EXAMINING HOW TEACHER-STUDENT RELATIONSHIPS ARE ASSOCIATED WITH STUDENTS' SOCIAL SKILLS AND BEHAVIOR PROBLEMS WITHIN AND ACROSS HOME AND SCHOOL SETTINGS

by

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(Under the Direction of Kristen Bub)

ABSTRACT

To gain a comprehensive understanding of child development, it is crucial to examine simultaneously children's relationships and developmental outcomes in multiple contexts. The current cross-sectional study examined how teacher-student and mother-child relationships relate to social skills and behavior problems across both home and school environments, and also explored the interactions between teacher-student relationships and family socioeconomic status (SES). Data were analyzed from 1053 fifth-grade students who participated in the NICHD Study of Early Child Care and Youth Development. Results indicated that positive teacher-student relationships were associated with better social skills and fewer behavior problems across both home and school contexts, whereas mother-child relationships did not predict social behaviors in the school context. Moreover, the positive effects of teacher-student relationships were more pronounced among students from high-SES backgrounds than those from low-SES backgrounds.

INDEX WORDS: teacher-student relationship, mother-child relationship, social skills, behavior problems, family SES

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TABLE OF CONTENTS

Page

CHAPTER

CHAPTER 1

INTRODUCTION

As one of the proximal contexts of students' development, the importance of teacher-student relationships has been emphasized in ample research. Quality teacher-student relationships are linked with fewer behavior problems (Hamre & Pianta, 2001), increased academic interest (Fauth et al., 2014), and higher social skills (Berry & O'Connor, 2010). Most studies examining associations between teacher-student relationships and students' behavior rely on teacher reports (see Lei et al., 2016), which measure students' behavior in school. Given that students behave differently in varied social contexts, it is unfortunate that little is known about the associations between teacher-student relationships and students' behavior at home, which is the primary and most immediate developmental context for students. According to the Bioecological Theory of Development (Bronfenbrenner & Ceci, 1994), children develop as a result of multiple layers of contexts as well as interactions among those contexts. Because children do not cultivate social-emotional competencies and behaviors solely in one environment, it is crucial to examine children's relationships and behaviors in multiple contexts simultaneously to have a comprehensive understanding of their development. Exploring developmental outcomes in both school and home contexts and further examining home factors such as the mother-child relationship and family socioeconomic status can prompt a deeper understanding of the role that the teacher-student relationship plays in children's development. Although researchers have investigated teacher-student relationships as important developmental assets for decades, studies that examine the teacher-student relationship and its impacts on development in multiple social

contexts are scant. This study, therefore, aims to deepen our understanding of the teacher-student relationship and its associations with child development by investigating the role of the teacher-student relationship on social and behavioral development in two primary social and developmental contexts: school and home.

Teacher-Student Relationships, Social Skills, and Behavior Problems

A positive teacher-student relationship, marked by a high level of closeness and a low level of conflicts, describes openness, caring, and warmth between students and teachers (Pianta, 2001). Teacher-student relationship studies are largely based on Attachment Theory. According to the attachment theory, adults such as teachers can serve as attachment figures (Verschueren & Koomen, 2012). Attachment is a strong disposition to seek and maintain closeness and contact with a specific figure (Ainsworth 1989; Bowlby, 2008). Attachment relationships with teachers have positive functions in the classroom. For example, such relationships provide feelings of security which allow students to explore the school environment actively and take risks in the classroom, such as answering a question of which the student might not be entirely certain. Also, students may form adequate internal working models through positive teacher-student relationships. The internal working model is built upon past experiences and guides students' expectations and responses to others. Positive interactions with teachers will help students to construct adaptive beliefs about themselves and others (Bergin & Bergin, 2009). In contrast, when students have negative teacher-student relationships they may feel less secure and see themselves as unworthy of better treatment from teachers. They internalize negative interactions with teachers into their sense of self and expect rejection and insensitivity from peers (Doumen et al., 2011).

A large body of research indicates that a positive teacher-student relationship enhances a broad range of students' socioemotional and behavioral development (Hamre & Pianta, 2001;

O'Connor et al., 2011; Pianta & Stuhlman, 2004). Specifically, teacher-student closeness is positively associated with social competence, and conflict is inversely linked with social competence and positively linked with antisocial behavior (Acar et al., 2020). Students in more emotionally supportive classrooms exhibit more behavioral self-control than students in less supportive classrooms (Merritt et al., 2012). Longitudinal evidence indicates children with high-quality relationships with teachers from kindergarten through sixth grade demonstrate more positive social skills trajectories over time (Berry & O'Connor, 2010). The teacher-student relationship is also related to the development of behavior problems (Leflot et al., 2011; Lucas-Molina et al., 2015; Spilt et al., 2012). Indeed, positive teacher-student relationships are linked to fewer behavior problems (Lei et al., 2016) and associated prospectively with better behavioral adjustment (Hamre & Pianta, 2001). Conversely, negative teacher-student relationships are related to higher levels of externalizing and internalizing behavior (Baker et al., 2008). For example, when elementary students and their teachers reported high levels of conflict in their interactions, students displayed higher peer victimization and peer aggression in the classroom (Lucas-Molina et al., 2015).

Social Skills and Behavior Problems

The development of social skills and adaptive behaviors is fundamental to the academic success and overall well-being of children (Bub et al., 2007; Ronen et al., 2016). Social skills and behavior problems are related and thus sometimes conflated in the literature. Prior studies note an inverse relation between behavior problems and social skills, which means higher levels of social skills are linked to lower levels of behavior problems (Hukkelberg et al., 2019). However, behavior problems do not simply mean a lack of social skills and vice versa – stronger social skills do not simply mean the absence of behavior problems. For example, aggressive children exhibit

substantial individual differences in their ability to engage with others, suggesting that some of these children might possess an array of positive behaviors (Peeters et al., 2010). Indeed, several studies have found that children who engage in bullying are often bistrategic controllers who are capable of using both prosocial behaviors and aggressive behaviors (Olthoef et al., 2011; Wurster & Xie, 2014). Despite the distinct aspects of behavior problems and social skills, there are limited studies investigating both social skills and behavior problems simultaneously in relation to teacher-student relationships. Therefore, examining both behavior problems and social skills simultaneously allows us to compare each unique linkage with teacher-student relationships and thus bring a better understanding of the role of teacher-student relationships in students' socio-emotional and behavioral development.

Teacher-Student Relationships and Mother-Child Relationships

Teacher-student relationships and students' social behaviors are influenced by different social relationships that students build in other social contexts. The mother-child relationship is one of the most frequently used and strongest predictors of students' behavior, and the importance of the mother-child relationship has been supported by many attachment studies (Erickson et al., 1985; Fearon et al., 2010; Groh et al., 2012; Sroufe et al., 1983). For example, a series of meta-analyses have demonstrated that securely attached children tend to exhibit fewer externalizing behavioral problems (d = .31, Fearon et al., 2010), fewer internalizing behaviors (d = .15, Groh et al., 2012), and higher social competence (d = .39, Groh et al., 2014).

The teacher-student relationship and the mother-child relationship are relationships that children build with significant adults in school and at home and both relationships play crucial roles in child development. For young children, there is modest concordance between mother-child relationships and teacher-student relationships (Ahnert et al., 2006; O'Connor & McCartney,

2006). A meta-analysis examining secure relationships between teachers and children found that children's security with teachers is significantly associated with their security with parents (Ahnert et al., 2006). However, children might develop internal working models of relationships with teachers that are distinct from initial relational models formed at home (Sabol & Pianta, 2012). In addition, because school and home have different features, mother-child relationships and teacher-student relationships inevitably have different characteristics (see Kenser, 2000). Although teachers change every academic year, mothers have a more consistent and lengthy relationship with their children. Moreover, mother-child relationships are more exclusive because children share teachers' caring and attention with other children in school. Mothers address a wide range of issues concerning their children while interactions between teachers and children primarily concentrate on school-related issues and the teacher's role as an instructor is highlighted as children mature. Further, schools and homes could have different expectations, norms, and rules. Thus, children are not likely to build relationships with teachers in an identical manner that they do with mothers. Mothers and teachers may play distinct roles in their particular social contexts, and their relationships with children may have different influences on the development of behavior problems and social skills. According to the Bioecological Model of Development (Bronfenbrenner & Ceci, 1994) children's development is enmeshed in multiple social contexts from the immediate settings of home and school to the larger system; these systems also interact to shape development. Thus, to better understand the socioemotional development of children, it is necessary to comprehensively consider social relationships in various proximal contexts (i.e., home and school) rather than conducting research limited to one specific context.

