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Does School Count? School Climate and Behavior Problems
for Youth With ASD, ID, or TD

A Thesis submitted in partial satisfaction
of the requirements for the degree of

Master of Arts

in

Education

by

Marina Murphy

June 2015

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ABSTRACT OF THE THESIS

Does School Count? School Climate and Behavior Problems for Youth With ASD, ID, or TD

by

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Master of Arts, Graduate Program in Education
University of California, Riverside, June 2015
Dr. Jan Blacher, Chairperson

Perceptions of school climate have been found to impact levels of behavior problems and psychopathology in typically developing adolescents; however, less is known about the significance of school climate for youth with autism spectrum disorder (ASD) or intellectual disability (ID). The present study investigated differences in youth and teacher reports of school climate based on disability status (ASD, ID or typical development [TD]), and determined the concurrent and predictive relationships between school climate and externalizing and internalizing behavior problems. Participants were 185 adolescents with ASD (N = 45), ID (N = 40), or TD (N = 100), assessed at ages 13 and 15. Youth with ASD or ID reported lower school engagement than their TD peers, and that teachers of youth with ASD reported lower peer acceptance for their students. Youth-reported affiliation with teachers and school bonding, as well as teacher-reported peer acceptance, were associated with externalizing and internalizing problems at age 13; additionally, teacher-reported peer acceptance was associated with internalizing problems. Age 13 externalizing problems and affiliation with teachers significantly predicted externalizing problems at age 15, while age 13 internalizing problems and classroom placement significantly predicted internalizing problems at age 15.

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Does School Count? School Climate and Behavior Problems for Youth With ASD, ID, or TD

Children and adolescents spend a significant portion of their time in school, and this environment can have lasting effects on their developmental competence or maladjustment. Most school effectiveness research has examined academic outcomes, such as achievement, grade point average, or dropping out (Goodenow, 1993; Reyes, Brackett, Rivers, White, & Salovey, 2012). In broadening this perspective, Roeser, Eccles, and Sameroff (2000) called for an integrated and interdisciplinary approach to schooling, development, mental health, and psychopathology in order to maximize student success. Indeed, there has been growing interest in the effects of the school environment, i.e., school climate, on nonacademic outcomes such as mental health and behavior problems (Anderman, 2002; Kuperminc, Leadbeater, & Blatt, 2001; Schochet, Dadds, Ham, & Montague, 2006). This study proposes an examination of school climate variables connected to improved student behavior and mental health.

Given this, a number of studies have investigated the role that perceptions of school climate play in students' nonacademic outcomes, as the feeling of belonging has been implicated as a construct that is important to psychological well-being (Baumeister & Leary, 1995). Anderman (2002) conducted multilevel regressions predicting youth adjustment using a large dataset of seventh- to twelfth-graders. The student-level models suggested that students with a higher sense of school belonging experienced lower depression, social rejection, and school problems. Similarly, in a community prediction study of 2,022 students ages 12 to 14 years, Schochet and colleagues (2006) found that

school connectedness, or lack thereof, predicted depressive symptoms for boys and girls, anxiety symptoms for girls, and general functioning for boys, after controlling for prior levels of the respective symptoms. Perceptions of school climate, rather than objective measurements of a set of institutional characteristics, have been emphasized in this literature. One longitudinal study found that positive perceptions of social climate moderated negative effects of students' self-criticism on internalizing and externalizing problems (Kuperminc et al., 2001). The significance of school climate, including school connectedness, social involvement, and relationships with teachers and peers, has been studied in typically developing adolescents, but little research has extended these questions to adolescents with autism spectrum disorder (ASD) or intellectual disability (ID), groups that are already at risk for social and behavior problems per the nature of these disorders. The present study aims to assess the impact of school climate variables on psychopathology and behavioral outcomes for students belonging to these groups.

Youth with ASD and ID in Schools

Schools today are tasked with educating a growing student population that has a diverse set of needs. Children with ASD or ID make up nearly 2% of the total enrollment in U.S. schools (U.S. Department of Education, National Center for Education Statistics, 2013). The rate of ASD diagnoses continues to rise, with one in 68 children identified with ASD today compared to one in 88 in 2012 and one in 150 in 2002 (Centers for Disease Control [CDC], 2014). As the school-aged population with ASD grows, schools must adapt and meet student needs in kind.

Autism spectrum disorder. The core deficits associated with ASD include impairment in social communication and the presence of restricted and repetitive behaviors (*DSM-5*; American Psychiatric Association [APA], 2013). Social communication deficits include impairment in social-emotional reciprocity; nonverbal behaviors, such as gesturing and facial expressions; delays in the development of language; and relationship building. Restricted and repetitive behaviors include stereotyped speech, such as echolalia and idiosyncratic phrases, e.g., scripted speech; adherence to routines, including ritualized nonverbal and verbal behavior; restricted interests; and abnormal reactivity to sensory stimuli. Although ASD symptoms exist on a spectrum, these core deficits often impact the functioning of children with ASD at school in academic, social, and behavioral domains.

Intellectual disability. ID is a distinct diagnosis from ASD, although there is significant overlap between these disorders. Comorbidity estimates for children with ASD who also have ID have ranged widely from 26 to 68% of cases (Fombonne, 2005); however, in the present study youth were not included in the ASD group if they also had ID. ID involves impaired mental abilities that have an effect on adaptive functioning in the following areas: the conceptual domain, including skills in language, reading, writing, math, reasoning, knowledge, and memory; the social domain, including empathy, social judgment, interpersonal communication skills, and the ability to make friendships; and the practical domain, focusing on self-management of personal care, job responsibilities, money management, recreation, and organizing school and work (APA, 2013).

The DSM-5 considers ID to be about two standard deviations or more below the norm on IQ, a score of 70 or below. However, research has found that individuals with borderline intellectual functioning, i.e., with IQs ranging from 71 to 84, experience similar difficulties to those with a diagnosis of ID (APA, 2013; Fenning, Baker, Baker, & Crnic, 2007). Therefore, these groups are sometimes combined to form the ID sample, as in the present study. The core deficits associated with ID point to a number of concerns regarding school functioning for students with this disorder. In particular, deficits in the conceptual domain may interfere with academic learning, while social skills deficits are likely to impact relationships with both peers and teachers (Eisenhower, Baker, & Blacher, 2007).

Behavior problems and psychopathology. Youth with ASD or ID are at significantly increased risk for developing behavior problems and/or psychopathology. Children with ID were found to be at about three times higher risk of developing behavioral and psychiatric problems, compared to their typically developing counterparts (B. L. Baker et al., 2003); a recent review of nine studies found that children and adolescents with ID faced 2.8 to 4.5 times the risk of mental disorder compared to TD youth (Einfeld, Ellis, & Emerson, 2011). Students with disabilities tend to be nominated for problem behavior more often than their peers, and, in turn, they experience more peer rejection (Farmer, 2000). Troubling prevalence estimates of psychopathology range from 30%-60% for children with ID, compared to 10%-15% for children with TD (Dekker, Koot, Ends, & Verhulst, 2002; Emerson, 2003).

Levels of psychopathology may be even higher for youth with ASD; Brereton, Tonge, and Einfeld (2006) found higher rates of mental health problems measured by the Developmental Behavior Checklist in children and adolescents (ages 4-19) with autism than in those with ID. Results showed that 73.5% of the autism subjects scored above the clinical cut-off score of 46, which was a significantly higher level of psychopathology than for the comparison subjects with ID, 40% of whom scored in the clinical range. Loukas and Robinson (2004) found that for adolescents with low effortful control, which reflects the ability to focus attention and actively control emotional responses, perceptions of school climate moderated levels of depressive symptoms for boys and conduct problems for girls. Although this study did not explicitly include participants with disabilities nor examine the effect of disability status, the findings may be extended to adolescents with disabilities who experience difficulties with emotional/behavioral regulation and social skills. Externalizing and internalizing behavior problems can severely impact school functioning (Breslau et al., 2009; Cook, Greenberg, & Kusche, 1993; Perfect & Morris, 2011), therefore it is critical to address and intervene with these concerns in the school setting.

Quality of relationships. In addition to the heightened risk for behavior problems and psychopathology, students with ID or ASD are more likely to experience lower quality relationships and poorer interactions with their teachers as well as with their peers. A review by Gresham and MacMillan (1997) found that children with mild disabilities struggled to navigate both peer-related and teacher-related adjustments in the school setting. These children had poorer social skills, displayed more problem

behaviors, and experienced poor acceptance and/or rejection by their peers. These difficulties may alter the quality of school climate for children with disabilities. Children with ID were found to have poorer relationships with their teachers compared to their TD peers in one study, with less closeness and more conflict and dependency (Eisenhower et al., 2007). Children with ASD may experience even more negative relationships with their teachers; a recent study found that student-teacher relationships (STRs) for 8-year-old children with ASD were poorer, with less closeness and more conflict, than for comparison groups of children with ID and TD (Blacher, Howell, Lauderdale-Littin, DiGennaro Reed, & Laugeson, 2014). Sadly, the quality of STRs may be particularly important for students most at risk for poorer outcomes (e.g., students with disabilities).

