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UNIVERSITY OF CALIFORNIA
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Student-Teacher Relationships in Early Elementary School and Impact on Later
Academic Engagement

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

Doctor of Philosophy

in

Education

by

Stacy Marie Lauderdale

June 2011

Dissertation Committee:
Dr. Jan Blacher, Chairperson
Dr. George Marcoulides
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The Dissertation of Stacy Marie Lauderdale is approved:

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University of California, Riverside

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Silent gratitude isn't much use to anyone. ~G.B. Stern

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Families are the compass that guide us. They are the inspiration to reach great heights, and our comfort when we occasionally falter.

-- Brad Henry

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ABSTRACT OF THE DISSERTATION

Student-Teacher Relationships in Early Elementary School and Impact on Later
Academic Engagement

by

Stacy Marie Lauderdale

Doctor of Philosophy, Graduate School of Education
University of California, Riverside, June 2011
Dr. Janet Blacher, Chairperson

Teachers have many roles that make them influential in a child's overall development at school. The relationship formed between teachers and students early on may foreshadow adjustment and functioning of the student in later school years. A conditional latent curve model was fit to data from a subsample of the longitudinal Collaborative Family Study (n=84) and used to examine the effects of the student-teacher relationship (STR) change over time (ages 6-9) in predicting academic engagement at age 13 for both typically developing (TD) children and those with intellectual delays (ID). This model was then expanded to include the child characteristics of social skills and behavior problems in predicting STR. Results indicated that age 6 STR's predicted academic engagement at age 13; students who experienced more positive STR's very early in elementary school had higher levels of academic engagement in middle school. In addition, the child characteristics of social skills and behavior problems were predictive of the STR, and accounted for more variance within academic engagement than the STR

alone. These findings emphasize the impact of the student-teacher relationship during the early school years, and underscore its importance for later formative experiences.

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Teachers have many roles that make them influential in a child's development including attachment figure, educator, disciplinarian, and judge of student's level of academic achievement (Furrer & Skinner, 2003). Moreover, the relationship formed between teacher and student early on provide formative experiences that may foreshadow adjustment and functioning of the student in later school years. This study aimed to investigate the link between student-teacher relationships (STR's) in elementary school and their ability to predict academic engagement in middle school for both typically developing children and those with intellectual delays. In addition, predictors of STRs including behavior problems and social skills were considered and implications of these relationships are discussed.

The literature suggests a direct link between supportive student-teacher relationships (STR) and a variety of positive present and future school related adaptive outcomes including academic engagement, sociability, and behaviors (Murray & Murray, 2004; Pianta & Stuhlman, 2004). The majority of this research pertains to typically developing (TD) children, but the limited research that has been conducted pertaining to children with intellectual disabilities (ID) indicates that they have poorer student-teacher relationships when compared to their typically developing peers (McIntyre, Blacher, & Baker, 2006). Lower quality STRs for children with ID are of concern because there is evidence that STRs play a particularly strong role for children at risk for adverse outcomes, by deflecting the course of their adjustment in school (Hamre & Pianta, 2001; Peisner-Feinberg et al., 2001; Pianta et al., 1995; Silver et al, 2005). These STR differences seem to be accounted for by early behavior problems, self-regulation, and

social skills (Eisenhower, Baker, & Blacher, 2007). In addition, relationships with teachers are important longitudinally because studies have found that academic achievement in later years of school is predicted by warm and supportive student-teacher relationships with low levels of conflict in early school years (Downer & Pianta, 2006). Academic achievement is associated with academic engagement (DeBaryshe, Patterson & Capaldi, 1993; Furrer & Skinner, 2003) which has been shown to be directly affected by student teacher relationships (Hughes, Luo, Kwok, & Loyd, 2008). Additionally, students who are engaged academically have also been shown to experience more motivation from their teachers (Skinner & Belmont, 1993).

Academic Engagement

Student engagement has been identified by many researchers as a predictor of student success and as being especially important in middle and high school years (Zyngier, 2008). The components involved in defining engagement vary by researcher but typically include positive student-teacher relationships, positive feelings about school and enjoyment of learning (Aunola, Stattin, & Nurmi, 2000), positive classroom behaviors, and engagement and compliance with homework (DeBaryshe, Patterson, & Capaldi, 1993). Academic engagement is important because it is associated with a number of important student outcomes including internalizing and externalizing problem behaviors (Aunola, Stattin, & Nurmi, 2000) and academic achievement (DeBaryshe, Patterson, & Capaldi, 1993; Furrer & Skinner, 2003).

Early research addressing academic engagement and its impact on relationships provided a bridge between classroom research and research relating to the relationships

of children and significant people in their lives. For example, some studies examined how relationships among parents, teachers, and friends related to each other and affected educational outcomes. While no specific theory of academic engagement is prominent in the literature, a number of theories relating to object relation, motivation, and attachment were explored in order to show the direct relationships between individual functioning, achievement, and the impact of significant others. Object relation theory addresses how people function most successfully in situations where they experience supportive and caring relationships with significant others (Behrends & Blatt, 1985). Similarly, motivation theorists propose that experiences of social relatedness with others fosters self-esteem, motivation, and independence (Ryan & Lynch, 1989). Bowlby (1973), a theorist interested in relationships, focused on attachment theory whereby human beings are most successful when they have the support of others they trust.

These theories were the basis for the research conducted by Ryan, Stiller, and Lynch (1994) who hypothesized that representations of parents, friends, and teachers would be positively related to academic outcomes, engagement, responsibility, and coping strategies. Specifically, these authors examined the constructs of felt security, emotional and school utilization, and emulation of 606 seventh and eighth grade students from suburban middle schools in New York. Felt security was defined as an affective component of attachment with parents and teachers. Emotional and school utilization focused on the degree to which adolescents felt the ability to rely on target figures in specific situations and utilization of others for school problems respectively. Lastly,

emulation was defined as the degree to which these adolescents admired and identified with target individuals in their lives, in this case parents, teachers, and friends.

Results indicated that girls experienced more felt security with teachers than boys and also scored higher on measures of emulation of teachers and friends. Boys, on the other hand, were lower on scores of emotional utilization of school and friends and higher on the likelihood of seeking no emotional support from target individuals. In addition, results also supported the hypothesis that representation of both parents and teachers predicted school functioning outcomes, with these relationships directly impacting adaptive functioning in school and self-esteem for adolescents. Students who felt able to utilize relationships with their parents and teachers and were secure with these relationships reported more positive school attitudes and motivation. Similarly, students who emulated their parents and teachers, as opposed to their friends, exhibited more positive school adjustment and motivation. These findings support the notion that teachers and parents play significant roles in students' overall school engagement and success, with more positive relationships being equated with more positive school outcomes.

Finn (1989) discussed two models of student engagement that included participation and identification. Participation included the behavioral components of student compliance with school and classroom rules, punctuality for both class and school, responding to teacher questions and directions, and being attentive to the teacher. In addition, participation also included involvement in extracurricular activities, such as student government and sports, and taking the initiative to engage with the teacher above

and beyond the minimal requirements by asking questions and seeking additional help. Identification focused more on the affective components of valuing school outcomes, such as grades and future achievements, feeling valued by the teacher, and a sense of belonging within the school environment. The components of participation and identification combine behavioral, emotional, and cognitive research. A lack of student engagement has been associated with poor academic performance. Students have been shown to have increased engagement when they maintained multiple and expanding forms of participation in school relevant activities.

Aunola, Stattin, and Murmi (2000) discussed the concept of school adjustment, defined as a combination of school adaptation, an adolescent's choice to work hard and feel invested in school, and his or her relationships with teachers. This definition makes school adjustment, in this case, essentially synonymous with academic engagement. This study focused on 1185 eighth grade adolescents in Sweden and gathered self-reported information as well as information from parent-completed measures. Students completed questionnaires addressing achievement strategies such as student expectations of school failure, engagement in task-irrelevant behavior, passivity, school adjustment, internalizing and externalizing problem behaviors, and self-esteem. Parents then completed measures addressing student achievement strategies, school adjustment, and externalizing problem behaviors. These relationships were analyzed using a structural equation model. Results indicated that student achievement strategies were associated with both school adjustment and externalizing and internalizing problem behaviors. In addition, the association between achievement strategies and externalizing behaviors was

mediated by adolescent school adjustment. Success expectations and task-focused behavior were both associated with high levels of school engagement.

Family characteristics have also been shown to contribute to child academic engagement and achievement. In a study conducted by DeBaryshe, Patterson, and Capaldi (1993) a model was tested with school academic engagement and achievement being predicted by family characteristics of parent academic achievement and ineffective discipline and child antisocial behavior. Two cohorts of predominantly white males and their families, ranging in age from fourth to eighth grade, completed questionnaires, measures, and structured interviews. In addition, the child's teachers completed questionnaires that were sent via mail. The latent variable of academic engagement was defined using parent and student report of homework completion and how seriously the adolescent took his schoolwork. In addition teachers reported on class participation, work ethic, and assignment completion. Additional latent variables included in the structural equation model consisted of parental academic achievement, defined as number of years of education and a vocabulary score on the Weschler Adult Intelligence Scale-Revised, ineffective discipline derived from parent report, student anti-social behavior (gathered from parent, student, and teacher report as well as observations), and student academic achievement. Student academic achievement comprised teacher and parent report, as well as school achievement test score composites. Results indicated that academic achievement was independently associated with parent level of education. Parent level of education also impacted parental discipline practices, which in turn impacted student academic engagement and anti-social behavior.

Academic engagement can also be considered in terms of behavior and emotional reaction towards learning. Furrer and Skinner (2003) hypothesized that positive relationships, or relatedness, with key partners such as teachers and parents would predict student levels of effort, behavior, persistence, and participation in school. They specifically measured student relationships in 641 students in grades three through six, perceived control of academic domains, and engagement vs. disaffection. Both teachers and students completed questionnaires related to engagement and disaffection, and students provided additional information on relatedness and control of academic domains. The measure of engagement completed by teachers and students included behavioral and emotional components, combined for a total score. Behavioral engagement was defined as perceptions of effort, attention, and persistence while initiating and sustaining learning activities. Emotional engagement, on the other hand, consisted of involvement of the student in learning activities. Findings indicated that students' relationships with their teachers and parents played an integral role in their academic motivation and performance. Teachers proved to be the most important source of relatedness, particularly in terms of student emotional engagement. Students' ability to relate to teachers and parents decreased as students transitioned to middle school, but it became a more important factor in predicting overall engagement. When examining the effect of students' feelings of relatedness on engagement throughout the school year, students who felt they had a better relationship with their teacher at the beginning of the year also scored higher on measures of engagement. In addition, they also showed more improvement in terms of engagement throughout the school year (from fall to spring)

than students who did not share these feeling of relatedness. These findings again reiterated the importance of students' ability to relate to their teachers and the effect that it has on school engagement, with students who experienced more positive student-teacher relationships also exhibiting higher levels of academic engagement.

Defining student engagement in the same way as the study above, Skinner and Belmont (1993) tested a model of motivation positing that child motivation would flourish when needs of competence, autonomy, and involvement with people were provided and exhibited by the teacher. Competency was defined as the structure of the classroom allowing for achievement or desired outcomes, autonomy was the amount of freedom given to the child by the teacher to determine his or her own behavior, and involvement with people referred to the relationships children had with their teacher and peers. The effects of these specific teacher behaviors on student engagement over one school year were examined. Participants included 144 children in grades three, four, and five equally divided by grade and gender. Teachers and students completed measures in the fall and spring addressing the student's basic psychological needs mentioned above and student engagement. Analyses examining teacher behavior and student engagement in the fall and spring indicated that all three aspects of teacher behavior (structure, autonomy, and involvement) were related to student behavior and emotional engagement. Children who experienced high levels of teacher involvement perceived their teachers as being structured and supportive of autonomy. On the other hand, students who perceived teacher relationships as uninvolved also found the same teachers to be disorganized and coercive. In addition, students who perceived their teachers as being more structured and

involved in the fall showed higher levels of behavioral and emotional engagement in the spring. This relationship, however, affected teacher perceptions of the student as well. If teachers perceived their students as being more engaged behaviorally, they provided higher levels of involvement, autonomy support, and structure to these students.

In the above studies, student-teacher relationships played an integral role in many aspects of student school engagement, with positive relationships being consistently synonymous with higher levels of student engagement. Engagement was also linked to academic achievement in all grade levels that, in turn, affected teacher's perceptions of the students in their class. This seemingly cyclical relationship between student-and-teacher and student school engagement begs the question of how student-teacher relationships in early school affect engagement in years to come.

Typically Developing Students and the STR

Current literature indicates an association between student-teacher relationships and school adjustment in typically developing students (Pianta & Walsh, 1998; Rimm-Kaufman & Pianta, 2000). These relationships begin to affect student social and cognitive outcomes as early as preschool (Davis, 2003; Pianta & Walsh, 1998) and have been shown to have long-term effects (Davis, 2006). Focusing on these early relationships, Griggs, Gagnon, Huelsman, Kiddler-Ashley, and Ballard (2009) examined the interactive influence of child temperament and student-teacher relationship quality on peer play behaviors in 44 preschool children. Parents provided ratings of their children's temperament on the Behavioral Style Questionnaire and teachers completed the Student-Teacher Relationship Scale and the Penn Interactive Peer Play Scale. Results indicated

that children exhibiting decreased levels of disruptive peer play experienced student-teacher relationships characterized by low conflict and low dependency. This study showed the predictive nature of child behavior problems on student-teacher relationships with children displaying fewer behavior problems having more positive relationships with their teachers.

In order to address the effect of early student-teacher relationships on student social and academic outcomes, Howes, Phillipsen, and Peisner-Feinberg (2000) examined the consistency of 793 children's student-teacher relationships longitudinally from their last two years of pre-school through their first year of kindergarten. They found that student-teacher relationships in both years of preschool were predictive of these relationships in kindergarten, with the preschool year closest to kindergarten being more predictive than the first. They also found that teacher reports of higher conflict in kindergarten were predicted by preschool behavior problems. In relation to social outcomes, children who were rated by teachers as being more social were perceived by teachers as having kindergarten student-teacher relationships containing more closeness and less dependency and conflict. These findings suggest that patterns of student-teacher relationships may be established prior to entering kindergarten and potentially have longitudinal effects.

Similarly, in a study conducted by Birch and Ladd (1997) examining the association between the student-teacher relationships and adjustment to school in 206 kindergarteners, teacher closeness was predictive of academic performance and children rated as less teacher dependent scored higher on readiness tests than children rated as

being more dependent. With regard to school affect and attitude, children with high ratings of teacher closeness had more positive attitudes toward school than children with lower closeness scores. These results, again, suggest that student-teacher relationships affect adaptive outcomes in early elementary school.

In order to address the stability of teacher closeness and conflict ratings in a sample of 878 typically developing children longitudinally from kindergarten to sixth grade, Jerome, Hamre, and Pianta (2008) gathered measures from teachers, parents, and children and conducted observations as well. These participants were a subsample of a larger study (n=1364) that met the requirements of having closeness and conflict data for at least three of the seven required time points. Measures gathered information surrounding STR (closeness, conflict, and dependency), maternal sensitivity, child attachment, quality of home environment, non-maternal childcare prior to 54 months, academic achievement, and maternal behavior ratings. Correlations indicated teacher reported conflict scores over the first seven years of school to be more stable than closeness. Teacher conflict ratings at each grade were negatively correlated with maternal education and sensitivity, home scores, and academic achievement. In addition, internalizing behavior scores were correlated with conflict in kindergarten, second, third, and fourth grade, while externalizing behaviors were related to conflict at all grade levels. Conflict scores in earlier grades were also shown to relate to greater conflict in subsequent grades. In terms of closeness, high academic achievement was related to positive teacher closeness ratings from kindergarten through third grade, with previous ratings of closeness impacting greater closeness at each subsequent time point. Home

variables that positively impacted teacher closeness ratings included maternal education, quality of home environment, and maternal sensitivity.

In order to examine the longitudinal relationship between children's preschool behaviors and STR and academic achievement in early adolescents, DiLalla, Marcus, and Wright-Phillips (2004) recruited participants that had previously taken part in a Play Study at age 5. Forty-two adolescents between the ages of 11 and 13 (grades 5-8) were included in the study from an original cohort of 146. Parent-completed measures during the age 5 lab visit included ratings of child personality and child behavior problems. No additional measures were completed by parents for the adolescents. Teachers, however, completed measures addressing present day student-teacher relationships and student behavior problems.