Discrepancies Between Teachers and Mothers on Social Behaviors of Students

A majority of studies examining the association between teacher-student relationships and developmental outcomes rely on teacher-report measures. According to a meta-analysis on the association between the affective teacher-student relationship and students' externalizing behavior problems (Lei et al., 2016), only 5 of 57 studies used parent-reported student behavior. Teacher-reported students' behavior is basically based on student's behavior observed within a classroom or school contexts. Teachers' knowledge of the student behaviors occurs in the classroom, and teachers have limited access to students' behavior outside of school contexts; however, students may behave differently in different settings. School and home contexts differ entirely in the purpose of any given activity, those with whom the child interacts, and the socio-emotional and physical factors influencing behavior. Sometimes these contexts even differ in the social and behavioral expectations held for the student. Therefore, behavior problems and social skills can appear differently depending on where and with whom the student is interacting.

Indeed, according to studies on cross-informant agreements, there are discrepancies between ratings on children's behavior problems (Achenbach et al., 1987; De Los Ryes et al., 2015; Youngstrom et al., 2000) and social skills (Gresham et al., 2010) from different informants who interact with students in different environments (e.g., teacher and parent). A classic meta-analysis of 199 studies of social, emotional, and behavior problems found that the mean intercorrelation between teachers and parents was .27 (Achenbach et al., 1987). In the past, discrepancies between informants were regarded as measurement error or informant bias (e.g., Richters, 1992; Youngstrom et al., 1999). Alternatively, discrepancies between informants might represent true behavioral differences of students that are bound to a social context (Achenbach et al., 1987; De Los Reyes et al., 2009; De Los Ryes et al., 2015). Students may display context-specific behavior

while interacting with others in each context. In other words, discrepancies between informants may reflect actual variations in students' behavior across diverse contexts. Indeed, when rating students' behaviors, informants sharing similar contexts (e.g., teacher-teacher) report higher intercorrelation than informants from different contexts (e.g., teacher-mother). For example, teacher-parent intercorrelations for social skills and problem behaviors were .30 and .31, respectively, whereas teacher-teacher intercorrelations were .68 and .61 respectively (Gresham et al., 2010). Therefore, to fully understand the teacher-student relationship and its associations with social skills and behavior problems, more work that considers multiple social contexts should be done.

Teacher-Student Relationships and SES

Students who are identified as at-risk are commonly defined by various student characteristics including low SES, minoritized racial/ethnic identity, functional risk, academic risk, or challenging temperament, which may contribute to inconsistent findings (Roorda et al., 2011). Among these risk factors, family SES may be the foremost variable predicting a wide array of cognitive, socio-emotional, and health development (Beauchamp & Anderson, 2010; Yoshikawa et al., 2012). For example, children from low SES families tend to be less ready for school learning (Vail, 2004), less socially competent (Harrod & Scheer 2005), and less self-regulated (Evans & Kim, 2013) than students from high SES backgrounds. Although positive relationships with teachers are broadly accepted as a developmental asset for children, the protective role of teacher-student relationships especially for at-risk students is still inconclusive (Pianta & Sablo, 2012; Roorda et al., 2011). Some studies supporting the moderation effect of the teacher-student relationship argue that teacher-student relationships may protect students against negative developmental outcomes by compensating for risks (Baker et al., 2008; Hamre & Pianta, 2005;

McCormick et al., 2014). For example, Hamre and Pianta (2005) noted that when students with functional risks (e.g., externalizing behavior, low sustained attention) were placed in a classroom providing high emotional support, they exhibited elevated academic scores and fewer conflicts with teachers commensurate with low-risk peers. Wang and colleagues (2013) found that positive teacher-student relationships played an important role in reducing depressive symptoms, especially for boys who are low in effortful control. However, several studies have failed to find a protective role of teacher-student relationships for students identified at risk (Bakchich et al., 2022; Liu et al., 2015). For instance, in the research conducted by Liu and colleagues (2015) on adolescents, it was demonstrated that the association between teacher-student relationship and problem behaviors or self-esteem is not moderated by students' family SES. Given existing mixed findings, this study focuses narrowly on family SES as a risk factor and explores the potential protective role of teacher-student relationships on social behaviors.

Furthermore, little research has yet to conducted on whether the teacher-student relationship can serve as a moderator for at-risk students with poor social skills. Studies about social-emotional learning (SEL) interventions, which include practices improving the quality of classroom climate can give a picture of the differential effect of the positive teacher-student relationship for low-SES students, but the results remain inconclusive. Meta-analyses on SEL found no differences in SEL effectiveness on social-emotional skills and behavior problems for children from different SES backgrounds (Murano et al., 2020; Taylor et al., 2017) but there is also evidence to suggest that schools with fewer SES disadvantages have the greatest intervention effects on improvement in social skills (Bierman et al., 2010). Given inconclusive findings around the potential role of positive teacher-student relationships on socioemotional outcomes, more studies on the moderating effect of family SES are needed.

The Current Study

To address existing gaps in the literature, this study seeks to deepen our understanding of the role that relationships with important adults play in students' social skills and behavior problems in multiple social contexts. Even though students' development occurs throughout multiple contexts, most studies have examined teacher-student relationships, mother-child relationships, and the effects of those relationships on children's socio-emotional and behavioral development separately. We extend previous research by including two primary developmental contexts (school and home) simultaneously to investigate how relationships and behaviors in school and at home are intertwined. This cross-sectional study focuses on (a) how teacher-student relationships are associated with students' behavior problems and social skills in school and at home; (b) how mother-child relationships are associated with teacher-student relationships and students' behavior in school and at home; and (c) the moderating effect of family SES on the associations between teacher-student relationships and students' behaviors in school and at home. To accomplish these aims, we analyzed the teacher-student relationship, the mother-child relationship, teacher-reported behaviors, and mother-reported behaviors of fifth-grade students using data from the National Institute of Child Health and Human Development's (NICHD) Study of Early Child Care and Youth Development (SECCYD).

CHAPTER 2

METHOD

Participants

This study was conducted using data from Phase III of the NICHD Study of Early Child Care and Youth Development (NICHD SECCYD), which is one of the most comprehensive longitudinal studies of children and their developmental environments and was carried out in four phases. Phase I started in 1991 and followed 1,364 families and their children from birth through age of three. In Phase II, 1,226 children and families remained in the study and were followed through the first grade. In Phase III, 1061 children and families remained and were followed through their sixth grade. Finally, in Phase IV, 1,009 children and families were followed through ninth grade (see NICHD Early Child Care Research Network 2005 or visit https://www.icpsr.umich.edu/web/ICPSR/series/00233 for more detailed information). The current study included 1,053 fifth-grade students, their mothers, and their teachers from Phase III. We included students who had data for at least one key variable (i.e., the student-teacher relationship, teacher-reported social skills, teacher-reported behavior problems, the mother-child relationship, mother-reported social skills, mother-reported behavior problems) in fifth grade. Of the respondents, approximately 81% were White, and the remaining 19% of respondents were children from traditionally minorized racial groups (12% Black, 1.4% Asian or Pacific Islander, 0.3% American Indian, Eskimo, Aleutian, 5% Other Ethnicity). The average income-to-needs was 4.5 times the poverty line and 77% of families were living-above-poverty; 15% of families were living-near-poverty; 8% of were living-in-poverty.

