for the study had the opportunity to develop a relationship with the participating teacher, all students selected had to have contact with the teacher for at least the 2 months prior to the study and spend a minimum of 3 hours per week with the teacher. As a subsample of students directly participated in the study and completed study measures, these students had to have the cognitive ability to understand and complete the surveys. For this reason, students with moderate to severe cognitive disabilities were excluded from the study as well as students who were nonverbal. To ensure consistency, this requirement was followed even for the larger sample of teachers/students where students were not direct participants in the study.

Students in the study ranged in age from 7 years 8 months to 12 years 11 months with an average age of 10.7 for both the full sample and the subsample. Students were in grades 1st-7th with the largest percentage of students in 5th and 6th grades. Most students in the study had an identified disability (*n* = 180) with the majority of those having an emotional disability (*n* = 127). Students were rated by both general (*n* = 26) and special education teachers (*n* = 177). While the percentage of students in public vs. therapeutic schools was almost evenly split for the subsample, for the full sample,

the majority of students were in traditional public schools (n = 131). Students were predominately male

(n = 170) and White (n = 81). However, many other racial/ethnic groups were represented in the sample

with 53 African-American students, 46 Latino students, 4 Asian-American students, and 19 multi-racial

students included. Full demographic information on students in both the full and subsample can be

found in Table V.

Table V: Student Demographics

Variable		Full Sample (N = 203)		Subsample (n = 50)	
		Mean	SD	Mean	SD
Age		10.7	1.5	10.7	1.4
Length of Relationship with Teacher (in months)		12	11.3	13.4	13.6
		N (%)		N (%)	
Grade	1st	3 (2)		0 (0)	
	2nd	18 (9)		2 (4)	
	3rd	31 (15)		10 (20)	
	4th	27 (13)		7 (14)	
	5th	44 (22)		12 (24)	
	6th	47 (23)		12 (24)	
	7th	33 (16)		7 (14)	
Disability	No disability	23 (11)		3 (6)	
	Emotional disability/ disturbance	127 (63)		28 (56)	
	Other disability (not ED)	53 (26)		19[1] (38)	
School Type	Traditional Public School	128 (64)		21 (42)	
	Therapeutic/ Special Education School	72 (36)		29 (58)	
Rated by	General Education Teacher	23 (11.5)		3 (6)	
	Special Education Teacher	177 (88.5)		47 (94)	
Gender	Female	33 (16)		7 (14)	
	Male	170 (84)		43 (86)	
Race/ Ethnicity	European American/ White	81 (40)		26 (52)	
	African American/Black	53 (26)		10 (20)	
	Latino/Hispanic	46 (23)		5 (10)	
	Asian/Pacific Islander	4 (2)		1 (2)	
	Multi-Racial	19 (9)		8 (16)	

[1] Information on all possible disability categories was collected for students in the subsample. In addition to the 28 students with a label of ED, 6 had a label of Autism, 4 had a label of Intellectual Disability, 15 had a label of Other Health Impairment, and 5 had a label of Learning Disability. Some students may have been identified with multiple disability labels.

Sampling

Teachers were drawn from urban and suburban public schools and private (i.e. therapeutic day/residential) schools serving students with emotional disabilities. An intentional effort was made to recruit teachers from schools and districts that served a diverse student population both in terms of race/ethnicity and socio-economic status. Additionally, an effort was made to recruit teachers from a variety of settings including urban, rural, and suburban areas as well as both traditional schools and schools primarily serving a special education population.

Teachers were recruited in a variety of ways. Initially, district administrators were contacted asking for permission to conduct the study. In the case of therapeutic schools, individual school administrators were contacted.   Seven districts were recruited through this procedure as well as 3 individual schools, yielding a total of 34 teachers for the study. Additionally, teachers were recruited through university programs and educational organizations such as Teach for America and the Council for Exceptional Children. The researcher emailed university or organizational contacts asking if they would pass information about the study on to teachers who met study requirements. A total of 24 teachers were recruited through these channels. Finally, teachers were recruited through personal connections of the researcher and by referral from current participants. A total of 21 teachers were recruited based on these connections.

Teachers recruited directly through districts and schools were eligible for participation in the subsample with student participants if the district/school agreed. Districts/schools were initially contacted about the study and after IRB approval was granted for each site, administrators were asked to provide contact information for potential teachers. These teachers were then contacted by the researcher with a description of the study and a request for participation. If districts/schools did not want students directly included in the study, they were given the option for teachers to participate in the larger sample without students. If they agreed, they were asked to forward information about the

study to eligible teachers. Teachers recruited through universities, organizations, or personal

connections were not eligible for participation in the subsample with students.

Teachers who consented to participate in the study were asked to identify students in their

classes who met study criteria. Teachers were then asked to complete the *Emotional and Behavioral*

Screener (EBS, Cullinan & Epstein, 2012) as a screening measure to confirm that students met the

criteria for emotional disturbance.   Students who scored in the 90th percentile or higher on the *EBS*

were eligible for participation. For students with an official label of ED (as designated by their IEP), a

score above the 90th percentile on the *EBS* was still required for participation in the study.   Of the

students identified for participation in the study only 11 did not meet the 90th percentile cutoff on the

EBS. Teachers who did not have any students meeting study criteria were removed from the study.

Teachers participating in the subsample were then given permission forms to send home with

students to obtain parent consent for participation in the study. (See Appendix B for all consent

materials.) For teachers who worked at therapeutic schools with a residential program, students who

lived in the residential setting were not eligible for participation in the study due to difficulties that

would have arisen obtaining parent/guardian consent.   Of the 108 eligible students, a total of 50

returned parental permission and assented to participate in the study. Across both samples,

participating teachers rated between 1 and 8 students with an average of 2.6 per teacher.

Sample size. In order to conduct statistical procedures in this study, namely Confirmatory

Factor Analysis, a goal of 200 ratings on the *STRS* was set. There are no clear-cut guidelines for sample

size for studies using Structural Equation Modeling, of which CFA is a subset. The necessary sample size

needed varies based on the specifics of the model being tested (Brown, 2006). Several researchers have

proposed various guidelines based on the number of parameters to be estimated (Jackson, 2003),

desired statistical power (Lee, Cai, & MacCallum, 2012), and factor loadings for individual items

(Guadagnoli &Velicer, 1988).   Klein (2011) cites 200 cases as a "typical" sample size in studies using

SEM. For the present study, a total of 203 *STRS* ratings was obtained. As statistical procedures involving

other study measures, the *PIML* and *SDQ*, involved the use of correlation, a smaller sample size was

needed for these measures. In order to obtain the necessary sample size required for correlational

analysis, a goal of 50 student participants was set.

Measures

      Teacher measures. All teachers in the study completed two measures. As part of the screening

process to identify students for the study, teachers completed the *Emotional and Behavioral Screener*

(EBS) to determine eligible students. Additionally, all teachers completed the *Student-Teacher*

Relationship Scale (STRS) for each student who was found eligible for the study. Teachers participating

in the subsample with students as full participants also completed the *Strengths and Difficulties*

Questionnaire (SDQ) for each student. Teachers in both samples also provided basic background

information about themselves (e.g. type of position held, grade levels taught, years of experience,

race/ethnicity, and gender) and about the students they were rating. For the larger sample without

direct student participants, teachers only provided the age, grade, gender, and race/ethnicity for each

student they rated. They were also asked if the student had a disability, and if so, whether they had

been given a label of emotional disturbance/disability. For teachers in the subsample with student

participants, teachers were asked to provide additional information about each student, including all

disability labels and special education services received. (See Appendix C for copies of all teacher

measures.)

      Emotional and Behavioral Screener. In order to determine students who were eligible for

participation in the study, teachers completed the *Emotional and Behavioral Screener* (*EBS*, Cullinan &

Epstein, 2012) for each student. The *EBS* was designed to be a quick screening tool to identify students

with or at-risk for emotional disturbance. The screener was designed using items from a more

comprehensive measure, the *Scales of Assessing Emotional Disturbance* (*SAED*, Epstein & Cullinan,

2010). Previous studies using the *EBS* have found it to have adequate test-retest and inter-rater

reliability (.90 and .63 respectively) (Nordess, Epstein, Cullinan, & Pierce, 2014). The *EBS* has also been

found to correlate with an established measure of student behavior, the *Behavior Assessment System*

for Children–Second Edition: Behavioral and Emotional Screening System (*BASC-2 BESS*; Kamphaus &

Reynolds, 2007). Correlation between the overall score on the *BASC-2* and the *EBS* for a population of

middle school students was .87 (Nordess et al., 2014). For this sample, overall reliability of the *EBS* using

internal-consistency (Chronbach alpha) was .63 for the subsample and .61 for the full sample.

        Student-Teacher Relationship Scale. Teachers completed the *Student Teacher Relationship*

Scale (*STRS*, Pianta, 2001) for each student included in the study. As described previously, the *STRS* has

been used extensively in research on teacher-student relationships. While it was originally designed for

use with younger students, it has been utilized in studies with young adolescents up to 8th grade

(Decker et al., 2007; Murray & Murray, 2004; Murray & Zvoch, 2010.) This study used the long-form of

the *STRS* which contains 28 items measuring the three factors of Conflict, Closeness, and Dependency.

        The *STRS* was found to have adequate measures of reliability using both test-retest and internal

consistency estimates. In the *STRS* Professional Manual, Pianta (2001) reported 2-week test-retest

correlations for a sample of 72 kindergarten students of .89 for the total score, and .88, .92, and .76

respectively for the Closeness, Conflict, and Dependency subscales. Internal consistency estimates for a

sample of 1,535 elementary students were also reported: .89, total score; .86, Closeness; .92, Conflict;

.64, Dependency. As described in Chapter II, similar estimates have been found in later research

including studies with older students. For the present study internal consistency estimates for the full

sample (*N* = 203) and subsample (*n* = 50) were .83 and .79, respectively, for the Closeness subscale, .87

and .88, respectively, for the Conflict subscale, .72 and .73, respectively, for the Dependency subscale,

and .80 and .79, respectively, for the full scale. As will be described in Chapter V, revisions were made

to the *STRS* for the present sample based on results of the factor analysis. This revised scale had 6 items

on the Conflict subscale, 4 items on the Closeness subscale, and 3 items on the Dependency subscale

with reliabilities of .86, .80, and .68 respectively.

To assess the social acceptability of the *STRS*, three questions were added to the reverse side of

the survey: 1) questions on the *STRS* are relevant to my relationship with this student, 2) the *STRS* could

help me identify areas of strength and weakness in my relationship with this student, and 3) the amount

of time it took to complete the *STRS* for this student was reasonable. Teachers were asked to rank each

statement on a scale of 1 (strongly disagree) to 6 (strongly agree). These questions were designed to

assess the relevance of the *STRS* for teachers, as well as the practicality of using the *STRS* in school for

students with ED. The wording and scale were based on the *Usage Rating Profile-Intervention*

(Chafouleas et al., 2009).   If teachers wanted to clarify any of their responses on the *STRS* or the three

opinion questions, space was left for them to write additional comments.

Strengths and Difficulties Questionnaire. The *Strengths and Difficulties Questionnaire (SDQ)* is a

25 item measure of psychopathology and prosocial behavior for children and adolescents (Goodman,

1997). The *SDQ* contains 5 subscales: Emotional Symptoms, Conduct Problems, Hyperactivity, Peer

Problems, and Prosocial. The first four scales can be added together to compute a Total Difficulties

Score. Additionally, the Emotional and Peer Symptoms scales can be added together to create an

Internalizing Problems scale and the Conduct Problems and Hyperactivity scales can be combined into

an Externalizing Problems scale (Goodman, Lamping, & Ploubidis, 2010). However, this is only

recommended for low-risk samples including students with lower levels of difficulties. In a study of over

seven thousand British children (5-15 years old), on the teacher-report version, Goodman (2001) found

reliabilities on individual scales ranging from .70 to .88. For this sample, on the teacher scale reliabilities

on individual scales ranged from .63 to .80.

The American English version of the *SDQ* was used in this study. This version contains separate

measures for students ages 4 to 10 and 11 to 17. Differences between the two versions are minimal and

consist only in slight changes to wording of questions. For example, where the word "children" is used

in the 4 to 10 version, the word "youth" is substituted in the 11 to 17 version. Teachers were given

copies of the version that corresponded to the age of students they were rating.

The *SDQ* has been used with the *STRS* in previous validity studies. Koomen and colleagues

(2012) found significant positive correlations between both the Conflict and Dependency subscale on

the *STRS* and the Emotional Symptoms, Conduct Problems, Hyperactivity, and Peer Problems subscales

of the *SDQ*. Similarly, significant negative correlations were found between the Closeness subscale of

the *STRS* and the Emotional Symptoms, Conduct Problems, Hyperactivity, and Peer Problems subscales

of the *SDQ*. The Prosocial subscale of the *SDQ* was found to positively correlate with the Closeness

subscale and negatively correlate with both the Conflict and Dependency subscales of the *STRS*.

Student measures. Students participating in the subsample completed two measures, a

measure of their relationship with their teacher, the *People in My Life (PIML),* and a self-report measure

of their behavior, the *Strengths and Difficulties Questionnaire (SDQ).* (See Appendix D for all student

measures.)

People in My Life. Students were asked to rate the quality of their relationships with teachers

using the *People in My Life* survey (*PIML*; Cook et al., 1995). The *PIML* is based on the *Inventory of*

Parent and Peer Attachment (*IPPA*; Armsden & Greenberg, 1987) a widely-used adolescent self-report

measure focused on attachments to parents and friends. Cook and colleagues (1995) adapted the *IPPA*

to be more accessible for younger children (10-12 year olds) and added additional scales to measure

attachment to school, teacher, and neighborhood, in addition to peers and parents. For the purpose of

this study, only the teacher and school items were used.   These items are hypothesized to measure

aspects of school bonding and student-teacher relationships (Murray & Greenberg, 2000).

Murray and Greenberg (2000) examined the teacher and school items on a sample of 289 fifth

and sixth grade students. Using Principal Component Analysis they identified four main factors

measured by the scale: Affiliation with Teacher, School Bond, Dissatisfaction with Teacher, and School Dangerousness. Reliabilities for components ranged from .60 to .88. In this study, reliabilities for the three subscales used in this study were .73 for School Bonding, .82 for Affiliation with Teacher, and .56 for Dissatisfaction with Teacher.

Scores on the four components had associations with teacher report measures of social emotional adjustment. Students with higher scores on positive aspects of school bonding and student-teacher relationships (i.e. Affiliation with Teacher and School Bonding subscales) were found to have higher scores on competence measures of the *Teacher-Child Rating Scale* (Hightower, Work, Cowen, Lotyczewski, Spinnell, Guare, & Rohrbeck, 1986) and lower scores on internalizing and externalizing scales on the *Child Behavior Checklist* (Achenbach, 1978) with an opposite patter observed for the School Dangerousness and Dissatisfaction with Teacher items.

Strengths and Difficulties Questionnaire. The self-report version of the *Strengths and Difficulties Questionnaire (SDQ)* is a 25 item measure designed to measure child and adolescent perceptions of psychopathology and prosocial behavior (Goodman, Meltzer, & Bailey, 1998). The self-report version of the *SDQ* contains 5 subscales identical to the teacher version: Emotional Symptoms, Conduct Problems, Hyperactivity, Peer Problems, and Prosocial. In a study of close to four thousand British children (11-15 years old), on the youth-report version of the *SDQ*, Goodman (2001) found an overall reliability of .80, with reliabilities on individual scales ranging from .41 for the Peer Problems scale to .67 for the Hyperactivity-Inattention subscale. Youth reports on the *SDQ* were mildly to moderately correlated with teacher-reports (ranging from .19 to .32). For this study, a reliability of .67 was found for the Total Difficulties scale. Reliabilities for individual scales ranged from .36 to .78 with lower reliabilities on the Emotional Symptoms and Peer Problems subscales (.49 and .36 respectively.) As reliabilities on these two individual scales fell below an acceptable level, they were not used for analyses. Items from these scales were, however, used to calculate the Total Difficulties score.

The American English version of the student-report *SDQ* was used. This version contains one measure designed for students age 11 to 17. However, versions of this scale have been used on samples of children as young as 6 years old. Studies examining the psychometric properties for the youth-report *SDQ* with students under the age of 11 have generally found support for its use with younger students (Curvis, McNulty, & Qualter, 2013; Di Riso, Salcuni, Chessa, Raudino, Lis, & Altoè, 2010; Muris, Meesters, Eijkelenboom, & Vincken, 2004; Van Roy, Veenstra, & Clench-Aas, 2008). However, reliabilities for the scale with student under the age of 11 have generally been lower than for student age 11 and above and researchers have found support for modified factor structures (2, 3, or 4 instead of 5) for the youth-report *SDQ* (Curvis et al., 2013; Muris et al., 2004; Di Riso et al., 2010).

Procedures

        Full sample without students as direct participants. Prior to beginning the study, permission was obtained from the university Office for Protection of Research Subjects (see Appendix A for IRB approval). For the full sample, teachers who met criteria for inclusion in the study and who were interested in participating either met with the researcher in person or spoke with the researcher over the phone to review study requirements and discuss procedures. The majority of teachers (*n*= 74) met in person while a much smaller number (*n* = 5) spoke with the researcher over the phone. For teachers who met with the researcher in person, those who were not a part of the subsample met with the researcher at a location of the teacher's choosing outside of the school such as a library or coffee shop. Teachers who consented to participate in the study were asked to identify students for participation and complete the *EBS* screener. Teachers were then given *STRS* forms to complete for each eligible student. Most teachers completed these forms with the researcher present. At this time, they also provided basic demographic information for the students they were rating (e.g. age, grade, ethnicity, special education label, etc.) and background information about themselves (e.g. position, grade levels taught,

years teaching experience, gender, and ethnicity.) The *EBS* and *STRS* were completed anonymously with

no student names provided.

Teachers who lived too far away from the researcher to meet in person participated in the study

via phone and email. Teachers who were interested in the study first spoke with the researcher over

the phone to learn about study requirements and procedures. Teachers were sent a consent form and

all study measures via email. After the phone conversation, they printed the study documents, signed

the consent form and completed all surveys, then scanned all documents to return them to the

researcher.

Subsample including student participants. After district and school permission had been

received, teachers interested in participating in this sample met with the researcher to review study

requirements, obtain consent, and complete the *EBS* screener. These meetings were generally held in

the teacher's classroom at a time when students were not present. After completing the screener, they

were given parental consent forms to send home with all eligible students. Once parent consent was

received, the researcher met with each eligible student individually to obtain student assent. After

assent had been obtained, students were asked to complete the *PIML* and *SDQ*. Both measures were

read aloud to students. This was done to ensure that students' age and/or reading ability did not

interfere with their ability to understand the measure. The study included students with emotional

disabilities, some of whom also have learning or intellectual disabilities interfering with their ability to

read the measure independently. In order to maintain consistency with administration of the measure,

it was read aloud to all students regardless of age or reading ability. Students were asked to follow

along on the form as the researcher read and were instructed to circle their preferred response for each

question. Students were told to stop the researcher if they had any questions about items on the

surveys. When this happened, the researcher attempted to clarify item meanings. The researcher also

monitored the students as they were completing the measures to ensure that they were circling items

correctly (e.g. only one response for each item) and not skipping any questions.

The majority of students completed measures individually with the researcher in a private

location in the school such as an office or the school library. However in one case, two students

completed the measures at the same time. The students were separated so that they could not see

each other's responses. In another instance, a student's one-on-one aide sat with the student as he

completed the surveys. The aide helped the child stay focused and helped to clarify questions as

needed. The student was assured that the aide would keep all of the student's responses private.

Students were told that participation was voluntary and they could stop at any time. In all but one case,

students were able to complete both surveys. However, one student participant became frustrated

while completing the *SDQ* and asked to stop. For this student, the *SDQ* responses were not used.

After students completed the *PIML* and *SDQ*, teachers were then asked to complete the *STRS*

and *SDQ* for each student. Teachers were given a packet for each student including a cover sheet with

demographic questions for the student and a copy of the *STRS* and the age-appropriate *SDQ* form. The

order of surveys was randomized so that approximately 50% of teachers completed the *STRS* first and

50% completed the *SDQ* first.   Some teachers were able to complete all surveys while the researcher

was present. However, due to time constraints, some teachers requested additional time to complete

the surveys. For these teachers, the surveys were left and then picked up at a later time once the

teacher had finished.

Data Analysis

Data analysis focused on establishing evidence for factor structure, reliability, and validity of the

STRS for an ED population.

Data screening. Data from each survey were first entered into Excel before being imported to a

data analysis program (AMOS and SPSS) for analysis. All data entry was completed by the researcher. If

missing items were discovered during the data entry process, an attempt was made to contact the

teacher to have the item completed. If that was not possible, missing values were imputed based on

directions provided in the manuals for each instrument. A total of 7 missing values were found across all

surveys, 6 for the *STRS* and 1 for the *SDQ*-Student report. In order to check for reliability of data entry, a

graduate student in social sciences entered at a minimum 20% of all surveys into Excel. These files were

checked with the researchers and a percent agreement was calculated. Agreement ranged from 98.1%

to 100% for the different surveys with an average agreement of 99.5% across all surveys.

Prior to analysis, data from all surveys were screened for missing values, outliers, and normality

using SPSS. No missing values were reported for any study measures with the exception of the one

student who did not finish the SDQ. As the student only completed a few questions from the survey, the

entire survey was removed from analysis. Additionally, no univariate outliers were found with the

exception of the variable measuring the amount of time the teacher has known the student being rated.

For this variable, while most teachers reported having known the student between a few months and 2

years, one teacher reported having known the student for almost 7 years. This value was checked with

the teacher for accuracy and was confirmed to be correct. For analyses involving this variable, the

analysis both with and without this outlier were run in order to determine the impact of the outlier on

the results.

Normality screening was conducted using visual inspection of histograms, stem and leaf plots,

and Q-Q plots, and statistics for skewness and kurtosis. Descriptive statistics and for all *STRS* items can

be found in Table VI. Skewness and kurtosis values over +/-1 are in bold.

