

2018

## The School Connections Survey and Middle School Students: Concurrent Validity with the Strengths and Difficulties Questionnaire

Brandis Ruise  
*University of Rhode Island, Brandis.Ruise@gmail.com*

Follow this and additional works at: [https://digitalcommons.uri.edu/oa\\_diss](https://digitalcommons.uri.edu/oa_diss)

Terms of Use

All rights reserved under copyright.

---

### Recommended Citation

Ruise, Brandis, "The School Connections Survey and Middle School Students: Concurrent Validity with the Strengths and Difficulties Questionnaire" (2018). *Open Access Dissertations*. Paper 732.  
[https://digitalcommons.uri.edu/oa\\_diss/732](https://digitalcommons.uri.edu/oa_diss/732)

This Dissertation is brought to you by the University of Rhode Island. It has been accepted for inclusion in Open Access Dissertations by an authorized administrator of DigitalCommons@URI. For more information, please contact [digitalcommons-group@uri.edu](mailto:digitalcommons-group@uri.edu). For permission to reuse copyrighted content, contact the author directly.

THE SCHOOL CONNECTIONS SURVEY AND MIDDLE SCHOOL STUDENTS:  
CONCURRENT VALIDITY WITH THE STRENGTHS AND DIFFICULTIES

QUESTIONNAIRE

BY

BRANDIS RUISE

A DISSERTATION SUBMITTED IN PARTIAL FULFILLMENT OF THE

REQUIREMENTS FOR THE DEGREE OF

DOCTOR OF PHILOSOPHY

IN

SCHOOL PSYCHOLOGY

UNIVERSITY OF RHODE ISLAND

2018

DOCTOR OF PHILOSOPHY DISSERTATION

OF

BRANDIS RUISE

APPROVED:

Dissertation Committee

Major Professor

Gary Stoner

John Stevenson

Karen McCurdy

Kimberly Pristawa

Nasser H. Zawia

DEAN OF THE GRADUATE SCHOOL

UNIVERSITY OF RHODE ISLAND

2018

## **ABSTRACT**

School connectedness has emerged as an important construct for the study of promoting resilience in youth in school settings. Potentially, the ability to identify youth before the onset of a disorder can be very beneficial, but there is much to consider in terms of the technical adequacy of a connections screening. A major concern pertains to whether such a screening can reliably and accurately identify students as at risk of academic failure or social and emotional difficulties. Findings suggest that self-reported peer connections on the School Connections Survey are significantly correlated with the Peer Relationship Problems subscale on the Strengths and Difficulties Questionnaire. However, the School Connections Survey identified students as at-risk at a higher rate than the Strengths and Difficulties Questionnaire. Implications of the findings are discussed.

## ACKNOWLEDGMENTS

I would like to extend a special thank you to my major professor, Dr. Gary Stoner, for providing support and mentorship throughout the past six years. Dr. Stoner has challenged me, inspired me, and supported me during my graduate studies. He has fostered my development as a researcher, an advocate, and a future psychologist. His commitment to improving educational and health systems that impact the lives of children everyday has encouraged me to pursue my interest in mental health promotion in school settings.

I would also like to thank my committee, Dr. John Stevenson, Dr. Karen McCurdy, and Mrs. Kimberly Pristawa, for their continued support, guidance, and thoughtful contributions to this project. Thank you all for always being available and willing to assist me throughout this process.

A special thank you goes to all the educators (at the school and district level) who participated in and/or supported this study, without you this project would not be possible. Your passion for advocacy is both remarkable and inspirational. Through your work, you have brought about positive change for your children in the classroom and beyond. Thank you for sharing your perspective.

Finally, I would like to thank my family. Thank you to my parents (Bonnie and Marcus), for continuing to support me and believe in me when I felt discouraged. Thank you for your countless sacrifices you have made to help me become the first in our family, but hopefully not the last, to accomplish such a major milestone. Thank you for helping me to become the person I am today.

## **PREFACE**

This dissertation is an original intellectual product of the author, Brandis Ruise. The fieldwork described in this report has been reviewed and approved by the Institutional Review Board of the University of Rhode Island.

## TABLE OF CONTENTS

<b>ABSTRACT .....</b>	<b>ii</b>
<b>ACKNOWLEDGMENTS .....</b>	<b>iii</b>
<b>PREFACE.....</b>	<b>iv</b>
<b>TABLE OF CONTENTS.....</b>	<b>v</b>
<b>LIST OF TABLES .....</b>	<b>vii</b>
<b>CHAPTER 1 .....</b>	<b>1</b>
Introduction.....	1
<b>CHAPTER 2 .....</b>	<b>3</b>
Review of Literature .....	3
Students and Mental Health .....	3
Schools as Contexts for Mental Health Service Delivery.....	7
Screening Youth for Mental Health Needs in School.....	12
Screening, Prevention, and Positive Psychology .....	17
Screening for School Connections.....	28
Purpose of the Study .....	32
Research Questions .....	35
<b>CHAPTER 3 .....</b>	<b>37</b>
Method .....	37
Participants and Setting.....	37
Procedure.....	38
Measures .....	38

<b>CHAPTER 4</b> .....	<b>43</b>
Results .....	43
Descriptive Statistics .....	43
Relations Among Measures .....	52
Analysis of Concurrent Validity .....	54
Analysis of Social Validity .....	57
<b>CHAPTER 5</b> .....	<b>61</b>
Discussion .....	61
<b>CHAPTER 6</b> .....	<b>771</b>
Conclusion .....	771
Methodological Considerations and Future Directions .....	71
<b>APPENDIX A: Study Measures</b> .....	<b>79</b>
<b>APPENDIX B: Recruitment Forms</b> .....	<b>79</b>
<b>APPENDIX C: Scripts for Survey Administration</b> .....	<b>79</b>
<b>APPENDIX D: Student Demographic Data</b> .....	<b>79</b>
<b>APPENDIX E: School Connections Survey Data</b> .....	<b>79</b>
<b>APPENDIX F: Strengths and Difficulties Questionnaire Data</b> .....	<b>79</b>
<b>APPENDIX G: Correlational Analyses</b> .....	<b>79</b>
<b>APPENDIX H: Schools Connections and Strengths and Difficulties Scores</b> .....	<b>79</b>
<b>APPENDIX I: Teacher Survey Data</b> .....	<b>79</b>
<b>BIBLIOGRAPHY</b> .....	<b>109</b>



## LIST OF TABLES

TABLE	PAGE
<b>Table 1.</b> Observed frequencies of student participants by ethnic/racial group and gender.....	93
<b>Table 2.</b> Observed frequencies of student participants by ethnic/racial group and school days attended .....	94
<b>Table 3.</b> Descriptive statistics of student participants .....	95
<b>Table 4.</b> School connections reported on the SCS by gender.....	96
<b>Table 5.</b> School connections reported on the SCS by ethnicity/race.....	97
<b>Table 6.</b> Total difficulties scores on the SDQ by gender .....	98
<b>Table 7.</b> Total difficulties scores on the SDQ by ethnicity/race.....	99
<b>Table 8.</b> Comparison of means and standard deviations for standardization sample and entire study sample.....	101
<b>Table 9.</b> Comparison of means and standard deviations for standardization sample and study sample by gender .....	102
<b>Table 10.</b> Correlational analyses .....	103
<b>Table 11.</b> Frequency table by student connectedness and total scores on the Strengths and Difficulties Questionnaire .....	106
<b>Table 12.</b> Descriptive statistics of the means of teacher impressions of each screening tool .....	107
<b>Table 13.</b> Wilcoxon signed rank test .....	108

# CHAPTER 1

## INTRODUCTION

A number of findings demonstrate a significant association between social connectedness and a variety of academic, behavioral, and emotional outcomes for youth. It seems plausible that students' school connections could provide an accessible domain for prevention or intervention efforts. One tool that has been created to assist with such an endeavor is the School Connections Survey (SCS; Pristawa, 2012). The SCS was created to help determine the number of self-reported connections that students identify in relation to peers and adults within their school building. The present work begins to examine and contribute to the development of this survey by exploring its concurrent validity with a screening tool that is purported to measure a related construct. The Strengths and Difficulties Questionnaire (SDQ) served as the criterion measure, as it is a tool that possesses a number of psychometrically sound characteristics.

An additional purpose of this study was to begin evaluating the social validity of the School Connections Survey using qualitative information to help shed light on the impressions of those who administer and complete it. A number of schools have used the SCS, and developed methods for follow up with “un-connected” students. In many instances, school personnel report positive results and strong satisfaction with the tool and the activities (e.g., screening and follow up) surrounding it. Obtaining additional information about the social acceptance and practicality of the SCS will help to further delineate the impact of its usage. Guided by the three-part framework originally proposed by Wolf (1978; Cooper, Heron, & Heward, 2007), a set of social

validity questions were included to gain insight on school personnel's perspectives regarding the goals, procedures, and effects of the selected screening instruments.

This work underscores the need for a more comprehensive approach to prevention and intervention in school settings. Additionally, this research serves as a model for linking positive psychology and evidence-based assessment to meaningful practice in school psychology.

## CHAPTER 2

### REVIEW OF LITERATURE

#### **Students and Mental Health**

The average proportion of students with a diagnosable mental disorder (i.e., using the Diagnostic and Statistical Manual of Mental Disorders system) in the United States public school system is estimated to be between 13 and 20 percent (Centers for Disease Control and Prevention, 2013; Costello, Mustillo, Erkanli, Keeler, & Angold, 2003; Hoagwood & Erwin, 1997; Levitt, Saka, Hunter-Romanelli, & Hoagwood, 2007; National Research Council and Institute of Medicine, 2009). This means that in a school of 300 students, approximately 39-60 students are likely to meet the diagnostic criteria for some internalizing or externalizing disorder. On the other hand, only about 1 to 5 percent of the total public school population is identified as having an emotional or behavioral disability and served according to the classification system of the Individuals with Disabilities Education Improvement Act of 2004 (Snyder, de brey, & Dillow, 2016; U.S. Department of Education, 2013). The large discrepancy in these two statistics suggests that a significant percentage of students with mental disorders may be under-identified as in need of support and/or underserved.

Estimates suggest that between 60 and 90 percent of students with mental health disorders fail to receive treatment (Kutash, Duchnowski, & Lynn, 2006; Murphey, Barry, & Vaughn, 2013). This trend has been observed especially for groups identified as more vulnerable within the general student population. Researchers (e.g., Lawrence, Gootman, & Sim, 2009; Mustanski, Garofalo, & Emerson, 2010; Ryan, Huebner, Diaz, & Sanchez, 2009) have documented a number

of disparities in access based upon race/ethnicity, income, gender, age, geography, and sexual orientation. For example, the Substance Abuse and Mental Health Services Administration Office of Applied Studies (2007) has found that African American students are less likely than their Hispanic or White peers to receive outpatient treatment for depression. Additionally, this agency reported that male students between the ages of 16 and 17 are among the least likely to receive services (when compared with females of that age as well as males and females who fall between the ages of 12 and 15). Geographic location also has been observed to affect the ability of students to access care, as states vary widely in the mental health services that are available through public programs (National Institute for Health Care Management, 2009).

Given the discrepancy between the number of youth in need of services and the number who are actually served, it is important to recognize that a vast number of students with complex needs are not receiving appropriate services or supports. Additionally, these numbers fail to account for the students who have not yet demonstrated challenges that are deemed clinically significant, but due to the cumulative effects of various risk factors, their development may follow trajectories that lead to poor outcomes. For some children, mental disorders might result in serious difficulties at home, with peer relationships, and in school (Centers for Disease Control and Prevention, 2013). These disorders also can be associated with substance use, criminal behavior, and other risk-taking behaviors. Children with mental disorders also frequently have other chronic health conditions (e.g., asthma, diabetes, and epilepsy) more often than children without mental disorders (Centers for Disease

Control and Prevention, 2013). Finally, mental disorders in children are associated with an increased risk for mental disorders in adulthood (National Research Council and Institute of Medicine, 2009), which are associated with decreased productivity, increased substance use and injury, and substantial costs to the individual and society (Centers for Disease Control and Prevention, 2013). These health trends underscore the importance of prevention and health promotion efforts that enhance early identification and timely, effective treatment for youth.

It should be noted that the majority of youth who do receive treatment services, access these services in school (U.S. Census Bureau, 2010). It is estimated that four out of five school-age children receiving mental health services receive care in schools (Atkins, Hoagwood, Kutash, & Seidman, 2010; Hoagwood, Burns, Kiser, Ringeisen, & Schoenwald, 2001). There have been a few reasons cited for this trend, which include one observation that care in schools may help reduce stigma and increase the likelihood of help-seeking (Slade, 2002). For example, some researchers have found that services provided in schools have extended the reach of care to youth and families from ethnic minority groups who are otherwise unlikely to access treatment (Stephan, Weist, Kataoka, Adelsheim, & Mills, 2007). In one study of Latino and African American youth from low-income backgrounds, Juszczak and colleagues (2003) found that youth were 20 times more likely to seek mental health services at a school-based clinic than in community mental health centers over a 5-year period. Moreover, school-based mental health services may represent a more accessible form of care that potentially reduces logistical barriers (e.g., clinic hours, transportation, and insurance),

while simultaneously improving early intervention or outreach efforts to families (Bear, Finer, Guo, & Lau, 2014).

Early identification can be accomplished at a variety of age or grade levels depending on when problems first begin to surface. However, the middle-school years may be a particularly important time to conduct screenings for emotional and behavioral problems for several reasons. The transition or entrance into the middle school grades is often accompanied by important shifts in interpersonal relationships (e.g., increased valuation of peer relationships; Hung, Luebbe, & Flaspohler, 2015; victimization by bullying peaks in school; Wang, Iannotti, & Luk, 2012) and pubertal changes (Robins, Trzesniewski, Tracy, Gossling, & Potter, 2002; Simmons & Blyth, 1987). Additionally, the majority of mental health problems have an onset prior to age 14, and 75% have an onset by a person's mid-20s (Kessler, Berglund, Denler et al., 2005), with a median delay of 10 years between the onset of symptoms and start of treatment (National Mental Health Association, 2005). During middle school, the early signs of a youth's problems may still be below a diagnostic threshold (Vander Stoep, Mccauley, Thompson et al., 2005). Also, the presence of behavioral or emotional disorders during this period is related to numerous negative outcomes both within and beyond the classroom (Lane, Parks, Kalberg, & Carter, 2007). Public schools potentially provide an ideal setting for counteracting negative trajectories through the application of universal screening procedures that facilitate early identification and intervention (Walker & Shinn, 2002).

## **Schools as Contexts for Mental Health Service Delivery**

An ecological approach provides a unifying framework to guide mental health service delivery in schools (Atkins, Hoagwood, Kutash, & Seidman, 2010). Using Bronfenbrenner's theory of human ecological systems, (Bronfenbrenner, 1994; Bronfenbrenner and Morris, 1998), children's development can be understood as influenced by the interrelated contexts in which they live, work, and play. Bronfenbrenner's model describes four systemic levels. First, the microsystem is concerned with an individual's immediate perception of life, such as how they perceive their immediate surroundings (Kohl, Recchia, & Steffgen, 2013). In an education setting, the microsystem includes the classroom and its management as well as staff in the school administration (Back, Polk, Keys, & McMahon, 2016). The second level is the mesosystem, which is composed of the different settings an individual lives in, which include family, peers, and school. The mesosystem encompasses connections between microsystems, such as relationships between school staff, as interactions between teachers and principals link the microsystems of the classroom and school administration (Back, Polk, Keys, & McMahon, 2016). The third level is the exosystem, which essentially describes the setting containing the mesosystem. A youth's peers, for example, are tied to the community. The last level, the macrosystem describes the culture, politics, and economics of a setting, and contains all the previous levels (Kohl, Recchia, & Steffgen, 2013). In an education setting, the macrosystem consists of the overarching patterns of beliefs, knowledge, and resources across microsystems and mesosystems, which all contribute to a school's climate (Back, Polk, Keys, & McMahon, 2016).



School climate is composed of “the attitudes, beliefs, values, and norms that underlie the instructional practices, the level of academic achievement, and the operation of a school” (McEvoy and Welker, 2000, p. 6), as perceived by students, teachers, and administrators (Winter and Sweeney, 1994). The construct first appeared in the literature over 100 years ago (Perry, 1908), and various aspects of school climate have since been examined. Researchers have been connecting school climate to various student outcomes, including teacher –student relationships (Furlong et al., 2005; Way, Reddy, & Rhodes, 2007; Zullig et al., 2014), peer relationships (Furlong et al., 2005; Way et al., 2007), order and discipline (Furlong et al., 2005; Way et al., 2007; Zullig et al., 2014), student involvement (Jia et al., 2009; Roeser, Eccles, & Sameroff, 1998; Wang, 2009), and academic support (Kuperminc, Leadbeater, Emmons, & Blatt, 1997; Loukas, Suzuki, & Horton, 2006 ; Wang, 2009; for a review see Zullig, Koopman, Patton, & Ubbes, 2010). Studies have suggested student perceptions of being connected to the school and supported by teachers and peers are associated with lower victimization (Demaray & Malecki, 2003; Haynie et al., 2001; Hoover, Oliver, & Hazler, 1992). Similarly, better interpersonal relationships with teachers and peers (e.g., less conflict) have also been associated with students experiencing fewer emotional problems (Jia et al., 2009; Kidger, Araya, Donovan, & Gunnell, 2012; Roeser et al., 1998) and conduct problems (Hung, Luebbe, Flaspohler, 2015; Kasen, Johnson, & Cohen, 1990). Further, student behavioral problems and victimization have also been inversely linked to student perception of fairness and clarity of rules (Gottfredson, Gottfredson, Payne, & Gottfredson, 2005). It can be surmised that school climate emphasizing high

expectations and opportunities for success within and beyond the classroom (both interpersonally and academically) and establishes a safe, secure high-quality learning environment can positively influence academic achievement (Lee and Bryk, 1989; McEvoy and Welker, 2000; Power et al., 1991; Stewart, 2008; Wang and Degol, 2016; Voight and Nation, 2016). A caring, supportive, and respectful school climate is particularly important for middle school students, given the aforementioned developmental changes they experience.

Empirical evidence suggests a positive middle school climate is associated with higher levels of student achievement and lower rates of suspension and expulsion (Brand et al., 2003; Hanson and Voight, 2014; Voight, Hanson, O'Malley, & Adekanye, 2015). Also, middle school students' perceptions of positive adult-student relationships are associated with higher self-esteem and lower rates of depression and behavior problems (Barber and Olsen, 2004; Voight, Hanson, O'Malley, & Adekanye, 2015; Wang & Dishion, 2012). Student participation and positive adult-student relationships have been correlated with lower rates of secondary school violence in both quantitative (Khoury-Kassabri, Benbenishty, Astor, & Zeira, 2004) and qualitative research (Johnson, Burke, & Gielen, 2012). Additionally, middle schools with more positive relationships between adults and students have been found to have greater success implementing classroom-based violence prevention programs (Gregory, Henry, & Schoeny, 2007). A positive school climate appears to be generally beneficial for middle school students, although differences in school experiences have been observed to vary according to students' characteristics, such as gender, ethnicity/race, and socioeconomic status.

Gender is an individual characteristic that may moderate the association between a middle school student's perceptions of the school environment and his/her school experiences during the first few months of school (Buehler, Fletcher, Johnston, & Weymouth, 2015; Niehaus et al., 2012; Way et al., 2007). Only a few researchers have statistically tested for gender interactions, but thus far, findings have been mixed (Buehler, Fletcher, Johnston, & Weymouth, 2015). Some have found a stronger association between school environment and girls' experiences (Loukas & Murphy, 2007), whereas others have found no gender interactions (Holas & Huston, 2012; Loukas, Suzuki, & Horton, 2006; Midgley et al., 1989; Zullig et al., 2011).

Several studies have also documented how school climate experiences differ in racially and ethnically diverse middle school settings. In particular, different vulnerabilities have been documented for African American and Hispanic students in relation to school engagement and achievement (Akos & Galassi, 2004; Burchinal, Roberts, Zeisel, & Rowley, 2008; Espinoza & Juvonen, 2011; Schneider & Duran, 2010). For example, Shirley and Cornell (2012) analyzed data from 400 students in one suburban middle school in Virginia and found that African American students were more likely than White students to report that their peers supported aggressive behavior and were less likely to express willingness to seek help from their teachers for bullying and/or threats of violence. Fan et al. (2011), in a multilevel analysis of the nationally representative Educational Longitudinal Study of 2002, found that Hispanic students had less favorable perceptions of school safety, and African American students reported less positive teacher-student relationships when compared to their same-school White peers.

A number of studies have also shown that students experience more violence and victimization in schools with high poverty rates (Bevans et al., 2007; Bradshaw et al., 2009; Khoury-Kassabri, et al. 2004; Koth et al., 2008), where rates of dropping out are the most severe (Nasir, Jones, & McLaughlin, 2011). On the other hand, there are studies that highlight how the school climate in such settings can be shaped by youth-led efforts pushing school reform (Voight, 2015). Youth organizing has been documented to affect the procurement of additional district resources (e.g., facilities improvement, college preparatory classes, and improved high-stakes testing practice; Shah & Mediratta, 2008), district-level responses to violence (Warren, Mira, & Nikundiwe, 2008), the tracking of English-language learners (Speer, 2008), and attention directed to racial achievement gaps (Christens & Kirshner, 2011). Such studies stress the importance of the need for additional research that examines how school climate operates for students from diverse social and economic backgrounds.

Given the mounting research that links school climate to student outcomes, much attention has been devoted to examining various facets of the construct. For example, the U.S. Department of Education (2007) was observed to support the Safe and Supportive Schools grant program to promote school climate assessment efforts. Additionally, the Centers for Disease Control and Prevention (2009) recommended that any efforts to reform school climate follow a data-driven strategy. Among the most important implications of this growing focus on school climate is that the identification of students' mental health needs has also emerged as a focus of assessment in schools. Additional research is needed, however, to identify psychometrically sound measures that can effectively support such assessment efforts.

## **Screening Youth for Mental Health Needs in School**

Screening youth for mental health needs in schools can promote shared, collaborative efforts, both within and across schools as well as partner organizations (e.g., community mental health centers), through encouraging communication related to the students' needs (Arora, Connors, George et al., 2016; Lyons, Epstein, & Jordan, 2010). Aggregated assessment data from universal screenings can provide school programs with a clearer understanding of the global needs and strengths of students they serve, inform decisions about staffing, and provide information about clinician or program effectiveness (Sander, Everts, & Johnson, 2011). Additionally, the results of such screening assessments may inform quality improvement efforts that are critically needed (Stephan, Weist, Katoaka et al., 2007).

Universal screening serves as a foundation for prevention-focused service models that emphasize data-based decision making for students experiencing academic, social, emotional, or behavioral difficulty in the school setting. In particular, school-based screening procedures should be guided by the assessment's purpose, as there are several distinctions between universal screening and other related forms of assessment, which typically include readiness assessments and diagnostic assessments (Glover & Albers, 2007). Universal screening assessments are generally conducted with all students in a classroom, school, or district to identify those at risk of academic failure and/or behavioral difficulties who could potentially benefit from specific instruction or intervention (Severson & Walker, 2002). Universal screening assessments are used to define the risk status of students currently in school, but in slight contrast, readiness assessments are administered to children prior to their entry

to school to identify whether they have acquired specified prerequisites (Glover & Albers, 2007). Unlike universal screening or readiness assessments, which are conducted by individuals from a variety of backgrounds to detect the potential need or readiness for services, diagnostic assessments are more frequently administered individually by those with very specific qualifications (e.g., school psychologists, reading specialists, etc.; Satz & Fletcher, 1988) to evaluate the nature and extent of an individual's academic or behavioral problems (American Educational Research Association, American Psychological Association, & National Center on Measurement in Education, 1999; Chafouleas, 2011; von der Embse, Pendergast, Kilgus, & Eklund, 2016) and are often more lengthy and comprehensive (Chafouleas, 2011; Sattler, 2001; Satz & Fletcher, 1988; von der Embse, Pendergast, Kilgus, & Eklund, 2016).

Traditionally, measurement goals in clinical treatment have focused on indicators of mental health and psychological adjustment, including specific symptoms and broader aspects of overall functioning (Hall, Moldavsky, Taylor, Sayal, Marriott, & Batty, 2014). Although assessing a student's symptomatic presentation and functional performance is certainly important in school mental health service, relevant assessment purposes that extend beyond these areas to include academic outcomes are needed (Suldo, Gormley, DuPaul, & Anderson-Butcher, 2014). Accordingly, many have called for the integration of academic and behavioral outcomes in school mental health (Hoagwood et al., 2007; Pullmann et al., 2013) as well as an emphasis on reducing and removing barriers to student learning (Adelman et al., 1999; Suldo et al., 2014).

Literature guiding the selection of targets for academic assessment exists. Suldo and colleagues (2014), for instance, emphasized a multidimensional approach to measuring academic success, in which more commonly incorporated measures of academic knowledge and skills are complemented by measures of factors that remove restrictions to learning (e.g., behavioral engagement and attitudes toward learning). They also noted that measures of student-level indicators of academic success could be conceptualized as both proximal and distal outcomes (Suldo et al., 2014). Proximal targets include curriculum-based assessment (CBA), direct observations of on-task behavior, and academic self-efficacy, while examples of distal targets of academic success include course grades, school attendance, and school climate. Although some literature points to the benefits of specific academic functioning targets, including standardized assessment tests (Kutash, Duchnowski, & Green, 2011) and CBA (Deno, Fuchs, Marston, & Shin, 2001), decisions about the most relevant academic indicators have tended to be distinct to each study and differed based on the students' age and focus of specified interventions (Suldo et al., 2014). Thus, some have suggested that the selection of academic measures should occur across categories of student outcomes (Suldo et al., 2014).

In spite of the importance of mental health-focused screening, there is a range of documented practical (e.g., time constraints, limited training) and perceptual (e.g., poor recognition of assessment importance, over-reliance on clinical judgment) barriers in practice (Arora, Connors, George et al., 2016; Hatfield and Ogles, 2007; Jensen-Doss and Hawley, 2011). Some barriers that have been noted include involving parents in assessment (Arora, Connors, George et al., 2016), creating

adequate time for screening in constrained clinician schedules (Kelly and Lueck, 2011), and overcoming privacy and confidentiality concerns (Arora, Connors, George et al., 2016). Also, the well-documented challenges associated with the dissemination of evidence-based practices in “real-world” clinical settings (Weisz, Ugueto, Cheron et al., 2013) are just as pronounced in school mental health service delivery (Evans and Weist, 2004; Langley et al. 2010), limiting the effectiveness of such service. For example, existing school-based mental health screening procedures more easily identify students with externalizing behavior problems that are readily identifiable by teachers (e.g., hyperactive, aggressive, and disruptive behavior; McIntosh et al., 2014; von der Embse, Pendergast, Kilgus, & Eklund, 2016). However, students with internalizing problems (e.g., anxiety and depression symptoms) are less likely to disrupt classroom instruction, and subsequently, be identified by teachers as at risk or in need of intervention (Gresham & Kern, 2004; Kalberg, Lane, Driscoll, & Wehby, 2011). Considering the varied challenges that exist in supporting the proper implementation of screening for mental health needs in school, there is also a critical need to develop and/or incorporate novel procedures that are integral to modern, multi-tiered frameworks of mental health service delivery (Kamphaus, DiStefano, Dowdy, Eklund, & Dunn, 2010).