Procedures

Data for the current study were gathered via teacher and mother reports. More specifically,

teachers reported on the quality of their relationship with the study child when children were in fifth grade. Additionally, mothers reported on the quality of their relationship with their child in fifth grade. Finally, both teachers and mothers reported on children's social skills, internalizing, and externalizing behaviors when children were in fifth grade. Child sex and race/ethnicity were collected via mother report when the youth was one month old. Family income was collected when children were in fifth grade and a family income-to-needs ratio was calculated. Additional detailed procedures of data collection can be found on the NICHD website (see https://doi.org/10.3886/ICPSR21942.v6).

Measures

Demographic information

Demographic information was used as covariates or moderators in this study. Mothers reported their child's sex and race/ethnicity when the child was one month old. Child gender was dummy coded (Female=0, Male=1). Child race/ethnicity included American Indian/Eskimo/Aleutian, Asian/Pacific Islander, Black, White, and Other. Given the limited variability in racial/ethnic categories, we coded race/ethnicity as a dichotomous variable (non-White = 0, White = 1). Socio-economic status was measured by the income-to-needs ratio of fifth grade. The total family income was divided by the U.S. Census-based poverty thresholds for appropriate family size to obtain an income-to-needs ratio (U.S. Census Bureau, 1999).

Teacher-student relationships

The Teacher-Student Relationship was assessed using the short form of the *Student-Teacher Relationship Scale* (STRS; Pianta, 1992). Teachers reported their perceptions of the quality of the relationship with a particular student using a 5-point Likert-type scale (1 = "Definitely does not apply" to 5 = "Definitely applies"). The 15-item STRS consists of two

subdimensions of Conflict and Closeness. The Conflict subscale includes seven items and measures the extent to which a teacher experiences disharmonious interactions and disagreements with students (e.g., "Dealing with this child drains my energy"). The Closeness subscale is comprised of eight items and measures the amount of warmth and openness in a relationship with a student (e.g., "I share an affectionate, warm relationship with this child."). This measure evidences high internal consistency and validity (Howes & Ritchie, 1999; Pianta, 2001). The STRS is associated with behavior problems and competencies in elementary classrooms (Pianta, et al., 1995) and peer relations (Birch, & Ladd, 1998). Across the children in the current study, the Conflict and Closeness subscale scores exhibited high levels of internal consistency with Cronbach's $\alpha = .90$ and .85, respectively.

Mother-child relationship

The Mother-Child Relationship was assessed by the *Child-Parent Relationship Scale* (CPRS; Pianta, 1992), which is a modified version of STRS and enables the parent to evaluate the child's attachment behaviors at home. The 15-item measure was used to assess mothers' perceptions of the quality of their relationship with the study child. Specifically, mothers rated how applicable each item was to their current relationship with their child using a 5-point Likert-type scale (1 = "Definitely does not apply" to 5 = "Definitely applies"). The Conflict subscale is comprised of seven items (e.g., "If upset, my child will seek comfort from me.") and the Closeness subscale is comprised of nine items (e.g., "My child is uncomfortable with physical affection or touch from me."). In the current study, the mother-reported Conflict and Closeness scores demonstrated high levels of internal consistency with Cronbach's $\alpha = .84$ and .73, respectively.

Social skills

Social skills were assessed using both the teacher version of the *Social Skills Rating System* (SSRS-T; Gresham & Elliot, 1990) as well as the parent version SSRS (SSRS-P; Gresham & Elliot, 1990). The SRSS measures the perceived frequency of social behavior that can affect the development of social competence and adaptive functioning. Teachers and mothers were asked to rate each item based on their perceived frequency of target behavior using a 3-point scale from 0 = "never" to 2 = "very often". In the present study, three subscales (Assertion, Self-Control, and Cooperation) were used. An additional subscale, Responsibility, is only included in parental SSRS, and therefore was not included in these analyses. The Cooperation subscale consists of 10 items and assesses cooperative behaviors facilitating academic success (e.g., "Attend to your instructions.", "Volunteers to help family members with the task."). The Assertion subscale is made up of 10 items and measures behaviors of initiating social interactions or expressions of opinion (e.g., "Initiates conversations with peers", "Invites others to your home."). The Self-Control subscale is comprised of 10 items and measures behaviors of inhibiting impulses or negative behavior (e.g., "Controls temper in conflict situations with peers.", "Speaks appropriate tone of voice at home".) The SSRS was normed based on a large and national sample of 4,170 children ages 3 to 18. This instrument has extensive evidence of good internal consistency and validity with various populations and thus has been widely used to measure the social skills of children (Gresham & Elliott, 1990; Merrell, 2001). It was highly associated with other teacher-rated social skills instrument such as the *Pictorial Scale of Perceived Competence and Social Acceptance for Young Children*, and the *Walker-McConnell Scale of Social Competence and School Adjustment* (Gresham & Elliott, 1990; Walker & McConnell, 1988). In the present study, internal consistencies for the sample were strong for both the teacher-reported subscales (α = 0.91,

0.86, 0.89, Cooperation, Assertion, Self-control, respectively) and mother-reported subscales (α = 0.79, 0.76, 0.81, Cooperation, Assertion, Self-control, respectively).

Behavior problems

Maternal reports of Internalizing and Externalizing Behavior problems were assessed by the *Child Behavior Checklist* (CBCL; Achenbach, 1991a). Teachers used the *Teacher Report Form of the Child Behavior Checklist* (TRF; Achenbach, 1991b). The CBCL was designed to obtain parents' reports on children's behavior problems and functioning. The TRF, which derives from the CBCL, was developed to obtain teachers' reports of students' broad range of behavior problems. Teachers and mothers were asked to rate how well item statements describe the behavior of the child now or within the past six months using 3-point scales from 0 = "not true of the child" to 2 = "very true of the child". The CBCL and TRF consist of two higher-order factors: Internalizing and Externalizing Problem. Each factor is made up of several empirically based syndrome scales. Internalizing Problems sum Somatic Complaints (i.e., Feels dizzy), Anxious/Depressed (e.g., Complains of loneliness) and, Withdrawn (i.e., Refuse to talk), and identify inhibited, fearful, and overcontrolled behavior. Externalizing Problems sum Aggressive (e.g., Argues a lot) and Destructive/Delinquent Behaviors (e.g., Lying or Cheating), and identify disruptive, antisocial, and under-controlled behavior. Thirty-four items were used for Internalizing Problems and 35 items were used for Externalizing Problems. In the current study, we used standardized scores (T-scores). Because the number of items in each scale differs, it is difficult to compare raw scores across different subscales. Raw scores can be converted into T scores which provide a metric that is similar for all scales. With T scores, it is possible to compare the relative frequency of child behavior problems on different scales.

The TRF and CBCL are widely used to assess children's adaptive functioning and demonstrate high internal consistency and validity (Achenbach, 1991a, 1991b). The CBCL and TRF revealed significant discriminations between clinically referred and nonrefereed children and significant associations with other analogous scales of the *Conner Scales* and the *Behavior Assessment System for Child Scales* (Achenbach, 2001). In the present study, internal consistencies for the sample were strong for teacher-reported Internalizing Problems (α = 0.74, 0.81, 0.81, Somatic Complaints, Anxious/Depressed, Withdrawn, respectively), the teacher-reported Externalizing Problems (α = 0.95, 0.64, Aggressive, Destructive/Delinquent Behaviors, respectively), mother-reported Internalizing Problems (α = 0.65, 0.80, 0.70, Somatic Complaints, Anxious/Depressed, Withdrawn, respectively), and mother-reported Externalizing Problems (α = 0.88, 0.63, Aggressive, Destructive/Delinquent Behaviors, respectively).

