Peer Affiliation and School-based Problem Behavior During Adolescence: A Cross-sectional

Evaluation

By

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CHAPTER I

INTRODUCTION

Peer affiliation is recognized as an important factor in the behavioral trajectories of adolescents, and the effect of peer dynamics on problem behavior is especially salient in the school setting (Olweus, 1993; Buhs, Ladd, & Herald, 2006). Unfortunately, much of the seminal work on the role of peers in the development of problem behavior has been conducted outside of the school setting and on overwhelmingly male samples (Patterson, Reid, & Dishion, 1992). Despite research demonstrating that negative peer affiliation is associated with especially unfavorable behavioral outcomes for male and female youth (Parker & Asher, 1987; Kupersmidt & Coie, 1990; Sandstrom, Cillessen, & Eisenhower, 2003), the link between peer relationships and school-based problem behavior remains understudied, especially for girls who may experience differential developmental patterns and unique long-term outcomes. Additionally, particularly at-risk subpopulations, such as students with disabilities, have been underrepresented in the cumulative literature on this topic.

In the following sections, a rationale is outlined for evaluating the link between deviant peer affiliation and school-based problem behavior for middle school students within and across gender groups with a secondary investigation by disability status. Specifically, the following phenomena are highlighted as the core bases for inquiry in this area: (a) the negative outcomes facing students who exhibit school-based problem behavior and problem behavior outside of the school setting, (b) the substantial number of school-based behavioral incidents in the United States representing girls and the unique profiles of girls with problem behavior, (c) decades of

theoretical and empirical work identifying peer affiliation as a salient predictor of problem

behavior for both male and female students, (d) the dearth of attention to the intersection of

deviant peer affiliation and school-based problem behavior for girls, and (e) important

limitations and methodological concerns in the deficient body of empirical literature on this topic

to date.

School-based Problem Behavior as a Risk Factor for Future Difficulties

A rise in school-based behavioral challenges is expected during adolescence given the

increase in autonomy, onset of puberty, and mounting influence of peers during this

developmental period (Brown, 2004; Kauffman et al., 2010; Larson, Richards, Moneta,

Holmbeck, & Duckett, 1996; Westling, Hampson, & Peterson, 2008); however, adolescent

problem behavior may also be explained by a history of school-based difficulties. Once

experiencing trouble in school, students are more likely to demonstrate future undesirable

behavior in and outside of the school context (Montague, Enders, & Castro, 2005; Murray &

Farrington, 2010). In school, students exhibiting persistent problem behavior, including both

internalizing and externalizing behaviors, are more likely than their peers to experience loss of

instructional time and academic failure (Malecki & Elliott, 2002; McLeod, Uemura, & Rohrman,

2012; Moffitt, Caspi, Harrington, & Milne, 2002; Seinnick & Staff, 2008). In a study

investigating arrest trajectories, Constantine et al. found that students with high rates of

disruptive behavior at school were more likely to follow high arrest pathways than their non-

disruptive classmates (Constantine, Andel, Robst, and Givens, 2013). Students with classroom

persistent problem behavior are more likely than their peers to experience exclusionary discipline

practices that then predict more serious trouble (Fabelo et al., 2011; Losen & Gillespie, 2012).

Using logistic regression analyses on a large sample of fifth through ninth grade students, Hemphill and colleagues found that school suspension significantly increased the likelihood of subsequent antisocial behavior (e.g., substance use, fighting, weapon-carrying, assault) after controlling for known risk and protective factors (Hemphill, Toumbourou, Herrenkohl, McMorris, & Catalano, 2006). Similarly, Monohan et al. tested the longitudinal associations between school suspension or expulsion and arrest and found that students who were suspended or expelled were more than two times as likely to be arrested during the month following a suspension or expulsion than during a month in which no suspension or expulsion occurred (Monohan, VanDerhei, Bechtold, & Cauffman, 2014). In fact, students at risk for involvement with the juvenile justice system share common school-related characteristics such as school disengagement and high rates of rule infractions as early as middle school (Balfanz, Spiridakis, Neild, & Legters, 2003). Given the escalation of issues over time, school-based problem behavior may serve as an early risk factor or predictor for short- and long-term difficulties.

Girls and Adolescent Problem Behavior

Historically, problem behavior was represented as a male phenomenon and, as a result, girls are underrepresented in school-based behavioral intervention research (e.g., Patterson et al., 1992; Maggin, Zurheide, Pickett, & Baillie, 2015). However, national data indicate that girls make up a substantial number of behavioral incidents in schools, especially during adolescence (Kaufman et al., 2010). During the 2013-2014 school year, 775,741 female students received out-of-school suspension for disciplinary infractions in the United States. In addition, 28,428 girls faced expulsion from school, and 16,982 girls experienced school-related arrests that year (U.S. Department of Education, 2017). Also, the proportion of school-based disciplinary actions

representing females as compared to males has risen in recent years (Losen & Skiba, 2010; U.S. Department of Education 2005; U.S. Department of Education, 2017). In fact, a growing body of literature suggests profiles for females with problem behavior are characterized by patterns in types of behaviors, developmental pathways, and long-term outcomes.

Types of behaviors. In recent decades, researchers have given much attention to the types of problem behaviors presented by students, drawing particular attention to divergent trends by student gender. As is well-documented in the literature, females with persistent problem behavior are more likely to exhibit relational, covert, indirect, or social aggression than physical, direct, or overt aggression, while their comparative males are more likely to exhibit the latter (Card, Stucky, Sawalani, & Little, 2008; Crick, 1997; Crick, Ostrov, & Kawabata, 2007; Rys & Bear, 1997; Murray-Close, Ostrov, & Crick, 2007; Marsee, et al., 2014). This has been shown for students as early as preschool (Bonica, Arnold, Fisher, Zeljo, & Yershova, 2003) and as late as adulthood (MacDonald & O'Laughlin, 1997). Likewise, girls tend to display higher rates of internalizing behavior than externalizing, a phenomenon directly counter to that of boys with problem behavior who tend to demonstrate externalizing behaviors more than internalizing behaviors (Leve, Kim, & Pears, 2005). These differential patterns in the topography of problem behavior by gender groups strengthen the argument that girls may be characteristically different than boys and that gender is an important consideration in the study of problem behavior.

Developmental pathways. The body of research on the development of problem behavior also cautions the field on the topic of gender. In 1993, Terrie Moffitt and colleagues summarized and expanded on years of developmental research by presenting two distinct

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antisocial trajectories: life-course-persistent and adolescent-limited (Moffitt, 1990; Moffitt, 1993); this two-pathway model was bolstered by further evaluation (Patterson & Yoerger, 1993). According to Moffitt, individuals following the life-course-persistent pathway exhibit stable patterns of problem behavior from early childhood into adulthood and are often characterized by neuropsychological deficits. In contrast, individuals on the adolescent-limited pathway initiate problem behavior for the first time during adolescence, continue to exhibit problem behavior with reinforcement from peers, then transition into an adult life free of problem behavior (Moffitt, 1993).

The extent to which gender has been considered in relation to these theoretical perspectives is limited; however, current trends in research indicate a growing interest in the applicability of existing models to females. The two-pathway model was generally applied to both genders despite a lack of evidence supporting the applicability of these paradigms to females (e.g., Moffitt, 1993; Frances, Pincus, & First, 1994). Given that a greater proportion of deviant girls initiate persistent problem behavior during adolescence than during childhood (Tolan & Thomas, 1995; Silverthorn, Frick, & Reynolds 2001; Moffitt & Caspi, 2001; Odgers et al., 2008), Silverthorn & Frick (1999) posited a third pathway in which adolescent-onset problem behavior persist for girls into adulthood similar to early-onset boys (Silverthorn & Frick, 1999). In an evaluation of the two-pathway model, Silverthorn, Frick, & Reynolds (2001) compared the timing of onset, correlates, and outcomes of 72 adjudicated male and female youth and reported that many adolescent-onset females demonstrate life-course-persistent problem behavior. Psychologists eventually argued for differential models and called for rigorous research to investigate the multiple pathways that may represent antisocial girls (Fontaine, Carbonneau, Vitaro, Barker, & Tremblay, 2009). Though clarity on differential pathways has not been

achieved, the discourse in the field on the topic of gender and pathways of problem behavior substantiates girls as a population of interest to be investigated separately from boys.

Outcomes. Though adult outcomes are bleak for antisocial youth across genders, adolescent females face distinct difficulties beyond those of adolescent males. In general, all adolescents who exhibit problem behavior are more likely to experience future exposure to high-risk environments, substance abuse, and adjudication when compared to non-deviant peers (McGue & Iacono, 2005, 2008). Moreover, these students are at a greater risk for decreased life satisfaction, limited educational attainment, and fewer subsequent employment opportunities than their non-delinquent peers (Suldo et al., 2008; Chung, Little, & Steinberg, 2005). Girls, however, face these and additional adverse outcomes. Antisocial girls are likely to encounter day-to-day hardships and lasting health troubles in adulthood (Cauffman, 2008). In a review of 23 studies evaluating the adult outcomes of antisocial adolescent girls, Kathleen Pajer (1998) reported that evidence shows deviant females to be at risk for higher mortality rates, criminal behavior, psychiatric problems, dysfunctional relationships, poor educational achievement, and unstable work histories. Likewise, in a longitudinal study of adolescent females, Bardone and colleagues (1998) found that persistent problem behavior was linked to later medical problems, poorer overall health, sexually transmitted disease, and early pregnancy (Bardone, et al., 1998). Moffitt and colleagues examined youth with conduct problems to address possible gender differences in adult outcomes and found that female youth with a diagnosis of conduct disorder were likely to experience more depression, more medical problems, and a worse health rating than their male counterparts (Moffitt et al., 2001). In sum, students with persistent problem behavior face potentially devastating long-term outcomes, and these outcomes may be

compounded for females. Considered in total, findings showing differential patterns of topography, developmental pathways, and long-term outcomes, motivate a closer look at the development of problem behavior and the role of gender.