When comparing STR closeness scores for students in fifth and sixth grade as compared to their older students in seventh and eighth grade's, students in the lower grades scored higher in terms of teacher closeness. When examining how preschool variables of temperament and behavior affected these student-teacher relationships (closeness, conflict, and dependency) in middle school, regression results indicated that these preschool variables were not predictive of STR in grades 6 through 8. Finally, when examining preschool predictors of adolescent school performance, children scoring higher on measures of anxiety at age 5 exhibited higher levels school performance in middle school. Thus, it appears that school performance is related to both the child and environmental factors of anxiety and STR respectively and should be considered when determining a model of achievement.

Hughes, Luo, Kwok, and Loyd (2008) hypothesized a model to determine the longitudinal effects of student-teacher relationship quality on student academic success. The authors examined how levels of effortful engagement in the classroom and, consequently, academic achievement were affected by the quality of student-teacher relationships over three consecutive years. Participants were 671 first grade students from three school districts in Texas across two cohorts that scored below the median on state tests of literacy. Separate latent variable structural equation models were used to test effects of Year 1 teacher-student relationship quality (TSRQ) on Year 3 reading and math achievement via the direct effects of TSRQ on Year 2 effortful engagement. Students completed sections from the Woodcock Johnson III Test of Achievement to determine reading and math success and teachers completed both a ten-item effortful engagement scale and the Teacher Student Relationship Inventory and TSRQ over a three year period. Results supported the hypothesized model in that effortful engagement in Year 2 fully mediated the effect of Year 1 TSRQ on Year 3 math and reading achievement. These findings suggest that TSRQ in first grade directly affects the level of engagement seen the following school year, influencing changes in student academic achievement in years to come. Changing any of these aspects of schooling in the early years could possibly change the course of student academic success.

Providing additional insight into understanding the association between early STRs and student outcomes in upper elementary and middle school, Hamre and Pianta (2001) examined the extent to which kindergarten teachers' perceptions of their relationships with students predicted a range of school outcomes including school performance and

behavior. In addition, the authors investigated possible moderators of the association between early social adjustment and later academic and behavioral performance. Participants included 179 children, who remained in the same district from kindergarten through eighth grade. Kindergarten measures included estimates of cognitive development utilizing the Stanford Binet-IV, teacher rating of child classroom behavior, and the student-teacher relationship scale. In Grades 1 through 8, information on academic performance was collected, measured by grade collection and state tests of basic skills scores, and work habits behaviors measured by teacher records and disciplinary records.

Results of the study indicated that academic and behavioral outcomes in upper elementary school were uniquely predicted by early teacher-child relationships, as experienced and described by kindergarten teachers, with mediated effects through eighth grade. In addition, behavioral outcomes in upper elementary and middle school were predicted by relational negativity (the combined score of the dependency and conflict subscale scores from the Student-Teacher Relationship Scale), specifically for students at the greatest risk for behavior problems including those with early behavior problems and boys. Overall, teacher-child relationship quality was a stronger predictor of behavioral outcomes than academic skills. These findings also suggested that children able to develop relationships with their kindergarten teachers marked by low levels of negativity, despite significant behavior problems, were in turn more likely to avoid future behavioral difficulties than peers with high negativity ratings.

Also exploring the connection between student-teacher relationships and behavior problems, Rudasill, Reio, Stipanovic, and Taylor (2010) examined the extent to which difficult temperament and background characteristics (family income, gender, and need for special services) at age four were associated with longitudinal student-teacher relationship quality (4th-6th grade) and risky behavior (6th grade) among 1156 sixth grade students. In addition, student teacher relationship quality (closeness and conflict) as a mediating role between background characteristics, difficult temperament, and risk taking behaviors was also assessed. Results indicated that boys from low-income families with difficult temperament and receiving special services had more conflictual relationships with their teachers. Conversely, higher levels of closeness were seen among girls from more affluent families receiving no special services. In addition, student-teacher relationship conflict was found to mediate the relationship between background characteristics and risky behavior and between difficult temperament and risky behavior. They also found that student-teacher relationship closeness mediated the relationship between risky behavior and student family income. These findings highlight the factors that impact the relationship between teachers and students as well student outcomes, such as behavior problems and risky behaviors, that are associated with these relationships.

Looking ahead into middle school, Wentzel (1998) examined students' motivation in relation to the perceived quality of their relationship with parents, teachers, and peers. The author also examined the role of motivation in explaining links between social relationships and academic achievement. One hundred and sixty-seven typically developing sixth grade students participated in this study from a suburban middle class

community. Regression analyses indicated that family cohesion and perceived support from teachers were independent positive predictors of interest in school, with girls reporting stronger interest than boys, and that distress was a significant negative predictor of school interest. Perceived teacher support was most closely related to classroom achievement and functioning, with positive support shaping student interest in class, positive pursuit of goals, and adhering to classroom policies and norms.

Also focusing on academic achievement, Konishi, Hymel, Zumbo, and Li (2010) assessed the relationship between academic achievement, bullying, and student-teacher connectedness utilizing data from the Programme for International Student Assessment. Participants included 27, 261 fifteen-year-old boys and girls, as well as 1,087 school principals from throughout Canada. Student measures consisted of reading and math standardized test scores and a student-teacher connectedness questionnaire. In addition, principals provided information on the school climate, specifically, on bullying. Multi-level modeling results indicated that students experiencing higher levels of bullying scored lower on both reading and math standardized tests. Connectedness with teachers reduced, but did not eliminate, the negative associations of the effect of bullying. Students experiencing high levels of bullying, but also feeling connected to their teachers, showed higher scores on math and reading standardized tests when compared to students in bullying atmospheres without teacher connectedness. Overall, students who felt more connected with their teacher, regardless of their bullying experiences, scored higher on math and reading achievement tests as compared to students who felt less connected.

Focusing on a group of students at risk for school failure, Hamre and Pianta (2005) examined whether students experiencing high levels of instructional and emotional support in first grade displayed higher achievement and lower levels of student-teacher conflict than their at-risk peers who did not receive this support. Participants included 910 first-grade students from a NICHD study of Early Child Care that followed students from kindergarten to first grade. Students were individually administered a standardized achievement battery and teachers completed a student-teacher relationship scale. Classroom observations were also conducted to measure the overall level of classroom support using a designated observation system. In classrooms offering moderate to high instructional support, mother level of education was not a factor in student overall achievement; however, in classrooms that offered low instructional support students with less educated mothers displayed significantly lower achievement at the end of first grade when compared to their low-risk peers. In addition, among children at high functional risk, classrooms with high levels of emotional support resulted in the highest academic achievement. Thus, student-teacher relationships were important because children's ability to develop strong relationships with their teachers, characterized by low levels of conflict, proved to be a key indicator of positive school adjustment.

For typically developing students, research findings suggest that the quality of student-teacher relationships in the early school years is a crucial predictor of later academic, behavioral, and social adjustment. For children who begin school with anxiety or disruptive behaviors, positive early relationships with teachers may serve as a compensatory resource, predicting improved school engagement, adjustment, and

reduced behavior problems over time. Conversely, relationships with teachers containing high levels of conflict and dependency have the potential to decrease overall student engagement in middle and high school. Research addressing the impact of these relationships over time is crucial in determining necessary antecedent strategies and interventions.

Zyngier (2008) determined that an engaging pedagogy needs to ensure that students and teachers connect, own, respond, and empower. Connecting refers to teachers having an interpersonal relationship with students and their cultural knowledge. Owning encompasses the students' ability to see themselves represented in their work. Responding is a teacher's ability to respect and consciously critique the students' lived experiences. Lastly, empowering relates to teachers encouraging students to believe that their choices will change the course of their lives and to help them find their voices so that they are able to discover and express their own opinions. Thus, the principles of "emerging pedagogy" can provide insight into how teachers create positive relationships with their students in early school years. This is important when examining the different experience that students have in terms of their relationships with their teachers.

Students with Intellectual Disabilities and the STR

There is much less known about student-teacher relationships for children with intellectual disabilities. However, this relationship may be even more important than that of their typically developing peers because children with intellectual disabilities are more prone to poor academic and social outcomes (Hamre & Pianta, 2001; Pianta, Steinberg, & Rollins, 1995; Silver et al., 2005).

Focusing on factors that contributed to early student-teacher relationships for children with and without intellectual disability (ID), Eisenhower, Baker, and Blacher (2007) examined parent reported measures of child behavior problems, and teacher reported behavior problems and overall relationship with the child for 140 participants. When comparing the ID and typically developing (TD) groups on student-teacher relationship quality, the ID group had lower total STR and teacher closeness scores along with higher ratings on conflict and dependency. There were also significant group differences in social skills and behavior problems, with the ID group showing lower levels of social skills and more behavior problems. When determining specific characteristics that related to STR quality, measured concurrently as well as earlier, behavior problems and self regulation at age three along with social skills and behavior problems at age six differentiated the two groups. These findings point to the importance of individual child characteristics on the student-teacher relationship in early elementary school for children with ID.

Expanding on the above findings Blacher, Baker, and Eisenhower (2009) examined STR stability across the early school years for children with and without ID. A subsample was used from the above longitudinal study comprising 98 children with measures being collected as ages six, seven, and eight. Parents and teachers completed measures at each of these time points, and parents and children participated in lab sessions as well. Measures were collected addressing child behavior problems, social skills, overall classroom climate, and student-teacher relationships. Results indicated that STRs were more stable for the TD than ID group over time. Teacher reports of STRs,

including closeness, conflict, dependency, and total score, were poorer for students with ID in all domains. In addition, when comparing the two groups on social skills and behavior problems the TD group was reported as having fewer behavior problems and higher levels of social skills. Increased behavior problems were predictive of relationships with teachers containing more conflict, and increased levels of social skills predicted higher closeness. Finally, externalizing behavior scores were related to STR at every age for both total score and level of conflict. These findings are indicative of the importance of child characteristics in predicting STR's for both ID and TD children in the early school years.

In a study conducted by Murray and Greenburg (2001), elementary school students between the ages of ten and eleven in general and special education classrooms, as well as their parents and teachers, completed measures relating to social, emotional, and school related outcomes. Students eligible under the categories of emotionally disturbed, other health impaired, learning disabled, and mild intellectual disability were included in the longitudinal sample of 289 students. Outcomes indicated that students with disabilities reported greater dissatisfaction with teachers, poorer bonds with school, and greater perceptions of school dangerousness when compared to typically developing peers. Students eligible under the categories of learning disabled, other health impaired, and typically developing students showed greater affiliation with teacher scores than students eligible under emotional disturbance and mild mental retardation. In addition, students with higher scores on positive relationship and school bonding scales were more likely to have positive social and emotional school adjustment.

In a similar study, Murray and Greenburg (2006) examined the associations among child perceptions of social relationships, their contextual experiences, and indicators of social, behavioral, and emotional adjustment in children with high incidence disabilities, including learning disabled, emotionally disturbed, mild mental retardation, and other health impaired, between the ages of eleven and twelve. Measures completed by teachers, parents, and children covered the same domains as in the previously mentioned study.

Separate analyses were run with the outcome variables of conduct problems, delinquency, anxiety, and school competence. Children scoring higher on communication with parents and peer trust had lower levels of conduct problems. Conversely, children scoring higher on teacher and peer alienation and teacher dissatisfaction had higher levels of conduct problems when compared to children with lower scores on these measures. In addition, conduct problems were also related to peer group involvement with students socializing with a delinquent peer group exhibiting greater levels of conduct problems. Interestingly, anxiety was predicted by the peer related variables of alienation, delinquency, and communication. In addition to these, teacher variables of affiliation and overall school bonding were also significant contributors to anxiety. Greater scores on peer and parent alienation were associated with higher anxiety scores, while children with higher teacher affiliation and school bonding scored lower. In addition to anxiety, school bonding was also a significant predictor of school competence, with higher scores being indicative of increased school competence.

These findings have important implications for children with high incidence disabilities and target individuals in their lives including parents, teachers, and peers. Supportive relationships with teachers and positive school contexts contribute to overall adjustment for children with high incidence disabilities. In addition, the ability of parents to communicate with their children in a positive manner has the potential to promote behavioral and emotional health. Conversely, involvement with a delinquent peer group by a child with a disability increases the likelihood of future deviant behavior. Behaviors exhibited by target individuals have been found to have both positive and negative impacts on the development of individuals with intellectual disabilities.

Current Study

In this study student-teacher relationships, from ages six through nine, were examined in order to determine whether they predict academic engagement of children with intellectual disability and typical development at age thirteen. The importance of this study stems from previous literature indicating that positive student-teacher relationships lead to positive school related outcomes including academic performance, sociability, and behaviors (Murray & Murray, 2004; Pianta & Stuhlman, 2004). Conversely, poorer student-teacher relationships have been associated with academic problems, aggressive or challenging behavior, and lack of motivation (Pianta, Steinberg, & Rollins, 1995). Long-term negative effects, previously reported only for TD children, have the potential to affect children with ID because they have been found to have poorer student- teacher relationships than their typically developing peers (McIntyre, Blacher, & Baker, 2006).

In order to determine the effects of early student-teacher relationships on middle school academic engagement the following primary research question will be addressed:

1. What impact do elementary school student-teacher relationships have on academic engagement of typically developing children and children with intellectual disabilities in middle school?
2. Do child behavior problems and social skills impact student teacher relationships across elementary school years, and do those characteristics predict academic engagement in middle school for typically developing students and students with intellectual disabilities?

Method

Participants

Participants included children with typical development (TD) or intellectual disability (ID) as well as their parents and teachers. Initial recruitment for this longitudinal study took place at age three in rural Pennsylvania and Southern California. The current sample includes a subsample of the original dataset including those for whom we have student-teacher relationship data from at least two of the four time points (ages six, seven, eight, and nine) and data at age thirteen. The total number of participants meeting these criteria equals 84, with the TD and ID groups being 61 and 23 respectively.

Children in the current study were classified as having ID according to the Diagnostic and Statistical Manual of Mental Disorders – Fourth Edition (American Psychiatric Association 2000), if at age 5, they: (1) received a score of 40–84 on the Stanford-Binet Intelligence Scale-Fourth Edition (Thorndike, Hagen, & Sattler, 1986), a measure of cognitive functioning; and (2) received a score of 40–84 on the Vineland Adaptive

Behavior Scales (VABS, Sparrow, Cicchetti, & Balla, 2005), a measure of adaptive functioning. Children were classified as having TD if they received a score of 85 or above on both Stanford-Binet and the VABS, and did not have a developmental disability or premature birth. Children were excluded from the current sample if they had discrepant scores on either the Stanford-Binet or VABS (one score over 84 while the other was under 84) or were diagnosed with autism (n=5). Examining individual student data made this determination. At age thirteen, students were reclassified into TD and ID groups using the Wechsler Intelligence Scale for Children-IV (Wechsler, 2003; WISC-IV) and the VABS. These classifications were examined using the previously mentioned criteria for participants at age thirteen to ensure appropriate grouping. Chi-square tests examining disability status at ages 5 and 13 found no significant differences between years ($\chi^2(1, N = 151) = .194, p = .66$); thus, age five disability status data was used throughout these analyses.

Table one shows demographic information and measure means and standard deviations by disability status. Both TD and ID status groups comprised predominantly Caucasian (63%) males (60%). There were no statistically significant group differences between ethnicity and gender. There were expected group differences in mean Stanford-Binet scores because that was a grouping variable.

The total sample mean age for mothers when the child was six years old was 37.7 years (range of 28-55), with 69% being employed and 55% having a bachelor's degree or higher. Although there was variability in family income, 68% of families earned over \$50,000 per year and 88% of the sample consisted of two parent households. Table one

contains information on individual group status and shows statistically significant group differences in mother age when child was six, employment status, level of education, and family income.

Assessments

Data were obtained from parents and students during a visit to the child study center at each site and through mailed packets. Teachers were given forms by participant parents, completed the forms, and mailed them back to the study site. All materials were provided to teachers by the participating families; thus, study principal investigators and others working on this project had no direct contact with participating teachers. Institutional Review Boards of the three Universities involved (Penn State University, UC Riverside, and UCLA) approved all procedures. Prior to the 13-year visit, parents were contacted via telephone and mailed a project description, a new informed consent form, and a packet of measures for both the parent and child. Parents then came into the laboratory and met with two examiners, one who worked with the parent and the other with the adolescent, in separate rooms. All interviews were audio recorded with permission from both parent and child and, in addition, the examiner took hand written notes. Families received a stipend of seventy-five dollars after completing the measures and laboratory sessions.

Teacher questionnaires (ages 6-9) were completed in the spring of the school year, in order for teachers to have sufficient time to become familiar with the child prior to completing the measures. Measures were mailed to the teachers in the March closest to the child's 6th, 7th, 8th, and 9th birthdays. The teachers then returned the measures in a

self-addressed pre-paid envelope to the designated project office. Measures were sent to the teacher identified by the child's parents as the primary teacher or the homeroom teacher. A list of all measures used within the current study can be seen in Table 2.

