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Examining the Impact of Student-perceived Relationships with Caregivers, Teachers, and Peers on Academic Performance among High School Students with Social Emotional Behavioral Problems

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ABSTRACT

This study explored adolescents' perceptions of relationships with caregivers, teachers, and peers and their impact on school performance. Specifically, structural equation modeling was used to test direct and indirect effects of self-reported perceptions of different types of relationships on school engagement and academic performance for 647 high school students with social, emotional, and behavioral (SEB) problems. The results of this study yielded a model with moderately good fit when the general engagement latent construct was split into behavioral disengagement and cognitive engagement variables. In this model, teacher and caregiver relationships significantly predicted cognitive engagement, but not behavioral disengagement or academic performance. Teacher relationships was most strongly related to cognitive engagement and academic performance, while peer relationships was the strongest predictor of behavioral disengagement, although not significantly. Finally, the results showed relationships did not significantly impact academic performance via school engagement.

CHAPTER 1

Statement of the Problem

Current prevalence rates indicate that almost 50% of adolescents aged 13-18 years old have experienced mental health difficulties at some point in their life and about one out of every five currently has a diagnosable mental health disorder [Centers for Disease Control and Prevention (CDC), 2013; Davis, Young, Hardman, & Winter, 2011; Merikangas et al., 2010]. Furthermore, almost 28% of adolescents have experienced a severe mental illness significant enough to lead to functional impairment [CDC, 2013; Merikangas et al., 2010; Pastor, Reuben, & Loeb, 2009; U.S. Department of Health and Human Services (DHHS), 2010]. In the U.S., the treatment of social, emotional, and behavioral difficulties is the greatest healthcare expenditure involving children and youth with estimated total costs exceeding $247 billion per year (Soni, 2014; National Research Council & Institute of Medicine, 2010).

Mental health difficulties have profound negative consequences for children and youth that include health concerns, school and learning difficulties, social problems, and vocational issues during transition to adulthood (Davis et al., 2011; Merikangas et al., 2010). Mental health difficulties can eventually lead to lifelong disability (U.S. Department of Education, 2013). Given the extent to which children and adolescents are impacted by mental health difficulties, it is important that they receive access to high quality assessment and intervention services (Simpson, Cohen, Pastor, & Reuben, 2008). Unfortunately, there is evidence suggesting that children and youth with social, emotional, and behavioral difficulties frequently experience a general lack of access to high quality, evidence-based interventions (Costello, Jian-Ping, Sampson, Kessler, Merikangas, 2014; Polancyk, 2014). Estimates indicate that 60-90% of adolescents in particular do not receive the mental health services they need (Knopf, Park,

Mulye, 2008). Polancyzk (2014) reported the lack of available evidence-based mental health treatments for adolescents, noting that patients are often given psychotropic medication as a primary treatment, without being offered psychotherapeutic options. Further, when non-pharmacological treatments are provided, it is often done so inconsistently or by professionals who have limited training in the approach. A recent study examined the rates of service used within 12 months by adolescents with cognitive, emotional, and behavioral difficulties and found that only 45% of adolescents with a psychiatric diagnosis received some kind of mental health service, most often in the school setting where treatment providers often lack specialized training (Costello, Jian-ping, Sampson, Kessler, & Merikangas, 2014According to a recent report from the U.S. Department of Education (2015), 6% of students receiving special education services have the label of Emotional Disturbance (ED). While ED is the educational label used to indicate an emotional and behavioral disability as defined by the Individuals with Disabilities Education Act (IDEA, 2004), researchers have suggested that many more students are struggling with emotional and behavioral problems, but lack appropriate supports. To capture this broader population, the term Social Emotional Behavioral (SEB) problems is used to describe students with severe internalizing and externalizing behaviors, and mental health problems that significantly impact school performance, regardless of whether they have been formally identified through the special education process. Students may experience symptoms of anxiety, depression, conduct disorder, attention-deficit hyperactivity disorder (ADHD) and oppositional defiant disorder (Merrell & Walker, 2004).

Forness, Kim, and Walker (2012) noted the considerable "service gap" that currently exists between students with SEB problems requiring services, and those students who are actually identified and provided with special education services. Schools are required by law to

provide special programming and supports for students with an IEP; yet, there are many students who are not identified for special education but would greatly benefit from mental health, behavioral, and academic supports (Forness et al., 2012). Some researchers have attempted to explain this service gap by suggesting that the educational definition of ED is too narrow and vague, and should be revised to more accurately capture students who need services (Forness et al., 2012; Merrell & Walker, 2004). Others have suggested that families may not want to admit their child has emotional or behavioral difficulties because they are afraid of being stigmatized, believe their child will grow out of it, are unsure the behavior is different than other children's, or feel responsible and guilty for their child's actions (Brauner & Stephens, 2006).

Students with SEB problems exhibit a number of characteristics that negatively impact school performance. For example, these students often have difficulty building and maintaining healthy relationships with others, have learning difficulties that cannot be explained by health factors, develop physical symptoms related to personal problems, engage in inappropriate behaviors compared to age and cultural norms, and have an unhappy mood (Merrell & Walker, 2004). In fact, students with SEB difficulties have the worst behavioral, academic, and social outcomes out of any disability group (Wagner et al., 2005; 2006). They often exhibit high rates of disruptive behavior in the classroom such as aggression and noncompliance, as well as internalizing behaviors such as anxiety and depression, which leads to withdrawal from others (Turnbull, Turnbull, Shank, & Smith, 2004). Moreover, students with SEB difficulties have higher rates of dropout, suspensions, and expulsions compared with other students with and without disabilities (U.S. Department of Education & Office of Special Education and Rehabilitative Services, 2015; Wagner et al., 2005).

Furthermore, students with SEB problems experience large achievement gaps and poor academic functioning. According to Trout, Nordness, Pierce, and Epstein (2003), students with SEB difficulties perform 1.2 to 2 grade levels below peers in elementary school, but as students enter high school, the achievement gap widens and students are performing 3.5 grade levels below peers. Nelson, Benner, Lane, and Smith (2004) conducted a cross-sectional study with a random sample of 155 students with SEB problems in kindergarten through 12th grade in public schools. They found that students had large achievement deficits across all content areas and deficits in mathematics increased with age. A meta-analysis including 25 studies from 1961-2000 of academic functioning for students with SEB difficulties provide additional evidence that students with SEB problems experience academic performance deficits when compared with typical age peers (Reid, Gonzalez, Nordness, Trout, & Epstein, 2004). Investigators found a moderate to large (-.69) difference in academic performance in all areas (reading, math, spelling, and written expression) of students with SEB difficulties as compared to students without disabilities, with the greatest absolute deficits in the areas of math and spelling. Students with SEB problems performed lower in all subject areas with an overall mean achievement level in the 25th percentile.

Students with SEB issues also experience gaps in social functioning. They are consistently rated as having significantly lower social skills than peers with and without disabilities (Wagner et al., 2005). Students often struggle with acquiring and performing social skills with fluency, which can often lead to rejection from peers and adults (McDuffie, Landrum, & Gelman, 2008; Simpson, Peterson, & Smith, 2010). These social skills deficits, coupled with high rates of problem behavior, often hinder the ability to form positive relationships with others, which can be a protective factor (Murray & Greenberg, 2006).

It is not surprising that, for students who struggle with mental health and behavioral concerns, long-term outcomes are also bleak (Farley, Torres, Wailehua, & Cook, 2012; Forness et al., 2012; Lane et al., 2005). A number of studies have suggested that students with SEB problems are at greater risk for negative long-term outcomes than students with other disabilities and without disabilities (Bullock & Gable, 2006; Lane et al., 2005; Reid, Gonzalez, Nordness, Trout & Epstein, 2004). The dropout rate for students with SEB difficulties is about 50%, and many of these students are less likely to go on to postsecondary education and obtain a stable job. Furthermore, after graduation, students with SEB problems engage in high rates of criminal activity and substance abuse (Bullock & Gable, 2006).

Considerable research has documented the difficulties and poor outcomes for students with SEB challenges. It is evident that this group of students has severe deficits in academic, behavior, and social skills continuing well into adulthood. Unfortunately, special education services, when provided, typically do not improve the functioning of these students. Students with SEB concerns who receive special education services perform worse, earn lower grades, make less academic progress, and receive more disciplinary actions than their peers in general education or than students in other disability categories (Lane et al., 2005; Reid et al., 2004; US DOE, 2002). Therefore, it is imperative to understand the context of the school experience for students with SEB problems and the factors that contribute to school performance.

This is especially important to examine at the high school level where there is a paucity of research, yet students are at greater risk due to evolving physical, cognitive, and social needs (Nelson et al., 2004; Trout et al., 2003; Wagner et al., 2006; Wiley, Siperstein, Forness, & Brigham, 2009). Adolescents exhibit a greater risk of unhealthy behaviors, are becoming more independent as the prefrontal cortex develops, and experience frequent changes in social roles

(Young, Calderella, Richardson, & Young, 2012). Additionally, high school students are more likely to be exposed to gang and cult activity, and engage in more violent offenses while facing increased pressure to improve academic performance because of impending graduation (Bohanon et. al., 2006). Despite the need to cultivate a supportive environment, high schools are structured in a way that makes it difficult for students to feel connected, a key predictor in positive student outcomes (Frey, Ruchkin, Martin, & Schwab-Stone, 2009).

Research on Relationships

Research points to the influence of relationships on school-related behaviors such as engagement, preparation, attendance, test scores, motivation, grades, and achievement (Klem & Connell, 2004; Learner & Kruger, 1997; Murray, 2009). For students with SEB needs, it may be important to consider the multiple relationship systems influencing them on a daily basis including parents, teachers, and peers (Bronfenbrenner, 1979; Davis, 2003).

Research on caregiver-child relationships. A majority of relationship research has focused on caregiver-child relationships, and generally has found that the quality of relationships is associated with social, emotional, and behavioral adjustment. This body of literature typically has used attachment theory (Ainsworth, Blehar, Waters, & Wall, 1978; Bowlby, 1982) as a framework to examine the dynamics of relationships, especially those of caregivers and their children (Murray & Greenberg, 2006). According to attachment theory, it is through interactions with caregivers that children develop attachment relationships (Michiels, Grietens, Onghena, & Kuppens, 2008). A secure bond is formed when a parent is sensitive to his/her infant's signals, addresses the infant's needs, and provides emotional regulation. This provides the child with a "secure base" and thus the child learns to trust the parent. When a child can trust his/her

caregiver, he/she is able to explore the environment more freely and without distress (Allen, 2008; Bartick-Ericson, 2006; Kennedy & Kennedy, 2004; Marvin & Britner, 2008).

In contrast, insecure attachments develop when a parent is not sensitive to his/her child's emotional state and they do not have the opportunity to attune to each other. The child then does not learn how to organize these mental processes effectively and has a dysfunctional mental model as a reference. Since they do not have someone responsive to their needs or regulating their emotions, they may learn maladaptive methods for coping (Allen, 2008; Bartick-Ericson, 2006; Kennedy & Kennedy, 2004; Marvin & Britner, 2008; Michiels et al., 2008). Children with insecure parental attachments have been shown to be at greater risk for (a) poor peer relationships; (b) antisocial behaviors such as delinquency, bullying, aggression, and substance use; and (c) poor psychological health as influenced by lower self-esteem (Arbona & Power, 2003; Branstetter, Furman, & Cottrell, 2009; Cota-Robles & Gamble, 2006; Crawford & Novak, 2002; Elliott & Cornell, 2009; Kochanska, Barry, Stellern, & O'Bleness, 2009; Laible, Carlo, & Roesch, 2004; Lee & Bell, 2003; Michiels et al., 2008; Wilkinson, 2004).

The influence of parental relationships on school performance has also been investigated (Mo & Singh, 2008; Murray & Greenberg, 2006). For example, using structural equation modeling (SEM), Mo and Singh (2008) examined the impact of caregiver-child relationships and parent involvement on middle school students' school engagement and performance. They found that caregiver-child relationships had a significant direct effect on student's engagement and, in turn, student engagement had a significant direct effect on school performance. Although the caregiver-child relationship did not directly affect school performance, the authors found a significant indirect effect (through student engagement). They concluded that positive

relationships and involvement motivated children to be more academically engaged, which led to higher achievement.

Research on teacher-student relationships. The same motivational framework has also been used to investigate the impact of teacher-student relationships on students' school behaviors. Researchers have theorized that teacher involvement, support, and caring, motivates and encourages students to engage with class material, leading to improvement in grades and achievement (Davis, 2003; Oldfather, 1993; Skinner & Belmont, 1993). Klem and Connell (2004) conducted a retrospective analysis using longitudinal data sets to test the relationships between teacher support and engagement and between engagement and achievement. Surveys were administered to elementary and middle school students and teachers, and students' school performance was measured by attendance and test scores. The authors found that students who perceived a good relationship with teachers were more likely to report engagement; furthermore, engagement was associated with higher attendance and test scores.

In another study, Hallihan (2008) proposed that students who had positive teacher relationships would like school more, which was found in previous research to be associated with increased participation, higher achievement on standardized academic assessments, better grades, reductions in deviant behavior, and greater chances of graduating. Although this study did not involve any direct measure of student outcomes, adolescents who perceived positive relationships with teachers, as rated by care, respect, and praise, were found to like school more than those who rated their teacher relationships negatively.

Research on peer relationships. More recently, a few studies have investigated the role of peer relationships on school engagement and performance, and have found results similar to caregiver-child and teacher-student relationship studies. Lynch, Lerner, and Leventhal (2012)

examined the role of school-wide peer culture in engagement and achievement for middle school students. Peer culture was divided into two constructs: relational (how students felt about peers in their school) and behavioral (how students acted in school). They found that both aspects of peer culture influenced student performance. Behavioral peer culture significantly predicted individual grade point average, while both relational and behavioral peer culture significantly predicted individual student engagement. This study demonstrated the impact of school-wide peer culture on individual student performance beyond the immediate peer group.

A study by Liem and Martin (2011) also explored how peer relationships influence school engagement and student outcomes. Researchers used SEM to determine if same-sex relationships had comparable effects on student outcomes as opposite-sex relationships for high school students. Findings indicated positive same-sex relationships had both direct and indirect effects on achievement and self-esteem; opposite-sex peer relationships had a direct and indirect link with self-esteem and an indirect link only with academics. Results did not differ across age or gender. This study provides further evidence of the mediating role of school engagement between relationships and school performance.

Research involving multiple relationship systems. Since students are clearly impacted by multiple contexts, researchers have emphasized the importance of an ecological perspective by including more than one relationship system in their studies. In fact, Pianta and Walsh (1996) designed the Contextual Systems Model (CSM) to focus specifically on how multiple relationship systems combine to impact a child's performance in school. They emphasized that the quality of the relationships contribute to a child's level of risk. When the systems work in conjunction and provide support, the student is more likely to be at low-risk and perform better in school. O'Connor and McCartney (2007) provided empirical support for this model using a

longitudinal data set to examine the connections between the quality of teacher-student relationships and achievement in children from preschool to third grade. Similar to previous studies, the investigators found positive associations between the quality of relationships and achievement that were mediated by child engagement behaviors. Moreover, they found that high quality relationships with the teacher buffered the student against a poor relationship with the mother in the area of achievement.

Other studies have examined the influence of multiple relationship systems within various theoretical models (Cotterell, 1992; Learner & Kruger, 1997; Murray, 2009; Reio, Marcus, & Sanders-Reio, 2009; Zimmer-Gembeck, Chipuer, Hanisch, Creed, & McGregor, 2006). Typically these have included caregiver-child and teacher-student combinations, or teacher-student and peer relationships. According to this research literature, relationships appear to contribute to student functioning in different ways. For example, Murray (2009) found that, among Latino adolescents in an urban environment, parent relationships significantly contributed to engagement, school competence, and reading achievement, while teacher relationships accounted for a significant amount of variance in engagement, grades, and math achievement after controlling for parent relationships and achievement level. Other research investigations have shown that teacher-student relationships appear to be the most influential in the school context. Teachers have been found to have a stronger impact on intrinsic motivation for academics than caregivers (Cotterell, 1992; Learner & Kruger, 1997). Additionally, when compared with peer relationships, positive teacher relationships are more powerful when predicting school completion (Reio et al., 2009) and have a stronger association with engagement (Zimmer-Gembeck et al., 2006).

Research involving students at risk and with disabilities. A majority of the literature examining the impact of relationships upon school performance has been conducted with students in the general population. However, researchers have noted that understanding relationships for students with SEB problems is even more important in predicting school outcomes and is an area that should be investigated (Decker, Dona, Christenson, 2007; Hamre & Pianta, 2001; Pianta & Walsh, 2006). Previous research has shown that positive relationships buffer students against risk (O'Connor & McCartney, 2007; Woolley & Bowen, 2007), yet students with disabilities, especially those with SEB issues, are at higher risk for negative relationships (Murray & Greenberg, 2001; Sutherland, & Wheby, 2001; Walker, Colvin, Ramsey, 1995). It is imperative to understand how relationships impact school performance for students with SEB concerns, given the multitude of difficulties they face, both in and out of school (Milhalas, Morse, Allsopp, & McHatton, 2008).