Peers and Adolescent Problem Behavior

Decades of theoretical and developmental work across the social sciences highlight peers as influential in the development of problem behavior and point to the school as a particularly relevant social context during adolescence (e.g., Hirschi, 1969; Akers, 1977; Patterson, DeBaryshe, & Ramsey, 1989; Moffitt, 1993).

Theories of deviance. Prominent criminologists have long recognized peer relationships in theories of deviance by identifying (a) social interaction as an avenue for learning deviant behaviors (Sutherland, 1939, 1947), (b) conformity to peer group conventions as a function of the social bond (Hirschi, 1969), and (c) peer reinforcement as a mechanism for learning and adopting deviant behaviors (Akers, 1977; Akers, Krohn, Lanza-Kaduce, & Radosevich, 1979). In other words, theorists have speculated that individuals interact within social circles to share common values, establish group norms, and reinforce the behaviors of other group members; and that an individual's commitment to peer group ideals is contingent on the degree to which that individual is attached to other group members.

However, early thought on deviance primarily centered on delinquent males, and disagreements about the role of gender in theories of deviance are seen in the collective work of feminist sociologists. Researchers have challenged the assumption that the link between deviant peer relationships and deviance are the same across genders and have presented arguments for

and against gender-based differential processes for social control and social learning. For example, Bjerregaard and Smith (1993) found similar effects of deviant peers on the delinquent involvement of male and female adolescents in a study of at-risk male and female youth. Conversely, Heimer (1996) posited that similar effects across genders are due to differential mechanisms of social control for male and female adolescents. To evaluate these processes, Heimer conducted a longitudinal study of delinquency and delinquent friendships on a national sample of 11- to 17-year-olds and found that anticipation of peer disapproval was significantly associated with delinquency for girls, but not for boys (Heimer, 1996, 1999). Such findings led to a rise in the view of gender as a social structure, and, subsequently, to gendered theories of deviance (Hagan, Gillis, & Simpson, 1987; McCarthy, Hagan, & Woodward, 1999; Heimer and DeCoster, 1999; Ogle, Maier-Katkin, & Bernard, 1995). However, some studies have yielded opposing findings that social bonds function similarly for males and females (Alarid, Burton, & Cullen, 2000), yet these social interactions in the context of deviance have been most frequently evaluated within families (Canter, 1982; Hagan et al., 1987). That is, gender differences in the link between peer processes and deviance have been understudied (Chapple, McQuillan, & Berdahl, 2005).

Developmental perspectives. Like the sociologists, prominent psychologists have highlighted the salience of social factors in decades of work on the development of problem behavior. In an outline of the developmental progression of antisocial behavior, Gerald Patterson and colleagues argued that behavior is shaped through coercive interactions in families and peer groups (Patterson, 1982; Patterson et al., 1992; Reid, Patterson, & Snyder, 2002); that is, an individual becomes more antisocial over time as the behavior and the social environment react to

each other in a cyclical pattern (Patterson & Cobb, 1973; Patterson et al., 1989; Patterson, Reid, & Dishion, 1992). Later, in a comprehensive framework of antisocial development, Granic and Patterson (2006) used a systems approach to underscore the interplay of a child's individual characteristics and family and peer dynamics by illustrating the cyclical nature of causal relationships between peer feedback processes, problem behavior, and patterns in social interactions that become predictable over time and often stabilize during adolescence (Bronfenbrenner, 1979).

In the adolescent years, social factors (e.g., peer affiliation) are especially important in the development and initiation of problem behavior. Throughout the middle school years, friendship becomes a more complex experience. Bukowski, Buhrmester, and Underwood (2011) describe this process as the "intensification of friendship," a time when adolescents turn to peers instead of parents for emotional support, loyalty, and intimacy. To this end, in an examination of the importance of friendship, Buhrmester (1990) found that friendship and socioemotional adjustment were more highly correlated during adolescence (13-16 years) than during preadolescence (10-13 years). Collectively, the developmental literature on problem behavior suggests that social factors may be most influential during adolescence, and the role of social dynamics may not be similar across gender groups.

Trends in the peer affiliation empirical literature. Peer affiliation has repeatedly been identified as a key predictor of adolescent problem behavior in the empirical literature. Patterson and Yoerger (1993) conducted a latent growth curve analysis of antisocial behavior on youth from 206 families and found that deviant peer affiliation predicted systematic increases in antisocial behavior during early adolescence. Subsequent studies confirmed the association

between peer relationships and problem behavior (Elliott & Menard, 1996; Mason, Hitchings, & Spoth, 2009). In a study of 155 juvenile offenders, Huey and colleagues (2000) found that a decrease in delinquent peer affiliation mediated the association between the implementation of Multisystemic Therapy (MST) and reductions in delinquent behavior for juvenile offenders (Huey, Henggeler, Brondino, & Pickrel, 2000). Comparably, Van Ryzin and Leve (2012) reduced contact with deviant peers during implementation of multidimensional treatment foster care (MTFC; Chamberlain, 2003) to lower rates of delinquency in a sample of adolescent girls. Some researchers have even investigated the mechanism by which peers influence problem behavior. For example, in a study of high-risk adolescents, Dishion (2000) reported that peers promote problem behavior within social groups by modeling, providing opportunities for, and reinforcing deviance. The study of peer-related processes in the development of problem behavior foreshadow important future directions and further define the understanding of peer affiliation as foundational in a line of research. This is first done by examining associations with peers with the aim to eventually understand peers as a mechanism to improve behavioral outcomes. In all, the literature clearly identifies peer affiliation as a common variable of interest and a key factor in the development of adolescent problem behavior.

Gaps in the Empirical Literature

Girls. Despite the numerous examinations of peer affiliation in relation to problem behavior, this link has yet to be confirmed for females. In fact, research on peer affiliation and problem behavior for girls is sparse, as behavioral research has largely targeted boys until recently (Patterson et al., 1992). Although limited, those studies including adolescent girls have

produced conflicting results with some researchers finding no gender differences in the association between peer affiliation and problem behavior while others have documented this relation. For example, Pepler and colleagues (2010) conducted a longitudinal study of the peer relationships and behavioral outcomes of 746 adolescents and found no gender differences in the link between peer delinquency and conduct problems; yet, in a study of 443 seventh graders, Kung and Farrell (2000) found that peer affiliation is a stronger predictor of problem behavior for adolescent females than for adolescent males. In a longitudinal study assessing the effect of deviant peer affiliation on problem behavior for adolescent girls, deviant peer affiliation predicted increases in aggressive and delinquent behaviors, but these effects did not hold over time (Mrug et al., 2014). As such, the generalizability of previous findings to females remains unclear.

Peer affiliation and school-based problem behavior. Peer affiliation may be one of the most crucial social factors influencing the behavioral outcomes of adolescent students (Hamm & Zhang, 2010; Wentzel, Carolyn, & Caldwell, 2004; Wentzel & Ramani, 2016). During the middle school years, students spend more time with peers than in prior developmental periods, and much of this time together is in the school setting (Lam, McHale, & Crouter, 2014; Rubin, Bukowski, & Parker, 2006). To date, an abundance of attention has been given broadly to peer dynamics in the school setting. A common research focus has been peer contagion and implications for practitioners (Gifford-Smith, Dodge, Dishion, & McCord, 2005). Additionally, researchers have investigated distinct attributes of the social contexts of classrooms (e.g., Cappella, Kim, Neal, & Jackson, 2013), peer dynamics as predictors of academic and behavioral outcomes (e.g., Olweus, 1993; Buhs et al., 2006), peer attention as a function of classroom

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problem behavior (e.g., McIntosh, Horner, Chard, Dickey, & Braun, 2008), friend selection in middle school (DeLay, Ha, Ryzin, Winter, & Dishion, 2016), and teachers' attunement to peer group affiliations (Hamm, Farmer, Dadisman, Gravelle, & Murray, 2011). Also, peers have been integral to core components of both academic and behavioral school-based interventions such as peer monitoring, peer mentoring, and peer-assisted learning strategies (Garringer & MacRae, 2008; Smith & Fowler, 1984; Fuchs, Fuchs, & Burish, 2000). However, in aggregate, the study of peer dynamics in the school setting reveals niche areas of focus and nuanced variables that represent a wide range of peer-related constructs. Only a small number of studies have addressed the specific effect of peer affiliation on school-based problem behavior (e.g., Trudeau, et al., 2012).

Though many researchers have evaluated peer affiliation on behaviors exhibited outside of school (e.g., Artega, Chen, & Reynolds, 2010), far fewer have evaluated the effect of peer affiliation and school-based problem behavior (e.g., Trudeau, Mason, Randall, Spoth, & Ralston, 2012). Consistent with the perspectives of early theorists, findings from the studies evaluating peer affiliation and school-based problem behavior demonstrate a predictive relationship and confirm the importance of social factors and the school environment in the development of problem behavior (e.g., Stewart, 2003; Hirschfield & Gasper, 2011). Considering the convergence of risk factors during adolescence and the literature on the particular relevance of friendship during this time, the direct link between peer affiliation and problem behavior at school is crucial; however, research on peers and problem behavior in the school setting is limited, especially for females.