Universal screening and early intervention hold great potential for promoting academic success among middle school students, which can serve as an important protective factor (Albers, Glover, & Kratochwill, 2007; Levitt, Saka, Hunter-Romanelli, & Hoagwood, 2007). While technically adequate, many broadband rating scales lack the efficiency necessary for acceptability within schools (Severson et al.,



2007; von der Embse, Pendergast, Kilgus, & Eklund, 2016). These deficiencies have led to the development of screening assessments with particular emphasis on brevity and predictive validity, including the Strengths and Difficulties Questionnaire (SDQ; Goodman, 1997), the Systematic Screening for Behavioral Disorders (SSBD; Walker & Severson, 1992), and the Behavioral and Emotional Screening System (BESS; Kamphaus & Reynolds, 2007). While considerably shorter than comprehensive rating scale formats (e.g., the Behavior Assessment System for Children-2 [BASC-2] Teacher Rating Scale, 100–139 items), existing screeners (e.g., BESS, 27 items; SDQ, 25 items) require a substantial investment of time and provide a total score that is predictive of behavioral and emotional problems (Kamphaus & Reynolds, 2007). Other screeners are more efficient (e.g., Student Internalizing Behavior Screener; Cook et al., 2011) but do not measure adaptive behaviors consistent with the twofold mental health perspective that emphasizes both the prevention of problem behaviors and the promotion of positive well-being (Suldo & Shaffer, 2008). The ability to implement an evidence-based universal screening assessment is heavily dependent upon the implementation of technically adequate, minimally disruptive, and cost-effective screening procedures that are correlated with access to appropriate services (Walker & Shinn, 2002). These characteristics will be further discussed in subsequent sections to describe the screening tools that are pertinent to this work, as considerations for evaluating a specific universal screening assessment at the middle school level will be further explored.

## Screening, Prevention, and Positive Psychology

While research has supported tiered models of academic service delivery (e.g., response to intervention [RtI]) and behavior management (e.g., positive behavioral intervention supports [PBIS]), there is limited support and adoption within the mental health domain (McIntosh, Ty, & Miller, 2014; von der Embse, Pendergast, Kilgus, & Eklund, 2016). Tiered levels of support in schools have become a prominent service delivery model that integrates prevention and intervention. This framework involves the provision of differentiated support to students according to their individual needs. It is comprised of four main elements: (a) screening, (b) tiered levels of evidence-based, high-quality instruction, (c) ongoing progress monitoring, and (d) decision making about the delivery of instruction based on progress-monitoring data (Chafouleas, 2011; Chafouleas, Kilgus, Jaffery et al., 2013; Fuchs & Fuchs, 2006). The multiple tiers of instruction represent various levels of support and information pertaining to a student's degree of risk that is used to classify interventions into the categories of universal, supplemental, and intensive. The focus here is tier 1 that is aimed at the entire population of interest (e.g., all students attending a given middle school). Screening is a critical first step for identifying at-risk students so that appropriate supports can be provided.

However, there is another facet of universal screening that is worth exploring, which is how such screening aligns with positive psychology. The term *positive psychology* was first formally introduced by Seligman and Csikszentmihalyi in 2000, and it refers to a perspective that emphasizes the positive aspects of an individual's mental health functioning. For example, the measurement of emotional and

behavioral characteristics that create a sense of accomplishment, contribute to satisfying relationships with others, enhance an individual's ability to cope with stress, and promote social and academic development, can be used to promote mental health and resilience in students (Nickerson & Fishman, 2013). Since the introduction of positive psychology, both educational and school psychologists have incorporated some of its principles into more traditional deficit-based assessment practices (Chafouleas & Bray, 2004; Gilman, Huebner & Furlong, 2009; Miller & Nickerson, 2007).

A number of advantages have been identified in favor of school-based assessment practices that employ a positive focus (Nickerson & Fishman, 2013). For instance, including a student's strengths within assessment data for evaluations can lead to a focus on the enhancement of student functioning, rather than solely the reduction or elimination of deficits (Donovan & Nickerson, 2007; Epstein, Harniss, Robbins et al., 2003). In turn, this positive focus is likely to enhance family-school relationships by fostering trust and support, as opposed to blame or guilt (Epstein, Harniss, Robbins et al., 2003; LeBuffe & Shapiro, 2004). Additionally, having data focused on strengths can also lead to the development of Individualized Education Programs that are more acceptable to students, families, and service providers (Epstein, Harniss, Robbins et al., 2003; Tsang, Wong & Lo, 2012; Walrath, Mandell, Holden & Santiago, 2004).

Complimentary to this focus on the enhancement of competencies is the notion that learning occurs within a social environment that includes interactions with teachers and other children (e.g., Brown et al., 2010). Thus, promoting the social and

emotional aspects of development in children can be critical to the pursuit of academic learning (Payton et al., 2008). However, while it is acknowledged that schools spend considerable effort on implementing a wide range of programs that address the social-emotional development of students (Zins et al., 2004), these efforts are usually seen as tangential rather than core to the function of schools. More effective models for integrating the assessment of social and emotional learning within the ongoing practices of schooling are needed.

Social and emotional learning (SEL) approaches integrate competence promotion and youth development frameworks for reducing risk factors and fostering protective mechanisms for positive adjustment (Benson, 2006; Catalano, Berglund, Ryan, Lonczak, & Hawkins, 2002; Guerra & Bradshaw, 2008; Weissberg, Kumpfer, & Seligman, 2003). SEL program designers build from Waters and Sroufe's (1983) description of competent people as those who have the abilities "to generate and coordinate flexible, adaptive responses to demands and to generate and capitalize on opportunities in the environment" (p. 80). Elias et al. (1997) defined SEL as the process of acquiring core competencies to recognize and manage emotions, set and achieve positive goals, appreciate the perspectives of others, establish and maintain positive relationships, make responsible decisions, and handle interpersonal situations constructively. The proximal goals of SEL programs are to foster the development of five interrelated sets of cognitive, affective, and behavioral competencies: self-awareness, self-management, social awareness, relationship skills, and responsible decision making (Collaborative for Academic, Social, and Emotional Learning, 2005). These competencies, in turn, should provide a foundation for better adjustment and

academic performance as reflected in more positive social behaviors, fewer conduct problems, less emotional distress, and improved test scores and grades (Greenberg et al., 2003). Over time, mastering SEL competencies results in a developmental progression that leads to a shift from being predominantly controlled by external factors to acting increasingly in accord with internalized beliefs and values, caring and concern for others, making good decisions, and taking responsibility for one's choices and behaviors (Bear & Watkins, 2006).

Throughout the past decade, there have been many informative research syntheses providing evaluative evidence regarding school-based prevention and promotion programming. These reviews typically include some school-based, universal SEL program evaluations along with an array of other interventions that target the following outcomes: academic performance (Wang, Haertel, & Walberg, 1997; Zins et al., 2004), antisocial and aggressive behavior (Loesel & Beelman, 2003; Wilson & Lipsey, 2007), depressive symptoms (Horowitz & Garber, 2006), drug use (Tobler et al., 2000), mental health (Durlak & Wells, 1997; Greenberg, Domitrovich, & Bumbarger, 2001), problem behaviors (Wilson, Gottfredson, & Najaka, 2001), or positive youth development (Catalano et al., 2002). These reports differ substantially, in terms of which intervention strategies, student populations, and behavioral outcomes are examined, yet they have reached a similar conclusion that universal school-based assessment and intervention are generally effective.

SEL programs, however, are not as widely used in schools as one might expect (Gottfredson & Gottfredson, 2002; Ringwalt et al., 2011; Shapiro, Kim, Robitaille, & LeBuffe, 2016). When SEL programs are being used in schools, they are most often

selected, implemented, and monitored in haphazard and uncoordinated ways that may inhibit their success (Elias, Leverett, Duffell, Humphrey, Stepney, & Ferrito, 2015). In order to adopt, implement, and sustain SEL programs in schools, an infrastructure is needed to support the delivery of SEL programs (Fagan, Hawkins, & Shapiro, 2015; Shapiro, 2015). Furthermore, there is a need for the systematic assessment of risk and protective factors to guide the implementation of effective prevention programs (Hawkins, Jenson, Catalano, Fraser, Botvin, Shapiro et al., 2015).

Risk and protective factors are terms used to characterize the predictors of emotional and behavioral problems (Shapiro, Kim, Robitaille, & LeBuffe, 2016). Risk factors are characteristics or circumstances that make problems more likely to emerge, whereas protective factors are characteristics or resources that reduce the impact of risk, making it less likely that an individual will ultimately develop an emotional or behavioral problem (Coie, Watt, West, Hawkins et al., 1993). The practices used to assess risk and protective factors are different than those used to determine the nature of an existing problem (Haggerty & Shapiro, 2013). Many school mental health systems have tools and processes for determining whether an individual meets the criteria for an existing problem, in order to justify, inform, or monitor a remediation technique that could lessen the problem. Yet, many of those systems lack tools and processes for proactively identifying threats to well-being that justify, inform, or monitor a prevention technique that could avoid an emotional or behavioral problem altogether. To address this gap, many schools are developing their own internal infrastructures for prevention that use multi-tiered approaches (Maras, Thompson, Lewis, Thornburg, & Hawks, 2015). These tiered systems for early

screening, prevention, and intervention, which became fundable through the Individuals with Disabilities Education Act of 2004, attempt to ensure each child receives, at minimum, the type of prevention that is needed for college and career readiness, given constrained resources and classroom time (Shapiro, Kim, Robitaille, & LeBuffe, 2016). Ideally, these systems triage students based on the child's unique profile of risk and protection and their response to the least invasive preventive intervention. For example, a student might receive a universal intervention like the Promoting Alternative Thinking Strategies (PATHS; Kusche & Greenberg, 1994) curriculum, delivered to all students through a series of classroom-based lessons. Some students may also receive a selective intervention, directed only to a group of students determined to be at risk for a problem or who fail to respond to a high quality, well-implemented universal intervention. Selective preventive interventions like the "Body Project" (Stice, Trost, & Chase, 2003) are often referred to as tier 2 interventions. Finally, some students may receive a tier 3 intervention if they are already experiencing early symptoms or signs of the problem, yet do not meet full diagnostic criteria for the condition (e.g., the "Blues Program"; Rohde, Stice, Shaw, & Brière, 2014). Determining which level of service is most appropriate is dependent on the availability of practical and psychometrically sound assessment tools that can screen a student population for predictors of emotional and behavioral problems as well as facilitate decision-making regarding the level of social emotional instruction that an individual student needs.

Guidance for how to screen a student population for predictors of emotional and behavioral problems emerged from two distinct fields of practice: public health

and school psychology. The World Health Organization published the Wilson-Jungner criteria in 1968, providing principles for screening that are still considered the “gold standard” in contemporary public health practice (Andermann, Blancquaert, Beauchamp, & Déry, 2008). More recently, these guidelines were adapted to be appropriate for screening risk and protective factors for the purpose of preventing emotional and behavioral problems (O’Connell et al., 2009).

The field of school psychology has contributed practice standards to guide universal screening in school settings, particularly regarding their appropriateness, technical adequacy, and usability (Glover & Albers, 2007; Shapiro, Accomazzo, Claassen, & Fleming, 2015). General guidelines are also articulated in the Standards for Educational and Psychological Testing (Joint Committee on Standards for Educational and Psychological Testing, 2014). As clarified in the 2014 revision, validity refers to “the degree to which evidence and theory support the interpretations of test scores for proposed uses of tests” (Joint Committee on Standards for Educational and Psychological Testing, 2014, p. 11). A major source of evidence of validity comes from relations between test scores and variables external to the test. Concurrent criterion studies examine the relationship between a test score and a criterion contemporaneously, which are useful for determining the accuracy of screeners when the passage of time has not interfered with the presence of the underlying construct. Predictive criterion studies examine the relationship between a test score and a temporally delayed criterion, which is useful for determining the utility of a screening instrument, theorized to foreshadow the likelihood of an outcome over time. Both of these study designs are crucial for understanding whether a



screening instrument does what it purports to do when used in multi-tiered SEL delivery systems in schools. Common metrics for determining criterion validity include determinations of sensitivity, specificity, positive predictive value, and negative predictive value (Glover & Albers, 2007; Shapiro, Kim, Robitaille, & LeBuffe, 2016).

Sensitivity is a determination of the extent to which a screening tool correctly identifies those who are actually at risk. Specificity is a determination of the extent to which a screening instrument correctly identifies those who are not actually at risk. Positive predictive value (PPV) is a determination of the proportion of students who are correctly identified as at risk by a screening instrument out of all students who are identified as at risk, whereas, negative predictive value (NPV) is a determination of the proportion of students who are correctly identified as not at risk by a screening instrument out of all of the students who are identified as not at risk.

In both the academic and behavioral realms, schools often use screening instruments in multi-tiered instructional models that have untested or inadequate performance against these metrics (Arora, Connors, George et al., 2016; Shapiro, Kim, Robitaille, & LeBuffe, 2016). Although it is desirable to have all indicators (sensitivity, specificity, PPV, and NPV) above 75% (Gredler, 2000; Kingslake, 1983; Shapiro, Kim, Robitaille, & LeBuffe, 2016), this is achieved more often with narrow or targeted diagnostic screeners once a problem exists rather than with broad-based screening instruments focused on various emotional and behavioral problems of individuals.

Broad-based screeners tend to favor either sensitivity or specificity (Shapiro, Kim, Robitaille, & LeBuffe, 2016). Therefore, school practitioners face the decision as to whether their screening protocols will be over-inclusive, with higher sensitivities triggering many false alarms, or over-exclusive, with higher specificities overlooking some students that may benefit from more intensive instruction (Levitt, Saka, Romanelli, & Hoagwood, 2007). In relation to over-identification, concerns might be raised about the potential to do harm through labeling, as there is pervasive stigma surrounding mental illness. Additionally, potential barriers might exist that limit a school's capacity to conduct an in-depth assessment to confirm case identification and offer more intensive interventions. When Levitt and colleagues reviewed broad-based screeners for mental, emotional, and behavioral problems in 2007 (Levitt et al., 2007), only four broad instruments (completed by adult informants) were identified with published studies of sensitivity and specificity (i.e., Pediatric Symptom Checklist, Behavior Assessment System for Children, Strengths and Difficulties Questionnaire, and Child Behavior Checklist). The Pediatric Symptom Checklist (PSC; Jellinek et al., 1988) and the Behavior Assessment System for Children (BASC; Reynolds & Kamphaus, 1992) were identified as favoring sensitivity (over-identification), whereas the Strengths and Difficulties Questionnaire (SDQ; Goodman, 1997) and the Child Behavior Checklist (CBCL; Achenbach, 1991) were identified as favoring specificity (under-identification).

An updated review by Jenkins and colleagues in 2014 (Jenkins, Demaray, Wren, Secord et al., 2014) reiterated findings for the SDQ, and reported that sensitivity and specificity information on emerging screeners such as the Social Skills

Improvement System (Elliott & Gresham, 2008) and the Systematic Screening for Behavior Disorders (Walker & Severson, 1992) was unavailable. Jenkins added information about the Behavioral and Emotional Screening System (BESS; Kamphaus & Reynolds, 2007), a newly published brief version of the BASC-2, revealing that it favored specificity. Given the general technical shortcomings of broad-based behavioral health screening tools (Shapiro, Kim, Robitaille, & LeBuffe, 2016), Glascoe (2005) advised practitioners who need to minimize excessive referrals to consider screening instruments with sensitivities of 50%, specificities of 80%, and PPV rates in the 30%–50% range as an acceptable standard. The BESS is the only screener known to meet these standards (Glascoe, 2005).

Nonetheless, all of the universal screeners that have been examined relate to students' problem behaviors, rather than risk or protective factors. There are two instruments, however, not included in these reviews that were created with scales focused on such factors (Shapiro, Kim, Robitaille, & LeBuffe, 2016). The first is the Resiliency Scales for Children and Adolescents (RSCA; Prince-Embury, 2006) noted to only have published sensitivity and specificity analyses that use gender and parent education level in addition to scale scores to determine correct classification rates (Prince-Embury, 2010), rendering the rates hard to interpret relative to other instruments or standards. In addition, the Social-Emotional Assets and Resilience Scales – Teacher Short Form (Merrell, 2011) manual does not report sensitivities or specificities, which Nese and colleagues (2012) identified as an important next step for future accuracy analyses.

Accuracy is an important feature of effective screening tools, however, sensitivity and specificity are not the only instrument features in need of consideration (Arora, Connors, George et al., 2016; Shapiro, Kim, Robitaille, & LeBuffe, 2016). Universal prevention screening in schools needs to be practical for schools to implement and be capable of leading to service allocation decisions that improve the well-being and achievement of students. Both the public health and school psychology fields converge in their expectations that universal screening must be accurate and produce valuable information, but also should not undermine teacher or parent discretion, be too time consuming, stigmatize students, or have embedded biases against groups of students (O’Connell et al., 2009; Shapiro, Kim, Robitaille, & LeBuffe, 2016).

Emerging evidence suggests that strength-based assessment instruments may be as accurate as risk or problem-oriented instruments for identifying a student in need of support, without stigmatizing (or otherwise harming) individuals in a population (Dowdy, Furlong, Eklund, Saeki, & Ritchey, 2010; LeBuffe & Shapiro, 2004; Shochet, Dadds, Ham, & Montague, 2006). The proposed research attempts to address some of the concerns raised about screening and draw upon the literature related to the ecological framework of social and emotional learning, to contribute to the further development of available screening tools for use with youth in school settings. To date, no studies have examined the validity of screening students for successful school relationships. As such, this work will explore the efficacy of one strength-based assessment approach to implementing school-based mental health services—screening students for school connections.

## **Screening for School Connections**

School connectedness has emerged as an important construct for the study of promoting resilience in youth in school settings. Defined as “the extent to which students feel personally accepted, respected, and supported in the school social environment” (Goodenow, 1993; p. 80), school connectedness is viewed as a potential protective factor (Blum & Libbey, 2004). In fact, there is an accumulation of studies that suggest having social connections (versus being isolated) is associated with positive classroom engagement and academic achievement (Wilson, Karimpour, & Rodkin, 2010; Wentzel, Barry, & Caldwell, 2004). Not only do poor social connections adversely affect performance in a classroom, but such students are also at risk for other adverse outcomes related to general functioning. Social withdrawal, extreme feelings of isolation, and rejection can be precursors to aggressive and violent behavior (Totura, Karver, & Gesten, 2013). Poor social connections also increase vulnerability to mental health problems like depression, loneliness, and social anxiety (January, Casey, & Paulson, 2011; Segrin & Flora, 2000). School connectedness, on the other hand, has been linked to more positive student outcomes that include better attendance, grades, and higher test scores (Lapan, Wells, Petersen, & McCann, 2014). Additionally, school connectedness among students is associated with positive outcomes related to general functioning, such as lower substance use and abuse (Garringer, 2009), lower likelihood of having early sexual experiences (Lapan, Wells, Petersen, & McCann, 2014), and less sustained injuries from risky behaviors (e.g., not wearing a seat belt or driving while drinking; Bonny, Britto, Klostermann et al., 2000). Given the number of findings that demonstrate a significant association between

school connectedness and a variety of academic, behavioral, social, and emotional outcomes for youth, it seems plausible that students' school connections could provide an accessible domain for prevention or intervention efforts.

One of the challenges in the study of school connectedness, however, is the breadth with which different studies have measured it. As many as 11 different terms have been used to describe constructs of school connectedness including school bonding, school climate, school connection, attachment, and orientation to school (Libbey, 2004; Waters & Cross, 2010). Some studies use student report, and others integrate student and staff perceptions (Finn & Rock, 1997). Other measures utilize item pools of between one (e.g., Eisenberg, Neumark-Sztainer, & Perry, 2003) and 72 items (e.g., Karcher & Finn, 2005) in the quest to measure school connectedness validly. These differences make comparisons across studies problematic because these seemingly measure different constructs, yet all are considered measures of school connectedness.

For example, one of the most commonly used measures of school connectedness, developed for the National Longitudinal Study of Adolescent Health (Resnick, Bearman, Blum, Bauman et al., 1997) comprises five items such as "I feel close to people in this school" and "I feel safe at school" (Sieving, Beuhring, Resnick, Bearinger et al., 2001). It is used in studies where multiple health and well-being indicators are measured because it is brief and has sufficient reliability ( $\alpha = .75$ ) (Sieving, Beuhring, Resnick, Bearinger et al., 2001; Waters & Cross, 2010).

Teacher connectedness is also often embedded in an overall measure of school connectedness (Fredricks, Blumenfeld, & Paris, 2004; McNeely & Falci, 2004; Waters

& Cross, 2010), as different studies found links between positive teacher connection and delayed initiation of problem and health risk behaviors (McNeely & Falci, 2004) as well as higher academic achievement and greater student retention (Fredricks, Blumenfeld, & Paris, 2004; WestEd, 2008) are reported. These teacher connectedness scales have modest reliability scores around 0.63 and include items such as the “teacher notices when I’m not there” or “teacher notices when I do a good job” (McNeely & Falci, 2004; WestEd, 2008).

Although definitions and measurement options vary, many measures of connectedness to school can be found in the scientific literature. Most are composite scales built using a unit-weighted approach where all items are assumed to contribute equally and, when calculated, represent the mean of all items or a sum total (Raykov, 1997; Renshaw, Long, & Cook, 2014; Waters & Cross, 2010). Many of the school connectedness scales are reported to have sufficient reliability and validity for the context in which they have been tested (Battistich, Soloman, Kim, Watson, & Schaps, 1995; Bonny et al., 2000; McNeely & Falci, 2004; Renshaw, Long, & Cook, 2014; Waters & Cross, 2010), with their reliability assessed primarily by Cronbach’s alpha (Nunnally, 1978) and validity assessed by traditional factor analytic techniques using SPSS and other omnibus statistical packages.

However, there are many threats to the validity and reliability of composite scores that are created in this way, potentially leading to biased, inaccurate estimates (Rowe, 2002). One is the assumption that the observed items are one-dimensional; that is, the items each measure their own single latent variable (Munro, 2005). However, many mental health instruments are comprised of multiple items required to

represent one underlying latent construct (Renshaw, Long, & Cook, 2014; Waters & Cross, 2010), which arguably, might reflect limited aspects of school connectedness.

Another threat emerges when summing or taking the mean of several indicators to create a composite score, when it is assumed that each item, required to adequately measure the unobservable construct, contributes equally to the scale and assumes no measurement error across the items (Munro, 2005; Rowe, 2002; Renshaw, Long, & Cook, 2014; Waters & Cross, 2010). Also, most scale items measuring connectedness have ordinal response choices, which are often highly skewed (Joreskog, 1994). While this feature poses no problem during unit-weighted scale calculation, it has major implications for factor analysis (often used in the analysis of multi-item scales), which assumes data are continuous, normally distributed and lack measurement error (Joreskog, 1994). Furthermore, packages such as SPSS estimate loadings for each item on every factor extracted (Bollen & Lennox, 1991) even though we are most interested in how each item contributes to one specific factor. Estimates obtained using ordinal data may therefore be underestimated (Rowe, 2002; Renshaw, Long, & Cook, 2014; Waters & Cross, 2010).

In considering various threats to scale validity and reliability, the present study aims to explore the psychometric properties of the School Connections Survey (Pristawa, 2012) that was designed to overcome practical obstacles related to universal prevention screening. The School Connections Survey (SCS; see Appendix A; Pristawa, 2012) was created to help determine the number of self-reported connections that students identify in relation to peers and adults within their school building. The SCS is a screening-based assessment consisting of a self-report and teacher survey.



Students are asked to indicate whether they feel they have a good connection with at least one adult and one peer in the school building. Then they are asked to indicate the names of up to three peers and three adults, who represent their school connections. In relation to the teacher surveys, adults are also asked whether they feel they have a good connection with their students. Then the teachers are asked to indicate the names of up to three students, who represent their school connections. Typically, the complete administration time of the survey takes approximately 5 minutes.

Additionally, its conception appears to be grounded in two important places, where one reflects a tiered service delivery model, and the other a philosophical framework for psychological services that reflects positive psychology. Potentially, the ability to identify youth before the onset of a disorder can be very beneficial, but there is much to consider in terms of the technical adequacy of a connections screening. A major concern pertains to whether such a screening can reliably and accurately identify students as at risk of academic failure or social and emotional difficulties.

The purpose of this study is to begin evaluating the psychometric properties of the School Connections Survey; to date no studies exist that validate this tool with other measures of student social-emotional concerns or academic functioning.

### **Purpose of the Study**

The present study attempts to examine and further contribute to the development of the School Connections Survey, guided by Clark and Watson's (1995) basic principles for quality scale development. Derived from Loveinger's (1957) seminal work on the topic, their principles informed a systematic review of measurement studies published in *Psychological Assessment* that were reflected in the

test development guidelines later presented in the *Standards for Educational and Psychological Testing* (Joint Committee on Standards for Educational & Psychological Testing, 1999; Renshaw, Long, & Cook, 2014). Clark and Watson asserted that the primary concern in measure development is construct validity, which encompasses the many subtypes of validity as well as traditional notions of reliability, and that such validity is constructed through establishing substantive, structural, and external validity evidences. Establishing substantive validity evidence typically consists of determining the nature and scope of the construct of interest as well as creating an item structure and pool. Next, structural validity is established through testing the measure on a target sample and evaluating the item distributions, latent structure, internal consistency, and construct boundaries using descriptive, factor analytic, reliability, measurement invariance, and correlational analyses. Lastly, if structural validity evidence is obtained, then external validity evidence is established via testing the generalizability of the measure's structure with diverse samples, its relations with other convergent and discriminant measures, and its utility in applied contexts. In relation to the School Connections Survey, this work will begin to explore these aspects of construct validity by incorporating a screening tool that is purported to measure a related construct (i.e., behavioral/emotional difficulties and social skills).

Firstly, this investigation will help determine the degree to which the School Connections Survey correlates with the Strengths and Difficulties Questionnaire (SDQ; Goodman, 1997; See Appendix A). In particular, concurrent validity will be examined by looking at the extent to which scores on the SDQ converge with the

results on the SCS, which purportedly distinguishes between high and low levels of connectedness. If the School Connections Survey is to be used for screening, referral, and support planning, the measure should be able to differentiate accurately between students who have and have not demonstrated healthy school adjustment.