In addition, there are differences in friendship quality between adolescents with and without ASD or ID. A sample of elementary-aged children with high-functioning ASD reported poorer quality friendships and fewer reciprocal friendships, and were more likely to be left out of social networks, based on peer and teacher reports (Kasari, Locke, Gulsrud, & Rotheram-Fuller, 2011). Difficulties with friendship persist for individuals with ASD as they grow up; Orsmond, Krauss, and Seltzer (2004) examined the peer relationships of 235 adolescents and adults with ASD and found low prevalence of having friendships and participating in social activities, based on mother report. Additionally, having peer relationships was predicted by better social skills and younger age. Youth with ID also struggle with friendship. Prior research has indicated that adolescents with ID perceived lower quality friendship and reported having fewer friends compared to their typically developing peers (Heiman, 2000), and that they experienced

difficulties with finding and holding on to friends during the transition to adolescence (Matheson, Olsen & Weisner, 2007).

These studies illustrate the current inventory of risk factors for school difficulties that children with ASD or ID encounter, including peer rejection, poor social skills, and school behavior problems. In spite of the fact that they tend to experience poorer quality relationships, a sample of students with disabilities in one study actually rated social support as more important than did their typically developing peers (Malecki & Demaray, 2003), indicating a mismatch between desired support and reality. Students with ASD or ID experience difficulties in the areas of social support and relationships, which are key components of school connectedness; therefore, there is a high probability that they have unique perceptions of this construct, or perhaps unrealistic ones, that may impact their behavior.

Transition to Adolescence

Adolescence is a period of major transition for youth with disabilities and typical development alike. During the progression from childhood to adulthood, youth must navigate physical changes, expanding environments, and new societal expectations, which can be particularly difficult for individuals with disabilities. Although they may be behind their typically developing peers in terms of cognitive, social, and physical development, adolescents with disabilities face some of the same challenges as TD youth (Hauser-Cram & Krauss, 2004). During adolescence, family, friends, teachers, and strangers begin to expect more from children who are beginning to resemble adults (Kuperminc et al., 2001).

The onset of puberty typically takes place during middle school, when students no longer have a home classroom and must better manage their schedules and possessions, not to mention their social interactions and relationships. They often have multiple teachers, resulting in a less personal and protective climate than was likely experienced in elementary school (Kasen et al., 2004). Research on younger children with ID has found that the transition to school is often accompanied by difficulties in adjustment. McIntyre, Blacher, and Baker (2006) found that children with ID transitioning to kindergarten had more behavior problems, poorer student-teacher relationships, fewer social skills, and fewer self-regulation skills than typically developing children based on reports collected from their teachers. The less positive early school experiences of children with ID may very well persist into the later elementary years and affect future transitions in the school environment, e.g., moving from middle to high school.

Adolescence is already a time of physical, emotional, and environmental changes, making many typically developing youth more likely to experience behavior problems or mental health concerns; for example, internalizing problems, including depressive symptoms and self-esteem deficits, tend to increase as children grow into adolescence (McCauley et al., 1993). Youth with ID or ASD are also more likely to develop these issues, as reviewed above. Additionally, research with typically developing populations suggests that students' levels of satisfaction with school decline as students progress through the school grades (King, Huebner, Suldo, & Valois, 2006). Therefore, there is reason to believe that significant changes both in youth wellbeing and perceptions of school may take place during adolescence.

Defining School Climate

The definition of school climate varies throughout the literature, making it complicated to measure this construct. In particular, some studies emphasized the climates of whole schools, while others focused on the more proximal experiences of individuals. School climate, school connectedness, and school bonding are overlapping terms used in the study of perceptions of the school environment. The literature emphasizing students' and teachers' perceptions of school climate is based on social-ecological and developmental theories, which highlight the impact that home, community, and school environments have on development. Bronfenbrenner's (1979) social-ecological theory emphasizes the reciprocal transactions between individuals and their environments, with perceptions as central to understanding these transactions. This ecological model of child development underscores the role of the school in socializing children. Students likely pursue both social and academic goals in the school setting. They are surrounded by peers from whom they may learn nearly as much as, if not more than, from their teachers. Further, teachers do not simply deliver the curriculum; they structure the social environment with norms and expectations for student behavior and interactions (Baker, Dilly, Aupperlee, & Patil, 2003). Therefore, school-based practitioners have the opportunity to mold aspects of school climate to promote improved student outcomes.

Dimensions of school climate. Kasen, Johnson, and Cohen (1990) proposed several dimensions of school climate that may influence student psychopathology or well-being, with the relationship domain being the most influential. This domain includes

student involvement, affiliation, and teacher support. Kasen and colleagues found that TD students' perceptions of school emotional and behavioral climate were related longitudinally to variations in mothers' reports of student psychopathology and alcohol use over time. Similarly, Bond and colleagues (2007) conceptualized school connectedness as including a belief that school is important, encompassing student-teacher relationships, relationships with peers, opportunities to be involved, and feelings of belonging. Given the multiple aspects listed, the authors did caution that the construct of school connectedness is generally not well defined and involves many overlapping concepts, labels, and measures (Bond et al., 2007). Wang, Berry, and Swearer (2013) defined school climate as the environment built by "interactions among and between adults and students and individuals' beliefs and attitudes (e.g., feelings about school, approval/disapproval of bullying)" (p. 297). Similarly, Haynes, Emmons, & Ben-Avie (1997) characterized school climate as the quality and consistency of interpersonal interactions within the school community. These interpretations of school climate emphasize both the relationships that students observe and experience and their perceptions of the school environment.

Student-teacher relationships. A key aspect of school climate involves the relationships that students have. One important relationship is with their teachers. Although it may be more constant during the elementary years, the student-teacher relationship is still a significant part of students' middle and high school experiences. Ryan and Patrick (2001) proposed that teacher support is an important component of the classroom social environment, and that non-parental adults, including teachers, are

particularly influential as sources of support during adolescence. Malecki and Demaray (2003) found that perceived emotional support from teachers was implicated in the development of social skills and academic competence for students in grades 5 to 8. This study measured four types of perceived support (emotional, informational, appraisal, and instrumental) and found that teacher support accounted for significant variance in social skills, academic competence, and school maladjustment. This finding suggests that, although teachers are typically considered sources of information and evaluation, it is their emotional support that may be most important for student outcomes.

Peer relationships. School is also a place that is ripe with opportunities to interact with and befriend peers. Friendship is a central experience throughout childhood and adolescence and has been found to predict positive wellbeing outcomes in adulthood by increasing interpersonal competence (Buhrmester, 1996). The socialization that results from friendships is a key aspect of the school experience for most children as they construct their identities, and counts as part of their informal education (Farmer, 2000). Unfortunately, increased levels of interactions with peers also increase the risk that bullying will occur. Childhood bullying and victimization by peers most commonly takes place in the school setting (Olweus, 1978). What is more, the literature indicates that an unhealthy school climate makes it more likely that bullying behavior will occur (Wang et al., 2013).

Methodology for Studying School Climate

Student perceptions of school climate. Students' perceptions of school provide invaluable data in the understanding of school climate, although it is recognized that

methodological issues such as response bias may occur. Preexisting behavior problems or psychopathology may influence student ratings of school climate, possibly leading to false conclusions about directionality (Kasen et al., 1990). However, objective observation of schools by outsiders is limited in scope and fails to capture the emotional valence of bonds and relationships. Furthermore, researchers have argued that student perceptions are more pertinent to the understanding of individual adjustment than objective measurements of school characteristics (Loukas & Robinson, 2004; Malecki & Demaray, 2003). People react to experiences as they perceive them, not based on some neutral assessment of reality, so student perceptions of school climate must be considered in examining and improving school adjustment and behavior (Haynes et al., 1997).

Teacher perceptions of school climate. Teacher perceptions of school climate variables also contribute important dimensions to the measurement of this construct. Hamre and Pianta (2001) examined the longitudinal relationship between teachers' perceptions of their relationships with their students and student outcomes. Kindergarten teachers completed the Student-Teacher Relationship Scale (STRS; Pianta, 2001), as well as a measure of children's classroom behavior, for 179 students who remained in the district through eighth grade. Hierarchical regression analyses indicated that a composite of STR Conflict and Dependency explained unique variance in eighth grade behavioral outcomes, including positive work habits and the number of disciplinary infractions. The predictive power of the teacher-rated STR was stronger for behavioral outcomes than for academic outcomes, particularly for students already at risk for behavior problems, suggesting that even over the span of eight years, teacher perceptions of this relationship

have important implications for outcomes in adolescence. The authors noted the need to also measure the STR from the student perspective, arguing that these perceptions are valuable indicators, particularly as children grow older.

School Climate and Adjustment of TD Students

A number of studies have examined behavioral and mental health outcomes for typically developing adolescents applying the aforementioned methodological approaches. Anderman (2002) studied the perceived sense of school belonging for students in grades 7-12 and the relationship to outcomes such as motivation, achievement, and attitudes toward school. Using multilevel modeling of data from the National Longitudinal Study of Adolescent Health, Anderman first examined school-level predictors of belonging, then examined how perceived school belonging was connected to psychological outcomes (controlling for school-level effects). He found that higher levels of perceived school belonging were related to lower depression, social rejection, and school problems and greater optimism and GPA.

A cross-sectional study conducted by Kuperminc, Leadbeater, Emmons, and Blatt (1997) examined the significance of perceived school climate at a large urban middle school, particularly regarding variation in students' externalizing and internalizing problems. Nearly 500 students reported on school climate using the multidimensional School Climate Survey (Haynes et al., 1997), which includes items such as "My school is a safe place," and "Everyone is treated equally well at my school." These perceptions of the quality and frequency of interactions with adults and other students accounted for 2-16% of the variance in boys' externalizing and internalizing problems (self and teacher

report), and 2% of the variance in girls' externalizing problems (self report only).