Statistical Analysis

Means, standard deviations, and correlations among the primary study variables were calculated using SPSS version 18. All predictive analyses were conducted using MPlus Version 8. Missing data were handled using Full Information Maximum Likelihood, the default in MPlus. To investigate how teacher-student relationships and mother-child relationships are associated with teacher-reported and mother-reported social skills and behavior problems, we used a path analysis in which we regressed teacher-reported and mother-reported social skills and behavior problems on teacher-student relationships and mother-child relationships, controlling for effects of sex and race/ethnicity. To confirm that the associations between exogenous variables (i.e., the teacher-student relationship, the mother-child relationship) and endogenous variables (i.e., teacher-reported social skills, mother reported social skills) are consistent in simple models, we estimated four separate path models (see Appendix A; Model 1: teacher-reported outcomes were regressed

on teacher-student relationships, Model 2: mother-reported outcomes were regressed on teacher-student relationships, Model 3: teacher-reported outcomes were regressed on mother-child relationships, Model 4: mother-child outcomes were regressed on mother-child relationships). There were only minor differences between these models and the full model, which include all pathways described above, so we report below on the full model only. Model fit was assessed using chi-square, CFI, TLI, and RMSEA. A CFI and TLI close to 0.95, and a RMSEA value close to 0.06 indicate a good fit (Hu & Bentler, 1999). A chi-square value was significant but given that chi-square is sensitive to sample sizes and the chi-square value increase with the increasing of sample sizes and a constant number of degrees of freedom (Schermelleh-Engel et al., 2003), the overall model fit should be interpreted cautiously.

In addition, to examine the moderation of family SES on associations between teacher-student relationships and social skills, behavior problems, a numerical integration was used. Because traditional model fit indices such as Chi-square, CFI, or RMSEA used in structural equation modeling are not available for interaction models including latent variables and cannot be directly calculated by Mplus, we calculated the model fit based on a two-step method proposed by Maslowsky et al. (2015). First, we analyzed the model without the interaction term (Model 0) and evaluated the model fit using traditional model fit indices. Second, we added the interaction term (Model1) in the parsimonious Model 0 and compared the model fit with Model 0 using the log-likelihood ratio test. When Model 0 fits well and the log-likelihood test indicates that Model 0 has significant loss in fit compared to Model 1, we can conclude that Model 1 fits well with the data. The test statistics (D) for a log-likelihood ratio test can be calculated by the following equation: $D = -2[(\log - \text{likelihood for Model 0}) - (\log - \text{likelihood of Model 1})]$. In addition, to acquire sufficient numerical precision, we increased the number of integration points using the

STARTS option in the Mplus. The STARTS option requires the set of the number of initial stage random sets of starting values to generate and the number of final stage optimizations to use. The default values are 20 random sets of starting values and 4 final stage optimizations (Muthen & Muthen, 2008). We specified numbers as 50, 20; 80, 20; 100,40; and the results based on different STARTS numbers were the same. Thus, we used 50 random sets of starting values for the initial stage and 20 optimizations for the final stage.

CHAPTER 3

RESULTS

Preliminary Data Analysis

The means and standard deviations of all primary variables were calculated (see Table 1). Higher numbers in social skills indicated better social skills and higher numbers in behavior problems indicate more behavior problems. Average scores for social skills (cooperation, assertion, and self-control) approximated the normed mean (Gresham & Elliot, 1990). On average, teachers rated students' cooperation and self-control higher and rated assertion lower than mothers. The average T-scores for internalizing and externalizing behavior were also comparable to those for the normed sample (Achenbach, 1991a). On average, teachers reported higher internalizing and externalizing behavior than mothers except for somatic complaints. Teachers tended to have fewer conflicts with students than mothers did, while they reported lower closeness with students than mothers.

Next, correlations between all primary variables were calculated (see Table 1) and there were several notable patterns in correlations. First, for both the teacher-student relationship and mother-child relationship, conflict was negatively associated with social skills and positively associated with behavior problems, and closeness was positively associated with social skills and negatively associated with behavior problems. In general, conflict had stronger correlations with outcome variables than the closeness. Second, correlations between variables from the same context were stronger. Specifically, the teacher-student conflict and closeness were highly linked with teacher-reported outcomes than mother-reported outcomes. Mother-child conflict and

closeness were moderately linked with mother-reported outcomes while having weak or non-significant correlations with teacher-reported outcomes. Third, there were moderate cross-informant correlations between teacher-reported and mother-reported social skills and behavior problems, which ranged from .13 to .30.

Finally, latent variables (teacher-student relationships, mother-child relationships, teacher-reported behavior problems, and mother-reported behavior problems) were created, and factor loadings were calculated. All factor loadings were significant at $p<.001$. The teacher-student relationship and the mother-child relationship are comprised of closeness and conflict, and factor loadings were 0.36, 0.95, 0.46, and 0.77, respectively. The teacher-reported externalizing behavior and the mother-reported externalizing behavior are comprised of disruptive behavior and aggressive behavior, and the factor loadings were 0.76, 0.93, 0.73, and 0.85, respectively. The teacher-reported internalizing behavior and the mother-reported internalizing behavior are comprised of withdrawn, somatic complaints, anxious/depressed. Factor loadings of teacher-reported internalizing behavior ranged from 0.36-0.94, and factor loading of mother-reported internalizing behavior ranged from 0.47-0.79.

Table 1 *Descriptive Statistics and Correlations for primary study variables*

Variable	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*	*15*	*16*	*17*	*18*	*19*	*20*	*21*	*22*	*23*
Teacher-Reported																							
1. Cooperation	-																						
2. Assertion	.50***	-																					
3. Self-control	.65***	.56***	-																				
4 Withdrawn [a]	-.40***	-.60***	-.33***	-																			
5. Somatic complaints [a]	-.23***	-.17***	-.17***	.34***	-																		
6. Anxious/Depression [a]	-.22***	-.28***	-.30***	.51***	.30***	-																	
7. Delinquent behavior [b]	-.50***	-.35***	-.61***	.35***	.21***	.27***	-																
8. Aggressive behavior [b]	-.53***	-.25***	-.69***	.23***	.18***	.33***	.70***	-															
Mother-Reported																							
9. Cooperation	.28***	.16***	.19***	-.14***	-.13***	-.01	-.16***	-.18***															
10. Assertion	.23***	.30***	.26***	-.26***	-.12**	-.15***	-.23***	-.18***	.37***	-													
11. Self-control	.23***	.15***	.30***	-.15***	-.15***	-.11**	-.24***	-.26***	.48***	.45***	-												
12. Withdrawn [c]	-.11**	-.21***	-.12***	.23***	.11**	.11***	.07*	.00	-.19***	-.36***	-.25***	-											
13. Somatic complaints [c]	-.04	-.04	-.08*	.04	.16***	.03	.03	.03	-.12***	-.15***	-.23***	.36***	-										
14. Anxious/Depression [c]	-.11**	-.13***	-.13***	.17***	.16***	.19***	.06	.05	-.18***	-.28***	-.31***	.60***	.38***	-									
15. Delinquent behavior [d]	-.21***	-.12***	-.25***	.13***	.07*	.05	.29***	.27***	-.28***	-.22***	-.39***	.39***	.25***	.37***	-								
16. Aggressive behavior [d]	-.18***	-.11**	-.23***	.11**	.13***	.14***	.18***	.21***	-.30***	-.19***	-.47***	.41***	.29***	.53***	.62***	-							
17. T-S conflict [e]	-.61***	-.37***	-.73***	.31***	.20***	.31***	.62***	.77***	-.23***	-.24***	-.28***	.09**	.10**	.11**	.25***	.21***	-						
18. T-S closeness [e]	.32***	.58***	.33***	-.37***	-.01	-.06	-.28***	-.20***	.11**	.21***	.08*	-.09***	-.04	-.04	-.10**	-.01	-.35***	-					
19. M-C conflict [f]	-.13***	-.09**	-.18***	0.06	.09**	.04	.16***	.16***	-.40***	-.27***	-.62***	.29***	.23***	.35***	.40***	.50***	.16***	-.01	-				
20. M-C closeness [f]	.08*	.11**	.08*	-.08*	-.01	.02	-.10**	-.07*	.34***	.39***	.34***	-.30***	-.05	-.19***	-.28***	-.20***	-.13***	.14***	-.35***	-			
21. Income-to-needs ratio	.22***	.19***	.18***	-.17***	-.12***	-.09*	-.20***	-.13***	.11***	.15***	.21***	-.11***	-.09**	-.08*	-.18***	-.14***	-.18***	.07*	-.10*	.08*	-		
22. Sex [g]	-.28***	-.12***	-.15***	.08*	.00	-.01	.04	.04	-.15***	-.05	-.05	.05	.01	.02	-.02	-.04	.18***	-.16***	-.04	-.06*	-.05	-	
23. Race [h]	.20***	.11**	.23***	-.13***	-.01	-.04	-.22***	-.24***	.10**	0.24***	.14***	-.04	-.04	.03	-.14***	-.06	-.25***	.09**	.00	.08**	.21***	.01	-
M	15.67	12.79	15.03	54.15	52.72	54.19	53.75	54.23	12.29	16.95	13.89	52.84	55.33	53.14	52.70	52.52	11.44	31.85	16.37	36.56	4.54	0.50	0.81
SD	4.18	4.11	3.99	6.60	5.77	5.65	5.81	6.68	3.27	2.64	3.27	5.23	6.31	5.48	5.11	5.08	5.74	5.37	6.00	3.25	4.06	0.50	0.39