Specifically, the study will attempt to evaluate the efficiency of the School Connections Survey in identifying the students who may or may not be at risk for elevated social-emotional concerns and academic failure as compared to another psychometrically sound screening tool, the Strengths and Difficulties Questionnaire.

The Strengths and Difficulties Questionnaire (SDQ) was chosen as the criterion measure for this work as it is a tool that possesses a number of psychometrically sound characteristics. First, the SDQ is a brief, 25-item questionnaire that was developed to screen for behavioral/emotional difficulties and social skills with school-age populations (Goodman, 1997). Second, it is a tool that can be completed by different informants (i.e., parents, teachers, and students). Third, multiple research studies (e.g., Gómez, 2012; Klasen, Woerner, Wolke, Meyer et al., 2000; and Muris, Meesters, & van den Berg, 2003) have found adequate reliability and validity in both community and clinical samples for the student version of the SDQ, which is particularly relevant for this study that intends to evaluate the psychometric properties of a self-report screening tool. Fourth, the SDQ is available at no cost for both research and clinical purposes. Moreover, SDQ scores were found to predict risk of psychiatric diagnosis in a community sample of adolescents, as assessed by structured diagnostic interview (Burns & Rapee, 2016). Taken together, the brevity, accessibility, psychometric robustness, and scope of the SDQ, all contributed to its

selection as an appropriate comparison measure within this study. See Appendix A for detailed information regarding the student version of the Strengths and Difficulties Questionnaire that will be used.

An additional purpose of this study is to begin evaluating the social validity of the School Connections Survey using qualitative information that can help shed light on the impressions of those who administer it. A number of schools have used the SCS, and developed methods for follow up with “un-connected” students. In many instances, school personnel report positive results and strong satisfaction with the tool and the activities (e.g., screening and follow up) surrounding it. Obtaining additional information about the social acceptance and practicality of the SCS will help to further delineate the impact of its usage. Guided by the three-part framework originally proposed by Wolf (1978; Cooper, Heron, & Heward, 2007), a set of social validity questions will be included to gain insight on school personnel’s perspectives regarding the goals, procedures, and effects of the screening process. See Appendix A for detailed information regarding the social validity questionnaire that has been created for this study.

Given the purpose and issues raised about the School Connections Survey, then, the proposed research is intended to address three primary questions:

### **Research Questions**

1. To what extent do the School Connections Survey and Strengths and Difficulties Questionnaire measure related constructs?

Hypothesis #1: School connectedness on the School Connections Survey will be significantly and negatively correlated with the subscales on the Strengths and

Difficulties Questionnaire that include Emotional Symptoms, Conduct Problems, Hyperactivity/Inattention, and Peer Relationship Problems. School connectedness will be significantly and positively correlated with the Prosocial Behavior subscale on the Strengths and Difficulties Questionnaire.

2. What is the concurrent validity of the School Connections Survey as indicated by its relationship to the Strengths and Difficulties Questionnaire when both are used with middle school students?

Hypothesis #2: If ethnicity, gender, school attendance, special education eligibility, free/reduced lunch eligibility, and office discipline referrals are taken into account, then there will be no significant difference in the classification of students who are identified as *connected* on the School Connections Survey and the students who are identified as *normal* on the Strengths and Difficulties Questionnaire.

3. In relation to the Strengths and Difficulties Questionnaire, to what extent do teachers perceive the methods, results, and usefulness of the School Connections Survey to be socially valid in contributing in a positive way to the education and support of middle school students?

Hypothesis #3: If teachers rate the School Connections Survey and Strengths and Difficulties Questionnaire concurrently, there will be no significant difference in their impressions of social validity between the screening tools.

## CHAPTER 3

### METHOD

#### **Participants and Setting**

The project was implemented in a middle school located in the mid-Atlantic region of the United States. Following approval from the Institutional Review Board at the University of Rhode Island, consent for participation in the study was obtained from multiple parties, including school administrators, teachers, parents, and students (See Appendices B and C for information and copies of consent forms). It should be noted that the process of gaining consent from all of the parties was completed in approximately six months, in accordance with the research protocol of the school district.

#### Student Variables

Given limitations associated with scheduling conflicts and the submission of completed consent forms, data were successfully gathered for 123 students enrolled in the 8<sup>th</sup> grade. These students comprised a group who was transported to a nearby high school each day to attend classes due to a lack of classroom space in the middle school. The available student data included ethnicity, gender, office discipline referrals, and attendance. It should be noted that the recruited sample did not include any students receiving special education services. Additionally, free/reduced lunch eligibility represented a protected status that was inaccessible to school administrators and required a security clearance.

## Teacher Variables

The adult participants included a sample of 25 teachers from the same middle school who either taught 8<sup>th</sup> grade primarily or multiple grades, but specifically, taught the students who participated in the study. The characteristics gathered about the adult participants included ethnicity, gender, and years of teaching experience. The majority of the teachers were female and White, with only four identifying as male and one male teacher identifying as Asian American. Additionally, three shared that they had worked as a teacher for 7-10 years, while seventeen reported to have worked 5-7 years, four reported to have worked 3-5 years, and one worked as a teacher for 1 to 3 years.

## **Procedure**

During the fall school term, the researcher visited various 8<sup>th</sup> grade classrooms to administer all the measures to participants within specially designated areas and times over the course of three days. Student participants completed the School Connections Survey and the Strengths and Difficulties Questionnaire in one session that lasted approximately 15 minutes. The teachers completed the social validity questionnaire during the same assessment period and submitted their responses simultaneously with the students. See Appendix C regarding the protocol for the administration of participant surveys.

## **Measures**

### School Connections Survey

The School Connections Survey (SCS; see Appendix A; Pristawa, 2012) was created to help determine the number of self-reported connections that students

identify in relation to peers and adults within their school building. The SCS is a screening-based assessment consisting of a self-report form for students and adult surveys for school staff. Students are asked to indicate whether they feel they have a good connection with at least one adult and one peer in the school building. Then they are asked to indicate the names of up to three peers and three adults, who represent their school connections. In relation to the adult surveys, school staff is also asked whether they feel they have a good connection with their students. Then the adults are asked to indicate the names of up to six students, who represent their school connections. Typically, the complete administration time of both student and staff surveys has been reported to take approximately 5-7 minutes. Presently, no norms, validity, or reliability indices have been studied or reported for the SCS.

In this study, only one administration of the School Connections Survey was implemented with students to obtain information about whether or not they believed they had a good connection with at least one adult and one peer in the school building. Using the self-report form, students listed the names of individuals to whom they felt connected, which could be counted as peer or adult connections. Depending upon the number of self-reported connections, a student's score for each type of connection could range between 0 and 3. Students submitted surveys using their pre-assigned school identification numbers, rather than their names, which enabled data collection on ethnicity, gender, office discipline referrals, and attendance. After student data were compiled and entered into an electronic database, it was coded using new identification numbers generated within the study to promote anonymity during analysis. Teachers were not asked to complete the adult connections survey in this



study as any analysis of such responses fell outside the scope of the proposed research questions.

### Strengths and Difficulties Questionnaire

A second primary measure used in this study was The Strengths and Difficulties Questionnaire (SDQ; Goodman, 1997). The SDQ is a brief, norm-referenced survey consisting of a parent, teacher, and self-report form intended to screen for social, emotional, and behavioral concerns in youth. The parent and teacher forms are designed to be used with children ages 3–16 years, while the self-report form exists for youth ages 11–16 years. The SDQ consists of 25 items over five scales, with five questions comprising each scale: Emotional Symptoms, Conduct Problems, Hyperactivity/Inattention, Peer Relationship Problems, and Prosocial Behavior. Total scores for each construct range from 0-10, with higher scores indicating more severe conduct problems, more severe emotional symptoms, and greater levels of prosocial behavior. Internal consistency across the different constructs of the SDQ and across different informants (self-report, teacher, parent) has been found to be satisfactory (Cronbach's Alpha mean of .73). Test-retest stability after 4–6 months was found to be .62 (Goodman, 2001).

The SDQ is available online, and all materials are downloadable for free. The SDQ is available in over 70 languages, with corresponding norms accessible on the survey website. The website includes printable rating scales, downloadable scoring templates, and online scoring tools, norms, and links to articles involving the SDQ. Each form can be scored by hand or online. There is no cost to use the SDQ online.

The cost of printing may need to be considered if one chooses to print hardcopies of the forms from the SDQ website.

The student self-report form of the SDQ was used in the present study using the American English version for adolescents aged 11–16 years (Bourdon et al., 2005). All of the items are rated using a 3-point Likert-type scale, ranging from 0=not true, 1=somewhat true, or 2=certainly true, in which the respondent identifies whether a behavior occurred during the current school year (Lane, Menzies, Oakes, & Kalberg, 2012). A total difficulties score is derived by summing all of the four problem behavior scales (i.e., Emotional Symptoms, Conduct Problems, Inattention–Hyperactivity, and Peer Relationship Problems). For each respondent a subscale score ranges from 0 to 10 and the total difficulties score ranges from 0 to 40, where higher numbers indicate higher levels of concern. The total difficulties score also falls within one of three categories: normal (i.e., scores from 0 to 15), borderline (i.e., scores from 16 to 19), or abnormal (i.e., scores from 20 to 40). Items comprising the Emotional Symptoms scale include unhappy mood, fearfulness, headaches or stomachaches, clinginess, and worries. The Conduct Problems scale includes items pertaining to temper tantrums, obedience, lying or cheating, stealing, and fighting. The Inattention–Hyperactivity scale includes items pertaining to restlessness, fidgeting or squirming, distraction, concentration problems, impulsiveness, and task completion. The Peer Relationship Problems scale includes items regarding preference for solitary play, friendships, being liked or bullied, and preference for adults. The Prosocial scale, which is excluded from the total difficulties score, includes consideration of others' feelings, sharing, displays of kindness, and willingness to help others.

In general, the SDQ has demonstrated acceptable reliability across a variety of settings, with weaker reliability for the Peer Relationship Problems and Prosocial Behavior scales. Research with American samples has generated alphas ranging from 0.63 to 0.82 for the core problem scales, 0.46 to 0.62 for Peer Relationship Problems, 0.62 to 0.88 for the total difficulties score, and 0.71 to 0.77 for Prosocial Behavior (Achenbach, Becker, Dopfner, Heiervang et al., 2008; Becker, Rothenberger, Sohn et al., 2015; Bourdon et al., 2005; Palmieri and Smith, 2007).

#### Social Validity Questionnaire

Teachers were asked to respond to six statements about their impressions of the School Connections Survey and Strengths and Difficulties Questionnaire in what was conceptualized as a social validity questionnaire (Wolf, 1978; Cooper, Heron, & Heward, 2007; and see Appendix A for a copy of the SV Questionnaire). The SV Questionnaire was administered simultaneously with the student surveys. The teachers tended to complete the questionnaire within ten minutes before submitting their responses to the researcher in closed envelopes. The questionnaire was designed to help gain an understanding of (a) teachers' perceptions of the screening tool, (b) challenges they might anticipate during implementation, and (c) their evaluation of students being able to benefit from the screening tool. Illustrative examples of social validity items include: (a) I understand the purpose of the administration of this screening tool; (b) I would be satisfied with the administration of this screening tool; and (c) This screening tool appears to be useful for learning about potential student difficulties.

## CHAPTER 4

### RESULTS

#### **Descriptive Statistics**

Preliminary analyses were conducted to assess various aspects of the data (e.g., centrality and frequency). The variables of interest included gender, ethnic/racial group, school attendance, office discipline referrals, self-reported peer and adult connections from the School Connections Survey, and the total difficulties scores obtained from the Strengths and Difficulties Questionnaire. A review of these variables revealed that male students outnumbered female students, with males comprising 58% of the sample (i.e., 71 out of 123 participants in total).

Approximately 58% (i.e., 43 males and 28 females) of the students were White, 32% (i.e., 20 males and 19 females) were Asian, 6% (i.e., 4 males and 4 females) were Hispanic, and 4% (i.e., 4 males and 1 female) were African American. Additionally, data related to school attendance revealed that 93% of all the students (i.e., 114 participants) had attended all school days at the time of the screening, with only 9 students recorded as absent for 1-2 days. In regard to office discipline referrals, 7 students (i.e. 6 male and 1 female) were observed to have office discipline referrals in their school record. All of these students were White with the exception of one Asian student. These data are displayed in Tables 1 through 3 in Appendix D.

In relation to the student data obtained from the SCS, the majority of students reported having a peer or adult connection. Fifty-seven students (i.e., 32 males and 25 females) reported three adult connections, 17 students (i.e., 8 males, 9 females) reported two adult connections, 23 students (i.e., 13 males and 10 females) reported

one adult connection, and 26 students (i.e., 18 males and 8 females) reported a lack of adult connections. The majority of students (i.e., 53 males and 40 females) reported having three peer connections, 11 students (i.e., 5 males and 6 females) reported two peer connections, 12 students (i.e., 7 males and 5 females) reported one peer connection, and 7 students (i.e., 6 males and 1 female) reported a lack of peer connections. Across gender and ethnic/racial group, students reported a greater number of connections with peers than adults. For example, about 25% of males and 15% of females reported a lack of adult connections, while 8% of males and 2% of females reported a lack of peer connections. Twenty-four percent of White students reported a lack of adult connections, whereas only 6% reported a lack of peer connections. The difference in connectedness with peers and adults was especially pronounced among the African American students, of whom 40% reported a lack of adult connections while none reported a lack of peer connections. Fifteen percent of Asian students reported a lack of adult connections and 8% reported a lack of peer connections. Twelve percent of Hispanic students reported a lack of adult connections and none reported a lack of peer connections. In general, the average number of connections included one adult and two peer connections. Female students were observed to disproportionally report more connections than their male counterparts. Also, a lack of connections were reported at a disproportionally greater rate amongst White and Asian students who were male. All of these data are summarized in Tables 4 and 5 in Appendix E.

In relation to observed scores on the Strengths and Difficulties Questionnaire about 81% of the sample (i.e., 61 males and 39 females) obtained total difficulties

scores that were in the normal range, 11% (i.e., 4 males and 9 females) were in the borderline range, and 8% (i.e., 6 males and 4 females) were in the abnormal range. This type of pattern was observed across ethnic/racial groups with the majority of scores falling in the normal range (i.e., 77% of White students, 95% of Asian students, 88% of Hispanic students, and 100% of African American students). Scores in the borderline range were observed for 10% of White students, 25% of Asian students, and 12% of Hispanic students. Thirteen percent of White students and 25% of Asian students' scores fell in the abnormal range, which indicated clinically significant social and emotional concerns. Subsequently, the SDQ subscale scores obtained in the study sample were compared with the standardization sample. These data are displayed in Tables 6 through 9 in Appendix F.

The means and standard deviations of the SDQ subscale scores obtained in the study were compared qualitatively with the means and standard deviations of the U.S. normative sample that can be found at <http://www.sdqinfo.com>. It should be noted that the standardization sample for U.S. participants is restricted by age, gender, and is primarily derived from caregiver report (rather than youth self-report). The means of the total study sample (Emotional Problems subscale  $M = 3.3$ ,  $SD = 2.3$ ; Conduct Problems subscale  $M = 1.5$ ,  $SD = 1.6$ ; Hyperactivity subscale  $M = 4.1$ ,  $SD = 1.9$ ; Peer Problems subscale  $M = 1.9$ ,  $SD = 1.5$ ) tended to exceed the means of the standardization sample (Emotional Problems subscale  $M = 1.7$ ,  $SD = 2.0$ ; Conduct Problems subscale  $M = 1.4$ ,  $SD = 1.8$ ; Hyperactivity subscale  $M = 2.7$ ,  $SD = 2.6$ ; Peer Problems subscale  $M = 1.4$ ,  $SD = 1.6$ ). This trend also emerged when the study sample was divided by males (Emotional Problems subscale  $M = 2.7$ ,  $SD = 2.0$ ;

Conduct Problems subscale  $M = 1.7$ ,  $SD = 1.7$ ; Hyperactivity subscale  $M = 4.1$ ,  $SD = 1.9$ ; Peer Problems subscale  $M = 2.0$ ,  $SD = 1.5$ ) and females (Emotional Problems subscale  $M = 4.2$ ,  $SD = 2.4$ ; Conduct Problems subscale  $M = 1.3$ ,  $SD = 1.3$ ; Hyperactivity subscale  $M = 4.1$ ,  $SD = 1.8$ ; Peer Problems subscale  $M = 1.8$ ,  $SD = 1.5$ ). The means for males (Emotional Problems subscale  $M = 1.5$ ,  $SD = 1.9$ ; Conduct Problems subscale  $M = 1.5$ ,  $SD = 1.9$ ; Hyperactivity subscale  $M = 3.1$ ,  $SD = 2.8$ ; Peer Problems subscale  $M = 1.5$ ,  $SD = 1.7$ ) and females (Emotional Problems subscale  $M = 1.8$ ,  $SD = 2.1$ ; Conduct Problems subscale  $M = 1.2$ ,  $SD = 1.6$ ; Hyperactivity subscale  $M = 2.2$ ,  $SD = 2.3$ ; Peer Problems subscale  $M = 1.3$ ,  $SD = 1.6$ ) in the standardization sample reflected smaller values. All of the scores from the study sample fell within a 95% confidence interval of the standardization sample, with the exception of the study sample mean total difficulties score ( $M = 10.8$ ,  $SD = 4.8$ ) that exceeded the standardization sample mean total difficulties score ( $M = 7.1$ ,  $SD = 6.2$ ) to a larger degree. Unexpectedly, the total study sample exhibited more problem behaviors and less prosocial behavior ( $M = 7.4$ ,  $SD = 1.8$ ) than the total U.S. standardization sample ( $M = 8.7$ ,  $SD = 1.8$ ). These data are displayed in Tables 8 and 9 in Appendix F.

Another facet of the preliminary analysis included a review of the kurtosis, skewness, and standard deviations of each variable (see Table 3 in Appendix D): student ethnicity, gender, attendance, office discipline referral, peer and adult connections, and SDQ total difficulties scores. Kurtosis pertains to how data peaks or spreads out around the midpoint (which is approximately zero for normal distributions) due to extreme values, with acceptable values falling between -1.5 and +2 (Harlow, 2005). Skewness refers to how data congregates at one end of the range

of values due to extreme values (e.g., outliers), where acceptable values fall between -1 and +1 (Harlow, 2005). Additionally, it is ideal for a given standard deviation to reflect a value lower than its associated mean, as large standard deviations indicate a wide range of scores. Minimal variance was observed in the frequencies of the demographic and screening variables (e.g., peer connections  $M = 2.54$ ,  $SD = 1.0$ ; adult connections  $M = 1.9$ ,  $SD = 1.2$ ; total difficulties score  $M = 10.9$ ;  $SD = 4.8$ ), as the standard deviations remained below their associated means. One exception emerged in relation to the Conduct Problems subscale, where the mean of 1.5 was equivalent to the standard deviation. Additionally, large skewness and kurtosis values resulted in an uneven distribution of values for gender, office discipline referrals, attendance, and peer connections. For example, a skewness value of 5.2 ( $SE = 0.43$ ) and kurtosis value of 29.3 ( $SE = 0.43$ ) were observed for office discipline referrals. An uneven distribution of values for gender, office discipline referrals, attendance, and peer connections, indicated unequal grouping across males and females, occurrence and non-occurrence of office discipline referrals, number of school days attended, and number of peer connections. As previously noted, the majority of the students were male (i.e., 71 in total), only 9 students (i.e., 1 female and 8 males) had been absent from school, and 7 students (i.e., 1 female and 6 males) had received an office discipline referral for the year at the time of the screening. This unevenness in the data yielded statistical implications for analysis that restricted the utility of procedures typically used to assess for mean differences between groups or measure the impact of variables in predictive models (e.g., dependent and independent t-tests and analysis of variance).



In particular, a regression analysis and discriminant function analysis were considered for assessing the concurrent validity of the SCS by examining how it classifies students as at risk in comparison to a more established measure when the same predictors (e.g., student variables) are taken into account. Regression is a statistical technique that is used to predict the behavior of a single dependent variable using a set of categorical and/or continuous independent variables (Harlow, 2005; Peng, Lee, & Ingersoll, 2002). In order for this approach to yield robust findings, however, there must be a linear relationship between the independent and dependent variables, a normal distribution, and homogeneous variance across all levels of the predictors (Harlow, 2005). The majority of potential predictors (e.g., students' ethnicity and attendance) in this study failed to meet these assumptions.

Discriminant function analysis (DFA) is a statistical method that uses several (usually continuous) independent variables and one categorical dependent variable (Harlow, 2005; UCLA: Statistical Consulting Group, 2017). It is mathematically equivalent to multivariate analysis of variance in that there are one or more categorical variables on one side and two or more continuous variables on the other side. DFA is mainly used in examining what variables differentiate between groups most clearly. The variables with the highest standardized weights are those that will also show the strongest group differences. Similar to a regression analysis, DFA requires the traditional general linear model assumptions (i.e., normality, linearity, and homoscedasticity) that were not met by many of the target variables. The lack of fit of standard statistical approaches, coupled with other considerations that emerged in relation to the unevenness of the screening data obtained from the SCS and SDQ,

supported the use of nonparametric statistical procedures. Three nonparametric approaches, in particular, were identified as pertinent to the research objectives.

One approach involves calculating a Receiver Operator Characteristic (ROC) curve, which is frequently used to assess the discriminatory accuracy of screening instruments (Coolidge, 2006). A ROC curve is a useful graphical summary of the sensitivity (i.e., true positive rate) and specificity (i.e., false positive rate) values at different decision points (Coolidge, 2006; Pepe, Janes, Longton, Leisenring, & Newcomb, 2004; Shapiro, 1999). The upper left corner of the graph represents perfect discrimination (sensitivity=1, specificity=0), while the diagonal line where sensitivity=specificity represents discrimination no better than chance. The ROC curve of a diagnostic test does not depend on the scale of measurement for the test, which makes it useful for comparing diagnostic tests of different scales, including tests for which the decision limit scale is latent rather than quantitative or discrete (Shapiro, 1999). This type of analysis also provides a common scale for comparing different predictors that are measured in different units, whereas the odds ratio in logistic regression analysis, for example, must be interpreted according to a unit increase in the value of an associated predictor that can make comparisons between predictors difficult to interpret (Pepe et al., 2004). Since it is often useful to have a single number that summarizes an instrument's accuracy, various summary indices based on the ROC curve have been implemented. One of the more popular summaries includes the area under the ROC curve (AUC). AUC values closer to 1 indicate the screening measure reliably distinguishes among students with high and low risk status, whereas values at .50 indicate the predictor is no better than chance (Zhou, Obuchowski, &

Obuschowski, 2002). Another summary index includes the partial AUC, which is the AUC over a range of specificity values that is relevant to a particular setting.

Additionally, other summary indices assess the sensitivity of screening instruments using fixed specificity values. The choice of an appropriate index depends on the application; however, there are several caveats to consider when using AUC to assess screening instruments that contain ordinal or continuous data.

For example, when the ROC curves cross for two tests, those same instruments can have similar AUC values even though one test has higher sensitivity for certain specificities while the other test has better sensitivity for other specificities (Halligan, Altman, & Mallett, 2015). Also, the AUC is actually the probability that the test results of a random pair of subjects, one at risk and one not at risk, are ranked correctly, but in practice the test is not given to pairs of subjects who represent risk and lack of risk (Halligan, Altman, & Mallett, 2015). Additionally, since AUC measures performance over all thresholds, it includes both clinically relevant and clinically illogical data. For instance, data suggesting that a test with an AUC of 0.9 slightly outperforms another with an AUC of 0.8 is not necessarily clinically interpretable. Practitioners tend to be uninterested in students' performance across all thresholds, as they focus on clinically relevant thresholds (Halligan, Altman, & Mallett, 2015). Despite these potential limitations, the ROC curve analysis is integral to the present research investigation, as one of the primary objectives is to assess the technical adequacy of a screening instrument against another instrument with known sensitivity and specificity values.

Another method for evaluating screening instruments that will be included within the data analysis is the McNemar Test. This procedure is typically used for paired binary observations and is often used in practice to compare the sensitivities and specificities for the evaluation of two diagnostic tests (Liao and Lin, 2008; Kim and Lee, 2017; Trajman and Luiz, 2008). More specifically, when two tests are performed on the same individuals, the reference test and the new test can be compared using the McNemar test by checking the equality of marginal positives (which, in this case, will be students classified as at risk). Although the McNemar test has been widely used this way for the purpose of evaluating diagnostic tests, there are some studies illustrating broader use of the test, as well as potential difficulties in the correct interpretation of the results.

For example, Trajman and Luiz (2008) and Hawass (1997) recommended researchers to compare the sensitivities between two diagnostic tests exclusively among “diseased” cases as well as to compare specificities exclusively among “healthy” cases using the McNemar test. When sensitivities (or the specificities) of a new test and of the reference test are equal, type I error seems to be well controlled, despite dependence within the data. Power increases with larger difference in sensitivities (or specificities) between the new and reference test, or with a larger sample size. When there is a difference between the new and reference test, the magnitude of dependence within the data negatively affects the power. Subsequently, using an all combined group may lead to failure in detecting differences between groups. The present study includes the McNemar Test as a follow up to the ROC

curve analysis, to assess potential differences between the SCS and SDQ in classifying students as at risk.

The third nonparametric approach includes implementing the Wilcoxon Signed Rank Test (WSR) to assess potential differences in the social validity of the School Connections Survey and Strengths and Difficulties Questionnaire. The WSR test is an alternative to the standard  $t$  test (Coolidge, 2006; Myers, Well, & Lorch, 2010) when comparing the means between paired data. It is only slightly less powerful than the correlated-scores  $t$  test when the data are normally distributed and can be more powerful when the difference scores are symmetrically distributed with heavy tails (Myers, Well, & Lorch, 2010). If the distribution of difference scores is skewed, however, the likelihood of Type I errors (i.e., false positives or incorrectly rejecting a null hypothesis) may be inflated (Myers, Well, & Lorch, 2010). Additionally, difference scores of zero are removed during the calculation of the WSR test, which results in a reduction of power. Given the noted limitations, a review of descriptive statistics was a necessary and preliminary step to assess the robustness of the findings obtained from the aforementioned statistical procedures. The following sections describe results from the ROC curve analysis, McNemar Test, and WSR test in greater detail.