While several items showed levels over +/- 1, none were over +/- 2 which can be considered an

acceptable level for normality.

For all other variables, visual inspection and skewness/kurtosis statistics showed acceptable

levels of normality for all variables with the exception of two variables. The distribution of the "time

known" variable showed unacceptable levels of skewness and kurtosis. As described previously, this

variable had one significant outlier which affected normality. However, even with this value removed

from the analysis, the variable still had a kurtosis value of 2.9, demonstrating deviations from normality.

Additionally, the Affiliation with Teacher subscale of the PIML showed a kurtosis level slightly above

what is acceptable (2.6). Additional assumptions were tested for each analysis (e.g. specific assumptions

necessary for EFA). These will be discussed in subsequent sections.

As the data were collected from teachers who frequently rated multiple students, testing for

potential teacher bias was also necessary. If there was a systematic difference in how teachers rated

students on the *STRS* this could affect the subsequent analyses and the multi-level structure of the data

would need to be accounted for in the analyses. In order to test for teacher bias a within-subjects

analysis of variance was conducted with the scores on individual STRS subscales as the within-subjects

factor and the number of students rated by the teacher as the between-subjects factor. The variable for

the number of students rated by the teacher was collapsed into three categories: teachers who rated 1-

2 students, teachers who rated 3-4 students, and teachers who rated 5-8 students. These categories

had approximately equal numbers of teachers (70, 71, and 62 respectively.)

Table VI: STRS Descriptive Statistics

Scale	Item	M(SD)	Skewness	Kurtosis
Conflict	2	2.62 (1.24)	.28	**-1.21**
	11	3.01 (1.45)	-.02	**-1.46**
	13	2.74 (1.39)	.21	**-1.28**
	16	2.25 (1.29)	.59	-.92
	18	3.56 (1.37)	-.67	-.85
	19	2.62 (1.29)	.50	-.96
	20	3.28 (1.40)	-.39	**-1.19**
	22	3.52 (1.43)	-.57	**-1.06**
	23	3.00 (1.50)	-.05	**-1.51**
	24	1.76 (1.20)	**1.63**	**1.59**
	25	2.43 (1.51)	.50	**-1.34**
	26	2.75 (1.50)	.12	**-1.53**
	Total Score	33.54 (10.61)	0	-.86
Closeness	1	3.85 (1.12)	-.97	.23
	3	3.32 (1.31)	-.49	-.97
	4	3.84 (1.25)	-.82	-.5
	5	3.92 (1.01)	-.97	.54
	7	4.26 (1.02)	**-1.53**	**1.78**
	9	3.82 (1.36)	**-1.02**	-.27
	12	3.65 (1.20)	-.85	-.17
	15	3.25 (1.28)	-.41	-1.0
	21	2.35 (1.32)	.51	**-1.07**
	27	3.74 (1.25)	-.89	-.25
	28	3.70 (1.00)	-.68	-.06
	Total Score	39.69 (8.01)	-.48	-.43
Dependency	6	3.00 (1.38)	-.08	**-1.36**
	8	2.28 (1.43)	.71	-.95
	10	2.48 (1.46)	.39	**-1.36**
	14	2.93 (1.57)	-.03	**-1.62**
	17	2.44 (1.45)	.46	**-1.26**
	Total Score	13.14 (5.00)	.21	-.74

The analysis of teacher bias yielded a non-significant interaction between the outcome variable (*STRS* subscale scores) and the number of students rated by the teacher F (2.5, 247) = 2.39, *p* = .08. Based on these results, it can be assumed that teacher bias was not present in the data set. Therefore, the variable of number rated was not be included in subsequent analyses.

Factor structure. To determine the factor structure of the *STRS* with this sample of students with emotional disturbance, the data from the full sample (*n* = 203) were analyzed using several steps. As the purpose of this study was to apply the *STRS* to a population of students for which the factor structure had not been previously tested, the data were first analyzed using Exploratory Factor Analysis (EFA). Principal axis factoring using Oblimin rotation was used since the three factors of the *STRS* have previously been found to correlate (Pianta, 2001). The factor structure was initially tested without setting the number of factors to be extracted, instead examining the factor structure using Kaiser's criterion (Kaiser, 1960) and the scree plot (Cattell, 1966).

After running each analysis, the EFA output was first checked to ensure that assumptions were met for conducting factor analysis. The Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy was examined for the overall data set and individual items. A minimum of .5 was considered acceptable for factor analysis, but values greater than .8 or .9 were desired (Hutcheson & Sofroniou, 1999). Additionally, correlations between items were examined to identify items with a majority of particularly low (below .3) or high (above .8) correlations. Bartlett's Test of Sphericity was also examined with significant values indicating that factor analysis is appropriate for the data. Finally, the determinant was examined to identify potential problems with multicollinearity with a value greater than .00001 desirable (Field, 2009).

After running the analysis for each model, several statistics were used to determine potential modifications. Factor loadings after rotation were examined to identify low and cross-loading items. Items without a loading of at least .4 on any factor or those that loaded highly on more than one factor

were eliminated from the analysis. Additionally, items with low communality (below .2) were targeted

for potential removal. After each modification to the EFA model, the analysis was rerun with the new

model. Only one change was made to the model at a time. If multiple changes were suggested by the

analysis, they were tried in various combinations to determine which would lead to the best fit.

Once the best fitting model was determined using EFA, CFA was then used to test the fit of that

model to the data. Using the AMOS statistical program, a measurement model was specified reflecting

the best fitting model from EFA. Several statistics were examined to determine the fit of the data to the

hypothesized model. Initially the χ^2 statistic was examined to assess the fit of the model to the data

with a significant χ^2 indicating a misfit (Jöreskog, 1969). However, there are issues with using this

statistic as the sole determiner of model fit especially for large sample sizes (Brown, 2006; West, Taylor,

& Wu, 2012). While these data do not necessarily meet the criteria for a large sample, three additional

statistics were utilized to assess the model fit, the comparative fit index (CFI; Bentler, 1990), the Tucker-

Lewis Index (TLI; Tucker & Lewis, 1973) and the root mean squared error of approximation (RMSEA;

Steiger, 1990). These statistics were chosen based on their reputation as "well behaved" in simulation

studies (Brown, 2006) and their frequent use in CFA studies using the *STRS* (e.g. Drugli & Hjemdal, 2013;

Tsigilis & Gregoriadis, 2008; Webb & Neuharth-Pritchett, 2011). For the CFI and TLI, a statistic greater

than .95 was considered an indicator of a "good" fit, and for RMSEA, a value less than .06 was

considered "good" fit (Hu & Bentler, 1999; MaCallum, Browne, & Sugawara, 1996). Additionally, the AIC

statistic was used to compare models with a lower AIC indicating a better fitting model (Akaike, 1987).

If the model specified through CFA was found to not be a good fit to the data, it was modified by

removing items, moving items to a different factor, and/or allowing measurement errors to covary.

Standardized factor loadings, squared multiple correlations, standardized residuals, and modification

indices as well as previous research were used as a guide to modifying the model. A full description of

modifications made to the model in both the EFA and CFA analyses is described in Chapter V.

Reliability. Several analyses were performed to provide evidence for the reliability of the *STRS* for an ED population. Internal consistency estimates using Chronbach's *alpha* were calculated for the overall score on the *STRS* and for each individual subscale (Chronbach, 1951). Intra-item correlations, item-total correlations, and alphas if individual items were removed were also examined to determine how individual items contributed to the reliability of the scale.

Validity. In order to assess the validity of the *STRS*, several analyses were conducted. First, the researcher calculated Pearson correlations between different scales of *STRS*. Previous researchers have generally found mild to moderate positive correlations between the Closeness and Dependency subscales, moderate negative correlations between the Closeness and Conflict scales, and mild positive correlations between the Conflict and Dependency subscales (Doumen, et al., 2009; Jerome, et al., 2009; Pianta, 2001; Webb & Neuharth-Pritchett, 2011). Similar results were hypothesized for this study.

The researcher also calculated correlations between the subscales of *PIML* and *STRS.* Previous studies examining teacher-student relationships from both teacher and student perspectives (e.g. Murray & Zvoch, 2010) have generally found positive correlations among similar subscales for teacher and student measures (e.g. Closeness on the *STRS* is positively correlated with Trust on a student measure). However, these correlations have been mild and researchers have shown that teachers and students often differ in their perception of relationships (Murray et al., 2008; Murray & Zvoch, 2010). To date, the *People in My Life* student measure has not been used as student-report measure of relationships in a study using the *STRS*. However, based on previous research using similar student-report measures, it was hypothesized that the Closeness subscale on the *STRS* would correlate positively with Affiliation with Teacher and School Bond on the *PIML* and negatively with Dissatisfaction with Teacher. The opposite pattern was expected with the Conflict subscale on the *STRS*.

Additionally, correlations between *STRS* subscales and total difficulties score and all subscales on both the teacher and youth-report versions of the *SDQ* were calculated. In a study by Koomen and

colleagues (2012), the Conflict and Dependency subscales on the *STRS* correlated positively with all

areas of problem behavior subscales on the teacher-report *SDQ* and negatively with the Prosocial

subscale on the *SDQ*. Conversely, the Closeness scale on the *STRS* correlated negatively with all areas of

problem behavior subscales on the *SDQ* and positively with the prosocial subscale on the *SDQ*. It was

hypothesized that similar results would be found for the present study.

To date, the youth-report *SDQ* has not been used in a study with the *STRS*. However,

correlations between the youth-report *SDQ* and the *STRS* were expected to be similar to correlations

with the teacher-report *SDQ*. Based on previous research finding smaller correlations between teacher-

reports of relationships and student-reported behavior ratings (e.g. Hughes, 2011; Murray et al., 2008;

Murray & Zvoch, 2011), it was expected that the correlations with the youth-report *SDQ* and the *STRS*

would be lower than with the teacher-report *SDQ*.

Social acceptability. To assess the social acceptability of the *STRS*, scores on each of the three

additional questions were first averaged across teachers. While teachers were asked to respond to the

three opinion questions for each survey they completed, teachers tended to repeat the same values on

each survey. As some teachers rated multiple students, in order to not have the opinions of teachers

who rated more students have a larger impact on the overall score, average scores for each question

were calculated for each individual teacher. Descriptive statistics were calculated for each question.

Additionally, as a few teachers left narrative comments, these were reviewed and summarized.

IV: RESULTS

This chapter describes results obtained relating to factor structure, reliability, and validity of the *Student-Teacher Relationship Scale* for a population of students with emotional disturbance. Six research questions guided this study and the organization of this chapter:

1) What is the 3 factor structure of the *STRS* for a population of students with Emotional Disturbance?

2) What are reliability estimates for the *STRS* for an ED population?

3) Is the construct validity of the *STRS* for ED students supported?

4) How do teachers and students with ED differ in their agreement of the quality of the relationship using attachment-based measures of teacher-student relationships?

5) How do associations between behavior and teacher-student relationships vary based on student and teacher reports for each?

6) How do teachers rate the social acceptability of the *STRS* when rating students with ED?

This chapter is divided into five sections. Results related to the factor structure of the *STRS* will be discussed first (research question 1), followed by results for reliability estimates (research question 2.) The third section will discuss evidence for validity of the *STRS* including agreement between raters and associations between behavior and teacher-student relationships (research questions 3-5). Finally, the fourth section will address the social acceptability of the *STRS* (research question 6).

Research question 1: Factor Structure of the *STRS*

The first research question of this study focused on establishing evidence for the factorial validity of the *STRS*. The original *STRS* scale is composed of 28 items measuring the level of Conflict, Closeness, and Dependency in the relationship. In this study, I sought to determine whether this 3-factor structure was still supported when the *STRS* was used with a population of students with emotional disturbance. In order to do this, several steps were taken. First, as the factor structure of the

STRS was being examined with an entirely new population, Exploratory Factor Analysis (EFA) was used

to determine the number of factors and the initial loadings of items. Once an acceptable model was

found using EFA, Confirmatory Factor Analysis (CFA) was used to test the fit of the data to the model.

Additional refinements to the model were made through CFA.   As will be described, two different

versions of the *STRS* were examined through factor analysis, the 28-item long-form of the measure with

Conflict, Closeness, and Dependency subscales, and the 15-item short-form with only Conflict and

Closeness.

      STRS long-form. As a first step in the process, Principal Axis Factoring with Oblimin rotation was

conducted using SPSS. Oblique rotation was used since the factors of the *STRS* have been shown in

previous research to be correlated.   Prior to the analysis data were screened following procedures

described in the previous chapter. For the initial full data set the KMO measure indicated that the

sample was acceptable for factor analysis, KMO = .84, and all KMO values for individual items were

above .6, with the majority above .8. Bartlett's test of sphericity χ^2 (378) = 2439.6, p < .001 indicated

that the correlations between items were sufficiently large for factor analysis. However, the

determinant of the R matrix was .000003 indicating potential concerns with multicollinearity.

      Initially, no assumptions were made about the number of factors to be extracted. The program

was instructed to retain factors with eigenvalues greater than 1 (Kaiser's criterion). The scree plot was

also examined to help determine the number of factors to retain. The original EFA retained 6 factors

accounting for 49% of the variance in the items. However, the majority of the variance (37%) could be

explained by the first two factors. Examination of the scree plot showed that retaining 2 or 3 factors

optimal. In this first model, two items, 4 and 21 from the Closeness scale, failed to load on any factor.

Additionally, item 6 from the Dependency subscale loaded on its own factor and items 9 and 27 from

the Conflict subscale loaded together on their own factor.   After the first analysis, items 4 and 21 were

deleted from the model and the analysis was rerun. The two items were each deleted individually to

see if removal of one would affect the loading of the other. However, as neither subsequently loaded

on a factor with the other removed, both items were deleted.

Additional items were then deleted based on low communalities, low loadings, and/or equal

loadings on more than one factor. In order to determine the optimal combination of items, problematic

items were removed one at a time in different orders and combinations to determine the best model.

Over the course of the analysis, a total of 15 items from the original 28-item measure were eliminated.

Reasons for deletion for each item during the EFA are shown in Table VII.

Table VII: Items deleted during EFA

Item(s)	Subscale	Reason for deletion
4, 21	Closeness	Did not load on any factor and low communalities
6	Dependency	Loaded on its own factor
9 , 27	Conflict	Loaded on their own factor and never loaded on other factors
28	Closeness	Loaded equally on multiple factors and low loadings (below .4)
20, 22	Conflict	Loaded on their own factor
24	Conflict	Low factor loading (below .4)
19, 15	Conflict	Loaded on their own factor
12	Closeness	Low factor loadings (below .4) and cross-loaded on Dependency
25	Conflict	Low factor loading (below .4)

The final model identified through the EFA had 3 scales with 7 items loading on Conflict, 4 on

Closeness, and 4 on Dependency. These three factors in this final model explained 51% of the variance

in items. The final 3 factor model with factor loadings in shown in Table VIII below. As with the initial

model tested, data screening for this analysis using the KMO measure and Bartlett's test indicated the

appropriateness of factor analysis. Additionally, the determinant for the R matrix was .002 indicating no

problems with multicollinearity.

It should also be noted that throughout the EFA process, the Conflict factor stayed the most

constant thought refinements of the model. Items that initially loaded on the Conflict factor tended to

remain on that factor as other items were eliminated. In contrast, as items were eliminated, several

items on the Closeness and Dependency factors tended to move back and forth between the two

factors. In fact, at one point in the refinement of the model, items on Closeness and Dependency

merged into one factor.

Table VIII: Final EFA Model using the STRS long-form

Item		Rotated Factor loadings		
		Conflict	Closeness	Dependency
23	This child's feelings toward me can be unpredictable or can change suddenly	.771		
13	This child feels I treat him/her unfairly	.768		
11	This child easily becomes angry with me	.751		
18	This child remains angry or is resistant after being disciplined	.712		
2	This child and I always seem to be struggling with each other	.635		
16	This child sees me as a source of punishment and criticism	.605		
26	This child is sneaky or manipulative with me	.520		
1	I share an affectionate, warm relationship with this child		.789	
5	This child values his/her relationship with me		.629	
7	When I praise this child, he/she beams with pride		.531	
3	If upset, this child will seek comfort from me		.519	
10	This child is overly dependent on me			.894
17	This child expresses hurt or jealously when I spend time with other children			.751
14	This child asks for my help when he/she really does not need it			.433
8	This child reacts strongly to separation from me			.426
	Eigenvalue	4.01	3.03	.62
	Percentage of explained variation	26.72	20.20	4.14
	Chronbach's alpha	.86	.80	.76

After the final model was identified in EFA, Confirmatory Factor Analysis was used to test the fit

of the data to the specified model. AMOS was used to test the model using the path model shown in

Figure 2. Items 2, 11, 13, 16, 18, 23, and 26 were specified to load on the Conflict factor, with items 1, 3,

5, and 7 on the Closeness factor, and items 8, 10, 14, and 17 on the Dependency factor. It was

hypothesized that all three factors will be correlated with errors uncorrelated. Based on this model,

there were a total of 33 parameters, 120 pieces of known information (15 variances and 105

covariances), with 87 degrees of freedom.
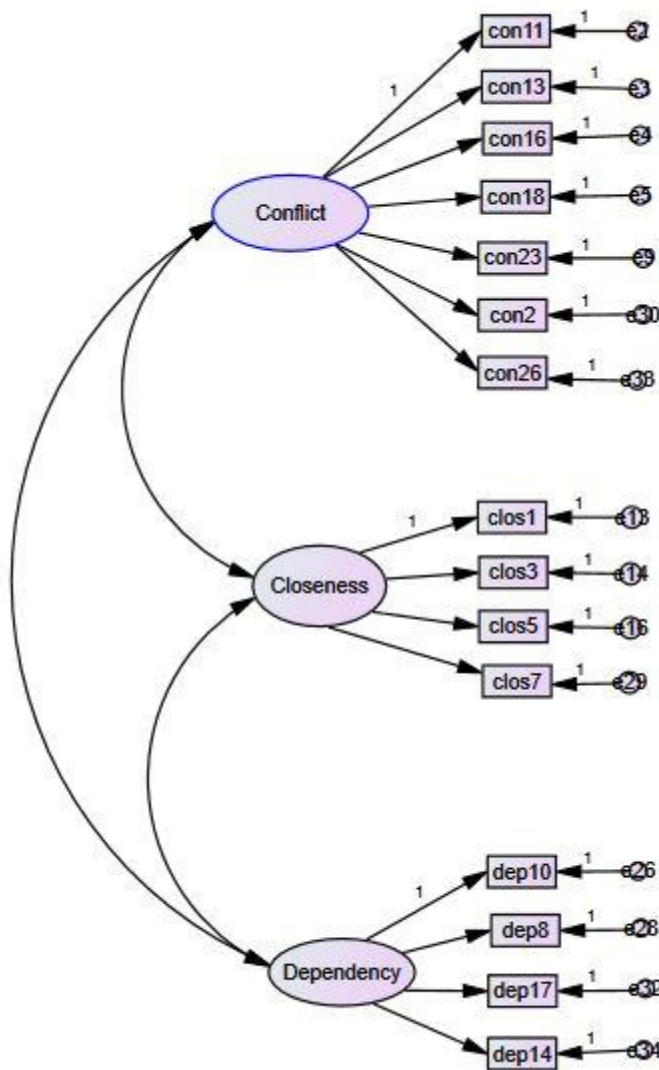
Figure 2: Initial Path Model for CFA of the STRS long-form

Model fit was assessed by examining the χ^2, TLI, CFI, and RMSEA. As described in Chapter III, a

"good" fit was based on a non-significant χ^2, a value of .95 of greater for the CIF and TLI, and a value of

less than .06 for the RMSEA. Additionally, models with a lower AIC statistic were considered to be

better fitting models. These statistics were used in combination with a judgment made after each

analysis about the improvement in the model from previous ones.

The initial model obtained in the EFA, when analyzed using CFA, had a significant χ^2, a TLI of .89, a CFI of .90, RMSEA of .08, and an AIC of 268. As these values did not meet the minimum requirements for an acceptable model, modifications were made. First, model fit indices were examined to determine possible error covariances to include in the model. Once these error covariances were added, the model was reanalyzed in AMOS. As the new model still had unsatisfactory model fit, additional changes were made. Model estimates including factor loadings and standardized residuals were examined to determine reasons for the lack of fit. Item 26 on the Conflict factor was removed due to low loading and item 17 on the Dependency factor was removed due to low loading and high standardized residuals. Item 14 on the Dependency scale also had low loadings on that factor but was retained in order to keep a minimum of 3 items on that factor. Additionally, the model was tested with item 17 remaining and item 14 deleted, but this did not improve the model fit.