[a] observed variables composing teacher-reported internalizing behavior [b] observed variables composing teacher-reported externalizing behavior [c] observed variables composing mother-reported internalizing behavior [d] observed variables composing mother-reported externalizing behavior [e] observed variables composing the teacher-student relationship [f] observed variables composing the mother-child relationship [g] 0 = female and 1=male, [h] 0= other races and 1= white

*$p < .05$. **$p < .01$. ***$p < .001$.

Teacher-Student Relationships, Mother-Child Relationship, and Children's Social-Emotional Outcomes

Parameter estimates from the path model predicting cooperation, assertion, self-control, and internalizing and externalizing behavior in school and home from teacher-student relationship and mother-child relationship are presented in Figure 1. Child sex and race/ethnicity were controlled in this model. The model fit was adequate, $\chi^2(130) = 952.140, p = .00, RMSEA = .08,\ SRMR = .06, CFI = .90, TLI = .80$.

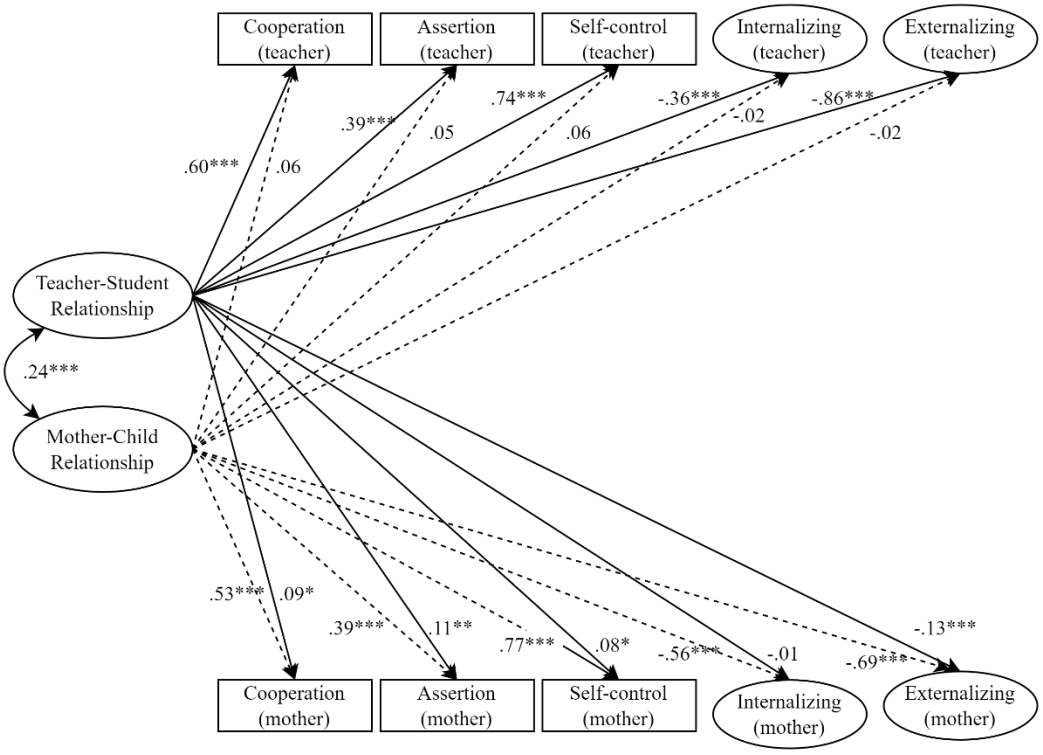

Figure 1 *Path model depicting the estimated effects of teacher-student relationship and mother-child relationships on cooperation, assertion, self-control, internalizing behavior, and externalizing behavior*

Note. Circles represent latent variables; Squares represent observed variables; Solid lines represent paths from the teacher-student relationship to outcome variables; Dashed lines represent paths from the mother-child relationship to outcome variables. $^{*}p < .05$. $^{**}p < .01$. $^{***}p < .001$.

Teacher-student relationships and outcomes

Students with more positive teacher-student relationships had higher teacher-reported cooperation ($\beta = .60, p < .001$), assertion ($\beta = .39, p < .001$), self-control ($\beta = .74, p < .001$), and fewer internalizing and externalizing behavior ($\beta = -.36, p < .001; \beta = -.86, p < .001$) in school. When students had a high-quality relationship with their teachers, they also exhibited higher mother-reported cooperation ($\beta = .09, p < .05$), assertion ($\beta = .11, p < .01$), self-control ($\beta = .08, p < .05$), and fewer externalizing behavior ($\beta = -.13, p < .05$) in the home. There was no evidence that teacher-student relationship was associated with mother-reported internalizing behavior ($\beta = -.01, p = .87$). Taken together, positive teacher-student relationships predicted higher levels of social skills and lower levels of problem behaviors in school and at home. Not surprisingly, when comparing the magnitude of standardized coefficients, teacher-student relationships were a stronger predictor of skills and behaviors in school than at home (see Figure 1).

Mother-child relationships and outcomes

Children with a more positive mother-child relationship had higher mother-reported cooperation ($\beta = .53, p < .001$), assertion ($\beta = .39, p < .001$), self-control ($\beta = .77, p < .001$), and fewer internalizing and externalizing behavior ($\beta = -.56, p < .001; \beta = -.69, p < .001$) at home. However, the mother-child relationship was not significantly associated with any teacher-reported social skills or problem behaviors (see Figure 1). Taken together, mother-child relationships appear to not predict social skills and problem behaviors in other social contexts while teacher-student relationships predicted students' behavior across two social contexts.

Teacher-student relationship and mother-child relationship

Teacher-student relationship was moderately associated with mother-child relationships $(\beta = .24, p < .001)$. The pattern of associations between the teacher-student relationship and teacher-reported student outcomes was similar to the pattern of associations between the mother-child relationship and mother-reported student outcomes. For social skills, both teacher-student relationships and mother-child relationships predicted self-control best followed by cooperation and assertion (see Figure 1). For behavior problems, both relationships predicted externalizing behavior better than internalizing behavior. While the mother-child relationship predicted mother-reported internalizing and externalizing behavior at a comparable level, the teacher-student relationship predicted teacher-reported externalizing behavior twice as strongly when compared to teacher-reported internalizing behavior (see Figure 1).