Teacher Measures (Ages 6-9)

Teachers provided ratings on the Student-Teacher Relationship Scale (STRS) (Pianta, 2001), the Social Skills Rating System (SSRS) (Gresham & Elliott, 1990), and the Teacher Report Form (TRF) (Achenbach, 1991).

The Student-Teacher Relationship Scale. The STRS is a 28-item self-report instrument designed to assess a teacher's perception of his or her relationship with a target student. Item scores range from 1-5 (1 = definitely does not apply; 2 = not really; 3 = neutral, not sure; 4 = applies; 5 = definitely applies). This measure contains three subscales: conflict (12 items) measures the teacher's feelings of negativity and conflict with the student (e.g., "This child and I always seem to be struggling with each other"); Closeness (11 items) the teacher's feelings of affection and open communication with the student (e.g., "I share an affectionate, warm relationship with this child"); and Dependency (5 items), the teacher's perception of the student as overly dependent (e.g., "The child asks for my help when he/she really does not need help). Total scores range from 28 to 140, with higher scores indicating a more positive student-teacher relationship. In addition, higher scores on the closeness subscale is indicative of more positive student-teacher relationships, while higher scores on conflict and dependency indicate less positive student-teacher relationships. The total score is computed using the following formula: Total Score = (72 – Conflict) + (Closeness) + (30 – Dependency). Pianta's (2001)

normative sample of children ages 4 through 8 showed a 50th percentile score of 117. Reliability and validity were also reported to be adequate. In terms of reliability, internal consistency for the total and subscale scores were .89 (total), .92 (conflict), .86 (closeness), and .64 (dependency) and test re-test reliability over a four week period was determined to be adequate with subscale and total alphas ranging from .76 to .92. In addition, construct validity found a three-factor solution. Using STRS data from the current study dataset for ages 6, 7, and 8, Blacher, Baker, and Eisenhower (2009) reported alphas of .86 (conflict), .78 (closeness), .57 (dependency), and .73 (total). For this study, the total score and each of the subscale score (Conflict, Closeness, Dependency) on the STRS were used as predictor variables and run in separate models.

Social Skills Rating System (SSRS) – Teacher. Child social skills were evaluated using the teacher form of the Social Skills Rating System, which measures the domains of Cooperation (10 items), Assertion (10 items), and Self-control (10 items). Scale scores are converted to standard scores (M = 100, SD = 15), with higher scores indicating better social skills. Good internal reliability is reported (alpha = 0.94), along with adequate discriminant validity (Gresham, Elliott, & Black, 1987). Content validity depends on the setting in which the behavior occurs with parents rating overall social skills and teachers rating social skills in a classroom context. The social skills total standard score was used in the current analyses.

Teacher Report Form (TRF; Achenbach, 1991). The TRF is the teacher version of the Child Behavior Checklist. It provides a standardized measure of problem behavior and offers 112 items investigating a range of behavior problems. The classroom teacher rates

each item on a Likert-type scale as follows: *is not true* (0), *somewhat or sometimes true* (1), or *very true or often true* (2); currently or within the past two months. A total problem behavior score, broadband externalizing and internalizing scores, and narrowband scales are generated. The total score consists of a T-score with mean of 50 and standard deviation of 10. Test-retest reliability has a mean correlation of .90 for Academic Performance and Adaptive Functioning scores, and .92 for the Total Problems score. Similar to the CBCL, the TRF generates a score of teacher's perceptions of student problem behaviors that can be compared to parent ratings and investigated as a predictor of the STR. The total problems sum score was used in the current analyses with higher scores indicating more problem behaviors.

Child Measure (Age 5)

Stanford-Binet Intelligence Scale – 4th Edition. This standardized test of intelligence is appropriate for children with and without intellectual disability; it yields a composite standard IQ with a mean of 100 and a SD of 16. In terms of reliability, Kuder-Richardson coefficients ranged from .95 - .99 and Individual subtest reliability ranged from .80 to .97. Validity was determined using intercorrelation and factor analysis scores. Intercorrelations among subtests suggest a general factor and factor analysis justifies a general factor. The composite IQ was used to determine disability status groups at age five for the current study.

Adolescent Measures (13 year)

Adolescent Interview. The adolescent interview, conducted at the 13-year lab visit, consisted of questions pertaining to friends, siblings, teachers, school (academic strengths

and weaknesses, investment in academics, and extra-curricular involvement), rule breaking, bullying others, being the target of bullying, and school-home involvement. There were five overarching topics (siblings, school, peers, getting bullied, and bullying others) with specific and probing questions embedded within those five broad topics. Adolescents were aware they were not required to answer all or any questions and that their answers would be kept confidential. For the purposes of this study, only the school sections of academic engagement, school/home engagement, social engagement, and emotional engagement were coded and used in these analyses, which comprised 12 questions. Sample questions from this section of the interview included: Do you usually pay attention in class? Do you care about your grades? Do you raise your hand and ask questions in class? Do you usually begin your homework when you get home or do your parents have to make you start? and What is your favorite class? (This last question is intended to determine if the teen chooses an academic or recreational class as their favorite.). The school section of the adolescent interview can be found in Appendix 1. This interview lasted for approximately one hour and the adolescent had the opportunity to take a break whenever necessary.

Adolescent interview codes were established to parallel the parent coding system, which was created during the year twelve assessments. Sections were coded using a likert scale ranging from 0-4 or 0-3 depending on the coding category. Higher scores were indicative of more active engagement. For this study, only the school sections of the interview were quantified. These included items on emotional engagement, academic engagement, extracurricular/social engagement, and school-home engagement.

An exploratory factor analysis (EFA) was run using the interview codes to determine the number of factors present. Results, seen in table 3, indicated that there was one factor present. One eigenvalue greater than one was retained (2.43) and factor loadings for all four interview topics were above .5, which is considered to be high. In addition, a correlation matrix, seen in table 4, indicated that all interview variables were moderately-to-highly correlated.

In this study, adolescents were divided into one of five groups: severe disengagement (0), significant disengagement (1), mixed engagement (2), significant engagement (3), or active engagement (4) based on the averaged total sum score. This information was then used as an observed variable that contributed to the latent variable of adolescent academic involvement at age 13. The complete adolescent coding system for the school codes can be found in Appendix 2.

Severe Disengagement was defined as the adolescent either actively not following school rules and skipping classes or as following rules and attending classes but teachers or parents noted that the adolescent was not really mentally “present” during class time (i.e., child sleeps in class, spends entire class doodling or being off task). Significant disengagement was defined as the adolescent following school rules and actively attending classes, but seeming 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). In addition, the student had very low frustration tolerance (gives up quickly after failure) and tried to passively avoid challenging situations. Mixed engagement was defined as the adolescent being somewhat engaged in some, non-

academic parts of the school day (such as woodshop or PE) but had 2-level disengagement during academic subjects. The adolescent also attended school regularly and followed school rules consistently, although the teacher may have occasionally reported some negative behaviors. Significant engagement was described as the adolescent being actively engaged in at least one academic subject, but not in all academic subjects. For example, the adolescent may have enjoyed literature class but was not motivated to perform well in math class. This category required some positive behaviors and only very mild negative behaviors. The final category, active engagement, was defined as the adolescent sincerely enjoying the majority of academic subjects in school. Teachers and school staff may have also noted pro-social behaviors that the adolescent engaged in during school hours (such as helping new students, doing extra clean-up duties). A total sum score combining scores from the four school related sections (academic engagement, school/home engagement, social engagement, and emotional engagement) was used as an observed variable that contributed to the latent variable of adolescent academic involvement at age 13.

Adolescent Questionnaire. The adolescent questionnaire, People in My Life: Teacher (Cook, Greenberg, & Kushe, 1995), focused on the adolescents' perceptions of their relationships with teachers as well as their generalized perceptions of the overall school environment. Subscales of this measure included teacher affiliation ($\alpha = .90$), school bonding ($\alpha = .81$), teacher alienation ($\alpha = .68$), and school dangerousness ($\alpha = .55$) (Murray & Greenberg, 2001). For the current study the subscales of teacher affiliation and school bonding were used as an observed variable that contributed to the latent

variable of academic involvement at age 13. Alphas for current sample for the two subscales used, teacher affiliation and school bonding, were .83 and .80 respectively. These subscales were chosen because they showed the highest reliability and the questions pertained most to the outcome variable of academic involvement. Questions relating to relationships with teachers assessed the positive and negative affective components of relationships as well as the positive and negative aspects of accessibility and involvement present within relationships. This questionnaire consisted of twenty-two items and was scored on a likert scale ranging from 1-4 (1 = almost never or never true; 2 = sometimes true; 3 = often true; or 4 = almost always or always true) with an item break down for each subscale as follows: teacher affiliation (8 items), school bonding (8 items), teacher alienation (3 items), and school dangerousness (3 items). Questions included: I trust my teachers; Teachers respect my feelings; I can count on my teachers when I have a problem; School in a nice place to be; and Teachers pay attention to me. In addition to these positive questions, questions were also asked in the negative to ensure reliability in answers. For example: School is a dangerous place; I get easily upset with my teachers; and It is hard to talk to my teachers. After examining the factor structure of this measure, Murray and Greenberg (2001) placed students into one of three groups; dysfunctional, functional/average, and positively involved based in subscale scores. This grouping system was also employed within the current study. Because the population examined in the Murray and Greenberg (2001) paper was typically developing, additional analyses for the ID sample were conducted to determine reliability of the teacher affiliation and school bonding subscales to ensure that these groupings also

related to individuals will ID. Alphas for the ID sample were .85 for both the teacher affiliation and school bonding subscales indicating that internal consistency was high.

For these analyses, sum scores from the school bonding and teacher affiliation subscales were combined and students were placed into one of three groups based on a total score: dysfunctional, functional/average, or positively involved. Total scores could range from 16-64 with lower scores indicating more school dysfunction. Students were placed in groups using the following scoring system: scores of 16 through 31 were considered dysfunctional, 32-47 were considered functional/average, and 48-64 were considered to be positively involved. These groups were then assigned a score of 1-3 respectively identifying group membership. These groups based on a total sum score then contributed to the latent variable of adolescent academic involvement at age 13.

Parent Measures (5-6 year)

Family Information Form (FIF; Baker, Blacher, Crnic, & Edelbrock, 2002). A brief questionnaire was administered to parents to collect demographic information such as child's gender and ethnicity, marital status, mother and father's age, education, job description, income category, and employment status. This information was collected from parents at each time point including the present 13-year data collection. Both SES and mother education were examined at age five and thirteen to determine stability. Chi-square results indicated there were no statistically significant differences between age 5 and age 13 family income $\chi^2(1, N = 84) = 1.05, p = .31$ or mother education $\chi^2(1, N = 84) = 0.22, p = .64$. Because of this, age 5 family income and mother education were used throughout.

Vineland Adaptive Behavior Scales. The VABS is a structured interview assessing the adaptive behavior of children and adults with or without disabilities. Within this study, mothers were respondents and the subscales used were Communication, Daily Living Skills, and Socialization. These were combined to form the adaptive behavior composite score, which was used to confirm intellectual disability status of children with Stanford-Binet scores of 84 or below. Blacher, Baker, and Eisenhower (2009) reported a Cronbach alpha coefficient of .95 for sample participants at age 5.

Parent Measures (Ages 6-9)

Child Behavior Checklist for ages 4-18 parent (CBCL; Achenbach, 1991, 2000). The CBCL is a 118-item measure given for students aged between 4-18 years. Parents completed the CBCL in order to determine their rating of child behavior problems. Behaviors or problems are listed and participants rate each item on a 3-point Likert-type scale: *not true* (0), *somewhat or sometimes true* (1), or *very true or often true* (2). A T-score with a mean of 50 and standard deviation of 10 is derived for total behavior problems, with a higher score being indicative of more behavior problems.. Reliability for behavior problems is .84 and .97 for social competencies. According to the CBCL manual, the criterion-related validity is widely supported through multiple regressions, relative risk odd ratios, and discriminant analyses. The CBCL is highly correlated with other instruments such as the Conner's Rating Scales and Behavior Assessment System for Children (BASC). The Total Problems sum score was used in current analyses.

Social Skills Rating System (SSRS) – parent. Child social skills were evaluated using the parent form of the Social Skills Rating System (SSRS-P; Gresham & Elliott, 1990).

This scale yields scores that can be converted to standard scores ($M=100$; $SD=15$). The parent form measures the domains of Cooperation (10 items), Assertion (10 items), Self-control (10 items), and Responsibility (8 items). The Social Skills Total standard score was used in current analysis with higher scores being indicative of more positive social skills. The social skills total score has good internal consistency with an alpha of .90. The SSRS teacher form is moderately correlated with the *Social Behavior Assessment* with correlations in the .50s and .60s. The SSRS is commonly used to determine social skills for individuals with and without disabilities.

Parent Measures (13 year)

Parent Interview. The parent interview, conducted during the age 13 years lab visit, is similar to the adolescent interview in that it contains questions that pertain to friends, siblings, teachers, school (academic strengths and weaknesses, investment in academics, and extra-curricular involvement), rule breaking, bullying others, being the target of bullying, and school-home involvement. In addition to these topics, parents were asked about conflicts they have had with their child and how this affected their relationship. They were also asked to identify any events that might have had a negative effect on their child both academically and socially. There are a total of seven overarching topics, but for the purposes of this study, only the school section was coded and used in analysis which comprised 17 specific questions. Sample questions from this section of the interview are as follows: What is your child's overall opinion of school?; What are his/her favorite subjects?; Does your child engage in any negative behaviors at school?; How is your child's relationship with his/her teachers?; and Can you describe the overall

homework situation? The school section of the parent interview can be found in Index 3. This interview lasted for approximately one hour and the parent had the opportunity to take a break whenever necessary.

Codes used in this analysis included academic engagement, extracurricular and social engagement, school-home engagement, and emotional engagement. Sections were coded using a likert scale ranging from 0-4 or 0-3 depending on the coding category. Higher scores were indicative of more active engagement. An exploratory factor analysis (EFA) was run using the interview codes to determine the number of factors present. Results, seen in table 5, indicated that there was one factor present. One eigenvalue greater than one was retained (3.11) and factor loadings for all four interview topics (academic engagement, extracurricular and social engagement, school-home engagement, and emotional engagement) were above .6, which is considered to be high. In addition, a correlation matrix, seen in table 6, indicated that all interview variables were moderately-to-highly correlated.

Based on the parent information provided within each factor, adolescents were divided into one of five groups: severe disengagement, significant disengagement, mixed engagement, significant engagement, or active engagement. The five levels of engagement were defined in the same way as the adolescent interview. The complete parent coding system for the school codes can be found in Appendix 4.

Data Analyses

All data were entered and analyzed using SPSS and Mplus. SPSS was used to organize these data by creating the necessary variables and explanations of these

variables. SPSS was also used when calculating total sample descriptive statistics including measures of central tendency (e.g., mean, median, mode) and variability (e.g. standard deviation and ranges). In addition, frequency distributions were computed to describe the sample in terms of gender, ethnicity, and other family demographic information. Standard lab procedures included double entry of all variables, checking out of range scores, and checking missing data. Mplus was used to fit the raw data to the proposed longitudinal latent growth model with full information maximum likelihood (FIML) parameter estimation to handle the presence of missing data.

The theoretical models discussed below were conceptualized after a review of the student-teacher relationship literature as it pertains to children with typical development and to those with an intellectual disability. As can be seen in the Figure 1, the unconditional model examines the growth of student-teacher relationships over four time points, from age 6 to 9 (total and subscale scores run in separate models). Observed variables are categorized in rectangles and represent variables that are measured directly. Latent variables (circles) are defined by observed variables and hypothetically influence the outcome variable (Marcoulides & Heck, 1993). Student-teacher relationships from years six, seven, eight, and nine each load on two factors, F1 and F2. The latent variable of initial (F1) represents the true status at the beginning of the study and is referred to as the Level factor. The latent variable growth (F2), referred to as the Shape factor, is the aspect measuring increase or decrease of change across the repeated assessments of STRs. In addition to the observed and latent variables, error terms, also referred to as residual terms, are included in the model representing the amount of variation in the

variable that is due to measurement error. These are represented by arrows on each of the variables. The correlation between the two latent variables of initial and growth are included in the model as well.

In these analyses, the structural equation-modeling framework of latent change analysis (LCA) was used to measure student-teacher relationship change over time. The specific longitudinal model strategy chosen was the Level-and-Shape (LS) model. This model was chosen over the Intercept-and-Slope (IS) model because the IS model assumes that change occurs in a specific manner and, thus, might cause difficulty in measuring the specific trajectory. The LS model is less restrictive and is expected to be a better fit for the data.