The final model had 6 items on the Conflict scale (items 2, 11, 13, 16, 18, and 23), 4 items on the Closeness scale (items 1, 3, 5, and 7), and 3 items on the Dependency scale (items 8, 10, and 14). See Figure 3 for the final path model with factor loadings. Errors for items 1 and 5, items 13 and 16, and items 8 and 14 were allowed to covary. All three factors of the model were correlated with positive correlations between the Dependency scale and both the Closeness and Conflict scales (.66 and .11 respectively) and a negative correlations between the Conflict and Closeness scales (-.34). Final model fit indices include a TLI of .94, a CFI of .95, a RMSEA of .06, and an AIC of 171 indicating an acceptable fit of the data to the model. The lower AIC of this model also indicates that it is a better fit compared to the original model from the EFA.
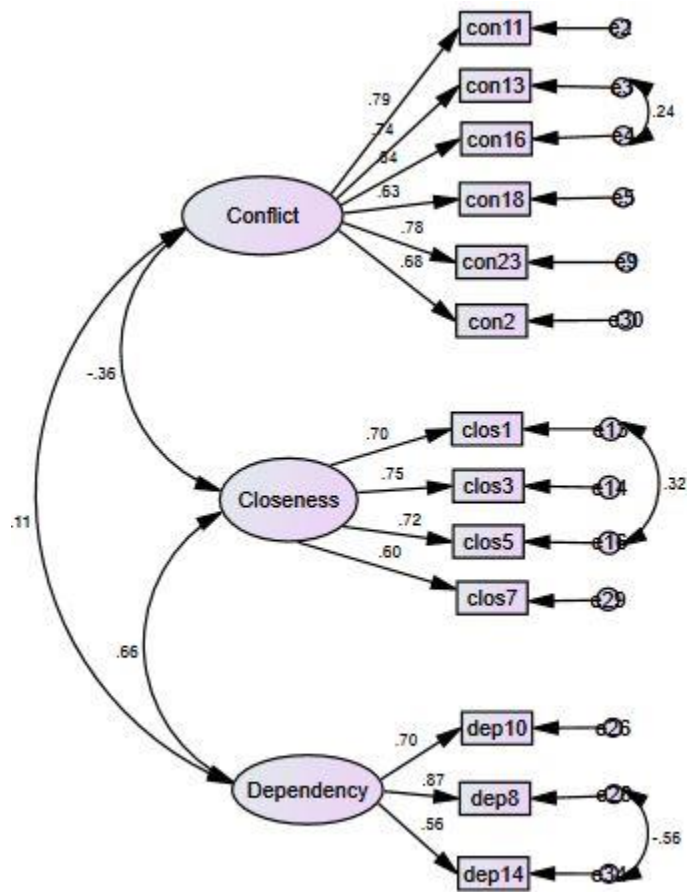
Figure 3: Final 3 Factor Model for the STRS long-form

***STRS* short-form.** Although the three-factor model demonstrated adequate fit to the current

data, there are still some potential concerns with the model, in particular with the Dependency

subscale. Item 14 still had a low factor loading compared to the two other items on this scale.

However, removing it would leave only two items on the dependency subscale, a less than optimal

solution. Additionally, as will be described in a subsequent section, the revised Dependency subscale

still demonstrated some concerns with reliability. For this reason, and the previously discussed cross-

loadings of Dependency and Closeness items in the EFA, I decided to test a model for the *STRS* without

the Dependency subscale. As described in Chapter II, many researchers have had concerns with the

Dependency subscale for different populations, including older students, who comprise a large part of

this sample. Indeed, the *STRS* professional manual even advises caution when using this scale due to

concerns with its reliability (Pianta, 2001).

While the long form of the *STRS* was used for this study (comprised of 28 items on three

subscales), a short-form of the scale exists, and it is used regularly in research. This short-form of the

STRS includes 15 items, 7 items selected from the Conflict subscale of the *STRS* long-form (items 2, 11,

18, 20, 22, 23, and 26) and 8 items selected from the Closeness subscale (items 1, 3, 4, 5, 7, 9, 15, and

27). In order to determine how the short-form would function with the population of students in this

study, the same process using EFA and CFA was repeated using items only found on the *STRS* short-

form.

Prior to conducting EFA, the data using the *STRS* short-form was screened using the methods

described for the previously analysis.   For the initial full data set the KMO measure indicated that the

sample was acceptable for factor analysis, KMO = .84, and all KMO values for individual items were

above .75. Bartlett's test of sphericity χ^2 (105) = 1142.2, p < .001 indicated that the correlations

between items were sufficiently large for factor analysis. The determinant of the R matrix was .003

indicating no concerns with multicollinearity.

The original EFA using this scale retained 3 factors accounting for 47% of the variance in the

items. However, the majority of the variance (41%) could be explained by the first two factors.

Examination of the scree plot showed that retaining 2 factors optimal. In this first model, items 4 and 15

from the Closeness scale had low communalities and failed to load on any factor, and, as in the EFA for

the full *STRS*, items 9 and 27 loaded on their own factor. However, with the exception of these 4 items,

the remaining Conflict and Closeness items loaded on two distinct scales all with factor loadings over .5.

A similar process was followed with this analysis as with the EFA for the full *STRS*. The four problematic

items were removed one at a time and in different combinations to determine the best fit.

Additionally, the model was run constraining the number of factors extracted to 2. When this was done,

all four items (4, 9, 15, and 27) loaded on the Closeness factor. However, items 4 and 15 both continued

to have low communalities and factor loadings below .4 so they were removed, while items 9 and 27

were kept in the model to be tested using CFA. See Table IX for the results of the EFA for the short-form

STRS.

Table IX: Final EFA Model using the STRS short-form

Item		Rotated Factor loadings	
		Conflict	Closeness
23	This child's feelings toward me can be unpredictable or can change suddenly	.765	
22	When this child is in a bad mood, I know we are in for a long and difficult day	.752	
20	Dealing with this child drains my energy	.718	
11	This child easily becomes angry with me	.688	
2	This child and I always seem to be struggling with each other	.652	
18	This child remains angry or is resistant after being disciplined	.618	
26	This child is sneaky or manipulative with me	.537	
3	If upset, this child will seek comfort from me		.755
5	This child values his/her relationship with me		.748
1	I share an affectionate, warm relationship with this child		.688
27	This child openly shares his/her feelings and experiences with me		.608
7	When I praise this child, he/she beams with pride		.517
9	This child spontaneously shares information about himself/herself		.479
	Eigenvalue	3.65	2.20
	Percentage of explained variation	28.10	16.95
	Chronbach's alpha	.85	.80

The final model obtained from the EFA had 7 items on the Conflict subscale (items 2, 11, 18, 20,

22, 23, and 26) and 6 items on the Closeness subscale (items 1, 3, 5, 7, 9, and 27). These items were

then used in the CFA analysis in AMOS. See Figure 4 for the initial path diagram used. This initial CFA

had a significant χ^2, a TLI of .79, a CFI of .83, RMSEA of .12, and an AIC of 291.
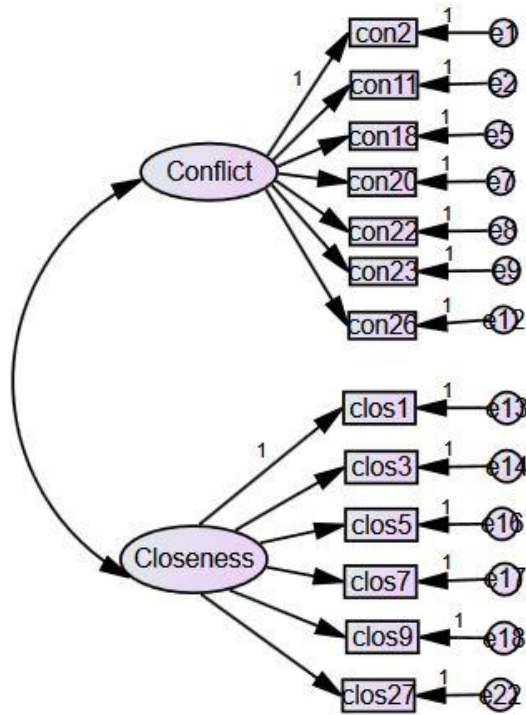
Figure 4: Initial Path Model for CFA of the STRS short-form

Modification indices were then used to determine potential error covariances. When these

were added the resulting model had a TLI of .90, a CFI of .94, a RMSEA of .08, and an AIC of 195

indicating better fit compared to the original model. Further refinements to the model were made

based on examination of standardized residuals and factor loadings of items with one item, item 9,

removed for low factor loading. The final, best fitting model had 7 items on the Conflict scale (items 2,

11, 18, 20, 22, 23, and 26) and 5 items on the Closeness scale (items 1, 3, 5, 7, and 27). Errors for items

11 and 23, 20 and 22, and 1 and 3 were allowed to covary in the final model. The final path model with

standardized factor loadings can be found in Figure 5 below. This final model had a TLI of .95, a CFI of

.96, a RMSEA of .06, and an AIC of 141 indicating an acceptable fit of the data to the model and an

overall improvement from the previous models tested using the *STRS* short-form.
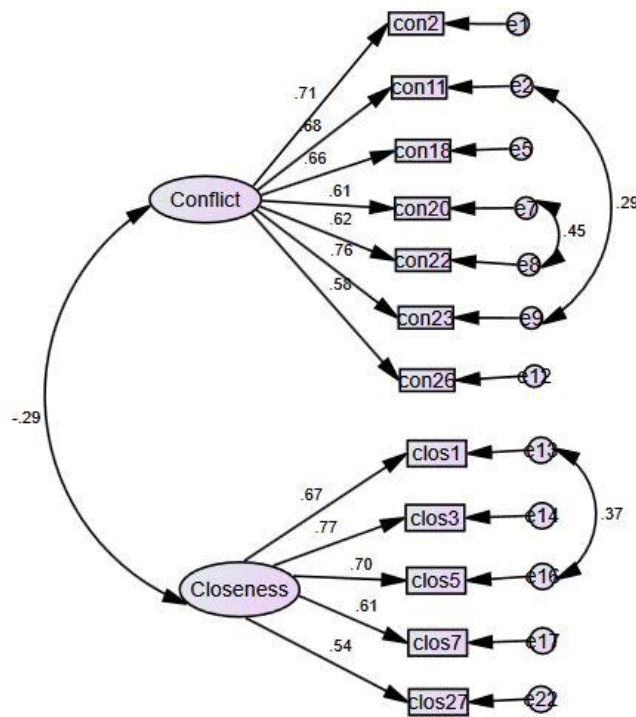
Figure 5: Final Factor Model for the STRS short- form

Research question 2: Reliability of the *STRS*

        The second question for this study focused on establishing evidence for the reliability of the

STRS when used with a population of students with ED. Reliability for the *STRS* was measured using

internal consistency estimates for each subscale. Using the original 28-item *STRS*, reliability estimates

for the full sample (*N* = 203) were .83 for the Closeness subscale, .87 for the Conflict subscale, and .72

for the Dependency subscale. For the revised 3-factor model, reliability estimates for the Conflict,

Closeness, and Dependency, and full scale were .86, .80, and .68 respectively. For the revised STRS

short-form, reliabilities were .85 for the Conflict scale and .80 for the Closeness. Examination of item

correlations yielded inter-item correlations generally ranging from .3 to .6 and item-total correlations

between .5 and .7 for items on both the revised short and long-form Conflict and Closeness scales. For

the Dependency subscale of the long-form *STRS*, inter-item correlations were lower for item 8 and item

14 (.25) and for item 14 and the total score (.37). Additionally, examining the reliabilities if individual

items were deleted only yielded problematic items for the Dependency scale. Deleting item 14 would

increase the scale reliability from .68 to .75.

Validity of the *STRS*

        In addition to question 1 which examined factorial validity for the *STRS*, questions 3-6 for this

study all focused on establishing evidence for validity of the *STRS* when used with a population of

students with ED including evidence for content validity (question 3), concordance between raters

(question 4), and associations between relationship and student behavior and ED symptoms, when

rated by both teachers and students (question 5). For all of these analyses, the revised *STRS* measures

obtained in the factor analysis (both short and long-forms) were used. With the exception of the intra-

correlations of the *STRS* subscales, the results for the original *STRS* scale are not reported here. They are

instead, provided in Appendix E. However, it should be noted that patterns in correlations for the

original *STRS* were similar to those found using the revised measures demonstrating similar functioning

of the scales.

        For all analyses between behavior and relationship measures, data were obtained from

participants in the subsample (*n* = 50). For the subsample, in addition to completing the *STRS*, teachers

completed a measure of the student's behavior, the *Strengths and Difficulties Questionnaire (SDQ).*

Students in the subsample also completed a relationship measure, the *People in My Life (PIML),* as well

as a student version of the *SDQ*. Intercorrelations between these measures used participants in the

subsample only as they were the only ones to complete the additional measures. However,

intracorrelations between the *STRS* subscales were calculated using data from the full sample (*N* = 203)

as all teachers completed this measure. Similarly, correlations between the *EBS* and *STRS* subscales

were calculated using data from the full sample.

      Research question 3: Intracorrelations of the *STRS* subscales. Using the full sample (N = 203)

and the original *STRS* with the three factors of Conflict, Closeness, and Dependency, significant

correlations were found between all *STRS* subscales and between each subscale and the total score on

the *STRS* (see Table X). The Conflict and Closeness subscales were negatively correlated (r = -.30), while

positive correlations were found between the Dependency subscale and both the Conflict and Closeness

subscales (r = .21 and r = .48 respectively). The Conflict and Dependency subscales both negatively

correlated with the *STRS* total score (r =.92 and r = -.22 respectively), while the Closeness subscale was

correlated with the *STRS* total (r=.57). For the revised long-form scale, Conflict and Closeness were

negatively correlated (r = -.31, p < .01), while Closeness and Dependency were positively correlated (r =

.52, p < .01). The correlation between Conflict and Dependency was not significant. For the revised

short-form *STRS*, Conflict and Closeness were negatively correlated (r = -.20, p < .01). Additionally,

similar subscales on the original *STRS*, and the revised short and long form measures were highly

correlated (generally over .9).

Table X: Intracorrelations for STRS original and revised subscales (full sample, N = 203)

	1	2	3	4	5	6	7	8
1. STRS – con[1]	-	-	-	-	-	-	-	-
2. STRS – close	-.30**	-	-	-	-	-	-	-
3. STRS – dep	.21**	.48**	-	-	-	-	-	-
4. STRS – total	-.92**	.57**	-.22**	-	-	-	-	-
5. STRS revised long form – con	.95**	-	-	-	-	-	-	-
6. STRS revised long form – close	-	.87**	-	-	-.31**	-	-	-
7. STRS revised long form - dep	-	-	.91**	-	.06	.52**	-	-
8. STRS revised short form – con	.96**	-	-	-	.90**	-	-	-
9. STRS revised short form - close	-	.93**	-	-	-	.97**	-	-.20**

p <.05; **p<.01
[1]con = Conflict, close = Closeness, dep = Dependency

Research question 4: Concordance between raters. Concordance between teachers and students on relationship quality was measured using correlations between teacher ratings on the *STRS* and student ratings on the *PIML*. Correlations were calculated between the Conflict, Closeness, and Dependency subscales of the revised *STRS* long form scale and each *PIML* subscale (see Table XI). The only significant correlation found between teacher and student-rated relationships was between the *STRS* Conflict scale and the *PIML* Dissatisfaction with Teacher scale (r = .29, p < .05). No other significant correlations were found between the teacher-rated *STRS* and the student-rated *PIML*. Additionally, all correlations, with the exception of Conflict and Dissatisfaction with Teacher were below .2. Similar results were found when using the revised short-form *STRS*. However, in that analysis, the correlation between Conflict and Dissatisfaction with Teacher was not significant.

Table XI: Intercorrelations for student and teacher-rated relationship measures (subsample, n = 50)

	STRS LF revised – con[1]	STRS LF revised – close	STRS LF revised – dep
PIML – AT	-.05	-.15	-.08
PIML – SB	-.02	-.06	-.08
PIML – DT	.29*	.04	.01

* *p* <.05; **p*<.01
[1]con = Conflict, close = Closeness, dep = Dependency, AT = Affiliation with Teacher, SB = School Bonding, DT = Dissatisfaction with Teacher

Research question 5: Associations between behavior and relationships. Relationship and behavioral measures were collected for the subsample (*n* = 50) for both teachers and students. Teachers completed the *STRS* for relationships and the *SDQ* teacher version as a measure of behavior, while students completed the *PIML* for relationships and the *SDQ* student version. To examine associations between behavior and relationships, correlations were calculated between the subscales on relationship and behavior measures including measures completed by the same rater (e.g. the *STRS* and the *SDQ* teacher) and those completed by different raters (e.g. the *STRS* and the *SDQ* student). For all analyses, the scores from the Conflict, Closeness, and Dependency subscales for the revised long-form *STRS* were used. For the student-rated *SDQ*, the Emotional Symptoms and Peer Problems subscales were not used in analyses as they were previously found to have low reliability. When examining associations between behavior and relationships, many more significant correlations were found between measures completed by the same-rater as opposed to cross-rater.

Teacher rated relationships and behavior. For teacher rated relationships and behavior, correlations between the *STRS* and *SDQ* generally occurred in expected directions (see Table XII). In general, students who exhibited more negative behaviors (e.g. higher teacher-rated conduct problems) had greater conflict with teachers. For example, teacher-student Conflict as rated by the *STRS* correlated positively with student Conduct Problems and student Total Difficulties on the *SDQ*, while

teacher-student Closeness correlated positively with Prosocial Behavior. In other words, students who

had higher levels of conduct problems had more conflict in their relationships with teachers and

students with higher levels of prosocial behavior had greater closeness in their relationships with

teachers. Dependency in relationships correlated positively with Emotional Symptoms, Peer Problems,

and Total Difficulties. Students who exhibited greater internalizing behavior and peer difficulties, and

overall more problem behavior, had more dependent relationships with teachers.

All associations between teacher-rated behavior and teacher-rated relationships fell in the mild

to moderate range with the strongest correlations between the Conflict and Conduct Problems,

Closeness and Prosocial Behavior, and Dependency and Total Difficulties (r = .58, r = .47, and r = .46

respectively.) Patterns for the revised *STRS* short form were similar. However, an additional significant

correlations was found between Conflict and Prosocial Behavior (r = -31, $p < .05$).

Table XII: Intercorrelations for teacher-rated relationship and behavior (subsample, n = 50)

	SDQ – ES	SDQ – CP	SDQ – HYP	SDQ – PP	SDQ – Pro	SDQ – Total
STRS LF revised – con	.13	.58**	.20	.03	-.27	.35*
STRS LF revised – close	.10	-.22	.02	.07	.47**	-.01
STRS LF revised – dep	.42**	.06	.25	.43**	.06	.46**

* $p <.05$; ** $p <.01$
[1]con = Conflict, close = Closeness, dep = Dependency, ES = Emotional Symptoms, CP = Conduct Problems, Hyp = Hyperactivity, PP = Peer Problems, Pro = Prosocial, Total = Total Difficulties

Student rated behavior and relationships. Similar to teacher rated relationships and behavior,

correlations between student-rated relationships and behavior were generally in expected directions

with positive relationship characteristics correlating with positive behavior and vice-versa (see Table

XIII). The Affiliation with Teacher subscale on the *PIML* correlated positively with the *SDQ* Prosocial

Behavior subscale. While the *PIML* Dissatisfaction with Teacher subscale correlated positively with *SDQ*

Conduct Problems, Hyperactivity, and Total Difficulties, and negatively with Prosocial Behavior.

Students who exhibited more prosocial behavior and less negative behavior generally reported more

affiliation with their teachers, while those with more behavioral difficulties reported more

dissatisfaction with teachers. The School Bonding subscale of the *PIML* was correlated negatively with

SDQ Conduct Problems, Hyperactive Behavior, and Total Difficulties, and positively with Prosocial

Behavior. However, it should be noted that this subscale measures students' overall feelings about their

school and not specific teachers, and is therefore not a direct measure of teacher-student relationships.

Similar to associations between teacher-rated relationships and behavior, correlations between student-

rated relationship and behavior were generally mild to moderate. The strongest correlation was found

between Prosocial Behavior and Affiliation with Teacher (*r* = .6) with all remaining significant

correlations under.5.

Table XIII: Intercorrelations for student-rated relationship and behavior (subsample, n = 49)

	PIML – AT	PIML – SB	PIML – DT
SDQ – CP	-.24	-.31*	.47**
SDQ – Hyp	.05	-.31*	.30*
SDQ – Pro	.60**	.44**	-.37**
SDQ – total	-.02	-.31*	.36*

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

[1] AT = Affiliation with Teacher, SB = School Bonding, DT = Dissatisfaction with Teacher, CP = Conduct Problems, Hyp = Hyperactivity, Pro = Prosocial, Total = Total Difficulties

   Cross-rater associations. Associations between student-rated relationships and teacher-rated

behavior or teacher-rated relationships and student-rated behavior were overall much lower than

associations for behavior and relationships by the same rater. In fact, only one significant correlation

was found. Teacher-rated Prosocial Behavior (as rated on the *SDQ*) correlated positively with student-

rated School Bonding on the *PIML* (r = .32). However, as mentioned previously, this subscale is not a

direct measure of teacher-student relationships. No significant correlations were found between

teacher-reported relationships and student rated behavior or teacher-rated behavior and the two

teacher-student relationship subscales of the *PIML* (Affiliation with Teacher and Dissatisfaction with

Teacher.) Analyses with the original *STRS* and the revised *STRS* short-form scales were similar. See

Tables XIV and XV below for all cross-rater behavior-relationship correlations.

Table XIV: Intercorrelations for student-rated relationship and teacher-rated behavior (subsample, n = 49)

	PIML – AT	PIML – SB	PIML – DT
SDQ – ES	.02	-.05	-.02
SDQ – CP	-.04	-.27	.14
SDQ – Hyp	-.08	-.17	.07
SDQ – PP	.01	-.13	-.02
SDQ – Pro	.10	.32*	-.05
SDQ – total	-.03	-.24	.07

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

[1] AT = Affiliation with Teacher, SB = School Bonding, DT = Dissatisfaction with Teacher, ES = Emotional Symptoms, CP = Conduct Problems, Hyp = Hyperactivity, PP = Peer Problems, Pro = Prosocial, Total = Total Difficulties

Table XV: Interorrelations for teacher-rated relationship and student-rated behavior (subsample, n = 50)

	STRS LF revised – con[1]	STRS LF revised – close	STRS LF revised - dep
SDQ – CP	.12	-.05	-.08
SDQ – Hyp	.20	.21	.00
SDQ – Pro	.06	.09	-.01
SDQ – total	.21	.16	.12

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

[1]con = Conflict, close = Closeness, dep = Dependency, CP = Conduct Problems, Hyp = Hyperactivity, Pro = Prosocial, Total = total difficulties

ED symptoms. Correlations between the *STRS* subscales and the *Emotional Behavioral Screener* (*EBS*) were calculated to determine the associations between relationships and students' level of severity of ED symptoms. The *EBS* is a 10-item measure of ED symptoms including items related to internalizing behavior, externalizing behavior, and social skills. Higher scores on the *EBS* indicated a student at greater risk for being identified as having emotional disturbance (Cullinan & Epstein, 2013). Correlations were calculated between the *EBS* total and the *STRS* Conflict, Closeness, and Dependency subscales. As with other analyses, the revised *STRS* long form was used for the analysis. Results indicate a positive relationship between ED symptoms as measured by the *EBS* and both Conflict and Dependency in relationship (*r* = .37 and *r* = .22, *p*< .01 respectively). See Table XVI below. Students who exhibit a higher level of ED symptoms have more conflict and dependency in their relationships with teachers. Examination of correlations using the original *STRS* and the revised *STRS* short form yielded similar results although with a higher correlations between the *EBS* and the *STRS* revised short-form Conflict subscale (*r* = .43, *p* < .01).