According to these results, school climate may matter more for male student outcomes than for girls, perhaps due to heightened surveillance of male behavior in school settings.

Bond and colleagues (2007) used data from a cohort of 2678 youth participating in the Gatehouse Project, a schoolwide intervention program implemented in Australia, to determine the relationship between school connectedness and youth outcomes related to wellbeing. Their longitudinal findings indicated that secondary school students who reported low school connectedness early on were more likely to have mental health problems and to use substances two years later. Higher levels of social connectedness served as an added protective factor against the development of depressive symptoms, suggesting that relationships play a key role (Bond et al., 2007).

Wang (2009) used structural equation modeling with a sample of 1,042 students from 23 middle schools to examine the impact of perceived school climate and social competence. This study investigated how these predictor variables, measured in seventh grade, affected adolescents' adjustment in eighth grade, defined as their levels of deviant behaviors and depressive symptoms. In this study, school climate included the following five components: promotion of performance goals, promotion of mastery goals, support of autonomy, promotion of discussion, and teacher emotional support. These facets were assessed via adolescents' self report on the School Climate Measure (Roeser & Eccles, 1998). Results indicated that most school climate components were negatively related to levels of adolescents' deviant behaviors and depression, controlling for previous adjustment. In addition, social competence mediated the relationship between perceived

school climate and adjustment outcomes. Wang emphasized the significance of adolescents' perceptions of school climate, as well as their levels of social competence, in explaining behavioral problems further down the line. The use of structural equation modeling also allowed for causal interpretation of these findings, suggesting meaningful avenues for school-based intervention targeting students' perceptions and social competence.

King and colleagues (2006) utilized self-report measures of school satisfaction, perceived social support, and problem behaviors of 974 students in three middle and two high schools in order to study school climate. A multiple regression analysis showed that three variables contributed significantly to school satisfaction, with teacher support contributing the most unique variance followed by parent support and then classmate support. Furthermore, hierarchical multiple regressions indicated that school satisfaction mediated the relationship between social support and both externalizing and internalizing behaviors, again illustrating the important influence held by students' perceptions of and satisfaction with school.

In line with the research emphasizing student perceptions over objective accounts of school climate, Way, Reddy, and Rhodes (2007) applied a cross-domain latent growth curve model to 1,451 early adolescents' ratings of teacher support, peer support, student autonomy in the classroom, and clarity and consistency in school rules and regulations, all components of school climate. Measures of adolescent behavior problems, self-esteem, and depressive symptoms were also collected. The authors found that student perceptions of teacher and peer support declined significantly with every year of middle

school. Students also reported increasing levels of depressive symptoms, behavior problems, and decreasing self-esteem over the years. What is more, analyses showed that student perceptions of school climate had unidirectional effects on their wellbeing such that it was perceptions that predicted adjustment and not the other way around. The patterns of change and directionality indicated by this study provide strong support for the influence of perceived school climate.

School engagement has also been studied as a domain of school climate, and includes behavioral engagement (involving participation in activities, positive conduct, and the absence of disruptive behaviors) and emotional engagement (involving a student's emotional reactions to school, teacher, and classmates; Fredricks, Blumenfeld, & Paris, 2004). Li and Lerner (2011) examined the longitudinal trajectories of these domains for adolescents across grades 5 to 8, and found that the initial levels and shapes of the growth varied with respect to gender, SES, and race/ethnicity. Additionally, results suggested that youth with the highest trajectories of school engagement experienced optimal outcomes in grades, depression, delinquency, and substance use, while those with decreasing behavioral or emotional engagement reported poor outcomes. These findings identified both risk factors and negative outcomes associated with lower trajectories of school engagement, and help to justify the study of other factors that may put youth at risk such as disability status.

A recent study examined similar relationships between patterns of school engagement and problem behaviors over time (Wang & Fredricks, 2014). Measures of dropout status, youth problem behaviors, and school engagement were collected from a

representative sample of nearly 1,300 youth and their families. Wang and Fredricks conducted structural equation modeling analyses and found that adolescents with declines in behavioral and emotional school engagement reported increased delinquency and substance use over time. Furthermore, a path model showed significant reciprocal associations between school engagement and delinquency and substance use at multiple time points, suggesting that school engagement and problem behavior are mutually reinforcing over time. These results are consistent with the social-ecological approach to development and highlight the complex interplay of environmental and individual risk factors that influence one another in a dynamic manner.

Limitations in the Research

Little research has examined group differences in the aspects of school climate among adolescents with ASD, ID, and TD. The extant literature provides mixed results regarding the “school belonging” experiences of students with disabilities compared to their typically developing peers. Further, such experiences have not been compared between students with intellectual disabilities and students with autism spectrum disorders. What is more, in spite of the fact that students with disabilities are at increased risk for behavioral and mental health concerns, studies have neglected to examine the effect that school connectedness variables have on these outcomes. Some studies that include students with disabilities do not describe in detail which disability categories are included or define disability status very broadly using student, parent, or teacher report (e.g., Malecki & Demaray, 2003).

Kuperminc et al. (1997) posited that a true understanding of development from a social-ecological perspective requires the examination of demographic variables linked to maladjustment, such as socioeconomic status or ethnicity, that may impact perceptions of school. Disability status is another risk variable that remains largely unexamined with the notable exception of a study by McMahon, Parnes, Keys, and Viola (2008) on the school belonging of low-income urban youth with disabilities. McMahon and colleagues measured school stressors, school belonging, academic outcomes, and psychological outcomes of African American and Latino students in grades 5-12, a large number of whom had disabilities. The resulting data were an excellent fit to their theoretical model supporting the central role that school belonging plays in both academic and psychological outcomes for students with disabilities.

Methodological weaknesses exist in the current literature on typically developing youth and school climate as well. Many studies employed cross-sectional designs, which do not allow for the examination of individual changes over time and directionality of effects. Additionally, few published studies on the impact of school climate for typically developing youth utilized multiple informants to assess dimensions of the construct (Wang, 2009). Most work has not addressed the multidimensional nature of school climate, which is affected by several areas of functioning (e.g., behavioral, emotional, and cognitive engagement; Wang & Fredricks, 2014) and relationships with both peers and teachers. Therefore, the present study examines varied dimensions of school climate as rated by multiple informants, i.e., students and teachers. Parent ratings of behavior outcomes are also considered.

The Present Study

The present study aimed to investigate the dimensions and significance of school climate experienced by adolescents with both disabilities and typical development. The goals of this study were to examine differences in school experiences by disability status, and to understand how school climate impacted adolescent wellbeing both concurrently and longitudinally. This study addressed the following research questions: (1a) Are there differences in youth-reported school experiences, including school climate, belonging, and relationships, provided by adolescents with ASD, ID, and typical development? (1b) Do teacher reports of student characteristics (social acceptance, relationship with teacher) differ among adolescents with ASD, ID, and TD? (2a) What are the concurrent relationships between youth-reported school variables and mother-reported externalizing and internalizing behavior problems at age 13? (2b) What are the concurrent relationships between teacher-reported school variables and mother-reported externalizing and internalizing behavior problems? (3a) To what extent do measures of school climate, belonging, and relationships at age 13 predict youth externalizing and internalizing behavior problems at age 15? (3b) Do teacher-reported variables account for additional variance in the prediction of youth behavior problems at age 15?

Method

Participants

Participants were recruited from a larger longitudinal study examining school and child influences on the development of behavior problems in children with and without disabilities. When the study began it was conducted at three universities across the

country: two in Southern California, and one in Pennsylvania (Eunice Kennedy Shriver National Institute of Child Health and Human Development Grant # HD34879-1459). Children with and without disabilities began their participation in this study beginning at age 3 and continued through adolescence; a newer sample comprised of youth with high-functioning autism spectrum disorder (ASD) joined the study at age 13.

The children with an intellectual disability (ID) were referred to the larger study predominantly by local service agencies, such as the California Regional Centers, that assist families with developmental disabilities. Children with ID were classified according to the Diagnostic and Statistical Manual of Mental Disorders-Fourth Edition Revised (DSM-IV-TR; American Psychiatric Association, 2000). As part of study procedures, children met criteria for ID if they had an IQ in the clinical or borderline range, below 85 on the Wechsler Intelligence Scale-Fourth Edition (WISC-IV; Wechsler, 2003), and a standard score below 85 on the Vineland Scales of Adaptive Behavior-II (VABS; Sparrow, Cicchetti, & Balla, 2005). As mentioned above, children with borderline intellectual functioning were included in the ID group because past literature suggests they experience similar challenges to those with clinical levels of impairment (Fenning et al., 2007).

The typically developing (TD) children were recruited for the larger study mainly through local schools and community programs. These children were included in the TD group if they scored in the range of normal cognitive development ($IQ > 85$) at the time of recruitment. In addition, the children included in this group did not have any diagnosis of developmental disability or record of special education.

Participants with autism spectrum disorder (ASD) were recruited for the larger study through local service agencies, schools, and regional centers. These youth were included in the ASD group if they had received a previous diagnosis of ASD as well as an IQ on the Wechsler Intelligence Scale for Children (WISC-IV; Wechsler, 2003) of 70 or above. Therefore, youth in the ASD sample did not have a concurrent diagnosis of ID. They met criteria for ASD based on evaluations by outside agencies, and/or were categorized under autistic-like behaviors at their schools based on their Individualized Education Plan (IEP) or 504 Plan.