LCA models are interpreted by fixing the factor loadings of the level factor to a value of one (Raykov & Marcoulides, 2006). Each of the paths associated with the initial factor were fixed to a value of one to insure that this factor was interpreted as an initial true status of STR. For the growth factor, the year six path was fixed to zero, indicated by a dotted line, while the year nine path was fixed to one to ensure that this factor was interpreted as a true overall change factor. The paths for years seven and eight within the growth factor were free to vary, implying that they denote the part of overall true change that occurs between years six and nine.

Due to their widespread use, evaluation of goodness-of-fit for all of the models was determined using chi-square values, comparative fit index (CFI), and root mean square error of approximation (RMSEA) (Raykov & Marcoulides, 2006, 2008). Model fit was supported with a non-significant chi-square goodness-of fit value, CFI greater than .90,

and a RMSEA below .05 with the left endpoint of its 90% confidence interval markedly smaller than 0.05. In addition, due to the chi-square test's sensitivity to sample size that often causes models to be rejected with only marginally inconsistent data, primary emphasis has been placed on other reported fit criteria (Raykov & Marcoulides).

Results

Each unconditional, predictive, and conditional models will be discussed separately depending on the measures included within the models. First, models containing total student-teacher relationship scores and teacher measures of behavior (TRF) and social skills (SSRS) will be discussed followed by a model containing parent measures of behavior (CBCL) and social skills (SSRS) as predictors of STR total. Finally, models containing student-teacher relationship subscale scores and teacher reported scores on behavior problems and social skills will be presented. These subscale models will also be discussed using parents' reports of social skills and behavior problems as predictors of student-teacher relationships in order to address shared method variance because only teachers could complete the STRS measure. Model goodness-of-fit criteria described above will be used for all models.

Models with Student-Teacher Relationship Total Score

The first proposed model examined was the unconditional LS model for student-teacher relationship total displayed in Figure 1 (descriptive statistics for STR total can be found in Table 7). This model provided the following fit criteria: $\chi^2 (3, N=84) = 2.51, p = .473$; CFI = 1.00; and RMSEA 0.000 (0.000; 0.172). Based on the previously mentioned fit criteria, this model was interpreted as fitting the data well.

Table 8 presents the Mplus factor loading parameter estimates of the proposed unconditional LS model tested. The shape factor loadings, which represent a proportion of change relative to the total change occurring, show a decline in total student-teacher relationships over time. The Level and Shape means are both statistically significant, meaning they are statistically different than 0, at $\mu = 119.84$, $t = 83.05$, $p < .01$ and $\mu = -3.61$, $t = -2.43$, $p < .05$ respectively. The negative mean value for shape indicates that total STR has declined, on average, by approximately 4 points from the initial time point measured. The covariance values are non-significant ($cov = 31.82$, $t = 0.55$, $p = .583$) meaning that the decrease in STR total over time is not related to the initial levels or vice versa. In other words, there is not a relationship between the initial and final time points. The variances of Level and Shape factors, which show the differences in individual participants on STR total from the initial time point and over time, are not statistically significant at $s^2 = 37.82$, $t = 0.56$, $p = .574$ and $s^2 = -24.96$, $t = -0.46$, $p = .646$ respectively, which means that there are not meaningful individual differences.

The proposed predictive model for STR total as seen in Figure 2. This model comprised one latent outcome variable: academic engagement (13 yr), which was defined by the observed variables of People in My Life Measure, adolescent interview, and parent interview. Frequency scores by disability status for these measures comprising academic engagement can be found in Figures 3, 4, and 5. The latent variables initial and growth, produced from this analysis, were used as predictors for academic engagement at age 13. Descriptive statistics for measures included in the academic engagement latent variable and factor loadings for academic engagement can be found in Table 9 and Table 10

respectively. For this model, the following fit criteria was obtained χ^2 (13, N=84) = 19.40, $p = .111$; CFI = 0.941; and RMSEA 0.077 (0.000; 0.143). After examining the previously mentioned fit criteria, the proposed predictive model also fit the data well.

Table 11 contains predictive coefficient estimates for academic engagement regressed on the Level and Shape factors of STR total. These coefficients indicate that the Level factor of STR total significantly predicted academic engagement at age 13 ($\gamma = .034$), meaning that, on average, at age 6, children who had more positive overall student-teacher relationships exhibited higher levels of academic engagement at age 13. These coefficients indicate that a one-unit increase in a total student teacher relationship is associated with a specific change in academic engagement. The Shape factor, however, was not found to predict academic engagement at age 13 ($\gamma = .070$)

Next, as seen in Figure 6, disability status was then added to the predictive model making it now a conditional model. The descriptive statistic for disability status can be found in Table 12. The fit criteria for this model was as follows: χ^2 (18, N=84) = 26.34, $p = .092$; CFI = 0.935; and RMSEA 0.074 (0.000; 0.132), indicating that the data fit the model well. Predictive coefficient estimates for academic engagement regressed on the Level and Shape factors of STR total; and Level and Shape factors as well as academic engagement regressed on disability status can be found in Table 13. Coefficients mirrored the above findings in that the Level factor ($\gamma = .011$) was predictive of academic engagement at age 13, but the Slope factor was not ($\gamma = -.057$). In addition, disability status was not found to be a significant predictor of the Level factor, Shape factor, or academic engagement.

The model in Figure 7 is an extension of the model in Figure 2. Teacher reports of social skills (SSRS) and behavior problems (TRF) were added to the model as predictors of student teacher relationships at each age level (ages 6-9), and the latent variable, academic engagement. Student social skills and behavior problems were determined by using the social skills standard score from the SSRS and the total problems sum score on the TRF that teachers completed at each of the time points with higher scores on the SSRS being indicative of better social skills and higher scores on The TRF indicating more problem behaviors. Using the same technique as the previous analyses, structural equation modeling framework of latent change analysis was used to measure student-teacher relationship change over time. Disability status is not discussed in detail within this model because when it was included (See Figure 8) goodness of fit criteria were not met: χ^2 (66, N=84) = 120.90, $p < .01$; CFI = 0.834; and RMSEA 0.100 (0.071; 0.127).

Descriptive statistics for the variables in Figure 7 can be found in Table 14. In terms of goodness-of-fit, this model was determine to fit the data well with criteria as follows: χ^2 (45, N=84) = 51.71, $p = .228$; CFI = 0.979; and RMSEA 0.042 (0.000; 0.087). Table 15 contains coefficient estimates for STR total at each age 6-9 individually regressed on teacher reports of behavior problems and social skills at the same age and academic engagement regressed on the Level and Shape factors of STR total. These coefficients indicated that teacher reported measures of child behavior problems and social skills were predictive of STR total at ages 6 ($\gamma = -.226$ and $\gamma = .337$), 7 ($\gamma = -.229$ and $\gamma = .331$), and 8 ($\gamma = -.201$ and $\gamma = .408$) with students having fewer behavior problems and higher levels of social skills experiencing a more positive overall student-teacher relationship during

each of the corresponding years. When examining age 9 coefficients, however, only teacher reported child behavior problems ($\gamma = -.350$) were predictive of overall student-teacher relationships, but the findings were consistent in that students with fewer behavior problems experienced more positive STR. Upon examining the Level and Shape factors, neither were predictive of academic engagement at age 13 ($\gamma = .024$ and $\gamma = .358$ respectively). It should be noted that with the exception of age 6 STR Total, academic engagement was more highly correlated with teacher reported child social skills and behavior problems than student-teacher relationships (Correlations in Table 16). In addition, the amount of variance explained in F1 went from .034 with only STR Totals included in the model to .347 when student characteristic of social skills and behavior problems were added to the model. This could help explain the non-significant Level and Shape factors because child characteristics are accounting for such a sizable amount of variance.

In order to address shared method variance, teacher reported measures of child behavior problems (TRF) and social skills (SSRS-T) were replaced with parent reported measures of the behavior problems (CBCL) and social skills (SSRS-P) respectively in the model seen in Figure 7 (descriptive statistics for parent completed measures can be found in Table 17). This model provided the following fit criteria: $\chi^2 (45, N=84) = 59.07$, $p = .077$; CFI = 0.91; and RMSEA 0.061 (0.000; 0.100). Based on the previously mentioned fit criteria, this model was interpreted as fitting the data well.

Coefficient estimates for STR total at each age 6-9 individually regressed on parent reports of behavior problems and social skills at the same age and academic engagement

regressed on the Level and Shape factors of STR total can be found in Table 18. These coefficients indicated that parent reported measures of child behavior problems were predictive of STR total at ages 7 ($\gamma = -.503$), 8 ($\gamma = -.348$), and 9 ($\gamma = -.232$) with students exhibiting fewer behavior problems experiencing a more positive overall student-teacher relationship. Coefficients surrounding parent reported social skills, however, were predictive of STR Total only at age 7 ($\gamma = .426$).

Unlike the model containing teacher reported social skills and behavior problems, coefficients in this model indicated that the Level factor of STR total significantly predicted academic engagement at age 13 ($\gamma = .027$). This can be interpreted as, on average, children with student-teacher relationships that are more positive at age 6, exhibited higher levels of academic engagement at age 13. These coefficients indicate that a one-unit increase in a total student teacher relationship is associated with a specific change in academic engagement. Consistent with the model containing teacher reported measures, the Shape factor was not found to predict academic engagement at age 13 ($\gamma = -.010$).

As mentioned previously, Figure 8 is an extension of Figure 7, with disability status being added to the model. This model was run using parent reports of social skills and behaviors problems just as it was with teacher reports of these same measures. As with the model containing teacher reports, fit criteria indicated that this model was not a good fit: $\chi^2(66, N=84) = 91.96, p < .05$; CFI = 0.84; and RMSEA 0.070 (0.030; 0.100). Due to the data not fitting the model well, coefficient estimates will not be interpreted.

Models with Student-Teacher Relationship Subscale Scores

Student-teacher relationship subscale scores of conflict, closeness, and dependency were separately entered into the models represented in Figures 1, 2, 3, 4, and 5 taking the place of STR total. Unconditional models, represented in Figure 1, were run for each subscale first. Descriptive statistics for each subscale can be found in Table 19.

Upon entering subscales of closeness and dependency separately into the unconditional model, the closeness subscale yielded the following fit criteria: χ^2 (3, N=84) = 2.74, p = .432; CFI = 1.00; and RMSEA 0.000 (0.000; 0.178) and the dependency subscale provided the following fit criteria: χ^2 (3, N=84) = .384, p = .944; CFI = 1.00; and RMSEA 0.000 (0.000; 0.032). Based on the previously mentioned fit criteria, both proposed unconditional models fit the data well. Although the dependency subscale fit the criteria well, parameter estimates, seen in Table 21, indicate no evidence of significant change in scores from age 6 to age 9. Because growth models are meant to measure change, the absence of change makes this model inappropriate for dependency subscale data. Based on this information, the dependency subscale will not be entered in the remaining models. In terms of the conflict subscale, when entering this data into the unconditional model, the data did not fit the model well and convergence was not reached. Because of this, conflict will also not be entered in the remainder of the models.

In Table 20 the Mplus factor loading parameter estimates of the proposed unconditional LS models tested for closeness are presented. The shape factor loadings, representing a proportion of change relative to the total change occurring, illustrate a decline in student-teacher closeness over time. Significant variance exists within the Level factor $s^2= 15.09$, $t= 1.86$, $p=.063$, but not in the Shape factor $s^2= 19.20$, $t= .978$

$p=.328$, indicating meaningful individual variability in the average initial individual student-teacher closeness score.

The Level and Shape means are both statistically significant, meaning they are statistically different than 0, at $\mu= 45.30$, $t= 62.40$, $p=.000$ and $\mu= -3.50$, $t= -3.78$, $p=.000$ respectively. The negative mean value for shape indicates that student-teacher closeness has declined, on average, by approximately 3.5 points from the initial time point measured. The covariance values are non-significant ($cov= -6.63$, $t= -0.61$, $p=.540$) meaning that the decrease in student-teacher closeness over time is not related to the initial levels or vice versa. In other words, as seen with STR total, there is not a relationship between the initial and final time points.

The next model examined for closeness was the proposed predictive model as seen in Figure 2. The following fit criteria was obtained for closeness: $\chi^2 (13, N=84) = 20.45$, $p = .085$; CFI = 0.913; and RMSEA 0.083 (0.000; 0.148). Based on the previously mentioned fit criteria, the proposed predictive model fit the data well.

Table 22 contains predictive coefficient estimates for academic engagement regressed on the Level and Shape factors of STR closeness. These coefficients indicate the predictive capability of teacher closeness on academic engagement. The Level factor significantly predicted academic engagement at age 13 ($\gamma = .103$), meaning that, on average, at age 6, children who had more closeness within their student-teacher relationships exhibited higher levels of academic engagement at age 13. These coefficients indicate that a one-unit increase in student teacher relationship closeness is associated with a specific change in academic engagement. However, when examining

the Shape factor for closeness, it was not found to be predictive of academic engagement at age 13 ($\gamma = .006$).

Next, as with STR total, disability status was added to the proposed predictive model making it now a conditional model (Seen in Figure 6). Upon examining the fit criteria for the conditional model containing STR closeness, the fit criteria indicated that the data did not fit the model well: $\chi^2 (18, N=84) = 37.85, p < .01$; CFI = 0.827; and RMSEA 0.115 (0.063; 0.166), thus, coefficient estimates were not interpreted.

Closeness subscale scores were then placed in a model containing teacher reports of social skills and behavior problems (See Figure 7). As with the models containing STR Total, teacher reports of social skills (SSRS) and behavior problems (TRF) were added to the model as predictors of student teacher relationship closeness at each age level (ages 6-9), and the latent variable, academic engagement. Once again, disability status is not discussed in detail within this model (See Figure 8) because the data did not fit the model well and convergence was unable to be achieved when this variable was included.

When evaluating fit, this model was determined to be a good fit to the data with closeness criteria being: $\chi^2 (45, N=84) = 60.19, p = .065$; CFI = 0.909; and RMSEA 0.063 (0.000; 0.102). Coefficient estimates for STR closeness at each age 6-9 individually regressed on teacher reports of behavior problems and social skills at the same age, and academic engagement regressed on the Level and Shape factors of STR total, can be found in Table 23. When examining the Level and Shape factors for closeness, the Shape factor was found to be predictive of academic engagement at age 13 ($\gamma = .210$), but the Level factor was not ($\gamma = .058$). This suggests that less decline in the

slope of student-teacher closeness over time predicts higher levels of academic engagement at age 13. Inspecting closeness coefficients indicated that teacher reported measures of child social skills were predictive of STR closeness at ages 6 ($\gamma = .263$), 7 ($\gamma = .245$) and 8 ($\gamma = .350$) with students experiencing closer relationships with their teachers if they had higher levels of social skills. When examining behavior problems, student-teacher closeness was predicted by student behavior problems only at age 9 ($\gamma = -.0720$), in that students with fewer behavior problems at age 9 had closer relationships with their teachers.

Finally, in order to address shared method variance within the proposed conditional models for the closeness subscale, teacher reported measures of child behavior problems and social skills were replaced with parent reported measures using the CBCL and SSRS respectively in the model seen in Figure 7. Data found to fit the model well using the following fit criteria: $\chi^2(45, N=84) = 52.68, p = .201$; CFI = 0.934; and RMSEA 0.045 (0.050; 0.089). Disability status was not included in the model (See Figure 8) because when closeness scores were included in this model, the data were determined to not fit the proposed model well, with the fit criteria as follows: $\chi^2(66, N=84) = 104.16, p < .01$; CFI = 0.71; and RMSEA 0.080 (0.050; 0.110). Because the data containing disability status did not fit the model well, coefficient estimates for that model were not interpreted.

Coefficient estimates for STR closeness at ages age 6-9 individually regressed on parent reports of behavior problems and social skills at the same age and academic engagement regressed on the Level and Shape factors of STR closeness can be found in Table 24. Coefficients from the conditional model for the STR closeness subscale-

containing parent reported measures indicated different results than with teacher reported measures. Similar to the STR total conditional model, parent reported measures of child behavior problems were predictive of STR closeness at ages 7 ($\gamma = -.215$), 8 ($\gamma = -.125$), and 9 ($\gamma = -.191$) with students exhibiting fewer behavior problems experiencing more closeness within their student-teacher relationship. When examining coefficients surrounding parent reported social skills, however, STR closeness was predicted by child social skills only at age 6 ($\gamma = -.122$). Also differing from the teacher reported measures, this proposed model containing parent reported social skills and behavior problems indicated that the Level factor, not the Shape factor ($\gamma = -.006$), of STR closeness significantly predicted academic engagement at age 13 ($\gamma = .080$). This can be interpreted as, on average, children with student-teacher relationships containing more closeness at age 6, exhibited higher levels of academic engagement at age 13.