### **Relations Among Measures**

The first research question of interest was: To what extent do the School Connections Survey and Strengths and Difficulties Questionnaire measure related constructs? It was hypothesized that the students' school connections would significantly relate to the SDQ subscales. To address the research question,

Spearman's correlation coefficient was calculated to assess the relatedness of the students' school connections and SDQ subscales. Spearman's correlation coefficient determines the rank order relationship between two quantitative variables when one or both variables are ordinal and non-normally distributed (Coolidge, 2006; Myers, Well, & Lorch, 2010). Thus, it is used similarly in data contexts as Pearson's correlation, falling between -1 and +1 (Coolidge, 2006; Myers, Well, & Lorch, 2010). An inspection of the pattern of coefficients between the students' school connections and SDQ subscales revealed a weak, negative correlation between peer connections and the Peer Relationship Problems subscale ( $r = -.27, p < .01$ ). Peer problems indicated by the SDQ were observed to decrease as the number of self-reported peer connections on the SCS increased (or vice versa), which suggests that peer connections reported on the SCS measure a construct similar to that measured by the Peer Relationship Problems Scale, to a very limited degree. This finding provided very limited support for the hypothesis that proposed self-reported school connections on the SCS would correlate with problem behavior subscales on the SDQ. However, other significant correlations emerged that shed more light on the sample's characteristics.

Some of the findings included weak, positive correlations between student gender and the Prosocial subscale on the SDQ ( $r = .19, p < .05$ ) as well as between adult connections and peer connections ( $r = .18, p < .05$ ). These correlations indicated female students were observed to obtain higher scores. Adult and peer connections were also observed to rise together. Additionally, moderate relationships emerged between student gender and the Emotional Problems subscale on the SDQ ( $r = .30, p < .01$ ), between school attendance and office discipline referrals ( $r = -.35, p < .001$ ), and

between office discipline referrals and adult connections ( $r = -.33, p < .001$ ). These correlations suggested the simultaneous rise of student gender and scores on the Emotional Problems subscale, where female students were observed to obtain higher scores. The negative correlations, on the other hand, indicated variance in opposite directions. School attendance increased while office discipline referrals decreased and office discipline referrals increased while adult connections decreased. All of these correlations correspond with previously cited literature regarding trends in school connectedness (e.g., low connectedness is related to behavioral problems). However, the weak correlation between peer and adult connections, along with the lack of covariance between school connections and the SDQ subscales, suggest that the SCS is potentially comprised of different constructs. Thus, any subsequent analysis should include an assessment of trends across both aggregated and disaggregated data, as school connections appear to vary across groups (e.g., gender). All of the noted correlations are displayed in Table 10 in Appendix G.

### **Analysis of Concurrent Validity**

The second research question of interest was: What is the concurrent validity of the School Connections Survey as indicated by its relationship to the Strengths and Difficulties Questionnaire when both are used with middle school students? It was hypothesized that there would be no significant difference in the classification of students who are identified as *connected* on the School Connections Survey and the students who are identified as *normal* on the Strengths and Difficulties Questionnaire. The ability of the School Connections Survey to distinguish between normal and at-risk students was examined using Receiver Operator Characteristic curves, employing

the area under the curve as the index of discriminant ability. As previously noted, the AUC is 1.0 for an instrument that discriminates perfectly and 0.5 for an instrument that discriminates with no better than chance accuracy. ROC curves were generated to assess the SCS against the Total Difficulties Score for the entire sample as well as separately for male and female students. Prior to analysis, two transformations were conducted on the SDQ and SCS data. Specifically, the SDQ Total Difficulties Score variable was recoded into a dichotomous one (i.e., 0 = *not at risk* and 1 = *at risk*) using its scoring system. The total difficulties score falls within one of three categories: normal (i.e., scores from 0 to 15), borderline (i.e., scores from 16 to 19), or abnormal (i.e., scores from 20 to 40). For the analysis, scores falling within the *normal* range were recoded as *not at risk* while scores falling within the *borderline* and *abnormal* ranges were recoded as *at risk*. The newly created dichotomous variable served as the classification predicted by the School Connections Survey. All of the self-reported connections from the SCS for a given student were summed up to form a new variable labeled *Total Connections*. The *Total Connections* variable was entered as the test variable in each analysis. Subsequently, three ROC curves were calculated.

Findings revealed that the SCS did not distinguish well between students at risk and those not at risk as indicated by the SDQ, regardless of gender. For the entire sample, the discrimination accuracy of *Total Connections* reported on the SCS resulted in an AUC value of .57 at p-value of .35. The discrimination accuracy of *Total Connections* for male students resulted in an AUC value of .52 at p-value of .81. The discrimination accuracy of *Total Connections* for female students resulted in an AUC value of .47 at p-value of .75. Additionally, the discrimination accuracy of *Total*



*Connections* for all students was examined in relation to each SDQ subscale, resulting in non-significant AUC values (.35 at p-value of .22 for Peer Problems; .56 at p-value of .40 for Hyperactivity; .38 at p-value of .30 for Conduct Problems; .58 at p-value of .35 for Emotional Problems). Given the lack of significance among these findings, it was determined that disaggregating the data further by gender (for a second time) would be unnecessary.

However, classification frequencies for both the SCS and SDQ were assessed using the McNemar Test to provide an additional perspective of each instrument's performance. The McNemar Test has a chi-square distribution and it is used to evaluate paired data (Conover, 1999; Siegel & Castellan, 1988). Its assumptions include that each pair of observations are mutually independent and can be assigned to one of two possible categories (Conover, 1999). Before conducting the statistical test, the ordinal data were recoded as categorical data. Specifically, the total number of school connections reported on the SCS fell into the category of either *low connectedness* (i.e., including 0-3 connections) or *high connectedness* (i.e., 4 or more connections). The total difficulties scores from the SDQ were recoded as either *normal* (i.e., scores equal to or less than 15) or *elevated* (i.e., scores of 16 or more). The categories were generated according to the scoring guidelines and/or limits of each survey's scales. Seven (i.e., approximately 5%) students could be classified as having low connectedness and elevated SDQ scores, 31 (i.e., 25%) students could be classified as having low connectedness and normal SDQ scores, 12 (i.e., approximately 10%) students could be classified as having high connectedness and elevated SDQ scores, and 73 (i.e., 59%) students could be classified as having high

connectedness and normal SDQ scores. The total number of students classified as having low connectedness was 38 (i.e., approximately 31%) out of 123 and the total number of students classified as having elevated SDQ scores was 19 (i.e., approximately 15%) out of 123. In view of the chi square distribution, the critical value of chi-square is 3.84 at  $p = .05$  with one degree of freedom. The McNemar Test revealed that the observed ratio of at-risk to no risk classification among the students significantly varied across the screening tools ( $\chi^2(1, N=123) = 7.54, p < .05$ ). The SCS appeared to classify students as at-risk at a greater rate than the SDQ, but imprecisely, as demonstrated by the AUC values. Furthermore, the observed ratio of at-risk to no risk classification varied significantly across the screening tools for male students ( $\chi^2(1, N=71) = 6.50, p < .05$ ), but not female students. Table 11 in Appendix H displays the classification frequencies for each screening tool.

### **Analysis of Social Validity**

The third research question of interest was: In relation to the Strengths and Difficulties Questionnaire, to what extent do teachers perceive the methods, results, and usefulness of the School Connections Survey to be socially valid in contributing in a positive way to the education and support of middle school students? It was hypothesized that there would be no significant difference in the teachers' impressions of social validity between the screening tools. The social validity items included: (a) I understand the purpose of the administration of this screening tool; (b) I would be satisfied with the administration of this screening tool; (c) This screening tool appears to be useful for learning about potential student difficulties, (d) This screening tool appears to be challenging to administer to students; (e) Students would benefit from

the administration of this screening tool; and (f) The administration of this screening tool is appropriate for the school setting. Respondents rated all of the items using a 5-point Likert-type scale, ranging from 1=strongly disagree, 2=disagree, 3=neither, 4=agree, or 5=strongly agree. A preliminary examination of the data revealed that the majority of the teachers (i.e., at least 14 out of the total 25) viewed both screening tools favorably and scored their social validity items in a similar manner, indicating a rating of 4 at minimum for all of the items except for one question. The exception was the item that asked whether or not a given screening tool appeared difficult to administer, as lower scores indicated a more favorable response from teachers.

Twenty-three teachers (out of the total 25) agreed that they understood the purpose of the administration of the SCS, while 24 teachers agreed that they understood the purpose of the administration of the SDQ. Eighteen teachers agreed that they would be satisfied with the administration of the SCS, while 24 teachers agreed that they would be satisfied with the administration of the SDQ. Sixteen teachers agreed that the SCS would be useful for learning about student difficulties, while 23 teachers agreed that the SDQ would be useful for learning about student difficulties. Sixteen teachers disagreed (i.e., rated the item as either 1 or 2) that the SCS would be challenging to administer, while 14 teachers disagreed that the SDQ would be challenging to administer. Nineteen teachers agreed that the administration of the SCS would benefit students, and 21 teachers agreed that the administration of the SDQ would benefit students. Twenty teachers agreed that the administration of the SCS is appropriate for the school setting, and 21 teachers agreed that the

administration of the SDQ is appropriate for the school setting. Across all of the social validity items, the teachers rated both screening tools in a similar manner.

Additional analyses were conducted to assess whether the data for teacher impressions met appropriate assumptions related to frequency, distribution, and collinearity. The sum of all six items represented the teachers' impressions of a given screening tool. Separate means were calculated for the social validity questionnaires that corresponded to each screening tool, based upon the sum of the teachers' responses. Results revealed only a small variance between the means (i.e., SCS impressions  $M = 21.2$ ,  $SD = 2.8$  and SDQ impressions  $M = 22.5$ ,  $SD = 3.6$ ); however, large kurtosis and skewness values resulted in an uneven distribution of scores for the teachers' impressions of the SDQ. The skewness value was observed to be  $-1.6$  ( $SE = 0.46$ ) and kurtosis value was  $5.2$  ( $SE = 0.90$ ).

Also, Cronbach's alpha was calculated in relation to each screening instrument to provide a measure of the internal consistency of the social validity scale. Expressed as a number between 0 and 1, Cronbach's alpha describes the extent to which all the items in a test measure the same concept or construct (Tavakol & Dennick, 2011). Cronbach's alpha for social validity was .53 for the SCS and .77 for the SDQ. According to conventional standards, acceptable values for scale reliability at minimum fall between 0.65 and 0.80, where a higher  $\alpha$  coefficient indicates a greater level of shared covariance among the items on a given scale and probably measure the same underlying concept. The low alpha values observed in this case could be due to the low number of questions on the social validity scale or poor interrelatedness between the question items (Tavakol & Dennick, 2011). Internal consistency is a

necessary but insufficient condition for measuring homogeneity or unidimensionality in a sample of test items (Tavakol & Dennick, 2011); thus, subsequent analyses were conducted to examine other aspects of the social validity of the SCS and SDQ.

The Wilcoxon Signed Rank Test (a non-parametric procedure) was implemented to assess potential differences in the teachers' impressions of the SCS and SDQ. It is an approach that creates a pooled ranking of all observed differences between two dependent measurements and uses the standard normal distributed z-value to test for significance (Conover, 1999; Siegel & Castellan, 1988). Its assumptions include that each pair of observations are mutually independent and can be assigned to one of two possible categories (Conover, 1999). The Wilcoxon Signed Rank Test revealed that the observed difference between the teachers' impressions of both screening tools was insignificant (but quite close) with an observed z value of -1.94 at p-value of .052. On average, it should be noted that a slightly larger number of teachers rated the SDQ more highly than the SCS. However, the analysis yielded insufficient evidence to support a statistically significant difference in the teachers' impressions of social validity between the screening tools. The noted data are available for review in Tables 12 and 13 in Appendix I.

## CHAPTER 5

### DISCUSSION

This study was implemented to address three purposes. The first purpose related to assessing the extent to which the School Connections Survey and Strengths and Difficulties Questionnaire measure related constructs. Correlations served as one type of validity coefficients that quantified the relationship (Hoyt, Warbasse, & Chu, 2006) between scores on the screening tools. It was predicted that school connectedness on the SCS would significantly correlate with the SDQ subscales. However, findings revealed such a relationship in only a few instances. For example, a significant correlation was found between peer connectedness and the Peer Relationship Problems subscale ( $r = -.27, p < .01$ ), indicating the number of peer connections increased while the number of symptoms associated with the Peer Relationship Problems subscale decreased. Additionally, moderate relationships emerged between student gender and the Emotional Problems subscale on the SDQ ( $r = .30, p < .01$ ), between school attendance and office discipline referrals ( $r = -.35, p < .001$ ), and between office discipline referrals and adult connections ( $r = -.33, p < .001$ ). The correlation between student gender and the Emotional Problems subscale on the SDQ revealed that female students were observed to obtain higher scores (i.e., report more symptoms) than did male students. The negative correlations, on the other hand, indicated variance in opposite directions. School attendance increased while office discipline referrals decreased and office discipline referrals increased while adult connections decreased. These findings suggest lower levels of attendance and connectedness with adults at school is associated with an increase in behavioral

problems. Also, peer connections increased while scores on the Peer Relationship Problems subscale decreased. All of these correlations correspond with previously cited literature regarding trends in school connectedness (e.g., Lapan, Wells, Petersen, & McCann, 2014; Wilson, Karimpour, & Rodkin, 2010). However, the small correlation between peer connectedness and the Peer Relationship Problems subscale could be interpreted as evidence of either convergence or divergence. The significance and direction of the relationship is theoretically consistent with the premise that peer connections measured by the SCS represent protective factors, whereas the Peer Relationship Problems subscale on the SDQ measures risk factors. Further, a lack of strength in the relationship between the instruments suggests they likely measure conceptually different constructs or reflect a critical problem with the reliability of the SCS.

Interpretation of the correlations presented above requires taking into account that experts in psychometrics disagree about the strength of correlation needed for ideal and minimally acceptable levels of consistency (Pedhazur & Schmelkin, 1991). Hopkins (2002), elaborating on levels of correlation strength discussed by Cohen (1988), presented seven levels, including *moderate* ( $r = .30-.49$ ), *large* (.50-.69), *very large* (.70-.89), and *nearly perfect* (.90-.99). Furthermore, several researchers (e.g., Nunnally & Bernstein, 1994; Salvia, Ysseldyke, & Bolt, 2010) suggest that for identification of a person to receive substantial intervention, correlations of .90 or above are needed, while for decisions carrying less risk (e.g., screening), correlations of .80 are adequate. The present findings fail to reach this benchmark, but suggest the potential multidimensionality of the SCS (e.g., peers versus adult connections), which

is consistent with research on adolescent connectedness that has frequently described connectedness as ecologically and relationally specific (Hoyt, Warbasse, & Chu, 2006). That is to say, studies have suggested student perceptions of being connected to the school and supported by teachers and peers have been observed to vary according to students' characteristics, such as gender (e.g., Buehler, Fletcher, Johnston, & Weymouth, 2015; Niehaus et al., 2012), ethnicity/race (e.g., Espinoza & Juvonen, 2011; Schneider & Duran, 2010), and socioeconomic status (e.g., Bradshaw et al., 2009; Khoury-Kassabri, et al. 2004; Nasir, Jones, & McLaughlin, 2011). Given the majority of screening-based assessments are comprised of instruments that emphasize behavioral or emotional problems, screening for potential protective factors is often overlooked.

Additional studies are needed to assess the performance of the SCS across other settings and student groups. For example, examining other outcome measures that include grades, standardized test scores, and free/reduced lunch status, would be helpful for determining characteristics that differentiate connected and unconnected students. Researchers also should examine how the SCS performs in comparison to universal screening instruments that focus on risk and protective factors, rather than students' problem and prosocial behaviors, as its conceptualization is rooted in a strength-based approach to screening. Both modes of research would shed additional light on the construct validity of the SCS.

The second purpose of the study related to the efficiency of the School Connections Survey in identifying the students who may or may not be at risk for elevated social-emotional concerns and/or academic failure as compared to the



Strengths and Difficulties Questionnaire. It was hypothesized that there would be no significant difference in the classification of students who were identified as *connected* on the School Connections Survey and the students who were identified as *normal* on the Strengths and Difficulties Questionnaire. The ability of the SCS to distinguish between normal and at-risk students was examined using Receiver Operator Characteristic curves, employing the area under the curve as the index of discriminant ability. A ROC curve is a useful graphical summary of the sensitivity (i.e., true positive rate) and specificity (i.e., false positive rate) values at different decision points (Coolidge, 2006; Pepe, Janes, Longton, Leisenring, & Newcomb, 2004; Shapiro, 1999). In contrast to the hypothesized outcome, findings demonstrated a significant difference between the screening tools in the identification of at-risk students, with the SCS classifying students as at-risk at a greater frequency than the SDQ. For the entire sample, the discrimination accuracy of *Total Connections* reported on the SCS resulted in an AUC value of .57 at p-value of .35. The discrimination accuracy of *Total Connections* for male students resulted in an AUC value of .52 at p-value of .81. Additionally, the discrimination accuracy of *Total Connections* for female students resulted in an AUC value of .47 at p-value of .75. AUC values closer to 1 indicate that a screening instrument reliably distinguishes among students with high and low risk status, whereas values at .50 indicate the predictor is no better than chance (Zhou, Obuchowski, & Obuschowski, 2002). Findings revealed that the SCS did not distinguish well between students with or without risk, regardless of gender. When the discrimination accuracy for all students was examined the SCS accurately identified about 57% of the students as at-risk who were classified as at-risk by the

SDQ. When the discrimination accuracy for each gender was examined the SCS accurately identified 52% of the males and 47% of the females as at-risk who also were classified as at-risk by the SDQ. The SCS tended to over-identify up to 15% of students as at-risk, while the SDQ was developed to identify approximately 10% of a community population as at-risk and 10% as meeting clinical thresholds (Jenkins, Demaray, Wren et al., 2014). The present findings fall below the diagnostic accuracy values that are commonly reported as acceptable in criterion validity studies, which include a range of values greater than or equal to .70 (Wood, Flowers, Meyer et al., 2002) to values greater than or equal to .90 (Johnson, Jenkins, Petscher et al., 2009). In view of established guidelines, the SCS lacks discrimination accuracy with AUC values that fall near .50.

In addition to the ROC curve data, a follow-up analysis using the McNemar Test reaffirmed that the observed ratio of at-risk to no risk classification among the students significantly varied across the screening tools ( $\chi^2(1, N=123) = 7.54, p<.05$ ). One hundred and twenty-three students were assessed for risk. Using the SDQ as the criterion measure, 19 students were found to have risk and 104 were without risk. Thus, the prevalence for risk was 15% in the sample. The SCS identified the same 19 students as at-risk, and an additional 19 students, resulting in a 100% sensitivity value. The SCS accurately identified 85 students out of the total 104 students as without risk, which resulted in an 82% specificity value. This screening instrument demonstrated a positive predictive value of 50% and a negative predictive value of 100%. In other words, the SCS accurately identified 100% of the students who were at risk and 82% of the students who were not at risk. The positive predictive value suggested there

was a 50% probability that risk was actually present when the SCS identified a student as at-risk. The negative predictive value indicated there was a high probability that risk was actually absent when the SCS identified a student as not at-risk. The SCS classified students as at-risk at a greater rate than the SDQ, but imprecisely, as demonstrated by discrimination accuracy no better than chance.

In relation to previous research regarding diagnostic accuracy, Glascoe (2005) advised practitioners who need to minimize excessive referrals to consider screening instruments with sensitivities of 50%, specificities of 80%, and positive predictive value rates in the 30%–50% range as an acceptable standard. Many broad-based screeners fall short, however, as they tend to favor either sensitivity or specificity (Shapiro, Kim, Robitaille, & LeBuffe, 2016). When Levitt and colleagues reviewed broad-based screeners for mental, emotional, and behavioral problems in 2007 (Levitt et al., 2007), they found that the youth self-report version of the Strengths and Difficulties Questionnaire favored specificity (under-identification of students with psychosocial problems, thus resulting in more false positives than parent or teacher reports, in practice). The present study suggests that a screening-based assessment involving the SCS may identify students as at-risk who are not necessarily in need of additional support; however, on the other hand, a higher number of students being identified as at-risk on the SCS might reflect the actual needs of students who have yet to display observable and/or clinically significant symptoms. Therefore, in using the SCS, school practitioners face the potential of implementing over-inclusive screening protocols, with higher sensitivities triggering many false alarms (Levitt, Saka, Romanelli, & Hoagwood, 2007). The greater the number of false positives results in

the need for more follow-up assessments, which can require additional time and materials. When the goal is secondary or indicated prevention and a more comprehensive assessment is desired, the specificity of the follow-up instrument becomes important as high specificity may make an important contribution to differential diagnosis. Although additional school resources would be needed, this scenario is preferable to the potentially life threatening risk of false negatives or missing students with untreated problems. Consequently, a screening program utilizing screening instruments that favor sensitivity should be prepared to conduct comprehensive follow-up assessments with identified youth. For middle school students, in particular, research suggests that youth self-reports about internalizing problems like depression and anxiety, substance abuse, and covert conduct problems are more accurate and reliable than parent or teacher reports (Logan & King, 2002; Reynolds, 1987). However, studies also indicate that parents and teachers are typically the best observers and reporters of youth externalizing behaviors like disobedience, hyperactivity, and lying (Loeber, Green, Lahey, & Stouthamer-Loeber, 1991). Multiple informants are needed in order to adequately assess a student's symptomology. The present findings underscore this importance, as screening with the student self-report version of the SCS yielded a higher false positive rate when compared to the criterion measure and resulted in the need for a greater number of follow-up assessments. Similarly, previous research has indicated that self-reports on the SDQ tend to produce more false positives than parent or teacher reports, when the prevalence of the disorder is low (Levitt, Saka, Romanelli et al., 2007). In community samples, the combination of the youth, parent, and teacher versions of the SDQ

resulted in the best sensitivity and specificity (Goodman et al., 2000). Subsequent studies should include the teacher versions of the School Connections Survey, in addition to the student versions, to further explore the diagnostic accuracy of its complete screening battery.

The third purpose of the study was to assess for similarities and/or differences in the social validity of the School Connections Survey and Strengths and Difficulties Questionnaire. It was hypothesized that there would be no significant difference in the teachers' impressions of social validity between the screening tools. The social validity items were designed to gain the perspectives of school personnel regarding the goals, procedures, and effects of the screening process. The findings supported the hypothesized outcome in that no significant difference emerged within the teachers' overall impressions of the screening tools, as similar teacher ratings emerged across all of the social validity questions. For the School Connections Survey, in particular, the most highly rated impressions included that teachers perceived its administration to be useful and appropriate for the school setting. This finding aligns with previous research related to screening-based assessment that suggests screening needs to be practical for school personnel to implement and capable of leading to service allocation decisions that improve the well-being and achievement of students (Arora, Connors, George et al., 2016; Shapiro, Kim, Robitaille, & LeBuffe, 2016). The present work demonstrates early promise for the SCS as a screening tool that appears to be acceptable to school staff members who would likely be asked to administer it.

Screening-based assessment for school-related emotional and behavioral problems has been a lower priority for schools than screening for academic and health

issues (Lane, Oakes, & Menzies, 2010; von der Embse, Pendergast, Kilgus et al., 2016). Recently, however, schools have increasingly embraced prevention systems to efficiently address the large numbers of students who require different levels of emotional and behavioral supports (Severson, Walker, Hope-Doolittle, Kratochwill, & Gresham, 2007). Implementation of these prevention systems has been supported by efficient universal screening of students to determine who might benefit from initial services, and within a multi-tier system, where each student's needs can best be met with the least resource-intensive intervention. Results of the present study demonstrate the School Connections Survey can readily be included within such a framework and further, be used to promote a strength-based approach to assessment. An apparent drawback found in this study, however, is that the SCS lacked diagnostic accuracy in a low prevalence middle school context and tended to over-identify students as at risk when compared to a more established screening instrument. If more students are identified as in need of follow-up assessment, resources (e.g., time, trained personnel, appropriate diagnostic instruments, and effective care coordination) available to deliver those supports may not be adequate (National Research Council and Institute of Medicine, 2009).

Nonetheless, there is no such thing as a perfect assessment instrument (in measurement, error is always present!), and as such, we need to rethink screening measure selection and use in contemporary practice. This is especially important, given the discrepancy between the prevalence estimates of children with significant emotional and behavioral disorders and the number of children served in public schools according to the classification system of the Individuals with Disabilities

Education Improvement Act of 2004. When used within a multi-tier system of support framework, the School Connections Survey could be included with other measures to help identify students who may benefit from additional supports at the Tier 2 or Tier 3 level, as well as children who may be in need of additional (and more focused) diagnostic assessment. Once identified, second and perhaps third stage assessments might be necessary to rule out false positives by more thoroughly assessing for the risk or presence of disorder and for treatment need. This approach, however, differs from how the SCS was evaluated in the present study.

The School Connections Survey was evaluated as a stand-alone and broad, mental health screening instrument used to define the risk status of a group of 8<sup>th</sup> grade students. No data regarding the effectiveness of any follow-up or additional instruction were gathered; thus, future researchers are encouraged to examine the SCS within the context of early identification programs. In particular, it will be helpful to study how the utility of the SCS is impacted by a school's resources to train personnel, bring in outside screening staff, or rely primarily on existing mental health staff.

## CHAPTER 6

### CONCLUSION

#### **Methodological Considerations and Future Directions**

Evaluating the results of the present work should take into account several limitations with the implementation of this study. One limitation related to participant recruitment. The researcher was required to gain consent from multiple stakeholders, as an evaluator external to the school. Given this arrangement, the screening process described in this study may not fully resemble screening procedures implemented within a school by internal personnel. For example, the School Connections Survey includes teacher surveys that were not used in the study due to limited teacher availability to participate. Thus, both student and staff data are likely to be more accessible to school personnel who have already obtained the necessary authorizations and/or established professional relationships with other staff members. Another limitation involved that not all students in the schools were invited to participate, which is especially pertinent to students receiving special education services, who frequently reflect youth with the greatest needs (e.g. emotional or behavioral difficulties). Thus, the data gathered from the students who were permitted to complete the screening protocol may have differed from the overall population, if all students had been required to participate.