Research on the impact of relationships on the school functioning of students with disabilities has begun to emerge (Hughes, Wu, Kwok, Villarreal, & Johnson, 2012; Murray & Greenberg, 2006; Murray & Malmgren, 2005). Both parent and teacher relationships have been linked with students' school engagement, academic motivation, and achievement (Hughes, et al., Johnson, 2012). Furthermore, research findings suggest relationship improvement leads to an improvement in students' academic outcomes, which points to the potential of this model in providing prevention and intervention ideas (Decker et al., 2007; Murray & Malmgren, 2005). For instance, Murray and Malmgren (2005) instituted a teacher-student relationship intervention for high school students with SEB difficulties. After implementing the intervention for 5 months, students in the intervention group had higher GPA's than students who did not receive the intervention.

Only a handful of studies examining the impact of relationships on school performance of students with disabilities have included all three relationship systems and results are mixed (Bartick-Ericson, 2006; Murray & Greenberg, 2006). Bartick-Ericson (2006) investigated the impact of caregiver-child, teacher-student, peer, and therapist-client relationships on school engagement for adolescents with SEB difficulties. No significant correlations were found when computing correlational matrices for a bivariate relationship between relatedness ratings and school engagement. However, when the author examined the data using regression analyses, significant curvilinear relationships were found. Specifically, low and high ratings of relatedness with caregivers and therapists were found to significantly predict low school engagement. The author theorized that students may have unconsciously idealized their relationships when completing the survey which would explain why ratings of high relatedness would predict low engagement, a common finding in attachment literature.

In another study by Murray and Greenberg (2006), the influence of relationships with parents, peers, and teachers, and perceptions of school and neighborhood bonding, on social, behavioral, and emotional adjustment was examined. Participants included middle school students with high incidence disabilities such as a learning disability, emotional disturbance, mild mental retardation, and other health impairments. In contrast to Bartick-Ericson (2006), Murray and Greenberg found significant correlations for relationships across all contexts. Relationships explained up to half of the variance in social, behavioral, and emotional adjustment, and perception of the school environment was the strongest contributor to school competence.

Summary and Limitations

Positive student-teacher and student-caregiver relationships have been shown to contribute to increased school engagement and, in turn, affect school performance as measured by higher grades, good attendance, and fewer discipline referrals (Bergin & Bergin, 2009). In addition, peer relationships have also been found to impact student performance in school, as they influence student motivation and engagement (Li & Lerner, 2013; Liem & Martin, 2011). Although limited, research on the influence of relationships with students with disabilities indicates that relationship quality is related to social, behavioral, emotional, and academic outcomes. Most importantly, positive relationships appear to buffer against risk and help improve school outcomes (Murray & Malmgren, 2005; O'Connor & McCartney, 2007; Woolley & Bowen, 2007).

High school students with SEB could particularly benefit from further investigation in this area (Murray & Malmgren, 2005). This group of students has the worst outcomes of any disability groups and is at high risk for dropping out of school (Wagner et al., 2006). They also experience rejection from peers, parents, and teachers, yet may have the potential to benefit greatly from supportive relationships (Hamre & Pianta, 2005). Thus, it is imperative to understand how relationships affect school performance for this population.

Although researchers have advocated for an ecological perspective (Pianta & Walsh, 2006), no studies were found that have investigated the impact of all three relationship systems simultaneously on the school performance behaviors of adolescents with SEB problems. Additionally, only a few studies (e.g., Liem & Martin, 2011; Mo & Singh, 2008) have utilized SEM to examine the interactions of relationships and school performance. SEM is a powerful method of data analysis allowing the researcher to (a) test multiple hypotheses simultaneously; (b) conduct a complex multivariate regression; (c) test a complete theoretical model; (d) define

variables as latent constructs consisting of multiple observed indicators, which improves understanding and assessment of variables; and (e) account for measurement error, leaving common variance to examine the relationships among factors (Schumacker & Lomax, 2010).

Therefore, the purpose of this study was to understand how adolescents' perceptions of relationships with caregivers, teachers, and peers influence the school performance of high school students with SEB problems. Specifically, this study investigated whether students' perceptions of their relationships with caregivers, teachers, and peers have a direct effect on academic performance, or whether these relationships impact academic performance indirectly via school engagement. In addition, the study examined which type of relationship is the strongest predictor of student outcomes, as well as how perceptions of relationships are related to one another. SEM was used to examine these associations with data collected from the first half of year 1 of an efficacy trial conduced by the Center for Adolescent Research in Schools (CARS) grant (Kern, Evans, & Lewis, 2008). The following research questions were addressed:

Research question 1. Do students' perceptions of caregiver, teacher, and peer relationships have a significant direct effect on school engagement for high school students with SEB problems?

It was hypothesized that students' perceptions of caregiver, teacher, and peer relationships would have a direct effect on their school engagement for high school students with SEB problems. A latent construct variable of Caregiver Relationships was created with the following indicators: Relationships with Parents subscale score on the student-rated *BASC-2* (Reynolds & Kamphaus, 2006), overall score on the student rated *Index of Family Relations (IFR;* Hudson, 1993), and the student rated Family Support for Learning subscale score on *the Student Engagement Instrument* (*SEI*; Appleton, Christenson, Kim, & Reschly, 2006**).** A

Teacher Relationship latent construct was created with the inclusion of the Attitude to Teachers subscale score on the student-rated *BASC-2* and the student-rated Teacher-student Relationships subscale score on the *SEI*. The Peer Relationships latent construct was created with the student-rated the Interpersonal Relations subscale score on the *BASC-2* and the student-rated Peer Support for Learning subscale score on the *SEI*.

The school engagement construct was defined by multiple indicators. School engagement was measured by the student-rated Control and Relevance for School Work and Future Goals and Aspirations subscale scores on the *SEI* and the student-rated Attitude to School subscale score on the student rated *BASC-2*. In addition, the frequency of office referrals and absences from the first half of the school year during the enrollment year in the CARS project was used as an indicator of school engagement.

Previous research indicates that caregiver-child, teacher-student, and peer relationships directly impact school engagement. Positive relationships led to more positive outcomes, while negative relationships were associated with poorer outcomes (Klem & Connell, 2004; Learner & Kruger, 1997; Liem & Martin; 2011). In addition, Hughes et al. (2012) found that teacher-student relationships are directly related to student motivation for at risk students. Therefore, it was hypothesized that these three relationship systems would be positively significantly associated with school engagement.

Research question 2. Does school engagement have a significant direct effect on academic performance for high school students with SEB problems?

It was hypothesized that school engagement would have a direct effect on academic performance for high school students with SEB problems. Academic performance was measured using standard scores from the Broad Reading and Broad Math composites on the *Woodcock-*

Johnson, 3rd edition (*WJ-III*; Woodcock, McGrew, & Mather, 2001) as well as student GPA from the first marking period of enrollment in the CARS project. Existing research within the relationship literature has shown a link between higher student engagement and motivation and positive school outcomes such as GPA, attendance, ODR, and achievement (Hughes et al., 2012; Klem & Connell, 2004; Murray, 2009; Reschly & Christenson, 2006; Zimmer-Gembeck et al. 2006). Therefore, it was hypothesized that student engagement would have a positive significant impact on academic performance.

Research question 3. Do students' perceptions of caregiver, teacher, and peer relationships have a significant indirect effect on their academic performance via school engagement for high school students with SEB problems?

It was hypothesized that students' perceptions of caregiver, teacher, and peer relationships would have an indirect effect on their academic performance via school engagement for high school students with SEB problems. Literature in this area has shown a link between higher student engagement and motivation and positive school outcomes such as GPA, attendance, ODR, and achievement (Liem & Martin, 2011; Murray, 2009). However, this link has most often been mediated by student engagement (Hughes et al., 2012; Klem & Connell, 2004; Zimmer-Gembeck et al., 2006). Therefore, it was hypothesized that student perceived relationships would have a significant indirect effect on academic performance through school engagement.

Research question 4. Do students' perceptions of caregiver, teacher, and peer relationships have a significant direct effect on their academic performance for high school students with SEB problems?

It was hypothesized that students' perceptions of caregiver, teacher, and peer would have a direct effect on academic performance for high school students with SEB problems. A few studies have documented the direct effects of teacher, peer, and parent relationships on academic performance outcomes such as standardized achievement, grades, and GPA (Liem & Martin, 2011; Lynch et al., 2013; Murray, 2009; Murray & Malmgren, 2005). Therefore, it was hypothesized that student perceived relationships would have a significant direct effect on academic performance.

Research question 5. Which model will provide a better fit: Model 1, hypothesizing relationship indirect effects only, or Model 2, with the inclusion of relationship direct effects?

It was hypothesized that Model 1, indirect effects only, would yield a better fit. There is no known research that compares models of student relationships having direct vs. indirect effects on academic performance. In absence of this empirical literature, it was hypothesized that Model 1 would yield a better fit as a majority of this research has included an engagement variable as a mediator between relationships and academic performance (Bergin & Bergin, 2009; Davis, 2003; Hughes et al., 2012; Klem & Connell, 2004; Zimmer-Gembeck et al., 2006).

Research question 6. Which type of relationship (caregiver, teacher, or peer) is the strongest predictor of (a) school engagement and (b) academic performance for high school students with SEB problems?

It was hypothesized that teacher relationships would be the strongest predictor of school engagement and academic performance for high school students with SEB problems. Previous studies comparing caregiver-child and teacher-student relationships have shown that teacher relationships are more strongly associated with outcomes (Cotterell, 1992; Learner & Kruger, 1997; Murray, 2009). Similarly, studies have shown that teacher relationships are more salient

than peer relationships on academic performance (Reio et al., 2009; Zimmer-Gembeck et al., 2006).

CHAPTER 2

Literature Review

Students with social, emotional, behavioral (SEB) problems have the worst outcomes of any disability group (Wagner et al., 2006). They earn low grades, have poor attendance, and receive many disciplinary actions, which only worsens with age (Lane et al., 2005; Nelson et al., 2004). Almost half of these students will not graduate from high school or find a stable job, and many are at high risk for engaging in criminal activity and substance abuse (Bullock & Gable, 2006; Wagner et al., 2004; US DOE, 2007).

Researchers estimate that up to 4% of the United States student population exhibits characteristics that would qualify them for special education services under Emotional Disturbance (ED; Lane et al., 2005). Thus, it is imperative that schools find effective ways of serving students with social, emotional, and behavioral problems. It is essential that researchers and school personnel discover and consistently implement effective prevention and intervention strategies to help improve student school performance (Lane et. al., 2005; Forness, Kim, & Walker, 2012; Murray & Malmgren, 2005, Young, Calderella, Richardson, & Young, 2012).

Students' relationships with caregivers, teachers, and peers have been recognized as an important contributor to school outcomes (Bergin & Bergin, 2009; Davis, 2003, Liem & Martin, 2011; Li & Lerner, 2013); yet, there is a lack of research involving students with SEB difficulties (Bartick-Ericson, 2006; Milhalas et al., 2008; Murray & Malmgren, 2005). This chapter will review the theoretical frameworks and associated construct definitions most frequently used in relationship research. Next, the student relationship research literature will be reviewed and gaps will be identified. The chapter will conclude with a rationale for the current study.

Theoretical Framework

Relationship research has typically been studied through three theoretical frameworks: attachment, motivation, and sociocultural. Each of these theories provides a slightly different method of conceptualizing the construct of relationships, but they have significant overlap and should not be considered independent of one another when examining the impact of relationships on behavior (Davis, 2003; Hughes et al., 2012; O'Connor & McCartney, 2007; Zimmer-Gembeck et al., 2006). Attachment theory is related to the development and quality of relationships with others (Bartick-Ericson, 2006; Michiels et al., 2008). Through attachment interactions, children internalize methods of coping and organizing mental processes such as self-regulation, motivation, and memory. Therefore, the quality of relationships is directly related to motivational processes and behavior (Siegel, 1999). Finally, in order to comprehensively examine the influence of relationships, one must consider the multiple environments and contexts in which a student interacts, providing a basis for an ecological perspective (Davis, 2003; O'Connor & McCartney, 2007).

Attachment theory. Attachment theory as originally developed by Bowlby (1969) has been used as a framework to examine the dynamics of relationships, especially those of caregivers and children. Through early attachment processes, children develop an internal working model (IWM) based on the quality of interactions with caregivers. When caregivers are sensitive and responsive to a child's needs, a secure bond is formed. As children grow older, they internalize these experiences, which forms the IWM and provides a mental representation of the self and others that influence later relationships (Allen, 2008; Bartick-Ericson, 2006).

Insecure attachments can develop when caregivers are not responsive to their child's needs. The IWM model for a child with an insecure attachment is more negative since the child

did not learn how to effectively organize mental processes and methods of coping (Siegel, 1999). Numerous studies have documented the effect of relationship quality on adjustment and well-being. According to attachment theory, relationship quality in early childhood is typically defined as closeness or feeling cared for, the absence of conflict or feeling respected, and dependency or support and feeling connected (Davis, 2003; Hamre & Pianta, 2001; Wellborn & Connell, 1987).

Secure relationships have been associated with emotional stability, trusting and intimate relationships with others, social competence, academic achievement, and independence (Bergin & Bergin, 2009; Davis, 2003; Siegel, 1999). Conversely, insecure relationships are related to psychopathology, ADHD, delinquency, aggression, substance use, and poor relationships with others (Bergin & Bergin, 2009; Branstetter et al., 2009; Davis, 2003; Elliott & Connell, 2009).

***Attachment in adolescence*.** As a child moves into adolescence, attachment relationships are characterized by goal corrected behavior rather than contact and physical proximity seeking behaviors. Adolescents still want to relate and feel connected in relationships, but being able to depend upon a person and feel encouraged by others to take on challenging tasks becomes important at this stage (Miller, 2002).

Although research has linked the quality of parental relationships with the quality of relationships with others (Bergin & Bergin, 2009; Davis, 2003), adolescents are able to form different types of attachment relationships with different people based on their ability to have more flexible thinking (Siegel, 1999). In fact, research has shown that attachment styles developed during infancy are not necessarily continuous through adulthood. Forming secure bonds with alternative caregivers provides the individual with an opportunity to correct maladaptive mental models (Allen, 2008; Bartick-Ericson, 2006; Creasey, Jarvis, & Gadke,

2009; Davis, 2003; Hamilton; 2000). For example, Creasey et al. (2009) surveyed the attachment history of college students and quality of relationships with their professors and found students' attachment styles did not influence their reported quality of the relationship with their teacher. The authors suggested as one possible explanation that adolescents' attachment style is not necessarily predictive of the quality of other relationships. Additionally, it could be the student-professor relationship was not salient enough to activate the attachment system.

It is important to note that not all positive relationships are attachment-based. Attachments are typically formed with caregivers with whom the individual has forged a deep, personal bond over time. Some teacher and peer relationships can be considered attachments, but some do not qualify. Although a relationship may not be considered an "attachment," it does not mean that it cannot have a significant impact (Bergin & Bergin, 2009). Attachment theory simply provides a perspective from which to consider the quality and development of relationships with key figures.

Motivation theory. Researchers have also relied on theories of motivation to guide their work on the influence of relationships in the educational context. In essence, the quality of the relationship, mainly teacher-student, promotes students' motivation to learn and perform in the classroom (Davis, 2003). The Self-Determination Theory (SDT; Deci & Ryan, 1985; 2000) has been useful in examining the influence of relationships. This research focuses on the effects of social contexts on intrinsic and extrinsic motivation of individuals. SDT theorists posit individuals are motivated by the fulfillment of specific needs such as autonomy or independence, competence, and relatedness, but how those needs are filled can vary by context. Interestingly, these are virtually identical characteristics that attachment theorists use to measure the quality of relationship (Bergin & Bergin, 2009; Davis, 2003; Vansteenkiste, Lens, & Deci, 2006).

Furthermore, SDT suggests the initial motivation often comes from an external source but can eventually be internalized. In this way, relationships with others can provide the catalyst for learning and motivation to be engaged in school. In some circumstances, motivation may depend on the quality of the relationship and ability of the parent, teacher, or peer to relate and encourage autonomy and competence. Thus, SDT provides the mechanism through which relationships promote engagement in the classroom (Appleton, Christenson, & Furlong, 2008; Davis, 2003; Zimmer-Gembeck et al., 2006).

Zimmer-Gembeck et al., (2006) used SDT to develop a model testing the influence of teacher and peer relationships on school fit, engagement, and grades among adolescents. Using SEM, the investigators tested for mediation by calculating direct and indirect effects between variables. Teacher-student relationships had a significant direct effect on school fit and student engagement while peer relationships had a direct effect on school fit only. Furthermore, there was a significant direct effect of engagement on achievement as measured by grades. In summary, engagement mediated the association between teacher-student relationships and achievement while school fit mediated the association between peer relationships and achievement. Ultimately, the authors concluded that relationships can influence the motivation of students to become more engaged in school, which is linked with higher levels of achievement.

Sociocultural theory. Sociocultural theorists consider the effect of relationships in the context of multiple environments; specifically, how interactions with others impact development. Recognizing that behavior does not occur in a vacuum, Bronfenbrenner (1979) created the Ecological Systems Model to demonstrate that development occurs within the context of one's environment, conceptualized as a collection of ecosystems. Bronfenbrenner stated that a person's behavior and development is not only the result of the immediate environment, but occurs as a

result of the interactions between ecosystems. Therefore, even when a student is in school, he/she is being impacted not just by teachers, but also by parents, friends, community, and even society. It is therefore impossible to evaluate the influence of relationships in school without taking into account all important relationship systems: caregivers, teachers, and peers (Davis, 2003).