Limitations in the existing literature. Given the discrepant findings for gendered

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processes of social control, social bonding, and social learning (Heimer, 1996, 1999; Alarid et al., 2000); generalization specifically to female populations is limited. Though some researchers have employed strategic data analyses procedures (e.g., Talbott & Thiede, 1999; Stickley et al., 2015; Trudeau et al., 2012), most have relied on data analyses techniques that are insufficient for interpreting results for females (e.g., Kochel et al., 2012; Dishion, Ha, & Veronneau, 2012; Wang & Dishion, 2012; Stewart, 2003; Hirschfield & Gasper, 2011). In fact, important methodological limitations persist across the published work on this topic.

In a systematic review of the empirical literature evaluating the link between peer affiliation and school-based problem behavior for girls, Sheaffer, Wehby, and Chow (in preparation) identified important deficits in the cumulative research on the relation between peer affiliation and school-based problem behavior. Findings indicate the following summative limitations: (a) a lack of consensus across researchers as to what definition of peer affiliation is most relevant for this research focus; (b) the inadequate measurement of both peer affiliation and school-based problem behavior variables (overuse of single-informant rating scales and self-report data); and (c) the common practice of analyzing old data (extant data collected at a time that may be dissimilar from current social contexts). To best add to the current literature and move the field toward effective intervention for at-risk adolescent girls, these deficits must be addressed in future research on this topic. In response to these findings, Sheaffer and colleagues recommend a robust evaluation of the link between deviant peer affiliation and school-based problem behavior for girls and boys in which researchers use multisource ratings of deviant peer affiliation across similar conditions from a valid and reliable rating scale, multimethod measures of multiple school-based problem behaviors, and separate statistical models by gender. By conducting mixed-gender, quality evaluations, findings will add to the literature by serving the

dual purpose of increasing what is known about girls while also building on the knowledge base by addressing potentially differential processes in the development of antisocial problem behavior across genders.

Purpose

Given that (a) school-based problem behavior is linked to subsequent problem behavior in and out of school and, in turn, negative short and long-term outcomes, (b) decades of prominent theoretical work highlight the important role of social influences in the development of problem behavior, and (c) the shortcomings of the collective literature evaluating the association between deviant peer affiliation and school-based problem behavior, especially for girls and in the school setting, a robust study is needed to evaluate the association between deviant peer affiliation and school-based problem behavior for male and female adolescents (see Figure 1).

To this end, an exploratory study was conducted to evaluate the association between deviant peer affiliation and school-based problem behavior for adolescents across gender and disability groups using a cross-sectional research design. Specifically, the following research questions were addressed: (1) Is deviant peer affiliation associated with school-based problem behavior after accounting for academic competence and socio-economic status? (2) Is the association between deviant peer affiliation and school-based problem behavior statistically significant for girls after accounting for academic competence and socio-economic status? (3) Does gender moderate the association between deviant peer affiliation and school-based problem behavior after accounting for academic competence and socio-economic status?

Though not the primary focus of this paper, the association between peer affiliation and

school-based problem behavior is also understudied for particularly at-risk subpopulations. Specifically, students with disabilities, who represent a considerable amount of annual discipline incidents in American schools (U.S. Department of Education, 2017), are insufficiently represented in previous studies. Because students with disabilities are more likely than their peers to experience behavior difficulties at school (Fauth, Platt, & Parsons, 2017) and may be vulnerable to peer influence when assigned to instructional settings or interventions with peers who exhibit problem behavior (Mager, Harris, & Howard, 2005), the following research questions were also addressed: (4) Does disability status moderate the association between deviant peer affiliation and school-based problem behavior? (5) Does disability status interact with gender to moderate the association between deviant peer affiliation and school-based problem behavior?

Based on the literature, the researcher hypothesized that the relation between deviant peer affiliation and school-based problem behavior would be positive and statistically significantly for the overall sample and for the girls sample specifically. However, because peer factors are repeatedly highlighted as especially relevant variables of interest for male and female adolescents, the author hypothesized that gender would not significantly moderate the link between deviant peer affiliation and school-based problem behavior.

RATIONALE

School-based problem behavior is linked to detrimental outcomes for students.

Female students represent a substantial amount of school-based problem behavior and demonstrate unique types of problem behavior, trajectories, and long-term outcomes.

The literature points to peer affiliation as a salient predictor of problem behavior.

The collective empirical literature on this topic has important limitations and methodological concerns and findings may not generalize to girls and extend to the school setting..

AIM 1:
Foundational Link

Gender

Deviant Peer Affiliation

School-based problem behavior

AIM 2:
Mechanism

Peer Processes (e.g., reinforcement, social bond)

Deviant Peer Affiliation

School-based problem behavior

Gender

AIM 3:
Intervention

Peer Processes (e.g., reinforcement, social bond)

Intervention

School-based problem behavior

Gender

GOAL
Fewer incidents of school-based problem behavior and improved outcomes for students
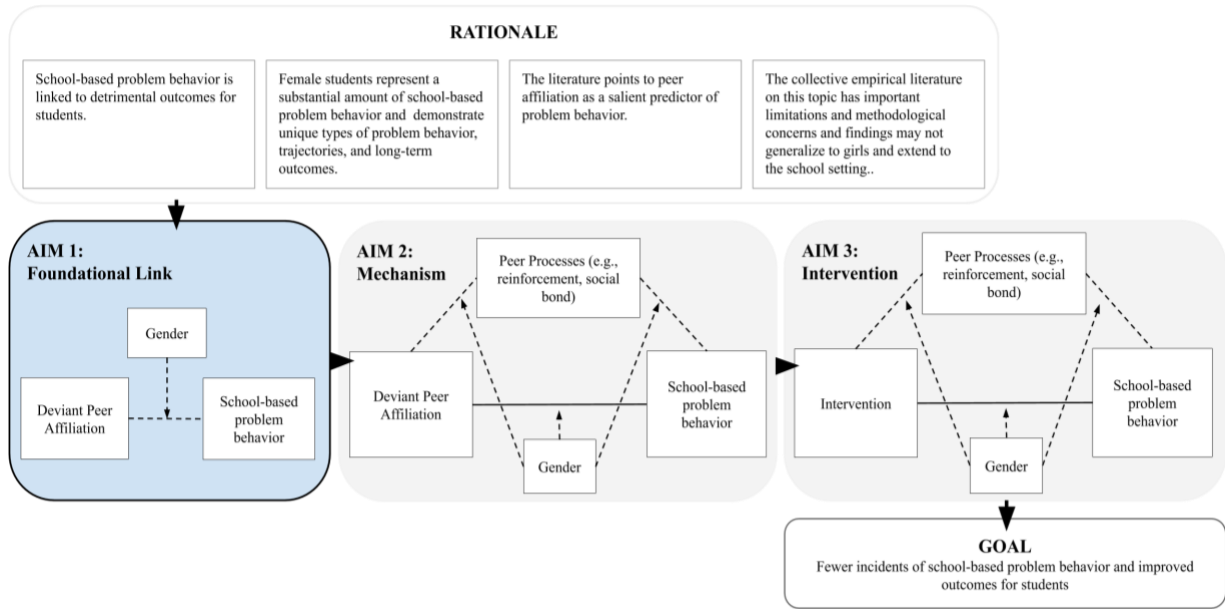
Figure 1. Rationale and Research Plan

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CHAPTER II

METHOD

Participants

The sample of participants included 146 middle school students and the literacy educators who supported them. To participate in the study, students had to be in grades 5-8 (ages 10-15 years) and could not be considered to have an intellectual disability (ID) under the Individuals with Disabilities Education Act (2004). Students could be enrolled in an inclusive, resource, or self-contained reading/language class. An English Language Arts (ELA) teacher for each eligible, assenting student participant was also invited to participate, and teacher participants were allowed to represent multiple students. Participants were selected only on the bases of the inclusion criteria and were not included or excluded based on race, ethnicity, or socioeconomic status; selection was equitable.

District-level approval. To obtain participants for this study, the researcher completed an district application to conduct research in a small, rural school district in middle Tennessee. The application included a comprehensive summary of the study and supplemental documents including fliers, consent forms, and measures. Upon district-level review and approval, the elected local school board completed a final review of the study proposal and granted official approval of the project.

School recruitment. The researcher collaborated with district representatives to identify

potential middle schools for participation and sent project fliers to two of the district's school principals via email. An administrator at one of the two targeted middle schools responded with interest in participating, and a subsequent phone meeting was held to share key study information. During this meeting, the principal agreed to participate in the study. The middle school served 661 students in grades 6-8, 47% of whom were female. Students with disabilities represented 17% of students, and 29% of students were considered economically disadvantaged. English learners made up 2.5% of students. Students represented the following racial/ethnic subgroups: Caucasian (79.3%), African American (8.4%), Latino (10.4%), and other subgroups including Native American and Pacific Islander (0.6%).

Teacher recruitment. After school-level approval was obtained, the researcher sent project fliers to potential teacher participants from each grade level (6-8) and met with interested parties during their respective planning periods. During these meetings, the researcher shared key information about the study, including student and teacher participant inclusion criteria, measures, and approximate study duration. After answering questions, prepared consent documents were distributed, and six teachers consented to participating in the study. The six consented teachers were general education ELA teachers and included three from the sixth grade, two from the seventh grade, and two from the eighth grade. All six participating teachers reported being female and Caucasian. For the highest degree earned, three teachers reported holding a master's degree, and three reported holding a bachelor's degree. Across teachers, teaching experience ranged from 2 to 24 years (M=11 years).