Other limitations emerged in relation to the sample characteristics. There was a lack of information on other student characteristics (e.g., socioeconomic status) that could affect the context in which school connections form. The present study was implemented in a public school district that required special authorizations for the release of individual student data, which were not readily accessible to school administrators. In future work,



this limitation might be addressed by consulting district-level leadership on ways that information can be shared without compromising students' identities. Information regarding other student characteristics was gathered, including disciplinary infractions to facilitate comparisons and analysis of behavioral outcomes; however, this indicator has a potential to carry bias (e.g., race, sex; McIntosh, Campbell, Carter, & Zumbo, 2009; Skiba, Michael, Nardo, & Peterson, 2002) and may be an imperfect proxy for a child's problem behavior. For example, school staff may use varying criteria for determining whether a behavior observed deserves an office discipline referral or a simple correction (Kern & Manz, 2004; Nelson et al., 2003). Also, schools without consistent office discipline referral submission or entry policies may not enter all office discipline referrals, resulting in an underestimated rate for individuals or the school as a whole (Rusby et al., 2007). Despite these sources of error, a number of studies have documented the association between office discipline referrals and other academic and behavioral outcomes. For example, school connectedness has been linked to positive student outcomes that include better attendance, grades, and higher test scores (Lapan, Wells, Petersen, & McCann, 2014). Social connections (versus being isolated) are associated with positive classroom engagement and academic achievement (Wilson, Karimpour, & Rodkin, 2010; Wentzel, Barry, & Caldwell, 2004). Thus, office discipline referrals were included as behavioral indicators in this study to help demonstrate potential similarities and differences among students with and without risk of social or emotional concerns, as determined by the School Connections Survey. Findings revealed that a moderate relationship emerged between school attendance and office discipline referrals ( $r = -.35, p < .001$ ) and between office discipline referrals and adult connections ( $r = -.33,$

$p < .001$ ). School attendance increased while office discipline referrals decreased and office discipline referrals increased while adult connections decreased. These findings suggested lower levels of attendance and connectedness with adults at school were associated with an increase in behavioral problems. Furthermore, White, male students comprised the largest proportion of the group of students who were observed to have office discipline referrals and documented absences at the time of the screening. This result aligned with previous research that has found an over-representation of males in relation to disciplinary infractions at school (McIntosh, Campbell et al., 2009), but at the same time, diverged from other studies that have cited the disproportionate use of office discipline referrals with students from cultural minority backgrounds (Gudiño, Lau, Yeh, McCabe, & Hough, 2009; Nelson et al., 2003; Skiba et al., 2008). It is unclear whether similar results would be found in a sample that included all students rather than only students who were referred for screening. As such, further research is needed to replicate these results in a larger, more diverse student population; especially, in school districts with clear definitions regarding what may or may not constitute an office discipline referral, a system for recording and summarizing data, and ongoing procedures to increase fidelity of use (McIntosh, Campbell et al., 2009).

Another limitation related to the sample distribution involving unequal comparison groups. Potentially, the effect of student and teacher characteristics (e.g., student sex, school attendance, and years of teaching experience acquired by staff) was suppressed as a result of low power associated with small and unequal comparison groups.

Other limitations emerged from the structure of the School Connections Survey. Specifically, it should be noted that students are limited in the number of connections that

they can report on the screening tool. That is, student respondents are asked to complete surveys that provide only three lines for adult connections and three lines for peer connections, which seem to imply that they should list only up to three connections per relationship type. As such, in the present study, three connections with adults and/or peers represented the maximum number indicated by any participant. Thus, it is possible that this instrument does not represent the actual number of peer and adult connections maintained by respondents. Future researchers evaluating the SCS might consider including opportunities (e.g., follow-up questionnaire) for respondents to indicate whether or not the survey accurately reflects their connectedness and/or re-administer the survey at multiple time points during a given school year to examine the reliability of such data.

The structure of the School Connections Survey also raised a number of questions about the appropriateness and utility of screening students for school connections as an indicator of social and/or emotional well-being. This instrument demonstrates various strengths as a screening tool. It permits students to express their perceived school connections in a straightforward manner. It is inexpensive and mobile. The SCS can be administered to a group of participants within a short amount of time. Also, it is a screening instrument that reflects a strength-based approach grounded in positive psychology. All of these characteristics are particularly salient considering the numerous logistical barriers to screening for student adjustment problems in schools, including limited time to administer, score, and interpret assessment data (Borntrager and Lyon, 2015; Connors et al., 2015; Lyon et al., 2016) and insufficient funding for services (Cammack et al., 2014). However, the present work has demonstrated that screening

students for school connections using qualitative indicators lacks psychometric adequacy, as its indicators fail to correlate with constructs on a more established, widely used measure of social and emotional problems. The lack of strength in the single correlation that emerged as significant between peer connections on the SCS and Peer Relationship Problems on the SDQ suggests they likely measure conceptually different constructs or that the SCS lacks reliability. Also, regarding diagnostic accuracy, findings revealed that the SCS classified students as at-risk at a greater rate than the SDQ, but imprecisely, as demonstrated by AUC values that were no better than chance. In practice, with the administration of the SCS, school practitioners face the potential of implementing over-inclusive screening protocols. However, given that the criterion measure used in this study primarily assessed behavioral and emotional problems, as opposed to behavioral or emotional strengths reflected in the SCS, additional studies are needed to assess the performance of the SCS in relation to other screening measures that assess behavioral and emotional strengths across various settings and student groups. Therefore, as already noted, school practitioners and future researchers are encouraged to examine the SCS within the context of a multi-tier system of support, which often include multiple assessment approaches and instruments.

Conceptually, the School Connections Survey can be viewed as a tool most useful for universal screening or as part of a comprehensive clinical assessment, leading to assessment of whether a student is at elevated risk for some general mental health condition as well as for moving an identified student on to the second stage of screening where a more comprehensive assessment can take place. As such, from an instrument development perspective, it will be important to take these purposes and uses into

consideration, and apply appropriate models/methods of instrument development and inquiry to promote progress in this area.

Aside from concerns about sensitivity and specificity, screening-based assessment also involves the consideration of whether to collect data in a nomothetic or idiographic manner (Arora, Connors, et al., 2016). The nomothetic approach to assessment reflects the use of individual data in comparison with large group-level data for the purposes of classification or prediction (Cone, 1986), as well as typically involves the administration of a consistent set of questions and scoring based on a standard rubric or guidelines. Conversely, the idiographic approach to assessment reflects the measurement of individually selected or tailored variables for the purpose of maximizing relevance to the individual (Arora, Connors, et al., 2016; Haynes et al., 2009), and compares data to one's own previous data points as opposed to a normed sample. In the context of screening-based assessment, nomothetic measures allow for students' progress to be monitored in relation to age- or grade-based norms or standards and lend themselves to aggregation in order to observe program outcomes over time for a group of students that have been targeted for intervention (Ruble et al., 2012). However, idiographic assessment is sensitive to cultural relevance, context, individual change, and individual differences (Arora, Connors, et al., 2016; Haynes et al., 2009). Additionally, idiographic assessment is aligned with several traditions of measurement frequently used in schools, including single-subject behavioral interventions that involve functional behavior assessments, data-driven student support teams, individualized education program teams, and response to intervention frameworks (Chafouleas et al., 2009; Lyon et al., 2013). Moreover, there is recent evidence that both school-based clinicians and students may prefer idiographic

to more standardized, nomothetic assessment approaches (Duong et al., 2016; Lyon et al., 2016). Given that school-based clinicians have reported low rates of using standardized assessments and frequently rely on other kinds of information (e.g., educational data, non-standardized or idiographic information) to assess and monitor student progress (Lyon et al., 2016), understanding the role of non-standardized assessment strategies relevant to screening-based assessment is imperative for advancing research on school mental health. Screening-based assessment must be accurate and produce valuable information, but also should not undermine teacher or parent discretion, be too time consuming, stigmatize students, or have embedded biases against groups of students (O’Connell et al., 2009; Shapiro, Kim, Robitaille, & LeBuffe, 2016). This study employed a nomothetic approach to assess the validity of screening students for school connections and found qualitative indicators to lack psychometric adequacy in relation to diagnostic accuracy. However, other researchers are encouraged to consider the utility of an idiographic approach to screening with the School Connections Survey within the context of a comprehensive clinical assessment system.

To build upon the present work, future studies should conduct predictive criterion studies with additional outcome indicators. The 2014 revision of the *Standards for Educational and Psychological Testing* (Joint Committee on Standards for Educational and Psychological Testing, 2014) suggest that when a test is used to classify students to different levels of service, additional support for the validity of the classification decision is desirable. This evidence could be discovered from studying how various student groups benefit from classification decisions, such as follow-up with unconnected students. Thus, it is also suggested that follow-up research studies examine how school

connections change throughout the school year in relation to prevention efforts. Additionally, future researchers should examine a cross-sectional view of student connections, correlation of student connections with other established measures, whether peer and adult connections represent single or multiple factors, and patterns of social validity when administered to additional student groups. More work is necessary to promote the delivery of high-quality, school-based mental health care for students to improve early identification and prevention efforts.

## Appendix A: Study Measures

### Confidential Student Connections Survey

Name: \_\_\_\_\_

**Directions: Please list the name(s) of one or more adult(s) and peer(s) in this building whom you feel you have a good connection with. These should be people that you trust, you know care about you, and you feel you can talk to if you have a problem.**

I have a good connection with the following adult(s) at (Name of School):

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_

Place a check in this box if you feel you DO NOT have a good connection with any adult in the building.

I have a good connection with the following peer(s)/classmate(s) at (Name of School):

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_

Place a check in this box if you feel you DO NOT have a good connection with any peer in the building.



## Appendix A: Study Measures

### Strengths and Difficulties Questionnaire

For each item, please mark the box for Not True, Somewhat True or Certainly True. It would help us if you answered all items as best you can even if you are not absolutely certain. Please give your answers on the basis of how things have been for you over the last six months.

	Not True	Somewhat True	Certainly True
I try to be nice to other people. I care about their feelings			
I am restless, I cannot stay still for long			
I get a lot of headaches, stomach-aches or sickness			
I usually share with others, for example CD's, games, food			
I get very angry and often lose my temper			
I would rather be alone than with people of my age			
I usually do as I am told			
I worry a lot			
I am helpful if someone is hurt, upset, or feeling ill			
I am constantly fidgeting or squirming			
I have one good friend or more			
I fight a lot. I can make other people do what I want			
I am often unhappy, depressed or tearful			
Other people my age generally like me			
I am easily distracted, I find it difficult to concentrate			
I am nervous in new situations. I easily lose confidence			
I am kind to younger children			
I am often accused of lying or cheating			
Other children or young people pick on me or bully me			
I often offer to help others (parents, teachers, children)			
I think before I do things			
I take things that are not mine from home, school or elsewhere			
I get along better with adults than with people my own age			
I have many fears, I am easily scared			
I finish the work I'm doing. My attention is good			

## Appendix A: Study Measures

### Social Validity Questionnaire for Adult Participants

Circle the response that most closely represents your opinion, using the following answer

key:

Strongly Disagree	Disagree	Neither	Agree	Strongly Agree
1	2	3	4	5

(a) This screening tool appears to be useful for learning about potential student difficulties.

1                      2                      3                      4                      5

(b) I would be satisfied with the administration of this screening tool.

1                      2                      3                      4                      5

(c) I understand the purpose of the administration of this screening tool.

1                      2                      3                      4                      5

(d) This screening tool appears to be challenging to administer to students.

1                      2                      3                      4                      5

(e) Students would benefit from the administration of this screening tool.

1                      2                      3                      4                      5

(f) The administration of this screening tool is appropriate for the school setting.

1                      2                      3                      4                      5

## Appendix B: Recruitment Forms

### INFORMATION SHEET FOR SCHOOL ADMINISTRATORS

#### *Title of Study:*

The School Connections Survey: Concurrent Validity with Middle School Students

This research study is being conducted by Dr. Gary Stoner, the Director of the School Psychology Program at the University of Rhode Island. My name is Brandis Ruise and I am a school psychology doctoral student who works with Dr. Stoner. I am also currently completing an internship in professional psychology with Loudoun County Public Schools, in which I conduct assessment, prevention, and intervention activities, under the supervision of a school psychologist. Dr. Stoner and I are requesting permission to conduct a research study with some of your students and teachers. Importantly, student and staff participation in this study is voluntary. All identifying information of students will be completely confidential and will only be disclosed if data suggest follow-up is needed. All staff responses will be anonymous. Neither student nor staff responses will be linked to their names in any written or verbal report of this research project.

#### **PURPOSE OF THE STUDY**

The purpose of this study is to gain a better understanding of the predictors of school connectedness. Defined as “the extent to which students feel personally accepted, respected, and supported in the school social environment” (Goodenow, 1993; p. 80), school connectedness has emerged as an important topic for the study of promoting resilience in youth in school settings.

I am requesting permission to recruit participants in your school because there are students between the ages of 11 and 14 years old. This particular age group was chosen because few screening tools have been researched to support their use in middle schools (Lane, Parks, Kalberg, & Carter, 2007).

#### **DURATION AND LOCATION**

Both student and staff participation in this study will last for approximately 15 minutes. Data collection will take place in classrooms during non-academic times (i.e., advisory, before school begins, etc.).

#### **PROCEDURES**

- 1) Copies of the consent and assent forms as well as the questionnaires can be provided to you prior to your approval of research recruitment occurring within your school.
  - a. Both parent consent and student assent will be necessary for two components:
    - 1) Student participation in the connections screening and
    - 2) Permitting the researcher to access educational records of the student that specifically includes and is limited to: ethnicity, age, grade point average, office discipline referrals, school attendance, special education eligibility, and free/reduced lunch eligibility for the current school year.
  - b. Teacher consent is necessary for involvement within the following procedures:
    - 1) Reviewing the School Connections Survey (SCS) that was designed to assess school connections and the Strengths and Difficulties Questionnaire (SDQ) that was designed to assess behavior patterns related to peer relationships, emotion regulation, attentiveness, and general conduct.
    - 2) Then completing one Social Validity Questionnaire about each screening tool for a total of two questionnaires.
- 2) Data collection will begin only if/when all parental consent, child assent, and staff consent forms are signed. For those students whose parents do not provide consent, they will be given an

alternative activity that will be decided upon by their respective teachers (e.g., silent reading, computer time, etc.).

- 3) Students will complete two questionnaires in one sitting. Both questionnaires will be read out loud to students. It is estimated that data collection in each classroom will take about 15 minutes. During classroom sessions, the investigator as well as the classroom teacher will be present for the entire time in case questions arise.
- 4) Some of the teachers will be asked to read through the two screening tools that have been selected for use with middle school students. Then complete two questionnaires about their opinions of each screening tool. Both questionnaires will be completed in one sitting concurrently with the student screening. It is estimated that data collection for each adult participant will take about 10 minutes.

#### **INSTRUMENTS USED IN STUDY**

The following two instruments will be used with students in this study: The School Connections Survey (SCS) to assess school connections and the Strengths and Difficulties Questionnaire (SDQ) to assess behavior patterns related to peer relationships, emotion regulation, attentiveness, and general conduct.

The Social Validity Questionnaire will be used with adult participants to gain insight on teacher's perspectives of the selected screening tools.

#### **ANTICIPATED BENEFITS FOR PARTICIPANTS**

Your school will receive no direct benefit from participation in this study, but participation may help school psychologists better understand the predictors that place children at risk of lacking school connections. Hypothetically, by identifying the predictors of school connectedness, clinicians can better identify struggling students. A follow-up interview with the school counselor will take place for those students who lack adult and/or peer connections at school. Therefore, if the research indicates that there are clear, identifiable students who lack connections, this information will be shared with the school principal so potentially a follow-up investigation can occur and intervention plans discussed. The school principal and researcher will determine the appropriate course of action. The long-term goal of this research is to match specific prevention/intervention strategies with a child's social or emotional needs.

#### **POTENTIAL RISKS AND DISCOMFORTS**

It is believed that risks are minimal in this study. However, it is possible that students may experience some discomfort when responding to questions regarding their school connections or general attitudes and behavioral characteristics related to their school relationships. Also, it is possible that school staff may experience some discomfort when responding to questions regarding their opinions or general attitudes.

#### **CONFIDENTIALITY**

Procedures for confidentiality will include those aimed at protecting participant identities (name and any other identifying information). The only individuals/parties that will have access to data will be the Student Investigator (SI) – Brandis Ruise; Principal Investigator (PI) – Dr. Gary Stoner, Ph.D.; and the University of Rhode Island's Institutional Review Board (URI IRB) office. To ensure your students' information is kept confidential, two practices will be conducted: 1- electronic data will be stored on an encrypted flash drive (i.e., a security code will be needed to access demographic information and data analysis information on the research project computer; and 2 – all paper documents (i.e., students' questionnaire answers) will be stored in a locked cabinet in a secure location (i.e., University of Rhode Island office of Dr. Gary Stoner, Principal Investigator). Of note, all paper documents will include only assigned identification numbers (not your students' names) and will be destroyed approximately 2-6 weeks following data collection.

All adult participants' responses will remain anonymous, which means that their names will not be recorded or connected to their answers to any questions. No one else will know if they participated in this study or find out how they responded to questions. Scientific reports involving teacher data will be based on group data and will not identify any individual as being in this project.

#### **RIGHTS OF RESEARCH PARTICIPANTS**

Your decision to permit study recruitment will not affect any future relationship with the University of Rhode Island or Loudoun County Public Schools. If you have any questions about the study or research participants' rights, please feel free to contact the SI—Brandis Ruise at 571. 781.0619 or [Brandis.Ruise@lcps.org](mailto:Brandis.Ruise@lcps.org); my dissertation advisor/PI for this study/Professor of School Psychology at the University of Rhode Island, Dr. Gary Stoner, Ph.D. at 401.874.4234 or [GStoner@uri.edu](mailto:GStoner@uri.edu); or the URI IRB at 401. 874.4328; In addition, this project has been reviewed and approved by the Institutional Review Board of the University of Rhode Island. Questions or complaints concerning this research may also may be addressed to Dr. Gerald Sonnenfeld, the Vice President of Research and Economic Development by phone at (401) 874-4576; by email at [gsonnenfeld@uri.edu](mailto:gsonnenfeld@uri.edu); or by mail to:

University of Rhode Island  
Carlotti Administration Building, 2nd Floor  
75 Lower College Road  
Kingston, RI 02881

#### **Cited References:**

Goodenow, C. (1993). The psychological sense of school membership among adolescents: Scale development and educational correlates. *Psychology in the Schools, 30*, 79–91.

Lane, K. L., Parks, R. J., Kalberg, J. R., & Carter, E. W. (2007). Systematic screening at the middle school level: Score reliability and validity of the Student Risk Screening Scale. *Journal of Emotional and Behavioral Disorders, 15*(4), 209-222.

## Appendix B: Recruitment Forms

### PARENTAL CONSENT TO PARTICIPATE IN RESEARCH

#### *Title of Study:*

The School Connections Survey: Concurrent Validity with Middle School Students

This research study is being conducted by Dr. Gary Stoner, the Director of the School Psychology Program at the University of Rhode Island. My name is Brandis Ruise and I am a school psychology doctoral student who works with Dr. Stoner. I am also currently completing an internship in professional psychology with Loudoun County Public Schools, in which I conduct assessment, prevention, and intervention activities, under the supervision of a school psychologist. Dr. Stoner and I are requesting permission to conduct a research study with your child in their classroom. Importantly, your child's participation in this study is voluntary. All identifying information will be completely confidential and will only be disclosed with your permission. Student responses will not be linked to his or her name or your name in any written or oral report of this research project.

#### **PURPOSE OF THE STUDY**

The purpose of this study is to gain a better understanding of the predictors of school connectedness. Defined as "the extent to which students feel personally accepted, respected, and supported in the school social environment" (Goodenow, 1993; p. 80), school connectedness has emerged as an important topic for the study of promoting resilience in youth in school settings.

I am requesting permission for two activities:

- 1) Your child's participation with completing a screening survey because your child is between the ages of 11 and 14 years old. This particular age group was chosen because few screening tools have been researched to support their use in middle schools (Lane, Parks, Kalberg, & Carter, 2007).
- 2) Permission for the researcher to access your child's educational records that **specifically includes and is limited to:** ethnicity, age, grade point average, office discipline referrals, school attendance, special education eligibility, and free/reduced lunch eligibility for the current school year.

#### **DURATION AND LOCATION**

Your child's participation in this study will last for approximately 15 minutes. Data collection will take place in your child's classroom during non-academic times (i.e., advisory, before school begins, etc.).

#### **PROCEDURES**

- 5) If you permit your child to participate in this study, please return this form to your child's teacher within seven days. Your child will be given an assent form as well. The assent form will be similar to this form, in which your child will have the opportunity to decide if he or she wants to participate.
- 6) If you choose so, you may review the questionnaires prior to giving consent. Data collection will begin when all parental consent and child assent forms are signed. For those students whose parents do not provide consent, they will be given an alternative activity that will be decided upon by their respective teachers (e.g., silent reading, computer time, etc.).
- 7) Students will complete two questionnaires in one sitting. Both questionnaires will be read out loud to students. It is estimated that data collection in each classroom will take about 15 minutes. During classroom sessions, the investigator as well as the classroom teacher will be present for the entire time in case questions arise.

### **INSTRUMENTS USED IN STUDY**

The following two instruments will be used in this study: The School Connections Survey (SCS) to assess school connections and the Strengths and Difficulties Questionnaire (SDQ) to assess behavior patterns related to peer relationships, emotion regulation, attentiveness, and general conduct.

### **ANTICIPATED BENEFITS FOR PARTICIPANTS**

You or your child will receive no direct benefit from their participation in this study, but their participation may help school psychologists better understand the predictors that place children at risk of lacking school connections. Hypothetically, by identifying the predictors of school connectedness, clinicians can better identify struggling students. A follow-up interview with the school counselor will take place for those students who lack adult and/or peer connections at school. Therefore, if the research indicates that there are clear, identifiable students who lack connections, this information will be shared with the school principal so potentially a follow-up investigation can occur and intervention plans discussed. The school principal and researcher will determine the appropriate course of action. The long-term goal of this research is to match specific prevention/intervention strategies with a child's social or emotional needs.

### **POTENTIAL RISKS AND DISCOMFORTS**

It is believed that risks are minimal in this study. However, it is possible that students may experience some discomfort when responding to questions regarding their school connections or general attitudes and behavioral characteristics related to their school relationships.

### **CONFIDENTIALITY**

Procedures for confidentiality will include those aimed at protecting participant identities (name and any other identifying information). The only individuals/parties that will have access to data will be the Student Investigator (SI) – Brandis Ruise; Principal Investigator (PI) – Dr. Gary Stoner, Ph.D.; and the University of Rhode Island's Institutional Review Board (URI IRB) office. To ensure your child's information is kept confidential, two practices will be conducted: 1- electronic data will be stored on a password protected computer (i.e., a security code will be needed to access demographic information and data analysis information on the research project computer; and 2 – all paper documents (i.e., students' questionnaire answers) will be stored in a locked cabinet in a secure location (i.e., personal office of student investigator) until its contents are entered into the project computer. Of note, all paper documents will include only assigned identification numbers (not your child's name) and will be destroyed approximately 2-6 weeks following data collection.

### **RIGHTS OF RESEARCH PARTICIPANTS**

Your decision to allow your child to participate will not affect his or her future relationship with the University of Rhode Island or Loudoun County Public Schools. If you have any questions about the study or your child's rights as a research participant, please feel free to contact the SI—Brandis Ruise at 571. 781.0619 or [Brandis.Ruise@lcps.org](mailto:Brandis.Ruise@lcps.org); my dissertation advisor/PI for this study/Professor of School Psychology at the University of Rhode Island, Dr. Gary Stoner, Ph.D. at 401.874.4234 or [GStoner@uri.edu](mailto:GStoner@uri.edu); or the URI IRB at 401. 874.4328; In addition, this project has been reviewed and approved by the Institutional Review Board of the University of Rhode Island. Questions or complaints concerning your child's rights as a participant in this research may also may be addressed to Dr. Gerald Sonnenfeld, the Vice President of Research and Economic Development by phone at (401) 874-4576; by email at [gsonnenfeld@uri.edu](mailto:gsonnenfeld@uri.edu); or by mail to:

University of Rhode Island  
Carlotti Administration Building, 2nd Floor  
75 Lower College Road  
Kingston, RI 02881

You are making a decision about two activities: allowing your child to participate in this study and permitting the researcher to access specific information that is kept in his/her educational record. Your signature below indicates that you have read the information provided above and have decided to allow him or her to participate in the research study and permit the researcher to gain access to specific educational information of your child. If you later decide that you wish to withdraw your permission for your child to participate in the research study, simply call or e-mail me. You may discontinue his or her participation at any time.

Please choose from the following:

I, \_\_\_\_\_ give permission for my child \_\_\_\_\_ to participate in this study that involves the completion of The School Connections Survey (SCS) and the Strengths and Difficulties Questionnaire (SDQ).

Please check this box if you would like the general results from this study once it is concluded.

\_\_\_\_\_  
Signature of Parent(s) or Legal Guardian

\_\_\_\_\_  
Date

-----  
---  
I, \_\_\_\_\_ give permission for the researcher to gain access to the educational record of my child \_\_\_\_\_. This access **specifically includes and is limited to:** ethnicity, age, school attendance, grade point average, office discipline referrals, special education eligibility, and free/reduced lunch eligibility for the current school year.

\_\_\_\_\_  
Signature of Parent(s) or Legal Guardian

\_\_\_\_\_  
Date

\_\_\_\_\_  
Signature of Investigator

\_\_\_\_\_  
Date

Cited References:

Goodenow, C. (1993). The psychological sense of school membership among adolescents: Scale development and educational correlates. *Psychology in the Schools, 30*, 79–91.

Lane, K. L., Parks, R. J., Kalberg, J. R., & Carter, E. W. (2007). Systematic screening at the middle school level: Score reliability and validity of the Student Risk Screening Scale. *Journal of Emotional and Behavioral Disorders, 15*(4), 209-222.



## Appendix B: Recruitment Forms

### STUDENT ASSENT TO PARTICIPATE IN RESEARCH

#### *Title of Study:*

The School Connections Survey: Concurrent Validity with Middle School Students

The study is being done by Brandis Ruise at the University of Rhode Island.

I want to tell you about a research study that I am working on. I am interested in understanding more about why some children feel connected to school. I am asking for you to be in the research study because you are between the ages of 11 and 14 years old. I will be in your classroom for about 15 minutes as you complete the two questionnaires that I will give you. The questionnaires will have questions about your feelings and opinions as a middle school student. Your parent has given their permission for you to answer these questions, but I want to make sure you want to answer them. If you agree to take part in my study, I will ask you questions about who you like to hang out with and what the other kids in your class are like. I will also ask things like how you may think, feel, or act in different types of situations as a middle school student.

The questions I ask you as part of the study might seem strange and may make you feel sad or embarrassed. If you don't want to, you don't have to answer these questions. In fact, you don't have to answer any of the questions that you don't want to answer. Importantly, your name will not be on any of the questionnaires that I will give you. You will be assigned an identification number and only this number will appear on the questionnaires. So no one will know what your answers were except for me and the other members of my research team from my University. If aggressive behavior is reported, I will contact your principal and school counselor and we will come up with ways to make sure everyone feels safe.

If you don't want to be in this study, you don't have to be. Remember, being in this study is up to you and no one will be upset if you don't want to be in it or even if you change your mind later and want to stop. You can ask any questions that you have about the study. If you have a question later that you couldn't think of now, you or your parent/guardian can call me at (571) 781-0619 or email me at [Brandis.Ruise@lcps.org](mailto:Brandis.Ruise@lcps.org).

Signing your name at the bottom means that you **agree** to be in this study. You and your parents will be given a copy of this form after you have signed it.