Within a sociocultural perspective, relationships are believed to develop through *joint activity* (sharing common goals), *affinity* (inclination towards another), and *intersubjectivity* (creating a common space to share ideas). Teachers can demonstrate that they care about their students by engaging in activities together and setting clear expectations, sharing perspectives and respecting those of the student, and providing the student with support. Again, these concepts are similar to those used in attachment and motivation research (Davis, 2003).

The Contextual Systems Model (CSM; Pianta & Walsh, 1996) is an example of an ecological model that specifically focuses on the experiences of students and their academic performance. Similar to Bronfenbrenner (1979), development occurs within the context of multiple systems, such as the family and school systems. Factors within these environments interact with one another and influence development. In the CSM, relationships are the main factors that contribute to development by impacting level of risk. If relationships are poor and systems are not aligned, students are at higher risk for maladaptive behaviors and poor school performance. When relationships are supportive and promote similar goals, students have greater school outcomes (O'Connor & McCartney, 2007; Sheridan, Warnes, & Dowd, 2004; Taylor, Clayton, & Rowley, 2004).

A recent study utilized the CSM framework to examine associations between teacher-child relationships and achievement for students in preschool through third grade (O'Connor &

McCartney, 2007). O'Connor and McCartney used a longitudinal data set and individual growth modeling to examine the influence of teacher-student relationships within a broader ecological context. Teacher-student relationships were the focus, but were evaluated amidst the effects of additional environmental factors such as parent attachment, peer relationships, classroom environment, cognitive abilities, behavior problems, parenting style and demographic factors such as gender, ethnicity, and poverty. The researchers found a positive association between teacher relationships and achievement as measured by the *Woodcock Johnson Psycho-Educational Battery-Revised (WJR*; Woodcock & Johnson, 1990).

Proving the utility of the CSM in conceptualizing the impact of relationships on students within an ecological framework, the authors found highly rated teacher relationships actually buffered against effects of insecure attachments on achievement. Moreover, the effect of the teacher-student relationship was mediated by classroom engagement. Finally, results indicated that for third graders the teacher relationship was the strongest predictor of achievement compared to maternal and peer relationships (O'Connor & McCartney, 2007).

Construct Definitions

In reviewing the research on relationships and school performance, it appears that investigators use different terms to define their constructs of study. It is important to clearly define concepts in order to get an accurate measurement and make meaningful conclusions about data. Therefore, the research involving relationships, engagement, and academic performance will be examined in order to derive a definition for the constructs to be used in the present study.

Relationship construct. Investigators typically operate from one of the aforementioned theories, or a combination of perspectives when examining the influence of relationships. Each of the theories provides a slightly different view on the construct, and defines "relationship"

using varying terms, yet they are all measuring the same basic concepts. Attachment measures the quality of relationships by examining *closeness, dependency,* and the *absence of conflict* (Davis, 2003; Pianta, 2001; Wellborn & Connell, 1987). Motivation theory considers *relatedness, competence, and autonomy* (Bergin & Bergin, 2009; Davis, 2003; Vansteenkiste, Lens, & Deci, 2006). Finally, a sociocultural perspective endorses the concepts of *joint activity*, *affinity,* and *intersubjectivity* (Tharp et al., 2000) to help create meaningful relationships and promote development.

Researchers may use different terms in their work, but at the core, they are still measuring the same ideas. Upon taking a closer look at these constructs, it is clear they are all indicative of the same concepts. Ultimately, to establish a positive relationship one must be caring and *involved*, provide *structure* and expectations so children can feel safe to take on challenges and feel competent, and provide *support* for seeking independence and becoming autonomous (Davis, 2003; Zimmer-Gembeck et al., 2006).

Engagement construct. Engagement is closely related to motivation, but they are distinct concepts. While motivation provides the underlying process through which a student becomes involved, engagement reflects the amount of actual participation (Appleton, Christenson, Kim, & Reschly, 2006). Historically, engagement has been defined by more observable and behavioral indicators, such as participation, time on-task, attendance, suspensions, homework completion, and involvement in extracurricular activities (Al-Hendawi, 2012; Appleton et al., 2006; Li & Lerner, 2013). However, in the past 10 years, researchers have suggested that school engagement should be defined as a multidimensional construct (Appleton et al., 2008; Li & Lerner, 2013).

Most researchers agree that engagement can be defined as having three dimensions: behavioral (which can be observed externally), cognitive, and emotional or psychological (which are measured more internally) (Appleton, et al., 2006; Fredericks, Blumenfeld, & Paris, 2004). Behavioral engagement has been measured in many ways including attendance, discipline (number of office referrals), time on-task, work completion, and participation in after-school activities and clubs (Al-Hendawi, 2012; Appleton, et al., 2006; Archambault et al., 2009). Cognitive aspects of engagement include perceptions and beliefs of the value of learning, relevance of schoolwork, and goal setting while psychological aspects include reactions and feelings towards teachers, classmates, parents, and school (Appleton et al., 2006; Fredericks et al., 2004; Jimerson, Campos, & Greif, 2003).

Due to the overemphasis of research on behavioral indicators and the need to have a measure of internal indicators, Appleton et al. (2006) developed and validated a scale to measure cognitive and psychological engagement in students. The *Student Engagement Instrument (SEI)* was created based on an extensive review of the engagement literature and subsequent exploratory and confirmatory factor analyses were conducted. Six factors, or subscales, comprise this self-report measure. The Psychological Engagement subscales include teacher-student relationships, peer support for learning, and family support for learning. The subscales that make up the Cognitive Engagement construct include control and relevance of schoolwork, future aspirations and goals, and extrinsic motivation. The authors validated the measure with a large group of ninth grade students in a diverse urban area and found each of the subscales was significantly correlated with educational outcomes such as GPA, reading and math achievement, and suspensions.

A recent study by Mo and Singh (2008) examined the impact of parent relationships on these three engagement constructs and subsequent effect on school performance. They created their own measure of engagement targeting behavioral, psychological, and cognitive aspects which yielded a reliability value of >.732. Using SEM to test the model they found parent relationships had a significant and direct effect on each aspect of student engagement, with the strongest impact on emotional engagement. Similar to previous studies (Al-Hendawi, 2012; Appleton et al., 2008; Finn, 1993) behavioral engagement was the strongest predictor of school performance, but cognitive and psychological aspects were also significantly associated with grades in core academic subjects.

Roorda et al. (2011) conducted a meta-analysis of the influence of teacher relationships on students' school engagement and achievement. The authors reviewed 99 studies that included students in preschool through high school. They found that both positive and negative relationships had medium to large effects on student engagement, and small to medium effects on achievement. Effects were strongest for high school students and students who were at-risk for academic difficulties.

Although recent engagement theories have stressed the importance of conceptualizing engagement as a multidimensional construct (Appleton et al., 2008; Appleton et al., 2006; Fredericks et al., 2004; Jimerson et al., 2003) research is still lacking in this area. Al-Hendawi (2012) recently completed a review of school engagement for students with SEB problems and found that it is still often measured in behavioral terms, mainly on-task behavior. This definition targets only one aspect of one component of the engagement construct. The author noted this narrow definition limits the ability to accurately understand the school context for these students and excludes potential sources for intervention development. He recommended future research

examine outcomes for students with SEB needs using a more comprehensive definition including behavioral, cognitive, and psychological dimensions. In this way, intervention development can be targeted towards improving student learning rather than just changing behavior. Thus, this study will incorporate behavioral, psychological, and cognitive indicators.

Academic performance construct. While studies have examined the impact of relationships on school outcomes, the construct of academic performance has been defined in various ways. Often school performance is measured using grades or GPA (Mo & Singh, 2008; Murray & Malmgren, 2005; Whannell & Allen, 2011). This method has differed in terms of data collection. For example, in some cases students have been asked to report on a Likert scale the grades they typically receive (Lynch, et al., 2013; Whannell & Allen, 2011; Zimmer-Gembeck, et al., 2006) and in other cases grades in core academic areas such as reading and math were used (Mo & Singh, 2008).

Some studies used standardized achievement as a measure of school performance (Hughes, et al., 2012; Liem & Martin, 2011; Murray, 2009) including the Broad Reading and Broad Math scales from the *Woodcock-Johnson Test of Achievement-third edition* (*WJ-III*; Woodcock, McGrew, & Mather, 2001), the *Iowa Test of Basic Skills* (*ITBS*; Hoover, Dunbar, & Frisbie, 2001), and the *Wide Range Achievement Test-third edition* (*WRAT-3*; Wilkinson, 1993). Additional studies examined other aspects of school performance such as school completion (Reio et al., 2009) and attendance (Klem & Connell, 2004).

Achievement and grades appear to be the most often used metrics of academic performance and therefore will be used in this study as a measure of *academic performance*. Specifically, the *WJ-III* (Woodcock, McGrew, & Mather, 2001) Broad Reading and Broad Math scales will be used along with student GPA.

Research on Relationships and School Performance

General education students. Several studies focused on the association between relationships, engagement, and school success for students in special education. Learner and Kruger (1997) assessed the influence of teacher-student and parental attachments on school performance measures and engagement. They surveyed 150 high school students using an attachment rating scale to gather information on relationship quality with caregivers and teachers as well as, ability to self-regulate, and motivation to engage with academic material, and intrinsic value for academics. Using multiple regression analyses, the authors found teacher attachment had a stronger relationship to intrinsic value for academics than did students' attachment to their parents. In addition, teacher-student attachments were related to students' ratings of self-regulatory behavior. The authors suggested teacher-student attachment at the high school level appears to have a significant impact on students' motivation to engage with academic material.

In another study examining engagement and school outcomes, Zimmer-Gembeck et al. (2006) tested a model of adolescents' perceptions of relationships with peers and teachers on school fit, engagement, and achievement. They surveyed 324 high school students and used SEM with bootstrapping to examine mediation. They found that engagement mediated the relationship between teacher-student relationships and achievement and that school fit mediated the relationship (partially) for teacher-student relationships and (fully) for peer relationships on engagement. Again, teacher relationships appear to be stronger in comparison to other types of relationships.

More recently, Bryan et al. (2012) tested the effects of school bonding on academic achievement for high school students. School bonding was defined using several variables including attachment to school, attachment to teachers, school commitment, and school

involvement. Academic achievement was defined using standardized math achievement scores. Additionally, the authors included two intervening variables, school-related delinquency, and prior academic achievement. The data were taken from a national public-use data set from 2002. The authors chose to use hierarchical multiple regression analysis to examine direct and indirect effects of school bonding on achievement. The results indicated that attachment to school and school involvement had direct effects on achievement. School related delinquency and prior achievement mediated the effects of attachment to teachers and school commitment behaviors on academic achievement. Similar to Zimmer-Gembeck (2006), the authors found that relationships had an indirect impact on achievement.

Klem and Connell (2004) conducted a retrospective analysis of surveys from 4,276 elementary and middle school students to explore the association between teacher support and engagement and engagement and achievement. This study yielded a number of results. First, they found that teacher reports of student engagement were a stronger predictor of student success than student reports. Second, they found the use of attendance and reading achievement were the best predictors of students remaining in school. Third, they found students who perceived positive relationships with teachers were more likely to report higher engagement. Finally, they found that higher engagement was associated with higher attendance and test scores. In sum, this study provided further evidence of the mediating role of engagement between relationships and school outcomes.

Another study on relationships and engagement examined the unique and cumulative contributions of parent and teacher relationships on school performance of Latino adolescents in an urban environment (Murray, 2009). The researcher surveyed 129 middle school students in an urban district on relationship quality, engagement, achievement, grades, and feelings of

competence. Multivariate Analysis of Variance (MANOVA) was used to compare groups and hierarchical regression was used to determine the cumulative effects of relationships. Murray found that parent relationships significantly contributed to engagement, school competence, and reading achievement while unclear expectations in parent relationships was a strong predictor of school adjustment and school performance. Furthermore, teacher-student relationships accounted for a significant amount of variance in engagement, grades, and math achievement, even after controlling for achievement and parent relationships. Overall, students who rated their relationships with both caregivers and teachers as poor had lower school competence. This study showed that it is important to consider multiple relationship systems as they can have differential, yet salient, effects.

A more recent study focused on the impact of peer relationships on engagement and performance (Liem & Martin, 2011). The investigators surveyed 1,436 high school students in Australia and gathered information perceptions of relationships with same and opposite sex peers, as well as engagement and self-esteem. They used a standardized achievement test as an academic outcome measure. Using SEM, they tested the mediating role of school engagement in connection with peer relationships and both academic and non-academic outcomes. The authors found that both same and opposite sex peer relationships had direct effects on self-esteem and indirect effects via engagement. Same sex peers had both a direct and indirect effect on academic measures, while opposite sex peer relations revealed only an indirect link to academics through engagement. These results were invariant across age and gender.

A few studies examined the influence of relationships on cognitive and psychological engagement variables alone, without the inclusion of academic outcomes. For example, Cotterell (1992) studied the relationship between adolescents' adjustment and the support they

received from significant attachment figures, including teachers, parents, and peers. After surveying 157 adolescents on psychological wellbeing, academic adjustment, social support, and attachments with key figures, the author found that for both boys and girls, attachment to teachers was positively correlated with self-concept, self-esteem, and academic self-concept. It is interesting to note that the effect was stronger for girls (r=.70 to .74) than for boys (r=.32 to .59). Again, for both genders, the correlations between variables were stronger for teacher relationships than for peer or parent.

Hallihan (2008) used surveys administered to 35,132 adolescents in public schools and 4,421 students in Catholic schools in Chicago to identify characteristics of teachers that increased students' affinity for school, which has been linked with achievement. The results of the study showed students like school more when teachers are fair, are caring, and provide praise. The teacher support variable had larger effects on liking school than school safety, academic confidence, and teacher's expectations. Moreover, teacher support, more than friendships, influenced students' feelings about school. This suggests positive teacher relationships are a powerful motivator for enjoying and becoming engaged in school.

A majority of the research examining the effect of relationships on school performance has been conducted with the general population. Results have connected relationships with ratings of self-regulatory behavior, motivation, engagement, self-concept, and academic performance. Some of these studies included multiple relationship systems (e.g. parent and teacher or peer and teacher) and students in middle and high school.

At-risk students. Similar to students in general education, the idea that relationships are related to engagement and academic outcomes have been explored with students considered at risk. Woolley and Bowen (2007) examined the relationship between the level of adult support

and psychological and behavioral engagement indicators. They surveyed 7,764 middle school students considered to be at risk based on risk-factor survey. The authors divided the sample into groups based upon their risk level. They found the mid-and high-risk groups had significantly lower levels of engagement than low risk students. They also noted that social relationships actually mediated the negative influence of contextual risks on engagement. Therefore, students with positive adult relationships were more likely to be engaged, even if they were exposed to a number of risk factors in their environments.

In another study, Decker et al. (2007) studied the teacher-student relationships of 44 African American elementary school students considered to be behaviorally at risk for referral to special education. Using ratings from both student and teachers they found that as ratings of relationship quality increased for both students and teachers there were increases in social-emotional functioning, engagement, and academic performance. More specifically, the student's perception of relationships quality with teachers uniquely contributed to the variance in behavioral referrals, academic engaged time, and letter name fluency. As students rated their relationships more positively over time, there was a decline in the amount of behavior referrals and an increase in engagement. These findings are important because it shows that student perceptions of relationships contribute to school performance and are associated with positive changes in behavior. Improving the quality of relationships could be a potential intervention for students with behavioral difficulties.

Murray and Malmgren (2005) tested this idea by implementing a teacher-student relationship program for students in an urban high school at risk for behavioral problems. The study used a randomized control group design with 48 students and 8 teachers. The intervention included three components. First, teacher and student pairs met each week and discussed

academic and personal goals that the student wanted to meet. Teachers reviewed progress towards meeting goals with students and helped problem-solve ways to overcome barriers. Second, the teachers increased praise towards their students. At the start of the program teachers were asked to identify positive attributes of their students that they could remark on during naturally occurring opportunities. Third, teachers called the student at home once or twice a week to review school progress and provide encouragement. These components helped establish ongoing communication, structure, and involvement with at risk students.

Researchers collected information on social competence and school adjustment, externalizing and internalizing behaviors, classroom engagement, academic grades, and attendance. Teachers completed the measures both pre- and post- intervention implementation. Using analysis of covariance (ANCOVA), the authors compared the intervention and control groups on post-test variables after controlling differences in pre-test scores (Murray & Malmgren, 2005).

On measures of social and school competence, emotional adjustment, school engagement, and absences there were no significant differences between groups but scores did indicate more positive adjustment for those in the intervention group. There were, however, significant differences between the control and intervention group on GPA. This study provides further support for the importance of teacher-student relationships on school outcomes and for using relationships as a basis for intervention (Murray & Malmgren, 2005).

Research is also starting to explore students academically at risk. Hughes et al. (2011) used path analysis to test hypotheses of indirect effects of teacher-student relationships on achievement. The sample included 690 elementary students struggling in academics as measured by low scores on statewide tests. Investigators administered assessments of teacher-student

relationship quality, standardized achievement, and motivation annually for 3 consecutive years. Researchers controlled for IQ and economic status.