Student recruitment. Following consent, participating teachers sent study fliers, parent

letters, and consent forms home with all eligible students. Students were excluded from

participating if they were (a) younger than age 10; (b) older than age 15; or (c) considered to

have an intellectual disability under the Individuals with Disabilities Act. Teacher participants

asked parents to return signed forms to the school to then be collected by the research team.

Following parent consent, the researcher obtained student assent in person by reading aloud the

student assent form, explaining the details of the study, and answering student questions. As

indicated in the student assent form, students were informed that participation was a choice and

that withdrawal from the study at any time would be permitted without negative consequences.

The final sample of participants included 146 students. See Table 1 for sample demographics.

Table 1.

Participant Demographics as a Count and Percentage of the Sample (N=146)

	Female	SWD	All
Grade Level			
Sixth	24(16.44)	4(2.74)	36(24.66)
Seventh	28(19.18)	8(5.48)	51(34.93)
Eighth	27(18.49)	11(7.53)	59(40.41)
Gender			
Female		11(2.39)	79(54.11)
Disability Status			
SWD	11(2.39)		23(15.75)
Ethnicity			
Caucasian	68(46.58)	20(13.70)	124(84.93)
African American	2(1.37)	0(0.00)	5(3.42)
Latin	7(4.79)	2(1.37)	12(8.22)
Other	0(0.00)	1(0.68)	5(3.42)
SES			
ED	21(14.38)	6(4.11)	40(27.40)

Note. Percentage of sample in parentheses. SWD=students with disability. ED=
economically disadvantaged.

Procedures

The researcher employed a cross-sectional research design to evaluate the link between deviant peer affiliation and school-based problem behavior. As such, data were collected only once for each variable per student participant. Data collection occurred during the second semester of the school year. The researcher distributed teacher rating scales to teachers on a rolling basis as respective parent consent forms were received. Completed teacher ratings were collected weekly. Once all teacher rating scales were completed and collected, teachers received a stipend equal to $10 for each rated student participant. Student rating scales were administered in the school cafeteria over three sessions with student participants grouped by grade level during the related arts block. Each student data collection session required approximately 30 minutes of time. If a student was absent on the day of the group session, the researcher returned on a different day to administer the ratings scales in one-on-one or small group sessions.

Measures

Deviant peer affiliation. Peer affiliation was measured using teacher and student ratings on the Peer Affiliation subscale of the Peer Affiliation and Social Acceptance Scale (PASA, Dishion, Stormshak, Kim, O'Neil, 2014). The PASA is a brief and comprehensive multi-agent rating scale for measuring peer affiliation and social acceptance. For each of four items, student and teacher raters indicate the percentage of the student's peers who engage in given problem behaviors on a 5-point scale from "very few (less than 25%)" to "almost all (more than 75%)." The teacher rating scale includes the following items: (1) *What percentage of this student's friends are well-behaved?* (2) *What percentage of this student's friends misbehave or break rules*

in school? (3) *What percentage of this student's friends experiment with smoking or other substances in school or outside of school?* and (4) *What percentage of this student's friends dress or act like a gang member; and corresponding items are included on the student rating scale with similar wording (e.g., What percentage of your friends misbehaved or broke rules?).* In a longitudinal analysis, Dishion and colleagues (2014) demonstrated reliability and convergent, concurrent, and predictive validity of the PASA as a measure of deviant peer affiliation and social acceptance among peers for adolescents (Dishion et al., 2014).

School-based problem behavior. For each student participant, the researcher assessed problem behavior using three measures: (a) a count of school-based disciplinary actions including office disciplinary referrals, suspensions, expulsions, and school-related arrests as indicated in student records, (b) a teacher rating of school-based problem behavior, and (c) a self-report rating of school-based problem behavior.

School-based disciplinary actions. The district office provided a count of all office disciplinary referrals (ODRs) for the current school year for each student participant. Previous research suggests that ODRs are useful to identify students who are nonresponsive to universal behavioral supports (McIntosh, Campbell, Carter, & Zumbo, 2009) and that ODRs predict continued problem behavior, especially in middle schools (McIntosh, Frank, and Spaulding, 2010). Given this evidence, the researcher collected ODR data as a potential indicator of school-based problem behavior in this evaluation.

Social Skills Improvement System (SSIS; Gresham & Elliott, 2008). Teachers and students rated student problem behavior using the SSIS. The SSIS is a valid and reliable measure of social skills, problem behavior, and academic competence and yields standard scores,

percentile ranks, and behavior levels. Within the social skills scale, scores may be calculated for an overall measure of social skills (range: 0-138) and scores for the following subscales: communication (range: 0-18), cooperation (range: 0-21), assertion (range: 0-21), responsibility (range: 0-21), empathy (range: 0-18), engagement (range: 0-21), and self-control (range: 0-18). The problem behavior scale yields an overall score for problem behavior (range: 0-87) and subscale scores for externalizing (range: 0-36), bullying (range: 0-15), hyperactivity/inattention (range: 0-21), and internalizing (range: 0-30). Additionally, items from the problem behavior teacher rating scale may be combined to yield a subscale score for classroom problem behavior that is antisocial or isolating (e.g., "withdraws from others"; range: 0-45). The SSIS is standardized and nationally normed on a representative sample (Gresham, Elliott, Cook, Vance, Kettler, 2010). Previous assessments of internal consistency and test-retest reliability prove sufficient across all scales and subscales as all alpha coefficients are .70 or greater (Gresham, Elliott, Vance, & Cook, 2011). The student form is for students ages 8-18 and includes only the social skills and problem behavior scales (not academic competence). On 76 items, students indicate how true various statements are on a 4-point scale (e.g., "I hurt people when I am angry."). The teacher form includes all three scales (up to 140 items depending on the student's age) in which teachers indicate the frequency a behavior is exhibited by the student on a 4-point scale (e.g., "Disobeys rules or requests."). The entire SSIS rating scale requires approximately 10-25 minutes for completion.

Student demographics. The researcher requested relevant student-level demographic data. Specifically, the following student data was obtained: ethnicity, gender, age, special

education status under the Individuals with Disabilities Act (IDEA), and socioeconomic status. These data were delivered electronically over a secure server in a password-protected document.

Ethnicity. The district provided student ethnicity as defined in student files in district records. Categories of ethnicity included Black/African American, Hispanic/Latin, American Indian, Multiracial, and White/Caucasian.

Gender. The district provided student gender as labeled in student files in district records. Students were coded either male or female.

Age. The district provided the birth date on file in district records for each student participant.

Special education status. For each student identified as having a disability under IDEA, district personnel provided the disability label. The first author treated disability status as a binary variable and coded each student as either with or without a disability.

Student academic competence. Teachers rated students' academic competence with the Academic Competence subscale of the SSIS (see SSIS information above). The Academic Competence subscale consisted of seven items about the student's academic ability (e.g., "Compared with other students in my classroom, the overall academic performance of this student is:"). For each item, the teacher rated the student on a 5-point Likert scale.

Statistical Analyses

Model specification. Based on the evidence in the literature demonstrating a relation between deviant peer affiliation and problem behavior during adolescence, a theoretical model

was specified demonstrating correlated latent constructs of deviant peer affiliation and school-based problem behavior for male and female youth to be considered separately and together. In particular, the researcher specified a measurement model in which the observed rating scale items represented indicators of the latent variables, and the path model shows the conjectured dependency of the latent variables. Paths were modeled to be bidirectional to represent dependence; though relations may, in fact, be causal in nature, causality was not modeled nor investigated here. A structural equation model is a combination of structural and measurement models, where the structural model defines the relationship among latent variables and covariates, and the measurement model specifies the underlying structure of the latent constructs; the covariance matrix of the latent constructs is estimated by the structural model (McDonald & Ho, 2002). The specified model is shown in Figure 1, and the procedures used to estimate the specified model are described in subsequent sections.

Software and model estimation. Because student peer affiliation and problem behavior were rated by teachers, student data may have varied systematically by teacher rater causing biased results (Kreft & Leeuw, 1998). To address the potential nesting effect, clustered standard errors were used to account for potential error covariance due to students being nested in teachers. To estimate the hypothesized correlation between deviant peer affiliation and school-based problem behavior as indicated in the theoretical model (see Figure 1), MPlus Version 7.0 was used to conduct multigroup structural equation modeling (SEM) with clustered standard errors (Byrne, 2013). In multigroup SEM, multiple group models may be developed to test measurement invariance and determine whether or not different groups within the sample share the same theoretical models, in this case gender and disability groups, and constraints may be

easily set to quantify the difference for parameters of interest (Arbuckle & Wothke, 2003; Chen, Sousa, & West, 2005). In other words, the multigroup structural model allowed for the examination of the association of interest across and within gender and disability groups.

Model estimation and testing. The researcher estimated measurement models, tested goodness of fit on a series of models, and then examined the relation between latent constructs for deviant peer affiliation and various aspects of school-based problem behavior with the final model (see Figures 1 and 2). Factor analysis was used to build the measurement model and to minimize potential for measurement error due to the random target variables. The author created latent constructs with multiple observed indicators for both deviant peer affiliation and school-based problem behavior (e.g., items rated). Model fit refers to how well the sample data fit the proposed model, and corresponding model fit statistics demonstrate the degree to which the model-implied variance-covariance matrices differ from those of the observed sample. Model fit was assessed using root mean square error of approximation, which accounts for sample size and model complexity (RMSEA; Hu & Bentler, 1999), comparative fit index (CFI; Bentler, 1990), and Tucker-Lewis Index (TLI; Tucker & Lewis, 1973). Five percent of data were missing due to unanswered rating scale items. Full information maximum likelihood (FIML) and listwise deletion was used in MPlus to estimate missing values. This strategy is recommended for the handling of missing data in structural equation models (Enders & Bandalos, 2001).