Table XVI: Correlations for teacher-rated relationships and ED symptoms (full sample, N = 203)

	STRS LF revised – con[1]	STRS LF revised – close	STRS LF revised - dep
EBS	.37**	.01	.22**

* p <.05; **p<.01
[1]con = Conflict, close = Closeness, dep = Dependency

Research question 6: Social Acceptability of the *STRS*

Question 6 for this study focused on evaluating the social acceptability of the STRS when used by teachers rating students with ED. In order to do this, teachers were asked to rate (on a scale of 1 to 6) their opinion of the *STRS* using three statements: 1) Questions on the *STRS* are relevant to my relationship with this student, 2) The *STRS* could help me identify areas of strength and weakness in my

relationship with this student, and 3) The amount of time it took to complete the *STRS* for this student

was reasonable. These questions were printed on the back of each *STRS* survey so teachers who

completed multiple surveys for multiple students also answered these questions multiple times. While

the questions were worded to apply to each student the teacher was rating (i.e. using the term "with

this student,") when examining responses, the vast majority of teachers gave the same ratings on each

survey. In order for teachers who completed multiple surveys to not have a greater impact on the

results compared to teachers who only rated 1 or 2 students, average scores were calculated for each

teacher. This lead to a total of 75 ratings for the three questions (note: this is less than the total

number of participants as 4 teachers left these questions blank.) Scores on all three items were

generally high with an average of 5.1, 4.7, and 5.7 for questions 1, 2, and 3 respectively.

Teachers were given the option to provide any additional comments they had about the

usability of the survey. However, few provided comments, and for those that did, many were comments

related to the individual child being rated and not the survey itself. Those that did leave comments

related to the scale generally focused on the difficulty rating students with ED due to inconsistencies in

the child's behavior. For example, one teacher said "relationships are complicated so this survey was a

bit frustrating – it can't capture the complexity. With this student it changes by the minute" and

another stated "this child's behavior is strongly affected by whether or not he has received his

medications." Other teachers discussed issues with individual items not being applicable to them or

their schools. One teacher mentioned how the school discipline policies could influence the

relationship: "#16 & 18 seem more due to nature of the school, heavy focus on discipline,

points/tokens/etc." and "physical affection not allowed at school so item [4] is difficult to rate."

Another mentioned how one item did not fit with her individual approach to teaching: "item #19 would

have a rating of n/a as I don't use a negative tone or looks." Finally, one teacher had issues with scale

used to rate relationships: "The phrasing on the scale of the word "apply" feels awkward to me. Would

prefer an agree/disagree or always true, somewhat true, etc."

Summary

This chapter present results for factor structure, reliability, validity, and social acceptability of

the *STRS* when used with a population of students with ED. In the following chapter, I will review those

results and conclusions that can be drawn about the applicability of the *STRS* for use with students with

ED. Implications for research involving the *STRS* and practical use of the *STRS* in schools will be

discussed as well as limitations of the study and future directions for research.

V: DISCUSSION

The purpose of this study was to examine the applicability of a common measure for teacher-student relationships, the *Student-Teacher Relationship Scale (STRS),* for a population of students with characteristics of emotional disturbance (ED). A great deal of research on teacher-student relationships uses the *STRS* as the measure of relationship quality. This body of research has lead researchers to draw conclusions about the quality of relationships students with disabilities, including those with characteristics of ED, experience with their teachers. However, in order for the results of those studies to be trustworthy, there must be evidence for the reliability and validity of the measures used. While there is a substantial research base for the reliability and validity of the *STRS* when used with young students without disabilities, and studies examining the applicability of the *STRS* to populations of older students, no research exists that establishes evidence for reliability and validity of the *STRS* when used with students with ED. The purpose of this study was to examine such evidence.

As described in the previous chapters, the sample for this study is unique in its focus on students with characteristics of ED. The sample for this study also differed from many previous studies using the *STRS* based on the age of students. As described in Chapter II, the majority of studies using the *STRS* included students from preschool up to early elementary (generally age 8 and younger). However, the majority of the students in this study fell outside of the age range typically used in research on the *STRS*, including students up to age 12. The sample in the current study was also highly skewed in terms of gender with 84% of the student sample being male. Conclusions that can be made about evidence for the reliability and validity of the *STRS* from the present study must take into account the unique sample in the present study.

In this chapter, I will review the results of the present study and discuss conclusions that can be drawn about evidence for factorial validity of the *STRS* (research question 1), evidence for reliability of the *STRS* (research question 2), evidence for construct validity of the *STRS,* including relationships

among the *STRS* subscales, associations between the *STRS* and other variables including student

behavior, concordance among different raters on measures of relationship quality (research questions

3-5), and teacher perceptions of the social acceptability of the *STRS* (research question 6).

Evidence for Factor Structure of the *STRS*

The first research question for this study focused on examining the 3 factor structure of the *STRS*

for a population of students with emotional disturbance. In order to answer this question, Exploratory

Factor Analysis (EFA) was conducted followed by Confirmatory Factor Analysis (CFA) using the best

factor model obtained in the EFA. As described in Chapter IV, two different analyses were conducted:

one using the 28-item long-form of the *STRS* with the subscales of Conflict, Closeness, and Dependency,

and one using the 15-item short-form of the *STRS* with the subscales of Conflict and Closeness. This

study found overall support for the two-factor model of the *STRS* short-form including the constructs of

Conflict and Closeness. The Conflict subscale was the most stable for this population while the

Closeness subscale required more substantial revisions. A discussion of the full results for each analysis

and overall conclusions about the factor structure of the *STRS* when used with a population of students

with emotional disturbance is in the following sections.

***STRS* long-form.** The original *STRS* demonstrated a 3-factor structure with items loading on

Conflict, Closeness, and Dependency subscales. Using EFA, Pianta (2001) found that most items loaded

on their respective factors with loadings above .5, with three items, items 12 and 21 on the Closeness

subscale, and item 6 on the Dependency subscale, loading above .4. Other researchers have raised

concerns with the full model proposed by Pianta, identifying problematic items and a lack of

measurement invariance for different populations (e.g. Koomen et al., 2012; Roeden et al., 2012;

Solheim et al., 2012; Webb & Neuharth-Pritchett, 2011). I identified similar concerns with items on the

STRS in the present study. However, what sets the present study apart from previous research using the

STRS is the degree of misfit found in the 3-factor model. Most studies using either EFA or CFA with the

STRS have found support for removing between 2 and 6 items in order to improve model fit. In contrast,

for the present study, a total of 15 items were removed from the original 28-item scale in order to

obtain an acceptable fit of the model to the data. While the resulting model showed adequate fit for

the 3 factors of Conflict, Closeness and Dependency, the degree of modification needed raises doubts

about the applicability of the long-form *STRS* for students with emotional disturbance and similar

characteristics.

Throughout the analyses, the Conflict subscale remained the most consistent with 6 out of the

original 12 items remaining after the factor analysis. However, only 4 out of 11 Closeness items and 3

out of 5 Dependency items remained in the final model. In particular, this study raised several concerns

with the functioning of the Dependency subscale when used with a population of students with ED.

Several studies examining the reliability and validity of the *STRS* have raised similar concerns (Drugli &

Hjemdal, 2013; Solheim et al., 2012; Webb & Neuhart-Pritchett, 2011). In fact, the *STRS* professional

manual recommends interpreting results using the Dependency subscale "with caution" due to the low

reliability of that scale (Pianta, 2001, p. 22). As will be discussed in the following section, I also found

low reliabilities for the Dependency subscale, using both the original and revised versions. Additionally,

in the present study, low factor loadings were also a concern with that scale. Of the original 5 items on

the Dependency scale, only two items loaded above .5 in the EFA process with only three items

remaining in the final best-fitting CFA model. Two of these items, item 8, "This child reacts strongly to

separation from me" and item 10, "This child is overly dependent on me," were found to have high

loadings on the factor (.87 and .70 respectively). However, the third item, item 14, "This child asks for

my help when he/she really does not need help," loaded much lower at .56. Other researchers have

noted similar difficulties with factor loadings for this subscale (Koomen et al., 2012; Webb & Neuhart-

Pritchett, 2011).

An additional finding for the 3-factor model for the *STRS* involved the overlap between the

Closeness and Dependency subscales. As will be discussed in a following section on validity, the Conflict

and Dependency subscales of the original 28-item *STRS* and revised scales obtained through factor

analysis in this study were moderately correlated. Throughout the various EFA models tested, several

items tended to cross-load on both the Dependency and Closeness subscales, and at one point, items

from these two scales merged to form one factor. This indicates that the constructs of Closeness and

Dependency may be related for students with emotional disturbance.

STRS short-form. Due to concerns with the Dependency subscale and overall difficulties finding

an acceptable 3-factor models for the *STRS* in this study, the analysis was repeated using the short-form

of the *STRS*. This second analysis yielded much better results compared to the full *STRS* with only 3

items removed, items 4 and 15, which did not load on any factor, and item 9 which loaded on its own

factor with item 27.   All three items were found to be problematic in the analysis of the full *STRS* and

were subsequently removed from the three-factor scale. The final *STRS* short form model showed

adequate model fit using CFA and retained 7 items on the Conflict subscale and 5 items on the Closeness

subscale.

Only two other studies have examined the factor structure of the short form of the *STRS*, one

with a school-age population (Drugli & Hjemdal, 2013), and one with a sample of kindergartners (Tsigilis

& Gregoraidis, 2008). Both found support for the factor structure of the *STRS* short form with CFI, TLI,

and RMSEA values approaching criteria indicating good fit. However, neither attempted to improve the

model by removing potentially problematic items as was done in this study. A comparison of CFI, TLI,

and RMSEA values between this study and the two other studies demonstrates a better fit of the data to

the model for the present study with three items eliminated.

The *STRS* short-form is generally used with less frequency as compared with the STRS long-form.

However, this study supports the use of the short-form over the long-form for elementary age student

with ED. The constructs of Conflict and Closeness as measured by the *STRS* short-form were adequately

represented in the items on the short-form as evident by the factor analysis. These items provide a

measure of both positive (i.e. Closeness) and negative (i.e. Conflict) aspects of teacher-student

relationships.

Problematic items. In addition to concerns about the 3-factor model for the *STRS* and the

Dependency subscale, I also found many items that did not fit the factor structure identified by Pianta

(2001). In particular, several items did not load on any factor (items 4 and 21 on the long-form *STRS* and

items 4 and 15 on the short-form *STRS*). Item 4, "This child is uncomfortable with physical affection or

touch from me," was especially problematic in the present study and several others (Fraire et al., 2013;

Koomen et al., 2012; Roeden, 2012; Solheim et al., 2012). This may be in part due to the age of students

in this study. Physical affection between teachers and students may be more common in preschool and

early elementary grades. However, as this study included students through age 12, physical affection

may not be as common or may even be discouraged by schools. For example, one teacher left a

comment on the *STRS* stating that physical affection with students was not allowed in her school so this

item was not applicable. Another item that did not load on any factor, item 21 "I've noticed this child

copying my behavior or ways of doing things," might also be more applicable to younger students. This

item has also been found to be problematic in other studies (e.g. Gregoriadis & Tsigilis, 2008, Webb &

Neuharth-Pritchett, 2011).

For the short-form *STRS*, item 15, "It is easy to be in tune with what this child is feeling" also did

not load on any factor. However, other research using the *STRS* has generally not found this item to be

problematic. Perhaps there is something unique about this item as it relates to students with emotional

disturbance. Students with ED have difficulty expressing their feelings appropriately, so this item may

be more of a measure of a student's social skills as opposed to an indicator of the relationship between

the student and teacher. What is also interesting about this item is that for the long-form *STRS* it loaded

on a factor with item 19, "When this child is misbehaving, he/she responds well to my look or tone of voice" and item 28, "My interactions with this child make me feel effective and confident." However, it is unclear as to why these items would have loaded together.

Other items that loaded together on their own factor include items 9 and 27 and items 20 and 22. Item 9, "This child spontaneously shares information about himself/herself" and item 27, "This child openly shares his/her feelings and experiences with me" are similarly worded and previous CFA studies have found them to have highly correlated measurement errors, indicating a common theme (Webb & Neuharth-Pritchett, 2011). Item 22, "When this child is in a bad mood, I know we're in for a long and difficult day" and item 20, "Dealing with this child drains my energy" could also be considered similar in theme as both rate the effect the child's behavior has on the teacher.

Other problematic items identified in the present study are also in line with what has been found in previous research. These include items 6, 12, and 25 (along with the previously mentioned items 4 and 21). Item 6 from the Dependency scale, "This child appears hurt or embarrassed when I correct him/her" loaded on its own factor in the present study. Other researchers have found a similar pattern with this item (Faire et al., 2013; Gregoraidis & Tsigilis, 2008; Koomen et al., 2012; Solheim et al., 2012; Webb & Neuharth-Pritchett, 2011) and have argued for its removal from the scale. Webb and Neuhardth-Pritchett (2011) attributed problems with this item to ambiguous wording and possible differing interpretations of the phrases "when I correct" and "appears hurt of embarrassed." For example, they discussed how "when I correct" could be construed to mean either when a teacher provides a simple redirection or when at teacher administers more significant consequences to the student, two very different situations (Webb & Neuharth-Pritchett, 2011). Item 25, "This child whines or cries when he/she wants something from me" has also been found to be problematic in many studies (Faire et al., 2013; Gregoraidis & Tsigilis, 2008; Webb & Neuharth-Pritchett, 2011). Finally, item 12, "This child tries to please me" was found to have a low overall factor loading in this study and load on

the Dependency subscale instead of Closeness. This finding suggests potential differences in the way

teachers interpreted this item. Solheim and colleagues (2012) are the only other researchers to report

concerns about this item, finding that it loaded negatively on Closeness instead of positively.

      Stable items and overall conclusions. Items remaining on the Conflict subscale included items

2, 11, 18, and 23 for both the short and long-forms, with the addition of items 13 and 16 for the long-

form, and items 20 and 22 for the short-form. The four items consistent across the two versions

measure unpredictability of the child's feelings towards the teacher (item 23), struggle between the

teacher and student (item 2), and anger from the child directed at the teacher (items 11 and 18). These

items appear to address key components of the conflict construct. Additional items on the short form

measure the affect the student's behavior has on the teacher (items 20 and 22), with additional items

on the long-form focusing on how the child sees the teacher's response to his/her behavior (items 13

and 16). Both appear to be important to the construct of teacher-student conflict. However, as items

13 and 16 are not a part of the *STRS* short-form, while the results of this study support the use of the

short-form STRS over the long-form, the particular aspect of relationships measured by items 13 and 16

is not measured when the short-form is used.

      Items remaining on the Closeness subscale included items 1, 3, 5, and 7, with item 27 also

remaining on the short-form. The four common items measure the level of warmth/affection in the

teacher-student relationship (item 1), the value the student places on the relationship (item 5), the

extent to which the student sees the teacher as a source of comfort (item 3), and how the student

responds to teacher praise (item 7). The additional item on the short-form measures the level of

openness in the teacher-child relationship (item 27). Compared to the Conflict construct, in the case of

Closeness, the STRS short-form appears to more adequately address the key areas of the Closeness

construct.

For the long-form STRS, items remaining on the Dependency subscale include items 8, 10, and 14. These items measure the over-dependency of the student on the teacher (item 10), how the student reacts when being separated from the teacher (item 8), and the extent to which the child asks for help when it is not needed (item 10). While these items seem to capture key areas of the dependency construct, as there are only 3 items remaining this scale, if the long-form of the *STRS* is to be used with students with ED additional items may need to be added. Other researchers (i.e. Koomen et al., 2012) have begun to do this by adding and rewording problematic items primarily on the Dependency subscale. For example, Koomen and colleagues (2012) added three new items to the Dependency subscale of the Dutch version of the *STRS*. Two of these items, "this child fixes his/her attention on me the whole day long" and "this child need to be continually confirmed by me" both loaded highly on the Dependency factor in their research. Others have begun to use this revised scale in its Dutch translation (Roeden et al., 2012). However, further research is needed to determine if a modified version of the Dependency subscale would be applicable to an English-speaking population and to students with ED.

Overall, the factor analysis conducted in the present study supports the removal/revision of several items from the *STRS* that have been found to be problematic in previous studies (items 4, 6, 12, 21, and 25). As evident by the concerns raised in the analysis of the 3-factor model of the *STRS* and the relative success of the factor analysis using the *STRS* short-form, results from this study support the use of the *STRS* short-form over the long-form when used with a population of students with ED having similar characteristics to the study sample (e.g. ages 7-12, predominately male). If the three-factor model of the *STRS* is to be used with students with ED, this study supports a more parsimonious measure with fewer items measuring the different subscales.

The Conflict subscale and Closeness subscale (with the removal of several problematic items) were both found to be stable when used with this population. The stability of the Conflict subscale for

students with ED was not surprising given that inappropriate behavior, which can lead to increased

conflict with teachers, is a defining feature of this disability label.   Additionally, the *STRS* Conflict items

tend to focus on the student's behavior and the teacher's reaction to this behavior. For students with

high levels of problem behavior such as those included in this study, these items provide a strong

measure of the level of conflict in the relationship. Although there was overlap between the Closeness

and Dependency subscales when using the three-factor long-form of the *STRS*, when measured on its

own using the *STRS* short-form, the Closeness subscale was a stable measure of the level of Closeness in

the teacher-student relationship.

Evidence for reliability of the *STRS*

In the second research question, I asked about reliability estimates for the *STRS* when used with

a population of students with emotional disturbance. Reliability is important in establishing the

consistency of a measure and the degree to which the measure is free from error (Crocker & Algina,

1986). There are no universally agreed upon criteria for acceptable reliability. However for measures of

low consequence, such as attitudinal and behavioral measures, researchers generally consider a

reliability coefficient of .8 to be an indicator of good reliability with values around .7 as also acceptable

in certain situations (Klein, 1999; Webb et al., 2006).

When it was originally developed, the *STRS* was found to have adequate measures of reliability

with initial *alpha* estimates of .86 for Closeness, .92 for Conflict, and .64 for Dependency (Pianta, 2001).

Later research using the *STRS* have generally found similar internal consistency estimates, with *alphas*

for Conflict and Closeness generally above .8 and Dependency estimates around .6. Many authors,

including Pianta (2001) have raised concerns about the lower reliability scores of the Dependency

subscale cautioning against its use and interpretation.

In this study I found comparable reliability estimates to those reported in previous studies, with

reliability estimates at .8 or above for the Conflict and Closeness subscales and estimates around .7 for

the Dependency subscale. These estimates were generally consistent between the three versions of the

STRS used in this study: the original 3-factor model, the revised 3-factor model obtained from the factor

analysis using the *STRS* long-form, and the revised 2-factor model obtained through the factor analysis

using the *STRS* short-form. Thus, I found that the overall reliability of the *STRS* with a population of

students with emotional disturbance was acceptable for all three subscales. While the reliability of the

Dependency subscale was notably lower than the Conflict and Closeness subscales, it still fell close to

the acceptable levels. Indeed, the three-item Dependency subscale from the revised *STRS* showed

internal consistency levels higher than what was originally reported in the *STRS* Professional Manual, .68

vs. .64. As this study used a restricted population (i.e. students with characteristics of ED) who tend to

be more alike in their relationships with teachers, high levels of reliability was not surprising.

Inter-item correlations show the degree to which items on a similar subscale are related to one

another, while item-total correlations show the relationship between individual items and the overall

subscale total (Field, 2009). As a further examination of reliability, I calculated inter-item correlations

and item-total correlations for each subscale of the revised measures, and examined the *alpha* that

would be calculated if individual items had been deleted from the scale. Acceptable inter-item

correlations were found for the revised Conflict and Closeness subscales (both short and long-form)

ranging from .3 to .6. Item-total correlations were also acceptable for the Conflict and Closeness

subscales ranging from .5 and .7. Researchers generally consider intra-item and item-total correlations

below .3 to indicate problematic items that are not closely related to each other or to the overall scale

(Field, 2009). Additionally, I found that for both the Conflict and Closeness subscale (short and long-

form) deleting individual items would not lead to an improvement in reliability estimates.

Examination of the item correlations for the Dependency subscale of the long-form *STRS* did

identify some potentially problematic items. Items 8 and 14 showed low intra-item correlation (.25),

with a lower item-total correlation for item 14 (.37). While these values on their own are not out of the

range of what could be considered acceptable, these values combined with the lower factor loading for

item 14 indicates potential concerns with including this item on the subscale. Additionally, deleting item

14 would lead to a substantial improvement in the *alpha* estimate, from .68 to .75. However, as the

revised scale only included 3 items, deleting this item would leave only 2 items on the Dependency

subscale. General guidelines for factor analysis suggest a minimum of 3 to 4 items on a factor

depending on the strength of the factor loadings (Thorkildsen, 2005).

Evidence for validity of the *STRS*

Evidence for the validity of a measure can include evidence based on internal structure and

evidence based on relationships to other variables (AERA, APA, & NCME, 2014). In this study, evidence

based on internal structure included both the factor analysis for the *STRS*, as described in a previous

section, and correlations between the different *STRS* subscales using the original and modified versions

(short and long-forms)*.* Evidence based on relationships to other variables in this study included

concordance between teachers and students on measures of relationship quality, and correlations

between both teacher and student-report measures of relationships and behavior. Research questions

3-5 will be addressed in this section on validity: 3) Is the construct validity of the *STRS* for ED students

supported? 4) How do teachers and students with ED differ in their agreement of the quality of the

relationship using attachment-based measures of teacher-student relationships? and 5) How do

associations between behavior and teacher-student relationships vary based on student and teacher-

reports for each?