The sample for the present study consisted of three groups for which the necessary data were available: youth with ASD (N = 45; mean IQ = 99.3), ID (N = 40; mean IQ = 62.8), and TD (N = 100; mean IQ = 108.4). An a priori power analysis using G*Power version 3.1 indicated that an overall sample size of 75 would be needed in order to detect effects, i.e., to reject the null hypothesis when the alternative hypothesis is true. Table 1 shows demographics by status group (ASD, ID, and TD). There were no statistically significant differences between the three adolescent groups on ethnicity, but there were significantly more males than females in the ASD group, which is typical of studies involving this population. As expected, the percentage of students in regular education was significantly higher for the TD adolescents, as were their Vineland composite scores. WISC-IV IQ scores differed significantly among all three groups. CBCL Externalizing scores were significantly higher for adolescents with ASD and those with ID compared to their TD peers; CBCL Internalizing scores differed significantly for all groups, with adolescents with ASD showing the highest levels, followed by

adolescents with ID and then adolescents with TD. Mother demographics did not significantly differ among subgroups.

The subsample used to examine research questions 1b, 2b, and 3b consisted of participants for whom teacher data were available: ASD ($N = 25$; mean IQ = 85.1), ID ($N = 28$; mean IQ = 59.4), and TD ($N = 56$; mean IQ = 111.9). Youth and mother demographics based on this subsample for whom teacher data were available were not significantly different from the larger sample.

Procedure

Following IRB procedures approved by the three participating universities, graduate student researchers obtained informed consent from mothers and youth on the day of the assessment. On-site assessments took place when the youth was 13 and again when the youth was 15 years old. During the assessments, the researchers met with the youth and mother separately to complete interviews about the adolescents' friendships, school experiences, and experiences with victimization, and to administer other tasks. Mothers and youth also completed measures of social skills, behavior problems, and relationship variables. Furthermore, following the 13-year assessment, the academic subject teacher closest to the youth was asked to fill out measures of social skills, youth behavior problems, and school-related variables.

Youth Measures

Wechsler Intelligence Scale for Children, Fourth Edition (WISC-IV; Wechsler, 2003). The WISC-IV (Wechsler, 2003) was used to measure youths' cognitive ability. This test is widely used and possesses strong psychometric properties; it provides

an IQ score with a mean = 100 and standard deviation = 15. For the present study, an estimated Full Scale IQ score was calculated from a short form of the WISC-IV, using three subtests: matrix reasoning, vocabulary, and arithmetic. The matrix reasoning subscale has a reliability coefficient of .89, the vocabulary has a reliability coefficient of .89, and the arithmetic has a reliability coefficient of .88. These three subscales correlate with the FSIQ at .62-.79, according to the WISC-IV manual. Past literature has indicated that a short form of the WISC-IV can be used for research purposes, as correlations with the full battery IQ have been found to be relatively high at .82-.91 (Campbell, 1998; Sattler & Dumont, 2004).

Vineland Adaptive Behavior Scales, Second Edition (VABS-II; Sparrow, Balla, & Cicchetti, 2005). The Vineland was used to measure adolescents' adaptive behavior. This measure is a semi-structured interview assessing the adaptive skills of individuals with or without a disability. In this study, parents reported on behaviors currently in the youth's repertoire. An Adaptive Behavior Composite score, with a mean of 100 and standard deviation of 15, was formed from the communication, daily living skills, and socialization skills subscales. The Vineland has an internal consistency of .75-.80 and Cronbach's alpha of .93. The adolescents in the sample for the present study obtained the following Adaptive Behavior Composites: ASD mean = 75, ID mean = 72, and TD mean = 97.

Adolescent Semi-Structured Interviews (Self-Report). The youth interview at age 13 included open-ended questions, shown in Appendix A, about adolescent perceptions of school, encompassing feelings about academic and social aspects,

homework, and teachers. The responses to these questions were subsequently coded and utilized as a metric of adolescent school experiences. Previous research has measured perceptions of school climate by utilizing youth interviews (Brookmeyer, Fanti, & Henrich, 2006; Kasen et al., 1990; LaRusso, Romer, & Selman, 2008). A coding team was extensively trained in the coding of these interviews, and all members were required to establish at least 70% reliability with the master coder. Codes were generated for the following aspects of school: academic engagement, school-home engagement, social engagement, and emotional engagement (encompassing positive and negative reactions to teachers, classmates, academics, and school). Descriptions of each item and code are included in Appendix B. Items were coded on a scale of zero, indicating severe disengagement, to four, indicating active engagement. Given that each item reflected an aspect of youth engagement at school and was coded on a consistent scale of zero to four, academic, school-home, social, and emotional engagement were summed to form a composite school engagement variable. This variable was used as an indicator of youth-perceived school climate to be utilized in analyses.

People In My Life: Teachers (PIML; Cook, Greenberg, & Kusche, 1995). The PIML is a youth-completed measure that assesses students' perceptions of their relationships with teachers, as well as of their school environment. This 22-item rating scale was obtained via self-report from adolescents at age 13. Responses are based on a 4-point scale (1 = *almost never or never true* to 4 = *almost always or always true*). Questions are intended to measure positive and negative affective and cognitive perceptions of warmth, trust, accessibility, and responsiveness in youth relationships

(Murray & Greenberg, 2001). Sample items include “I can count on my teacher when having a problem”; “School is a nice place to be”; “Kids in my school have a good chance in the future”; and “I feel scared at school.” Murray and Greenberg (2000) conducted a principal components analysis of the PIML that yielded the following four reliable factors: affiliation with teacher ($\alpha = .88$), dissatisfaction with teachers ($\alpha = .66$), bonds with school ($\alpha = .80$), and school dangerousness ($\alpha = .60$). A score is generated for each factor; there is no total score. Within the current sample, the PIML demonstrated internal consistency of $\alpha = .80$.

Teacher Measures

Teacher Rating Scale of Social Acceptance (TRS; Harter, 1985). The TRS of Social Acceptance is a teacher-report measure of the youth’s social acceptance. It consists of five items pulled from the fifteen-item teacher rating form for the Self-Perception Profile for Children (Harter, 1985), which assesses domain-specific evaluations of competence or adequacy in five different domains. The TRS parallels the original self-perception profile for children, asking the teacher to rate the youth’s actual behavior in each area using a four-choice scale. For items 1-3, teachers are presented with a “left side” option with two scale scores (e.g., item 1: “This child finds it hard to make friends” with 1 = “Really true” and 2 = “Sort of true”) and a “right side” option with two scale scores (e.g., “For this child it’s pretty easy” with 3 = “Sort of true” and 4 = “really true”). Item 2 states “This child has a lot of friends/This child doesn’t have very many friends” and item 3 states “This child is popular with others his or her age/This child is not very popular” with the same scoring techniques. The social acceptance total score,

used in these analyses, consists of the sum of items 1, 2, and 3, with items 2 and 3 reverse scored. Subscale reliability is good, with alpha coefficients ranging from .93 to .96 for the teacher form (Harter, 1982).

Student-Teacher Relationship Scale (STRS; Pianta, 2001). The STRS is a teacher-report measure that assesses the quality of the student-teacher relationship. The academic teacher with whom the youth felt closest completed this measure at youth age 13. The STRS yields a total score ($\alpha = .79$), used in this study, as well as three subscales. The Conflict subscale (12 items, $\alpha = .89$) measures the teacher's perceptions of negativity and conflict with the student (e.g., "This child and I always seem to be struggling with each other"). The Closeness subscale (11 items, $\alpha = .81$) measures the teacher's perceptions of affection and open communication toward the student (e.g., "I share an affectionate, warm relationship with this child"). The Dependency subscale (5 items, $\alpha = .64$) measures the teacher's idea of whether the student is overly dependent (e.g., "This child asks for my help when he/she really does not need help").

Parent Measures

Achenbach Child Behavior Checklist (CBCL; Achenbach & Rescorla, 2001). The CBCL was used to measure youth behavior problems via mother report at youth ages 13 and 15. The parent report form consists of 113 items regarding internalizing and externalizing behavior problems. The parent rates youth levels of behavioral, emotional, and social problems based on the preceding six months as *0 = not true*, *1 = somewhat or sometimes true*, and *2 = very true or often true*. The parent form has alpha coefficients ranging from .69 to .97 and test-retest reliability ranging from .82 to .94. The present

study utilized the T-scores for externalizing behavior problems and internalizing behavior problems, which have a mean of 100 and a standard deviation of 15.

Results

This study addressed three primary research questions, each with an additional question examining teacher-reported school climate data for a subset of the larger sample.