CHAPTER III

RESULTS

Power

The researcher conducted a power analysis using a Monte Carlo simulation with 500

iterations; this analysis established the number of participants needed to run SEM to evaluate the

relation between deviant peer affiliation and school-based problem behavior while controlling

for academic competence and socio-economic status for adolescents across gender and disability

groups. Results indicated a minimum sample size of 150 participants to have power of 0.85 or

larger for the parameters of interest.

Preliminary Analyses

Exploratory factor analysis. The author conducted exploratory factor analysis and

confirmatory factor analysis to inspect the factor structure for both constructs of interest. For

deviant peer affiliation, exploratory factor analysis showed that all items across teacher and

student ratings loaded onto a single factor signifying a one-factor model that showed good fit

(RMSEA=0.059; CFI=0.97; TLI= 0.959). Unlike the items for student and teacher ratings of

deviant peer affiliation, the items for school-based problem behavior did not load onto a single

factor.

Confirmatory factor analysis. Confirmatory factor analysis for school-based problem

behavior showed that when all items across teacher and student ratings were entered, only

models with seven or more factors showed adequate fit. To improve model fit, the researcher

conducted separate analyses for student and teacher ratings of school-based problem behavior.

Subscale dimensions were cross-validated as item loadings for the study sample aligned with the

those identified in the SSIS manual for both student and teacher rating scales, indicating the

factor structure was very stable (Gresham & Elliott, 2008). Student ratings of school-based

problem behavior demonstrated good fit for a 4-factor model: externalizing, bullying,

hyperactivity/inattention, and internalizing (RMSEA=0.067, CFI=0.947, TLI=0.941). Analyses

of teacher ratings yielded a 5-factor model: externalizing, bullying, hyperactivity/inattention,

internalizing, and antisocial (RMSEA=0.088, CFI=0.814, TLI=0.797). Model fit meets the

criteria outlined by Kline (2005) who recommended CFI and TLI values be .90 or greater and

RMSEA values be .06 or less. Table 2 shows means and standard deviations for all indicator

variables across the overall sample and by gender group and disability status for the final student

and teacher models.

Table 2.

Variable Means and Standard Deviations

Variable	All M	All SD	Males M	Males SD	Females M	Females SD	SWD M	SWD SD	SWND M	SWND SD
SES	0.28	0.45	0.28	0.45	0.28	0.45	0.43	0.51	0.25	0.43
AC	91. 37	26.41	88.18	27.67	93.89	25.25	90.17	15.56	91.59	28.00
DPA										
Student	2.08	0.57	2.04	0.68	2.11	0.47	2.33	0.73	2.04	0.53
Teacher	2.04	0.45	2.07	0.55	2.01	0.35	2.37	0.43	1.97	0.42
SPB										
EXT										
Student	7.42	6.48	8.49	7.24	6.57	5.72	11.26	5.71	6.71	6.39
Teacher	3.90	4.36	5.11	5.07	2.93	3.43	6.96	3.89	3.32	4.21
BULLY										
Student	1.78	2.40	2.34	3.05	1.33	1.61	2.00	2.32	1.73	2.43
Teacher	0.69	1.50	0.86	1.84	0.55	1.15	1.22	2.15	0.59	1.33
HYP										
Student	6.97	4.75	7.15	4.86	6.83	4.69	8.61	4.10	6.67	4.82
Teacher	3.86	3.40	5.08	3.84	2.89	2.66	6.00	3.19	3.46	3.30
INT										
Student	7.47	6.88	6.09	6.08	8.56	7.30	5.70	4.73	7.80	7.17
Teacher	3.80	3.23	3.66	3.35	3.90	3.15	3.91	3.27	3.77	3.24
ANT										
Student	-	-	-	-	-	-	-	-	-	-
Teacher	17.67	6.67	15.94	6.69	19.05	6.38	16.13	5.63	17.96	6.83

Note. Antisocial was not a factor for the student model. SWD=students with disability. SWND=students with no disability. SES=socio-economic status. AC=academic competence. DPA=deviant peer affiliation. SPB=school-based problem behavior. EXT=externalizing. BULLY=bullying. HYP=hyperactivity/inattention. INT=internalizing. ANT=antisocial.

Modeling. As described, items loaded differently across teacher and student rating scales for school-based problem behavior and, when collapsed, showed poor fit. Therefore, the researcher decided to break student and teacher ratings into separate models. In line with the strategy used for school-based problem behavior, the researcher separated the deviant peer affiliation construct by rater in order to handle both variables of interest similarly, despite the fact that teacher and student ratings of deviant peer affiliation collapsed onto one latent variable

with good fit. In other words, the final data analyses plan included two separate models, a student model and a teacher model.

As the purpose of this study was to evaluate the link between deviant peer affiliation and school-based problem behavior across and within gender and disability subgroups, the researcher first ran a multigroup, multilevel structural equation model latent factors for deviant peer affiliation and school-based problem behavior with gender and disability status as grouping variables. However, the models failed to converge, suggesting the issue may have been related to the combination of structural and multilevel modeling procedures introducing too many parameters into the model. To adjust for this, a multigroup SEM with clustered standard errors was employed as an alternative method for accounting for nested data, thereby removing the burden of the parameters of the multilevel model with success.

Power. Structural equation modeling is most often used as a large sample technique (Kline, 2011). In fact, Jackson (2003) put forth the *N:q* rule recommending 20 participants for each estimated parameter. Because the rating scale items for school-based problem behavior loaded onto multiple latent constructs, the model yielded more parameters than anticipated. Consequently, the sample size was too small to meet the recommended 20:1 ratio recommended for SEM (Costello & Osborne, 2005; Jackson, 2003). With four latent constructs for school-based problem behavior, the student model included five parameter estimates plus the estimates of thresholds for the categorical variables. The teacher model had five latent variables for school-based problem behavior resulting in six total parameters and the thresholds. The sample of 146 participants was sufficient for either of these models to satisfy the recommended ratio of cases to parameters, but when the sample is split for the multigroup analyses, the ideal number of participants effectively doubles. Approximately 150 participants were needed for each gender

and disability group to achieve adequate power for the desired within-group analyses, as was indicated by the Monte Carlo simulation used to determine sample size. Therefore, it should be noted that this study was underpowered, thus its designation as an exploratory study.

Final model. For the final data analyses plan, multigroup SEM with clustered standard errors across gender and disability groups was conducted for a student model and a teacher model. The student model estimated parameters for student ratings of deviant peer affiliation and student-ratings of school-based problem behavior, controlling for socio-economic status and teacher-rated academic competence. The teacher model estimated the association between teacher ratings of deviant peer affiliation and teacher ratings of school-based problem behavior, controlling for socio-economic status and teacher-rated academic competence across gender groups. It should be noted that these covariates were not entered when the teacher model was run across disability groups because so few students were in the disability group. A summary of data analyses procedures is presented in Figure 1.

Model fit was good for the final models when multiple groups were not considered (Teacher Model: CFI =.779, TLI =.761, RMSEA =.083; Student Model: CFI =.943 TLI =.937, RMSEA =.036). However, the small sample size limited the ability to assess model fit on the multigroup model. In order to run the multigroup model, the researcher treated the categorical responses as continuous, which allowed the model to converge despite being underpowered for the multigroup analysis. Though this strategy was not likely to markedly change parameter estimates, model fit was still poor due to inaccurate treatment of manifest variables. Prior work shows moderate support for the treatment of categorical variables as continuous in SEM procedures, and maximum likelihood estimation procedures are sensitive to small samples (Rhemtulla, Brosseau-Liard, & Savalei, 2012). Ultimately, the small sample size and complexity