---

Child Signature	Date
Signature of Investigator	Date

## **Appendix B: Recruitment Forms**

### **ADULT (TEACHER) CONSENT TO PARTICIPATE IN RESEARCH**

#### ***Title of Study:***

The School Connections Survey: Concurrent Validity with Middle School Students

This research study is being conducted by Dr. Gary Stoner, the Director of the School Psychology Program at the University of Rhode Island. My name is Brandis Ruise and I am a school psychology doctoral student who works with Dr. Stoner. I am also currently completing an internship in professional psychology with Loudoun County Public Schools, in which I conduct assessment, prevention, and intervention activities, under the supervision of a school psychologist. Dr. Stoner and I are requesting permission to conduct a research study with your involvement. It is important to note that your participation in this study is voluntary and your responses will be anonymous. Staff responses will not be linked to his or her name in any written or verbal report of this research project.

#### **PURPOSE OF THE STUDY**

The purpose of this study is to gain a better understanding of the predictors of school connectedness. Defined as “the extent to which students feel personally accepted, respected, and supported in the school social environment” (Goodenow, 1993; p. 80), school connectedness has emerged as an important topic for the study of promoting resilience in youth in school settings.

You have been invited to participate in this study by answering questions regarding your opinion on two screening tools that have been selected for use with middle school students. This particular age group was chosen because few screening tools have been researched to support their use in middle schools (Lane, Parks, Kalberg, & Carter, 2007).

#### **DURATION AND LOCATION**

Your participation in this study will last for approximately 10 minutes. Data collection will take place on school grounds during non-academic times (i.e., advisory, before school begins, etc.).

#### **PROCEDURES**

- 1) If you choose so, you may review the questionnaires prior to giving consent. Data collection will begin when your adult consent form is signed.
- 2) Adult participants will review two screening tools that have been selected for use with middle school students. Then complete two questionnaires about their opinions of each screening tool. Both questionnaires will be completed in one sitting. It is estimated that data collection for each participant will take about 10 minutes.

#### **INSTRUMENTS USED IN STUDY**

Participants will be asked to review the following two screening instruments: The School Connections Survey (SCS) that was designed to assess school connections and the Strengths and Difficulties Questionnaire (SDQ) that was designed to assess behavior patterns related to peer relationships, emotion regulation, attentiveness, and general conduct.

Then participants will be asked to complete one Social Validity Questionnaire about each screening tool for a total of two questionnaires.

#### **ANTICIPATED BENEFITS FOR PARTICIPANTS**

Participants will receive no direct benefit from their participation in this study, but their participation may help school psychologists better understand the potential benefits and limitations of school-based

screening. Hypothetically, school-based screening enables clinicians to better identify struggling students. The long-term goal of this research is to match specific prevention/intervention strategies with a child's social or emotional needs.

**POTENTIAL RISKS AND DISCOMFORTS**

It is believed that risks are minimal in this study. However, it is possible that participants may experience some discomfort when responding to questions regarding their opinions or general attitudes.

**CONFIDENTIALITY**

All adult participants' responses will remain anonymous, which means that your answers to all questions are private. No one else can know if you participated in this study and no one else can find out what your answers were. Scientific reports will be based on group data and will not identify you or any individual as being in this project.

**RIGHTS OF RESEARCH PARTICIPANTS**

The decision to participate in this research project is up to you. You do not have to participate and you can refuse to answer any question.

Also, your decision to participate will not affect your future relationship with the University of Rhode Island or Loudoun County Public Schools. If you have any questions about the study or your rights as a research participant, please feel free to contact the SI—Brandis Ruise at 571. 781.0619 or [Brandis.Ruise@lcps.org](mailto:Brandis.Ruise@lcps.org); my dissertation advisor/PI for this study/Professor of School Psychology at the University of Rhode Island, Dr. Gary Stoner, Ph.D. at 401.874.4234 or [GStoner@uri.edu](mailto:GStoner@uri.edu); or the URI IRB at 401. 874.4328; In addition, this project has been reviewed and approved by the Institutional Review Board of the University of Rhode Island. Questions or complaints concerning your rights as a participant in this research may also may be addressed to Dr. Gerald Sonnenfeld, the Vice President of Research and Economic Development by phone at (401) 874-4576; by email at [gsonnenfeld@uri.edu](mailto:gsonnenfeld@uri.edu); or by mail to:

University of Rhode Island  
Carlotti Administration Building, 2nd Floor  
75 Lower College Road  
Kingston, RI 02881

Signing your name at the bottom means that you **agree** to be in this study. You will be given a copy of this form after you have signed it.

---

Adult Participant Signature	Date
-----------------------------	------

---

Signature of Investigator	Date
---------------------------	------

Cited References:

Goodenow, C. (1993). The psychological sense of school membership among adolescents: Scale development and educational correlates. *Psychology in the Schools, 30*, 79–91.

Lane, K. L., Parks, R. J., Kalberg, J. R., & Carter, E. W. (2007). Systematic screening at the middle school level: Score reliability and validity of the Student Risk Screening Scale. *Journal of Emotional and Behavioral Disorders, 15*(4), 209-222.

## Appendix C: Scripts For Survey Administration

### Script for Student Screening

“Today you are being asked to complete two brief surveys. At the top of each survey, write your first and last name.

Then take a look at the form entitled Strengths and Difficulties Questionnaire. You are encouraged to try to answer all of the questions that are listed.

Next, take a look at the form entitled The School Connections Survey, which is about your connections at \_\_\_\_\_. You are encouraged to think about any personal connections you have with other students and adults at \_\_\_\_\_. The first section asks you to list any adults in the building with whom you have a good personal connection. These should be people that you trust, you know care about you, and you feel you can talk to if you have a problem. Remember to consider any adult in the building including teachers, teaching assistants, administrators, counselors, secretaries, custodians, cafeteria workers, etc. The second section asks you to consider any classmates or peers in the building with whom you have a good personal connection. These should be peers that you trust, you know care about you, and you feel you can talk to if you have a problem. Remember to consider any student in the building, including those in different grades and different classes.

Think carefully about the connections that you may have and record them on the survey; however, if you feel that you genuinely have no connections at this time, please check the appropriate box at the bottom of each section.

When you have completed both forms, please fold them in half and place them in the envelope. Your responses will be kept confidential, and I will not be looking at them.

If you have any questions while completing the surveys or if you need assistance reading them, please let me know.”

## **Appendix C: Scripts For Survey Administration**

### **Script for Administration of Social Validity Questionnaire**

“Today you are being asked to spend a few minutes reading through two brief surveys. These surveys were developed to help screen students for social, emotional and behavioral concerns. You do not have to be familiar with these instruments but you are asked to share your impressions related to their intended use.

After reviewing both surveys, please complete a Social Validity Questionnaire for each screening tool. That means you are completing a total of two questionnaires.

When you have completed both forms, please fold them in half and place them in the envelope. Your responses will be kept anonymous, and I will not be looking at them.

If you have any questions while completing the surveys, please let me know. Thank you for your participation!”

## Appendix D: Student Demographic Data

Table 1

*Observed Frequencies of Student Participants by Ethnic/Racial Group and Gender*

<b>Ethnic/Racial Group</b>	<b>Gender</b>		<b>TOTAL</b>
	Male	Female	
White	43	28	71
Asian	20	19	39
Hispanic	4	4	8
African American	4	1	5
<b>TOTAL</b>	71	52	123

## Appendix D: Student Demographic Data

Table 2

*Observed Frequencies of Student Participants by Ethnic/Racial Group and School Days Attended*

<b>Ethnic/Racial Group</b>	<b>School Days Attended</b>			<b>TOTAL</b>
	63	64	65	
White	2	7	62	71
Asian	0	0	39	39
Hispanic	0	0	8	8
African American	0	0	5	5
<b>TOTAL</b>	2	7	114	123

Appendix D: Student Demographic Data

Table 3  
Descriptive Statistics of Student Participants

	N	Minimum	Maximum	Mean	Std. Deviation	Skewness		Kurtosis	
						Statistic	Std. Error	Statistic	Std. Error
Ethnicity	123	1	4	1.85	.775	1.118	.218	1.666	.433
Gender	123	1	2	1.42	.496	.317	.218	-1.931	.433
Office Discipline Referrals	123	0	3	.09	.405	5.208	.218	29.285	.433
Days attended	123	63	65	64.91	.339	-4.098	.218	17.452	.433
Adult Connections	123	0	3	1.85	1.219	-.432	.218	-1.448	.433
Peer Connections	123	0	3	2.54	.889	-1.807	.218	1.972	.433
Total Difficulties Score	123	2.00	24.00	10.8537	4.82596	.701	.218	.062	.433
Emotional Problems Scale	123	.00	10.00	3.3252	2.28141	.403	.218	-.257	.433
Conduct Problems Scale	123	.00	7.00	1.5203	1.54893	1.340	.218	2.007	.433
Hyperactivity Scale	123	.00	8.00	4.1138	1.86074	.025	.218	-.620	.433
Peer Problems Scale	123	.00	7.00	1.8943	1.46999	1.020	.218	1.423	.433
Prosocial Scale	123	2.00	10.00	7.3740	1.80345	-.755	.218	.283	.433



**Appendix E: School Connections Survey Data**

**Table 4**  
*School Connections Reported on the SCS by Gender*

Number of Connections	Adult Connections (N = 123)				Peer Connections (N = 123)			
	Males	% of Males	Females	% of Females	Males	% of Males	Females	% of Females
0	18	(25.3%)	8	(15.4%)	6	(8.5%)	1	(2.0%)
1	13	(18.3%)	10	(19.2%)	7	(9.9%)	5	(9.6%)
2	8	(11.3%)	9	(17.3%)	5	(7.0%)	6	(11.5%)
3	32	(45.1%)	25	(48.1%)	53	(74.6%)	40	(76.9%)
<b>Total</b>	<b>71</b>	<b>(100%)</b>	<b>52</b>	<b>(100%)</b>	<b>71</b>	<b>(100%)</b>	<b>52</b>	<b>(100%)</b>

Appendix E: School Connections Survey Data

Table 5  
School Connections Reported on the SCS by Ethnicity/Race

Ethnicity/Race	Adult Connections (N = 123)				Total (% per ethnic/racial group)	Peer Connections (N = 123)				Total (% per ethnic/racial group)
	0	1	2	3		0	1	2	3	
White	17 (24%)	15 (21%)	8 (11%)	31 (44%)	71 (100%)	4 (6%)	5 (7%)	6 (8%)	56 (79%)	71 (100%)
Asian	6 (15%)	8 (21%)	8 (21%)	17 (43%)	39 (100%)	3 (8%)	5 (13%)	4 (10%)	27 (69%)	39 (100%)
Hispanic	1 (12%)	0	0	7 (88%)	8 (100%)	0	1 (12%)	0	7 (88%)	8 (100%)
African American	2 (40%)	0	1 (20%)	2 (40%)	5 (100%)	0	1 (20%)	1 (20%)	3 (60%)	5 (100%)
Total	26	23	17	57	123	7	12	11	93	123

## Appendix F: Strengths And Difficulties Questionnaire Data

Table 6  
*Total Difficulties Scores on the SDQ by Gender*

Observed Total Difficulties Scores	Males (N = 71)	Females (N = 52)	Total (N=123)
2	0	2	2
4	4	0	4
5	8	3	11
6	5	0	5
7	6	5	11
8	3	3	6
9	9	5	14
10	6	6	12
11	6	9	15
12	5	4	9
13	1	2	3
14	4	0	4
15	4	4	8
<i>Normal Range Scores 1-15 (% per gender)</i>	<i>61 (86% of males)</i>	<i>39 (82.7% of females)</i>	100
16	2	0	2
17	0	3	3
18	0	2	2
19	2	0	2
<i>Borderline Range Scores 16-19 (% per gender)</i>	<i>4 (5.6% of males)</i>	<i>9 (9.6% of females)</i>	13
20	2	1	3
21	2	1	3
22	1	1	2
23	1	0	1
24	0	1	1
<i>Abnormal Range Scores 20+ (% per gender)</i>	<i>6 (8.4% of males)</i>	<i>4 (7.7% of females)</i>	10

## Appendix F: Strengths And Difficulties Questionnaire Data

Table 7  
*Total Difficulties Scores on the SDQ by Ethnicity/Race*

Observed Total Difficulties Scores	White (N = 71)	Asian (N = 39)	Hispanic (N = 8)	African American (N=5)	Total (N=123)
2	1	1	0	0	2
4	4	0	0	0	4
5	6	5	0	0	11
6	2	2	1	0	5
7	6	4	0	1	11
8	4	2	0	0	6
9	5	6	1	2	14
10	5	6	1	0	12
11	5	7	2	1	15
12	9	0	0	0	9
13	0	3	0	0	3
14	3	0	1	0	4
15	5	1	1	1	8
<i>Normal Range Scores 1-15 (Cumulative % per group)</i>	55 (77%)	37 (95%)	7 (88%)	5 (100%)	104
16	2	0	0	0	2
17	2	1	0	0	3
18	1	0	1	0	2
19	2	0	0	0	2

<i>Borderline Range Scores 16-19 (Cumulative % per group)</i>	7 (10%)	1 (25%)	1 (12%)	0 (0%)	9
20	2	1	0	0	3
21	3	0	0	0	3
22	2	0	0	0	2
23	1	0	0	0	1
24	1	0	0	0	1
<i>Abnormal Range Scores 20+ (Cumulative % per group)</i>	9 (13%)	1 (25%)	0 (0%)	0 (0%)	10

## Appendix F: Strengths And Difficulties Questionnaire Data

Table 8  
*Comparison of Means and Standard Deviations for Standardization Sample and Entire Study Sample*

SDQ Score	Normative SDQ data from the United States for 11-14 year olds (N = 2,770)		Study Sample (N = 123)	
	Mean	Std. Deviation	Mean	Std. Deviation
Total Difficulties	7.1	6.2	10.8	4.8
Emotional Problems	1.7	2.0	3.3	2.3
Conduct Problems	1.4	1.8	1.5	1.6
Hyperactivity-inattention	2.7	2.6	4.1	1.9
Peer Problems	1.4	1.6	1.9	1.5
Prosocial Behavior	8.7	1.8	7.4	1.8

*Note.* Strengths and Difficulties Questionnaire (SDQ) normative data reported at [www.sdqinfo.com](http://www.sdqinfo.com) on January 30, 2004.

Appendix F: Strengths And Difficulties Questionnaire Data

Table 9  
*Comparison of Means and Standard Deviations for Standardization Sample and Study Sample by Gender*

SDQ Score	Normative SDQ data from the United States for Female 11-14 year olds (N = 2,770)		Normative SDQ data from the United States for Male 11-14 year olds (N = 2,770)		Study Female Sample (N = 52)		Study Male Sample (N = 71)	
	Mean	Std. Deviation	Mean	Std. Deviation	Mean	Std. Deviation	Mean	Std. Deviation
Total Difficulties	6.6	5.8	7.6	6.5	11.3	4.7	10.5	4.9
Emotional Problems	1.8	2.1	1.5	1.9	4.2	2.4	2.7	2.0
Conduct Problems	1.2	1.6	1.5	1.9	1.3	1.3	1.7	1.7
Hyperactivity-inattention	2.2	2.3	3.1	2.8	4.1	1.8	4.1	1.9
Peer Problems	1.3	1.6	1.5	1.7	1.8	1.5	2.0	1.5
Prosocial Behavior	8.9	1.6	8.4	2.0	7.8	1.8	7.1	1.8

Note. Strengths and Difficulties Questionnaire (SDQ) normative data reported at [www.sdqinfo.com](http://www.sdqinfo.com) on January 30, 2004.

Appendix G: Correlational Analyses

Table 10  
Correlational Analyses of Student Data

	Ethnicity	Gender	Days attend	Office Disc Referrals	Adult Connect	Peer Connect	Total School Connect	Emo Prob Scale	Conduct Prob Scale	Hyperact Scale	Peer Prob Scale	Prosoc Scale	Total Diff Score
Spearman's rho	Ethnicity Correlat Coeff	1.000	-.081	.042	.033	.095	.077	.147	.035	.129	.138	-.062	.179*
	Sig. (2-tailed)		.376	.645	.715	.296	.399	.105	.698	.153	.127	.494	.047
	N	123	123	123	123	123	123	123	123	123	123	123	123
	Gender Correlat Coeff	-.081	1.000	-.137	.079	.048	.079	.301**	-.061	-.012	-.072	.194*	.119
	Sig. (2-tailed)			.130	.382	.600	.385	.001	.505	.895	.429	.032	.189
	N	123	123	123	123	123	123	123	123	123	123	123	123
	Days attend Correlat Coeff	-.117	1.000	-.345**	.217*	-.094	.135	.065	.159	.145	-.049	.044	.117
	Sig. (2-tailed)			.000	.016	.304	.137	.476	.079	.110	.588	.631	.197
	N	123	123	123	123	123	123	123	123	123	123	123	123
	Office Disc Referr Correlat Coeff	.042	-.137	1.000	-.332**	-.041	-.277**	.000	-.095	.026	-.053	-.031	-.037
	Sig. (2-tailed)				.000	.652	.002	1.000	.297	.776	.560	.735	.684
	N	123	123	123	123	123	123	123	123	123	123	123	123



Adult Connect	Correlat Coeff	.033	.079	.217*	-.332**	1.000	.180*	.872**	.102	.052	.120	-.114	.119	.085
	Sig. (2-tailed)	.715	.382	.016	.000	.	.046	.000	.260	.565	.186	.209	.188	.352
	N	123	123	123	123	123	123	123	123	123	123	123	123	123
Peer Connect	Correlat Coeff	.095	.048	-.094	-.041	.180*	1.000	.606**	.024	-.037	-.009	-	.156	-.037
	Sig. (2-tailed)	.296	.600	.304	.652	.046	.	.000	.793	.684	.917	.002	.085	.683
	N	123	123	123	123	123	123	123	123	123	123	123	123	123
Total School Connect	Correlat Coeff	.077	.079	.135	-.277**	.872**	.606**	1.000	.072	.048	.090	-	.132	.049
	Sig. (2-tailed)	.399	.385	.137	.002	.000	.000	.	.426	.601	.324	.017	.145	.591
	N	123	123	123	123	123	123	123	123	123	123	123	123	123
Emot Probl Scale	Correlat Coeff	.147	.301**	.065	.000	.102	.024	.072	1.000	.167	.366**	.151	.032	.756**
	Sig. (2-tailed)	.105	.001	.476	1.000	.260	.793	.426	.	.065	.000	.095	.722	.000
	N	123	123	123	123	123	123	123	123	123	123	123	123	123
Conduct Prob Scale	Correlat Coeff	.035	-.061	.159	-.095	.052	-.037	.048	.167	1.000	.393**	.282**	-	.591**
	Sig. (2-tailed)	.698	.505	.079	.297	.565	.684	.601	.065	.	.000	.002	.000	.000
	N	123	123	123	123	123	123	123	123	123	123	123	123	123
Hyperact Scale	Correlat Coeff	.129	-.012	.145	.026	.120	-.009	.090	.366**	.393**	1.000	-.024	-.139	.711**
	Sig. (2-tailed)													
	N	123	123	123	123	123	123	123	123	123	123	123	123	123

	Sig. (2-tailed)	.153	.895	.110	.776	.186	.917	.324	.000	.000	.789	.125	.000
	N	123	123	123	123	123	123	123	123	123	123	123	123
Peer	Correlat	.138	-.072	-.049	-.053	-.114	-.274**	-.214*	.151	.282**	-.024	1.000	-.415**
Prob	Coeff											.273**	
Scale	Sig. (2-tailed)	.127	.429	.588	.560	.209	.002	.017	.095	.002	.789	.002	.000
	N	123	123	123	123	123	123	123	123	123	123	123	123
Prosoc	Correlat	-.062	.194*	.044	-.031	.119	.156	.132	.032	-.312**	-.139	1.000	-.209*
Scale	Coeff											.273**	
	Sig. (2-tailed)	.494	.032	.631	.735	.188	.085	.145	.722	.000	.125	.002	.021
	N	123	123	123	123	123	123	123	123	123	123	123	123
Total	Correlat	.179*	.119	.117	-.037	.085	-.037	.049	.756**	.591**	.711**	.415**	-.209*
Diff	Coeff												1.000
Score	Sig. (2-tailed)	.047	.189	.197	.684	.352	.683	.591	.000	.000	.000	.000	.021
	N	123	123	123	123	123	123	123	123	123	123	123	123

\*. Correlation is significant at the 0.05 level (2-tailed).

\*\* . Correlation is significant at the 0.01 level (2-tailed).

## Appendix H: School Connections And Strengths And Difficulties Scores

Table 11

*Frequency Table by Student Connectedness and Total Scores on the Strengths and Difficulties Questionnaire*

### Level of connectedness & SDQ Total Scores

Level of connectedness	SDQ Elevation		Total
	Elevated (16+)	Normal (1-15)	
Low (0-3)	7	31	38
High (3+)	12	73	85
Total	19	104	123

## Appendix I: Teacher Survey Data

Table 12

*Descriptive Statistics of the Means of Teacher Impressions of Each Screening Tool*

	N	Minimum	Maximum	Mean	Std. Deviation	Skewness		Kurtosis	
						Statistic	Std. Error	Statistic	Std. Error
TotalConnections	25	16.00	26.00	21.200	2.78388	-.338	.464	-.447	.902
TotalSDQ	25	11.00	30.00	22.480	3.57211	-1.574	.464	5.169	.902
Valid N (listwise)	25								

## Appendix I: Teacher Survey Data

Table 13  
*Wilcoxon Signed Rank Test*

Summary of ranked difference scores for each screening tool

	N	Mean Rank	Sum of Ranks
TotalSDQ - TotalConnections Negative Ranks	6 <sup>a</sup>	6.83	41.00
Positive Ranks	12 <sup>b</sup>	10.83	130.00
Ties	7 <sup>c</sup>		
Total	25		

a. TotalSDQ < TotalConnections

b. TotalSDQ > TotalConnections

c. TotalSDQ = TotalConnections

Test Statistics<sup>a</sup>

	TotalSDQ - TotalConnections
Z	-1.944 <sup>b</sup>
Asymp. Sig. (2-tailed)	.052

a. Wilcoxon Signed Ranks Test

b. Based on negative ranks.

## BIBLIOGRAPHY

- Achenbach, T. M. (1991). Manual for the Child Behavior Checklist/4-18 and the 1991 profile. Unpublished manuscript, Department of Psychiatry, University of Vermont.
- Achenbach, T.M., Becker, A., Dopfner, M., Heiervang, E., Roessner, V., Steinhausen, H., & Rothenberger, A. (2008). Multicultural assessment of child and adolescent psychopathology with ASEBA and SDQ instruments: Research findings, applications, and future directions. *The Journal of Child Psychology and Psychiatry*, 49(3), 251-275.
- Adelman, H. S., Taylor, L., Weist, M. D., Adelsheim, S., Freeman, B., Kapp, L., et al. (1999). Mental health in schools: A federal initiative. *Children's Services: Social Policy, Research, and Practice*, 2, 95–115.
- Albers, C. A., Glover, T. A., & Kratochwill, T. R. (2007). Where are we, and where do we go now? Universal screening for enhanced educational and mental health outcomes. *Journal of School Psychology*, 45, 257-263.
- American Educational Research Association (AERA), American Psychological Association (APA), & National Center on Measurement in Education (NCME). (1999). *Standards for educational and psychological testing*. Washington, DC: AERA.
- Akos, P., & Galassi, J. P. (2004). Gender and race as variables in psychosocial adjustment in middle and high school. *The Journal of Educational Research*, 98, 102–108.
- Andermann, A., Blancquaert, I., Beauchamp, S., & Déry, V. (2008). Revisiting Wilson

- and Jungner in the genomic age: A review of screening criteria over the past 40 years. *Bulletin of the World Health Organization*, 86, 317–319.
- Arora, P.G., Connors, E.H., George, M.W., Lyon, A.R., Wolk, C.B., & Weist, M.D. (2016). Advancing evidence-based assessment in school mental health: Key priorities for an applied research agenda. *Clinical Child and Family Psychology Review*, 19(4), 271-284.
- Atkins, M. S., Hoagwood, K. E., Kutash, K., & Seidman, E. (2010). Toward the integration of education and mental health in schools. *Administration and Policy in Mental Health*, 37(1-2), 40–47.
- Back, L. T., Polk, E., Keys, C. B., & McMahon, S. D. (2016). Classroom management, school staff relations, school climate, and academic achievement: Testing a model with urban high schools. *Learning Environments Research*, 19(3), 397–410.
- Barber, B.K., & Olsen, J.K. (2004). Assessing the transitions to middle and high school. *Journal of Adolescent Research*, 19, 3—30.
- Battistich, V., Soloman, D., Kim, D., Watson, M., & Shaps, E. (1995). Schools as communities, poverty levels of student populations, and students' attitudes, motives, and performance: A multilevel analysis. *American Educational Research Journal*, 32(3), 627–658.
- Bear, L., Finer, R., Guo, S., & Lau, A. S. (2014). Building the gateway to success: An appraisal of progress in reaching underserved families and reducing racial disparities in school-based mental health. *Psychological services*, 11(4), 388.
- Bear, G. G., & Watkins, J. M. (2006). Developing self-discipline. In G. G. Bear & K.