Intracorrelations of the *STRS* subscales. Correlations between the *STRS* subscales were

calculated between all subscales of the original *STRS*, the revised *STRS* long-form, and the revised *STRS*

short-form. Analyses using all three versions of the *STRS* yielded mild, negative correlations between

the Conflict and Closeness subscales (ranging from -.20 to -.31 depending on the version used). This is in

line with what previous studies have found, though on the low end of the range of correlations. When it

was first developed, Pinata (2001) found a moderate negative correlation between the two subscales (*r*

= -.45). Other researchers have found correlations ranging from -.25 to over -.7 (e.g. Harrison et al,

2007; Jerome et al., 2009; Murray & Murray, 2004; Murray & Zvoch, 2011; Rey et al., 2007; Rudasill et

al., 2010). For this study, correlations in the -.2 to -.3 range fell within the low end of what has been

found previously.

When looking at correlations between the Dependency subscale and the other two *STRS*

subscales, positive correlations were found for each, with stronger correlations between Dependency

and Closeness (.48 for the original *STRS* and .52 for the revised *STRS* long-form.) While Pianta (2001)

originally found a mild positive correlation between Closeness and Dependency, most other researchers

have found negative correlations between Closeness and Dependency (e.g. Birch & Ladd, 1998; Doumen

et al., 2012; Solheim et al., 2012). For studies in which researchers have found positive correlations

between Closeness and Dependency, those correlations have generally been in the mild range. For

example, in a study of 3rd-6th graders, Rey and colleagues found a correlation of .22 between Closeness

and Dependency. Correlations between Conflict and Dependency have also generally been positive (e.g.

Doumen et al., 2012; Rey et al., 2007; Murray & Murray, 2004; Roeden et al., 2012; Solheim, et al, 2012;

Spilt & Koomen, 2009), with many studies finding moderate to strong correlations between the two

subscales. For this study, the correlation was mild for the original *STRS* subscale (*r* = .21) and non-

significant for the revised subscales (*r* = .06). What is unique about the present study is the strength of

the positive correlation between Closeness and Dependency and the relatively weak correlation

between Conflict and Dependency.

Researchers generally view Conflict and Dependency to be negative factors of the teacher-

student relationship, with Closeness as a positive factor (Pianta, 2001). However, recent studies noting

positive correlations between Closeness and Dependency have suggested that the associations between

Dependency and both Conflict and Closeness may vary based on the culture of students and teachers in

the study (Gregoriadis & Tsigilis, 2008; Webb & Neuharth-Pritchett, 2011). For example, in their study

of Greek kindergartners, Gregoraidis and Tsigilis (2008) discussed how in Greek society, dependency-

related behavior may be seen in a more positive light compared to cultures that place a higher value on

individualism. However, to date, this is the only possible explanation explored in the research for

differences in patterns of correlations with the Dependency subscale.

No studies using the *STRS* have explored how the concept of dependency may vary with

students with disabilities or those receiving special education services (a large percentage of the sample

for the present study). Perhaps for students with disabilities or those in special education settings more

dependent relationships may develop with teachers. This may cause dependency to be viewed more as

an indicator of the closeness between the teacher and student as opposed to a more negative quality of

the relationship. Students with ED and those high levels of externalizing or antisocial behavior may have

experienced trauma in their lives (Walker & Smithgall, 2009). This experience of trauma might lead

students to push away from adults including teachers. Indeed, the definition of ED under IDEA specifies

that these students have difficulties forming close interpersonal relationships (IDEA, 2004). For these

reasons, dependency in relationship may be a protective factor for these students as they learn to trust

and rely on adults (Griffin & STudzinski, 2010).

Concordance between raters. Concordance between teachers and students on relationship

quality was measured using correlations between teacher ratings on the *STRS* and student ratings on the

PIML. Previous research using the *STRS* and a student measure for relationships found mild correlations

between student and teacher reports of relationship quality (Al-Yagon & Mikulincer, 2004; Decker et al.,

2007; Harrison et al., 2007; Murray & Zvoch, 2010, 2011; Rey et al, 2007; Valiente et al., 2008), and I

hypothesized that I would find mild correlations between the Conflict subscale of the *STRS* and the

Dissatisfaction with Teacher subscale on the *PIML*, and between the Closeness subscale on the *STRS* and

the Affiliation with Teacher and School Bonding subscales of the *PIML*. My hypothesis was only partly

supported by the data in this study. The *STRS* Conflict subscale and the *PIML* Dissatisfaction with

Teacher subscale were correlated positively (*r* = .29, *p* < .05). However, no other significant correlations

were found between the *STRS* and *PIML* and all other correlations were below .2.

Based on current research and theories about interactions between teachers and students with

ED, associations between the *STRS* Conflict and *PIML* Dissatisfaction with Teachers subscales are to be

expected. As students with ED are characterized by high rates of negative behavior, especially conflict

with adults and peers, this can have an impact on the relationships they develop with their teachers. If

we view relationships using the model proposed by Myers and Pianta (2008) described in Chapter I,

relationships involve a transactional process between teachers and students. For students with high

levels of conflict in their teacher-student relationships (as measured by the *STRS* Conflict subscale) these

negative interactions with teachers can not only affect the teacher's perception of the relationship, but

also the student's. Teacher negative perceptions of the student (based on challenges in the teacher-

student relationship) can cause the teachers to be more negative in their interactions with students

(Sthulman & Pianta, 2001), leading students to have a more negative perception of the teacher as

captured by the *PIML* Dissatisfaction with Teacher subscale.

There are several possible explanations for the lack of significant correlations between the

remaining *STRS* and *PIML* subscales (and small correlations overall). First, since previous studies finding

correlations between teacher and student-reports of relationships used measures different from the

PIML, it could be that the *PIML* and *STRS* measure different constructs. For example, Closeness as rated

by teachers and Affiliation with Teacher as rated by students may not be measuring the same aspects of

the relationship. Furthermore, as has been mentioned previously, the School Bonding subscale of the

STRS is an overall measure of students' perception of their relationship to their school, and not a direct

measure of teacher-student relationships. No scale on the *STRS* measures a similar construct. Likewise,

there is no parallel on the *PIML* for the Dependency subscale of the *STRS*.

It is also possible that teachers and students with ED view relationships in different ways. Some previous researchers have found little to no correlation between teacher and students on reports of relationship quality (Hughes et al., 1999; Murray et al., 2008). Additionally, research on informant discrepancies has highlighted differences between raters, including teachers and students, on measures related to student social-emotional functioning and behavior (Achenbach, McConaughy, & Howell, 1987; De Los Reyes & Kazdin, 2005). These discrepancies are persistent across different sample types including students with different levels of externalizing behavior and students of varying ages, genders, and backgrounds (Achenbach et al., 1987; De Los Reyes & Kazdin, 2005; Talbott, Karabatsos, & Zurheide, 2015). De Los Reyes and Kazdin (2005) point to differences in perceptions between teachers and students as one cause of the discrepancy.   However, researchers point to the need for additional research examining teacher-student relationships and agreement among raters, particularly for students with ED or externalizing behavior (Talbott et al., 2015).

Similarly, Harrision (2011) draws on ideas of attachment theory and the idea of the inner working model (as described in Chapter I) to describe how students and teacher might perceive relationships differently. Citing the work of several theorists (Bretherton & Munholland, 1999; Brock, Sarason, Sanghvi & Gurung, 1998; Sarason, Pierce, & Sarason, 1990) they conclude that:

> Teacher and child perceptions of the relationship are expected to differ, since their perceptions reflect their individual mental representations and other characteristics...the student's perception of the teacher as accepting, trustworthy, and available whether congruent with other sources of information on the relationship or not, might motivate the child to seek the teacher's assistance, rely on the teacher as a source of felt security, and seek to please the teacher. (Harrison, 2011, p. 42)

However, as most studies examining rater congruence include students with and without disabilities (and often far fewer numbers of students with disabilities), more research is needed to determine if differences between teachers and students with ED on ratings of relationships, such as in the present study, can be attributed to specific characteristics of students with ED or if these differences fall into the range of differences currently found when examining rater congruence.

While the present study does not provide evidence for the convergent validity of the Closeness subscale based on associations with other measures of relationship quality, it does provide evidence for convergent validity of the Conflict subscale. Associations between the Conflict subscale of the *STRS* and a related construct, student-rated Dissatisfaction with Teacher, were higher than associations between Conflict and an unrelated dimension, Affiliation with Teacher. As the *PIML* did not measure a construct similar to Dependency, it was not possible to assess the validity of the Dependency subscale through this analysis.

Associations between behavior and relationships. Additional evidence for the validity of the *STRS* comes from associations between the *STRS* and measures of student behavior as rated by both teachers and students using the *Strengths and Difficulties Questionnaire (SDQ)*. When examining ratings for relationships and behavior both completed by teachers, moderate associations were found in the expected directions. Conflict was positively correlated with Conduct Problems and Total Difficulties, and negatively correlated with Prosocial Behavior, while Closeness was negatively correlated with Conduct Problems and positively correlated with Prosocial Behavior. The Dependency subscale correlated positively with Emotional Symptoms, Peer Problems, and Total Difficulties. Only one other study was found that used both the *STRS* and *SDQ* (Koomen et al., 2012).   In that study, Conflict and Dependency were positively correlated with all areas of problem behavior and negatively correlated with Prosocial Behavior, while the opposite pattern was observed for Closeness. Compared to the present study, the study by Koomen and colleagues (2012) found greater associations between the *SDQ* and *STRS* and overall stronger correlations (e.g. Koomen found a correlation of .72 between Conflict and Total Difficulties compared to .35 for the present study.) Additionally, Koomen and colleagues (2012) found significant correlations between Conflict, Closeness, and Dependency and all subscales of the *SDQ* while the present study only found significant correlations for selected subscales.

Although correlations from the present study were not as strong as those obtained by Koomen and colleagues (2012), results from the present study do fit the general pattern found in many other studies using the *STRS*. That is, I found that Conflict was associated with negative behavior and Closeness was associated with positive behavior (e.g. Birch & Ladd, 1998; Buyse et al., 2008; Murray & Murray, 2004; Murray & Zvoch, 2011; Silver et al., 2005; Spilt & Koomen, 2009; Thijs & Koomen, 2009). Fewer studies using the *STRS* have examined associations between behavior and the Dependency subscale, with studies generally finding similar patterns for Dependency as for Conflict (Birch & Ladd, 2012; Nurmi, 2012; Thijs & Koomen, 2009). What is unique about the present study is the pattern in associations for the *STRS* subscales, compared to teacher-ratings for externalizing and internalizing behaviors. Conflict was found to correlate positively with Conduct Problems, a measure of externalizing behavior, while Dependency correlated with Emotional Symptoms, a measure of internalizing behavior. Closeness was associated negatively with measures of externalizing behavior but not internalizing behavior. Previous studies using the *STRS* have generally found Conflict to correlate positively with measures of internalizing behavior and Closeness to correlate negatively (Birch & Ladd, 1998; Buyse et al., 2008, Murray & Murray, 2004) and one study in which researchers used the Dependency subscale, students with higher levels of internalizing behavior also had higher levels of dependency (Murray & Murray, 2004).

When examining associations between the *STRS* and student-rated behavior, correlations were overall much weaker and all were non-significant. Other researchers examining student and teacher-reported relationships and behavior have found similar results; associations between behavior and relationships when rated by the same rater were much higher compared to cross-rater associations (Murray & Zvoch, 2011; Rey et al., 2007).

Examination of associations between the *STRS* and teacher and student-rated behavior provides additional evidence for convergent and discriminant validity of the *STRS*. Associations between the

Conflict, Closeness, and Dependency subscales and both problem and prosocial behavior were generally in expected directions. This is especially true for the Conflict and Closeness subscales with correlations between positive aspects of both relationship and behavior correlating positively (i.e. Closeness and Prosocial behavior) with the opposite patterns for negative aspects of the relationship (e.g. Conflict correlating positively with Conduct Problems). Associations between the teacher-rated *SDQ* and Dependency were also supported by findings from previous studies. However, as few studies have examined associations between Dependency and behavior, no definitive conclusions can be made about results from the present study.

Additionally, the strength of correlations between the *STRS* and measures of behavior and differences between the patterns of associations for the three *STRS* subscales can be examined to provide evidence of discriminant validity. While measures of relationship quality were correlated with student behavior, these correlations all fell in the mild to moderate range. This is important to determine if the *STRS* provides a unique measure of relationships and is not redundant with behavioral measures. For example, the correlation between Conflict on the *STRS* and Conduct Problems on the *SDQ* was .58, indicating that while the two constructs are related, they do measure two distinct constructs. Similarly, examining the pattern of correlations between Conflict, Closeness, and Dependency shows differences in the ways the three aspects of relationships are associated with student behavior. Although the Closeness and Dependency subscales are related (as revealed by a significant positive correlation between the two subscales and some overlap of items found during EFA), these two subscales are unique in the ways in which they relate to student behavioral measures with different patterns emerging in correlations between the subscales and different behavioral measures. Finally, comparing results for same and cross-rater associations between behavior and relationships lends support for the validity of the *STRS* with constructs measured by the same rater having much stronger associations compared to cross-rater.

Most studies on teacher-student relationships tend to use only one source for relationship ratings (usually the teacher's perspective). Similarly, if ratings of behavior and other student characteristics or outcomes are used in the study, these are also generally evaluated from the teacher's perspective. However, differing reports from teachers and students in the present study lend support for utilizing multiple perspectives when assessing the quality of relationships between teachers and students with ED and the subsequent associations between relationships and behavioral characteristics and outcomes. Including student ratings for relationships and behavior can add a unique perspective not found in teacher reports. Previous studies examining associations between behavior and relationships as measured by both teacher and student reports have also emphasized the importance of including student perspectives (e.g. Decker et al., 2007; Murray & Zvoch, 2011; Rey et al, 2007). In particular, a study by Decker and colleagues (2007) using a sample of elementary-age African American students at risk for referral to special education based on their behavior stressed the need to include student reports when examining associations between relationships and student outcomes.

Associations between relationships and ED symptoms. Correlations between the *STRS* and the *Emotional and Behavioral Screener (EBS)* can also be used to provide evidence for validity of the *STRS* when used with a population of students with ED. The *EBS* is a measure of ED symptoms with a higher score on the *EBS* indicating that a student is at greater risk for being identified with ED. Positive correlations were found between *EBS* and *STRS* Conflict and Dependency subscales indicating that students with a greater degree of ED symptoms had greater Conflict and Dependency in their relationships with teachers. As one of the defining characteristics of ED is difficulty forming and maintaining personal relationships, these results lend support to the validity of the *STRS*. Additionally, correlations between Conflict and Dependency and the *EBS* fell within the mild to moderate range indicating that each measures a unique construct.

Social Acceptability of the *STRS*

Teachers generally rated the social acceptability of the *STRS* high with average scores on the

three items ranging from 4.7 to 5.7 out of a possible 6. Teachers were especially in agreement that the

STRS takes a reasonable amount of time to complete. They rated the practical usage of the *STRS* to help

diagnose areas of strengths and weaknesses in their relationships with individual children the lowest.

However, they still rated this item between "slightly agree" and "agree" so teachers evidently see some

practical use for the survey. Teachers rated the relevance of the *STRS* for their students between

"agree" and "strongly agree" suggesting that they felt the scale would apply to students with

characteristics of ED. While some teachers left individual comments in this section, since so few

teachers left relevant comments related to the *STRS*, few conclusions can be drawn.

Limitations

It is important to acknowledge several limitations to this study including sample size and

composition. While the overall sample had an adequate sample size (*N* = 203), the subsample was much

smaller with only 50 students. A larger sample size would have been preferable for the correlational

analyses. Additionally, a larger sample of teachers in the full sample would have allowed for additional

analyses of the factor structure including measurement invariance across groups (e.g. special and

general education teachers, students with ED and students without, etc.). With the current sample (*N* =

203), sample sizes of the various subgroups were too small to conduct these analyses.

Recruitment for this study proved to be very difficult, taking over one year to complete.

Challenges included low numbers of students with characteristics of ED in public school classrooms,

district resistance to research for fear of overburdening teachers, and competing demands for teachers'

time. Locating schools and districts that serve students with ED was especially challenging. Many

districts/schools contacted for participation stated that they had no students with ED or very few. While

many general education teachers participated in the study, these teachers generally only had one or two

students with ED in their classes. Greater success in recruitment was found with special education

teachers, particularly those in self-contained classroom settings where students with ED are often

concentrated. However, many districts, especially smaller ones, may only have 1-2 classes for students

with ED, and therefore only 1 or 2 teachers who work with those students. Because of this, recruitment

for this study required contacting multiple districts, schools, and organizations in order to obtain the

necessary sample size. For this study, approximately 170 districts, 240 individual schools, and 20

universities and professional organizations were contacted for recruitment.

Additionally, as evident by the sample for this study, many students with characteristics of ED do

not have the official label of ED. Many researchers have discussed the underdiagnosis of ED (Walker et

al., 2000) and the comorbidity of ED and other disabilities (Forness & Kavale, 2001; Talbott & Fleming,

2003). For this study, large numbers of students were either not diagnosed with ED or identified with a

different disability label. Indeed, many teachers who worked in self-contained classrooms and schools

designed to serve students with ED reported that the students they were rating did not have an ED

label. As was apparent in this study, this can lead to challenges when conducting research on

populations of students with ED (or characteristics thereof). Determining inclusion criteria for students

and then locating teachers and students who meet criteria for participation can hamper efforts to

conduct research with this population.

A second limitation of this study involves the diversity of the sample especially in terms of race

and gender. The teacher sample in this study was primarily White and female. While this is a reflection

of the current population of teachers in the United States (US Department of Education, National Center

for Education Statistics, Schools and Staffing Survey, 2008) greater diversity would have improved the

generalizability of results from this study. Teachers also worked primarily in suburban settings,

especially in the subsample, with far fewer teachers in urban settings, and only one in a rural area. The

students rated by teachers in the study tended to be more diverse in terms of race but they were

primarily male. This is not necessarily a limitation of this study, as the population of students with ED is

overwhelmingly male (Data Accountability Center, 2011). However, having a larger number of female

students would have been helpful in order to examine differences in the functioning of the *STRS* when

used with both male and female students with ED.

Students in this study also tended to be older than the age of students often used with the *STRS*.

Most research using the STRS has focused on students in preschool to early elementary (Kg-1st grade).

Recently, researchers have begun to examine the *STRS* with an older population of students (e.g.

Koomen et al., 2012). Those studies have raised concerns about the functioning of the *STRS* when used

with elementary age students up to age 12 (the population used in this study). When examining the

reliability and validity of the scale with a population of students with ED, it would have been best to use

younger students for which there is established evidence of reliability and validity for the *STRS*.

Therefore, differences in the functioning of the *STRS* could be attributed to students having ED and not

their age. If both older students are used for a study and students with characteristics not previously

examined in a reliability/validity study, in this case characteristics of emotional disturbance, then it is

difficult to discern whether differences in the functioning of the scale should be attributed to the age of

the students or the other characteristic. However, in the case of this study, there are far fewer numbers

of students in preschool and early elementary with ED, so recruiting a sample of, for example,

kindergarteners with characteristics of ED would have been exceedingly difficult.

Implications for Practice and Future Directions

Overall, the results of this study support the work of other researchers who caution against the

use of the long-form *STRS* including the Dependency subscale. I found support for the overall factor

structure of the revised *STRS* long-form and acceptable internal consistency levels. However, based on

concerns about the reliability of the Dependency subscale and substantial number of items deleted from

the scale in order to reach an acceptable factor solution, the use of the full *STRS* for a population of

students with emotional disturbance is not supported. Some researchers (e.g. Koomen et al., 2012) have begun to create revised versions of the *STRS* including substantial revisions to the Dependency subscale in order to make the scale more relevant to a wider range of students such as older elementary students. Future research is needed to continue to adapt the long-form *STRS* scale in order to improve the overall reliability and validity of the measure when used with older students and those with disabilities such as ED. As the work of Koomen and colleagues (2012) is focused on creating a revised version in Dutch, further research is needed to adapt the *STRS* in English.

In contrast to caution against the use of the long-form *STRS*, this study does support the short-form *STRS* with the subscales of Conflict and Closeness for use with populations of students with ED. Minor revisions were needed for the short-form scale in this study in order to improve the factor structure when used with populations of students with ED. As most research using the *STRS* uses the long-form version, more research is needed using the short-form *STRS* to determine its acceptability when used with diverse groups of students.

Additionally, more research is needed to examine measurement invariance of the *STRS* (both the long and short-forms) when used with different groups of students based on gender, race, disability, and other characteristics. As this study did not have a large enough sample size, or enough diversity in participants with regard to gender and disability to conduct such analyses, additional research is needed with sufficient group sizes in order to conduct measurement invariance analyses. Given the under-identification of students with emotional disturbance, future research should also examine the use of the *STRS* with populations of students with different behavioral characteristic (e.g. externalizing, antisocial, internalizing, etc.).

When examining evidence for validity for the *STRS* with students with ED based on associations between the subscales and other variables, I found evidence for convergent and discriminant validity for the Conflict and Closeness subscales for the *STRS* and preliminary evidence for the validity of the

Dependency subscale. However, as few validity studies have used the Dependency subscale, more

research is needed to establish adequate evidence for this subscale.

Additionally, this study provides support for the use of the *STRS* in schools to assess

relationships between teachers and students with ED. This study provides preliminary evidence for the

social acceptability of the *STRS* with this unique population. Overall, teachers found it to be acceptable

to use with their students based on the time needed to complete the measure and the relevance of the

STRS to their practice. However, as this was the first study to collect usability data for the *STRS* when

used with a population of students with ED, more research is needed to explore the usefulness of the

STRS for evaluating relationships in school settings. The *STRS* has been used in previous studies to

assess interventions focused on improving relationships between students and teachers (e.g. Tsai &

Cheney, 2012). Interventions including a relationship component such as Check and Connect (Sinclair &

Christenson, 1998) can utilize the *STRS* as a measure of relationship quality. This study supports the use

of the *STRS* for students with emotional disturbance participating in such interventions. However, as

there is limited research on the use of similar interventions with students with ED, additional research is

needed in this area.