RQ1: Group Differences in Perceptions of School Climate

For the first research question, a multivariate analysis of variance (MANOVA) was run to determine whether there were group differences in the four factor scores of the People In My Life (PIML) measure (Affiliation with Teachers, Dissatisfaction with Teachers, Bonds with School, and School Dangerousness). The MANOVA indicated no statistically significant differences in PIML factor scores based on disability status, using Wilks' statistic, $\Lambda = .94$, $F(4, 166) = 1.24$, $p = .273$. Additionally, for the first research question, one-way analyses of variance (ANOVAs) were run to examine group differences in the youth-reported School Engagement composite and the total scores from the teacher-reported Teacher Rating Scale and Student-Teacher Relationship Scale. There were significant differences by disability status in the School Engagement Composite, $F(2, 142) = 12.30$, $p < .001$ (see Table 2). Least significant differences (LSD) tests were conducted for post hoc analyses in order to determine where differences existed; the LSD test was used because it considers the unequal sample size in the current data (Raykov & Marcoulides, 2008). The post hoc analyses indicated that TD youth reported significantly higher school engagement ($M = 12.18$, $SD = 2.79$) than did youth with ASD ($M = 9.78$, $SD = 2.80$) or ID ($M = 9.86$, $SD = 3.08$). Furthermore, ANOVAs of the individual

interview items used for the composite mirrored the group differences in the composite score, with TD youth reporting higher Academic Engagement, School Home Engagement, Social Engagement, and Emotional Engagement than youth with ASD or ID (see Figure 1).

There were also significant differences by disability status in teacher-reported social acceptance on the TRS, $F(2, 90) = 9.88, p < .001$ (see Table 3). Post hoc analyses using LSD tests revealed teachers reported lower social acceptance for youth with ASD ($M = 6.06, SD = 2.53$) compared to youth with ID ($M = 8.47, SD = 2.37$) or TD ($M = 9.09, SD = 2.57$). There were no significant differences by disability status in the teacher-reported student-teacher relationship on the STRS, $F(2, 91) = 1.47, p = .235$.

RQ2: Concurrent Relationships with Behavior Problems

To address the second research question about the concurrent relationships between school climate and adjustment, correlations between youth- and teacher-reported school climate variables and mother-reported youth externalizing and internalizing behavior problems at age 13 were examined (see Table 4). For youth-reported school climate variables, there was a significant negative relationship between the school engagement composite and both externalizing ($r = -.28, p < .01$) and internalizing ($r = -.29, p < .01$) behavior problems. There was also a significant negative relationship between Bonds with School, a PIML factor, and both externalizing ($r = -.21, p < .01$) and internalizing ($r = -.31, p < .01$) behavior problems. There was a significant negative relationship between the Affiliation with Teachers PIML factor and externalizing behavior problems ($r = -.15, p < .05$), and a significant positive relationship between the

School Dangerousness PIML factor and internalizing behavior problems ($r = .15, p < .05$). For teacher-reported school climate variables, there were significant negative relationships between the TRS total score and both externalizing ($r = -.27, p < .01$) and internalizing ($r = -.32, p < .01$) behavior problems. There was a significant negative relationship between the STRS total score and externalizing behavior problems ($r = -.32, p < .01$).

RQ3: Predictive Relationships with Behavior Problems

For the third research question, correlations between 13-year school climate variables, demographic variables, and 15-year behavior problems were first examined in order to inform regression models. Variables that significantly correlated at the $p < .05$ level were entered into the regression analyses predicting externalizing and internalizing behavior problems.

A hierarchical linear regression, summarized in Table 5, was run in order to examine the extent to which school climate variables at age 13 predicted externalizing behavior problems at age 15. In Step 1, the following control variables, which correlated significantly with the outcome, were entered: Age 13 externalizing behavior problems and classroom placement (i.e., special vs. general education). These variables accounted for 37% of the variance in age 15 externalizing behavior problems ($R^2 = .37, F = 20.66, p < .001$). In Step 2, the youth's ASD status (i.e., not ASD/ASD) and ID status (i.e., not ID/ID) were entered into the model, accounting for a nonsignificant additional 2% of the variance in age 15 externalizing behavior problems. The model variance accounted for remained significant ($R^2 = .39, F = 11.13, p < .001$). In Step 3, the youth-reported school

climate variables that significantly correlated with the outcome were entered into the model: school engagement composite, PIML Affiliation with Teachers, PIML Dissatisfaction with School, and PIML Bonds with School. These variables accounted for a significant additional 8% of the variance in age 15 externalizing behavior problems ($\Delta R^2 = .08, p < .05$), and the model variance accounted for remained significant ($R^2 = .47, F = 7.40, p < .001$). In Step 4, the STRS total score, which correlated with the outcome, was entered into the model, accounting for a nonsignificant additional 3% of the variance in age 15 externalizing behavior problems; the model variance was still significant ($R^2 = .50, F = 6.35, p < .001$). The final model for mother-reported externalizing behavior problems at age 15 accounted for 50% of the variance and showed that age 13 externalizing behavior problems and Affiliation with Teachers were significant at $p < .05$ in predicting higher and lower age 15 externalizing behavior problems, respectively. Classroom placement, ASD status, and STRS total score entered the model at the $p < .10$ level.

A hierarchical linear regression, summarized in Table 6, was run in order to examine the extent to which school climate variables at age 13 predicted internalizing behavior problems at age 15. In Step 1, the following control variables, which correlated significantly with the outcome, were entered: Age 13 internalizing behavior problems and classroom placement (i.e., special vs. general education). These variables accounted for 47% of the variance in age 15 internalizing behavior problems ($R^2 = .47, F = 32.12, p < .001$). In Step 2, the youth's ASD status (i.e., not ASD/ASD) and ID status (i.e., not ID/ID) were entered into the model, accounting for a nonsignificant additional 3% of the

variance in age 15 internalizing behavior problems. The model variance accounted for remained significant ($R^2 = .50$, $F = 17.54$, $p < .001$). In Step 3, the school engagement composite, the only youth-reported school climate variable that was significantly correlated with the outcome, was entered, accounting for no additional variance; the model variance remained significant ($R^2 = .50$, $F = 13.87$, $p < .001$). In Step 4, the TRS total score, which correlated with the outcome, was entered into the model, accounting for no additional variance in age 15 internalizing behavior problems; the model variance was still significant ($R^2 = .50$, $F = 9.72$, $p < .001$). The final model for mother-reported internalizing behavior problems at age 15 accounted for 50% of the variance and showed that age 13 internalizing behavior problems and classroom placement (where 1 = general education) were significant at $p < .001$ in predicting higher and lower age 15 internalizing behavior problems, respectively. ID status entered the model at the $p < .10$ level.

Discussion

The purpose of the present study was to examine whether youth with ASD, ID, or TD differ in their perceptions of school climate, as well as whether their teachers perceive this construct differently. Additionally, the study investigated both concurrent and predictive relationships of youth and teacher school climate perceptions with youth adjustment, i.e., externalizing and internalizing behaviors. Findings indicated that youth with disabilities perceived lower levels of school engagement than did typically developing youth, and that teachers of youth with ASD rated these students as significantly less accepted by peers than did teachers of youth with ID or TD. In addition, there were significant concurrent associations between mother-reported externalizing

behavior problems and youth-reported school engagement, affiliation with teachers, and bonds with school, and between mother-reported externalizing behavior and teacher-reported peer acceptance and student-teacher relationship, at age 13. There were significant concurrent associations between mother-reported internalizing behavior problems and youth-reported school engagement, bonds with school, and school dangerousness, and between internalizing behavior and teacher-reported peer acceptance, at age 13. Finally, hierarchical regressions indicated that age 13 externalizing behavior problems and affiliation with teachers were significant predictors of age 15 externalizing behavior problems for youth with and without disabilities. Age 13 internalizing behavior problems and classroom placement, and no school climate variables, were significant predictors of age 15 internalizing behavior problems for youth with and without disabilities.

Disability Status

The first research question examined group differences by disability status for youth- and teacher-reported measures of school climate. The findings that youth with ASD or ID reported significantly lower school engagement both on the composite variable and individual interview codes (academic, school-home, social, and emotional engagement) are troubling, yet consistent with the limited research examining perceptions of school climate for students with disabilities. Brown, Higgins, Pierce, Hong, and Thoma (2003) found that secondary students ages 13-21 receiving special education services, whose specific disabilities were not reported, were more likely to report feeling disconnected from the school environment. Similarly, Reschly and

Christenson (2006) found significant differences in self-reported school engagement between eighth graders with learning disabilities or emotional or behavioral disorders and their typical peers. The results based on the youth interview support the presence of similar patterns of low school engagement for students with ASD or ID, a population for which this construct has not previously been examined.

However, analyses of the PIML youth report measure did not indicate significant differences between youth with and without disabilities in their ratings of affiliation with teachers, dissatisfaction with teachers, bonds with school, and school dangerousness. The lack of findings here may speak to the nature of the PIML, which was a paper and pencil measure filled out by youth at the 13-year clinic assessment. Graduate student researchers were available for questions but youth nonetheless may have reported inaccurately due to lack of understanding or a desire to please. The youth interview, on the other hand, was orally administered in a structured manner by the researcher, who provided prompts and explanations for questions that were confusing or generated an incomplete response from the youth. Therefore, the interview approach may have elicited more thorough information, particularly from youth with disabilities. The literature suggests that individuals with high functioning ASD (Mazefsky, Kao, & Oswald, 2011) or with ID (Finlay & Lyons, 2001) may not be accurate reporters of their own experiences or symptomatology, especially when a more restricted paper and pencil measure is used.