The Moderation of SES on Teacher-Student Relationships

Parameter estimates from the path model examining the moderation effect of SES on the associations between teacher-student relationships and student social skills and behavior problems in school and home are reported in Table 2. The model fit was tested using log-likelihood ratio test and it appeared that the moderation model fits well with data, $D = 45.32$, $p < 0.001$. For teacher-reported social skills and problem behaviors, there was a significant interaction of teacher-student relationships with SES on externalizing behaviors $(\beta = .11, p < .001)$ but the interaction was not in the expected direction. More specifically, students from high SES backgrounds appeared to benefit more from positive teacher-student relationships than did students from low SES backgrounds, suggesting that positive teacher-student relationships might not significantly buffer students from the negative effects of low SES. Instead, it might serve as an additional resource for

children from higher SES backgrounds. There was no interaction between teacher-student relationships and SES on any other teacher-reported outcomes.

For mother-reported social skills and problem behaviors at home, there was a significant interaction between teacher-student relationships and SES on externalizing behavior at home ($\beta = .08, p < .05$), such that students from higher SES backgrounds benefited more from positive relationships with teachers in terms of reduced externalizing behavior than did students from lower SES backgrounds. No other interactions between teacher-student relationships and SES were identified for mother-reported outcomes. Even after including the interaction term, main effects of the teacher-student relationship and SES on social skills and internalizing behavior in school and at home were significant (see Table 2).

Teacher-reported	Cooperation		Assertion		Self-control		Internalizing		Externalizing	
	β	*SE*	β	*SE*	β	*SE*	β	*SE*	β	*SE*
Sex	-.17***	.03	-.04	.03	-.03	.03	.02	.03	-.11***	.02
Race	.02	.03	-.02	.04	.04	.03	.01	.04	-.04	.04
TSR	.69***	.04	.44***	.05	.82***	.03	-.45***	.09	-1.01***	.04
SES	.11***	.02	.12***	.03	.05*	.03	-.12**	.04	-.01	.02
TSR*SES	-.02	.02	.00	.03	-.02	.02	.04	.07	.11**	.03
Mother-reported	Cooperation		Assertion		Self-control		Internalizing		Externalizing	
	β	*SE*	β	*SE*	β	*SE*	β	*SE*	β	*SE*
Sex	-.11**	.03	-.02	.03	-.01	.03	.01	.04	-.11**	.04
Race	.04	.04	.18***	.04	.06	.03	.04	.04	-.01	.04
TSR	.19**	.06	.26***	.06	.24***	.05	-.16*	.08	-.37***	.08
SES	.07*	.03	.09*	.04	.16***	.03	-.12***	.03	-.16***	.02
TSR*SES	.02	.03	-.04	.04	.00	.03	.03	.04	.08*	.04

Table 2 *Parameter estimates from the path analysis testing moderating role of SES on the association between teacher-student relationship and social skill, problem behaviors*

*$p < .05$. **$p < .01$. ***$p < .001$.

CHAPTER 4

DISCUSSION

The purpose of the current study was to examine the teacher-student relationship and its associations with developmental outcomes in two primary social contexts (school and home) and thereby acquire a comprehensive understanding of the role that teacher-student relationships play in child development. To accomplish this, we explored the simultaneous associations between teacher-student relationships, mother-child relationships, and developmental outcomes in the school and home context. Furthermore, we examined whether family SES moderates these associations. Taken together, findings suggest that teacher-student relationships explain child outcomes above and beyond mother-child relationships, and that positive teacher-student relationships benefit students from high-SES backgrounds more than students from low-SES backgrounds.

Within Context Associations Between Adult-Child Relationships and Student Outcomes in School and at Home

In line with existing research, strong teacher-student relationships predicted better social skills and fewer problem behaviors in school. Similarly, positive mother-child relationships predicted better social skills and fewer behavior problems at home. In each setting, quality relationships with adults were associated with more positive developmental outcomes. These findings are consistent with attachment theory (Ainsworth 1989; Bowlby 2008), which would suggest that a more positive relationship with a caring adult is linked with psychological and behavioral well-being. The results of the current study corroborate prior studies highlighting the

importance of teacher-student relationships and mother-child relationships as developmental assets of children (Fearon et al., 2010; Hamre & Pianta, 2001; Leflot et al., 2011; Lucas-Molina et al., 2015).

Interestingly, associations within respondent were similar; that is, the pattern of associations between the teacher-student relationship and teacher-reported student outcomes was similar to the pattern of associations between the mother-child relationship and mother-reported student outcomes. This finding indicates that the behaviors of a student in a good relationship with an adult do not differ dramatically by context. Although students behave differently in different contexts and the interpretation of the behavior can also be different according to contexts (Achenbach et al., 1987; De Los Reyes et al., 2015), study results suggest that relationships between caring adults and children are related to social outcomes in a similar manner across contexts.

Identical patterns found in the school and home context might represent the consistency in adults' behavioral expectations of students. For example, for social skills, both teacher-student relationships and mother-child relationships predicted self-control best followed by cooperation; they were both least predictive of assertion. This finding is consistent with previous studies on behavior expectations showing that teachers place more importance on self-control and cooperation than they do on assertion (Lane et al., 2004; Lane et al., 2010) and these behavioral expectations are uniformly held by mothers (Lane et al., 2007). Consistent findings suggest that students' behavior and adults' relationships might be affected by adults' behavioral expectations. Taken together, both teachers and mothers value social skills that contribute to harmony and less value assertion, and these expectations could be reflected in associations between their relationships with children and social outcomes.

For problem behavior, both teacher-student relationships and mother-child relationships predicted externalizing behavior more strongly than internalizing behavior. This finding replicated previous studies indicating that the teacher-student relationship and the mother-child relationship have a stronger correlation with externalizing behavior than with internalizing behavior (Fearon et al., 2010; Groh et al., 2012; Pakarinen et al., 2018; Zhang & Sun, 2011). Studies suggest that internalizing behaviors are negatively associated with positive teacher-student relationships (Baker et al, 2008; Pianta & Stuhlman, 2004) and secure attachments between parents and children (Groh et al., 2012), whereas other studies have not indicated that this is the case (Groh et al., 2012; O'Connor et al., 2011; Roorda & Koomen, 2021). This weak and inconsistent association may be due to the fact that internalizing behavior is directed at oneself, making it less noticeable and disruptive to teachers and mothers compared to externalizing behavior (Rubin & Coplan, 2007).

It is of note that whereas the magnitude of the link between the mother-child relationship and externalizing behavior or internalizing behavior was comparable, the link between the teacher-student relationship and externalizing behavior was more than twice as strong as that with internalizing behavior. Differences in magnitude for teachers may be related to the nature of the school. To maintain classroom structure and provide appropriate education, teachers require students to comply to some extent. Externalizing behaviors are disruptive and thus are more likely to evoke negative emotions or reactive behaviors in teachers (Rubin & Coplan, 2007), which results in a higher level of conflict between teachers and children. In addition, complex classroom situations might make teachers over-report externalizing behavior because of its salient and disruptive characteristics. Indeed, Scherzinger and Wettstein (2019) demonstrated that external observers' evaluations of class disruptions agreed with students' evaluations to a large extent, but not with teachers' evaluations. While there are consistent patterns across contexts between adult-

child relationships and social outcomes, certain behaviors are more likely to negatively impact relationships depending on the nature of context and behavior expectations in contexts.