Several findings were noted. First, conflict in relationships remained stable across the 3 years but warmth in teacher relationships declined, as rated by students. Second, African American students and boys had relationships characterized by more conflict than girls and Caucasian and Hispanic students. Third, student-rated conflict in relationships predicted changes in teacher-rated behavioral engagement across the years, which subsequently predicted changes in reading and math achievement across the years (Hughes et al., 2011).

Two studies explored the impact of relationships upon school completion for at-risk students (Reio et al., 2009; Whannell & Allen, 2011). The focus of the Reio et al. (2009) study was peer and teacher relationships. They investigated the influence of peer and teacher relationships on the completion of a GED program for 244 students attending an adult education center. The authors used measures of relationship quality, attachment style, and school completion (GED attainment) and found that the likelihood of completing the program increased as students formed positive peer and teacher relationships. In comparison, the teacher-student relationship was the more powerful predictor.

In contrast to the previous study, Whannell and Allen (2011) analyzed the impact of teachers and caregivers on the school completion of high school students in Australia. The sample included 144 students who had dropped out of school but were returning to receive their degree via a bridging program at a university. Students completed a survey on multiple constructs including school and emotional engagement, capacity to cope with school work, and peer, family, and teacher relationships in an attempt to understand factors related to dropout.

The study produced two major findings. First, students who rated teacher relationships as low also showed low levels of emotional engagement with school. The authors proposed that students who felt they had a poor classroom experience and did not enjoy school were more at risk for dropping out of high school. No other variables were significantly rated to school completion. The second major finding was that students who lived at home with both caregivers during the last two years at high school were more likely to complete school than those living in a different type of situation. This result suggested that home context has a meaningful impact on behaviors at school. Overall, the authors concluded that poor teacher relationships, low engagement, and alternative living situations contributed to the decision to drop out of school (Whannell & Allen, 2011).

Within the past few years, research on relationship and academic performance has begun to emerge including students at risk for behavioral and academic problems. Researchers are primarily interested in understanding how relationships are connected with engagement, school completion, and academic performance. Results are promising and suggest that more work in this area needs to be done.

Special education students. Murray and Greenberg (2001) investigated the perceptions of teacher-student relationships among 289 middle school children with high incidence disabilities and without disabilities. Students with high incidence disabilities included those receiving services for emotional disturbance (ED), learning disabilities (LD), mild mental retardation, (MMR), and other health impairments (OHI). Not surprisingly, the authors found that students with disabilities rated their teacher relationships and bonds with school lower and perceived danger higher than students without disabilities. Data analyses also compared results

among disability categories and found that students with ED had poorer school bonds and teacher relationships than students with other disabilities and without disabilities.

Murray and Greenberg (2006) extended this work to explore the impact of perceived relationships with parents, peers, and teachers on measures of social and behavioral adjustment. Participants included 96 elementary school students receiving special education services for a high incidence disability. Students were asked to complete questionnaires on relationships with peers, parents, and teachers as well as social competence, anxiety and depression, delinquent behaviors, and general personality. It is interesting to note that type of relationship was not separately examined; instead, one construct was used to represent peer, parent, and teacher relationships. The authors found that there were significant associations between relationships and social-emotional and behavioral outcomes. Up to half of the variance in social-emotional and behavioral indicators was accounted for by the ratings on the relationship scale. The findings from both Murray and Greenberg (2001, 2006) suggest that the relationships construct is an important aspect of the school experience to study for students with SEB difficulties.

Another study involving students with SEB problems resulted in different findings. Bartick-Ericson (2006) examined the impact of several different relationships on school engagement. She surveyed 64 adolescents with SEB concerns attending an alternative school using an attachment-based rating scale that included questions about relationships with parents, teachers, peers, and therapists. Classroom engagement was measured via a teacher rating scale. Correlations were computed between the relationship and engagement variables but did not produce any significant associations. Next, the author tested to see if a curvilinear relationship existed between variables, meaning that both high and low relationship scores could be related to lower engagement, theorizing that students may "idealize" their relationship even when

relationship characteristics are not considered to be positive. The results yielded a curvilinear association between mother and therapist relationships and school engagement, but not for other key figures.

Literature on the influence of relationships on school outcomes for students with disabilities is lacking. There are few studies involving these constructs and results have been mixed. However, several researchers note the importance of understanding how relationships impact the academic performance for high school students with SEB problems (Bartick-Ericson, 2006; Bergin & Bergin, 2009; Davis, 2003; Hamre & Pianta, 2001; Milhalas et al., 2008; Murray & Greenberg, 2006). Thus, this is an area of the literature that needs to be more thoroughly investigated.

Summary

Strengths of existing literature. A consistent finding in the relationship and school outcomes literature is that the perception of relationship quality is directly related to measures of school engagement, which in turn directly affects academic functioning (Klem & Connell, 2004; Learner & Kruger, 1997; Liem & Martin, 2011; Murray, 2009; Zimmer-Gembeck et al., 2006). In essence, relationships strongly contribute to the performance of students in school. Although this finding has been demonstrated most often in the general education population, similar outcomes are beginning to emerge for students at risk and with disabilities (Bartick-Ericson, 2006; Decker et al., 2007; Hughes et al., 2011; Woolley & Bowen, 2007).

It is important to consider theoretical orientation when designing a study so that outcomes can be clearly understood. Drawing from current literature on motivation and ecological perspectives, some studies incorporate multiple relationship systems (Cotterell, 1992; Learner & Kruger, 1997; Murray, 2009; O'Connor & McCartney, 2007; Reio et al., 2009;

Zimmer-Gembeck et al., 2006) and employ a multidimensional construct of engagement (Liem & Martin, 2011; Mo & Singh, 2008; Woolley & Bowen, 2007). This is imperative in order to obtain the most comprehensive understanding of the impact of relationships on academic performance.

A notable finding from this body of research is that teacher-student relationships, when compared to caregiver-child and peer relationships, appear to exert the most influence on outcomes such as school completion, academic motivation, engagement, and achievement (Cotterell, 1992; Learner & Kruger, 1997; Reio et al., 2009; Zimmer-Gembeck et al., 2006). Moreover, there is some evidence to suggest that improving relationship quality leads to improvements in outcomes, indicating that relationships could be the target of intervention (Decker et al., 2007; Hughes et al., 2011; Murray, 2009; Woolley & Bowen, 2007).

Limitations of existing literature. There are several limitations that emerge upon review of this literature. One major gap in the research is limited number of studies conducted with students with disabilities. Although research is emerging including at risk students, very few studies have focused on students with disabilities, including those with SEB problems (Bartick-Ericson, 2006; Murray, 2009; Murray & Greenberg, 2001; Murray & Greenberg, 2006). According to researchers, this is a glaring oversight and one that needs to be addressed (Bartick-Ericson, 2006; Bergin & Bergin, 2009; Davis, 2003; Hamre & Pianta, 2001; Milhalas, et al., 2008; Murray & Greenberg, 2006).

Another limitation is the lack of a comprehensive theoretical framework that includes multiple constructs such as different types of engagement and relationship systems when developing a study. Some studies ascribe to an attachment (Learner & Kruger, 1997), motivation (Zimmer-Gembeck, et al., 2006), or ecological perspective (O'Connor & McCartney,

2007), but in considering only one viewpoint, not all aspects of the study are properly defined (Davis, 2003). For example, Bartick-Ericson (2006) included multiple relationship systems into the model, yet did not use a multidimensional construct of engagement. Currently, there are no known published studies that have measured the effect of relationship quality with peers, teachers, and caregivers on a multidimensional construct of engagement. Moreover, there do not appear to be any published studies targeting high school students with SEB problems examining the impact of multiple relationships on school performance.

Finally, the methods most often used in analyzing data have included correlation and regression. Only a few studies have applied SEM to examine connections between relationships, engagement, and school performance (Hughes et al., 2011; Liem & Martin, 2011; Mo & Singh, 2008; Zimmer-Gembeck et al., 2006). SEM is powerful tool for understanding the associations between concepts and allows for greater flexibility in the definition of constructs, which is useful for testing a theoretical model (Schumacker & Lomax, 2010).

Relevance of Current of Study

The current study will provide a novel contribution to the literature on relationships and school outcomes by addressing the aforementioned limitations. A comprehensive model, based on a combination of attachment, motivational, and ecological theories, will be tested using SEM. This model will include measures of students' perceptions of their relationships with parents, teachers, and peers, and will utilize a multidimensional definition of engagement (behavioral, psychological, and cognitive).

This study will focus on understanding the educational context for high school students with SEB problems. This group of students has the worst outcomes of any disability group (Lane, et al., 2005; Nelson, et al., 2004; Wagner et al., 2006), is at increased risk for poor

relationships (McDuffie et al., 2008; Hamre & Pianta, 2005), and is often resistant to interventions (Al-Hendawi, 2011; Siperstein et al., 2011). Additionally, there is very little research involving high school students with SEB needs in the relationship and school outcome literature. Therefore, it is crucial to have a more complete understanding of the underlying processes influencing school outcomes for students with emotional and behavioral difficulties in order to best understand how to effectively serve these students.

The current study evaluated a conceptual model of academic performance for adolescents with SEB problems based on the influence of relationships. In particular, it tested whether relationships with parents, peers, and teachers directly affect academic functioning or if they indirectly affect academic performance through school engagement. Additionally, this study investigated which type of relationship has the strongest association with school engagement and academic performance variables.

CHAPTER 3

Methods

Participants and Setting

The sample for the current study included participants in the Center for Adolescent Research in Schools (CARS; Kern, Evans, & Lewis, 2008) study, a grant funded by the Institute of Educational Sciences from 2008-2013 focused on the development and evaluation of an intervention package for high school students with intensive SEB needs. Data used for the current study were collected during the baseline phase, prior to any interventions being implemented. This dataset was accessed with permission from the principal investigators.

The CARS study included students in grades 9 through 11 located within Pennsylvania, Ohio, Kansas, Missouri, and South Carolina. Each of the 54 participating high schools referred students struggling with both behavior and academics, who were then screened for eligibility. Students who met the criteria and provided assent and parent consent were enrolled for a 2-year efficacy trial from 2011-2013. Criteria included SEB problems as indicated by a score in the at risk range or above for the externalizing or internalizing subscale on the parent version of the *BASC-2* (Reynolds & Kamphaus, 2006) or a score in the at risk range or above on either a student-rated depression or anxiety rating scale. Students also needed to exhibit impairment in school performance as indicated by at least two of the following characteristics: (a) combined total of 10% absences or more in academic year 2010-2011; (b) 4 or more office referrals per semester; (c) 2 or more school suspensions in academic year 2011-2012; and (d) 1 or more F's or 2 or more D's in core academic subjects per marking period in at least one of two previous marking periods. Students were excluded if they had a diagnosis of Pervasive Developmental Disorder and/or an IQ of below 70.

Participant recruitment and characteristics. Each participating high school identified a school liaison to help recruit students for CARS. The liaison met with administrators and teachers to generate a list of students who demonstrated impairment in school performance as defined by the eligibility criteria above. Once the school generated a list of about 25 students, they called the families of the students to get permission for CARS staff to contact them about enrollment in the study. Once a parent agreed, the school liaison provided CARS staff with the contact information.

The next step in recruitment involved obtaining consent from the parent and assent from the student. Once the families agreed to participate, the caregivers and students completed several rating scales. In addition, school performance and IQ data were gathered from school records. All data were sent to a data processing site that entered information and determined eligibility of students.

In total, 647 students (66.5% male and 33.5% female) were enrolled between April 2010 and January 2011. When the efficacy trial began, 6.8% of students were in grade 9, 47.9% in grade 10, and 45.4% in grade 11. A majority of students identified themselves as White/Caucasian (52.1%) or African American (38.6%). Other ethnicities represented include Hispanic/Latino (5.3%), Black/White (1.2%), Biracial (0.9%), Asian (0.5%), Native American/Alaskan Native (0.3%), White/Hispanic (0.3%), African American/Latino (0.2%), Caucasian/Native American (0.2%), Middle Eastern (0.2%), White/Black/Hispanic (0.2%), and Native Hawaiian/Other Pacific Islander (0.2%). Within this sample, 48.5% of students received special education services through an IEP and 3.7% received services under a 504 plan. Students receiving special education services were identified with a primary classification of Learning Disability (50.6%),

Emotional Disturbance (21.8%), Other Health Impairment (21.8%), or another category (5.8%).

Measures

School Engagement Instrument (*SEI*; Appleton et al., 2006). The *SEI* is a 36-item student rating scale used to measure student perception of cognitive and psychological engagement with school. It was developed based on a thorough literature review of engagement concepts followed by an exploratory and confirmatory factor analysis. The best fitting model yielded six factors. Three of these make up psychological engagement: Teacher-student Relationships (10 items), Peer Support for Learning (6 items), and Family Support for Learning (4 items). The cognitive engagement construct consists of these subscales: Control & Relevance of School Work (9 items) and Future Aspirations and Goals (7 items; Fredricks & McCloskey, 2012).

The *SEI* uses a 4-point Likert scale with higher scores (4) indicating Strongly Agree and lower scores (1) indicating Strongly Disagree, with the exception of 4 items that are reverse-scored. The total possible scores range from 38 to 152 with higher scores indicating higher levels of engagement and connectedness with teachers, peers, and parents.

This scale was initially validated with a sample of 1, 931 9^{th} graders in an urban and diverse school district and found internal consistency estimates between r_{α}=.72 and r_{α}=.88, indicating that the six factors were related to one another. The authors also found correlations between the six factors and outcome variables such as reading and math achievement, GPA, and suspensions. The scale was recently validated with students in grades six through twelve (Betts, Appleton, Reschly, Christenson, & Huebner, 2010). Researchers found similar internal consistency and a similar factor structure was indicated for this group of students that remained for all grades. For the purpose of this study, Teacher-student Relationships, Peer Support for

Learning, and Family Support for Learning were used as measures of relationship, while Control & Relevance of School Work and Future Aspirations and Goals were used as measures of school engagement (cognitive engagement).

Behavior Assessment System for Children- 2nd Edition-Adolescent Self-Report (*BASC-2*; Reynolds & Kamphaus, 2006). The *BASC-2* is abroad band measure of student behavior and adjustment that was originally developed by Reynolds and Kamphaus (1992). Many versions exist including teacher, parent, and self-report for various ages. This study used the *BASC-2 Adolescent Self-report version (SRP-A)* that measures self-perception of both maladaptive and adaptive behaviors, and school performance for students, ages 12 to 18.

The *SRP-A* consists of 186 items with ratings of True or False or a 4-point scale from Never (1) to Almost Always (4). This questionnaire yields composite scores for School Problems, Internalizing Problems, Inattention/Hyperactivity, Personal Adjustment, and an overall measure of functioning, Emotional Symptoms Index. Results also yield scores for several subscales such as Attitude to School, Attitude to Teachers, Anxiety, Depression, Relations with Parents, Self-esteem, and Hyperactivity. The *BASC-2* yields T-scores used to determine percentile scores that compare the student's rating of behavior to those of peers.

The *BASC-2 SRP-A* was normed with both general and clinical populations and has good psychometric properties. The authors report internal consistency with a coefficient alpha in the .90s for composite scores and .80s for subscales for both norm groups. Test-retest reliability correlations are in the .80s for composite and subscale scores. Constructs were confirmed using factor analysis and correlations were found with similar measures providing evidence of validity. When the *BASC-2 SRP-A* was compared to other measures of self-report of social, emotional,

and behavioral characteristics, it was found to have moderate correlations in the .50s and .60s. (Reynolds & Kamphaus, 2006).

The subscales that were used in this study as indicators of relationship quality were Attitude to School (7 items), as a measure of school engagement and Attitude to Teachers (9 items), Interpersonal Relations (7 items), and Relations with Parents (10 items).

Index of Family Relations, Student Rated *(IFR;* Hudson, 1993). The *IFR* assesses perceptions of relations within the family and severity of relationship problems with family members. This measure was designed for ages 12 and up and can be completed by any family member. This scale has 25 items with a 7-point scale that ranges from None of the time (1) to All of the time (7). It produces a total score within the range of 0-100, with higher scores indicating greater problems. Adequate psychometric properties are reported with reliability alpha of .95 and validity of .60 and greater *(IFR;* Hudson, 1993). This measure was used as an indicator of parent relationships.

Woodcock-Johnson Tests of Achievement- 3rd edition *(WJ-III*; Woodcock, McGrew, & Mather, 2001). The *WJ-III* is a standardized measure of academic achievement. The standard battery of the *WJ-III* contains a measure of total achievement, as well as measures of broad reading, mathematics, and written language skills. In addition, it gives a measure of a student's basic academic skills, their fluency in completion of academic work, and a measure of application of academic knowledge.

For the purpose of CARS, students were administered the Letter-Word Identification, Reading Fluency, and Passage Comprehension subtests, which when combined yield a standard score of Broad Reading. To assess math functioning, students completed the Calculation, Math Fluency, and Applied Problems subtests, making up the Broad Math composite. All subtests and

composite scores yield a standard score (M=100, SD= 15). For the current study, the Broad Reading and Broad Math standard scores were used as measures of academic functioning. Research has documented strong psychometric properties for the *WJ-III*. Reliability for the Broad Reading composite is high at .94 and is similar for Broad Math at .95. Validity for the Broad Reading and Broad math subscales when compared with broad reading and math composites on alternative achievement assessments ranged from correlations of 0.67- 0.76 and 0.66-0.70, respectively (Schrank, McGrew, & Woodcock, 2001).