Discussion

In this study the ability of student-teacher relationships in elementary school to predict academic engagement at age 13, as experienced by children with typical development and children with intellectual disability, was investigated. Teacher and parent reports of social skills and behavior problems were added to the tested statistical models to determine their impact on the student-teacher relationship, as well.

The contribution of this study can be seen in the reported influence of both student-teacher relationships (STR's) over time and child characteristics specifically, social skills and behavior problems, in predicting academic engagement at age 13. While past studies have examined student-teacher relationship impact on various aspects of child

development over a two to three year span, few, if any, have assessed the impact of these relationships over five or more years. In addition, these results provided a more global view of academic engagement and child characteristics shown to be associated with STR by incorporating parent, teacher, and child reports.

Academic engagement, used as an outcome variable, comprised multiple data sources including: student and parent reports of overall academic engagement, reports of school and home engagement, social engagement, and emotional engagement. When defining academic engagement, the literature suggested a theoretical framework with components including: importance of grades, investment in learning/education, participation in class (Aunola, Stattin, & Nurmi, 2000), independent homework completion and willingness, limited conflicts with parents involving homework (DeBaryshe, Patterson, & Capaldi, 1993), and involvement in school related activities. The latter component incorporated social integration within the school environment including having a cohesive peer group, compliance with rules, frequency/severity of behavior, and positive and negative feelings towards teachers, classmates, academics, and school (Furrer & Skinner, 2003).

The literature also included many alternative components used to define academic engagement, but not all could be included within this study. Nonetheless, the information provided in the study via parent and adolescent reports addressed many of the important factors highlighted within previous studies. Additionally, the components incorporated within this study were found to load onto one factor, meaning that they were measuring the same construct. All reported information also loaded significantly onto the academic

engagement latent variable. Parent and child reported personal information was statistically supported as being an accurate depiction of academic engagement at age 13.

When examining the ability of STR total scores to predict academic engagement at age 13, it was discovered that STR total at age 6 was predictive of academic engagement at age 13. Students who experienced more positive STR's very early in elementary school had higher levels of academic engagement in middle school. Student-teacher relationships were also the most positive at age 6, with scores declining each year thereafter. These findings are consistent with Murray and Murray (2004) and Pianta and Stuhlman (2004) who found a direct link between supportive early STR's and academic engagement, with importance being placed on students establishing positive relationships with target individuals, such as teachers, at a young age. Downer and Pianta's (2006) research also reiterated these findings suggesting that academic achievement in later years of school was predicted by warm and supportive STR with low levels of conflict in early school years. It is notable, however, that none of these earlier studies involved samples of children with intellectual disability.

Although disability status was posited to impact both STR's and academic engagement it was not shown to be predictive of STR total score or subscale scores in any of the proposed models. This non-significant finding could possibly be accounted for by examining individual TD and ID child and parent reported measures (interviews and People in My Life Measure) and teacher and parent reported child characteristics. When examining scores of overall academic engagement using parent interview, adolescent interview, and student completed measure, quite a bit of overlap in scores between the

TD and ID groups was discovered. Students with intellectual disability reported less overall academic engagement, but students within both groups were found to be present in mixed, active, and significant engagement levels. This overlap likely contributed to a decrease in variability between the two groups and was perpetuated by the small sample size of the ID group (n=23). In order to account for this overlap, it would be helpful to rerun these models with the use of a larger ID sample size. In addition, because of the small ID sample, models could not be run separately for each group. Coefficient estimates for each group would have been helpful in individually interpreting the relationships among STR, child characteristics, and academic engagement for the TD and ID groups over time.

Child characteristics should also be considered when examining the finding that disability status was not found to be a significant predictor of STR over time or of academic engagement at age 13. Although disability status was not found to predict STR, the child characteristics of social skills and behavior problems were good predictors. When added to the model, teacher reports of social skills and behavior problems accounted for more variance within the academic engagement latent variable (35%) than STR alone (3%). Eisenhower, Baker, and Blacher (2007) were able to account for TD and ID STR differences at age 6 using earlier measures of self-regulation, behavior problems, and social skills in part because young children with an intellectual delay have been shown to exhibit more problem behaviors and fewer social skills than their typically developing peers (Baker et al., 2002). Previous research also found that children with developmental risk characteristics (behavior problems, social skills, low

SES) other than cognitive factors, experienced a less positive STR (Baker, 2006) when compared to children without these risk factors. This makes a strong argument for variables other than disability status (e.g. social skills and behaviors problems) as important predictors of student-teacher relationships; however, these variables have substantial overlap with characteristics associated with having a developmental disability which are related to STR and academic engagement. Relating this information to these model results, teacher reported social skills and behavior problems were predictive of STR for ages 6, 7, and 8 and behavior problems alone were predictive at age 9. However, when these child characteristics were entered, the STR initial factor was no longer predictive of academic engagement at age 13. This suggests that child characteristics are having a more substantial impact on academic engagement than STR total.

With the exception of age 6, academic engagement was more highly correlated with teacher reports of social skills and behavior problems than total student-teacher relationships. When examining the academic engagement literature, social and emotional engagement in school as well as behavior (positive or negative) have been shown to impact the level of academic engagement exhibited by students (Furrer and Skinner, 2003). For example, positive relationships with key partners, such as teachers and parents, were predictive of student levels of effort, positive behavior, persistence, and participation in school. Similarly, the variables of social skills and behavior problems have also been shown to be predictors of the level of positivity within the student-teacher relationship (Eisenhower, Baker, and Blacher, 2007). In the current study, student

characteristics accounted for more variance in academic engagement than student-teacher relationships alone, but were also significant predictors of the relationship that a student had with their teacher. In other words, student-teacher relationships were related to academic engagement, but behavior problems and social skills have a more global impact on both STR and academic engagement.

When teacher reports of child characteristics were replaced with parent reports, results were consistent, showing that parent reported behavior problems were predictive of the STR relationship for ages 7, 8, and 9, with students exhibiting fewer behavior problems experiencing more positive STR's. Unlike teacher reports, which found social skills to be predictive of STR at ages 6, 7, and 8 parent reports of social skills were only significant at age 7, which indicated that children having higher levels of social skills also had a more positive relationship with their teacher at the reported age. In addition, social skills and behavior problems were not predictive of STR at age 6 per parent report, but both were significant when teachers were reporting these child characteristics. This discrepancy between parent and teacher reports of behavior problems and social skills supports the previous argument that child characteristics are more predictive of later academic engagement than STR alone. Teacher reports of behavior problems and social skills predicted STR at age 6; however, the path from initial STR to academic engagement at age 13 was then not significant. On the other hand, when parent reports of social skills and behavior problems were not significant predictors of STR at age 6, the path from initial STR to academic engagement at age 13 then became significant.

Student-teacher subscales of conflict, dependency, and closeness were also run to determine their predictive value in terms of academic engagement. Data associated with conflict and dependency STR subscales were not found to fit the unconditional model well, so they were not entered into the remaining predictive and conditional models. The STR closeness subscale, however, was a good fit for the unconditional model, and was then included in the remaining predictive and conditional models. Upon examining the unconditional model, STR closeness scores exhibited a decline from age 6 to 9 with student scores indicating individual variability at the initial time point. This three and a half point change can be interpreted as teachers perceiving their relationships with students as containing less closeness over time. This decline in closeness scores has the potential to be detrimental to student success, because with regard to school affect and attitude, children with high ratings of teacher closeness have shown more positive attitudes toward school than children with lower closeness scores (Birch & Ladd, 1997).

When students feel closeness and support from teachers their achievement and overall functioning increase, with positive support shaping student interest in class, positive pursuit of goals, and adhering to classroom policies and norms (Wentzel, 1998). Within the current model, teacher closeness at the initial age 6 time point, was found to be predictive of academic engagement at age 13. This finding mirrored STR total results, with levels of teacher-student closeness in early elementary school impacting later academic engagement in middle school. This relationship was positive in that more perceived closeness was indicative of higher levels of academic engagement. Thus, the

positive impacts of a close and trusting student-teacher relationship, especially in early school years, are evident.

In order to gain greater insight into the variables impacting teacher-student closeness, child characteristics of social skills and behavior problems were entered into the next model. The model yielded results indicating that teacher reports of social skills were predictive of closeness at ages 6, 7, and 8, suggesting students who had higher levels of social skills experienced more teacher closeness. Behavior problems, on the other hand, were predictive of student-teacher closeness only at age 9. As previously reported for STR total, students exhibiting fewer problem behaviors had relationships with higher levels of teacher closeness. Additionally, the shape, or growth factor, was also predictive of academic engagement at age 13. This was the only instance of the shape factor predicting academic engagement in any of the proposed models. This speaks to the importance of maintaining a close relationship with various teachers throughout elementary school and the impact it has upon entering middle school.

Parent reported measures of child behavior problems and social skills yielded different results than teacher reported measures. According to parent reports, children exhibiting higher levels of social skills at age 6 experienced more closeness with their teachers. Unlike teacher reported measures, social skills for ages 7 and 8 were not predictive of student-teacher closeness. Differences in reports of behavior problems by teachers and parents were also present in that behavior problems in years 7, 8, and 9 were predictive of STR closeness per parent report, but only age 9 behavior problems were predictive per teacher report. One other variation in teacher and parent report was seen in

the ability of STR closeness to predict academic engagement. While teacher measures reported a significant path between the shape factor of teacher closeness, suggesting students experiencing STR's with less decline in closeness overtime have higher levels of academic engagement at age 13, parent reports indicated a significant path between the initial (level) factor and academic engagement, suggesting STR closeness at age 6 predicted academic engagement at age 13. This exemplifies the impact that reported levels of social skills and behavior problems have on aspects of STR and later academic achievement in early and late elementary school years, with the impact of STR on academic engagement varying dependent on reported child characteristics.

All findings associated with the predictors and predictive ability of STR underscore the importance of relationships with target individuals, in this case, teachers. Child characteristics of social skills and behavior problems have also been highlighted as key variables associated with predicting varying levels of STR. Thus, there is lasting educational impact of a child's early relationship with his or her teacher. Although the generalization of these findings is limited due to sample size, the message is clear in that behavior and social skills are important components of educational relationships and success. Children struggling with behavior problems and social skills are impacted both educationally and emotionally. The relationship between child characteristics and experiences with school personnel has the potential to be particularly detrimental to the much larger populations of children at risk for developmental delays, since these children historically exhibit early behavior problems and social skill deficits (Eisenhower, Baker, Blacher, 2007).

Implications/Future Research

The results of this study are consistent with the literature and highlight the impact of social skills and behavior problems on STR and later academic engagement, especially in the early school years. The longitudinal impact of relationships formed at a young age is also emphasized within these findings. This impact speaks to the importance of providing target individuals with the tools to combat these deficit areas and potentially lead to more positive STR's and thus produce higher levels of academic engagement in years to come. Teachers, especially, need to be equipped with specific knowledge of how to identify problem behaviors and then provide an intervention appropriate for that specific behavior (Cipani, 1998).

Teachers also need to be provided with a social skills curriculum that is mutually beneficial. Not only can students learn from their teacher, but teachers can also learn from their students. A comprehensive social skill curriculum could be advantageous for all students who could have deficits in this area, not just those children with various identified disabilities. For example, those at risk for developmental delays due to factors such as socio-economic status or mother's level of education, may also benefit. Programs such as Frankel and Myatt's (2003) "Children's Friendship Training," provide teachers with a manualized curriculum addressing social skills essential for forming relationships with peers and adults. Results of studies utilizing this curriculum have shown social skill improvements in children with High Functioning Autism, Asperger's Syndrome, Attention -Deficit Hyperactivity Disorder, and Fetal Alcohol Syndrome. This program also has a parent assistance component, which provides at home social skill

support. Providing parents with the knowledge to teach their children school readiness skills would support the training teachers would receive, and theoretically contribute to more positive STR's at school. Evidence exists supporting the theory that families involved in training/educational programs in the early school years are able to effectively reduce concurrent as well as later child problem behaviors (Feinfield & Baker, 2004). Creating a collaborative home/school environment would be equally beneficial for all target individuals.

Future research surrounding this topic should focus on expanding the relationship between child characteristics, disability status, and later academic success. Within the current study, the limited size of the ID sample impacted the ability to fully explore the relationship between disability status, STR, and later academic engagement.

Determining if there is a relationship between these variables might also help drive possible interventions. Additional child and teacher characteristics should also be explored and measured to create a more comprehensive picture of the variables impacting both STR and academic engagement.

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Table 1: Child and Family Demographics and Measures by Disability Status

Variable	TD (n=61) Mean/%	ID (n=23) Mean/%	t/ χ^2
Child:			
Gender (% Male)	57.4	65.2	$\chi^2 = .43$
Race (% Caucasian)	67.2	52.2	$\chi^2 = 1.62$
Mean Stanford-Binet (SD)	105.02 (11.63)	65.00 (13.34)	t = 13.50**
Mother/Family:			
Marital Status (% married)	88.5	87.0	$\chi^2 = .04$
Mean Mother Age (years)	38.57 (6.30)	35.43 (4.88)	t = 2.16*
Employment (% Employed)	75.4	52.2	$\chi^2 = 4.22^*$
Education (% with B.A. or >)	67.2	21.7	$\chi^2 = 13.94^{**}$
Family Income (% 50K or >)	75.4	47.8	$\chi^2 = 5.83^*$
Teacher Completed Measures:			
Student-teacher Relationship Scale:			
STRS Age 6	121.06 (12.79)	116.74 (11.95)	t = 1.28
STRS Age 7	119.07 (13.58)	110.19 (14.16)	t = 2.52**
STRS Age 8	116.45 (14.90)	109.39 (8.03)	t = 1.91†
STRS Age 9	117.09 (11.45)	114.65 (10.90)	t = .78
Teacher Report Form:			
TRF Age 6	17.92 (22.20)	33.79 (21.85)	t = -2.66**
TRF Age 7	21.29 (22.43)	42.33 (29.68)	t = -3.28**
TRF Age 8	23.19 (28.96)	41.39 (17.05)	t = -2.52**
TRF Age 9	20.43 (22.06)	33.59 (14.87)	t = -2.30*
Social Skills Rating System:			
SSRS Age 6	102.69 (14.13)	93.42 (13.04)	t = 2.50*
SSRS Age 7	104.94 (11.55)	88.80 (19.03)	t = 4.37**
SSRS Age 8	101.58 (12.46)	88.06 (7.56)	t = 4.33**
SSRS Age 9	100.98 (18.67)	85.44 (22.65)	t = 2.78**
Parent Completed Measures:			
Child Behavior Checklist:			
CBCL Age 6	24.63 (16.68)	33.96 (27.72)	t = -1.87†
CBCL Age 7	24.33 (16.76)	38.48 (30.30)	t = -2.68**
CBCL Age 8	23.81 (22.77)	35.29 (26.78)	t = -1.89†
CBCL Age 9	25.48 (22.67)	38.35 (27.36)	t = -2.19*
Social Skills Rating System:			
SSRS Age 6	101.68 (17.92)	81.26 (12.93)	t = 4.97**
SSRS Age 7	103.22 (14.34)	83.87 (13.34)	t = 5.58**
SSRS Age 8	103.40 (16.50)	83.57 (13.60)	t = 4.93**
SSRS Age 9	104.76 (16.86)	86.52 (13.76)	t = 4.62**

†p < .10 * p < .05 **p < .01

Table 2

Parent, Teacher and Child Completed Measures at Ages (5, 6, 7, 8, 9, and 13)

	Age 5	
<i>Parent Completed Measures</i>	<i>Teacher Completed Measures</i>	<i>Child Completed Measures</i>
Vineland Adaptive Behavior Scale <i>Adaptive Behavior Composite Score</i>	None	Stanford-Binet <i>Composite IQ Score</i>
Family Information Form <i>Mother Education Level</i> <i>Family Income Level</i>		
	Ages 6, 7, 8, 9	
<i>Parent Completed Measures</i>	<i>Teacher Completed Measures</i>	<i>Child Completed Measures</i>
CBCL-P <i>Total Score</i>	TRF <i>Total Score</i>	None
	STRS <i>Conflict</i> <i>Closeness</i> <i>Dependency</i> <i>Total Score</i>	
SSRS-P <i>Total Score</i>	SSRS-T <i>Total Score</i>	
	Age 13	
<i>Parent Completed Measures</i>	<i>Teacher Completed Measures</i>	<i>Child Completed Measures</i>
Parent Interview <i>Academic Engagement</i> <i>Extracurricular/Social Engagement</i> <i>School-home Engagement</i> <i>Emotional Engagement</i>		Adolescent Interview <i>Academic Engagement</i> <i>Extracurricular/Social Engagement</i> <i>School-home Engagement</i> <i>Emotional Engagement</i>
Vineland Adaptive Behavior Scale <i>Adaptive Behavior Composite Score</i>		People in My Life: Teachers <i>Total Score</i>
		Wechsler Intelligent Scale for Children-IV <i>Composite IQ Score</i>