APPENDICES

APPENDIX A

UNIVERSITY OF ILLINOIS
AT CHICAGO

Office for the Protection of Research Subjects (OPRS)
Office of the Vice Chancellor for Research (MC 672)
203 Administrative Office Building
1737 West Polk Street
Chicago, Illinois 60612-7227

Approval Notice
Continuing Review

December 17, 2014

Jaime Zurheide, MA
Special Education
1040 W Harrison St., M/C 147
Chicago, IL 60612
Phone:

RE: Protocol # 2013-1112
"Measuring Relationships of Teachers and Students with Emotional Disturbance:
Applicability of the Student-Teacher Relationship Scale"

Dear Ms. Zurheide:

Please note that this research did not have Institutional Review Board (IRB) approval from midnight December 5, 2014 until December 10, 2014.

Please note that the research training for *Dr. Elizabeth Talbott* <u>will</u> expire on **01/30/2015** and she must complete a minimum of two hours of continuing education prior to the expiration date in order to continue to participate in the conduct of the research. You may refer her to the OPRS website, where continuing education offerings are available: http://research.uic.edu/compliance/irb/education-training

Your Continuing Review was reviewed and approved by the Expedited review process on December 10, 2014. You may now continue your research.

Please note the following information about your approved research protocol:

Protocol Approval Period: December 10, 2014 - December 10, 2015
Approved Subject Enrollment #:   1300 (612 Subjects enrolled to date)
Additional Determinations for Research Involving Minors: The Board determined that this research satisfies 45CFR46.404, research not involving greater than minimal risk. Therefore, in accordance with

APPENDIX A (continued)

45CFR46.408, the IRB determined that only one parent's/legal guardian's permission/signature is needed. Wards of the State may not be enrolled unless the IRB grants specific approval and assures inclusion of additional protections in the research required under 45CFR46.409. If you wish to enroll Wards of the State contact OPRS and refer to the tip sheet.

Performance Sites: UIC,

Sponsor: None

Research Protocol(s):

    a) Measuring Relationships of Teachers and Students with Emotional Disturbance: Applicability of the Student-Teacher Relationship Scale; Version 5; 10/09/2014

Recruitment Material(s):

    a) Eligibility Screening; Version 2; 12/03/2013

    b) Recruitment Letter to Parents; Version 2; 12/03/2013

    c) Teacher Eligibility; Version 2; 12/03/2013

    d) Initial Email to Administrator; Version 3, 06/04/2014

    e) Recruitment E-Mail to Teachers; Version 3, 06/04/2014

    f) Email to Administrator Sample 2; Version 1; 10/09/2014

    g) Recruitment Email to Teachers Sample 2; Version 1; 10/09/2014

    h) Email to Teachers Sample 2 (publicly available contact information); Version 1; 10/09/2014

    i) Follow up Email to Teachers Recruited Outside of Schools Sample 2; Version 1; 10/17/2014

    j) Email to Professional Organizations Sample 2; Version 1; 10/17/2014

    k) Email to Universities Sample 2; Version 1; 10/17/2014

Informed Consent(s):

    a) Teacher Consent Version 3, 06/04/2014

    b) Teacher Consent Sample 2; Version 2; 10/17/2014

    c) A waiver of consent has been granted under 45 CFR 46.116(d) for recruitment (to obtain teacher contact information) purposes only; minimal risk; written consent will be obtained at enrollment.

    d) A waiver of documentation of informed consent has been granted under 45 CFR 46.117 and an alteration of consent has been granted under 45 CFR 46.116(d) for teacher recruitment purposes only; minimal risk; verbal consent to screening/eligibility questions will be obtained; written consent will be obtained at enrollment.

Assent(s):

    a) Student Assent; Version 2; 12/03/2013

Parental Permission(s):

    a) Permiso Parental (Spanish) Version 3, 06/04/2014

    b) Parent Permission Version 3, 06/04/2014

    c) A waiver of parental permission and child assent has been granted for the collection from the teacher subject of potentially indirectly identifiable information regarding students under 45 CFR 46.116(d) (minimal risk; obtaining assent and permission would be intrusive and present higher risk)

    d) A waiver of parental permission and assent has been granted under 45 CFR 46.116(d) for recruitment purposes only (for the child eligibility screening); minimal risk; written parent permission and assent will be obtained at enrollment.

APPENDIX A (continued)

Your research continues to meet the criteria for expedited review as defined in 45 CFR 46.110(b)(1) under the following specific category:

(7) Research on individual or group characteristics or behavior (including but not limited to research on perception, cognition, motivation, identity, language, communication, cultural beliefs or practices and social behavior) or research employing survey, interview, oral history, focus group, program evaluation, human factors evaluation, or quality assurance methodologies.

Please note the Review History of this submission:

Receipt Date	Submission Type	Review Process	Review Date	Review Action
12/03/2014	Continuing Review	Expedited	12/10/2014	Approved

Please remember to:

→ Use your **research protocol number** (2013-1112) on any documents or correspondence with the IRB concerning your research protocol.

→ Review and comply with all requirements on the enclosure,
   "**UIC Investigator Responsibilities, Protection of Human Research Subjects**"
       (*http://tigger.uic.edu/depts/ovcr/research/protocolreview/irb/policies/0924.pdf*)

Please note that the UIC IRB has the prerogative and authority to ask further questions, seek additional information, require further modifications, or monitor the conduct of your research and the consent process.

Please be aware that if the scope of work in the grant/project changes, the protocol must be amended and approved by the UIC IRB before the initiation of the change.

We wish you the best as you conduct your research. If you have any questions or need further help, please contact OPRS at (312) 996-1711 or me at (312) 355-2939. Please send any correspondence about this protocol to OPRS at 203 AOB, M/C 672.

Sincerely,

Jewell Hamilton, MSW
IRB Coordinator, IRB # 2
Office for the Protection of Research Subjects

Enclosure(s):

1. **Informed Consent Document(s):**
    a) Teacher Consent Version 3, 06/04/2014

APPENDIX A (continued)

     b) Teacher Consent Sample 2; Version 2; 10/17/2014

  2.   **Assent Document(s):**

     a) Student Assent; Version 2; 12/03/2013

  3.   **Parental Permission(s):**

     a) Parent Permission Version 3, 06/04/2014

     b) Permiso Parental (Spanish) Version 3, 06/04/2014

  4.   **Recruiting Material(s):**

     a) Eligibility Screening; Version 2; 12/03/2013

     b) Recruitment Letter to Parents; Version 2; 12/03/2013

     c) Teacher Eligibility; Version 2; 12/03/2013

     d) Initial Email to Administrator; Version 3, 06/04/2014

     e) Recruitment E-Mail to Teachers; Version 3, 06/04/2014

     f) Email to Administrator Sample 2; Version 1; 10/09/2014

     g) Recruitment Email to Teachers Sample 2; Version 1; 10/09/2014

     h) Email to Teachers Sample 2 (publicly available contact information); Version 1; 10/09/2014

     i) Follow up Email to Teachers Recruited Outside of Schools Sample 2; Version 1; 10/17/2014

     j) Email to Professional Organizations Sample 2; Version 1; 10/17/2014

     k) Email to Universities Sample 2; Version 1; 10/17/2014

cc: Elizabeth Talbott, (Faculty Sponsor), Special Education, M/C 147

Appendix B

University of Illinois at Chicago
Research Information and Consent for Participation in Social Behavioral Research
Measuring Relationships of Teachers and Students
with Emotional Disturbance: Applicability of the *Student-Teacher Relationship Scale*

Dear Teacher:

You are being asked to participate in a research study. Researchers are required to provide a consent form such as this one to tell you about the research, to explain that taking part is voluntary, to describe the risks and benefits of participation, and to help you to make an informed decision. You should feel free to ask the researchers any questions you may have.

Principal Investigator Name and Title: Jaime Zurheide, Doctoral Student
Department and Institution: Department of Special Education, University of Illinois at Chicago
Address and Contact Information: 1040 W. Harrison St., Chicago, IL 60607
Phone: 773-501-7650
Email: jzurhe2@uic.edu

Faculty Advisor Name: Dr. Elizabeth Talbott
Phone: 314-413-8745
Email: etalbott@uic.edu

Why am I being asked?

You are being asked to participant in a research study about relationships between elementary and middle school teachers and students with emotional disturbance (ED). Students with emotional disturbance exhibit inappropriate classroom behaviors, have difficulty building and maintaining interpersonal relationships, have a general mood of unhappiness or depression, and/or have a tendency to develop physical symptoms or fears associated with school. You have been asked to participate in the research because you teach students in grade 2nd-7th some of whom may exhibit symptoms of ED.

APPENDIX B (continued)

Your participation in this research is voluntary. Your decision whether or not to participate will not affect your current or future dealings with the University of Illinois at Chicago. **If you decide to participate, you are free to withdraw at any time without affecting that relationship.**

Approximately 300 teachers and up to 1000 students may be involved in this research at UIC.

What is the purpose of this research?

This research is being conducted as part of a doctoral program. The researcher is trying to learn about relationships between teachers and students with ED. Specifically, the researcher is interested in learning more about how we measure relationships for students with ED. The results of this project will help contribute to the understanding of the complexities of teacher-student relationships for students with ED and ways to better measure those relationships.

What procedures are involved?

If you agree to participate in this research you will be asked to identify students in your class who exhibit characteristics of ED. You will be given a short screening measure to complete for each student to determine which students qualify for participation in the study. You will send home permission slips with these students to get permission from their parents for their inclusion in the study.

We will ask you to complete two surveys about each student who has parental permission and who has provided assent, as well as a short demographic survey about yourself and each student. All research will be conducted at a time and location that is convenient for you. You will need to meet with the researcher two times, once for about 15 minutes to complete the screening measures and demographic surveys and a second time to complete student surveys. It is estimated that it will take 10 minutes per student to complete the student measures. If you prefer to complete them on your own, the researcher can drop them off at your school and pick up the completed forms at a later date.

What are the potential risks and discomforts?

The research has minimal risks. To the best of our knowledge, the things you will be doing have no more risk of harm than you would experience in everyday life. A risk of this research is a loss of privacy (revealing to others that you are taking part in this study) or confidentiality (revealing information about you to others to whom you have not given permission to see this information). However, the researcher will take precautions to ensure that all the information you provide is confidential. Identifying information (ex. your name and school) will be deleted from the research findings and no one other than the researchers will have access to the data including your employer or supervisor.

APPENDIX B (continued)

You may feel uncomfortable answering questions about yourself and your teaching. However, you can refuse to answer any question that makes you uncomfortable.

Are there benefits to taking part in the research?

There are no direct benefits to you by participating in the research. The results of this project will help contribute to our understanding of measuring teacher-student relationships particularly for students with ED.

What other options are there?

You have the option to not participate in this study

What about privacy and confidentiality?

The people who will know that you are a research participant are members of the research team, students participating in the study, their parents, and school staff members who referred you for the study. No information about you, or provided by you during the research will be disclosed to others without your written permission, except if necessary to protect your rights or welfare (for example, when the UIC Institutional Review Board monitors the research or consent process) or if required by law. Study information which identifies you and the consent form signed by you may be looked at and/or copied for checking up on the research by UIC OPRS and State of Illinois Auditors.

When the results of the research are published or discussed in conferences, no information will be included that would reveal your identity. Information will only be shared during dissemination of research findings (e.g., conference presentations, journal articles) and only in the aggregate without any individual identifying information. Any information that is obtained in connection with this study and that can be identified with you will remain confidential and will be disclosed only with your permission or as required by law.

The data collected for research purposes will be confidential and will not contain any identifying information.

All data on the project will be stored in locked file cabinets in the researcher's office. All electronic files will be password protected. In order to keep track of all data, you will receive a code that is linked to your name; however, this list will be locked in another file. At the end of the project the list linking your name to the ID will be destroyed. All hard copies will be de-identified immediately verifying the participant and any identifying information will be blacked out. All copies of the data will be destroyed after 5 years.

APPENDIX B (continued)

What are the costs for participating in this research?

There is no cost to you for participation in this study.

Will I be reimbursed for any of my expenses or paid for my participation in this research?

You will receive a $25 gift certificate to Amazon.com for participating in the study and completing the survey.

Can I withdraw or be removed from the study?

Your participation in this research is voluntary. Your decision whether or not to participate will not affect your current or future relations with the University or with your school. If you decide to participate, you are free to withdraw at any time without affecting that relationship. You may also refuse to answer any questions you do not want to answer and still remain in the study.

Who should I contact if I have questions?

The researcher conducting this study is Jaime Zurheide. You may ask any questions you have now. If you have questions later, you may contact the researcher at (773) 501-7650 or email at jzurhe2@uic.edu or the faculty advisor, Dr. Elizabeth Talbott at (314) 413-8745 or email at etalbott@uic.edu.

What are my rights as a research subject?

If you feel you have not been treated according to the descriptions in this form, or if you have any questions about your rights as a research subject, including questions, concerns, complaints, or to offer input, you may call the Office for the Protection of Research Subjects (OPRS) at 312-996-1711 or 1-866-789-6215 (toll-free) or e-mail OPRS at uicirb@uic.edu.

Remember: Your participation in this research is voluntary. Your decision whether or not to participate will not affect your current or future relations with the University or your school. If you decide to participate, you are free to withdraw at any time without affecting that relationship. You will be given a copy of this form for your information and to keep for your records.

Signature of Subject

I have read (or someone has read to me) the above information. I have been given an opportunity to ask questions and my questions have been answered to my satisfaction. I agree to participate in this research. I will be given a copy of this signed and dated form.

APPENDIX B (continued)

_____   _____
Signature   Date

_____
Printed Name

_____   _____
Signature of Person Obtaining Consent   Date (must be same as subject's)

_____
Printed Name of Person Obtaining Consent

APPENDIX B (continued)

University of Illinois at Chicago
ASSENT TO PARTICIPATE IN RESEARCH
Measuring Relationships of Teachers and Students with Emotional Disturbance:
Applicability of the *Student-Teacher Relationship Scale*

1. Hello, I am a researcher from the University of Illinois at Chicago. I am doing a study at your school and am asking if you would like to be a part of this study.

2. This study is trying to learn more about relationships between teachers and students.

3. If you agree to be in this study, we will need to know some things about you. Your teacher will share with us that information, which we call demographic information. We will ask your teacher to tell what grade you are in, your age, ethnic background (e.g, African American), and gender. We will ask your teacher if you have a disability and receive any special education services.

4. We would like your teacher to complete a survey about your behavior. Your teacher will be asked to rate different behaviors you show in class. We would also like your teacher to complete a survey about your relationship. Only your teacher and myself will see these surveys and you teacher will not discuss them with anyone else in the school. We will never use you name when talking or writing about the information; all the information shared with us will be confidential. We will not tell people your name or show this survey to other people.

5. We would also like you to complete a survey about your behavior and the relationship you have with your teacher. These surveys will not be shown to your teacher or anyone else at your school. These surveys should take you less than 20 minutes to complete.

6. Besides the short survey, you will not need to miss any class time or have to complete any extra work or tests if you decide to be part of this study. If you agree to participate in the study you will be able to pick a school supply reward (e.g. a pen, stickers, or notebook) to thank you for your time.

7. You might feel uncomfortable about your teacher sharing things about you and discussing your relationship with your teacher. We will keep this information secret. I assure you,

APPENDIX B (continued)

we will not share anything about this study with your name on it with anyone. When we write papers or talk to people about this study, we will not say who was in the study.

8. Your participation in this study is your decision. Your parents have given their permission for you to take part in this study. But even though your parents said, "yes," you can still decide not to do this. If you do not want to take part in this study, you do not have to. No one will be upset with you, if you do not participate, and your class grades will not be affected in any way if you choose not to participate.

9. You can change your mind later and stop being a part of this study. You just need to let your teacher or let us know. Also if during the project your teacher decides they no longer want to be in the study, then you too will no longer be in it. If you move to another teacher's class or to another school, you will no longer be part of the study.

10. You can ask me any questions that you may have about the study now. If you have a question later that you did not think of now, you can call me at 773-501-7650 or email at jzurhe2@uic.edu.

11. Signing your name at the bottom means that you agree to be in this study. Remember you can quit from the study at any time and no one will be upset. You and your parents will be given a copy of this form.

_____   _____

Name of Student   Date

_____

Signature of Student

_____   _____

Age   Grade in School

_____

Signature of Researcher

APPENDIX B (continued)

University of Illinois at Chicago
Research Information and Permission for Participation in Social Behavioral Research
Measuring Relationships of Teachers and Students
with Emotional Disturbance: Applicability of the *Student-Teacher Relationship Scale*

Dear Parent or Guardian,

Your child is being asked to participate in a research study. Researchers are required to provide a consent form such as this one to tell you about the research, to explain that taking part is voluntary, to describe the risks and benefits of participation, and to help you to make an informed decision. We ask that you read this form and ask any questions you may have before agreeing to have your child participate in the research.

Principal Investigator Name and Title: Jaime Zurheide, Doctoral Student
Department and Institution: Department of Special Education, University of Illinois at Chicago
Address and Contact Information: 1040 W. Harrison St., Chicago, IL 60607
Phone: 773-501-7650
Email: jzurhe2@uic.edu

Faculty Advisor Name: Dr. Elizabeth Talbott
Phone: 314-413-8745
Email: etalbott@uic.edu

<u>**Why is my child being asked?**</u>

Your child's teacher is part of a research study conducted by Jaime Zurheide, a graduate student in special education at the University of Illinois. The study is about relationships between teachers and students. Specifically, this study is looking at one measure of teacher-student relationships, the Student-Teacher Relationship Scale and how it works with different populations of students including those with emotional and behavioral difficulties.

Your child is being asked to be part of this research because your child's teacher will be participating in the study. Your permission is needed to allow us to collect information about

APPENDIX B (continued)

University of Illinois at Chicago
Research Information and Permission for Participation in Social Behavioral Research
Measuring Relationships of Teachers and Students
with Emotional Disturbance: Applicability of the *Student-Teacher Relationship Scale*

Dear Parent or Guardian,

Your child is being asked to participate in a research study. Researchers are required to provide a consent form such as this one to tell you about the research, to explain that taking part is voluntary, to describe the risks and benefits of participation, and to help you to make an informed decision. We ask that you read this form and ask any questions you may have before agreeing to have your child participate in the research.

Principal Investigator Name and Title: Jaime Zurheide, Doctoral Student
Department and Institution: Department of Special Education, University of Illinois at Chicago
Address and Contact Information: 1040 W. Harrison St., Chicago, IL 60607
Phone: 773-501-7650
Email: jzurhe2@uic.edu

Faculty Advisor Name: Dr. Elizabeth Talbott
Phone: 314-413-8745
Email: etalbott@uic.edu

Why is my child being asked?

Your child's teacher is part of a research study conducted by Jaime Zurheide, a graduate student in special education at the University of Illinois. The study is about relationships between teachers and students. Specifically, this study is looking at one measure of teacher-student relationships, the Student-Teacher Relationship Scale and how it works with different populations of students including those with emotional and behavioral difficulties.

Your child is being asked to be part of this research because your child's teacher will be participating in the study. Your permission is needed to allow us to collect information about

Parent permission, v.3, 6/4/14

your child to support our learning. Your child's participation in this research is voluntary. Your decision whether or not to participate will not affect your or your child's current or future dealings with your child's school or the University of Illinois at Chicago. **If you decide to allow your child to participate, you are free to withdraw at any time without affecting that relationship.**

Approximately 300 teachers and up to 1000 students may be involved in this research at UIC.

What is the purpose of this research?

This research is being conducted as part of a doctoral program. The researcher is trying to learn about measuring relationships between teachers and students. The results of this project will help contribute to the understanding of the complexities of teacher-student relationships and improve ways to measure teacher-student relationships.

What procedures are involved?

Your child has been identified by the teacher for inclusion in the study. If you agree for your child to be in this research, then we will meet and explain the project to your child at a time arranged by your child's teacher. We will give him/her a form like this one and describe what information we are requesting from his teacher about him/her. We will encourage you to go over the form with your child. If your child also agrees to participate, we would ask for your child's teacher to share with us the information listed below.

1. DEMOGRAPHIC INFORMATION. We need your permission to use basic demographic information about your child. In order to describe the students who participate in this project, we need to report your child's age, grade level, ethnic category, and gender. If your child receives special education services, we will also obtain information regarding the type of special education services your child receives, type of special education program, and disability label. All of this information will be provided by your child's teacher. The researchers will not view any of your child's school records or IEPs.

2. BEHAVIOR RATING SCALE. We need your permission to have your child's teacher complete a scale measuring his/her classroom behavior. The scale is called the Strengths and Difficulties Questionnaire and asks questions about the types of behavior your child has exhibited in the classroom.

3. TEACHER-STUDENT RELATIONSHIP SCALES. We need your permission to have your child's teacher complete a scale measuring the strength of his/her relationship with your child. This measure is called the Student-Teacher Relationship Scale and asks questions about how your child and teacher interact and the quality of their relationship.

Additionally, we need your permission for your child to complete two measures:

APPENDIX B (continued)

1. TEACHER-STUDENT RELATIONSHIP SCALE: This scale is called the People in My Life and asks students questions about their relationships with their teacher and attitudes toward their school.

2. BEHAVIOR RATING SCALE: The scale is called the Strengths and Difficulties Questionnaire and asks questions about the types of behavior your child has exhibited in the classroom. It is similar to the behavior measure completed by your child's teacher.

Your child will not miss any academic instruction in order to complete the scales. It should take your child no more than 10 minutes to complete both scales and a time will be arranged with your child's classroom teacher.