Report card summary form. Grades, attendance, and discipline information were gathered from the report card summary form from the first half of the school year during the baseline phase. The school districts that participated in the CARS grant had differing methods of measuring the school year. A majority of the schools followed a four marking-period schedule, while some schools had six marking periods. Therefore, the first half the year for schools with four marking periods included the first two marking periods, and the schools with six marking periods included the first three marking periods. GPA was used as an indicator of academic performance (Mo & Singh, 2008; Murray & Malmgren, 2005; Whannell & Allen, 2011). Grades were recorded on the report card summary in letter form (e.g., A, B, C, etc.). Therefore, for the purpose of this study, letter grades were converted to the following corresponding numbers so that they could be included in the analysis: A=4, B=3, C=2, D=1, F=0. Grades from core academic classes were included (e.g., Math, English, History, Science). Once letter grades were transformed to numbers, they were averaged for the first half of the year to create the mid-year GPA. Finally, the number of absences and number of behavior referrals from the first half of the year were used as a measure of school engagement (behavioral engagement; Al-Hendawi, 2012; Appleton, Christenson, Kim, & Reschly, 2006; Li & Lerner, 2013).

Procedures

Data used for this study were collected as part of the larger CARS grant with IRB approval. Graduate students employed by the CARS grant were trained on each measure and administered all assessments to caregivers and students. All student assessments were completed in person. Caregivers completed rating scales via telephone or by mail only when they were not able to meet in person. Assessments took place either in school, the home, or a mutually agreed place in the community such as the library. Data on the report card summary form were collected from school personnel after each marking period.

Data Analysis

Structural equation modeling (SEM) procedures were used to test direct and indirect effects of the relationship constructs on school engagement and academic performance variables as well as to determine if the proposed model was a good fit for the data. SEM was chosen to test the hypotheses in the current study for a number of reasons. SEM is a powerful statistical tool used to determine if a theoretical model is supported by sample variables. Variables can be defined as latent constructs, which consist of multiple observed indicators. Thus, researchers are not limited to using one measure to define a variable. Rather, variables can be expressed based on existing research, which improves our understanding of the constructs being measured. Additionally, multiple hypotheses can be tested simultaneously by conducting a complex multivariate regression (Schumacker & Lomax, 2010; Weston & Gore, 2006). This study defined latent constructs with multiple indicators based on related theory, tested multiple hypotheses, and determined the overall fit of the model. Therefore, SEM was the best method to use for the current study.

There were two models tested using SEM. The first was the measurement model that represents how the observed indicators are related to latent variables. The second model tested in SEM was the structural model, which represents the direct and indirect effects of the latent variables (Schumacker & Lomax, 2010). There were originally five latent variables included in the model for this study: Teacher–student relationships, peer relationships, parent–child relationships, school engagement, and academic performance. The modified model included six latent variables, separating the engagement constructs into behavioral and cognitive engagement variables. Each latent construct was defined by grouping similar measures. For example, the academic performance measure was originally defined as GPA, and scores on Broad Reading (*WJ-III*) and Broad Math (*WJ-III*). The revised model included the individual GPA scores for core academic classes and dropped the *WJ-III* scores.

As recommended by Weston and Gore (2006), a two-step approach (Anderson & Gerbing, 1988) was used, with the addition of testing an alternative model, in order to prevent confirmation bias. In the first step, a confirmatory factor analysis (CFA) was conducted to see how independent variables were related and if observed indicators loaded onto the appropriate latent constructs in the measurement models. The second step involved testing the structural model for direct and indirect effects, as well as the overall fit of the model to the data. Finally, an alternative model was tested and compared to the first model, to determine which was a better fitting model. Model 1 tested only indirect effects of relationships on academic functioning through school engagement and Model 2 included the addition of direct effects on academic functioning. See Figures 1 and 2 for a visual depiction of both models.

Model specification. There are several steps involved in the SEM process. First, the model is specified. During this stage, the researcher draws upon theory to create a model.

Ultimately, the purpose is to investigate if the true model that generated the data is significantly different than the theoretical model. If the models are significantly different, then the model is considered a poor representation of the data (Schumacker & Lomax, 2010). In this case, attachment, motivation, and ecological theories were used to help create the model being tested for this study.

Model identification. The second step is model identification. The purpose of this step is to determine if there is enough information in the sample matrix in order to uniquely estimate parameters. Models can be under-identified (not enough information), just-identified (just enough information, but only one way to estimate parameters), and over-identified (more than enough information). Ideally, models should be over-identified (Weston & Gore, 2006). The hypothesized model had 112 degrees of freedom and the revised final model had 94 degrees of freedom and therefore, is over-identified (Schumacker & Lomax, 2010).

Research suggests having three indicators of a latent variable in order to avoid identification problems (Schumacker & Lomax, 2010). Three of the latent variables in the hypothesized model have three or more observed indicators. Three latent variables, teacher-student relationships, peer relationships, and behavioral disengagement are defined with two observed indicators. Bollen (1989) suggest that two observed indicators can be sufficient for identification if there is more than one latent variable in the measurement model. The current model has three latent variables in the measurement model on the exogenous side, meeting the two-indicator rule.

Additional issues regarding data may contribute to identification problems including sample size, missing data, multicollinearity, and normality (Weston & Gore, 2006). There is no consensus on the number of participants needed to conduct SEM, but a minimum of 200 is

recommended (Weston & Gore) and most models have a sample size between 250 and 500 (Schumacker & Lomax, 2010). Another recommendation is to include 5 to 10 participants per parameter to be estimated. In this case, there are 48 parameters being estimated which would mean that between 240 and 480 participants are needed. The sample includes 647 students, so sample size should not contribute to issues of power or identification.

Self-report data were collected upon enrollment of students in the project and report card data were collected after each marking period. Any data that were missing were considered missing at random (MAR; Schumacker & Lomax, 2010). If the amount of missing data were less than 5% for a measured variable, expectation maximization (EM) methods could have been used to estimate missing values (Little, Jorgensen, Lang, & Moore, 2014). Because there were more than 5% missing data, full information maximum likelihood (FIML) was used to estimate parameters. When there are missing data, the GFI fit index and modification indices cannot be computed (Siperstein, Parker, Bardon, & Widaman, 2007; Schumacker & Lomax, 2010).

Multicollinearity can occur when two measured variables are too highly correlated, leading to redundancy. Research suggests correlations of observed indicators with values greater than .85 may be a problem (Kline, 2005). A possible solution is to remove one of the variables if it causes problems during estimation and note the issues in the results (Weston & Gore, 2006).

SEM typically operates under the assumption of normality. If model data show evidence of skewness (asymmetrical distribution) or kurtosis (unbalanced peak or tails) then results may be incorrect (Weston & Gore, 2006). For the purpose of this study, cutoffs of -10 to +10 for kurtosis (Weston & Gore, 2006) and -3 to +3 for skewness (Chou & Bentler, 1995) were used.

Model estimation. The third step in SEM is to estimate the population parameters in the model. Preferably, the parameters in the population matrix will yield values as close as possible to the sample matrix. A fitting function is used to minimize the differences between matrices. For this study, FIML estimation was used due to the amount of missing data (Schumacker & Lomax, 2010; Weston & Gore, 2006). All modeling was done using the AMOS v23 program (Arbuckle, 2015).

Standardized and unstandardized estimates were calculated for each of the estimated parameters along with a significance value. Standardized estimates were used to determine which of the relationship variables had the strongest impact on school engagement. Unstandardized estimates were used to determine if the relationship variables had a significant direct effect on school engagement and if school engagement had a significant direct effect on academic performance (Weston & Gore, 2006). It is also important to consider if parameters yield coefficients in the expected direction (Schumacker & Lomax, 2010). In addition, the amount of variance (R^2) in dependent variables (school engagement and academic performance) explained by independent variables (relationships and school engagement) was calculated.

Model Testing. Once parameters have been estimated, the overall fit of the model can be tested. There are different types of fit indices that can be used to determine if the hypothesized model reflects the actual observed data. Global fit indices test whether the proposed model is confirmed based on the collected data. The most common measure of global fit is chi-square (Bollen, 1989). Non-significant values indicate a good fit because that means there is no significant difference between the proposed model and sample matrix. Although this is often reported, chi-square is sensitive to sample size so it is recommended that other indices be used in conjunction (Martens, 2005; Weston & Gore, 2005).

The most recommended global fit measures include Root Mean Square Squared Error of Approximation (RMSEA; Steiger, 1990; Steiger & Lind, 1980) and Goodness-of-fit Index (GFI; Jöreskog & Sörbom, 1981). RMSEA corrects for complexity but is sensitive to the number of variables. For a well-fitting model, values of <.08 are used (McDonald & Ho, 2002). The GFI measures the amount of variance and covariance in the sample matrix as predicted by the hypothesized model. Values of .90 and higher represent good fit (Hoyle & Panter, 1995).

Incremental fit indices compare the improvement of fit of the hypothesized model over the null, independence model in which no parameters are estimated. The Tucker-Lewis Index (TLI; Tucker & Lewis, 1973) and Comparative Fit Index (CFI; Bentler, 1990) were used based on recommendations from the literature (Martens, 2005; McDonald & Ho, 2002; Weston & Gore, 2006). Values above .90 indicate greater fit.

Model modification. If the hypothesized model does not fit well to the data, modifications to the model may be made if they are meaningful and supported by theory. Modifications could include setting non-significant parameters to 0 or adding paths between variables (Schumacker & Lomax, 2010; Weston & Gore, 2006).

Indirect effects. Mediation is often assessed based on criteria set by Baron and Kenny (1986). The authors contend that variable *M* is a mediator when *X* significantly predicts *Y*, *X* significantly predicts M and M significantly predicts *Y* (after controlling for *X*). However, according to Preacher and Hayes (2004), indirect effects may be calculated even when *X* does not significantly predict *Y*.

For this study, indirect effects of relationship variables on academic performance (through school engagement) were examined. Had there been no missing data or EM procedures had been utilized, bootstrapping would have been the preferred method for computing indirect

effects (Preacher & Hayes, 2004; Shrout & Bolger, 2002). This is a nonparametric method of determining effect size by taking a large number of samples (e.g. 5000) and calculating the indirect effects for each sample. Based on these samples, a new distribution would have been created and a confidence interval, significance value, and standard error would have been generated. A 95% confidence interval would have been used. If 0 is not within the confidence interval, then it would be concluded that the indirect effect is significantly different than 0 at $p < .05$ (Preacher & Hayes, 2004).

Due to the amount of missing data, bootstrapping methods could not be used as AMOS will not allow this procedure when there are missing data. Instead, the Sobel method (Sobel, 1982) was used to evaluate mediation. In the Sobel method, standard error estimates of the latent variables are used to determine whether a *z*-statistic is significantly different from 0 within the proposed confidence interval (95% for this study; Shrout & Bolger, 2002).

Testing alternative models. In order to determine if Model 1 (indirect effects only) or Model 2 (indirect effects plus direct effects from relationships to academic engagement) was a better fitting model, the two models were compared based on the following criteria: (a) examining significance of parameter estimates, (b) reviewing the change in explained variance on academic functioning, and (c) assessing improvement in model fit. Therefore if parameters in the alternative model were significant, it may be acceptable. Additionally, if there was no change or an increase in explained variance of the dependent variable, then the alternative model may prove a better fit. Direct comparisons of model fit were made for this study because the models are considered nested. Thus, the chi-square difference test was conducted. In this case, if the value of chi-square significantly decreased, than the alternative model would be considered to have a better fit (Weston & Gore, 2006).

CHAPTER 4

Results

Descriptive Analyses

CARS data from the first year of enrollment were used for the data analyses and the subject ID was used to merge the databases. The final dataset was comprised of 647 participants. The descriptive statistics for the variables of interest are shown in Table 1. The grades for English, Math, Social Studies, and Science and the number of office discipline referrals and absences were averaged for the first half of the school year. All variables met the criteria for skewness (-3 to +3; Chou & Bentler, 1995) and kurtosis (-10 to +10; Weston & Gore, 2006). Absences and referrals showed higher skewness and kurtosis then the other variables; however students with SEB problems tend to have higher absences and office referrals than typical peers so these higher numbers make sense within this population.

Initial descriptive analyses showed a moderate frequency of missing data, ranging from 0 to 295 cases across variables creating a sample ranging from 295-647 participants. A total of 162 cases had no missing data. Due to the amount of missing data, full information maximum likelihood (FIML) was used to estimate parameters (Siperstein, Parker, Bardon, & Widaman, 2007).

Bivariate correlations were conducted to check multicollinearity between measured values. Research indicates correlations of observed indicators with values greater than r =.85 may be problematic (Kline, 2005). Correlations ranged from r =.001 to r =.670. This suggested that the observed indicators did not exhibit multicollinearity issues.

Measurement Model

The exogenous and endogenous measurement models were first tested separately to understand how well the observed indicators relate to their latent variable (Anderson & Gerbing, 1988). The exogenous model included the Teacher, Peer, and Caregiver relations latent variables. The model showed good fit, with one fit index meeting the a priori fit criteria: χ^2 (11) = 95.53, p<.001, CFI=.93, TLI=.84, RMSEA=.10. All indicators' regression weights on their respective latent variables and the correlations among the three Relations latent variables were significant (p<.001) and in the expected direction.

Next, the endogenous measurement model was tested. Two of the four fit indices showed good fit: χ^2 (20) =95.53, p <.001, CFI=.87, TLI=.78, RMSEA=.08. All indicators' regression weights on their respective latent variables were significant (p<.001)and in the expected direction at except for referrals and absences on the School Engagement latent variable and the *WJ-III* Broad Reading and Broad Math indicators on the Academic Performance latent variable. The referrals and absences indicators were removed and the model was re-estimated; however, fit indices revealed a worse fitting model. As a result, these two variables were retained in the model as indicators and instead behavior referrals and school absences were used to create a new latent construct termed *Behavioral Disengagement.* Research has been shown that behavioral and cognitive engagement are distinct, yet related concepts, so a theoretical foundation exists for separating the indicators to create two engagement mediating variables (Appleton, Christenson, Kim, & Reschly, 2006; Eccles, 2012; Engels et. al., 2016). It should be noted that higher referrals and absences represent a higher level of disengagement from school, while lower numbers represent a higher level of engagement. Thus, the latent variable was labeled Behavioral

Disengagement and therefore it would be expected to have negative associations with other variables.

In addition, the GPA indicator was removed from the Academic Performance latent variable to determine whether the *WJ-III* subtests would load significantly onto a latent construct but the model was not identified. Thus, overall GPA was removed from the model, and indicators representing GPA scores for each of the core subject classes (math, science, English, and social studies) were used as a measure of grades. This revised endogenous measurement model was tested with the four course grades as indicators representing Academic Performance latent variable and the newly added Behavioral Disengagement latent variable and showed excellent fit on all indices: χ^2 (24)= 15.56, p =.93, CFI= 1.00, TLI= 1.00, RMSEA= 0.00. All indicators had significant regression weights on their latent variables (p <.001) and were in the expected positive direction.

Structural Model

Following the establishment of the exogenous and endogenous measurement models above, the full structural model was analyzed. All indicators had significant regression weights on their respective latent variables (p <.001). This model is depicted in Figure 3. When the revised model was tested it showed an improved fit: χ^2 (94) = 382.12, p <.001, CFI=.90, TLI=.85, RMSEA=.07. Parameter estimates and model fit indices can be found in Table 2. Squared multiple correlations were examined to measure the amount of variance estimated by the predictors of dependent variables. The R^2 values were Behavioral Disengagement (.005), Cognitive Engagement (.78), and Grades (.42).

An alternative model was tested in order to examine both direct and indirect effects of relationships on grades via cognitive and behavioral engagement. Model 2 (Figure 4) is a nested

model that adds paths from Teacher, Peer, and Caregiver relations directly to the outcome variable Grades. The fit of this model was tested and a χ^2 difference test was conducted in order to determine if the second model, with the additional paths, produced a significantly better fit than Model 1: $\Delta\chi^2$ (3)=1.54, p>.05. The fit of Model 2 was very similar to Model 1 with good fit shown by two indices meeting the fit criteria specified a priori: χ^2 (91)= 380.57, p<.001, CFI=.90, TLI=.84, RMSEA=.07. Estimates and model fit can be found in Table 3. The R^2 values for Model 2 were Behavioral Disengagement (.003), Cognitive Engagement (.78), and Grades (.41).

Research Question 1: Do students' perceptions of caregiver, teacher, and peer relationships have a significant direct effect on school engagement for high school students with SEB problems?

Model 1 (Figure 3) was used to examine the direct effects of students' perceptions of caregiver, teacher, and peer relationships on school engagement for high school students with SEB problems. Significant positive direct effects were found for Teacher (β =.75) and Caregiver (β =.20) relationships on Cognitive Engagement at p<.001 but not for Behavioral Disengagement. Peer relationships did not significantly predict Cognitive Engagement or Behavioral Disengagement.

Research Question 2: Does school engagement have a significant direct effect on academic performance for high school students with SEB problems?

Model 1 was used to examine direct effects of school engagement on academic performance for high school students with SEB problems. Cognitive Engagement did not significantly predict Academic Performance as measured by grades but Behavioral Disengagement did negatively significantly predict Academic Performance as measured by

grades (b=-.64, p<.001). This means that as the number of absences and office discipline referrals increase by 1 standard deviation, grades (academic performance) decrease by .64 standard deviations.