Also regarding the first research question, teachers of youth with ASD reported significantly lower peer acceptance for their students compared to teachers of youth with ID or TD. This finding differs somewhat from the previous one in that youth with ASD

were particularly at risk in the domain of peer acceptance, suggesting ASD symptomatology impacts these youth socially. Indeed, social skills and friendship are particular areas of difficulty for youth with ASD. Past literature suggests that youth with ASD are often poorly accepted by their peers and do not engage with them socially, whether due to lack of social skills and/or motivation. In one study, although children with ASD were not more likely to experience peer rejection, they were still less accepted by peers and had fewer reciprocal friendships than age-matched TD peers across grade levels, based on child reports on a social network survey (Rotheram-Fuller, Kasari, Chamberlain, & Locke, 2010). Strikingly, the social isolation of children with ASD in inclusive classrooms became comparatively higher in later elementary grades. Direct observational data have paralleled these findings for older youth, showing that students with ASD were less engaged in cooperative interaction with peers and spent more time engaged in solitary behaviors, compared to demographically matched groups both with and without dyslexia (Humphrey & Symes, 2011). In the present study teachers noted low peer acceptance for their students with ASD, whose noted social deficits may have exacerbated the challenges of adolescence and changing school environments (e.g., movement between different classrooms for each subject, new peer groups, etc.).

Interestingly, teachers did not report differences in the student-teacher relationship based upon disability status (ASD, ID, TD). It is possible that the domains measured by the STRS – conflict, closeness, and dependency – are more relevant to the elementary years and do not capture differences in these relationships during adolescence. In addition, students in middle and high school move throughout six or

seven classrooms per day, meaning that their interactions with each teacher are shorter and may not be as influential. Furthermore, participants in the present study were instructed to give the teacher packet to the academic teacher with whom the youth was closest; therefore, we may have oversampled from teachers only reporting more positive aspects of the student-teacher relationship. Studies at the elementary level have found that students with emotional disturbance or mild ID (Murray & Greenberg, 2001) and with ASD (Blacher et al., 2014) experience poorer relationships with their teachers, but less known about this domain for older students.

Concurrent and Predictive Relationships

The second research question examined concurrent relationships between student and teacher perceptions of school climate and youth behavior problems at age 13. In line with the extant literature (e.g., Wang & Fredricks, 2014), youth who reported higher levels of school engagement based on the youth interview composite score demonstrated fewer externalizing behavior problems. Additionally, youth reporting more bonds with school and lower school dangerousness on the PIML also had fewer externalizing problems. This mirrors previous studies indicating that youth who feel safer and more connected at school experience improved adjustment (e.g., Kasen et al., 2004; Way et al., 2007). Regarding teacher report, teacher ratings of youth's social acceptance by peers, as well as their ratings of the student-teacher relationship, were negatively associated with externalizing problems. Extensive research has examined the importance of the student-teacher relationship during the early years of school adjustment (e.g., Pianta & Stuhlman, 2004), which Pianta (2001) aimed to measure with the STRS. Similar to findings for

younger children, adolescent literature has indicated that relationships with teachers are meaningfully associated with youth adjustment including risky behaviors (Rudasill, Reio, Stipanovic, & Taylor, 2010) and conduct problems (Murray & Greenberg, 2001) as they approach the middle and high school years.

Youth who reported higher levels of school engagement based on the youth interview composite score demonstrated fewer internalizing behavior problems according to mother report. Youth reporting more bonds with school and lower school dangerousness also had fewer internalizing problems. Regarding teacher report, teacher ratings of youth's social acceptance by peers were negatively associated with internalizing problems, while teacher ratings of the student-teacher relationship had no such association. The connection between better youth perceptions and lower internalizing problems is logical and reflects prior findings (e.g., Bond et al., 2007; King et al., 2006; Ward, Sylva, & Gresham, 2010). Students who are more connected to, or feel better about, school likely experience fewer feelings of loneliness and isolation, which are correlates of depression (McMahon et al., 2008). The associations found here between the PIML factors and measures of both externalizing and internalizing problems are similar to the results of the creators of the PIML measure (Murray & Greenberg, 2000). This study indicated significant moderate correlations between all four factor scores of the PIML and teacher-reported externalizing and internalizing behavior problems for 5th and 6th graders, about one third of whom had mild or moderate disabilities. There are clear implications for youth reports on their connections to school and teachers, even for individuals with disabilities.

The third research question examined whether school climate variables added value to the prediction of behavior problems at age 15 above and beyond reported behavior problems at age 13. Results indicated that better affiliation with teachers predicted lower levels of externalizing problems, with school climate variables explaining a significant amount of overall variance. Therefore, although there were no differences by disability status in teacher reports of the student-teacher relationship, within the whole sample, more positive youth perceptions of their relationships with teachers were predictive of fewer externalizing behaviors two years later.

Mother-reported internalizing behaviors, on the other hand, were not significantly predicted by any youth- and teacher-reported school climate variables. It is interesting to note that classroom placement, entered as a control variable in the first block, was a significant predictor of internalizing but not externalizing problems in the current sample; disability status was not a significant predictor. This suggests that the experience of being in a special education classroom may put students at risk for the development of internalizing symptoms, and that students in regular education settings are not at risk regardless of their ASD or ID diagnosis.

Although there were significant associations between school climate variables and both externalizing and internalizing behavior problems at age 13, these variables had less predictive power in explaining behavior problems longitudinally from age 13 to 15. Prior levels of behavior problems explained much of the variance in the outcome at age 15, attesting to the stability of these broadband behavior problem scores. It is also possible that perceptions of school climate are not as important for students with ASD or ID,

many of whom look to family and outside services for support rather than to school-level variables such as the teacher. This situation would be quite different for typically developing adolescents, who spend much of their time and energy involved with friends, extracurricular activities, and even with certain teachers.

Limitations

There are several limitations to consider in interpreting the results of this study. First, the measurement of school climate was based on individual reports from students and teachers; more systematic assessments of overall school climate, including aspects such as resources and student:teacher ratios, were not collected. It is possible that the deficits associated with ASD and ID may have made it more difficult for youth to report accurately. Additionally, the youth in the current sample were attending a multitude of schools in the southern California area; therefore, information about school level factors was not available. The use of school level data in multilevel modeling techniques would have allowed for statistical control of the effects of the school to better understand individual processes.

However, within an ecological framework, the environmental factors that are the most proximal tend to exert the strongest effects (i.e., individual student-level perceptions are considered to be more important than level two school climate variables; Bronfenbrenner, 1979). Furthermore, there is great value to be found in individuals' perceptions of their environments; the sole reliance on objective ratings of school climate is unlikely to encompass students' true experiences at school (Kasen et al., 1990). For example, Kidger, Araya, Donovan, and Gunnell (2012) found more robust effects of

individual student perceptions of the school environment on emotional health, including the following predictor variables: teacher support, general connectedness, quality of relationships with peers, feeling safe at school, and feeling close to people in school.

Mother reports of behavior were used in analyses, in part to avoid overreliance on youth report as the source of both independent and dependent variables. However, it could be argued that mother reports of youth behavior are not applicable to the school context, as parent and teacher reports of behavior have been found to diverge particularly as children grow older (van der Ende, Verhulst, & Tiemeier, 2012). While teacher reports of youth behavior at age 15 were collected as part of the larger project, these ratings were not utilized in the present study because of concerns about power due to the small number of teacher rating forms obtained. Even with the current data, the small sample size for the ASD and ID groups may have resulted in insufficient power to detect all group differences and effects on behavior problems.

It should be recognized that since data were collected at youth ages 13 and 15, most if not all of the adolescents made the significant transition from middle to high school between time points. Thus, their teachers, peer groups, and overall environments changed as well and this lack of consistency was not controlled for in the present study. While the move from middle to high school was not the focal point of the study, it is an element of adolescence with which many individuals struggle. Newman, Newman, Griffen, O'Connor, and Spas (2007) hypothesized that youth social support systems, including relationships with family, peers, and school adults, are often disrupted during the transition from middle to high school, and that this may account for some of the

difficulties accompanying this step. Specifically within the context of school climate, the 15-year-old youth who were new to high school may have had limited opportunities to closely interact and build relationships with teachers and peers. At the same time, considering the focus on disability in the present study, students in self-contained, highly staffed special education programs may not face the same barriers.

Implications and Future Directions

The results of the present study suggest that youth with disabilities, specifically ASD and ID, experience lower quality in some aspects of school climate. In addition, these results support the presence of connections between youth and teacher perceptions of school climate and youth adjustment. Feeling a connection to teachers and school can influence youth social and academic adjustment because they may be more likely to feel comfortable and confident and thus build skills and competence in multiple areas (Murray & Greenberg, 2000). From an eco-behavioral perspective, the amount of time that young people spend in school means that there are ample opportunities to alter aspects of the school environment to foster school connectedness. Practitioners can apply known connections between school variables and positive outcomes to promote student adjustment, utilizing a developmental-ecological perspective (J. A. Baker et al., 2003). Schools are ideal sites within which to situate interventions targeting adolescent adjustment, particularly during times of multiple transitions that include academic, social, and physical changes (Bond et al., 2007; Malecki & Demaray, 2003; Wang, 2009). This highlights the importance of interventions to improve school climate on multiple levels,

such as school-wide positive behavior support (PBS; Sugai & Horner, 2002) and anti-bullying programs.