- M. Minke (Eds.), *Children's needs III: Development, prevention, and intervention* (pp. 29–44). Bethesda, MD: National Association of School Psychologists.
- Becker, A., Rothenberger, A., Sohn, A., & The BELLA Study Group (2015). Six years ahead: A longitudinal analysis regarding course and predictive value of the Strengths and Difficulties Questionnaire (SDQ) in children and adolescents. *European Child & Adolescent Psychiatry, 24*, 715-725.
- Benson, P. L. (2006). All kids are our kids: What communities must do to raise caring and responsible children and adolescents (2nd ed). San Francisco: Jossey-Bass.
- Bevans, K., Bradshaw, C., Miech, R., & Leaf, P. (2007). Staff- and school-level predictors of school organizational health: A multilevel analysis. *Journal of School Health, 77*, 294–302.
- Blum, R. W., & Libbey, H. P. (2004). Executive summary. *Journal of School Health, 74*, 231–232.
- Bollen, K. A., & Lennox, R. (1991). Conventional wisdom on measurement: A structural equation perspective. *Psychological Bulletin, 110*, 305–314.
- Bonny, A. E., Brito, M. T., Klosterman, B. K., Hornung, R. W., & Slap, G. B. (2000, November). School disconnectedness: Identifying adolescents at risk. *Pediatrics, 106*, 1017-1021.
- Borntrager, C., & Lyon, A. R. (2015). Client progress monitoring and feedback in school-based mental health. *Cognitive & Behavioral Practice, 22*, 74–86.
- Bourdon, K. H., Goodman, R., Rae, D. S., Simpson, G., & Koretz, D. S. (2005). The



- Strengths and Difficulties Questionnaire: U.S. normative data and psychometric properties. *Journal of the American Academy of Child and Adolescent Psychiatry*, 44, 557–564.
- Bradshaw, C. P., Koth, C. W., Thornton, L. A., & Leaf, P. J. (2009). Altering school climate through school-wide positive behavioral interventions and supports: Findings from a group-randomized effectiveness trial. *Prevention Science*, 10, 100–115.
- Brand, S., Felner, R. D., Shim, M., Seitsinger, A., & Dumas, T. (2003). Middle school improvement and reform: Development and validation of a school-level assessment of climate, cultural pluralism and school safety. *Journal of Educational Psychology*, 95, 570–588.
- Bronfenbrenner, U. (1994). Ecological models of human development. In T. Husen & T. N. Postlethwaite (Eds.), *International encyclopedia of education* (2nd ed., pp. 1643–1647). New York: Elsevier.
- Bronfenbrenner, U., & Morris, P. (1998). The ecology of developmental process. *Handbook of Child Psychology*, 1, 993–1029.
- Brown, J. L., Jones, S. M., LaRusso, M., & Aber, J. L. (2010). Improving classroom quality: Teacher influences and experimental impacts of the 4Rs Program. *Journal of Educational Psychology*, 102, 153–167.
- Buehler, C., Fletcher, A. C., Johnston, C., & Weymouth, B. B. (2015). Perceptions of school experiences during the first semester of middle school. *School Community Journal*, 25(2), 55-83.
- Burchinal, M. R., Roberts, J. E., Zeisel, S. A., & Rowley, S. J. (2008). Social risk and

- Protective factors for African American children's academic achievement and adjustment during the transition to middle school. *Developmental Psychology*, 44, 286–292.
- Burns, J.R. & Rapee, R.M. (2016). Screening for mental health risk in high schools: The development of the Youth RADAR. *Psychological Assessment*, 28(10), 1220-1231.
- Cammack, N. L., Brandt, N. E., Slade, E., Lever, N. A., & Stephan, S. (2014). Funding expanded school mental health programs. In M. Weist, N. Lever, C. Bradshaw, & J. Owens (Eds.), *Handbook of school mental health: Research, training, practice, and policy* (2nd ed., pp. 17–30). New York: Springer.
- Catalano, R. F., Berglund, M. L., Ryan, J. A. M., Lonczak, H. S., & Hawkins, J. D. (2002). Positive youth development in the United States: Research findings on evaluations of positive youth development programs. *Prevention & Treatment*, 5, Article 15.
- Centers for Disease Control and Prevention. [Mental Health Surveillance Among Children – United States, 2005-2011]. *MMWR* 2013; 62(Suppl 2): 1-35.
- Centers for Disease Control and Prevention. (2009). *School connectedness: Strategies for increasing protective factors among youth*. Retrieved January 13, 2017, from <http://www.cdc.gov/HealthyYouth/AdolescentHealth/pdf/connectedness.pdf>
- Chafouleas, S. M. (2011). Direct Behavior Rating: A review of the issues and research in its development. *Education & Treatment of Children*, 34, 575–591.
- Chafouleas, S.M. & Bray, M.A. (2004). Introducing positive psychology: Finding a

- place within school psychology. *Psychology in the Schools*, 16, 1–5.
- Chafouleas, S. M., Kilgus, S. P., & Hernandez, P. (2009). Using Direct Behavior Rating (DBR) to screen for school social risk: A preliminary comparison of methods in a kindergarten sample. *Assessment for Effective Intervention*, 34, 214–223.
- Chafouleas, S. M., Kilgus, S. P., Jaffery, R., Riley-Tillman, T. C., Welsh, M. E., & Christ, T. J. (2013). Direct Behavior Rating as a school-based behavior screener for elementary and middle grades. *Journal of School Psychology*, 51, 367–385.
- Christens, B., & Kirshner, B. (2011). Taking stock of youth organizing: An interdisciplinary perspective. *New Directions for Child and Adolescent Development*, 134, 27–41.
- Clark, L. A., & Watson, D. (1995). Constructing validity: Basic issues in objective scale development. *Psychological Assessment*, 7, 309–319.
- Cohen, J. (1988). *Statistical power analysis for the behavioral sciences*, 2nd ed. Hillsdale, NJ: Lawrence Erlbaum.
- Coie, J. D., Watt, N. F., West, S. G., Hawkins, J. D., Asarnow, J. R., Markman, H. J., Ramey, S., Shure, M., & Long, B. (1993). The science of prevention: A conceptual framework and some directions for a national research program. *American Psychologist*, 48, 1013–1022.
- Collaborative for Academic, Social, and Emotional Learning. (2005). Safe and sound: An educational leader’s guide to evidence-based social and emotional learning programs—Illinois edition. Chicago: Author.

- Cone, J. D. (1986). Idiographic, nomothetic, and related perspectives in behavioral assessment. In R. O. Nelson & S. C. Hayes (Eds.), *Conceptual foundations of behavioral assessment* (pp. 111–128). New York: Guilford.
- Connors, E. H., Arora, P., Curtis, L., & Stephan, S. H. (2015). Evidence-based assessment in school mental health. *Cognitive and Behavioral Practice, 22*, 60–73.
- Conover, W.J. (1999). *Practical Nonparametric Statistics*, 3<sup>rd</sup> ed. New York, NY: John Wiley & Sons, Inc.
- Cook, C. R., Rasetshwane, K. B., Truelson, E., Grant, S., Dart, E. H., Collins, T. A., & Sprague, J. (2011). Development and validation of the Student Internalizing Behavior Screener: Examination of reliability, validity, and classification accuracy. *Assessment for Effective Intervention, 36*, 71–79.
- Coolidge, F. L. (2006). *Statistics: A Gentle Introduction* (2<sup>nd</sup> ed). Thousand Oaks, California: Sage Publications.
- Cooper, J. O., Heron, T. E., & Heward, W. L. (2007). *Applied behavior analysis*, 2<sup>nd</sup> ed. Upper Saddle River, N.J.: Pearson Prentice Hall.
- Costello, E. J., Mustillo, S., Erkanli, A., Keeler, G., & Angold, A. (2003). Prevalence and development of psychiatric disorders in childhood and adolescence. *Archives of general psychiatry, 60*(8), 837-844.
- Demaray, M. K., & Malecki, C. K. (2003). Perceptions of the frequency and importance of social support by students classified as victims, bullies, and bully/victims in an urban middle school. *School Psychology Review, 32*(3), 471–489.

- Deno, S. L., Fuchs, L. S., Marston, D., & Shin, J. (2001). Using curriculum-based measurement to establish growth standards for students with learning disabilities. *School Psychology Review*, 30, 507–524.
- Donovan, S.A. & Nickerson, A.B. (2007). Strength-based versus traditional social-emotional reports: Impact on multidisciplinary team members' perceptions. *Behavioural Disorders*, 32, 228–237.
- Dowdy, E., Furlong, M., Eklund, K., Saeki, E., & Ritchey, K. (2010). Screening for mental health and wellness: Current school-based practices and emerging possibilities. In B. Doll, W. Phofl, & J. Yoon (Eds.), *Handbook of youth prevention science* (pp. 70–95). New York, NY: Routledge.
- Duong, M., Lyon, A. R., Ludwig, K., Wasse, J. K., & McCauley, E. (2016). Student perceptions of the acceptability and utility of standardized and idiographic assessment in school mental health. *International Journal of Mental Health Promotion*, 18(1), 49–63.
- Durlak, J. A., & Wells, A. M. (1997). Primary prevention mental health programs for children and adolescents: A meta-analytic review. *American Journal of Community Psychology*, 25, 115–152.
- Eisenberg, M., Neumark-Sztainer, D. & Perry, C. (2003). Peer harassment, school connectedness, and academic achievement. *Journal of School Health*, 73(8), 311-316.
- Elias, M. J., Leverett, L., Duffell, J. C., Humphrey, N., Stepney, C., & Ferrito, J. (2015). Integrating SEL with related prevention and youth development approaches. In J. A. Durlak, C. E. Domitrovich, R. P. Weissberg, & T. P.

- Gullotta (Eds.), *Handbook of social and emotional learning: Research and practice* (pp. 33–49). New York, NY: Guilford Press.
- Elias, M. J., Zins, J. E., Weissberg, R. P., Frey, K. S., Greenberg, M. T., Haynes, N. M., et al. (1997). *Promoting social and emotional learning: Guidelines for educators*. Alexandria, VA: Association for Supervision and Curriculum Development.
- Elliott, S. N., & Gresham, F. M. (2008). *SSiS: Social Skills Improvement System*. Minneapolis, MN: Pearson.
- Epstein, M.H., Harniss, M.K., Robbins, V., Wheeler, L., Cyrulik, S., Kriz, M. et al. (2003). Strength-based approaches to assessment in schools. In M.D. Weist, S.W. Evans & N.A. Lever, *Handbook of school mental health: Advancing practice and research* (pp.283–299). New York: Kluwer Academic/Plenum.
- Espinoza, G., & Juvonen, J. (2011). Perceptions of the school social context across the Transition to middle school: Heightened sensitivity among Latino students? *Journal of Educational Psychology*, 103, 749–758.
- Evans, S. W., & Weist, M. D. (2004). Implementing empirically supported treatments in the schools: What are we asking? *Clinical Child and Family Psychology Review*, 7, 263–267.
- Fagan, A. A., Hawkins, J. D., & Shapiro, V. B. (2015). Taking SEL to scale in schools: The role of community coalitions. In J. A. Durlak, C. E. Domitrovich, R. P. Weissberg, & T. P. Gullotta (Eds.), *Handbook of social and emotional learning: Research and practice* (pp. 468–481). New York, NY: Guilford Press.

- Fan, W., Williams, C. M. and Corkin, D. M. (2011), A multilevel analysis of student perceptions of school climate: The effect of social and academic risk factors. *Psychology in the Schools*, 48, 632–647.
- Finn, J. D., & Rock, D. A. (1997). Academic success among students at risk for school failure. *Journal of Applied Psychology*, 82, 221–234.
- Fredricks, J., Blumenfeld, P., & Paris, A. (2004). School Engagement: Potential of the Concept, State of the Evidence. *Review of Educational Research* 74(1), 59–109.
- Fuchs, D., & Fuchs, L. S. (2006). Introduction to Response to Intervention: What, why, and how valid is it?. *Reading Research Quarterly*, 41(1), 93-99.
- Furlong, M. J., Grief, J. L., Bates, M. P., Whipple, A. D., Jimenez, T. C., & Morrison, R. (2005). Development of the California school climate and safety-survey form. *Psychology in the Schools*, 42, 137–149.
- Garringer, M. (2009). *Redefining your success: The role of adolescent connectedness in demonstrating mentoring impact*. (Mentoring Resource Center Fact Sheet No.28). Retrieved January 13, 2017, from <http://www.edmentroing.org/pubs/facsheet28.pdf>
- Gilman, R., Huebner, E.S. & Furlong, M.J. (Eds.) (2009). *Handbook of positive psychology in schools*. New York: Routledge.
- Glascoc, F. P. (2005). Screening for developmental and behavioral problems. *Mental Retardation and Developmental Disabilities Research Reviews*, 11, 173–179.
- Glover, T. A., & Albers, C. A. (2007). Considerations for evaluating universal screening instruments. *Journal of School Psychology*, 45, 117-135.

- Gómez, R. (2012). Correlated trait-correlated method minus one analysis of the convergent and discriminant validities of the Strengths and Difficulties Questionnaire. *Assessment, 12*, 372–382.
- Goodenow, C. (1993). The psychological sense of school membership among adolescents: Scale development and educational correlates. *Psychology in the Schools, 30*, 79–91.
- Goodman, R. (1997). The strengths and difficulties questionnaire: A research note. *Journal of Child Psychology and Psychiatry, and Allied Disciplines, 38*, 581–586.
- Goodman, R. (2001). Psychometric properties of the Strengths and Difficulties Questionnaire. *Journal of the American Academy of Child and Adolescent Psychiatry, 40*(11), 1337–1345.
- Goodman, R., Renfrew, D., & Mullick, M. (2000). Predicting type of psychiatric disorder from Strengths and Difficulties Questionnaire (SDQ) scores in child mental health clinics in London and Dhaka. *European Child and Adolescent Psychiatry, 9*, 129–134.
- Gottfredson, D. C., & Gottfredson, G. D. (2002). Quality of school-based prevention programs: Results from a national survey. *Journal of Research in Crime and Delinquency, 39*, 3–35.
- Gottfredson, G. D., Gottfredson, D. C., Payne, A. A., & Gottfredson, N. C. (2005). School climate predictors of school disorder: Results from a national study of delinquency prevention in schools. *Journal of Research in Crime and Delinquency, 42*, 412–444.



- Greenberg, M. T., Domitrovich, C., & Bumbarger, B. (2001). The prevention of mental disorders in school aged children: Current state of the field. *Prevention & Treatment, 4*, 1–62.
- Greenberg, M. T., Weissberg, R. P., O'Brien, M. U., Zins, J. E., Fredericks, L., Resnik, H., et al. (2003). Enhancing school-based prevention and youth development through coordinated social, emotional, and academic learning. *American Psychologist, 58*, 466–474.
- Gregory, A., Henry, D. B., & Schoeny, M. E. (2007). School climate and implementation of a preventive intervention. *American Journal of Community Psychology, 40*(3–4), 250–260.
- Gresham, F. M., & Kern, L. (2004). Internalizing behavior problems in children and adolescents. In R. B. Rutherford, M. M. Quinn, & S. R. Mathur (Eds.), *Handbook of research in emotional and behavioral disorders* (pp. 262–281). New York, NY: Guilford Press.
- Gudiño, O. G., Lau, A. S., Yeh, M., McCabe, K. M., & Hough, R. L. (2009). Understanding racial/ethnic disparities in youth mental health services: Do disparities vary by problem type? *Journal of Emotional and Behavioral Disorders, 17*(1), 3–16.
- Guerra, N. G., & Bradshaw, C. P. (2008). Linking the prevention of problem behaviors and positive youth development: Core competencies for positive youth development. *New Directions for Child and Adolescent Development, 122*, 1–17.
- Haggerty, K. P., & Shapiro, V. B. (2013). Science-based prevention through

communities that care: A model of social work practice for public health. *Social Work in Public Health*, 28, 349–365.

Hall, C. L., Moldavsky, M., Taylor, J., Sayal, K., Marriott, M., Batty, M. J., et al. (2014). Implementation of routine outcome measurement in child and adolescent mental health services in the United Kingdom: A critical perspective. *European Child and Adolescent Psychiatry*, 23(4), 239–242.

Halligan, S., Altman, D.G. & Mallett, S. (2015). Disadvantages of using the area under the receiver operating characteristic curve to assess imaging tests: A discussion and proposal for an alternative approach. *European Radiology*, 25(4), 932-939.

Hanson, T., & Voight, A. (2014). *The appropriateness of a California student and staff survey for measuring middle school climate*. Washington, DC: U.S. Department of Education, Institute for Education Sciences, National Center for Education Evaluation and Regional Assistance, Regional Educational Laboratory West.

Harlow, L. L. (2005). *The Essence of Multivariate Thinking*. Mahwah, New Jersey: Lawrence Erlbaum Associates, Publishers.

Hatfield, D. R., & Ogles, B. M. (2007). Why some clinicians use outcomes measures and others do not. *Administration and Policy in Mental Health and Mental Health Services Research*, 34, 283–291.

Hawass N. E. (1997). Comparing the sensitivities and specificities of two diagnostic procedures performed on the same group of patients. *British Journal of Radiology*, 70, 360–366.

- Hawkins, J. D., Jenson, J. M., Catalano, R. F., Fraser, M. W., Botvin, G. J., Shapiro, V. B., the Coalition for Behavioral Health. (2015). *Unleashing the power of prevention* [Discussion paper]. Washington, DC: Institute of Medicine and National Research Council.
- Haynes, S. N., Mumma, G. H., & Pinson, C. (2009). Idiographic assessment: Conceptual and psychometric foundations of individualized behavioral assessment. *Clinical Psychology Review, 29*(2), 179–191.
- Haynie, D. L., Nansel, T., Eitel, P., Crump, A. D., Saylor, K., Yu, K., et al. (2001). Bullies, victims and bully/victims: Distinct groups of at-risk youth. *Journal of Early Adolescence, 21*(1), 29–49.
- Hoagwood, K., Burns, B. J., Kiser, L., Ringeisen, H., & Schoenwald, S. K. (2001). Evidence-based practice in child and adolescent mental health services. *Psychiatric Services, 52*, 1179–1189.
- Hoagwood, K., & Erwin, H. D. (1997). Effectiveness of school-based mental health services for children: A 10-year research review. *Journal of Child and Family Studies, 6*(4), 435-451.
- Hoagwood, K. E., Olin, S. S., Kerker, B. D., Kratochwill, T. R., Crowe, M., & Saka, N. (2007). Empirically based school interventions targeted at academic and mental health functioning. *Journal of Emotional and Behavioral Disorders, 15*, 66–92.
- Holas, I., & Huston, A. C. (2012). Are middle schools harmful? The role of transition time, classroom quality, and school characteristics. *Journal of Youth and Adolescence, 41*, 333–345.

- Hopkins, W. G. (2002). A scale of magnitudes for effect statistics. Retrieved February 10, 2017, from <http://www.sportsci.org/resource/stats/effectmag.html>
- Hoover, J. H., Oliver, R., & Hazler, R. J. (1992). Bullying perceptions of adolescent victims in the Midwestern USA. *School Psychology International, 13*, 5–16.
- Horowitz J. L., & Garber J. (2006). The prevention of depressive symptoms in children and adolescents: A meta-analytic review. *Journal of Consulting and Clinical Psychology, 74*, 401–415.
- Hoyt, W., Warbasse, R., & Chu, E. (2006). Construct validation in counseling psychology research. *The Counseling Psychologist, 34*(6), 769-805.
- Hung, A. H., Luebbe, A. M., & Flaspohler, P. D. (2015). Measuring School climate: Factor analysis and relations to emotional problems, conduct problems, and victimization in Middle School Students. *School Mental Health, 7*(2), 105–119.
- Individuals with Disabilities Education Improvement Act of 2004*, 20 U.S.C. § 1400 et seq. (2004) (Reauthorization of the Individuals with Disabilities Education Act).
- January, A., Casey, R., & Paulson, D. (2011). A meta-analysis of classroom-wide interventions to build social skills: Do they work? *School Psychology Review, 40*(2), 242-256.
- Jellinek, M. S., Murphy, J. M., Robinson, J., Feins, A., Lamb, S., & Fenton, T. (1988). Pediatric Symptom Checklist: Screening school-age children for psychosocial dysfunction. *The Journal of Pediatrics, 112*, 201–209.
- Jenkins, L. N., Demaray, M. K., Wren, N. S., Secord, S. M., Lyell, K. M., Magers, A.

- M., Andrea J. Setmeyer, A.J., Rodelo, C., Newcomb-McNeal, E., & Tennant, J. (2014). A critical review of five commonly used social-emotional and behavioral screeners for elementary or secondary schools. *Contemporary School Psychology*, 18, 241–254.
- Jensen-Doss, A., & Hawley, K. M. (2011). Understanding clinicians' diagnostic practices: Attitudes toward the utility of diagnosis and standardized diagnostic tools. *Administration and Policy in Mental Health and Mental Health Services Research*, 38(6), 476–485.
- Jia, Y., Way, N., Ling, G., Yoshikawa, H., Chen, X., Hughes, D., et al. (2009). The influence of student perceptions of school climate on socioemotional and academic adjustment: A comparison of Chinese and American adolescents. *Child Development*, 80(5), 1514–1530.
- Johnson, S. L., Burke, J. G., & Gielen, A. C. (2012). Urban students' perceptions of the school environment's influence on school violence. *Children and Schools*, 34, 92–102.
- Johnson, E. S., Jenkins, J. R., Petscher, Y. & Catts, H. W. (2009). How can we improve the accuracy of screening instruments? *Learning Disabilities Research & Practice*, 24(4), 174–185.
- Joint Committee on Standards for Educational and Psychological Testing. (1999). *Standards for educational and psychological testing*. Washington, DC: American Educational Research Association.
- Joint Committee on Standards for Educational and Psychological Testing. (2014).

*Standards for educational and psychological testing*. Washington, DC: American Educational Research Association, American Psychological Association, and National Council on Measurement in Education.

Joreskog, K. (1994). On the estimation of polychoric correlations and their asymptotic covariance matrix. *Psychometrika*, 59, 381–389.

Juszczak, L., Melinkovich, P., & Kaplan, D. (2003). Use of health and mental health services by adolescents across multiple delivery sites. *Journal of Adolescent Health*, 32, 108–118.

Kalberg, J. R., Lane, K. L., Driscoll, S., & Wehby, J. (2011). Systematic screening for emotional and behavioral disorders at the high school level: A formidable and necessary task. *Remedial and Special Education*, 32, 506–520.

Kamphaus, R. W., DiStefano, C., Dowdy, E., Eklund, K., & Dunn, A. R. (2010). Determining the presence of a “problem”: Comparing two approaches for detecting youth behavioral risk. *School Psychology Review*, 39, 395-407.

Kamphaus, R. W., & Reynolds, C. R. (2007). *Behavior Assessment System for Children—Second Edition (BASC-2): Behavioral and emotional screening system (BESS)*. Bloomington, MN: Pearson.

Karcher, M. J., & Finn, L. (2005). How connectedness contributes to experimental Smoking among rural youth: Developmental and ecological. *Journal of Primary Prevention*, 26, 525–536.

Kasen, S., Johnson, J., & Cohen, P. (1990). The impact of school emotional climate on student psychopathology. *Journal of Abnormal Child Psychology*, 18(2), 165–177.

- Khoury-Kassabri, M., Benbenishty, R., Astor, R. A., & Zeira, A. (2004). The contributions of community, family, and school variables to student victimization. *American Journal of Community Psychology*, 34(3/4), 187–204.
- Klasen, H., Woerner, W., Wolke, D., Meyer, R., Overmeyer, S., Kaschnitz, W., Rothenberger A, & Goodman R. (2000). Comparing the German versions of the Strengths and Difficulties Questionnaire (SDQ-Deu) and the child behavior checklist. *European Child and Adolescent Psychiatry*, 9, 271–276.
- Kelly, M. S., & Lueck, C. (2011). Adopting a data-driven public health framework in schools: Results from a multi-disciplinary survey on school-based mental health practice. *Advances in School Mental Health Promotion*, 4(4), 5–12.
- Kern, L., & Manz, P. (2004). A look at current validity issues of school-wide behavior support. *Behavioral Disorders*, 30, 47-59.
- Kessler, R. C., Berglund, P., Denler, O., Jin, R., Merikangas, K. R., & Walters, E. E. (2005). Lifetime prevalence and age-of-onset distributions of DSM-IV disorders in the National Comorbidity Survey Replication. *Archives of General Psychiatry*, 62, 596-768.
- Kidger, J., Araya, R., Donovan, J., & Gunnell, D. (2012). The effect of the school environment on the emotional health of adolescents: A systematic review. *Pediatrics*, 129(5), 925–949.
- Kim, S. & Lee, W. (2017). Does McNemar’s test compare the sensitivities and specificities of two diagnostic tests? *Statistical Methods in Medical Research*, 26(1),142–54.
- Kohl D., Recchia S., Steffgen G. (2013). Measuring school climate: An overview of

- measurement scales. *Educational Research*, 55, 411-426.
- Koth, C. W., Bradshaw, C. P., & Leaf, P. J. (2008). A multilevel study of predictors of student perceptions of school climate: The effect of classroom-level factors. *Journal of Educational Psychology*, 100(1), 96–104.
- Kuperminc, G. P., Leadbeater, B. J., Emmons, C., & Blatt, S. J. (1997). Perceived school climate and difficulties in the social adjustment of middle school students. *Applied Developmental Science*, 1(2), 76–88.
- Kusche, C. A., & Greenberg, M. T. (1994). *The PATHS (Promoting Alternative Thinking Strategies Strategies) curriculum*. South Deerfield, MA: Channing-Bete.
- Kutash, K., Duchnowski, A. J., & Green, A. L. (2011). School-based mental health programs for students who have emotional disturbances: Academic and social-emotional outcomes. *School Mental Health*, 3(4), 191–208.
- Kutash, K., Duchnowski, A., & Lynn, N. (2006). *School-based mental health: An empirical guide for decision makers*. University of South Florida, The Louis De La Parte Florida Mental Health Institute, Department of Child and Family Studies, Research and Training Center for Children's Mental Health.
- Lapan, R. T., Wells, R., Petersen, J., & McCann, L. A. (2014). Stand Tall to Protect Students: School Counselors Strengthening School Connectedness. *Journal of Counseling & Development*, 92(3), 304-315.
- Langley, A. K., Nadeem, E., Kataoka, S. H., Stein, B. D., & Jaycox, L. H. (2010). Evidence-based mental health programs in schools: Barriers and facilitators of successful implementation. *School Mental Health*, 2(3), 105–113.



- Lane, K. L., Menzies, H., Oakes, W., & Kalberg, J. (2012). *Systematic Screenings of Behavior to Support Instruction*. New York: The Guilford Press.
- Lane, K. L., Oakes, W., & Menzies, H. (2010). Systematic screenings to prevent the development of learning and behavioral problems: Considerations for practitioners, researchers, and policy makers. *Journal of Disability Policy Studies*, 21, 160–172.
- Lane, K. L., Parks, R. J., Kalberg, J. R., & Carter, E. W. (2007). Systematic screening at the middle school level: Score reliability and validity of the Student Risk Screening Scale. *Journal of Emotional and Behavioral Disorders*, 15(4), 209–222.
- Lawrence, R. S., Gootman, J. A., & Sim, L. J. (Eds.). (2009). *Adolescent health services: Missing opportunities*. Washington, DC: National Academies Press.
- LeBuffe, P.A. & Shapiro, V.B. (2004). Lending ‘strength’ to the assessment of preschool social-emotional health. *The California School Psychologist*, 9, 51–61.
- Lee, V. E., & Bryk, A. S. (1989). A multilevel model of the social distribution of high school achievement. *Sociology of Education*, 62, 172–192.
- Levitt, J. M., Saka, N., Romanelli, L. H., & Hoagwood, K. (2007). Early identification of mental health problems in schools: The status of instrumentation. *Journal of School Psychology*, 45(2), 163-191.
- Liao, Y. & Lin, Y. M. (2008). McNemar Test Is Preferred for Comparison of Diagnostic Techniques (letter). *American Journal of Roentgenol*, 191(4), W190.