Research Question 3: Do students' perceptions of caregiver, teacher, and peer relationships have a significant indirect effect on their academic performance via school engagement for high school students with SEB problems?

Bootstrapping is the preferred method for estimating indirect effects (Preacher & Hayes, 2008; Shrout & Bolger, 2002) but is only conducted in AMOS when there are no missing data. Thus, bootstrapping could not be performed in this case. Alternatively, the Sobel method (Sobel, 1982) was used to calculate indirect effects (http://quantpsy.org/sobel/sobel.html). Results of the Sobel test can be found in Table 4. There were no significant findings. Further, the model did not meet the criteria for mediation set forth in Baron and Kenny (1986). It can be concluded that students' perceptions of caregiver, teacher, and peer relationships did not have an indirect effect on Academic Performance via Cognitive Engagement or Behavioral Disengagement for high school students with SEB problems.

Research Question 4: Do students' perceptions of caregiver, teacher, and peer relationships have a significant direct effect on their academic performance for high school students with SEB problems?

Model 2 (Figure 4) was used to determine if students' perceptions of caregiver, teacher, and peer relationships have a significant direct effect on their academic performance for high school students with SEB problems. There were no significant direct effects found for perceptions of relationships on academic performance.

Research Question 5: Which model will provide a better fit: Model 1, hypothesizing significant relationship indirect effects only, or Model 2, with the inclusion of significant relationship direct effects on academic performance?

Model 1, hypothesizing indirect effects only, provided a slightly better fit than Model 2, with the inclusion of relationship direct effects to the outcome variable Grades. Model fit and parameter estimates as well as the amount of variance explained in the dependent variables were very similar in both models, although slightly better in Model 1. A χ^2 difference test was conducted to see if Model 2 provided a significantly better fit and results showed that it did not: $\Delta\chi^2(3)=1.54$, $p>.05$. Therefore, the most parsimonious model, Model 1, was retained.

Research Question 6: Which type of relationship (caregiver, teacher, or peer) is the strongest predictor of (a) school engagement and (b) academic performance for high school students with SEB problems?

Standardized estimates in Model 1 were used to determine which type of relationship was the strongest predictor of both engagement and academic performance for high school students with SEB problems. Teacher relationships was the strongest predictor of Cognitive Engagement (β =.75) when compared with Caregiver relationships (β =.20). Peer relationships did not significantly predict Cognitive Engagement (β =.04).

Peer relationships was not a significant predictor of Behavioral Disengagement (β =-.08, p=.38), but it was the most strongly associated when compared to Teacher (β =.01, p=.97) and Caregiver relationships (β =.03, p=.78). None of the relationship latent constructs significantly predicted Academic Performance but Teacher relationships (β =-.19, p=.36) was most associated to Academic Performance when compared with Caregiver (β =-.02, p=.87) and Peer (β =.09, p=.30) relationships.

CHAPTER 5

Discussion

The current study examined how adolescents' perceptions of relationships with caregivers, teachers, and peers impacted their school performance. Specifically, SEM was used to test direct and indirect effects of self-reported perceptions of different types of relationships on school engagement and academic performance for high school students with SEB problems.

Findings

This study yielded several major findings. First, the three relationship latent variables were significantly correlated with one another. Although exogenous latent variables are most often correlated with one another, some previous research has indicated that adolescents may be able to form different types of attachment relationships with different people due to having more flexible thinking (Siegel, 1999). Additionally, forming positive relationships with alternative caregivers or attachment figures provides adolescents the opportunity to learn more adaptive social models (Allen, 2008; Bartick-Ericson, 2006, Creasey, Jarvis, & Gadke, 2009). The results of this study revealed that for this sample of high school students with SEB problems, the model fit by correlating the relationship latent variables. Although some research has noted the ability of adolescents to form distinct relationship patterns with different types of people (e.g., caregivers vs. teachers vs. peers), other research has suggested that older children have formed and solidified their mental models of relationship patterns and have similar attachment histories across attachment figures (Bergin & Bergin, 2009; Connell & Wellborn, 1991). Thus, adolescents with insecure attachments are more likely to form insecure attachments with others. This may be especially true for students with SEB problems who have difficulty with flexible thinking.

A change to the original model that improved fit was separating the overall School Engagement latent construct into Cognitive Engagement and Behavioral Disengagement. When the model was analyzed with a global engagement construct, absences and office referrals did not significantly load onto the latent variable. However, removing them from the model did not improve the fit; in fact, it decreased the fit. Therefore, the behavioral disengagement indicators were retained, but were used to create a new latent construct, which yielded improved fit indices. The final model used for analyses contained two engagement latent variables: Cognitive Engagement and Behavioral Disengagement. This shows that the indicators included in the model are measuring separate and distinct measures of engagement. These constructs have contributed differently to student outcomes in past research. In a study that examined student engagement and its relationships to high school dropout, researchers found that behavioral, cognitive, and psychological engagement uniquely contributed to dropout and behavioral engagement was the only significantly predictor (Archambault, Janosz, Fallu, & Pagani, 2009).

Research question 1 examined the direct effects of students' perceptions of relationships with teachers, peers, and caregivers on student engagement and it was hypothesized that each of these relationship systems would have a direct effect on engagement. Results showed significant paths from teacher and caregiver relationships to cognitive engagement, but not Behavioral Disengagement. Peer relationships did not significantly predict either engagement variable. In this model, Cognitive Engagement was represented by indicators measuring a students' perception of control and relevance of their schoolwork, future goals and aspirations, and their general attitude towards school while Behavioral Disengagement was represented by number of absences and office referrals. Previous research has shown direct effects of relationship quality with student engagement (Hughes et al., 2012; Liem & Martin, 2011) but there were no known

studies that included both behavioral and cognitive engagement constructs and focused on high school students with SEB problems. Murray (2009) found that teacher and parent relationships significantly predicted behavioral engagement as rated by students and teacher relationships only significantly predicted grades. One possibility for the current findings is that it may be difficult for high school students with SEB problems to separate their perceptions of relationships within the school context from their perception of their overall school experience. According to a motivational perspective, relationships at school become increasingly embedded within the educational context and therefore tend to have greater impact on cognitive engagement outcomes such as values, beliefs, and goals about school (Davis, 2003).

Peer relationships did not significantly predict Cognitive Engagement or Behavioral Disengagement. Previous research has yielded mixed results, but some studies have shown peer relationships do not have direct effects on academic outcomes when accounting for teacher and caregiver relationships (Goodenow, 1993; Ryan, Stiller, & Lynch, 1994). Due to the moderately good fit of the model tested in this study, it may be more useful to consider the overall impact of important relationship groups to high school engagement and grades than each system individually.

The second research question examined the direct effect of school engagement on academic performance for high school students with SEB problems and it was hypothesized that school engagement would have a direct effect on academic performance. The current study used grades as a measure of academic performance after the *WJ-III* Broad Reading and Math standard scores were removed as indicators during the testing of the measurement models. The current study found a significant direct effect for Behavioral Disengagement on grades, but not Cognitive Engagement. As previously mentioned, Archambault et al. (2009) examined the

effects of cognitive, behavioral, and psychological engagement on school dropout for high school students and found only behavioral engagement to have a significant impact on student outcomes. Further, it is possible the current model is reflecting that the concept of Behavioral Disengagement, as measured by absences and referrals, has a more proximal relationship to grades than Cognitive Engagement, and therefore may be more strongly associated (Murray, 2009).

The third and fourth research questions deal with the direct effects of students' perceptions of relationships on academic performance and the indirect effects of perceptions' of relationships on academic performance via school engagement for high school students with SEB problems. Based on previous studies (Hughes et al., 2012; Klem & Connell, 2004; Liem & Martin, 2011; Lynch et al., 2013; Zimmer-Gembeck et al., 2006), it was hypothesized that the three relationship systems would have a significant direct effect on Academic Performance as well as a significant indirect effect on Academic Performance via School Engagement. The results of the current study found that none of the relationship variables had a significant direct effect on grades, nor did they have a significant indirect effect via Cognitive Engagement or Behavioral Disengagement. This is surprising, given that previous research has shown engagement to be a mediator between teacher, caregiver, and peer relationships and academic performance, including grades. Jeynes (2007) conducted a meta-analysis examining the relationship between parent relationships and academic achievement for urban high school students and found that parent relationships did significantly predict grades. Additionally, in a study validating the *Student Engagement Instrument* (*SEI* subscales were used in the current study as measures of cognitive engagement and teacher, caregiver, and peer relationships), Appleton et al. (2006) found positive relationships between the *SEI* factors and GPA.

More recently, a meta-analysis conducted by Roorda et al. (2011) found relationships had medium to large effects on student engagement and small to medium effects on achievement, and effects were strongest for high schools students and students who are at-risk for academic difficulties. The authors suggested that positive relationships are important but may not be sufficient to improve learning behaviors and student outcomes, and other factors such as quality of instruction and internal student characteristics should be considered. For example, almost half of the students in this study received special education services, most frequently for a learning disability. Therefore, it is likely that this had a strong impact on academic performance but it was a student characteristic not included in this model. Similarly, Fredriksen and Rhodes (2004) indicated that models of teacher relationships and student outcomes often do not include child internal factors such as temperament that can have a large impact on behavior, especially for students with SEB problems. Internal characteristics and processes are difficult to capture because they often cannot be observed directly, but must be measured through rating scales completed by self or someone close to the participant. Perhaps there is another construct, such as temperament, that significantly impacts the grades of high school students with SEB problems that is not measured in the current model, or there are aspects of the constructs included in the model that are not being fully measured by indicators chosen for this study. Although the findings of the current study appear to be in contrast with previous research, there are no other studies simultaneously testing all three relationship systems and both Cognitive Engagement and Behavioral Disengagement for high school students with SEB problems.

Another explanation for the lack of significant findings is that the relationship measures may have been too general. The measures did not indicate that the student should think about any particular teacher, caregiver, or peer when rating their perceptions of their relationships. As

Davis (2003) noted, students' perceptions of relationships become increasingly embedded within the educational context. Thus, it may be that even though a student may have a good relationship with one teacher, he/she experiences multiple teachers a day and may have poor relationships with other teachers, or have a history of poor relationships. It is possible that in this study the ratings of relationships were based more on a collective perception, rather than the perception of one person with which the student most identifies, whether it be positively or negatively.

The fifth research question examined which model provided a better fit, either Model 1 hypothesizing an indirect effect of relationships on academic performance via engagement or Model 2 which added direct effects from teacher, caregiver, and peer relationships to academic performance. Because there are no known studies that compared models of student relationships having direct vs. indirect effects on academic performance, it was hypothesized that Model 1 would yield a better fit since a majority of research on relationships and academic performance has included engagement as a mediator (Bergin & Bergin, 2009; Hughes et al., 2012; Zimmer-Gembeck, 2006). The findings of the current study suggested that Model 1 was the better fitting model because it was more parsimonious and had slightly better fit outcomes. The two models yielded almost exactly the same fit indices, path estimates, and variances and the chi-square difference test was not significant. Therefore, the more parsimonious model was retained (Weston & Gore, 2006).

The last research question examined which type of relationship was the strongest predictor of school engagement and academic performance and it was hypothesized that teacher relationships would be the strongest predictor (Murray, 2009; Reio et al., 2009; Zimmer-Gembeck et al., 2006). As hypothesized, the results of the current study found that teachers were

the strongest predictor of cognitive engagement and academic performance; however, it is important to note that the impact of teacher relationships on academic performance was not significant. Peers were the strongest predictor of Behavioral Disengagement, but it was not significant. Although this finding was unexpected, it is not unreasonable, especially given the population in the current study. In fact, Tillery et al. (2013) suggested that when students do not feel support or experience success at school, they become frustrated with the school context and may seek support in peers outside of the school setting. This can lead to disengagement from school, evidenced by higher absences and discipline referrals. Given that students with SEB problems tend to either isolate themselves or connect with other students with similar difficulties, it makes sense in this model that peer relationships would have the strongest impact on Behavioral Disengagement (absences and referrals) for high school students with SEB problems.

Limitations

The revised model showed moderately good fit and yielded some significant paths but there are limitations to this study that warrant discussion.

In general, the use of an existing database can be viewed as a limitation because the researcher is limited to analyzing the measures available and these may not be the best measure of the constructs being investigated. In the current study, the data were gathered before the current study was developed which means the measures administered to the students in the sample were not chosen with the express intent of measuring relationships, engagement, and academic performance. Therefore, the indicators included in the model may not be representing exactly the model that was hypothesized, which should be considered when interpreting results as they related to the research questions.

Another artifact of using an existing database is the issue of missing data because there is no opportunity for the researcher to collect additional data. In the current study, there was a large amount of overall missing data, which meant that Expectation Maximization or listwise deletion procedures were not recommended (Schumacker & Lomax, 2010) and impacted the types of analyses that could be preformed. Full Information Maximum Likelihood (FIML) was used to estimate parameters; consequently, modification indices and the GFI fit index were not able to be generated due to missing data. Furthermore, bootstrapping procedures could not be performed as the preferred method of examining the significance of indirect effects.

There are also limitations with using student self-report measures. All of the measures administered in this study for the final model utilized self-report, with the exception of grades, and number of absences and office referrals, which were gathered from student report cards. Although the purpose of this study was to examine the impact of relationships on engagement and academic performance through students' perceptions, there are methodological concerns with using only student self-report. There are times when a student's self-report does not match their behavior. For example, a student may rate their relationship with his/her mother as very positive, yet engage in a lot conflict. This difference in perception and behavior is known as "defensive processing" (Bartick-Ericson, 2006). In other cases, participants may give inaccurate ratings because they feel pressured to respond in a specific way. In addition, being able to accurately report one's thoughts and feelings requires a higher level of introspection and insight, which students with SEB difficulties often do not possess. Further, significant effects found between the latent constructs may have been heightened due to a shared response bias between subscales used from the same measure used to indicate different latent variables (Isen & Erez, 2007).

Conversely, there are researchers that argue that self-report is the only method that should be used to assess internal states, especially in the case of cognitive and psychological engagement (Appleton, et al., 2006; Fredricks & McColskey, 2012). One alternative that is frequently recommended is to use multiple raters and multiple formats in conjunction with student self-reports in order to gain a more accurate representation of student functioning (Appleton, et al., 2006; Fredricks & McColskey, 2012; Isen & Erez, 2007; Roorda et al., 2011). However, as noted by Bartick-Ericson (2006), self-reports often do not match the ratings of other people and are highly affected by psychological defenses. Therefore when interpreting the results of this study it is important to remember that the findings reflect the perceptions of relationships and cognitive engagement from the adolescent's point of view.

Some *post-hoc* modifications were made to the hypothesized model in order to improve fit, but they were kept to a minimum and supported by research. Because modifications were made that were not specified *a priori*, the results should be interpreted with caution and ideally the model should replicated on an independent sample (Martens, 2005). The results of the model tested in the current study showed moderately good fit, but it is important to remember that there may be equivalent models that may also show good fit (Bullock, Harlow, & Mulaik, 1994).

Finally, the results of this study may have limited generalizablability to other adolescents. This particular study focused on adolescents with SEB problems and there could be population characteristics that are specific to this study that may not translate to other populations. Caution should be used when extrapolating these results to different populations.

Implications and Future Research

Despite the limitations of the current study, there are important implications for practice and research. The current study yielded mixed results in terms of significant indirect and direct

effects, but produced a relatively well fitting model. Perhaps it may be more important for researchers and educational stakeholders to consider the model as a whole rather than to examine individual paths. In this case, the model showed that relationships with teachers, peers, and caregivers and behavioral and cognitive engagement uniquely contributed to student grades. Additionally, the model showed that absences and office referrals significantly impacted student grades. These behavioral indicators should be an important target for intervention in high school students with SEB problems. Schools should consider programs such as Check & Connect (Anderson, Christenson, Sinclair, & Lehr, 2004), a mentoring program designed to target alterable, behavioral indicators that are linked to school engagement and completion. This intervention also helps students to feel more connected to their school by providing a positive relationship with an adult at their school, which in turn, should contribute to better school outcomes.

Future research should aim to address the limitations of the current study. First, this model should be replicated on an independent sample in order to test generalizability beyond the current study. Ideally, future studies should have a limited amount of missing data so that results can be interpreted with more confidence and additional analyses such as bootstrapping may be conducted. Researchers interested in examining these constructs should consider other measures of relationships and engagement to insure they are representing the latent constructs accurately.

It is important for researchers to consider moderating variables in future research in order to gain a better understanding of how SEB students' perceptions of relationships influence their engagement and academic performance. Previous research has found differential effects for at-risk students (e.g., low SES, minority ethnicity, academic problems), and for these students who have poor outcomes it is essential to understand their school experience in order to determine

how best to intervene (Decker, Dona, & Christenson, 2006; Milhalas, Morse, Allsopp, McHatton, 2009; Roorda et al., 2011). Future studies should investigate whether the effects of relationships on engagement and academic performance are significantly different for varying groups of students within the SEB population.