Table 3

Summary of Exploratory Factor Analysis Results for Adolescent Academic Engagement Interview Variable

	Factor Loadings
Interview Topic	Academic Engagement
Emotional Engagement	.85
Social Engagement	.67
Academic Engagement	.67
School/Home Engagement	.67
Eigenvalue	2.43

Table 4

Correlation Matrix for Adolescent Academic Engagement Interview Variable

Characteristics	1	2	3	4
(1) Emotional Engagement				
(2) Social Engagement	.57			
(3) Academic Engagement	.57	.45		
(4) School/Home Engagement	.57	.45	.45	

Table 5

Summary of Exploratory Factor Analysis Results for Parent Academic Engagement
Interview Variable

Factor Loadings	
Interview Topic	Academic Engagement
Emotional Engagement	.89
Social Engagement	.63
Academic Engagement	.90
School/Home Engagement	.83
Eigenvalue	3.11

Table 6

Correlation Matrix for Parent Academic Engagement Interview Variable

Characteristics	1	2	3	4
(1) Emotional Engagement				
(2) Social Engagement	.56			
(3) Academic Engagement	.80	.57		
(4) School/Home Engagement	.73	.53	.74	

Table 7

Descriptive statistics for Student-teacher Relationship Total
(N=84)

Variables	M	SD
Student-Teacher Relationships Total		
Time 1 = STR6	119.90	12.39
Time 2 = STR7	116.69	14.14
Time 3 = STR8	115.05	13.62
Time 4 = STR9	116.06	11.34

Table 8

*Factor loadings parameter estimates, standard errors, and critical t ratios for LS model
Student-Teacher Relationship Total Scores*

<i>Factor Loadings</i>	<i>Estimate</i>	<i>SE</i>	<i>Critical ratio</i>
Student-Teacher Relationships Total			
Time 1 = STR6	0=		
Time 2 = STR7	0.92**	.37	2.48
Time 3 = STR8	1.36**	.46	2.94
Time 4 = STR9	1=		

†p<.10 * p < .05 **p < .01

Table 9

Descriptive statistics for Academic Engagement Latent Variable measures: People in My Life, Adolescent Interview, and Parent Interview

(N=84)

Variables	M	SD
Academic Engagement		
People in My Life Measure	2.67	.49
Adolescent Interview	2.91	.69
Parent Interview	2.75	.91

Table 10

Factor loadings parameter estimates, standard errors, and critical t ratios for Academic Engagement Latent Variable

<i>Factor Loadings</i>	<i>Estimate</i>	<i>SE</i>	<i>Critical ratio</i>
Academic Engagement			
Parent Interview	1=		
Adolescent Interview	.827**	.246	3.37
People in My Life	.320**	.108	2.96

†p<.10 * p < .05 **p < .01

Table 11

Factor loadings parameter estimates, standard errors, and critical t ratios for Predictive LS model Student-Teacher Relationship Total Scores

<i>Variable</i>	<i>Estimate unstandardized</i>	<i>SE</i>	<i>Critical ratio</i>
Academic Engagement on level factor	.034†	.018	1.88
Academic Engagement on shape factor	.070	.080	0.87

†p<.10 * p < .05 **p < .01

Table 12*Descriptive statistics for Disability Status at Age 5*

(N=84)

Variables	M	SD
Disability Status	.27	.45

Table 13

Factor loadings parameter estimates, standard errors, and critical t ratios for Conditional LS model Student-Teacher Relationship Total, Academic Engagement and Disability Status

<i>Variable</i>	<i>Estimate unstandardized</i>	<i>SE</i>	<i>Critical ratio</i>
Academic Engagement on level factor	0.011†	0.006	1.842
Academic Engagement on shape factor	-0.057	0.143	-0.399
Academic Engagement on Disability Status	-0.269	0.387	-0.694
Level factor on Disability Status	-3.549	3.256	-1.090
Shape factor in Disability Status	-2.363	2.470	-0.957

†p<.10 * p < .05 **p < .01

Table 14

*Descriptive statistics for teacher completed behavior problem and social skills measures:
Teacher Report Form and Social Skills Rating Scale*

(N=84)

Variables	M	SD
Teacher Report Form		
TRF6	23.41	23.26
TRF7	26.69	26.08
TRF8	26.44	27.12
TRF9	24.98	21.59
Social Skills Rating Scale - Teacher		
SSRS6	99.66	14.21
SSRS7	101.30	15.72
SSRS8	98.65	12.94
SSRS9	94.30	21.79

Table 15

Factor loadings parameter estimates, standard errors, and critical t ratios for LS Conditional model; Student-Teacher Relationship Total Scores, Academic Engagement, Teacher Report Form, and Social Skills Rating System -Teacher

<i>Variable</i>	<i>Estimate unstandardized</i>	<i>SE</i>	<i>Critical ratio</i>
Academic Engagement on Level factor	0.024	0.125	0.195
Academic Engagement on Shape factor	0.358	0.392	0.911
STR6 on TRF6	-0.226**	0.070	-3.243
STR6 on SSRS6 - Teacher	0.377**	0.128	2.952
STR7 on TRF7	-0.229**	0.506	-4.056
STR7 on SSRS7 – Teacher	0.331**	0.107	3.099
STR8 on TRF8	-0.201**	0.062	-3.251
STR8 on SSRS8 – Teacher	0.408**	0.155	2.631
STR9 on TRF9	-0.350**	0.058	-6.015
STR9 on SSRS69- Teacher	0.008	0.078	0.105

†p<.10 * p < .05 **p < .01

Table 16

Correlations for Academic Engagement Composite Variable with STR Total, Social Skills Rating System – Teacher , and Teacher Report Form

	Academic Engagement
STR Age 6	.47**
STR Age 7	.18
STR Age 8	.29
STR Age 9	.30*
SSRS Age 6 – Teacher	.40**
SSRS Age 7 – Teacher	.37*
SSRS Age 8 – Teacher	.49**
SSRS Age 9 – Teacher	.36*
TRF Age 6	-.44**
TRF Age 7	-.29*
TRF Age 8	-.25
TRF Age 9	-.36*

Table 17

*Descriptive statistics for parent completed behavior problem and social skills measures:
Child Behavior Checklist and Social Skills Rating Scale*

(N=84)

Variables	M	SD
Child Behavior Checklist		
CBCL6	26.79	20.56
CBCL7	28.53	22.88
CBCL8	26.57	23.64
CBCL9	29.00	24.41
Social Skills Rating Scale		
SSRS6	96.03	18.76
SSRS7	97.49	16.53
SSRS8	98.35	18.01
SSRS9	99.80	17.77

Table 18

Factor loadings parameter estimates, standard errors, and critical t ratios for LS Conditional model; Student-Teacher Relationship Total Scores, Academic Engagement, Child Behavior Checklist-Parent, and Social Skills Rating System -Parent

<i>Variable</i>	<i>Estimate unstandardized</i>	<i>SE</i>	<i>Critical ratio</i>
Academic Engagement on Level factor	0.027**	0.011	2.489
Academic Engagement on Shape factor	-0.010	0.014	-0.695
STR6 on CBCL6	0.028	0.137	0.202
STR6 on SSRS6 - Parent	-0.234	0.165	-1.421
STR7 on CBCL7	-0.503**	0.201	-2.501
STR7 on SSRS7 – Parent	0.426*	0.198	2.154
STR8 on CBCL8	-0.348**	0.090	-3.862
STR8 on SSRS8 – Parent	0.132	0.108	1.265
STR9 on CBCL9	-0.232*	0.099	-2.351
STR9 on SSRS69- Parent	0.116	0.114	1.012

†p<.10 * p < .05 **p < .01

Table 19

Descriptive statistics for student-teacher relationship closeness, student-teacher relationship conflict, and student-teacher relationship dependency

(N=84)

Variables	M	SD
Student-Teacher Relationships Closeness		
Time 1 = STR6	45.41	6.27
Time 2 = STR7	44.17	6.12
Time 3 = STR8	42.85	6.50
Time 4 = STR9	41.92	6.27
Student-Teacher Relationships Conflict		
Time 1 = STR6	18.11	7.32
Time 2 = STR7	19.63	8.31
Time 3 = STR8	20.14	8.70
Time 4 = STR9	18.50	7.18
Student-Teacher Relationships Dependency		
Time 1 = STR6	9.52	3.34
Time 2 = STR7	9.87	3.14
Time 3 = STR8	9.63	3.46
Time 4 = STR9	9.44	2.97

Table 20

*Factor loadings parameter estimates, standard errors, and critical t ratios for LS model
Student-Teacher Relationship Closeness Subscale Scores*

<i>Factor Loadings</i>	<i>Estimate</i>	<i>SE</i>	<i>Critical ratio</i>
Student-Teacher Relationships Total			
Time 1 = STR6	0=		
Time 2 = STR7	0.32†	.20	1.64
Time 3 = STR8	0.68**	.22	3.16
Time 4 = STR9	1=		

†p<.10 * p < .05 **p < .01

Table 21

*Factor loadings parameter estimates, standard errors, and critical t ratios for LS model
Student-Teacher Relationship Dependency Subscale Scores*

<i>Factor Loadings</i>	<i>Estimate</i>	<i>SE</i>	<i>Critical ratio</i>
Student-Teacher Relationships Total			
Time 1 = STR6	0=		
Time 2 = STR7	-3.53	7.87	-0.45
Time 3 = STR8	-1.53	3.36	-0.65
Time 4 = STR9	1=		

†p<.10 * p < .05 **p < .01

Table 22

Factor loadings parameter estimates, standard errors, and critical t ratios for Predictive LS model Student-Teacher Relationship Closeness Subscale Scores

<i>Variable</i>	<i>Estimate unstandardized</i>	<i>SE</i>	<i>Critical ratio</i>
Academic Engagement on level factor	.103**	.033	3.10
Academic Engagement on shape factor	.006	.040	0.16

†p<.10 * p < .05 **p < .01

Table 23

Factor loadings parameter estimates, standard errors, and critical t ratios for LS Conditional model; Student-Teacher Relationship Closeness Subscale Scores, Academic Engagement, Teacher Report Form, and Social Skills Rating System -Teacher

<i>Variable</i>	<i>Estimate unstandardized</i>	<i>SE</i>	<i>Critical ratio</i>
Academic Engagement on Level factor	0.058	0.070	0.831
Academic Engagement on Shape factor	0.210*	0.109	1.930
STRCLO6 on TRF6	0.030	0.042	0.721
STRCLO6 on SSRS6 - Teacher	0.263**	0.084	3.131
STRCLO7 on TRF7	0.029	0.030	0.955
STRCLO7 on SSRS7 – Teacher	0.245**	0.055	4.434
STRCLO8 on TRF8	0.070	0.045	1.546
STRCLO8 on SSRS8 – Teacher	0.350*	0.125	2.792
STRCLO9 on TRF9	-0.072†	0.042	-1.698
STRCLO9 on SSRS9- Teacher	-0.091	0.057	-1.607

†p<.10 * p < .05 **p < .01

CLO = Closeness Subscale

Table 24

Factor loadings parameter estimates, standard errors, and critical t ratios for LS Conditional model; Student-Teacher Relationship Closeness Subscale Scores, Academic Engagement, Child Behavior Checklist-Parent, and Social Skills Rating System -Parent

<i>Variable</i>	<i>Estimate unstandardized</i>	<i>SE</i>	<i>Critical ratio</i>
Academic Engagement on Level factor	0.080**	0.026	3.011
Academic Engagement on Shape factor	-0.006	0.017	-0.337
STRCLO6 on CBCL6	0.013	0.061	0.215
STRCLO6 on SSRS6 - Parent	-0.122*	0.062	-1.973
STRCLO7 on CBCL7	-0.215**	0.067	-3.197
STRCLO7 on SSRS7 – Parent	0.109	0.062	1.756
STRCLO8 on CBCL8	-0.125**	0.043	-2.891
STRCLO8 on SSRS8 – Parent	-0.011	0.053	-0.212
STRCLO9 on CBCL9	-0.191*	0.074	-2.594
STRCLO9 on SSRS69- Parent	0.100	0.064	1.565

†p<.10 * p < .05 **p < .01

CLO = Closeness Subscale Score

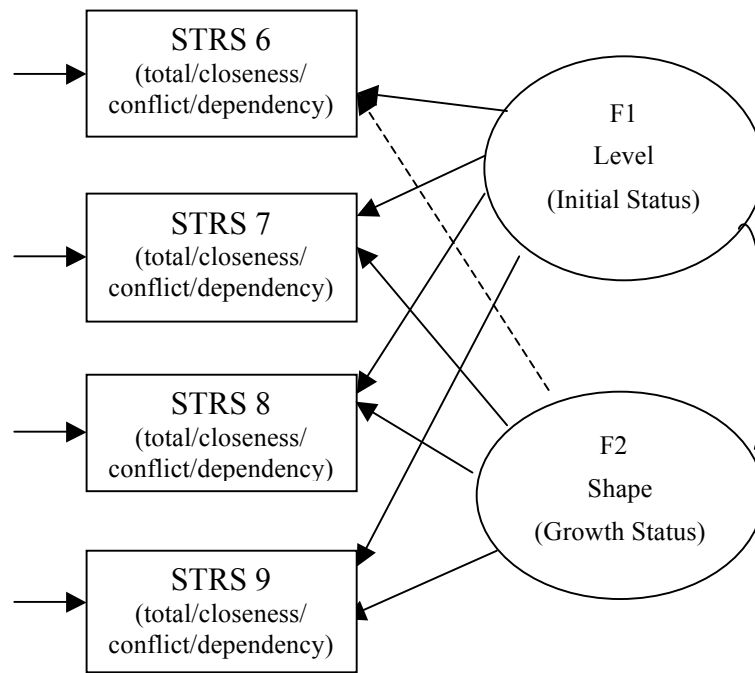


Figure 1. Unconditional Model for student-teacher relationship total. Applicable for student-teacher relationship total and subscales of closeness, conflict, and dependency. For student-teacher relationship total and subscale scores at age 6, the loading on the second factor is set to 0 – indicated by the dotted line. F=factor.

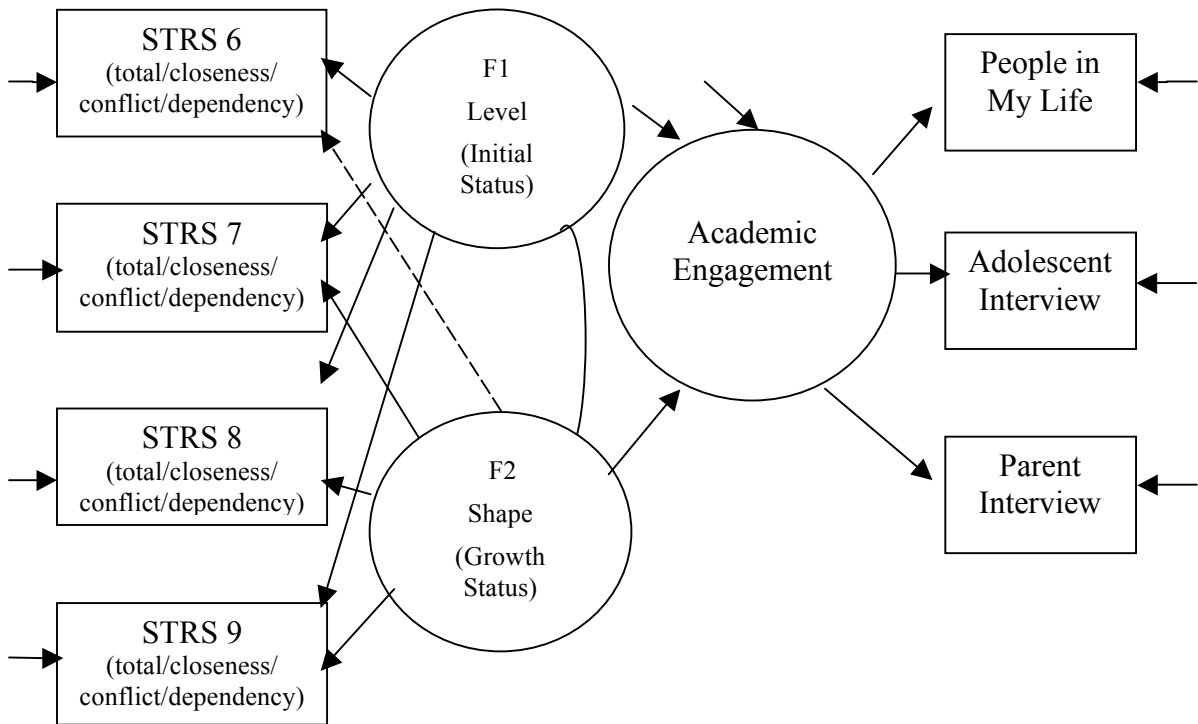


Figure 2. Proposed predictive Model for student-teacher relationship total. Applicable for student-teacher relationship total and subscales of closeness, conflict, and dependency. For student-teacher relationship total and subscale scores at age 6, the loading on the second factor is set to 0 – indicated by the dotted line. F=factor.