of the multigroup model prevented convergence during model fit testing. Accordingly, the multigroup parameter estimates reported in this study should be interpreted with caution as manifest variables were considered continuous in the model. The final models are shown in Figure 2.
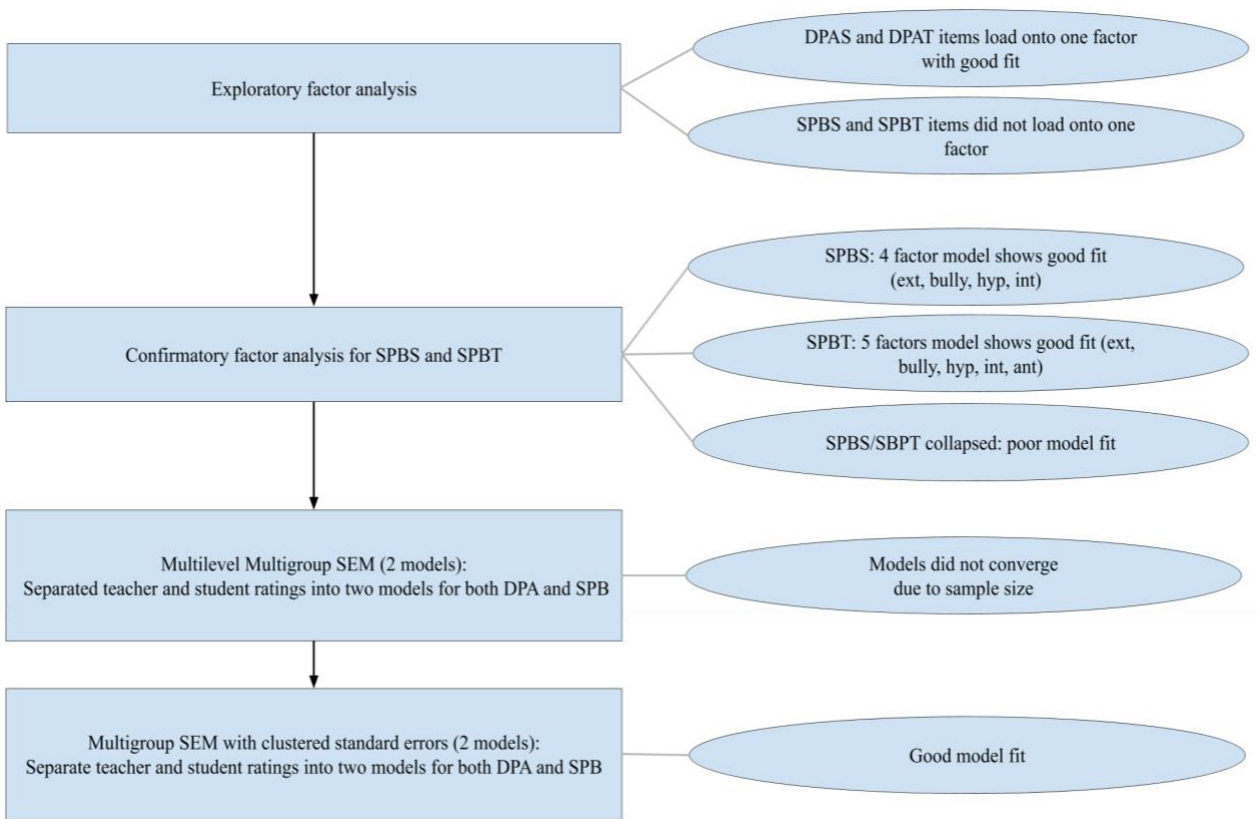

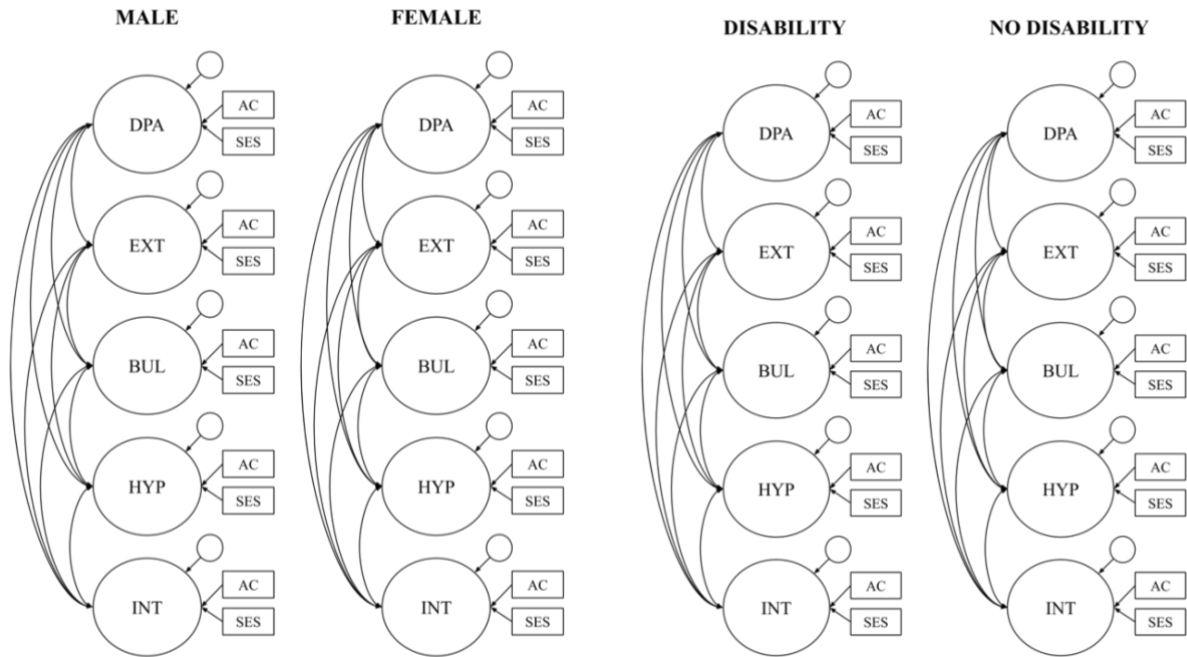*Figure 2.* Summary of Data Analyses Procedures

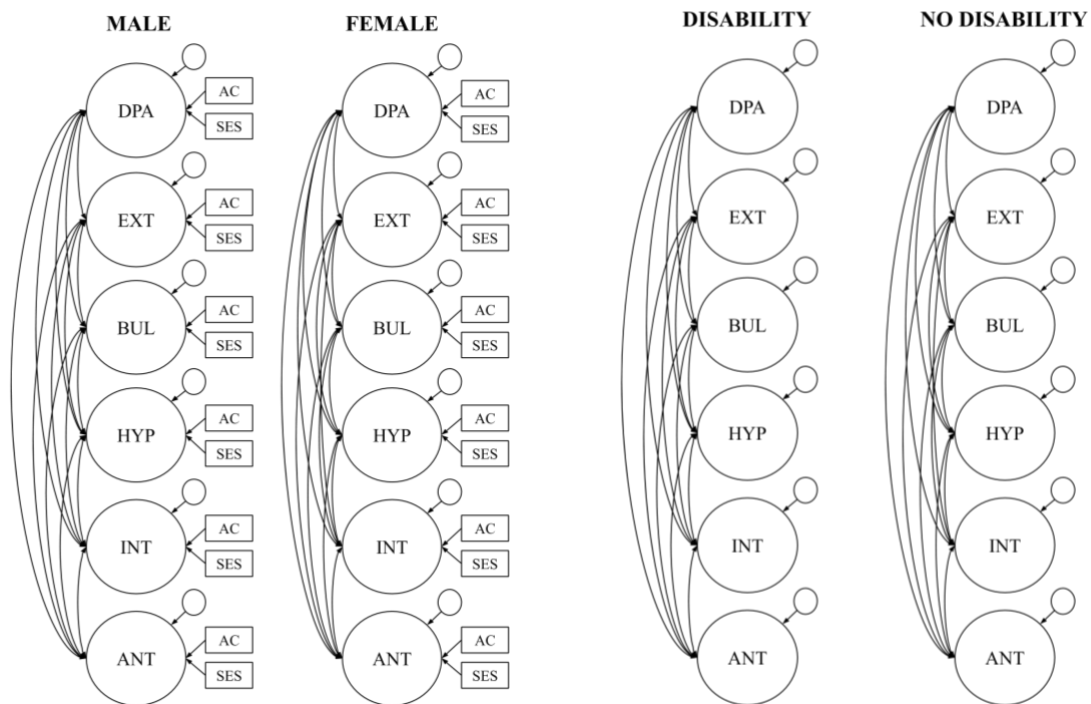*Figure 3.* Multigroup SEM Student Models by Gender and Disability Status

Figure 4. Multigroup SEM Teacher Models by Gender and Disability Status

Parameter Estimates for Multigroup SEM

To test the association between deviant peer affiliation and school-based problem behavior for the overall sample, deviant peer affiliation was specified to predict the factors loaded onto school-based problem behavior as identified in each model, controlling for academic competence and socioeconomic status. A multigroup SEM was conducted with gender and disability subsamples to estimate the associations separately by gender and disability subgroups and to evaluate group differences in the association of interest. The interaction between gender and disability as a potential moderator in the link between deviant peer affiliation and school-based problem behavior was not possible on either model due to insufficient sample size.

Student model. The four-factor student model included externalizing, bullying, hyperactivity/inattention, and internalizing. For the overall sample, model parameters estimated positive associations between deviant peer affiliation and all four factors. Of the four factors loaded onto school-based problem behavior, only associations with externalizing ($\varphi = .70, p = .00$) and hyperactivity/inattention ($\varphi = .64, p = .00$)were statistically significant. Covariance and parameter estimates for the student model are presented in Tables 3 and 4.

Gender. Once model fit was established for the overall sample, model fit for each gender group was compared to the fit of the global model, and differences were measured. For girls, the student model indicated positive relations between deviant peer affiliation and all four factors of school-based problem behavior; only the links with externalizing ($\varphi = .70, p = .03$) and hyperactivity($\varphi = .63, p = .02$) were statistically significant. Gender differences were not found in the link between deviant peer affiliation and factors of school-based problem behavior on the student model.

Disability. Difference in association by disability status was not assessed on student

ratings (model did not converge). This is likely due to the small number of students with

disabilities in the sample.

Table 3.

Covariance Matrix: Student Model

	SES	AC	DPAS	EXT	BULLY	HYP	INT
SES	1.00						
AC	-0.09	1.00					
DPAS	-0.01	0.00	1.00				
EXT	0.04	-0.04	0.33	1.00			
BULLY	0.06	0.02	0.19	0.80	1.00		
HYP	-0.03	-0.04	0.36	0.83	0.61	1.00	
INT	-0.02	0.04	0.15	0.46	0.43	0.50	1.00

Note. SES=socio-economic status. AC=academic competence. EXT=externalizing.
BULLY=bullying. HYP=hyperactivity/inattention. INT=internalizing.

Table 4.