For this sample in particular, it would be interesting to explore if there are differences for students who have an educational disability (e.g., ED, LD, OHI) and are receiving special educations services vs. students who have academic and behavioral difficulties but have not been identified for special education services. Along those lines, future researchers may want to examine whether the model differs for students with internalizing vs. externalizing behavioral issues. In a study by Drugli, Klokner, and Larsson (2011) that examined the associations between student internalizing and externalizing behavior problems, academic performance and adaptive functioning, and teacher-reported student-teacher relationships, results showed differing effects based on type of behavioral concern. Students with externalizing problems showed higher levels of conflicts with teachers while internalizing students had less supportive relationships. Perhaps there are different motivating factors that would impact these two groups of students differently by tapping into different needs. For example, students with externalizing problems may be more motivated by relationships that foster a sense of autonomy and less conflict, while students with internalizing problems may be more motivated by relationships that foster relatedness and warmth (Davis, 2003).

Finally, it would be prudent to examine alternative ways that the latent constructs may be connected. For example, some authors suggest that relationships and engagement may have more of a transactional relationship than a linear one in which improvement in relationships leads to increases in engagement which leads to further improvement in relationships (Davis, 2003;

Engels et al., 2016). It is clear that research studies should continue to examine how these constructs interact in order to produce a clearer understanding of the school context for students with SEB problems (Decker, Dona, & Christenson, 2007; Engels et al., 2016; Roorda et al., 2011).

This study adds to the limited research base on relationships, engagement, and academic performance for high school students with SEB problems. The final model, with the addition of correlations between the relationship latent constructs and the Behavioral Disengagement latent variable, yielded a model with good fit on two indices and approaching good fit on a third. Although conclusions about causal relationships cannot be made and findings should be interpreted in light of the limitations discussed, the results suggested that parent, teacher, and peer relationships impact student engagement and grades. In particular, teacher and caregiver relationships significantly predicted Cognitive Engagement and Behavioral Disengagement significantly impacted grades.

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Table 1

Descriptive statistics

	N	Minimum	Maximum	Mean	SD	Skewness	Kurtosis
Teacher student relationship	627	10	40	28.37	4.60	-0.06	0.68
Peer support	632	6	24	18.31	3.20	-0.49	1.20
Attitude toward teachers	646	33	97	57.92	12.02	0.40	-0.28
Interpersonal relations	647	10	62	49.15	11.34	-1.22	1.19
Relationship parents	647	17	67	43.90	10.83	-0.07	-0.63
Family support for learning	636	5	16	12.92	2.15	-0.41	0.28
Index of family relations	646	0	96	31.08	18.59	0.65	0.03
Control & Relevance of School Work	627	10	36	25.04	4.33	-0.07	0.40
Extrinsic Motivation	638	2	8	5.91	1.34	-0.49	0.69
Attitude to school	647	32	81	55.70	11.93	0.28	-0.79
Future goals	634	8	28	23.03	3.69	-0.54	0.17
WJIII: BROAD READING	459	57	146	90.16	12.30	0.42	0.91
WJIII: BROAD MATH CLUSTER	487	46	115	79.96	11.74	0.08	-0.35
English	414	0	4	1.55	1.12	0.33	-0.79
math	423	0	4	1.39	1.14	0.41	-0.86
social	352	0	4	1.46	1.12	0.38	-0.83
science	386	0	4	1.40	1.09	0.44	-0.65
referral	454	0	19.5	2.34	3.14	2.42	7.47
absent	441	0	34	5.82	5.92	2.19	5.90
Valid N (listwise)	162						

Table 2

Estimates and model fit for Model 1

			b	S.E.	β	P
cogeng	<---	TSR	.705	.072	.747	***
cogeng	<---	caregiver	.077	.019	.201	***
cogeng	<---	peers	.041	.054	.037	.447
behaveng	<---	peers	-.068	.077	-.078	.377
behaveng	<---	caregiver	.008	.028	.025	.782
behaveng	<---	TSR	.004	.087	.005	.966
academicperform	<---	cogeng	-.001	.015	-.007	.922
academicperform	<---	behaveng	-.180	.055	-.644	***
TSR_SEI	<---	TSR	1.000		.781	
AtT_BASC	<---	TSR	-2.329	.155	-.695	***
PR_BASC	<---	caregiver	1.000		.812	
FSL_SEI	<---	caregiver	.173	.010	.707	***
PSL_SEI	<---	peers	1.000		.950	
IR_BASC	<---	peers	1.990	.135	.533	***
CRSW_SEI	<---	cogeng	1.000		.783	
absent	<---	behaveng	1.000		.452	
referral	<---	behaveng	.473	.124	.403	***
math	<---	academicperform	1.000		.660	
social	<---	academicperform	1.086	.105	.727	***
science	<---	academicperform	1.039	.101	.708	***
english	<---	academicperform	1.018	.100	.676	***
IFR	<---	caregiver	-1.688	.091	-.798	***
FG_SEI	<---	cogeng	.706	.047	.648	***

			b	S.E.	β	P
AtS_BASC	<---	cogeng	-2.319	.152	-.658	***

Model fit: χ^2 (94) = 382.12, p<.001, CFI=.90, TLI=.85, RMSEA=.07

***p<0.001

Table 3

Estimates and model fit for Model 2

			b	S.E.	β	P
cogeng	<---	TSR	.706	.072	.747	***
cogeng	<---	caregiver	.077	.019	.200	***
cogeng	<---	peers	.041	.054	.037	.442
behaveng	<---	TSR	-.040	.101	-.052	.693
behaveng	<---	caregiver	.009	.035	.030	.791
behaveng	<---	peers	-.010	.097	-.011	.918
academicperform	<---	cogeng	.029	.045	.130	.528
academicperform	<---	behaveng	-.174	.052	-.634	***
academicperform	<---	TSR	-.040	.043	-.190	.361
academicperform	<---	caregiver	-.001	.008	-.016	.866
academicperform	<---	peers	.021	.020	.086	.298
TSR_SEI	<---	TSR	1.000		.780	
AtT_BASC	<---	TSR	-2.333	.155	-.696	***
PR_BASC	<---	caregiver	1.000		.812	
FSL_SEI	<---	caregiver	.173	.010	.707	***
IFR	<---	caregiver	-1.688	.091	-.798	***
PSL_SEI	<---	peers	1.000		.950	
IR_BASC	<---	peers	1.990	.135	.532	***
CRSW_SEI	<---	cogeng	1.000		.784	
AtS_BASC	<---	cogeng	-2.319	.152	-.658	***
FG_SEI	<---	cogeng	.706	.047	.648	***
absent	<---	behaveng	1.000		.461	
referral	<---	behaveng	.470	.123	.408	***

			b	S.E.	β	P
math	<---	academicperform	1.000		.659	
social	<---	academicperform	1.088	.105	.727	***
science	<---	academicperform	1.040	.101	.709	***
english	<---	academicperform	1.018	.100	.677	***
χ^2 (91) 380.57, p<.001, CFI=.90, TLI=.84, RMSEA=.07						

***p<0.001

Table 4

Sobel Test Results

Indirect effect	z'	S.E.	P
TeacherRel→CogEng→Grades	0.64	0.030	0.52
CaregivRel→CogEng→Grades	0.63	0.003	0.52
PeerRel→CogEng→Grades	0.49	0.002	0.62
TeacherRel→BehavEng→Grades	0.41	0.002	0.63
CaregivRel→BehavEng→Grades	-0.33	0.006	0.74
PeerRel→BehavEng→Grades	0.12	0.160	0.90

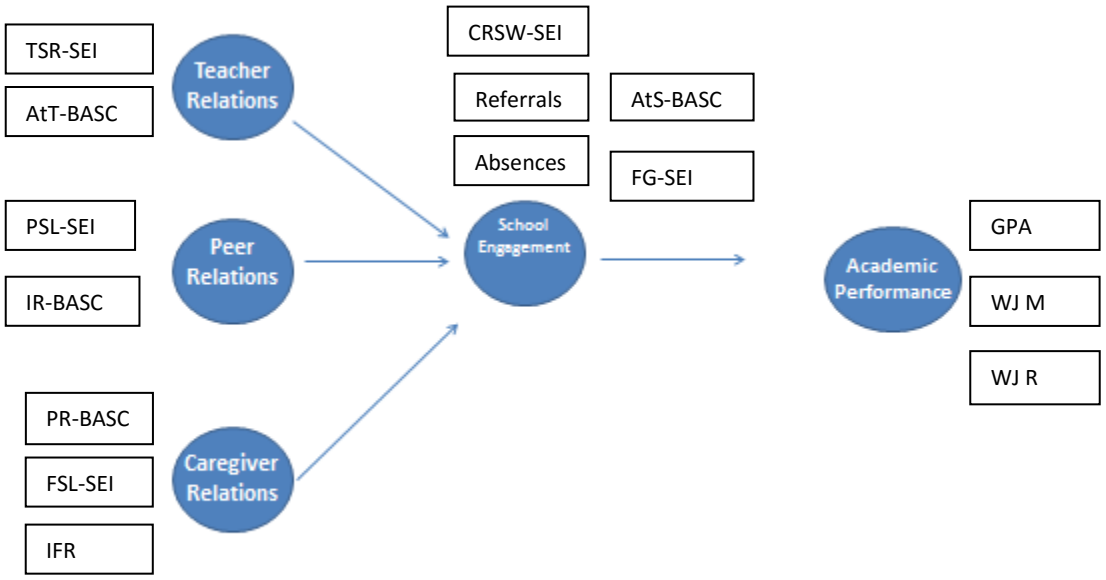

Figure 1: Proposed Model 1-Indirect Effects of Relationships on Academic Performance via School Engagement

Caption: TSR-SEI= Teacher-student relationships (SEI); AtT-BASC= Attitude to teachers (BASC-2, SRP-A); PSL-SEI= Peer support for learning (SEI), IR-BASC= Interpersonal relations (BASC-2, SRP-A); PR-BASC= Relationships with parents (BASC-2, SRP-A); FLS-SEI= Family support for learning (SEI); IFR= Index of family relations; CRSW-SEI= Control & relevance for school work (SEI); Referrals= # of Office Referrals at mid-year; Absences= # of absences at mid-year; AtS-BASC= Attitude to school (BASC-2, SRP-A); FG-SEI= Future goals and aspirations (SEI); GPA= Grade point average at mid-year; WJ Read= Broad Reading score (WJ-III); WJ Math= Broad Math score (WJ-III).

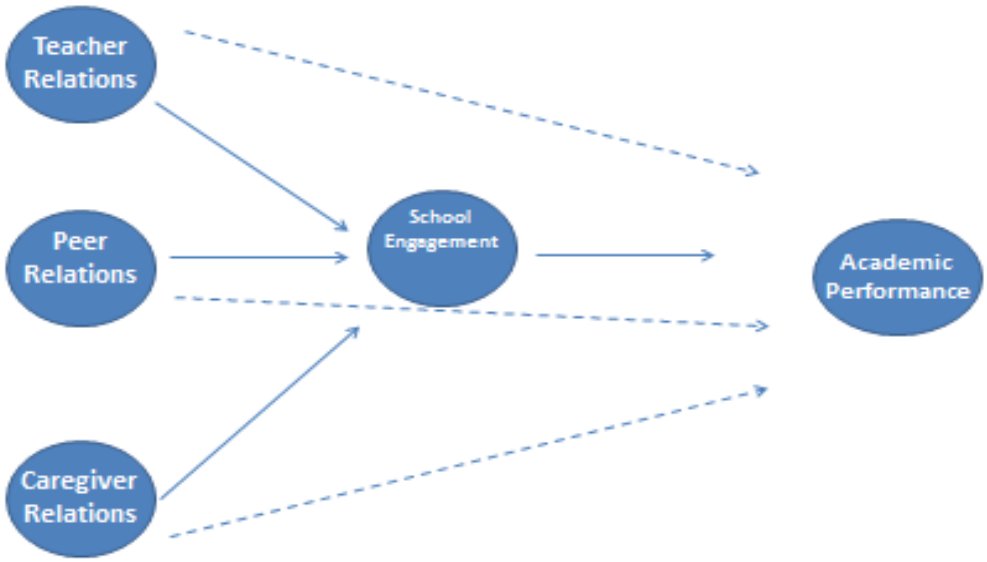

Figure 2: Proposed Model 2 (Alternative Model) - Indirect and Direct Effects of Relationships, School Engagement, and Academic Performance

Note: Added direct effect paths are indicated by dashed arrows.

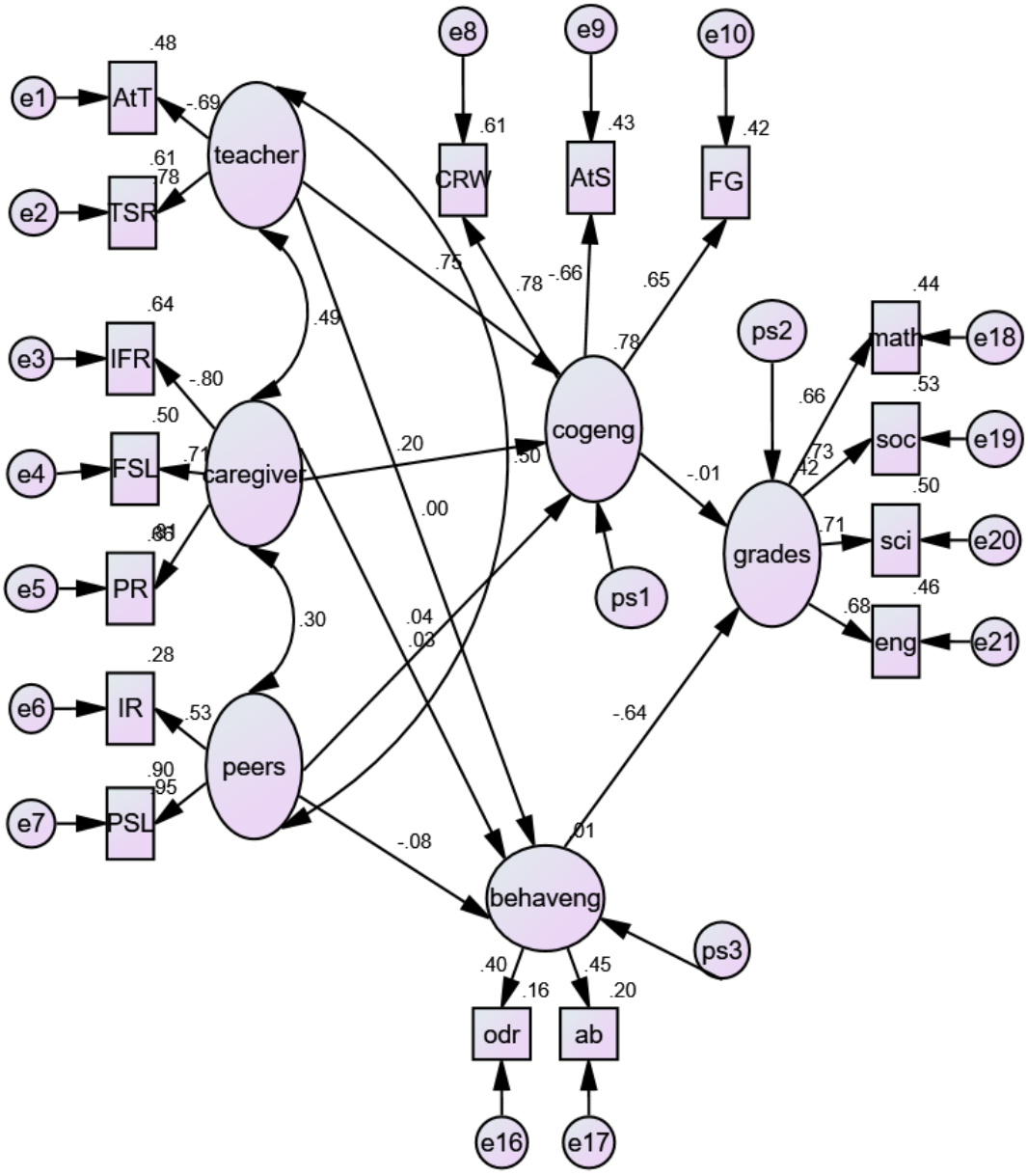

Figure 3: Final Model 1- Indirect effects of Relationships on Grades via School Engagement