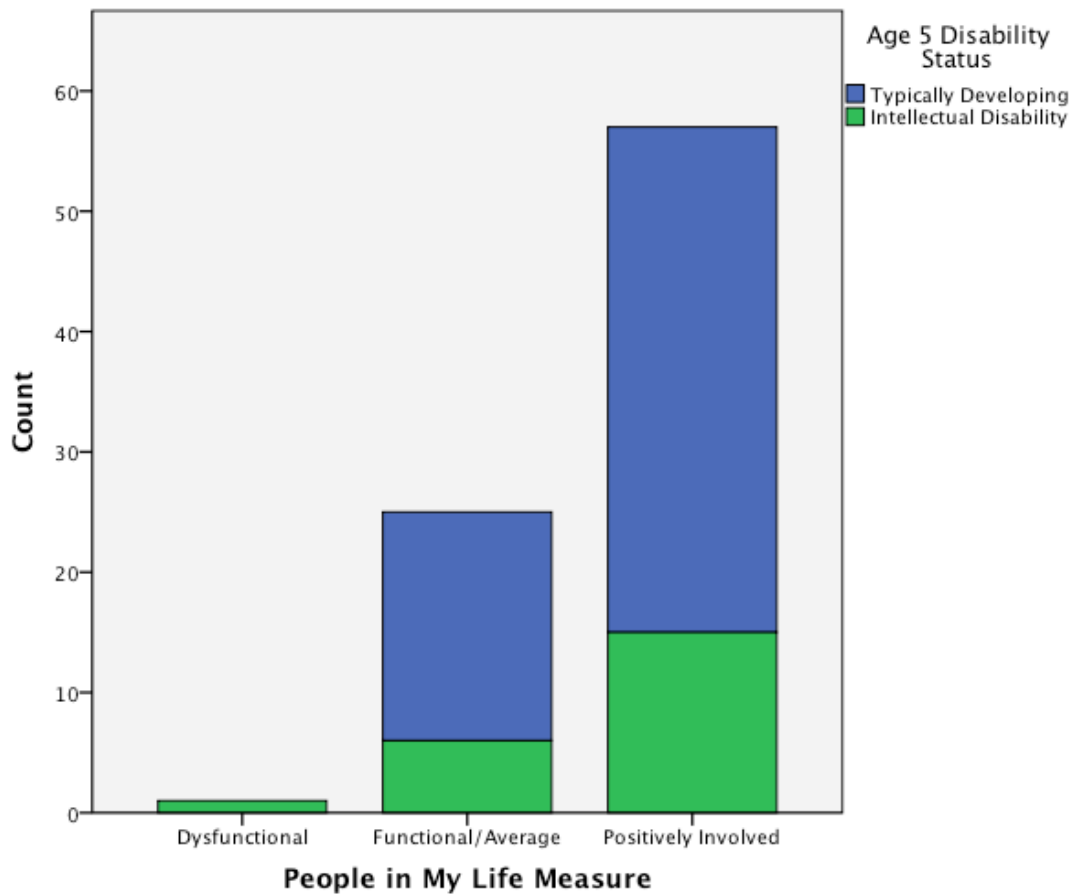


Figure 3. People in My Life Measure by Disability Status

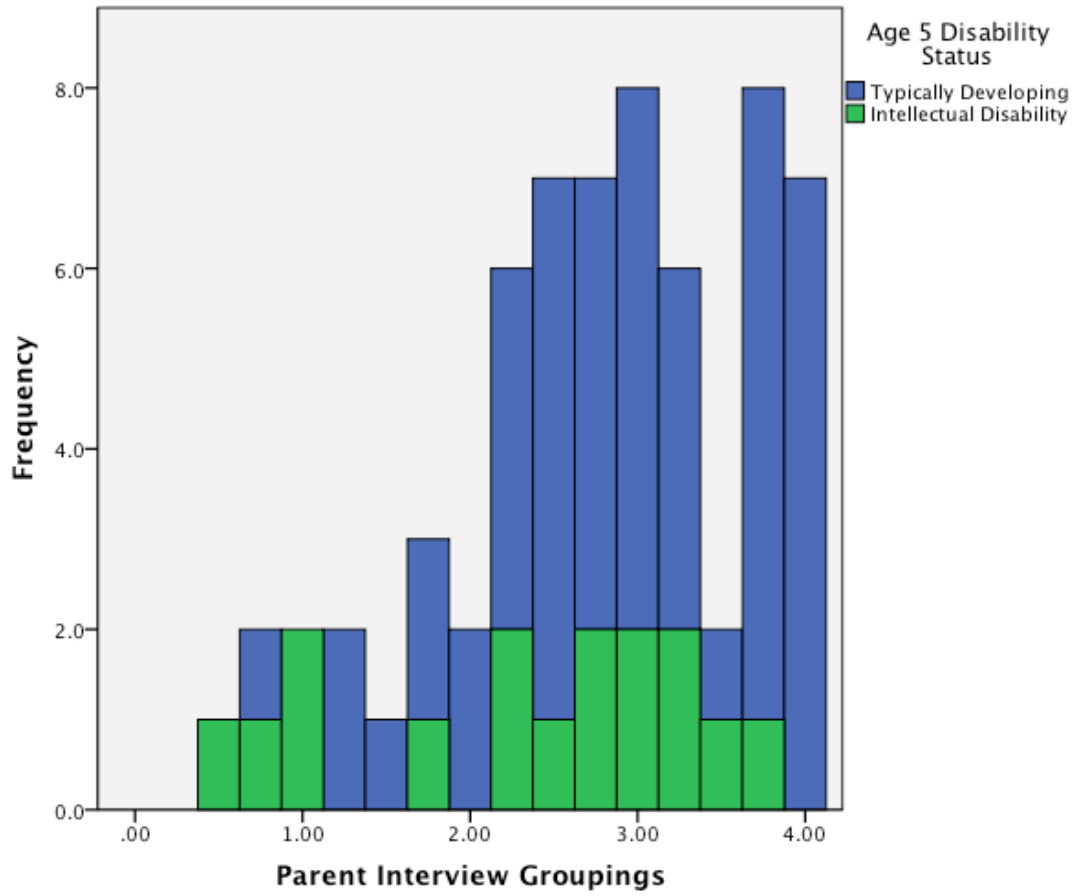


Figure 4. Parent Interview Level of Engagement by Disability Status

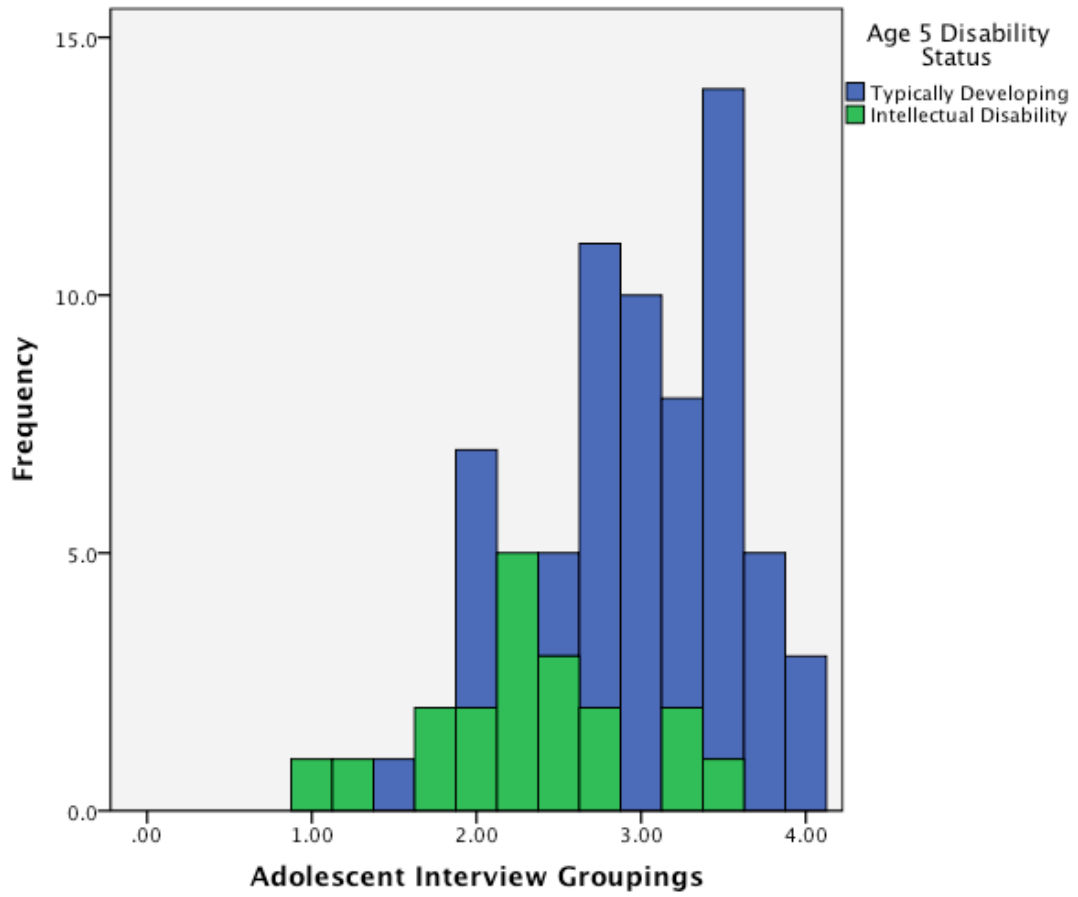


Figure 5. Adolescent Interview Level of Engagement by Disability Status

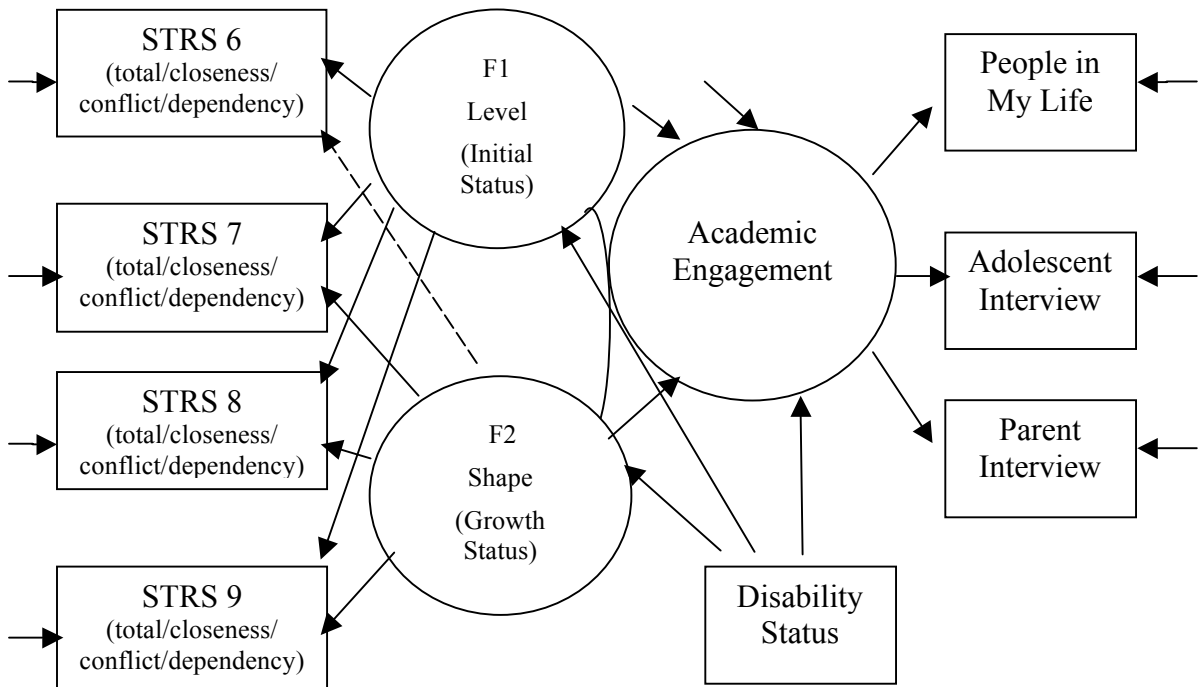


Figure 6. Proposed Conditional Model for student-teacher relationship total with Disability status. Applicable for student-teacher relationship total and subscales of closeness, conflict, and dependency. For student-teacher relationship total and subscale scores at age 6, the loading on the second factor is set to 0 – indicated by the dotted line. F=factor.

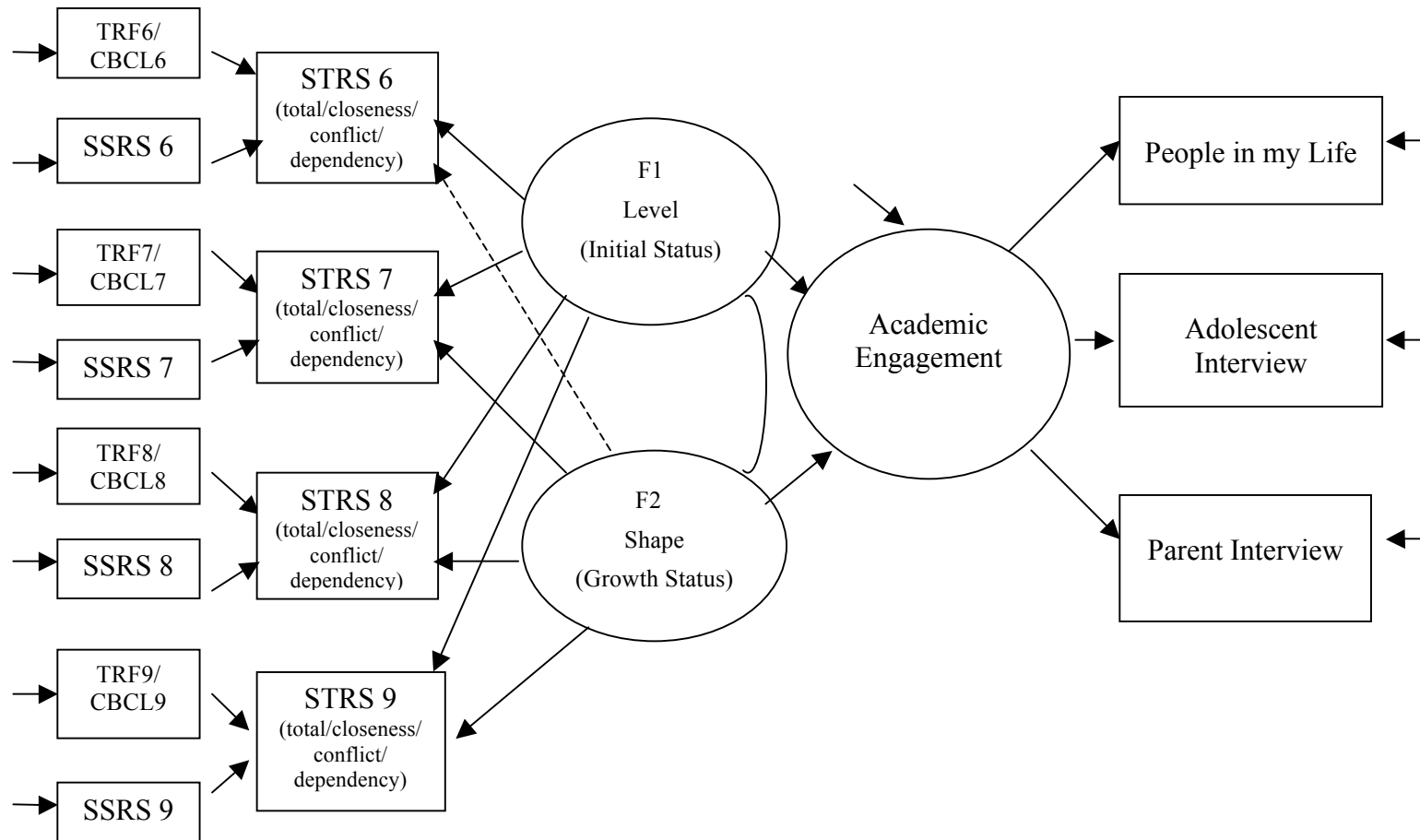


Figure 7. Proposed Conditional Model for student-teacher relationship total with social skill and behavior problem predictors. Applicable for student-teacher relationship total and subscales of closeness, conflict, and dependency as well as parent reported measures of social skills and behavior problems. For student-teacher relationship total and subscale scores at age 6, the loading on the second factor is set to 0 – indicated by the dotted line. F=factor.