Results for multigroup SEM with clustered standard errors: Student ratings

	Deviant Peer Affiliation										
SPB	All	*SE*	Boys	*SE*	Girls	*SE*	SWND	*SE*	SWD	*SE*	Gen
EXT	.70***	0.18	.31*	.14	.70**	.13	.79***	.13	-.11	.79	.30
BULLY	.33	0.29	.65***	.10	.73	.40	.48**	.22	-.07	.34	.08
HYP	.64***	0.08	.18	.11	.63*	.48	.64***	.08	-.25	.27	.23
INT	.07	0.15	.39	.37	.07	.39	.16	.17	-.98***	.06	.24

Note. SPB=school-based problem behavior. EXT=externalizing. BULLY=bullying.
HYP=hyperactivity/inattention. INT=internalizing. SWD=students with disability. SWND= students
with no disability. Gen=gender group difference. Dis=disability group difference.
*p< .05. **p<.01. ***p<.001.

Teacher Model. Externalizing, bullying, hyperactivity/inattention, internalizing, and

antisocial loaded onto school-based problem behavior for the 5-factor teacher model. For the full

sample, parameters estimated statistically significant positive associations between deviant peer affiliation and school-based problem behavior on all five factors (externalizing: $\varphi = .94, p < .001$; bullying $\varphi = .88, p < .001$; hyperactivity: $\varphi = .95, p < .001$; internalizing $\varphi = .56, p < .001$; antisocial $\varphi = .91, p < .001$). Covariance and parameter estimates for the teacher model are shown in Tables 5 and 6.

Gender. For girls, parameter estimates for the relation between deviant peer affiliation and all five factors were positive and statistically significant (externalizing: $\varphi = .95, p = .00$; bullying $\varphi = .92, p = .00$; hyperactivity: $\varphi = .95, p = .00$; internalizing $\varphi = .69, p = .00$; antisocial $\varphi = .90, p = .00$). Significant differences in the association between deviant peer affiliation and school-based problem behavior by gender were only found on teacher ratings of deviant peer affiliation and bullying ($\varphi_b - \varphi_g = .71, p = .02$) and teacher ratings of deviant peer affiliation and internalizing ($\varphi_b - \varphi_g = .86, p = .00$), with both associations greater for girls. Gender did not moderate the relation between deviant peer affiliation and school-based problem behavior on other factors in the teacher model.

Disability. Due to small sample size, the multigroup teacher model by disability did not converge when the control variables were entered. Thus, teacher model parameters for disability group were estimated without controlling for academic competence or socio-economic status. The association between deviant peer affiliation and school-based problem behavior on the teacher model differed significantly by disability status on deviant peer affiliation and internalizing ($\varphi_{swd} - \varphi_{swnd} = .29, p = .00$). However, the association between deviant peer affiliation and the remaining factors (i.e., externalizing, bullying, hyperactivity/inattention, antisocial) did not differ significantly by student disability status.

Table 5.

Covariance Matrix: Teacher Model

	SES	AC	DPAS	EXT	BULLY	HYP	INT	AUT
SES	1.00							
AC	-0.05	1.00						
DPAT	-0.06	-0.01	1.00					
EXT	-0.01	-0.02	0.81	1.00				
BULLY	-0.01	-0.02	0.81	1.00	1.00			
HYP	-0.02	-0.02	0.81	0.99	0.61	1.00		
INT	0.001	-0.02	0.79	0.99	0.43	0.50	1.00	
ANT	-0.16	0.17	0.47	.57	.56	.57	.55	1.00

Note. SES=socio-economic status. AC=academic competence. DPAT=deviant peer affiliation teacher ratings. EXT=externalizing. BULLY=bullying. HYP=hyperactivity/inattention. INT=internalizing. ANT=antisocial.
*p< .05. **p<.01. ***p<.001.

Table 6.

Results for multigroup SEM with clustered standard errors: Teacher ratings

	Deviant Peer Affiliation											
SPB	All	*SE*	Boys	SE	Girls	*SE*	ND	*SE*	SWD	*SE*	Gen	Dis
EXT	.94***	.04	.70**	.22	.95***	.01	.38	.69	.98***	.07	.25	.60
BULLY	.88***	.04	.21	.30	.92***	.02	.39	.29	.76***	.13	.71*	.37
HYP	.95***	.02	.80***	.13	.95***	.02	.58	.62	.95***	.03	.15	.37
INT	.56***	.56	-.17*	.09	.69***	.13	.20	.30	.80***	.04	.86***	.60**
ANT	.91***	.05	.28	.67	.90***	.02	.41	.32	.97***	.02	.62	.56

Note. SPB= school-based problem behavior. EXT=externalizing. BULLY=bullying. HYP=hyperactivity/inattention. INT=internalizing. ANT=antisocial. SWD= students with disability. ND= students with no disability. Gen= gender group difference. Dis= disability group difference.
*p< .05. **p<.01. ***p<.001.

CHAPTER IV

DISCUSSION

The Link Between Deviant Peers and School-based Problem Behavior

The purpose of this study was to explore the link between deviant peer affiliation and school-based problem behavior for adolescents across gender and disability subgroups. This focus was motivated by the longstanding salience of peer-related variables in the literature examining the development of adolescent problem behavior (e.g., Moffitt, 1993). The proven link between school-based problem behavior and more serious problem behavior outside of school (e.g., substance abuse and adjudication, Hemphill et al., 2006) and the resulting deleterious outcomes for offenders (McGue & Iacono, 2005) bolster the rationale for more focused study of peer factors that may be related to school-based problem behavior as potential points of intervention.

Full sample. The first aim of this study was to replicate findings in the existing literature evaluating the relation between deviant peer affiliation and school-based problem behavior with mixed gender samples (Wang & Dishion, 2012). Controlling for socio-economic status and academic competence, parameters were estimated on separate models for student ratings and teacher ratings. Parameter estimates for the student model on the full sample showed positive associations between deviant peer affiliation and all four factors of school-based problem behavior. Of the four factors of school-based problem behavior, only associations with externalizing and hyperactivity/inattention were statistically significant; associations with bullying and internalizing behavior were not. On the teacher model, parameters estimated

statistically significant positive relations between deviant peer affiliation and school-based problem behavior on all five factors: externalizing, bullying, hyperactivity/inattention, internalizing, and antisocial.

As hypothesized, findings demonstrate strong evidence for the association between deviant peer affiliation and school-based problem behavior that are consistent with prior work evaluating the link between peers and problem behavior outside of the school context (e.g., Mason et al., 2009). Students who rated their peers with higher rates of deviance were likely to also rate themselves as having higher rates of problem behavior, especially externalizing problem behaviors and hyperactivity/inattention. Teacher ratings followed a similar pattern of positive associations, except parameters were statistically significant across *all* latent constructs of problem behavior. That is, students who were considered by teachers to demonstrate high rates of problem behavior were more likely than their classmates with low teacher ratings of problem behavior to be rated by teachers as having deviant peers. Although this finding is in line with previous studies of deviant peer affiliation and problem behavior across mixed gender samples, it adds to the literature by demonstrating that these findings hold true for problem behavior in the school context and across multiple raters.

Girls. The specific aim to assess gender differences stemmed from the lack of attention given to the development of problem behavior for girls. Girls make up a sizeable proportion of school-based behavioral incidents each year, and their trajectories include distinctive difficulties; yet, emphases on girls in the cumulative developmental and intervention literature on problem behavior to date is limited. Moreover, extracting findings for girls from existing studies of mixed-gender samples has proven to be precarious due to limitations in the analyses procedures.

This study sought to address these gaps by employing a data analytic strategy that included within-group examinations of the association between deviant peer affiliation and school-based problem behavior for girls. Unlike prior studies assessing the link between peer-related variables and problem behavior in which authors considered girls comparatively (in reference to boys) by treating gender as a predictor and covariate (e.g., Wang & Dishion, 2012), this strategy yielded results for each gender subgroup as well as across subgroups, allowing girls to be considered independently *and* comparatively. Additionally, gender group differences were measured and tested for statistical significance. Consequently, the current study offered a comprehensive look at gender in the context of the link between student- and teacher-rated peer affiliation and school-based problem behavior.

Given that multigroup SEM was conducted with gender groups, parameters were estimated for girls and boys separately. The student model indicated positive relations between deviant peer affiliation and school-based problem behavior on all four indicators of school-based problem behavior; however, only the link with externalizing was statistically significant. Like students in the full sample, girls who self-reported high rates of externalizing behavior were more likely to report having deviant peers. On the teacher model, parameter estimates for the relation between deviant peer affiliation and all five factors were positive and statistically significant for girls, consistent with the findings for the full sample. That is, girls who were rated by teachers as having high rates of problem behavior were likely to be rated as having deviant peers.

Implications. Findings offer clarity to the mixed results in the existing literature and confirm the hypothesis that peer affiliation is linked to school-based problem behavior for girls. Moreover, generalization of findings from previous studies to today's youth and the current

school setting has been limited by the frequent use of extant data representing students from decades ago. Though core components of social processes may hold over time, key changes in the means by which peers interact are unaccounted for in data representing teens of the 20th century. For example, the increase of technology and social media use by students is principally relevant because it implies that modes of communication and peer interactions are notably different for today's adolescent students. The findings of this study indicate that peer affiliation predicted problem behavior for girls in the current climate of youth, as was found in studies conducted in previous decades, despite rapidly advancing technology and contemporary platforms for engaging with peers. In other words, how adolescents connect with peers may not alter the importance of who those peers are and to what degree those peers engage in problem behavior. Continuing this line of research in the context of modern-day technology will be especially important as online social networking continues to evolve and the proportion of adolescent peer interactions occurring online increases (Lenhart & Madden, 2007; Reich & Espinoza, 2012; Shapiro & Margolin, 2014).