Furthermore, the findings of the present study support the inclusion of youth with disabilities in order to foster a sense of belonging for this group. McMahon and colleagues (2008) suggested that both teachers and peers should promote social inclusion by spreading awareness about disabilities and matching students with special needs with TD students. Simple initiatives to include students with disabilities in extracurricular activities and gatherings at lunch are steps toward building a more positive school climate for all those involved. The role of teachers is especially important, although the nature of the student-teacher relationship changes during the transition from primary to secondary school. For example, a warm, dependent and supportive relationship in the early school grades may not be appropriate for a middle or high school student. Rather, teachers at this level should focus on context, relationships, and processes for learning, in addition to curriculum content, in order to encourage continued engagement with school; ideally, students should find some form of reward in school to prevent disengagement and seeking reward elsewhere (Bond et al., 2007).

This study's unique sample of participants and measurements at multiple time points created a strong framework for furthering the study of disability and school climate. J. A. Baker et al. (2003) recommend using a developmental-ecological framework including school practices that enhance children's meaningful connections to others in the school environment, enhance children's sense of competence, and promote autonomy and self-direction. Practitioners are encouraged to focus on indicators of

positive adjustment rather than signs of problems, and to engage in preventative models rather than reactive practices in working with student populations. Specifically, they encourage building psychologically healthy school environments that will enhance students' connectedness to others and foster their sense of competence (J. A. Baker et al., 2003).

In future work, the measurement of other dimensions of school climate would be of interest. The separation of school level effects from teacher or student level effects via multilevel modeling would clarify the influences of school climate. School-level phenomena are worthy of further study, although individual perceived school belonging is still an important variable to consider as protective against negative psychological outcomes. Future analyses might examine the impact of school climate variables on additional outcome variables such as mental health and well-being, particularly for populations with ASD or ID.

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Table 1
Demographics by Disability Status

Variable	ASD (<i>n</i> = 45)	ID (<i>n</i> =40)	TD (<i>n</i> = 100)	χ^2 or <i>F</i>
	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)	
<i>Adolescents (13 years old)</i>				
WISC-IV IQ (Age 13)	99.29 (19.76) _b	62.79 (11.54) _c	108.38 (12.34) _a	<i>F</i> = 148.04***
Vineland (Age 13)	77.47 (9.83) _b	75.04 (9.85) _b	97.10 (9.33) _a	<i>F</i> = 108.61***
Gender (% Male)	88.6 _a	55.0 _b	51.0 _b	χ^2 = 18.91***
Race (% Caucasian)	59.0	45.0	58.0	χ^2 = 2.27
Classroom setting (% Reg. Edu.)	37.8% _b	30.0% _b	93.0% _a	χ^2 = 79.96***
CBCL Ext.	55.41 (9.59) _a	53.86 (10.28) _a	46.93 (9.83) _b	<i>F</i> = 13.15***
CBCL Int.	62.59 (9.52) _a	54.64 (10.90) _b	47.62 (10.49) _c	<i>F</i> = 25.89***
<i>Mothers</i>				
Marital Status (% Married)	62.2	65.0	76.0	χ^2 = 3.50
Income (%>\$50,000)	64.4	57.5	72.0	χ^2 = 2.90
Mother's Education (Highest Grade)	15.21 (2.31)	14.11 (2.90)	16.91 (9.25)	<i>F</i> = 2.70

Note. ASD = autism spectrum disorder; ID = intellectual disability; TD = typically developing; CBCL Ext. = CBCL Externalizing T-score, age 13 mother report; CBCL Int. = CBCL Internalizing T-score, age 13 mother report. Means with differing subscripts within rows are significantly different at the $p < .05$ level based on Fisher's LSD test. Frequencies with differing subscripts within rows are significantly different at the $p < .05$ level based on Cramer's *V*.
 * $p < .05$, ** $p < .01$, *** $p < .001$

Table 2

Group Differences in School Climate: School Engagement Composite – Youth Report

Source	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>
Intercept	13453.42	1	13453.42	1656.52***
Disability status (ASD/ID/TD)	199.76	2	99.88	12.30***
Error	1153.25	142	8.12	
Total	19274.0	145		

Note. $R^2 = .148$, $p < .001$ * $p < .05$, ** $p < .01$., *** $p < .001$

Table 3

Group Differences in School Climate: Social Acceptance – Teacher Report

Source	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>
Intercept	4425.71	1	4425.71	696.07***
Disability status (ASD/ID/TD)	125.59	2	62.80	9.88***
Error	572.24	90	6.36	
Total	7223.0	93		

Note. $R^2 = .18$, $p < .001$ * $p < .05$, ** $p < .01$, *** $p < .001$

Table 4
Correlations Among School Climate Variables and Behavior Problems - Age 13

	1.	2.	3.	4.	5.	6.	7.	8.	9.
1. CBCL Int. age 13	1.0								
2. CBCL Ext. age 13	.66**	1.0							
3. SE Composite	-.29**	-.28**	1.0						
4. PIML Affiliation	-.14	-.15*	-.39**	1.0					
5. PIML Dissat.	.05	.01	-.32**	-.45**	1.0				
6. PIML Bonds	-.31**	-.21**	.51**	.64**	-.32**	1.0			
7. PIML School Dang.	.15*	.06	-.31**	-.30**	.31**	-.30**	1.0		
8. TRS Total	-.32**	.27**	-.56**	.26*	-.17*	.33**	.25*	1.0	
9. STRS Total	-.05	-.32**	.24**	.16*	.06	.12	-.02	.40**	1.0

Note. CBCL Int. = Internalizing Behavior Problems T-score; CBCL Ext. = Externalizing Behavior Problems T-score; SE Composite = School Engagement Composite; PIML Affiliation = People in my Life – Affiliation with Teachers; PIML Dissat. = People in my Life – Dissatisfaction with Teachers; PIML Bonds = People in my Life – Bonds with School; PIML School Dang. = People in my Life – School Dangerousness; TRS Total = Teacher Rating of Social Acceptance – Total Score; STRS Total = Student-Teacher Relationship Scale – Total Score.

* $p < .05$, ** $p < .01$.

Table 5

Hierarchical linear regression predicting age 15 externalizing behavior problems

Block	Predictor	<i>B</i>	<i>SE B</i>	β	<i>R</i>²
1	CBCL Externalizing 13 year	.55	.11	.53***	.37
	Classroom Placement	-3.22	2.39	-.14	
2	CBCL Externalizing 13 year	.59	.11	.57***	.39
	Classroom Placement	-4.84	2.71	-.21 [†]	
	ASD status	-4.55	2.74	-.18	
	ID status	-.07	2.48	-.00	
3	CBCL Externalizing 13 year	.62	.11	.60***	.47
	Classroom Placement	-5.20	2.61	-.23*	
	ASD status	-6.13	2.75	-.25*	
	ID status	-.73	2.46	-.03	
	SE Composite	-.02	.41	-.01	
	PIML Affiliation	-.77	.32	-.34*	
	PIML Dissatisfaction	.54	.62	.10	
	PIML Bonds	.58	.33	.23 [†]	
	CBCL Externalizing 13 year	.57	.11	.55***	
	Classroom Placement	-4.48	2.63	-.20 [†]	
4	ASD status	-5.11	2.98	-.21 [†]	.50
	ID status	-.62	2.43	-.03	
	SE Composite	.00	.44	.00	
	PIML Affiliation	-.72	.32	-.32*	
	PIML Dissatisfaction	.60	.62	.11	
	PIML Bonds	.42	.33	.17	
	STRS Total	-.15	.09	-.19 [†]	

Note. [†] $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 6

Hierarchical linear regression predicting age 15 internalizing behavior problems

Block	Predictor	<i>B</i>	<i>SE B</i>	β	<i>R</i>²
1	CBCL Internalizing 13 year	.38	5.92	.38***	.47
	Classroom Placement	-10.12	2.31	-.42***	
2	CBCL Internalizing 13 year	.44	.10	.44***	.50
	Classroom Placement	-12.37	2.55	-.52***	
	ASD status	-3.25	2.73	-.12	
	ID status	-4.02	2.37	-.16 [†]	
3	CBCL Internalizing 13 year	.43	.10	.44***	.50
	Classroom Placement	-12.36	2.56	-.52***	
	ASD status	-3.46	2.83	-.13	
	ID status	-4.2	2.46	-.16 [†]	
	SE Composite	-.11	.34	-.03	
4	CBCL Internalizing 13 year	.42	.11	.43***	.50
	Classroom Placement	-12.74	2.69	-.53***	
	ASD status	-3.66	3.09	-.14	
	ID status	-4.22	2.49	-.16 [†]	
	SE Composite	-.09	.40	-.03	
	TRS Total	-.15	.48	-.04	

Note. [†] $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$.