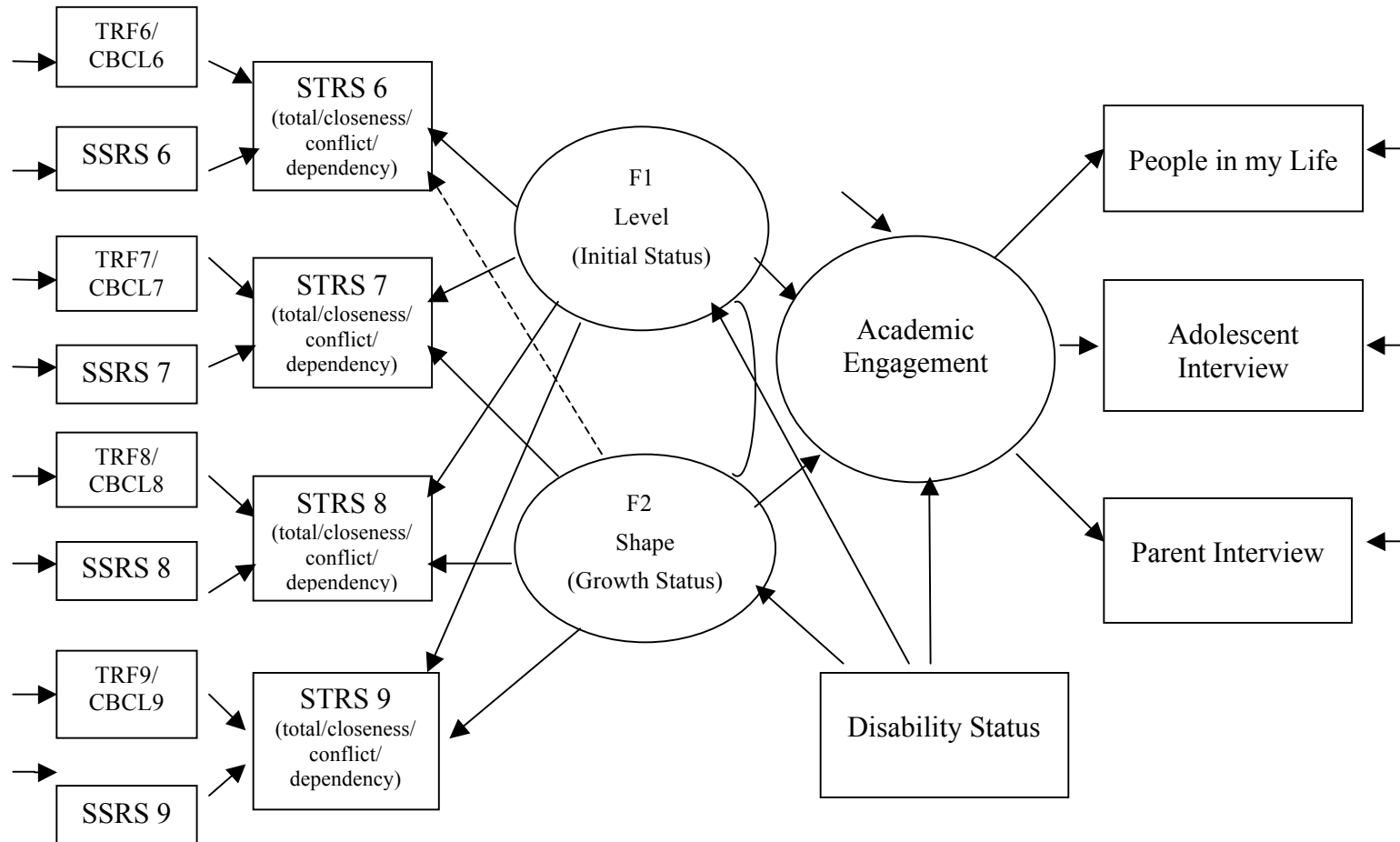


Figure 8. Proposed Conditional Model for student-teacher relationship total with social skill, behavior problem, and disability status predictors. Applicable for student-teacher relationship total and subscales of closeness, conflict, and dependency as well as parent reported measures of social skills and behavior problems. For student-teacher relationship total and subscale scores at age 6, the loading on the second factor is set to 0 – indicated by the dotted line. F=factor

Appendix 1

SCHOOL

2) Now we're going to ask you some questions about school. Tell me a little bit about your school.

2a) How do you like school?

- Overall opinion of school. General like/dislike/ambivalent. Positive/negative feelings toward school, teachers, academic subjects, classmates.
- Explanations for opinion of school (why does the child like/dislike school). Get examples.
- Negative behaviors child engages in at school (e.g. avoid going to school, avoid participating in school activities, skipping classes, leaving early, crying fits before school). Get examples.
- Positive behaviors child engages in at school (e.g. helping teacher after school, working really hard, etc.). Get examples.

2b) What kinds of classes are you taking?

- General, artistic, remedial, special ed

2c) What are your favorite and least favorite subjects?

2d) What subjects are hard for you? What subjects are easier?

- Academic strengths and weaknesses

2e) How are your grades in school? What are your actual grades right now?

- How important is to you to get good grades?

- How important is to your parents that you do well in school?
- How do grade translate to homework (independently starts homework, waits to be reminded and then complies, refuses or lies about completing homework)? Is it different for different subjects?

2f) Do you and your parents ever get into conflicts about school or homework?

2g) 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?
- How do you feel about your level of involvement at school?

2h) What do you do during free time at school?

2i) What are your teachers like?

- Tell me about your favorite and least favorite teachers.

2j) How important is school to you?

- Which parts are most important? (Grades, extracurricular activities, friendships, etc.)
- Is he/she actively involved academically? (does he/she follow the rules, is he/she “present” during class time, does he/she avoid challenging situations, does he/she do their homework?)

- “Do you usually pay attention in class? Do you participate in class?”

2k) How much do you think your parents are involved with your school? in homework?

- How do your parents get information about your schoolwork?

2l) Have you ever gotten at trouble at school? (Make sure to follow up on all endorsements of getting into trouble and ask those kids that deny getting into trouble about minor incidents like talking in class.)

- What kinds of things did you get in trouble for?
- Severity and frequency of behavior
- How did your parents and teachers respond?
- What were the consequences? Where were the consequences (school, home)
- How did the child behave and feel afterwards?

Appendix 2

Adolescent Interview Codes

School:

15. Favorite Subjects

- 0 = Academic (social studies, language arts, science)
- 1 = Artistic
- 2 = PE/Sports
- 3 = Combination of nonacademic classes
- 4 = Combination of academic and nonacademic classes

16. Least Favorite Subjects

- 0 = Academic (social studies, language arts, science)
- 1 = Artistic
- 2 = PE/Sports
- 3 = Combination of nonacademic classes
- 4 = Combination of academic and nonacademic classes

17. What Subjects are Hardest for the Child?

- 0 = Academic (social studies, language arts, science)
- 1 = Artistic
- 2 = PE/Sports
- 3 = Combination of nonacademic classes
- 4 = Combination of academic and nonacademic classes

18. What Subjects are Easiest for the Child?

- 0 = Academic (social studies, language arts, science)
- 1 = Artistic
- 2 = PE/Sports
- 3 = Combination of nonacademic classes
- 4 = Combination of academic and nonacademic classes

19. Academic performance

- 0= Very poor (D's and F's in almost all classes; may be retained)
- 1= Poor (C's and D's in almost all classes OR average performance with significant difficulties in one or more areas)
- 2= Average (Mostly C's and some B's OR discrepant performance with significant weaknesses and significant strengths)
- 3= Good (Mostly B's and some A's OR somewhat discrepant performance with nothing below a C)
- 4= Very Good (Mostly A's, enrollment in honors classes, etc.)

20. Importance of academics/grades to child?

0 = None

1 = Minimal

2 = Average

3 = Important, but not top priority

4 = Top priority for child (child is extremely proud of good grades, very upset about average or poor grades and/or really intrinsically driven to get good or better grades)

21. Importance of academics/grades to parents?

0 = None

1 = Minimal

2 = Average

3 = Important, but not top priority

4 = Top priority for parents (parents put a lot of pressure on child to get good grades or there is a strong desire from child to please parents, parents emphasize child's future)

22. Parental Conflict over grades?

0 = None

1 = Some

2 = A lot

23. Parental Conflict over homework?

0 = None

1 = Some

2 = A lot

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.

26. Amount of Time Spent on After School Activities (band, sports teams, drama, ASB, etc – all extracurricular activities not just at school)?

0=no involvement

1=limited involvement (involvement in 1-2 activities that together take no more than 1 afternoon a week OR take less than 1 hour/day each day of the week)

2=moderate involvement (involvement in 1 or more activities that combined take no more than 2-3 afternoons a week or about 1-2 hours/day each day of the week)

3=significant involvement (involvement in 1 or more activities that combined take more than 3 afternoons a week or more than 2 hours/day each day of the week)

4=very significant involvement (involvement in 1 or more activities that combine take at 5+ afternoons a week (and maybe some weekend or evening involvement) or more than 3+ hours a day each day of the week)

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.

28. Student-Teacher Relationship (Categorical – ONLY Choose One)

0 = Predominantly Poor Relationships: Child reports having negative relationships with all or most of their teachers. Child is having problems getting along with his/her teachers or being disruptive in the classroom.

1 = Predominantly Neutral Relationships: Child doesn't report particularly negative or positive relationships with teachers.

2 = Mixed Relationships: Child reports some very positive and some very negative relationships with teachers.

3 = Predominantly Positive Relationships: Child has positive relationships with the majority of his/her teachers. Child believes that teachers like and care about him/her and appreciate having him/her in class.

29. Parent involvement at school

0 = No involvement

1

2 = Attends parent conferences and formal school functions and may occasionally talk with teacher. Parent has basic knowledge of teacher names and school operations.

3

4 = Volunteers at school events, attends all school events, possibly has leadership role

30. Parent involvement in homework

0 = No involvement/minimal involvement in homework

1 = Some structuring of homework

2 = A lot of structuring of homework

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.

32. Has the Child Ever Been in Trouble at School?

0 = No

1 = Yes

32a. What did/does the child get in trouble for? (Categorical – Choose The Most Severe Behavior)

0= Disobeying Teachers' Requests or Talking Back

1= Fighting with Peers

2= Violating School Rules (Skipping class, etc.)

3= Engaging in Illegal Behavior (Using drugs or alcohol, bringing a weapon, etc.)

4= Other _____

32b. Frequency of Behavior Child Got into Trouble for

0 = Only one occasion

1 = Infrequent, but more than one occasion

2 = Relatively frequent

3 = Very Frequent

32c. Severity of Behavior Child Got into Trouble for

0 = Not risky or concerning (child's behavior is typical of his/her age—talking to peers in class).

1 = Minimally risky/concerning (minimal non-compliance such as talking back to a teacher)

2 = Moderate concern (moderately severe/intense defiance or rule breaking such cursing at a teacher or skipping multiple classes/leaving school early).

3 = Marked severity (Serious rule-breaking and possibly illegal behavior – bringing a weapon to school, seriously injuring another child.)

33. How Did the School/Teachers Respond? (Categorical –Choose The Most Severe Punishment)

- 0 = No response
- 1 = Scolding/reprimand
- 2 = Move seats
- 3 = Go to principal's office
- 4 = Detention/after school discipline program
- 5 = Parent – Teacher/Principle discussion
- 6 = Suspension
- 7 = Expulsion
- 8 = Police Involvement

34. Parent Response to Behavior (Circle all that apply)

- 0 = No response
- 1 = Discuss situation with child, problem solves
- 2 = Punish child
- 3 = Involves outside authority
- 4 = Seek professional services
- 5 = Negative verbal interaction (yelling, criticizing, threatening)
- 6 = Other _____

35. Settings of consequences (Circle all that apply)

- 0 = No consequence
- 1 = School authority
- 2 = Home (enforced by caregivers)
- 3 = Legal
- 4 = Other _____

36. Severity of Consequence

- 0 = No consequence**
- 1 = Minimal, low-impact consequence:** reprimanded without tangible punishment, disapproving look, warnings
- 2 = Moderate consequence:** consequence at home that is short-term and/or consequences at school that don't get marked on the child's record
- 3 = Marked consequence:** detention and/or long-term consequence at home (e.g. grounding for more than 2 weeks; losing privileges for more than 2 weeks)
- 4 = Severe consequence:** school suspension/expulsion/in-school suspension AND/OR known pending legal consequence AND serious consequences at home

Appendix 3

7) Describe how your child feels about school. What indications does your child give that they like or dislike school?

Areas to cover:

- Overall opinion of school. General like/dislike/ambivalent. Positive/negative feelings toward school, teachers, academic subjects, classmates.
- Explanations for opinion of school (why does the child like/dislike school). Get examples.
- What are the child's favorite subjects and what are his/her least favorite subjects?
- What are the child's academic strengths?
- What are the child's academic weaknesses?
- Is he/she involved academically? (does he/she follow the rules, is he/she "present" during class time, does he/she avoid challenging situations, do they do their homework?)
- Is he/she actively involved socially? (does he/she participate in extracurricular activities, does he/she sit with a group of friends during lunch, etc.)
- Negative behaviors child engages in at school. (e.g. avoid going to school, avoid participating in school activities, leaving early, crying fits before school). Get examples.
- Positive behaviors child engages in at school. (e.g. helping teacher after school, working really hard, etc.) Get specific examples.
- Academic issues
- Parent attributes for poor or strong academic performance (e.g. child works hard, child is smart, teacher factors, school factors, etc.)
- Parent response to academic weaknesses (e.g. do they talk to the teachers, punish child, seek outside help, etc.)
- How is the child's relationship with the teacher?
- Relationship from the child's view
- Relationship from the teacher's view
- Ask parent to describe overall homework situation with the child. Who initiates homework activities? Does he/she do his/her homework independently or with the help of a family member?
- What is your general opinion of school? Have you been asked to volunteer? How often would you say you meet with your child's teacher? How often do you have parent conferences?
 - Ask more specifically how the parent interacts with the school. Volunteering? Classroom visits? Teacher visits? Not involved at all? Only through school reports?

Appendix 4

Parent School Codes

59. Academic Engagement

0 = Severe disengagement: Child either actively does not follow school rules and skips classes or does follow rules and attends but teachers or parents note that child 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 teacher may occasionally report 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 noted positive behaviors and very mild negative behaviors.

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

60. 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.

61. 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. There is a sense from the parent that homework time is a constant struggle with few reprieves or that they 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.

62. Student-Teacher Relationship (Categorical-Choose only one)

0 = Predominantly Poor Relationships: Child reports having negative relationships with all or most of their teachers. Teachers have expressed to parents that the child is having problems getting along with them or being disruptive in the classroom.

1 = Predominantly Neutral Relationships: Child doesn't report particularly negative or positive relationships with teachers.

2 = Mixed Relationships: Child has some very positive and some very negative relationships with teachers.

3 = Predominantly Positive Relationships: Child has positive relationships with the majority of his/her teachers. Teachers actively report that they like and care about the child and appreciate having him/her in class.

63. 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 subjects.

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 her ability to learn.

64. Parent attribution of poor academic performance (Circle all that apply)

0 = No poor performance

1 = Mental health condition that could impact school performance

2 = Motivational factors (kid is lazy, kid does not enjoy the subject matter)

3 = Stressors outside of school (such as recent divorce, death, or family conflict)

4 = Teacher factors (insensitive teacher, poor student-teacher relationship)

5 = School factors (school does not offer accommodations for learning disability, child is inappropriately placed in a class that is too easy or hard)

6 = Peer factors (child is unmotivated b/c friends are unmotivated to perform well)

7 = Not innate

8 = Other (specify)

65. Parent attribution of strong academic performance (Circle all that apply)

0 = No strong performance

1 = Child innate ability

2 = Child works hard/motivated

3 = Teacher factors

4 = School factors (school has provided child with new placement/ school counselor or principal involvement)

5 = Other (specify)

66. Parent response to academic weakness (Circle all that apply)

0 = No response because no weakness

1 = No response although some weakness is present

2 = Parent seeks outside help

3 = Parent consults with teacher

4 = Provide increased structure

5 = Parent punishes child

6 = Other (specify)

67. Parent involvement at school

0 = No involvement

1

2 = Attends parent conferences and formal school functions and may occasionally talk with teacher. Parent has basic knowledge of teacher names and school operations.

3

4 = Volunteers at school events, attends all school events, possibly has leadership role

68. Parent involvement in homework

0 = No involvement/minimal involvement in homework

1 = Some structuring of homework

2 = A lot of structuring of homework