- Loeber, R., Green, S. M., Lahey, B. B., & Stouthamer-Loeber, M. (1991). Differences and similarities between children, mothers, and teachers as informants on disruptive child behavior. *Journal of Abnormal Child Psychology*, 19, 75–95.
- Logan, D. E., & King, C. A. (2002). Parental identification of depression and mental health service use among depressed adolescents. *Journal of the American Academy of Child and Adolescent Psychiatry*, 41, 296–304.
- Loeber, R., & Beelman, A. (2003). Effects of child skills training in preventing antisocial behavior: A systematic review of randomized evaluations. *Annals of the American Academy of Political and Social Science*, 587, 84–109.
- Loukas, A., & Murphy, J. L. (2007). Middle school student perceptions of school climate: Examining protective functions on subsequent adjustment problems. *Journal of School Psychology*, 45(3), 293–309.
- Loukas, A., Suzuki, R., & Horton, K. D. (2006). Examining school connectedness as a mediator of school climate effects. *Journal of Research on Adolescence*, 16, 491–502.
- Loveinger, J. (1957). Objective tests as instruments of psychological theory. *Psychological Record*, 3, 645–694.
- Lyon, A. R., Borntrager, C., Nakamura, B., & Higa-McMillan, C. (2013). From distal to proximal: Routine educational data monitoring in school-based mental health. *Advances in School Mental Health Promotion*, 6(4), 263–279.
- Lyon, A. R., Ludwig, K., Wasse, J. K., Bergstrom, A., Hendrix, E., & McCauley, E. (2016). Determinants and functions of standardized assessment use among school mental health clinicians: A mixed methods evaluation. *Administration*

*and Policy in Mental Health and Mental Health Services Research*, 43, 122–134.

Lyons, J. S., Epstein, R. A., & Jordan, N. (2010). Evolving systems of care with total clinical outcomes management. *Evaluation and Program Planning*, 33(1), 53–55.

Maras, M. A., Thompson, A. M., Lewis, C., Thornburg, K., & Hawks, J. (2015). Developing a tiered response model for social-emotional learning through interdisciplinary collaboration. *Journal of Educational & Psychological Consultation*, 25, 2–3, 198–223.

McEvoy, A., & Welker, R. (2000). Antisocial behavior, academic failure, and school climate: A critical review. *Journal of Emotional and Behavioral Disorders*, 8, 130–140.

McIntosh K., Campbell A. L., Carter D. R., Zumbo B. D. (2009). Concurrent validity of office discipline referrals and cut points used in schoolwide positive behavior support. *Behavioral Disorders*, 34(2), 100–113.

McIntosh K., Ty S. V., Miller L. D. (2014). Effects of school-wide positive behavioral interventions and supports on internalizing problems current evidence and future directions. *Journal of Positive Behavior Interventions*, 16, 209–218.

McNeely, C., & Falci, C. (2004). School connectedness and the transition into and out of health-risk behavior among adolescents: A comparison of social belonging and teacher support. *Journal of School Health*, 74(7), 284–292.

Merrell, K. W. (2011). Social and emotional assets and resilience scales {Measurement instrument}. Lutz: Psychological Assessment Resources.

- Midgley, C. , Feldlaufer, H., & Eccles, J. (1989). Student/teacher relations and attitudes toward mathematics before and after the transition to junior high school. *Child Development*, 60, 981-992.
- Miller, D.N. & Nickerson, A.B. (2007). Changing the past, present, and future: Potential Applications of positive psychology in school-based psychotherapy with children and youth. *Journal of Applied School Psychology*, 24, 147–162.
- Munro, B. H. (2005). *Statistical methods for health care research* (5th ed.). Philadelphia: Lippincott Williams & Wilkins.
- Muris, P., Meesters, C., & van den Berg, F. (2003). The Strengths and Difficulties Questionnaire (SDQ): Further evidence for its reliability and validity in a community sample of Dutch children and adolescents. *European Child and Adolescent Psychiatry*, 12, 1-8.
- Murphey, D., Barry, M., Vaughn, B. (2013). Adolescent health highlight. *Child Trends*. Retrieved January 15, 2017, from [http://www.childtrends.org/wp-content/uploads/2013/03/Child\\_Trends-2013\\_01\\_01\\_AHH\\_MentalDisordersl.pdf](http://www.childtrends.org/wp-content/uploads/2013/03/Child_Trends-2013_01_01_AHH_MentalDisordersl.pdf)
- Mustanski, B. S., Garofalo, R., & Emerson, E. M. (2010). Mental health disorders, psychological distress, and suicidality in a diverse sample of lesbian, gay, bisexual, and transgender youth. *American Journal of Public Health*, 100(12), 2426-2432.
- Myers, J. L., Well, A. D., & Lorch, R. F. (2010). *Research Design and Statistical Analysis* (3<sup>rd</sup> ed). New York, NY: Routledge.
- Nasir, N. S., Jones, A., & McLaughlin, M. W. (2011). School connectedness for

students in low-income urban high schools. *Teachers College Record*, 113(8), 1755-1793.

National Institute for Health Care Management. (2009). *Strategies to support the integration of mental health into pediatric primary care*. Retrieved February 10, 2017, from <http://nihcm.org/pdf/PediatricMH-FINAL.pdf>

National Mental Health Association. (2005, July). Study shows mental illness often begins in youth, treatment delays worsen issues. *The Bell: The newsletter of the National Mental Health Association*, 1-5.

National Research Council and Institute of Medicine. (2009). Preventing Mental, Emotional, and Behavioral Disorders Among Young People: Progress and Possibilities. Committee on the Prevention of Mental Disorders and Substance Abuse Among Children, Youth, and Young Adults: Research Advances and Promising Interventions. Mary Ellen O'Connell, Thomas Boat, and Kenneth E. Warner, Editors. Board on Children, Youth, and Families, Division of Behavioral and Social Sciences and Education. Washington, DC: The National Academies Press.

Nelson, J. R., Gonzalez, J. E., Epstein, M. H., & Benner, G. J. (2003). Administrative discipline contacts: A review of the literature. *Behavioral Disorders*, 28, 249-281.

Nese, R. N., Doerner, E., Romer, N., Kaye, N. C., Merrell, K. W., & Tom, K. M. (2012). Social Emotional Assets and Resilience Scales: Development of a strength-based short-form behavior rating scale system. *Journal for Educational Research Online*, 4, 124-139.

- Nickerson, A. B., & Fishman, C. E. (2013). Promoting mental health and resilience through strength-based assessment in US schools. *Educational and Child Psychology, 30*(4), 7-17.
- Niehaus, K., Moritz Rudasill, K., & Rakes, C. R. (2012). A longitudinal study of school connectedness and academic outcomes across sixth grade. *Journal of School Psychology, 50*, 443–460.
- Nunnally, J. C. (1978). *Psychometric theory* (2<sup>nd</sup> ed.). New York: McGraw-Hill.
- Nunnally, J. C., & Bernstein, I. H. (1994). *Psychometric theory* (3rd ed.). New York, NY: McGraw-Hill.
- O’Connell, M. E., Boat, T., & Warner, K. E. (Eds.). (2009). Preventing mental, emotional, and behavioral disorders among young people: Progress and possibilities. Washington, DC: National Academies Press.
- Palmieri, P. A., & Smith, G. C. (2007). Examining the structural validity of the Strengths and Difficulties Questionnaire (SDQ) in a U.S. sample of custodial grandmothers. *Psychological Assessment, 19*, 189–198.
- Payton, J., Weissberg, R. P., Durlak, J. A., Dymnicki, A. B., Taylor, R. D., Schellinger, K. B., & Pachan, M. (2008). *The positive impact of social and emotional learning for kindergarten to eighth-grade students: Findings from three scientific reviews*. Chicago: Collaborative for Academic, Social, and Emotional Learning.
- Pedhazur, E. J., & Schmelkin, L. P. (1991). *Measurement, design, and analysis: An integrated approach*. Hillsdale, NJ: Lawrence Erlbaum.
- Peng, C. Y. J., Lee, K. L., & Ingersoll, G. M. (2002). An introduction to logistic

regression analysis and reporting. *The Journal of Educational Research*, 96(1), 3-14.

Pepe, M. S., Janes, H., Longton, G., Leisenring, W., & Newcomb, P. (2004).

Limitations of the odds ratio in gauging the performance of a diagnostic, prognostic, or screening marker. *American Journal of Epidemiology*, 159(9), 882–90.

Perry, A. (1908). *The management of a city school*. New York: Macmillan.

Power, F. C., Higgins, A., & Kohlberg, L. (1991). *Lawrence Kohlberg's approach to moral education*. New York: Columbia University Press.

Prince-Embury, S. (2006). *Resiliency Scales for Children and Adolescents: A profile of personal strengths {Measurement instrument}*. San Antonio, TX: Harcourt Assessments.

Prince-Embury, S. (2010). Assessment for integrated screening and prevention using the Resiliency Scales for Children and Adolescents. In B. Doll, W. Phofl, & J. Yoon (Eds.), *Handbook of youth prevention science* (pp. 141–162). New York, NY: Routledge.

Pristawa, K. (2012). The development of a universal social-emotional screening.

*Communique*, 42(7), 24-26.

Pullmann, M. D., Bruns, E. J., Daly, B. P., & Sander, M. A. (2013). Improving the evaluation and impact of mental health and other supportive school-based programmes on students' academic outcomes. *Advances in School Mental Health Promotion*, 6(4), 226–230.

Raykov, T. (1997). Estimation of composite reliability for congeneric measures.

*Applied Psychological Measurement*, 21, 173–184.

- Renshaw, T. L., Long, A. C. J., & Cook, C. R. (2014). Assessing adolescents' positive psychological functioning at school: Development and validation of the Student Subjective Wellbeing Questionnaire. *School Psychology Quarterly*, 30(4), 534-552.
- Resnick, M. D., Bearman, R. W., Blum, K. E., Bauman, K. M., Harris, J., Jones, J., Tabor, J., Beuhring, T., Sieving, R. E., Shew, M., Ireland, M., Bearinger, L. H., & Udry, J. R. (1997). Protecting adolescents from harm. Findings from the National Longitudinal Study on Adolescent Health. *The Journal of the American Medical Association*, 278, 823–832.
- Reynolds, W. M. (1987). *Reynolds adolescent depression scale: Professional manual* {Measurement instrument}. Odessa, FL: Psychological Assessment Resources, Inc.
- Reynolds, C. R., & Kamphaus, R. W. (1992). *Behavior Assessment System for Children* {Measurement instrument}. Circle Pines, MN: American Guidance Service.
- Ringwalt, C., Vincus, A. A., Hanley, S., Ennett, S. T., Bowling, J. M., & Haws, S. (2011). The prevalence of evidence-based drug use prevention curricula in U.S. middle schools in 2008. *Prevention Science*, 12, 63– 69.
- Robins, R. W., Trzesniewski, K. H., Tracy, J. L., Gossling, S., & Potter, J. (2002). Global self-esteem across the life span. *Psychology and Aging*, 17, 423–434.
- Roeser, R. W., Eccles, J. S., & Sameroff, A. J. (1998). School as a context of early adolescents' academic and social–emotional development: A summary of



- research findings. *The Elementary School Journal*, 100(5), 443–471.
- Rohde, P., Stice, E., Shaw, H., & Brière, F. N. (2014). Indicated cognitive behavioral group depression prevention compared to bibliotherapy and brochure control: Acute effects of an effectiveness trial with adolescents. *Journal of Consulting and Clinical Psychology*, 82, 65–74.
- Rowe, K. (2002, October). *The measurement of latent and composite variables from multiple items or indicators: Applications in performance indicator systems*. Paper presented at the Royal Melbourne Institute of Technology Statistics Seminar Series, Melbourne, Australia.
- Ruble, L., McGrew, J. H., & Toland, M. D. (2012). Goal attainment scaling as an outcome measure in randomized controlled trials of psychosocial interventions in Autism. *Journal of Autism and Developmental Disorders*, 42(9), 1974–1983.
- Rusby, J. C., Taylor, T. K., & Foster, E. M. (2007). A descriptive study of school discipline referrals in first grade. *Psychology in the Schools*, 44, 333-350.
- Ryan, C., Huebner, D., Diaz, R., & Sanchez, J. (2009). Family rejection as a predictor of negative health outcomes in white and Latino lesbian, gay and bisexual young adults. *Pediatrics*, 123, 346-352.
- Salvia, J., Ysseldyke, J. E., & Bolt, S. (2010). *Assessment in special and inclusive education* (10th ed.). Boston, MA: Houghton Mifflin.
- Sander, M. A., Everts, J., & Johnson, J. (2011). Using data to inform program design and implementation and make the case for school mental health. *Advances in School Mental Health Promotion*, 4(4), 13–21.

- Sattler, J. M. (2001). *Assessment of children: Cognitive applications (4th ed.)*. La Mesa, CA, US: Jerome M Sattler Publisher.
- Satz, P., & Fletcher, J. M. (1988). Early identification of learning disabled children: an old problem revisited. *Journal of Consulting and Clinical Psychology, 56*(6), 824-829.
- Schneider, S. H., & Duran, L. (2010). School climate in middle schools: A cultural perspective. *Journal of Research in Character Educations, 8*, 25–37.
- Segrin, C., & Flora, J. (2000). Poor social skills are a vulnerability factor in the development of psychosocial problems. *Human Communication Research, 26*, 489–514.
- Seligman, M. E. P., & Csikszentmihalyi, M. (2000). Positive psychology: An introduction. *American Psychologist, 55*, 5–14.
- Severson, H. H., & Walker, H. M. (2002). Pro-active approaches for identifying children at-risk for sociobehavioral problems. In K. L. Lane, F. M. Gresham, & T. E. O'Shaughnessy (Eds.), *Interventions for children with or at risk for emotional and behavioral disorders*. Boston: Allyn and Bacon.
- Severson, H. H., Walker, H. M., Hope-Doolittle, J., Kratochwill, T. R., & Gresham, F. M. (2007). Proactive, early screening to detect behaviorally at-risk students: Issues, approaches, emerging innovations, and professional practices. *Journal of School Psychology, 45*, 193–223.
- Shapiro, D. E. (1999). The interpretation of diagnostic tests. *Statistical Methods in Medical Research, 8*(2), 113-134.
- Shapiro, V. B. (2015). Resilience: Have we not gone far enough? A response to Larry

- Davis. *Social Work Research*, 39, 7–10.
- Shapiro, V. B., Accomazzo, S., Claassen, J., & Fleming, J. L. (2015). Multi-method social emotional assessment in out of school time settings: Choices, challenges, and lessons learned. *Journal of Youth Development: Bridging Research and Practice*, 10, 32–45.
- Shapiro, V.B., Kim, B.K.E., Robitaille, J.L., & LeBuffe, P.A. (2016). Protective factor screening for prevention practice: Sensitivity and specificity of the DESSA-Mini. *School Psychology Quarterly*. Advance online publication.
- Shah, S., & Mediratta, K. (2008). Negotiating reform: Young people's leadership in the educational arena. *New Directions for Youth Development*, 117, 43–59.
- Shirley, E. L. M., & Cornell, D. G. (2012). The contribution of student perceptions of school climate to understanding the disproportionate punishment of African American students in a middle school. *School Psychology International*, 33(2), 115–134.
- Shochet, I. M., Dadds, M. R., Ham, D., & Montague, R. (2006). School connectedness is an underemphasized parameter in adolescent mental health: Results of a community prediction study. *Journal of Clinical Child and Adolescent Psychology*, 35, 170–179.
- Siegel, S. & Castellan, N.J. (1988). *Nonparametric Statistics for the Behavioral Sciences*, 2nd edition, New York, NY: McGraw-Hill.
- Sieving, R. E., Beuhring, T., Resnick, M. D., Bearinger, L. H., Shew, M., Ireland, M.,

- & Blum, R. W. (2001). Development of adolescent self-report measures from the National Longitudinal Study of Adolescent Health. *Journal of Adolescent Health, 28*, 73–81.
- Simmons, R. G., & Blyth, D. A. (1987). *Moving into adolescence: The impact of pubertal change and school context*. New York, NY: Aldine de Gruyter.
- Skiba R. J., Michael R. S., Nardo A. C., Peterson R. L. (2002). The color of discipline: Sources of racial and gender disproportionality in school punishment. *Urban Review, 34*, 317–342.
- Skiba, R. J., Simmons, A. B., Ritter, S., Gibb, A. C., Rausch, M. K., & Cuadrado, J., & Chung, C. G. (2008). Achieving equity in special education: History, status, and current challenges. *Exceptional Children, 74*, 264-288.
- Slade, E. P. (2002). Effects of school-based mental health programs on mental health service use by adolescents at school and in the community. *Mental Health Services Research, 4*, 151–166.
- Snyder, T.D., de Brey, C., and Dillow, S.A. (2016). *Digest of Education Statistics 2015* (NCES 2016-014). National Center for Education Statistics, Institute of Education Sciences, U.S. Department of Education. Washington, DC.
- Speer, P. W. (2008). Altering patterns of relationship and participation: Youth organizing as a setting-level intervention. In M. Shinn & H. Yoshikawa (Eds.), *Toward positive youth development: Transforming schools and community programs* (pp. 213–228.). New York: Oxford University Press.
- Stephan, S. H., Weist, M., Kataoka, S., Adelsheim, S., & Mills, C. (2007).

- Transformation of children's mental health services: The role of school mental health. *Psychiatric Services*, 58(10), 1330-1338.
- Stewart, E. B. (2008). Individual and school structural effects on African American high school students' academic achievement. *The High School Journal*, 91(2), 16–34.
- Stice, E., Trost, A., & Chase, A. (2003). Healthy weight control and dissonance-based eating disorder prevention programs: Results from a controlled trial. *International Journal of Eating Disorders*, 33, 10–21.
- Substance Abuse and Mental Health Services Administration Office of Applied Studies. (2007). *Detailed tables of 2006 National Survey on Drug Use and Health, table 6.20A*. Retrieved February 10, 2017, from <http://oas.samhsa.gov/NSDUH/2k6NSDUH/tabs/Sect6peTabs1to41.htm#Tab6.20A>
- Suldo, S. M., Gormley, M. J., DuPaul, G. J., & Anderson-Butcher, D. (2014). The impact of school mental health on student and school-level academic outcomes: Current status of the research and future directions. *School Mental Health*, 6(2), 84–98.
- Suldo, S. M., & Shaffer, E. J. (2008). Looking beyond psychopathology: The dual-factor model of mental health in youth. *School Psychology Review*, 37, 52–68.
- Tavakol, M. & Dennick, R. (2011). Making sense of Cronbach's alpha. *International Journal of Medical Education*, 2, 53-55.
- Tobler, N. S., Roona, M. R., Ochshorn, P., Marshall, D. G., Streke, A. V., &

- Stackpole, K. M. (2000). School-based adolescent drug prevention programs: 1998 meta-analysis. *Journal of Primary Prevention, 30*, 275–336.
- Totura, C., Karver, M., & Gesten, E. (2013). Psychological distress and student engagement as mediators of the relationship between peer victimization and achievement in middle school youth. *Journal of Youth and Adolescence, 1-13*.
- Trajman, A. & Luiz, R. R. (2008). Revisiting McNemar  $\chi^2$  test revisited: comparing sensitivity and specificity of diagnostic examinations. *Scandinavian Journal of Clinical and Laboratory Investigation, 68(1)*, 77–80.
- Tsang, K. L., Wong, P. Y., & Lo, S. K. (2012). Assessing psychosocial well-being of adolescents: a systematic review of measuring instruments. *Child: care, health, and development, 38(5)*, 629-646.
- UCLA: Statistical Consulting Group (2017). *Discriminant Function Analysis*. Retrieved November 17, 2017, from <https://stats.idre.ucla.edu/spss/dae/discriminant-function-analysis/>
- U.S. Census Bureau. (2010). *Current Population Survey, 2010 Annual Social and Economic Supplement*. Retrieved January 11, 2017, from [http://www.census.gov/hhes/www/cpstables/032010/health/h08\\_000.htm](http://www.census.gov/hhes/www/cpstables/032010/health/h08_000.htm)
- U.S. Department of Education. (2007). Mobilizing for evidence-based character education. Retrieved January 11, 2017, from <http://www2.ed.gov/programs/charactered/mobilizing.pdf>
- U.S. Department of Education, National Center for Education Statistics. (2013). *Digest of Education Statistics, 2012* (NCES 2014-015), [Chapter 2](#).
- Vander Stoep, A., Mccauley, E., Thompson, K. A., Herting, J. R., Kuo, E. S., Stewart,

- D. G., Anderson, C. E., & Kushner, S. (2005). Universal emotional health screening at the middle school transition. *Journal of Emotional and Behavioral Disorders, 13*, 213-223.
- Voight, A. (2015). Student voice for school-climate improvement: A case study of an urban middle school. *Journal of Community and Applied Social Psychology, 25*, 310–326.
- Voight, A., Hanson, T., O'Malley, M., & Adekanye, L. (2015). The racial school climate gap: Within-school disparities in students' experiences of safety, support, and connectedness. *American Journal of Community Psychology, 56*, 252–267.
- Voight, A. and Nation, M. (2016), Practices for Improving Secondary School Climate: A Systematic Review of the Research Literature. *American Journal of Community Psychology, 58*: 174–191.
- von der Embse N. P., Pendergast L., Kilgus S. P., Eklund K. R. (2016). Evaluating the applied use of a mental health screener: Structural validity of the Social, Academic, and Emotional Behavior Risk Screener. *Psychological Assessment, 28*, 1265–1275.
- Walker, H. M., & Severson, H. H. (1992). *Systematic screening for behavior disorders-2nd ed.* {Measurement instrument}. Longmont, CO: Sopris West.
- Walker, H. M., & Shinn, M. R. (2002). Structuring school-based interventions to achieve integrated primary, secondary, and tertiary prevention goals for safe and effective schools. In M. R. Shinn, H. M. Walker, & G. Stoner (Eds.),

*Interventions for academic and behavior problems II: Preventative and remedial approaches* (pp. 1–25). Bethesda, MD: NASP.

Walrath, C.M., Mandell, D.S., Holden, E.W. & Santiago, R.L. (2004). Assessing the strengths of children referred for community-based mental health services. *Mental Health Services Research*, 6, 1–8.

Wang, J., Iannotti, R. J., & Luk, J. W. (2012). Patterns of adolescent bullying behaviors: Physical, verbal, exclusion, rumor, and cyber. *Journal of School Psychology*, 50, 521-534.

Wang, M. (2009). School climate support for behavioral and psychological adjustment: Testing the mediating effort of social competence. *Social Psychology Quarterly*, 24, 240–251.

Wang, M. C., Haertel, G. D., & Walberg, H. J. (1997). Learning influences. In H. J. Walberg & G. D. Haertel (Eds.), *Psychology and educational practice* (pp. 199–211). Berkeley, CA: McCatchan.

Wang, M. T., & Degol, J. L. (2016). School climate: A review of the construct, measurement, and impact on student outcomes. *Educational Psychology Review*, 28(2), 315–352.

Wang, M. T., & Dishion, T. J. (2012). The trajectories of adolescents' perceptions of school climate, deviant peer affiliation, and behavioral problems during the middle school years. *Journal of Research on Adolescence*, 22, 40–53.

Warren, M., Mira, M., & Nikundiwe, T. (2008). Youth organizing: From youth development to school reform. *New Directions for Youth Development*, 117, 27–42.



- Waters, S., & Cross, D. (2010). Measuring students' connectedness to school, teachers, and family: Validation of three scales. *School Psychology Quarterly*, 25(3), 164-177.
- Waters, E., & Sroufe, L. A. (1983). Social competence as a developmental construct. *Developmental Review*, 3, 79 – 97.
- Way, N., Reddy, R., & Rhodes, J. (2007). Students' perceptions of school climate during the middle school years: Associations with trajectories of psychological and behavioral adjustment. *American Journal of Community Psychology*, 40, 194–213.
- Weissberg, R. P., Kumpfer, K., & Seligman, M. E. P. (Eds.). (2003). Prevention that works for children and youth: An introduction. *American Psychologist*, 58, 425–432.
- Weisz, J. R., Ugueto, A. M., Cheron, D. M., & Herren, J. (2013). Evidence-based youth psychotherapy in the mental health ecosystem. *Journal of Clinical Child & Adolescent Psychology*, 42(2), 274–286.
- Wentzel, K. R., Barry, K. R., & Caldwell, K. A. (2004). Friendships in middle school: Influences on motivation and school adjustment. *Journal of Educational Psychology*, 96, 195-203.
- WestEd. (2008). *California Health Kids Survey: California School District Secondary School Survey Results Fall 07/Spring 08*. Los Alamitos, CA: WestEd.
- Wilson, D. B., Gottfredson, D. C., & Najaka, S. S. (2001). School-based prevention of problem behaviors: A meta-analysis. *Journal of Quantitative Criminology*, 17, 247–272.

- Wilson, T., Karimpour, R., Rodkin, P. (2010). African American and European American students' peer groups during early adolescence: Structure, status, and academic achievement. *Journal of Early Adolescence, 31*, 74-98.
- Wilson, S. J., & Lipsey, M. W. (2007). School-based interventions for aggressive and disruptive behavior: Update of a meta-analysis. *American Journal of Preventive Medicine, 33*(Suppl. 2S), 130-143.
- Winter, J. S., & Sweeney, J. (1994). Improving school climate; administrators are key. *NASSP Bulletin, 78*, 65-69.
- Wolf, M. M. (1978). Social validity: The case for subjective measurement or how applied behavior analysis is finding its heart. *Journal of Applied Behavior Analysis, 11*, 203-214.
- Wood, F., Flowers, L., Meyer, M., & Hill, D. (2002). *How to evaluate and compare screening tests: Principles of science and good sense*. Paper presented at the meeting of the International Dyslexia Association, Atlanta, GA.
- Youth in Mind. (September, 2016). *Information for researchers and professionals about the Strengths & Difficulties Questionnaires*. Retrieved January 10, 2017, from <http://www.sdqinfo.com>
- Zhou, X. H., Obuchowski, N. A., & Obushcowski, D. M. (2002). *Statistical methods in diagnostic medicine*. Wiley & Sons: New York.
- Zins, J. E., Weissberg, R. P., Wang, M. C., & Walberg, H. J. (Eds.). (2004). *Building academic success on social and emotional learning: What does the research say?*. New York: Teachers College Press.
- Zullig, K. J., Collins, R., Ghani, N., Patton, J. M., Huebner, E. S., & Ajamie, J. (2014).

Psychometric support of the school climate measure in a large, diverse sample of adolescents: A replication and extension. *Journal of School Health*, 84(2), 82–90.

Zullig, K. J., Huebner, E. S., & Patton, J. M. (2011). Relationships among school climate domains and school satisfaction. *Psychology in the Schools*, 48, 133–145.

Zullig, K. J., Koopman, T. M., Patton, J. M., & Ubbes, V. A. (2010). School climate: Historical review, instrument development, and school assessment. *Journal of Psychoeducational Assessment*, 28(2), 139–152.