If you would view copies of any of these data collection instruments please inform your child's teacher or the researcher using the contact information provided at the end of this form.

What are the potential risks and discomforts?

The research has minimal risks. To the best of our knowledge, the things your child will be doing have no more risk of harm than he/she would experience in everyday life. A risk of this research is a loss of privacy (revealing to others that your child is taking part in this study) or confidentiality (revealing information about your child to others to whom you have not given permission to see this information). However, the researcher will take precautions to ensure that all the information you provide is confidential. Identifying information (ex. your child's name and school) will be deleted from the research findings and no one other than the researchers will have access to the data including your child's teacher or other school staff.

There is a possibility that your child may feel uncomfortable answering questions about their behavior and relationship with their teacher and knowing that someone other than their teacher will have information about them. Your child will be assured that all information will be kept private and not shared with anyone else in the school. Your child's teacher will be instructed not to discuss the information provided to us with anyone else and all information collected on your child will not be reported using their name, their teacher's name, or the school name.

Are there benefits to taking part in the research?

There is no direct benefit to you or your child from participating in the project. The information we gather will be useful to help us understand more about how to measure relationships between teachers and students.

What other options are there?

You have the option for your child not to participate in this study

APPENDIX B (continued)

What about privacy and confidentiality?

The people who will know that your child is a research participant are members of the research team and also others at the school. No information about your child, or provided by your child during the research will be disclosed to others without your written permission, except if necessary to protect your child's rights or if required by law. Study information which identifies you and the consent form signed by you may be looked at and/or copied for checking up on the research by UIC OPRS and State of Illinois Auditors.

All information about your child collected during this study will be kept confidential. Your child will have a number assigned to him/her that will be used on all information and reports. The list linking your child's name with their number will be destroyed at the end of the study. No information that will reveal your child's identity will be included in published reports, or discussed in conferences. Only the teacher and researcher will have access to the information. All demographic and assessment information will be stored electronically. These files will be password protected.

All records about your child will be stored in a locked file in the researcher's office. After the data have been analyzed and evaluated, the electronic data will be kept in password protected files and student surveys in locked files for up to 5 years at which point they will be destroyed.

What are the costs for participating in this research?

There are no costs for participating in this research.

Will I be reimbursed for any of my expenses or paid for my participation in this research?

Though you will not be reimbursed for this study, your child will receive a school supply reward (ex. Pencil, stickers, notebook) for participating in the study and completing the surveys.

Can I withdraw or be removed from the study?

Your child's participation in this research is voluntary. If you decide your child can participate, he or she is free to withdraw at any time. If your child's teacher withdraws from the study then your child will also be withdrawn from the study.

You can choose whether your child is in this study or not. If you sign the permission form now, but decide later that you do not want your child to participate, you may withdraw the consent at any time without consequences. To withdraw from the study, call Jaime Zurheide at 773-501-7650 or email jzurhe2@uic.edu, or let the teacher know you want your child to stop participating in the study.

APPENDIX B (continued)

Who should I contact if I have questions?

The researcher conducting this study is Jaime Zurheide. You may ask any questions you have now. If you have questions later, you may contact the researcher at (773) 501-7650 or email at jzurhe2@uic.edu or the faculty advisor, Dr. Elizabeth Talbott at (314) 413-8745 or email at etalbott@uic.edu.

What are my rights as a research subject?

If you feel you have not been treated according to the descriptions in this form, or if you have any questions about your child's rights as a research subject, including questions, concerns, complaints, or to offer input, you may call the Office for the Protection of Research Subjects (OPRS) at 312-996-1711 or 1-866-789-6215 (toll-free) or e-mail OPRS at uicirb@uic.edu.

Remember: Your child's participation in this research is voluntary. Your decision whether or not to have your child participate will not affect your or your child's current or future relations with your child's school or the University of Illinois at Chicago. If you decide to give consent for your child's participation, and he/she agrees to participate, they are free to withdraw at any time without affecting that relationship. You will be given a copy of this form for your information and to keep for your records.

Signature of Parent or Legal Guardian

I have read (or someone has read to me) the above information. I have been given an opportunity to ask questions and my questions have been answered to my satisfaction. I agree to allow my child to participate in this research. I will be given a copy of this signed and dated form.

_____ _____   _____

Signature of Parent/Guardian   Date

_____

Printed Name of Parent/Guardian

_____

Print Name of Child (first and last name)

_____   _____

Signature of Researcher   Date (must be same as subject's)

Parent permission, v. 3, 6/4/14   Page 5 of 5

APPENDIX B (continued)

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Leave box empty - For office use only


STARTS APPROVAL EXPIRES

DEC 1 0 2014   TO   DEC 1 0 2015

UNIVERSITY OF ILLINOIS AT CHICAGO
INSTITUTIONAL REVIEW BOARD
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Universidad de Illinois en Chicago
Información y consentimiento de participación en un estudio de conducta social
Midiendo las Relaciones Entre los Profesores y Estudiantes con Trastornos Emocionales:
Aplicación de la *Escala de la Relación entre Estudiantes y Profesores*

Estimados padres o guardianes,

Le hemos pedido a su hijo/a que participe en un estudio investigativo. Los investigadores tienen la obligación de suministrarles un formulario de consentimiento, como el que tiene en sus manos. Este formulario describe en qué consiste este estudio investigativo, explica que toda participación es voluntaria, describelos riesgos y ventajas de participar, y le ayuda a tomar una decisión informada. Les pedimos que lean este documento cuidadosamente, y no duden en contactar a los investigadores con cualquier pregunta que tengan.

Nombre y cargo del investigador principal: Jaime Zurheide, Estudiante de doctorado
Departamento de Educación Especial, Universidad de Illinois en Chicago
Dirección e información del contacto: 1040 W. Harrison St., Chicago, IL 60607
Teléfono: 773-501-7650
Correo electrónico: jzurhe2@uic.edu

Nombre delprofesor asesor: Dr. Elizabeth Talbott
Teléfono: 312-413-8745
Correo electrónico: etalbott@uic.edu

¿Por qué le estamos pidiendo la participación de su hijo/a?

Se le ha pedido a su hijo/a que participe como sujeto en un estudio investigativo sobre las relaciones entre maestros y estudiantes. El/La maestro/a es parte de un estudio realizado por Jaime Zurheide, una estudiante de posgrado estudiando educación especial en la Universidad de Illinois. Específicamente, este estudio evalua un componente de la relación entre estudiante y maestro, la escala de la relación de estudiante y meastro, y cómo afecta a distintos grupos de estudiantes incluyendo aquellos con dificultades emocionales y de comportamiento.

Hemos pedido la participación de su hijo/a en este estudio investigativo porque el maestro/a de su hijo/a es un participante. Su permiso es necesario para permitir la recolección de información acerca de su hijo/a, para apoyar a nuestros aprendizajes. La participación de su hijo/a en este estudio investigativo es voluntaria. Si usted decide participar o no, su relación actual o a largo plazo con la escuela de su niño ó la Universidad de Illinois en Chicago no se verá afectada por

APPENDIX B (continued)

dicha decisión. **Si decide permitir que su hijo/a participe, también puede retirarse en cualquier momento, sin que esto afecte dicha relación.**

Estimamos que unos 300 maestros y 1000 estudiantes participarán en este estudio de investigativo en UIC.

¿Cuál es el objetivo de esta investigación?

Este estudio se lleva a cabo como parte de un programa de doctorado. El objetivode este estudio es medir las relaciones entre maestros y estudiantes. Los resultados de este estudio nos ayudaran a a comprender los complejos de las relaciones entre maestros y estudiantes. Igualmente ayudará a mejorar la manera en que estas relaciones son medidas.

.

¿Cuáles son los procedimientos del estudio?

Su hijo/a a sido identificado por su maestro/maestro para ser incluido en este estudio. Si usted permite que su hijo/a sea parte del estudio, nos reuniramos con su hijo/a para explicarles el projecto en una hora acordada con el/la maestro/a. Le sugerímos que repase este formulario con su hijo/a. Si su hijo/a esta de acuerdo en participar, le pediremos al/a la maestro/a que comparta la siguiente informacion con nosotros:

1. INFORMACION DEMOGRÁFICA. Necesitamos su permiso para usar la información demográfica de su hijo/a. Para poder explicar los estudiantes que participan en este estudio, necesitamos reportar la edad, grado, etnicidad y sexo. Si su hijo/a recibe servicios de educación especial, también tendremos acceso al tipo de servicios de educación especial que su hijo/a recibe, el programa de educación especial, y el tipo de discapacidad. Toda esta información será proveida por el/la maestro/a de su niño. Los investigadores no tendrán acceso a los registros o IEPs de su niño.

2. ESCALA EVALUATIVA DE COMPORTAMIENTOS. Necesitamos su permiso para que el/la maestro/a complete una escala evaluativa de los comportamientos de su hijo/a durante clase. El nombre de la escala es "Escala de Comportamientos Infantiles, Reporte de Maestros de Fortalezas y Dificultades "Este cuestionario contiene preguntas sobre el tipo de comportamientos que su hijo/a demuestra durante clase.

3. ESCALA DE LA RELACION ENTRE MAESTROS/AS Y ESTUDIANTES. Necesitamos su permiso para que el maestro/a complete una escala midiendo que tan fuerte es la relación con su hijo/a. Esta medida se llama "Escala de la Relación entre Maestro y Estudiante" y contiene preguntas sobre como su hijo/a interactua con el/la maestro/a y la calidad de su relación.

Adicionalmente, necesitamos su permiso para que su hijo/a complete unas escalas.

APPENDIX B (continued)

1. ESCALA DE LA RELACION ENTRE MAESTRO/A Y ESTUDIANTE: La escala es llamada "La Gente en mi Vida" y contiene preguntas sobre como su hijo/a interactua con el/la maestro/a, la calidad de su relación, y sus sentimientos sobre la escuela.

2. ESCALA EVALUATIVA DE COMPORTAMIENTOS. La escala es llamada "Cuestionario de Fortalezas y Dificultades" y tiene preguntas sobre los tipos de comportamientos que su hijo/a demuestra durante clase. Las preguntas similares a las que el maestro/a completa.

Su hijo/a no tardara mas de 10 minutos para completar estas escalas, y el tiempo será dispuesto por el/la maestro/a. Su hijo/a no perderá nigun tiempo de escuela para completar las escalas

Si usted quiere copias de la información recolectada, por favor contacte al maestro/a ó el investigador principal

¿Cuáles son los posibles riesgos y molestias?

Los riesgos del estudio son mínimos. El riesgo no es mayor al que su hijo/a se expone cada dia. Uno de los riesgos del estudio es la perdida de privacidad (revelando a otros que su hijo/a es parte de una investigación) o la confidencialidad (revelando information sobre su hijo/a a otros que no han recibido su consetimiento de ver la información). Sin embargo, los investigadores van a tomar precauciones para asegurarse de que toda la información que proporcione sea confidencial. Informació que identifique a un individuo (por ejemplo, el nombre de su hijo/a y su escuela) será borrada de los resultados. Unicamente los investigadores tendrán acceso a esta información, incluyendo el/la meastro/a de su hijo/a y otros maestros.

Hay una posibilidad que su hijo/a se sienta incomodo/a respondiendo preguntas acerca de su comportamiento y la relación con su mestro/a, sabiendo que otros, además de su maestro/a tendrán acceso a estos resultados. Su hijo será asegurado de que toda la información se mantendrá en privado, y no se compartirá con nadie más en la escuela. Le instruiremos al maestro/a de su hijo/a que no discuta la información dada a a nosotros por cada persona, y que toda la informacion s wau hijo/a que haya sidorecolectada, no tendrá su nomre o el de la maesta,o el de la escuela.

¿Cuáles son los beneficios de participar en este estudio investigativo?

No hay beneficios directos para usted o su hijo/a por su participación en el estudio. La información que recopilamos será útil para ayudarnos a entender cómo medir las relaciones entre maestros y estudiantes.

¿Qué otras opciones existen?

Tiene la opción de no participar en este estudio.

APPENDIX B (continued)

<u>**¿Cómo se tratará la privacidad y la confidencialidad?**</u>

Las personas con conocimiento de la participación de su hijo/a como sujeto en la investigación, son miembros del equipo investigativo y miembros de la escuela. Niguna información acerca de su hijo/a sera divulgará a terceras personas sin un permiso escrito, o únicamente si es necesario para proteger los derechos o el bienestar de su hijo/a, o para cumplir con la ley. Informacion del estudio que lo indentifique, y el formulario de consentimiento firmado por usted, podran ser vistos y/o copiados para comprobar la investigación por parte de UIC OPRS y los auditores del Estado de Illinois.

Toda la información sobre su hijo/a recolectada durante el estudio será confidencial. Un numero será dado a su hijo/a para poder identificarlo/a en la información y reportes. La lista de números identificando a los particpantes será destruida al final del estudio. Ninguna información que revele la identidad de su hijo/a será incluido en los informes publicados o discutidos en conferencias. Solo el/la maestro/a y el investigador tendrán acceso a la información. Toda la información demográfica y evaluativa será almacenada electrónicamente. Estos archivos serán protegidos con una contraseña.

Todos los registros de su hijo seran almacenados en un archivo con llave en la oficina del investigador. Despues que la información haya sido analizada y evaluada, los datos electronicos seran protegidos con contraseña, y las encuestas de los estudiantes serán guardadas bajo llave hasta 5 años, y serán destruidas después de ese tiempo.

<u>**¿Cuáles son los costos de participación en lainvestigación?**</u>

No hay costos para usted o su hijo/a por participar en este estudio.

<u>**¿Me reembolsarán algunos de mis gastos, o sere pagado por mi participación en este estudio investigativo?**</u>

Aunque usted no será reembolsado por este estudio, su hijo/a recibirá una recompensa de materiales estudiatiles (por ejemplo, un lápiz, stickers y cuadernos) por participar en el estudio y completar la encuesta.

<u>**¿Puedo retirarme o ser retirado del estudio?**</u>

La parcipacion de su hijo/a en este estudio es voluntaria. Si usted decide permitir la participación de su hijo/a, puede retirarse del estudio en cualquier momento sin ninguna consequencia en las relaciones.Si el/la maestro/a de su hijo se retira del estudio,, su hijo/a será también será retirado/a.

APPENDIX B (continued)

Es su decisión que su hijo/a participe en este estudio. Si usted firma este formulario dando permiso ahora, pero después decide que no quiere que su hijo/a participe, usted puede retirar su consentimiento en cualquier momento sin ninguna consequencia. Para retirar se del estudio, por favor llame a Jaime Zurheide a (773)501-7650también puede mandar un correo electrónico a jzurhe2@uic.edu, o infórmele al/ a la maestro/a que usted desea que su hijo/a no siga participando en el estudio.

¿A quién debo contactar si tengo preguntas?

La investigadora del estudio es Jaime Zurheide. Si tiene preguntas, puede contactar a la investigadora por teléfono al (773)501-7650 or por correo electrónico, escribiendo a jzurhe2@uic.edu también pueden contactar la asersora de la facultad, la Dra. Elizabeth Talbott en el (312)413-8745 or por correo electronico a etalbott@uic.edu.

¿Cuáles son mis derechos como participante de la investigación (estudio?)?

Si cree que no ha sido tratado de acuerdo a las descripciones en este formulario, o si tiene preguntas sobre sus derechos como sujeto de la investigación, incluyendo preguntas, preocupaciones o quejas, o para ofrecer opiniónes, puede llamar a la Oficina para la Protección de los Seres Humanos en la Investigación (OPRS, Office for the Protection of Research Subjects) al 312-996-1711 o 1-866-789-6215 (llamada gratis) o enviar un mensaje por correo electrónico a OPRS a uicirb@uic.edu.

Recuerde: La participación de su hijo/a en este estudio es voluntaria. Su decisión sobre permitir a su hijo/a participar no afectará su relación actual o futura de su hijo/a con la escuela o la universidad. Si decide permitir la participación de su hijo/a, ellos son libres de retirarse en cualquier momento sin afectar estas relaciones. Ustéd recibirá una copia de este formulario para su información y para mantener en sus archivos.

Firma del representante legalmente autorizado

He leído (o alguien me ha leído) la información anterior. He tenido la oportunidad de hacer preguntas, y éstas han sido contestadas satisfactoriamente. Acepto permitir la participación de mi hijo/a en esta investigación. Se me entregará una copia de este formulario firmado y fechado.

_____   _____
Firma del padre/madre/tutor legal   Fecha

_____
Nombre escritodel padre/madre/tutor legal
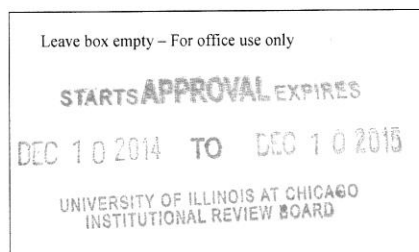
APPENDIX B (continued)

_____
Nombre del hijo/a (Nombre y apellido)

_____   _____
Firma del investigator   Fecha (debe ser la misma del sujeto)

APPENDIX B (continued)

Leave box empty – For office use only

STARTS APPROVAL EXPIRES

DEC 1 0 2014 TO DEC 1 0 2015

UNIVERSITY OF ILLINOIS AT CHICAGO
INSTITUTIONAL REVIEW BOARD

University of Illinois at Chicago
Research Information and Consent for Participation in Social Behavioral Research
Measuring Relationships of Teachers and Students
with Emotional Disturbance: Applicability of the *Student-Teacher Relationship Scale*

Dear Teacher:

You are being asked to participate in a research study. Researchers are required to provide a consent form such as this one to tell you about the research, to explain that taking part is voluntary, to describe the risks and benefits of participation, and to help you to make an informed decision. You should feel free to ask the researchers any questions you may have.

Principal Investigator Name and Title: Jaime Zurheide, Doctoral Student
Department and Institution: Department of Special Education, University of Illinois at Chicago
Address and Contact Information: 1040 W. Harrison St., Chicago, IL 60607
Phone: 773-501-7650
Email: jzurhe2@uic.edu

Faculty Advisor Name: Dr. Elizabeth Talbott
Phone: 314-413-8745
Email: etalbott@uic.edu

Why am I being asked?

You are being asked to participant in a research study about relationships between elementary and middle school teachers and students with emotional disturbance (ED). Students with emotional disturbance exhibit inappropriate classroom behaviors, have difficulty building and maintaining interpersonal relationships, have a general mood of unhappiness or depression, and/or have a tendency to develop physical symptoms or fears associated with school. You have been asked to participate in the research because you teach students in grade 2nd-7th some of whom may exhibit symptoms of ED.

APPENDIX B (continued)

Your participation in this research is voluntary. Your decision whether or not to participate will not affect your current or future dealings with the University of Illinois at Chicago. **If you decide to participate, you are free to withdraw at any time without affecting that relationship.**

Approximately 300 teachers and up to 1000 students may be involved in this research at UIC.

What is the purpose of this research?

This research is being conducted as part of a doctoral program. The researcher is trying to learn about relationships between teachers and students with ED. Specifically, the researcher is interested in learning more about how we measure relationships for students with ED. The results of this project will help contribute to the understanding of the complexities of teacher-student relationships for students with ED and ways to better measure those relationships.

What procedures are involved?

If you agree to participate in this research you will be asked to identify students in your class who exhibit characteristics of ED. You will complete a short screening survey for each student to determine if they exhibit characteristics of ED. For each student who meets the cutoff score on the screening survey, you will complete a survey measuring the strength of your relationship with that student (the Student-Teacher Relationship Scale.) You will also be asked to provide basic demographic information (ex. age, race, gender, disability label) for each student you rate and to answer questions about your opinion of the STRS.

You will need to meet with the researcher once to sign up for the study and complete all surveys. This meeting should take between 15 and 30 minutes depending on the number of surveys you complete. We can schedule a time that is convenient for you such as before or after school. We can meet at your school or another location of your choosing (e.g. a local coffee shop.)

What are the potential risks and discomforts?

The research has minimal risks. To the best of our knowledge, the things you will be doing have no more risk of harm than you would experience in everyday life. A risk of this research is a loss of privacy (revealing to others that you are taking part in this study) or confidentiality (revealing information about you to others to whom you have not given permission to see this information). However, the researcher will take precautions to ensure that all the information you provide is confidential. Identifying information (ex. your name and school) will be deleted from the research findings and no one other than the researchers will have access to the data including your employer or supervisor.

You may feel uncomfortable answering questions about yourself and your teaching. However, you can refuse to answer any question that makes you uncomfortable.

APPENDIX B (continued)

Are there benefits to taking part in the research?

There are no direct benefits to you by participating in the research. The results of this project will help contribute to our understanding of measuring teacher-student relationships particularly for students with ED.

What other options are there?

You have the option to not participate in this study

What about privacy and confidentiality?

The people who will know that you are a research participant are members of the research team, students participating in the study, their parents, and school staff members who referred you for the study.   No information about you, or provided by you during the research will be disclosed to others without your written permission, except if necessary to protect your rights or welfare (for example, when the UIC Institutional Review Board monitors the research or consent process) or if required by law.   Study information which identifies you and the consent form signed by you may be looked at and/or copied for checking up on the research by UIC OPRS and State of Illinois Auditors.

When the results of the research are published or discussed in conferences, no information will be included that would reveal your identity. Information will only be shared during dissemination of research findings (e.g., conference presentations, journal articles) and only in the aggregate without any individual identifying information. Any information that is obtained in connection with this study and that can be identified with you will remain confidential and will be disclosed only with your permission or as required by law.

The data collected for research purposes will be confidential and will not contain any identifying information.

All data on the project will be stored in locked file cabinets in the researcher's office. All electronic files will be password protected. In order to keep track of all data, you will receive a code that is linked to your name; however, this list will be locked in another file. At the end of the project the list linking your name to the ID will be destroyed. All hard copies will be de-identified immediately verifying the participant and any identifying information will be blacked out. All copies of the data will be destroyed after 5 years.

What are the costs for participating in this research?

There is no cost to you for participation in this study.