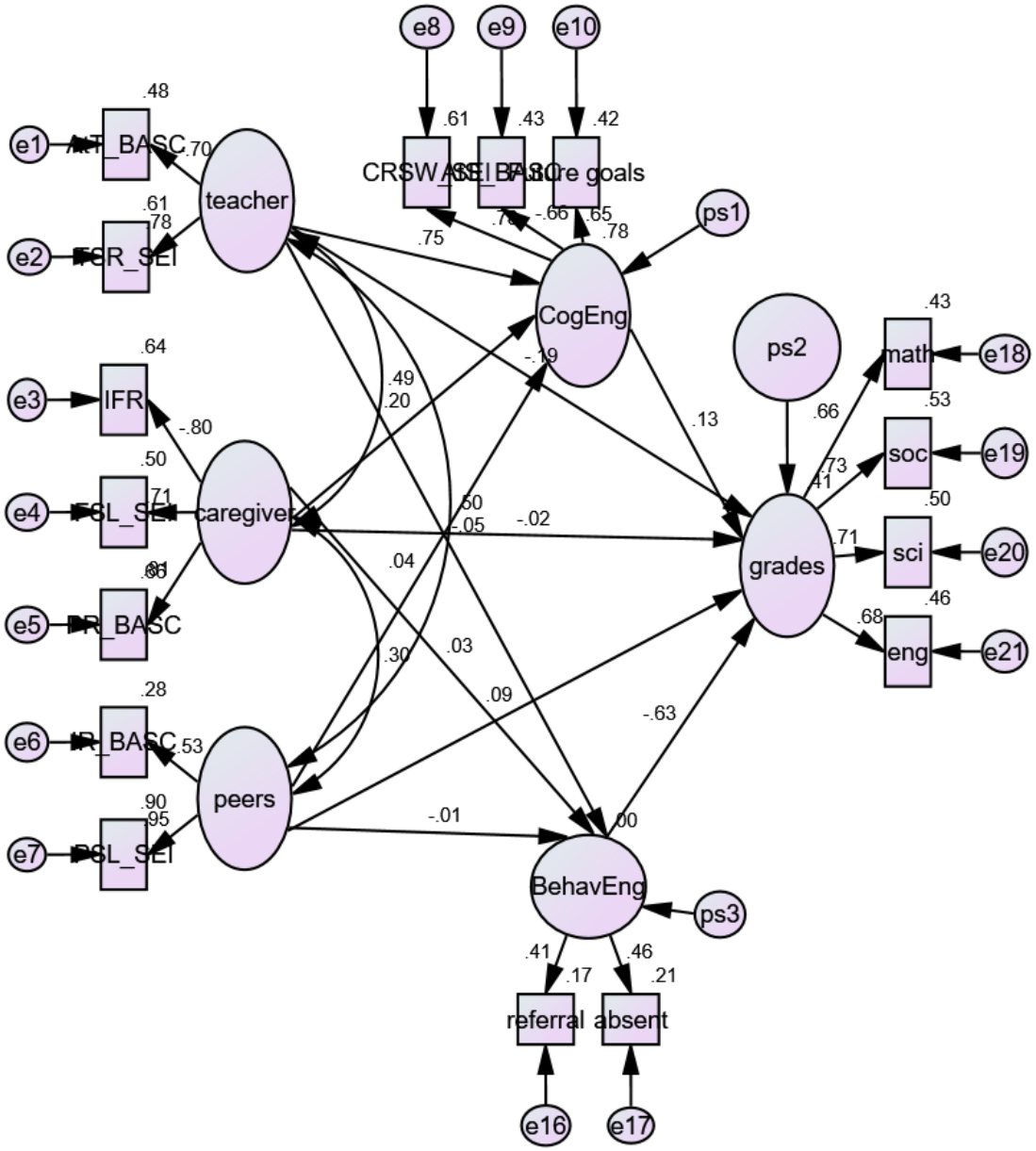

Figure 4: Model 2-Indirect and Direct Effects of Relationships, School Engagement, and Academic Performance

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EDUCATION

Ph.D., *2016* **Lehigh University, Bethlehem, PA**

- School Psychology
- APA accredited and NASP-approved
- Level 1 Educational Specialist Certification
- GPA: 3.92
- Qualifying Project: Passed August 2012
  - *Effects of Student-Assisted Behavioral Consultation on the Problem Behaviors of Secondary-age Students with Emotional and Behavioral Difficulties*
- Dissertation: Defended April 2016
  - *Examining the Impact of Student-perceived Relationships with Caregivers, Teachers, and Peers on the Academic Performance among High School Students with Social Emotional Behavioral Problems*

M.Ed., *2013* **Lehigh University, Bethlehem, PA**

- Human Development
- GPA: 3.92

M.Ed., *2007* **Lehigh University, Bethlehem, PA**

- Special Education
- Level 1 Teaching Certification
- GPA: 4.0

B.A., *2005* **Montclair State University, Montclair, NJ**

- Psychology *magna cum laude*
- GPA: 3.77, Psychology major GPA: 3.89

LICENSURE & CERTIFICATIONS

2015	**Youth Mental Health First Aid Instructor Certificate**
2014	**First Aid & CPR Certificate**
2014	**Professional Crisis Management Certificate**
2014	**PA K-12 Student Assistance Program (SAP TEAM) Certificate**
2013	**PA Professional Certificate K-12 Educational Specialist, School Psychology**
2007	**PA Professional Certificate N-12 Instructional I, Special Education**

APPLIED EXPERIENCE

8/2014-6/2015 **Director of Treatment & School Psychologist- Carbon-Lehigh Intermediate Unit #21**

Supervisor: Tee Decker, Assistant Director of Special Programs & Services

- Director of Treatment for elementary school-based & secondary center-based partial hospitalization programs
    - Attended weekly treatment team with mental health staff & psychiatrist
    - Assisted in creating treatment plans
    - Provided crisis management
    - Conducted risk/threat assessments
    - Provided supervision to mental health staff
    - Coordinated with outside services
    - Provided individual, group, and family therapy as needed
    - Consulted with classroom staff
- School Psychologist for school-based elementary Emotional Support, center-based secondary Emotional Support, and Enhanced Autism programs
    - Attended monthly student progress meetings with school & relevant provider staff
    - Provided individual, group, and family therapy
    - Conducted school-wide and classroom consultation
    - Completed psychological evaluations
    - Provided crisis management
    - Developed and implemented behavioral intervention plans
    - Conducted staff trainings
    - Administered and interpreted behavioral/emotional progress monitoring
    - Member of Emotional Support Framework Committee
    - Member of Autistic Support Framework Committee
    - Member of School-Wide Positive Behavior Support Committee

APPLIED EXPERIENCE Cont.

- Member of District Team for Safe Schools/Healthy Schools grant
  - Coordinator of Mental Health Supports Strand
- Trained and served as FLIGHT team member to assist districts in dealing with crises

7/2013-7/2014 **Pre-doctoral Psychology Internship- Carbon-Lehigh Intermediate Unit #21**

Supervisor: Mark Simon, Ph.D., Licensed Psychologist

- Therapist and Therapeutic Case Manager: Partial Hospitalization Program
- Conducted individual, group, and family therapy
- Created and implemented treatment plans
- Facilitated re-authorization of services with managed care provider
- Conducted initial evaluations and re-evaluations for special education eligibility
- Provided school-wide consultation
- Conducted Functional Behavioral Assessments and implemented behavioral interventions
- Crisis de-escalation and management
- Served on School-wide Positive Behavioral Support Committee

2009-2011 **School-Based Practicum- Allentown School District**

Supervisors: Dawn Wadsworth, Ed.S, Cindy Ilgenfritz, Ed.S.

- Conducted comprehensive, multidisciplinary, psychoeducational evaluations to determine special education eligibility for students ages 4 to 21
- Conducted functional behavioral assessments (FBA)
- Consulted with teachers to develop and implement interventions to improve students' behavior and classroom performance.
- Provided short-term individual psychotherapy for students with emotional and/or behavioral difficulties

01/10 to 05/10 **Early Childhood Assessment Practicum**

Supervisor: Robin Hojnoski, Ph.D.

- Conducted comprehensive early childhood evaluation for a preschool student
- Developed and conducted an ecological classroom observation system to evaluate the physical, programmatic, and social environments
- Developed and conducted an observation system to evaluate student engagement behaviors in the classroom

APPLIED EXPERIENCE Cont.

01/09 to 06/09 **Curriculum Based Assessment Practicum**
Supervisor: Edward Shapiro, Ph.D.
- Conducted comprehensive curriculum assessments for students referred with academic difficulties
- Developed, implemented, and progress monitored an intervention to address academic difficulties for a student utilizing AIMSweb

08/08 to 01/09 **Behavioral Assessment Practicum**
Supervisor: Robin Hojnoski, Ph.D.
- Conducted comprehensive behavioral assessments for students referred with behavioral difficulties.
- Designed behavioral observation systems

2007-2009 **Independent Educational Consultant** -Unconditional Child Care
Supervisor: Nicole Smith
- Received referrals from daycare centers and preschools requesting support for students with behavior difficulties
- Observed the target child, interviewed parents and teachers, and made recommendations to the school and parents during wrap-around meetings

01/08 to 05/08 **Assessment of Intelligence Practicum**
Supervisor: Kevin Kelley, Ph.D.
- Administered and interpreted intelligence and academic achievement tests (e.g., WISC-III, WAIS, Woodcock Johnson, WIAT, UNIT)

08/07 to 01/08 **Consultation Practicum**
Supervisor: Patti Manz, Ph.D.
- Engaged in behavioral consultation with teachers in order to address classroom behavioral difficulties

2007-2008 **Special Education Teacher, Elementary Program- Centennial School of Lehigh University**
Supervisors: Kelly Price and Michael George, Ph.D.
- An approved private school that serves students from grades 1-12 with emotional and behavioral difficulties
- Taught elementary school math, reading, and language arts
- Assisted in training/supervision of teacher interns
- Developed/implemented/evaluated behavioral and academic interventions
- Participated in IEP and ER/RR writing and meetings
- Monitored progress of behavior and academic skills

APPLIED EXPERIENCE Cont.

2006-2007 **Teacher Associate**, **Middle School Program- Centennial School of Lehigh University**

Supervisors: Scott Ware & Michael George, Ph.D.

- An approved private school that serves students from grades 1-12 with emotional and behavioral difficulties
- Taught middle school reading, language arts, math, science, and history
- Developed/implemented/evaluated behavioral and academic interventions
- Participated in IEP and ER/RR writing and meetings
- Monitored progress of behavior and academic skills

08/06 to 12/06 **Applied Behavioral Analysis Practicum**

Supervisor: Christine Cole, Ph.D.

- Conducted Functional Behavioral Assessment in a classroom for students with emotional behavior disorders
- Designed and implemented an intervention to decrease disruptive behaviors

2005-2006 **House Supervisor & Program Manager-Lehigh Support for Community Living**

Supervisor: Freya Koger, Ph.D.

- A program that supports individuals with severe developmental disabilities. Lehigh Support runs licensed group homes and provides supports to individuals living independently
- Supervised house staff and program managers, created schedules, led house meetings, responded to emergency calls, trained staff, met with county and state program coordinators
- Supported individuals with disabilities in a group home setting, collected data for behavior plans, attended ISP and quarterly meetings, helped develop goals for consumers, and taught individuals daily living skills
- Administered and documented medications, supervised medical care and finances, accompanied consumers to appointments and activities in the community

2003-2005 **Residential Counselor-Rainbow of Hope (Cape Counseling Services, Inc.)**

Supervisor: Noel Hiers

- A psychiatric residential program for adolescents with emotional and behavioral disabilities
- Supervised and implemented behavior modification, wrote progress notes and shift logs, participated in development of treatment plans, created and led groups, dispensed and documented medication, accompanied consumers to appointments, crisis intervention

RESEARCH EXPERIENCE

2008-2013 **Research Assistant/Classroom Facilitator, Center for Adolescent Research in Schools, Lehigh University Center for Promoting Research to Practice**

PIs: Lee Kern, Ph.D., Tim Lewis, Ph.D., Steve Evans, Ph.D.

- IES grant to develop a manualized set of interventions to address behavioral, academic, social, and mental health needs of high school students with behavioral difficulties
- Administered and scored assessments, collected data, conducted classroom observations, consulted and trained teachers on interventions, worked with parents, students, and teachers, facilitated intervention implementation, trained center staff, developed intervention procedures and integrity, completed data entry

2007-2008 **Research Assistant, Project MAPS, Lehigh University, Center for Promoting Research to Practice**

PI: Asha Jitendra, Ph.D.

- Research about the effectiveness of using schema based problem solving methods in mathematics with elementary school students
- Administered assessments, collected data, created databases in SPSS and Microsoft Excel, entered data, prepared materials

2006-2008 **Research Assistant, Project RAPPS, Lehigh University, Center for Promoting Research to Practice**

PI: Asha Jitendra, Ph.D.

- Research about the effectiveness of using schema based problem solving methods with ratios, proportions, and percents with middle school students
- Administered assessments, collected data, created graphs, created databases in SPSS and Microsoft Excel, entered data, prepared materials

2006 **Research Assistant**, **Interspersed Math Task, Lehigh University**

PIs: Lee Kern, Ph.D. & Alexandra Hilt-Panahon, Ph.D.

- Research about whether math probes interspersed with easy problems have an effect on student accuracy
- Collected data, created spreadsheet, entered data, created graphs, prepared materials, scored assessments

2004-2005 **Research Assistant**: **Adolescents: Finding Their Voices in a Multicultural Society, Montclair State University**

PI: Deborah Fish Ragin, Ph.D. & Sandra Lewis, Ph.D.

- A study on ethnic identity development during adolescence
- Assisted in study development, administered surveys, entered data.

RESEARCH EXPERIENCE cont.

2003-2004 **Researcher and Co-Author**: **Shocking a Community into Action: A Social Marketing Approach To Cardiac Arrests, Montclair State University**

PI: Deborah Fish Ragin, Ph.D.

- A retrospective analysis of the Public Access Defibrillation Trial using a social marketing perspective
- Completed literature search, compiled data and statistics, wrote bibliography, designed charts and provided input

PUBLICATIONS & PRESENTATIONS

Peer Reviewed Publication

Ragin, D. F., Holohan, J., Ricci, E., **Grant, C**., Richardson, L. D. (2005). Shocking a Community into Action: A Social Marketing Approach to Cardiac Arrests. *Journal of Health and Social Policy, 20*(2), 49-70.

Professional Presentations

Grant, C., State, T., Kern, L., & Lewis, T. (2013, March). *Check & Connect: A Tier 2 Intervention for Secondary Students with EBD.* Presentation at Association of Positive Behavior Support, San Diego, CA.

State, T**., Grant, C.,** Kern, L. Adamson, R., Wachsmuth, S. & Lewis, T. (2013, March). *Classroom-based interventions for high school students with behavioral difficulties.* Presentation at Association of Positive Behavior Support, San Diego, CA.

State, T., **Grant, C.,** Kern, L., & Evans, S. (2012 March*). A Review of standardized measures for adolescents with EBD and their families.* Poster session at Association for Positive Behavior Support Conference, Atlanta, GA.

Grant, C., & DuPaul, G.J. (2012 February). *Contingency management: An Intervention for adolescents with substance use disorders.* Poster session at National Association of School Psychologists Annual Convention, Philadelphia, Pa.

Mullen, C., **Grant, C.,** Parks, J., State, T., & Kern, L. (2011, April). *Teacher and student acceptability of behavior interventions for secondary-aged students.* Poster session at Council for Exceptional Children Convention, National Harbor, MD.

Parks, J. & **Grant, C**. (2011, April). *Effective classroom interventions for high school students with emotional and behavioral difficulties.* Poster session at Council for Exceptional Children Convention, National Harbor, MD.

PUBLICATIONS & PRESENTATIONS Cont.

Grant, C., Mullen, C., Kern, L., Parks, J., State, T., & Evans, S. (2011, February). *A consultation model for strengthening teacher and classroom capacity.* Presentation at National Association of School Psychologists Annual Convention, San Francisco, CA.

Grant, C. & McCurdy, E. (February, 2011). *Making G.R.E.A.T., a community specific gang prevention program, even greater.* Paper presented at the National Association of School Psychologists 2011 Annual Convention, San Francisco, CA.

McCurdy, E. & **Grant, C.** (February, 2011). *Gang involved youth and the role of the school psychologist.* Paper presented at the National Association of School Psychologists 2011 Annual Convention, San Francisco, CA.

Mullen, C., **Grant, C.,** Parks, J., State, T., & Kern, L. (2011, February). *Intervention acceptability in secondary classrooms: Teacher and student perspectives.* Poster session presented at National Association of School Psychologists Annual Convention, San Francisco, CA.

UNIVERISTY TEACHING EXPERIENCE

Spring 2011 — **Co-instructor, Lehigh University**
Instructor: Christine Cole, Ph.D.
- SCHP422: Advanced School and Family Interventions
- Helped redesign syllabus, created central applied activity (resource manual), prepared and delivered lectures, supervised student projects & presentations, created assessments, graded projects, provided student assistance

Fall 2002 — **Teacher's Assistant, Montclair State University**
Instructor: Professor Tete Tetens
- Group Dynamics
- Read and commented on weekly journals and all assignments, participated in class instruction, attended weekly supervision meetings, provided assistance to students, helped determine semester grades

HONORS AND AWARDS

2008-2011 — **Received Lehigh University Tuition Scholarships**
2006 — **Received Villas/Woodring Award & Scholarship at Lehigh University**
2004 — **Psi Chi National Psychology Honor Society**
2004 — **Golden Key International Honor Society**
2004 — **Phi Kappa Phi National Honor Society**

HONORS AND AWARDS Cont.

2001-2005	**Dean's List Recognition**
2001	**Academic Achievement Award in Psychology, APA TOPSS division**

PROFESSIONAL ORGANIZATION MEMBERSHIPS & ACTIVITIES

2013	**Reviewer for Journal of Positive Behavioral Interventions**
2012-present	**Member of Association for Positive Behavior Support** • Membership Committee Member • Student Network Committee Member • Conference Volunteer
2012	**Reviewer for Journal of Behavioral Education**
2009-2010	**Lehigh University Council of Exceptional Children, Lehigh University Chapter** • Treasurer
2008-present	**Member of American Psychological Association** • Division 16 (School Psychology) & SASP (Student Affiliates of School Psychology)
2008-present	**Member of National Association of School Psychologists** • Reviewed Presentation Proposals Submitted for 2012 Convention
2006-present	**Member of Council for Exceptional Children**
2004-2005	**Member of Psi Chi Honors Society, Montclair State University** • Psychology Tutor
2003-2005	**Member of Montclair State University Psychology Club** • Purchasing Officer (2003-2004)