Gender as a Moderator

Because prior literature indicates dissimilar profiles and pathways for adolescents with problem behavior (e.g, Card et al., 2008; Moffitt, 1993), gender was assessed as a possible moderator in the association between deviant peer affiliation and school-based problem behavior. The multiple group method of structural equation modeling allowed for the testing of group differences in addition to estimating parameters within and across sample subgroups. Remarkably, on student and teacher ratings, associations between deviant peer affiliation and school-based problem behavior were stronger for girls than for boys on all latent factors of

problem behavior. However, gender differences were only statistically significant for teacher ratings of the links between deviant peer affiliation and bullying and teacher ratings of deviant peer affiliation and internalizing behaviors. Gender did not significantly moderate the relation between deviant peer affiliation and school-based problem behavior on other factors in the teacher model (i.e., externalizing, hyperactivity/inattention, antisocial). Gender differences were not found in the link between deviant peer affiliation and factors of school-based problem behavior on the student model at all. It was hypothesized that gender would not moderate the link between deviant peer affiliation and school-based problem behavior, expecting the association to be strong for both boys and girls. Findings confirm this hypothesis for most factors of problem behavior but highlight bullying and internalizing as variables for additional consideration in the context of gender.

Bullying. The examination of gender as a moderator in the link between deviant peer affiliation and school-based problem behavior yielded findings indicating that the association between peer affiliation and bullying at school is stronger for girls than for boys. Although the association was positive for both genders, it was not statistically significant for boys as it was for girls. This finding aligns with prior work showing that girls are more prone to aggress relationally than physically, a direct contrast to the opposite phenomenon that plagues boys with problem behavior (Crick et al., 2007; Marsee et al., 2014).

Given that girls are more disposed to relational aggression, these data suggest that female deviant peer groups may be prone to acts of relational aggression in the form of bullying. This is especially dangerous in the school context where offenders and vulnerable students are all subject to compulsory attendance laws and acts of relational aggression are unlikely to be detected by teachers and school staff (Yoon & Kerber, 2003). If girls with deviant peers are more

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likely than boys with deviant peers to exhibit bullying, predominately female deviant peer groups may necessitate interventions geared toward different behavioral outcomes (i.e., bullying) than predominately male deviant peer groups.

Internalizing. In the current study, student and teacher ratings revealed the association between peer affiliation and internalizing school-based problem behavior to be stronger for girls than for boys. Indicators of internalizing problem behavior included issues related to interrupted sleep, fatigue, fear, embarrassment, loneliness, nervousness, and sadness. Girls who were rated by teachers as having deviant peers were more likely to have high ratings of internalizing problem behavior. Interestingly, teacher ratings produced associations for boys and girls in opposite directions. High teacher ratings of deviant peer affiliation predicted lower teacher ratings of internalizing problem behavior for boys. This could be due to an expectation of outward expressions of problem behavior among boys, as teachers rated boys higher than girls on externalizing problem behavior, and the association between teacher-rated deviant peer affiliation and externalizing problem behavior was positive and significant for boys. This supplements previous findings that internalizing is more common for girls with problem behavior (Leve et al., 2005) and bolsters the case for considering gender profiles of students with problem behavior in the study of peer processes and intervention.

Disability

Given that students with IEPs often receive special education services in separate settings and are more likely than peers without IEPs to demonstrate problem behavior (Fauth et al., 2017), an exploratory evaluation was conducted of the disability status as a moderator in the link between deviant peer affiliation and school-based problem behavior. To assess whether disability

status moderates the association, multigroup SEM parameter estimates were assessed by disability group (disability versus no disability). Students with significant cognitive impairments were not included in the study, so the disability group included students with high incidence disabilities. As the number of students with disabilities in the overall sample was small, all students with disabilities were put into a single subgroup and specific disability type was not considered. Like the multigroup model by gender groups, this model yielded results within disability groups as well as across and between groups.

Between-group estimates. Only the association between deviant peer affiliation and internalizing differed significantly by disability status on deviant peer affiliation and internalizing behaviors. That is, students who were rated by teachers as demonstrating internalizing behaviors were likely to also be rated by teachers as having deviant peers; this correlation was stronger for students with disabilities than for students without disabilities. The association between deviant peer affiliation and the remaining factors (i.e., externalizing, bullying, hyperactivity/inattention, antisocial) did not differ significantly by student disability status. Difference in association by disability status was not assessed on student ratings (model did not converge).

Within-group estimates. All measured associations between deviant peer affiliation and school-based problem behavior were positive and significant for teacher ratings of students with disabilities. Though all associations were also positive for students without disabilities, none of those associations were statistically significant. On student ratings, students with disabilities reported negative associations on all factors of problem behavior, with ratings showing a correlation in the opposite direction than teacher ratings. Teachers ratings indicate a positive association between deviant peer affiliation and all loaded factors of school-based problem

behavior (more deviant peers, more problem behavior), while student ratings demonstrate a negative association (more deviant peers, less problem behavior). Though the difference in ratings between students and teachers was not evaluated in this study, the discrepant results show that students with disabilities and teachers rated key variables differently.

Results indicate that teacher perceptions of students with disabilities and the students' perceptions of themselves diverged. Indeed, on average, students with disabilities rated themselves more harshly than teachers rated them across all measures of school-based problem behavior; conversely, average ratings of deviant peer affiliation were aligned across teacher and student ratings. In sum, item responses imply that teachers may have viewed the behavior of students with disabilities more favorably than students with disabilities viewed their own behavior. Since the teacher raters for this study were general education teachers and not special educators, these students likely spent a portion of instructional time with other adults or in another setting. As students with disabilities are likely to experience more reprimands than their non-disabled peers (Nelson & Roberts, 2000; Scott, Alter, & Hirn, 2011), the students with disabilities in this study may have experienced reprimands away from the general education teacher who rated their behavior. The lack of correspondence between self-report and teacher-report ratings of problem behavior for students with disabilities may reflect a differential exposure to the behavioral feedback given to those students with disabilities between the students receiving the feedback and their general education teachers.

Foundations for Further Research

In light of the diverse body of work on this topic that including varied aspects of peer involvement for adolescents engaging in problem behavior, this exploratory study is the first step

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in a progression of research examining the role of peers in the development of problem behavior by testing the fundamental hypothesis that having deviant peer affiliation predicts problem behavior at school for both boys and girls. In total, study findings offer evidence to support the stated hypotheses and add to the rationale for the continuation of a line of research in which investigators (1) establish a clear link between the deviant peer affiliation and adolescent school-based problem behavior within and across gender groups; (2) investigate the mechanism by which deviant peer affiliation and school-based problem behavior are associated (e.g., peer-related processes) within and across gender groups ; and (3) develop school-based interventions that (a) exploit peer processes and (b) may be tailored to particular gender profiles to improve rates of problem behavior for students within and across gender groups. This study contributes to this line of research by providing evidence of the foundational relation between deviant peer affiliation and school-based problem behavior. With the knowledge that students who are affiliated with peers who present problem behavior are likely to demonstrate problem behavior themselves, investigators are justified in exploring the processes by which that problem behavior is learned and shared among peers.

Limitations

This study was designed with careful attention to major gaps and shortcomings in the existing literature on the topic of peers and problem behavior and, thus, provides a noteworthy contribution to the field. Specifically, this study improves the current literature on this topic by (a) including males and females in the sample, (b) analyzing the data to yield results within and across gender groups, and (c) measuring problem behavior in the school setting. The study of peer factors and their association to school-based problem behavior has been largely unfocused

and a logical line of research has not been clearly defined. Also, previous work has not adequately generalized to females.

In the current study, a sample of both males and females were included and an analytic strategy was employed that allowed for within and across group estimates as well as group comparisons. Specifically, this study offers findings for females while maintaining males as an important point of reference on the same measures, as other studies have often failed to do. In doing so, study findings offer what previous work has not: generalizable findings and a comprehensive look at study variables across a full sample, by gender subgroups, and with a comparison. Previous studies on this topic have offered results for girls or a measure or gender difference, but few have offered both.

Still, this study was conducted with several limitations that should be noted. Sample size is below the recommended 20:1 *N:q* ratio (Jackson, 2003). As a result, multilevel SEM was not possible. Additionally, the variables were treated as continuous instead of categorical in *MPlus* which could lead to inaccurate parameter estimates. The small sample of students with disabilities also prevented the inclusion of covariates in the models used to evaluate disability group, so results regarding students with disabilities do not account for socio-economic status or academic competence. Future studies should include adequate sample size to enable a full model with multilevel multigroup SEM and good model fit while treating variables appropriately and controlling for relevant covariates during data analyses procedures.

Conclusion

The goal of the current study was to evaluate the association between deviant peer affiliation and school-based problem behavior for male and female adolescents. The researcher

sought to lay the foundation for a linear research agenda that progresses incrementally from examinations of principal correlations between peer affiliation and school behavior to the identification of peer-related mechanisms of change in the development of behavioral challenges at school. Subsequent research may target peer-related mechanisms of change in the development and testing of school-based interventions and consider gender and disability group differences in variables of interest. By corroborating prior evidence demonstrating a relation between deviant peer affiliation and school-based problem behavior for boys and dispelling doubts about the generalization of the association to girls, this study provides a springboard for the continuation of this line of research and offers direction for future researchers looking to improve outcomes for students who exhibit challenging behavior at school and are at increased risk for additional trouble beyond the classroom.

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