APPENDIX B (continued)

Will I be reimbursed for any of my expenses or paid for my participation in this research?

You will receive a $25 gift certificate to Amazon.com for participating in the study and completing the survey.

Can I withdraw or be removed from the study?

Your participation in this research is voluntary. Your decision whether or not to participate will not affect your current or future relations with the University or with your school. If you decide to participate, you are free to withdraw at any time without affecting that relationship. You may also refuse to answer any questions you do not want to answer and still remain in the study.

Who should I contact if I have questions?

The researcher conducting this study is Jaime Zurheide. You may ask any questions you have now. If you have questions later, you may contact the researcher at (773) 501-7650 or email at jzurhe2@uic.edu or the faculty advisor, Dr. Elizabeth Talbott at (314) 413-8745 or email at etalbott@uic.edu.

What are my rights as a research subject?

If you feel you have not been treated according to the descriptions in this form, or if you have any questions about your rights as a research subject, including questions, concerns, complaints, or to offer input, you may call the Office for the Protection of Research Subjects (OPRS) at 312-996-1711 or 1-866-789-6215 (toll-free) or e-mail OPRS at uicirb@uic.edu.

Remember: Your participation in this research is voluntary. Your decision whether or not to participate will not affect your current or future relations with the University or your school. If you decide to participate, you are free to withdraw at any time without affecting that relationship. You will be given a copy of this form for your information and to keep for your records.

Signature of Subject

I have read (or someone has read to me) the above information. I have been given an opportunity to ask questions and my questions have been answered to my satisfaction. I agree to participate in this research. I will be given a copy of this signed and dated form.

APPENDIX B (continued)

_____   _____
Signature   Date

_____
Printed Name

_____   _____
Signature of Person Obtaining Consent   Date (must be same as subject's)

_____
Printed Name of Person Obtaining Consent

APPENDIX C

***Emotional and Behavioral Screener (EBS)* Questions**

Rated on a scale of Not a Problem, Mild Problem, Considerable Problem, or Severe Problem

1. Anxious, worried, tense

2. Destroys and ruins things

3. Disrespectful, defiant of authority

4. Does not work well in group activities

5. Fails to consider the consequences of own acts

6. Gets distracted, doesn't pay attention to teachers or work

7. Lacks self-confidence

8. Lacks skills needed to be friendly and sociable

9. Makes threats to others

10. Rejected, avoided by peers

Cullinan, D., & Epstein, M. H. (2012). *Emotional and Behavioral Screener (EBS).* Austin, TX: PRO-ED.

APPENDIX C (continued)

STRS Questions and Subscales
*items denoted with SF are also found on the STRS short-form

Rated on a scale of: 1 = definitely does not apply, 2 = does not apply, 3 = neutral, not sure, 4 = applies somewhat, 5 = definitely applies

Conflict Subscale:
2. This child and I always seem to be struggling with each other. (SF)
11. This child easily becomes angry with me. (SF)
13. This child feels that I treat him/her unfairly.
16. This child sees me as a source of punishment and criticism.
18. This child remains angry or is resistant after being disciplined. (SF)
19. When this child is misbehaving, he/she responds well to my look or tone of voice.
20. Dealing with this child drains my energy. (SF)
22. When this child is in a bad mood, I know we are in for a long and difficult day. (SF)
23. This child's feelings toward me can be unpredictable or can change suddenly. (SF)
24. Despite my best efforts, I'm uncomfortable with how this child and I get along.
25. This child whines or cries when he/she wants something from me.
26. This child is sneaky or manipulative with me. (SF)

Closeness Subscale:
1. I share an affectionate, warm relationship with this child. (SF)
3. If upset, this child will seek comfort from me. (SF)
4. This child is uncomfortable with physical affection or touch from me. (SF)
5. This child values his/her relationship with me. (SF)
7. When I praise this child, he/she beams with pride. (SF)
9. This child spontaneously shares information about himself/herself. (SF)
12. This child tries to please me.
15. It is easy to be in tune with what this child is feeling. (SF)
21. I've noticed this child copying my behavior or ways of doing things.
27. This child openly shares his/her feelings and experiences with me. (SF)
28. My interactions with this child make me feel effective and confident.

Dependency Subscale:
6. This child appears hurt or embarrassed when I correct him/her.
8. This child reacts strongly to separation from me.
10. This child is overly dependent on me.
14. This child asks for my help when he/she really does not need help.
17. This child expresses hurt or jealousy when I spend time with other children.

Pianta, R. C. (2001). *Manual and scoring guide for the Student-Teacher Relationship Scale*.
	Charlottesville: University of Virginia.

APPENDIX C (continued)

Student Measures Cover Sheet (used with subsample only)

Directions for teachers: Please complete this form prior to completing the measures for each student. Please use the information listed on the student's official record (including the student's Individualized Education Plan if applicable**.) Please do not include any copies of the student's IEP or school records with this form.**

Teacher Name: _____   **How long have you known the student:**

Student Name: _____   _____ years _____ months

Student age: _____ years _____ months   **Student grade**: _____

Student gender: _____

Student race/ethnicity: If the student is multi-racial, please list all race/ethnicity categories that apply.

_____

If the student has a disability please look at the student's IEP and complete the following information.

Student disability category(ies): List all. If the IEP form distinguishes between primary and secondary disabilities, please provide that information as well.

Special education services received: Please list the types of services the student receives (e.g. inclusion, self-contained class, resource) and the number of minutes of service provided for each subject. If the student receives any related services (e.g. speech, social work) please list those services as well.

APPENDIX C (continued)

Additional Questions for the *Student-Teacher Relationship Scale*

Thinking about the *Student-Teacher Relationship Scale (STRS)* you just completed on the other side of this page and the student you were rating, please rate your agreement with each statement below. Circle the appropriate number for each item. If you have additional comments about any of your ratings you may write them in the space below.

1	2	3	4	5	6
Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree

1. Questions on the STRS are relevant to my relationship with this student

    1   2   3   4   5   6

2. The STRS could help me identify areas of strength and weakness in my relationship with this student

    1   2   3   4   5   6

3. The amount of time it took to complete the STRS for this student was reasonable.

    1   2   3   4   5   6

Additional Questions for teachers not participating in the subsample:

How long have you known the student you are rating: _____ years _____months

Does this student have a documented disability (on an IEP)?

            Yes   No

If yes, does he/she have a label (either primary or secondary) of emotional disturbance or emotional disability?

            Yes   No

APPENDIX C (continued)

SDQ-Teacher Questions and Subscales
*words in [ ] denote wording in version used for students age 11 and up

Rated on a scale of Not True, Somewhat True, or Certainly True

Emotional Symptoms Subscale
Often complains of headaches, stomach-aches or sickness
Many worries or often seems worried
Often unhappy, depressed or tearful
Nervous or clingy in new situations, easily loses confidence
Many fears, easily scared

Conduct Problems Subscale
Often loses temper
Generally well behaved, usually does what adults request
Often fights with other children [youth] or bullies them
Often lies or cheats
Steals from home, school, or elsewhere

Hyperactivity Subscale
Restless, overactive, cannot stay still for long
Constantly fidgeting or squirming
Easily distracted, concentration wanders
Thinks things out before acting
Good attention span, sees work through to the end

Peer Problems Subscale
Rather solitary, prefers to play alone [Would rather be alone than with other youth]
Has at least one good friend
Generally liked by other children [youth]
Picked on or bullied by other children [youth]
Gets along better with adults than with other children [youth]

Prosocial Subscale
Considerate of other people's feelings
Shares readily with other children [youth], for example toys, treats, pencils [books, games, food]
Helpful if someone is hurt, upset or feeling ill
Kind to younger children
Often offers to help others (parents, teachers, children)

Goodman, R. (1997). The Strengths and Difficulties Questionnaire: A research note. *Journal of Child Psychology and Psychiatry, 38,* 581–586.

APPENDIX D

People in My Life Questions and Subscales

Rated on a scale of Almost Never or Never True, Sometimes True, Often True, or Almost Always or Always True

School Bonding Subscale

Most mornings I look forward to going to school.
I feel safe at my school.
My school is a nice place to be.
I like my class(es) this year.
I like to take part in class discussions and activities.
I feel sure about how to do my work at school.
Doing well at school is important to me.
Kids in my school have a good chance to grow up and be successful.

Affiliation with Teacher Subscale

I like my teacher this year.
My teacher respects my feelings.
My teacher understands me.
I trust my teacher.
My teacher pays a lot of attention to me.
I get along well with my teacher.
My teacher is proud of the things I do.
I can count on my teacher when I am having a problem.

Dissatisfaction with Teacher Subscale

I get upset easily with my teacher.
I feel angry with my teacher.
It's hard for me to talk to my teacher.

Cook, E. T., Greenberg, M. T., & Kusche, C. A. (1995, March). *People in my life: Attachment relationships in middle childhood.* Paper presented at the Society for Research in Child Development, Indianapolis, IN.

APPENDIX D (continued)

SDQ-Student Questions and Subscales

Rated on a scale of Not True, Somewhat True, or Certainly True

Emotional Symptoms Subscale
I get a lot of headaches, stomach-aches or sickness
I worry a lot
I am often unhappy, depressed or tearful
I am nervous in new situations. I easily lose confidence
I have many fears, I am easily scared

Conduct Problems Subscale
I get very angry and often lose my temper
I usually do as I am told
I fight a lot. I can make other people do what I want
I am often accused of lying or cheating
I take things that are not mine from home, school, or elsewhere

Hyperactivity Subscale
I am restless. I cannot stay still for long.
I am constantly fidgeting or squirming
I am easily distracted, I find it difficult to concentrate
I think before I do things
I finish the work I'm doing. My attention is good

Peer Problems Subscale
I would rather be alone than with people of my age
I have one good friend or more
Other people my age generally like me
Other children or young people pick on me or bully me
I get along better with adults than with people my own age

Prosocial Subscale
I try to be nice to other people, I care about their feelings.
I usually share with others, for example CD's, games, food.
I am helpful if someone is hurt, upset or feeling ill
I am kind to younger children
I often offer to help others (parents, teachers, children)

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APPENDIX E

Correlational Results Using the Original 28-Item *STRS*

Table XVII: Intercorrelations for student and teacher-rated relationship measures (subsample, n = 50)

	STRS – con[1]	STRS – close	STRS - dep	STRS - total
1. PIML – AT	-.014	-.161	-.046	-.044
2. PIML – SB	-.067	-.019	.027	.030
3. PIML – DT	.196	.014	.086	-.158

* *p* <.05; **p < .01
[1]con = Conflict, close = Closeness, dep = Dependency, AT = Affiliation with Teacher, SB = School Bonding, DT = Dissatisfaction with Teacher

Table XVIII: Intercorrelations for teacher-rated relationship and behavior (subsample, n = 50)

	STRS – con	STRS – close	STRS – dep	STRS – total
SDQ – ES	.157	.013	.436**	-.240
SDQ – CP	.626**	-.307*	.113	-.602**
SDQ – Hyp	.279*	-.036	.277	-.297*
SDQ – PP	.085	.036	.319*	-.144
SDQ – Pro	-.322*	.630**	.163	.441**
SDQ – total	.429**	-.106	.449**	-.484**

* *p* <.05; **p < .01
[1]con = Conflict, close = Closeness, dep = Dependency, ES = Emotional Symptoms, CP = Conduct Problems, Hyp = Hyperactivity, PP = Peer Problems, Pro = Prosocial

Table XIX: Intercorrelations for teacher-rated relationship and student-rated behavior (subsample, n = 49)

	STRS – con	STRS – close	STRS – dep	STRS – total
SDQ – CP	.20	-.17	-.05	-.20
SDQ – Hyp	.24	.00	.04	-.18
SDQ – Pro	.05	.08	.04	-.02
SDQ – total	.21	.02	.17	-.19

* *p* <.05; **p < .01
[1]con = Conflict, close = Closeness, dep = Dependency, CP = Conduct Problems, Hyp = Hyperactivity, Pro = Prosocial

APPENDIX F

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VITA

Jaime L. Zurheide

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Education

8/08-8/15   University of Illinois-Chicago
                 PhD in Special Education

6/11-8/15   University of Illinois-Chicago
                 Master of Education in Measurement, Evaluation, Statistics, and Assessment

8/00-5/05   University of San Francisco
                 Master of Arts in Learning and Instruction

8/94-5/99   University of Missouri-Columbia
                 Bachelor of Arts degrees in Sociology and Interdisciplinary Studies (Women Studies)

2/96-5/96   University of Limerick-Ireland
                 Study Abroad focusing on Irish and European Studies

Professional Experience

6/14-present   **American Institutes for Research, National Center on Intensive Intervention**
                 Technical Assistance District Coach

1/11-6/15   **University of Illinois at Chicago**   Chicago, IL
                 Graduate Teaching Assistant

01/12-12/14   **Elmhurst College**   Elmhurst, IL
                 Adjunct Instructor

10/09-8/14   **National-Louis University**   Chicago, IL
                 Adjunct Faculty

08/11-12/11   **Elmhurst College**   Elmhurst, IL
                 Elmhurst Learning and Success Academy (ELSA)
                 Interim Coordinator

1/06-1/10   **Chicago Teaching Fellows**   Chicago, IL
                 Deputy Institute Director—Summer 2008 and 2009
                 Fellow Advisor—Summer 2007
                 Lead Selector—Ongoing from January 06-January 10

8/06-6/08   **Chicago Public Schools**   Chicago, IL
                 Al Raby School for Community and Environment
                 High School Special Education Teacher

| 12/03-8/06 | **Lawrence Hall Youth Services** | Chicago, IL |
| | *High School Special Education Teacher* | |

| 7/03-11/03 | **KIPP Ascend Charter School** | Chicago, IL |
| | *Special Education Teacher and Case Manager* | |

| 8/01-6/03 | **Lincoln Child Center** | Oakland, CA |
| | *Non-public School Special Education Teacher* | |

| 8/99-6/01 | **Teach for America—Cesar Chavez Academy** | East Palo Alto, CA |
| | *Special Day Class Teacher—6-8th grade* | |

Research Experience

| 8/14-12/14 | University of Illinois-Chicago, Dr. Daniel Maggin |
| | *Graduate Research Assistant* |

| 8/13-5/14 | University of Illinois-Chicago, Dr. Elizabeth Talbott |
| | *Graduate Research Assistant* |

| 8/10-6/11 | University of Illinois-Chicago, STEP=UP Leadership Program |
| | *Graduate Research Assistant* |

| 8/08-6/11 | University of Illinois-Chicago, Collaborative Teacher Network |
| | *Graduate Research Assistant* |

| Summer 2010, | Elmhurst College, Elmhurst Life Skills Academy |
| Summer 2011 | *Outside Evaluator* |

Professional Contributions

Journal Articles

Maggin, D. M., Zurheide, J.L., Pickett, K., & Baille, S. J. (in press). A systematic review of the Check In Check Out intervention program. *Journal of Positive Behavior Interventions.*

Talbott, E., Karabatsos, G., & Zurheide, J. L. (under review). Informant discrepancies and the heritability of antisocial behavior: A meta-analysis*.* Manuscript submitted to: *Journal of School Psychology.* (Work supported by NSF grant #SES-1156372)

Talbott, E., Zurheide, J. L., & Karabatsos, G. (2015). Discrepancies between teachers in the assessment of antisocial behavior among twins: A meta-analysis. Manuscript to be submitted to *Journal of Emotional and Behavioral Disorders*.

Maggin, D. M., Talbott, E**.**, Zurheide, J. L., & Van Acker, E. Y. (2015). Application of quality indicators to reviews of research in special education. Manuscript in preparation.

Book Chapters

Talbott, E., Traska, A., & Zurheide, J. L. (2016). A systematic review of peer tutoring interventions for students with disabilities around the world. In Hughes, M. T., & Talbott, E. (Eds). *The Handbook of Research on Diversity in Special Education.*

Conference Presentations

Talbott, E., Traska, A., and Zurheide, J. (2014, October). *Peer interventions to improve academic achievement and social outcomes for students with and without disabilities: A systematic review.* Presentation at the UIC College of Education Research Day.

Talbott, E., Zurheide, J., & Karabatsos, G. (2014, April). *Discrepancies between teachers in the assessment of antisocial behavior.* Lecture presented at the Council for Exceptional Children Convention, Philadelphia, PA.

Zurheide, J. (2013, October). *Measuring relationships between teachers and students with externalizing behavior.* Presentation at the UIC College of Education Research Day.

Zurheide, J. (2013, September). *Teacher perspectives on developing relationships with students with externalizing behavior.* Lecture presented at the Council for Children with Behavior Disorders Conference, Chicago, IL.

Talbott, E., Karabatsos, G., and Zurheide, J. (2013, May). *Sensitivity of informants and the heritability of antisocial behavior: A meta-analysis.* Campbell Collaboration Colloquium, Loyola University Chicago.

Talbott, E., Karabatsos, G., & Zurheide, J. (2013, February). *Sensitivity of informants and the assessment of heritability of antisocial behavior: A meta-analysis of twin, sibling, and adoption studies.* Poster presented at the Pacific Coast Research Conference, San Diego, California.

Talbott, E., Karabatsos, G., & Zurheide, J. (2012, October). *Sensitivity of informants and the assessment of heritability of antisocial behavior: A meta-analysis of twin, sibling, and adoption studies.* Presentation at Faculty Research Day, UIC College of Education.

Zurheide, J. (2012, November). *"I'm here because I care": Developing positive relationships with challenging students.* Poster session presented at the Council for Exceptional Children Teacher Education Division Conference, Grand Rapids, MI.

Doty, L., Burke, L., Dauksas, L., Servilio, K., & Zurheide, J. (2012, November). *A discussion about the instruction, assessment, and remediation of professional dispositions.* Presented at the Council for Exceptional Children, Teacher Education Division Conference, Grand Rapids, MI.

Zurheide, J. (2011, April). *Improving outcomes for students with EBD through increased opportunities to respond.* Poster session presented at the Council for Exceptional Children Convention, National Harbor, MD.

Tejero Hughes, M., Parker-Katz, M., Zurheide, J., Olson, J., Muhammad, G., Lee, G., Ko, T., Keel, J., Bryant, A. (2011, April). *Collaborative Teacher Network: Professional development to enhance inclusion*

instruction in middle school. Poster session presented at the Council for Exceptional Children Convention, National Harbor, MD.

Tejero Hughes, M., Parker-Katz, M., Bryant, A., Keel, J., Ko, T., Lee, G., Muhammad, G., & Zurheide, J. (2011, April). *Collaborative Teacher Network: Findings related to increasing teachers' knowledge of content area reading strategies.* Roundtable discussion presented at the meeting of the American Educational Research Association, New Orleans, LA.

Zurheide, J. (2011, February). *Improving outcomes for students with EBD through increased opportunities to respond*. Poster session presented at the Midwest Symposium for Leadership in Behavioral Disorders, Kansas City, MO.

Zurheide, J. (2009, November). *Social/emotional learning and special education teacher education*. Poster session presented at the Council for Exceptional Children, Teacher Education Division Conference, Charlotte, NC.

Teaching Experience

University of Illinois-Chicago—Graduate Courses Taught:
- SPED 573 – Understanding Research in Special Education
- SPED 473 – Teaching Math and Science with Adaptations
- SPED 467 – Social Emotional Development and Disabilities
- SPED 578 – Classroom-based Inquiry Internship
- SPED 572 – Promoting Academic and Prosocial Behavior II
- SPED 461 – Political and Socio-Cultural Foundations of Special Education

University of Illinois-Chicago – Undergraduate Courses Taught:
- SPED 416 – Methods of Instruction for Exceptional Learners
- SPED 415 – Characteristics of Exceptional Learners in Inclusive Settings

Elmhurst College – Graduate Courses Taught:
- MTL 535 – Curriculum and Instruction Strategies for Learners with High Incidence Disabilities

Elmhurst College – Undergraduate Courses Taught:
- SPE 225 – Cultural Foundations of Education

National Louis University—Graduate Courses Taught:
- SPE 500 – Introduction to Exceptional Children and Adolescence
- SPE 527 – Individualized Curriculum and Instruction
- SPE 501 – Education and Diagnostic Assessment of Exceptional Children and Adolescents
- SPE 503 – Collaborative and Consultative Teaming and Teaching
- SPE 506 – Frameworks and Perspectives in Special Education
- SPE 523 – Diagnosis and Remediation of Math Disabilities
- SPE 507 – Social/Emotional Development, Teaching, and Support
- SPE 509 – Clinical Literacy

Invited Presentations
- *Working in diverse classrooms: Systems and strategies to promote success for all students*, presented to NU Teach Secondary Cohort and Inner City Teaching Corps elementary cohort (Northwestern University), January, 2011, February, 2012, and February 2013
- *Special Education in elementary and secondary classrooms: Meeting the needs of all students*, presented to NU Teach Secondary Cohort and Inner City Teaching Corps elementary cohort (Northwestern University), July, 2011 and July, 2012
- *Test prep workshop for the ICTC Special Education General Curriculum content exam,* presented to Chicago Teaching Fellows special education candidates, April, 2011.
- *Working in inclusive secondary classrooms*, presented to NU Teach Secondary Cohort (Northwestern University), October, 2010
- *Special education basics*, presented to the Inner City Teaching Corps elementary cohort, July, 2010.

Honors and Awards

- Council for Exceptional Children, Division of Research Doctoral Student Scholar
- University of Illinois at Chicago, Department of Special Education, Albin and Young Doctoral Fellowship Award, 2010 and 2013

Service

- Graduate Student Council representative for the Special Education Department, 2011-2014
- Doctoral Program Steering Committee student representative, 2013-2014
- Assisted with selection of applicants for the MEd/LBS1 program at UIC, Spring 2014

Professional Affiliations

Council for Exceptional Children
- Research Division - Student representative to the 2015 CEC Conference Program Advisory Committee
- Council for Children with Behavioral Disorders
- Teacher Education Division

American Educational Research Association
- Division D – Measurement and Research Methodology
- Division K – Teaching and Teacher Education
- Social and Emotional Learning SIG
- Special Education SIG