Cross-Context Associations Between Adult-Child Relationships and Outcomes

Neither the teacher-student nor mother-child relationship strongly predicted children's behaviors across contexts. That is, the associations between teacher-student relationships with mother-reported outcomes (i.e., home behavior) were weaker than the associations between teacher-student relationships and teacher-reported outcomes (i.e., school behavior). Similarly, mother-child relationships did not predict teacher-reported outcomes whereas they significantly predicted mother-reported outcomes. Not surprisingly, cross-context associations were weaker than within-context associations. This result might reflect true differences in social skills and problem behaviors resulting from different social contexts. Even though there is behavioral consistency manifested across different settings, child behavior changes across different settings because of distinct characteristics and interactions embedded in each context (Funder, 2006; Funder & Colvin, 1991). School and home have different characteristics; for example, the school may be more structured and routine while the home may have more flexibility. Students may behave differently due to these differences in context, resulting in weak cross-context associations. Indeed, in the current study, there were low to moderate agreements between teachers and mothers on social outcomes, which is consistent with existing literature on cross-informant agreements (Achenbach et al., 1987; De Los Reyes et al., 2015; Gresham et al., 2010).

It is interesting to note that teacher-child relationships significantly predicted social skills and externalizing behaviors at home while mother-child relationships did not predict social skills and problem behaviors in school. One possible explanation for the better predictive power of teacher-student relationships is that teacher-student relationships may be a better indicator of the

general social competencies of children than the mother-child relationship. Although the concept of teacher-student relationships has roots in the attachment theory (Ainsworth, 1989; Bowlby, 2008), the teacher-student relationship is a social relationship, not identical to mother-child attachment (Verschueren & Koomen, 2012). In the early years, the teacher-student relationship is more similar to a caregiving relationship but as children get older, that relationship might transition to more of a social relationship. A teacher, for example, plays an important role as an attachment figure for young children, who lack self-regulation and have easily triggered attachment systems (Verschueren & Koomen, 2012). However, as children get older, they seek less comfort from teachers and perceive fewer personal ties with teachers (Verschueren et al., 2012). Considering that the participants in the current study were fifth graders and their relationships with teachers are likely to resemble general social relationships, the teacher-student relationship may better reflect universal social competencies and be a better predictor of students' behavior and social skills.

Related to the above explanation, having a good teacher-student relationship itself could stand for higher social goals and skills of children, which may enable teacher-student relationships to better predict social outcomes across contexts. Most students are likely to exert themselves to build a quality relationship with teachers for various reasons. The Self-Determination perspective (Deci & Ryan, 1985) of teacher-student relationships suggests that teacher-student relationships can serve as the primary source of fulfilling children's basic needs for relatedness. It is possible for students to try to connect with teachers and demonstrate adaptable social behaviors to gain social belonging. In addition, students might attempt to establish positive relationships with teachers because teacher-student relationships affect peer relationships such as peer-relatedness and peer-liking (Hughes & Chen, 2011; Hughes & Im, 2014). According to the sociocultural perspective of the teacher-student relationship (Bronfenbrenner & Ceci, 1994; Hughes, 2012), this relationship

cannot be isolated from other aspects of the school environment (Davis, 2003). Taken together, students' needs, motivations, or social goals can have students perform adaptive social behaviors and build positive relationships with teachers. This notion suggests, in turn, students in a positive relationship with teachers are more likely to be students who already possess higher social competencies to perform better social behaviors toward teachers. This idea is in line with studies arguing that the characteristics of students could impact the quality of teacher-student relationships (Nurmi, 2012; Pakarinen et al., 2018) and may provide evidence of a child-driven model (Megia & Hoglund, 2016), which argues for the role of student characteristics in their interpersonal environment.

Nonsignificant associations between mother-child relationships and social outcomes in the school might be explained by the complex social processes embedded within the school environment. In addition to the teacher-student relationship, other factors such as peers, norms, rules, culture, and policy might push students to behave in more tailored ways for school contexts. For example, students in the classroom having higher norms on prosocial behavior would perform more prosocial behaviors in the classroom than in other settings. Students who are disruptive at home may adhere to rules in the classroom because of punishment policy or peer likability. Indeed, in the classroom where aggressive behavior is linked with popularity, aggressive behaviors became acceptable and prosocial behaviors were reduced (Laninga-Wijnen et al, 2020). Additionally, given the age of participants in the current study, students at this developmental stage increasingly value peer relationships and they may adjust their behaviors according to norms and cultures (Dijkstra & Gest, 2015; Laninga-Wijnen et al, 2018). Thus, school behaviors might be more likely to reflect distinct characteristics created by the school context, which makes it more difficult for mothers to predict students' behavior in school. Conversely, significant associations between

teacher-student relationships and social outcomes in the home context might suggest that school behaviors transferred to the home. Social skills that are learned and practiced in school can transfer to other contexts (Gentry & Benenson, 1993; Ozoke 2017). Fifth graders spend a lot of time at school engaging in social behaviors with teachers and peers. Because this age group places more importance on school life than young children, children might internalize those social behaviors and transfer those behaviors to home.

Alternatively, the teacher-student relationship may have different predictive power from mother-child relationships due to the characteristics of the teachers and mothers as informants. Teachers and mothers are privileged as informants in measuring students' behavioral functioning. Mothers' reports are based on broad experiences with their children accumulated over a long time and include information about behaviors that are inaccessible to other informants. Nevertheless, parents may not be able to observe these behaviors through the lens of normative development. Teachers have limited opportunities to observe each child, but their educational knowledge and experiences with many other children may enable them to perceive children's behaviors within a wide range of development and to calibrate their reports using a normative development framework (De Los Reyes et al., 2009; De Los Reyes et al., 2015; Grietens et al., 2004). A teacher's report on relationships with children and their behaviors is likely to be more accurate and reflective of typical developmental patterns than a mother's report, which may increase the predictive power of teacher reports.

The Moderation of Family SES on the Teacher-Student Relationship

The moderation of family SES on associations between the teacher-student relationship and developmental outcomes was not found except for externalizing behaviors in both school and home contexts. It might be possible that the associations between teacher-student relationships and

internalizing behaviors were not strong enough to detect the moderation effect of family SES. Indeed, internalizing behavior has been found to have weak and inconsistent associations with teacher-student relationships than externalizing behaviors (Groh et al.,2012; O'Connor et al., 2011; Roorda & Koomen, 2021). In terms of social skills, students from low socioeconomic backgrounds benefited almost equally from positive teacher-student relationships as those from more affluent backgrounds. This finding is in line with two meta-analysis studies on SEL interventions (Murano et al, 2020; Taylor et al, 2017) showing no differential effect of SEL on students from low SES families and high SES families. This finding suggests that practices that improve relationships between teachers and students or the classroom climate may help all students to develop adaptive social skills, regardless of their family SES.

A higher quality teacher-student relationship was associated with less externalizing behavior in school and at home, particularly with students from high SES. In other words, students from high SES backgrounds appeared to more benefit from positive teacher-student relationships than students from low SES backgrounds in terms of externalizing behavior. This finding is notable given that students experiencing lower risks have less room to improve their behaviors than their disadvantaged counterparts. The result is inconsistent with previous studies suggesting the protective role of the positive teacher-student relationship for at-risk students (Baker et al., 2008; Hamre & Pianta, 2005; McCormick et al., 2014; Wang et al, 2013). This perspective argues that when students from low SES backgrounds experience high-quality relationships with teachers, they are likely to benefit more from that process than students from high SES backgrounds would. The current study found the reverse direction of moderation on externalizing behavior – a finding that is in line with the Matthew effect (i.e., "the rich get richer, and the poor get poorer"). In education, it refers to the idea that the beneficial growth of students is relative and proportional to

the initial stage (Walberg & Tasi, 1983). Students from high-family SES have richer social resources and experience better social relationships than their disadvantaged counterparts (Alvarez et al., 2017; Parcel & Bixby, 2016). Thus, they may have better social competencies and social goals, and eventually, obtain larger beneficial outcomes through positive interactions with teachers. These findings of the current study may suggest that teachers need to provide students from low family SES with additional practices or interventions engaging them in positive social relationships to fill the gap between students from different family SES, especially for externalizing behavior. For students from low SES, universal practices may not be sufficient to reduce externalizing behaviors, which highlights the need for selective or targeted interventions.