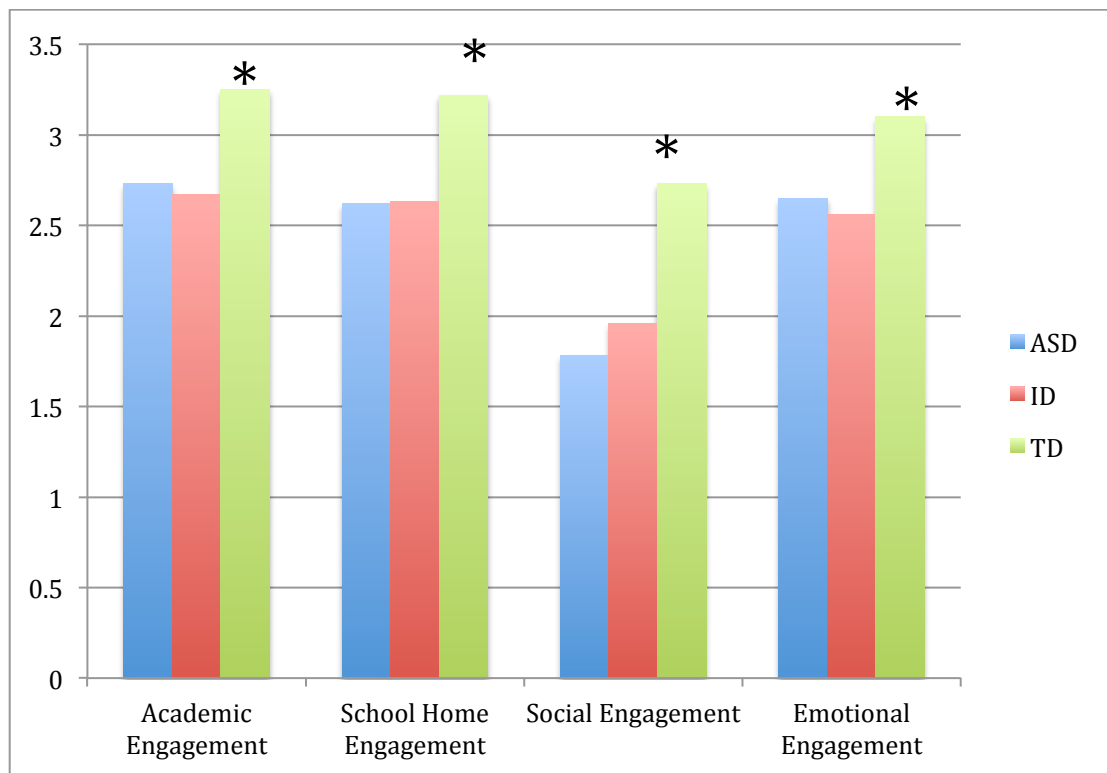


Figure 1. Bar graph displaying differences by disability status (ASD/ID/TD) in youth responses to open-ended interview questions about school, including codes for academic engagement, school home engagement, social engagement, and emotional engagement.

Appendix A

Open-ended questions about school from 13-year youth interview

2) School: Now we're going to ask you some questions about school.

School Concepts: Want to know child's feelings about the: a) academic, b) social aspects of school, c) homework, d) teacher aspects of school.

Academics- Want to know how child feels they are doing in school, which subjects they enjoy and dislike (and whether or not these are academic vs. more elective subjects such as art/PE). Want to know child's assessments of their own strengths and weaknesses in school. Child's assessment of their relationship with their teachers. Also, want to know how much importance child attaches to their academic identity and how much time is spent on academic tasks. Finally, want to know child's perception of their parents' involvement in school.

Social- Want to know what child's peer relationships are like in school. Is child involved in extracurricular activities like sports or ASB? How much time is spent at school after school hours? Does child have people to hang out with?

Tell me a little bit about your school. How do you like school?

How are your grades in school? How important is to you to get good grades? How important is to your parents that you do well in school? Do you and your parents ever get into conflicts about school or homework?

What kinds of classes are you taking? What are your favorite and least favorite subjects? What subjects are hard for you? What subjects are easier?

Are you involved in any after school activities like sports teams, band, drama, or ASB? What kinds of things do you do? How much time do you spend on those things? What are your favorite and least favorite aspects of these activities?

What are your teachers like? Tell me about your favorite and least favorite teachers.

How important is school to you? Which parts are most important? (grades, extracurriculars)

How much do you think your parents are involved in your school life? How do they get information about your schoolwork?

Have you ever gotten at trouble at school? What kinds of things did you get in trouble for? How did your parents and teachers respond?

3) Now I will be asking a little about your friends and other kids at school. Who are your friends (Provide names, ages, genders and # of friends.)?

Conceptual Goals: Want to get a sense if child has someone they feel is their best friend. Want to get a sense of whether or not child can rely on friends for social support and companionship, what kinds and frequency of activities children engage in with their peers (developmentally normative or not), and whether or not they are able to confide in their peers. Want to get a sense about whether or not child engages in prosocial or more deviant behaviors with friends. It would also be good to understand what conflicts are like in the relationship, specifically, whether the conflicts end up bordering on bullying/aggressive behaviors, or if there's a lot of rivalry/competitiveness in the relationship. In addition, want to know if child has ever had a boyfriend or girlfriend.

Finally, just want some demographic information about friends: ages, genders, where the child knows friends from, how long child has known her friends.

Where do you know your friends from?

Tell me a little bit about the things you like to do together. (code for frequency as well as whether or not activity is organized by adults, such as school or sports team, or child-driven, play date, hanging out at the mall)

How do you think your parents feel about your friends? (Get a sense of whether or not parents know friends, encourage child to spend time with friends, or discourage child from doing so).

Do you have a best friend?

What do you like best about your friends? *Use this question and any additional necessary prompts to get a sense of warmth and closeness and positive reciprocity in the friend relationship.*

Describe the last time you had a disagreement with one of your friends. (Code for whether or not child or friend engaged in bullying behaviors, as well as for child response. Does child disengage, end friendship, become aggressive, or engage in prosocial problem solving with friends?)

How much do you think your parents are involved with your friends?

Have you recently had a crush on anyone or asked anyone out at school?

Do you have a boyfriend or girlfriend?

Appendix B

Description of youth interview codes used for school engagement composite variable

24. Academic Engagement

0 = Severe disengagement: Child either actively does not follow school rules and skips classes or does follow rules and attends but is not really mentally “present” during class time (i.e., child sleeps in class, spends entire class doodling or being off task). Child doesn’t even give himself chance to fail b/c won’t try any of the work. Child actively avoids situations that may be challenging.

1 = Significant disengagement: Child follows school rules and actively attends classes but seems fairly unintegrated and uninvolved in school activities (for example, child may come to class but does not raise hand and exerts little effort on classroom activities). Child has very low frustration tolerance (gives up quickly after failure) and tries to passively avoid challenging situations.

2 = Mixed Engagement: Child may be somewhat engaged in some, non-academic parts of the school day (such as woodshop or PE) but has 2-level disengagement during academic subjects. Child attends school regularly and follows school rules consistently, although may engage in some negative behaviors.

3 = Significant engagement: Child is actively engaged in at least one academic subject, but not in all academic subjects. For example, child really enjoys literature class but is not motivated to perform well in math class. At least some positive behaviors and very mild negative behaviors.

4 = Active engagement: Child reports sincerely enjoying the majority of academic subjects in school. Child engages in pro-social behaviors during school hours (such as helping new students, doing extra clean-up duties, etc.)

25. School-Home Engagement (Homework and other School-Home Activities)

0 = Severe Disengagement: Child never independently initiates homework activities. Parent must either support child during homework time the full time or homework is not completed or turned in. Homework time is a constant struggle with few reprieves or parents have given up/never taken an interest in helping the child complete homework assignments.

1 = Significant Disengagement: Child still does not initiate homework on their own, but has at least minimum success at completing homework with initiation from their parents or another adult. The parent still needs to provide frequent reminders in order for homework to be completed, but there is less of a negative cast to interactions around homework (though interactions may still be negative)

2 = Minimal Engagement: Child may initiate homework activities on their own or with relatively infrequent reminders from parents, but there is a sense that the child is doing the minimal amount of work (e.g. do what they have to in order to just get by).

3 = Mixed Engagement: Child produces high quality, independent work in some subjects but not in others.

4 = Significant Engagement: Child independently produces high quality work in all academic subjects. There is a sense that parents do not need to supervise homework completion at all b/c the child is highly motivated to do well in school and learn.

27. Extracurricular and Social Engagement

0 = Severe Disengagement: Child does not seem socially integrated in school (i.e., doesn't have a peer group they can sit at lunch with) or participate in extracurricular or social activities within the school.

1 = Significant Disengagement

2 = Mixed Engagement: Child seems somewhat socially integrated into school life. The child should definitely have at least a group of friends with whom s/he is friendly and with whom s/he can work on group projects/sit at lunch. Child may also be involved in some extracurricular activities in the school, but on a sort of minimal level. For example, the child may go to a school dance occasionally or be sporadically involved in a club.

3 = Significant Engagement

4 = Active Engagement: Child is actively integrated into the social life of the school. Child is actively involved in extracurricular activities (i.e., makes an active, sustained commitment to a school sports team, club, ASB, etc.). Child also seems to have established friendships at school that are positive and stable.

31. Emotional Engagement

Emotional engagement encompasses positive and negative reactions to teachers, classmates, academics, and school.

0 = Severe Disengagement: Child actively dislikes teachers at school and has strongly negative feelings around classes and school in general. Child has strongly negative feelings about themselves as a learner and student. The child is primarily reactive in displaying their negative feelings.

1 = Significant Disengagement: Child has primarily negative feelings about self as learner, school, and teachers but these feelings are more detached and are expressed more passively than in 0.

2 = Mixed Engagement: Child has positive feelings about teachers, academics, and self as learner in some academic subjects, but negative feelings about aspects of school.

3 = Significant Engagement: Child has overall positive feelings about the majority of school but is not too overtly enthusiastic.

4 = Active Engagement: Child expresses strongly positive and visible signs of emotional engagement in school. Child actively talks about how much they like certain teachers and academic subjects. Child has self-confidence in his/her ability to learn.