Limitation and Future Direction

There are several limitations that need to be considered when interpreting the results. First, the current sample (NICHD SECCYD) is not a high-risk sample and accordingly participants demonstrated relatively normative social behaviors and relationships with teachers and mothers (see O'Connor et al., 2011). Thus, the variability might be more limited than in other samples. This might partially contribute to a nonsignificant moderation effect on social skills or internalizing behavior and inconsistent findings with previous studies regarding externalizing behavior. Moreover, the sample is generally comprised of middle- and upper-class families and thus we may not have captured the full extent to which low-SES students can benefit from positive teacher-child relationships. Additional studies using more diverse samples should be conducted to better understand these associations – especially the moderating effect of the teacher-child relationship. Second, data on adult-child relationships, and outcome variables were collected via adult-report measures. Adult-child relationships and behaviors reported by adults do not include students' perceptions of relationships and their own behaviors. Student perspectives, especially

among older children, may be particularly important for understanding the full benefits of this relationship for social and behavioral outcomes. Third, as student relationships and school behaviors are measured by teachers, and mother-child relationships and home behaviors are measured by mothers, there could be mono-reporter bias. When predictor and outcome variables are obtained from the same informants, artifactual covariance between the predictor and outcome variables can be produced (Podsakoff et al., 2003), which may have caused weak cross-context correlations or may have led to inflated associations within context. Taken together, it suggests the need for multiple informants including children for a more valid assessment in examining the associations between adult-child relationships and children's behaviors across multiple contexts. Moreover, given low or moderate correlations between teacher-reported and mother-reported outcomes, research focusing on understanding agreements and discordance among multiple informants should be conducted together.

Conclusion

This study extends previous studies by examining children's relationships and behaviors in two primary contexts simultaneously. It has been found that good relationships with adults at school and at home are related in a similar manner to adaptive social behaviors in each context. However, the quality of their relationships with adults and their social behaviors may differ depending on the context. By building a supportive relationship, teachers and mothers may make a unique contribution to students' social and behavioral development. Though school and home environments are capable of compensating for each other's deficiencies (McCartney et al., 2007; Watamura et al., 2011), the present study emphasizes the independent role of each context in fostering students' optimal development. Positive interactions between school and home may be

beneficial for teachers and mothers to construct supportive environments in each context and consistent environments across contexts.

In addition, findings indicated that students from high-family SES benefit more from positive teacher-student relationships than students from low-family SES regarding externalizing behaviors. However, there was no moderation effect of the teacher-student relationship on social skills and internalizing behaviors. Based on different moderation effects on social skills and externalizing behaviors, educators may need to design practices differently depending on the social outcomes they are targeting. For example, if the purpose of the intervention is to improve social skills, the universal practice may be sufficient. However, if educators are seeking to reduce students' externalizing behavior, selective practices targeting disadvantaged groups may be necessary as well. Educators should note how much each student group is acquiring from their relational practices to avoid false conclusions and support students' social-emotional development effectively.

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APPENDIX A

Four Separate Path Models

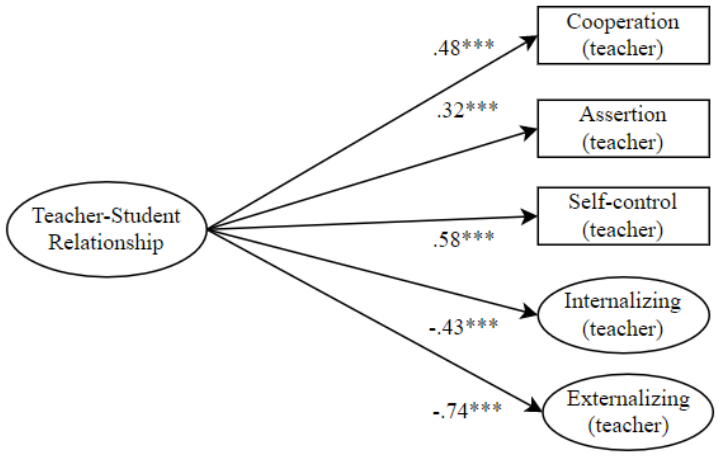

Figure A1 *Model 1: Path model depicting the estimated effects of teacher-student relationship on teacher-reported outcomes*

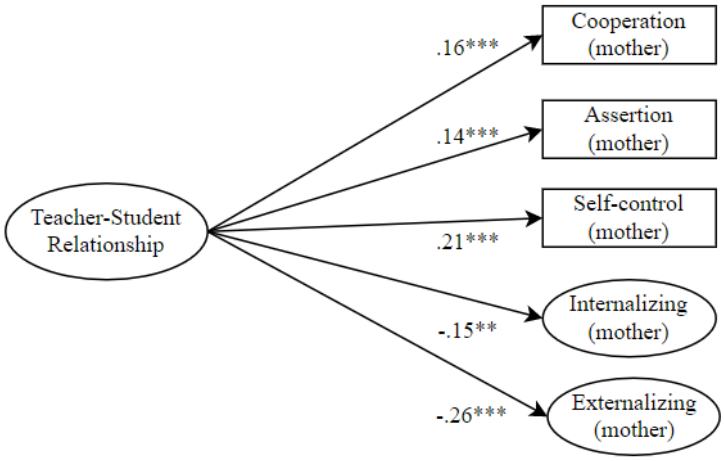

Figure A2 *Model 2: Path model depicting the estimated effects of teacher-student relationship on mother-reported outcomes*

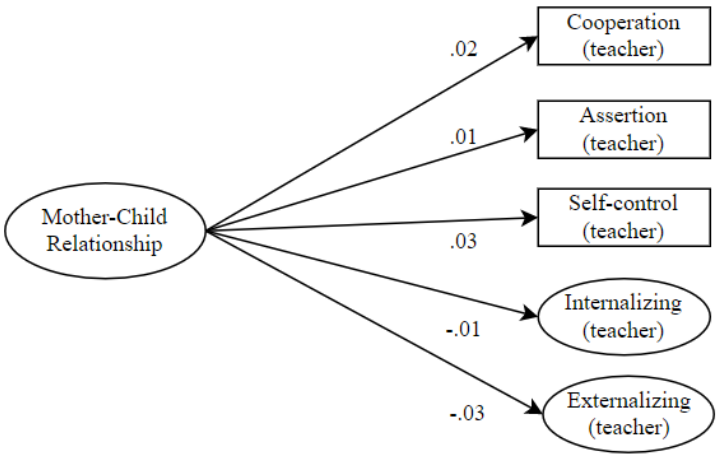

Figure A3 *Model 3: Path model depicting the estimated effects of mother-child relationship on teacher-reported outcomes*

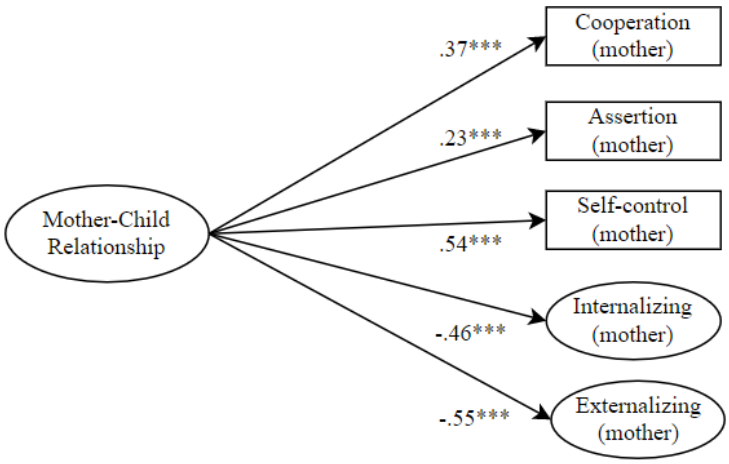

Figure A4 *Model 4: Path model depicting the estimated effects of mother-child relationship on mother-reported outcomes*