

STUDENT-TEACHER RELATIONSHIPS FROM KINDERGARTEN TO 3RD  
GRADE FOR LATINE STUDENTS IN DUAL LANGUAGE PROGRAMS

by

Diego Josue Ordonez Rojas  
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Committee:

\_\_\_\_\_ Director

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_ Department Chairperson

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Student–Teacher Relationships from Kindergarten to 3rd Grade for Latine Students in  
Dual Language Programs

A Thesis submitted in partial fulfillment of the requirements for the degree of Master of  
Arts at George Mason University

by

Diego Josue Ordonez Rojas  
Bachelor of Arts  
Portland State University

Director: Adam Winsler, Professor  
Applied Developmental Psychology

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George Mason University  
Fairfax, VA

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## **DEDICATION**

I dedicate this work to my family and friends for their support. All in different forms, all I am equally thankful for.

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## **ABSTRACT**

### **STUDENT–TEACHER RELATIONSHIPS FROM KINDERGARTEN TO 3RD GRADE FOR LATINE STUDENTS IN DUAL LANGUAGE PROGRAMS**

Diego Josue Ordonez Rojas, M.A.

George Mason University, 2025

Thesis Director: Dr. Adam Winsler

Student–teacher relationships in early education have been investigated widely. The current thesis expands on this literature by exploring these relationships in the unique context of Dual Language Education (DLE) K-3 programs and by examining Latine students. I explore student–teacher relationships as a function of student–teacher ethnicity-matching in Spanish-English, two-way immersion programs across grades K-3, where some students have one teacher and others have two. Participants included 33 teachers and 203 students in kindergarten through 3rd grade in Spanish-English two-way DLE immersion classrooms in North Carolina. Relationships were measured via teacher report with the Student–Teacher Relationship Scale (STRS, Pianta, 2001a).

The main research questions were: 1) What is the quality of student–teacher relationships for all students, and does this vary by grade (in grades K-3)?, 2) Do student–teacher relationships vary as a function of student ethnicity and teacher ethnicity,

and if so, does this vary across different grades?, 3) Do student–teacher relationships vary as a function of ethnic match between student and teacher?, and 4) Specifically for Hispanic students, how much does having a Hispanic teacher influence their student–teacher relationship quality? My hypotheses were that students and teachers that share the same ethnicity, and those in earlier grades, will have higher closeness scores (and lower conflict) than those who do not share the same ethnicity or are in later grades. Additionally, I expected Hispanic students to have closer relationships with their teachers than White students.

Results indicate that student–teacher closeness for all students was highest in kindergarten and lower for subsequent grades, with Black students showing particularly high closeness in kindergarten but steeper declines by third grade compared to other students. Boys had more conflictual relationships with their teachers than girls, and Hispanic/Latine English teachers had more closeness with their students than teachers of other ethnicities. Students with two teachers had lower closeness with their teachers than students with only one teacher. Importantly, ethnic match between student and teacher was not associated with teacher closeness or conflict in the current study’s TWI settings. Implications of these findings include ethnic match not being as important as the number of teachers for student–teacher relationship quality, and that, overall, TWI programs are efficient at producing an inclusive environment for families of diverse ethnicities.

# **STUDENT–TEACHER RELATIONSHIPS FROM KINDERGARTEN TO 3<sup>RD</sup> GRADE FOR LATINE STUDENTS IN DUAL LANGUAGE PROGRAMS**

## **BACKGROUND**

Student–teacher relationships (or teacher-child relationships) have been the focus of researchers for decades (Spilt & Koomen, 2022). It has been consistently shown that positive relationships between teachers and student influence student’s academic, social, behavioral, and emotional development (McGrath & Van Bergen, 2015). In educational settings, for example, students with high quality relationships with teachers are more engaged, more task-oriented, and generally perform better (Roorda et al., 2011). Students have also been found to benefit from high-quality classroom instruction particularly when they have a high-quality dyadic relationship with their teacher (Nguyen et al., 2020).

Measures for student–teacher relationships are typically based on teachers’ perceptions. The most utilized tool from the teacher's perspective is the Student–Teacher Relationship Scale (STRS; Pianta, 2001a), an empirically validated multiple-item report by teachers on their perceived relationship quality with individual students. Specifically, the items on this scale are written to assess teachers’ feelings and beliefs about their relationship with a student and about the student’s behavior toward them (Pianta et al., 1995). The original STRS measures student–teacher relationships through three dimensions: closeness, conflict, and dependence. The alpha reliability score for the total scale is typically around or higher than .85, and alphas for the factor-based subscales

usually exceed .70 (McCormick et al., 2013; Pianta, 2001b). Additionally, closeness reliability scores ( $\alpha = .85 \sim .90$ ) tend to be lower than for conflict ( $\alpha = .90 \sim .93$ , Choi & Dobbs-Oates, 2016; Pianta, 2001b). Closeness represents high levels of warmth, positive affect, and approachability between teacher and student (Pianta et al., 1995). Conflict represents negativity and lack of rapport (Ladd & Burgess, 2001; Pianta et al., 1995). Dependence measures the degree to which a teacher perceives a student as overly dependent on them (Pianta, 2001b).

This tool has been shown to correlate with observational measures of student–teacher relationship quality (Howes & Hamilton, 1993; Howes & Ritchie, 1999). Doumen et al. (2009) did psychometric research on the STRS, replicating and extending previous findings concerning convergent validity. Support was found for the convergent validity and to a lesser extent the discriminant validity of the STRS closeness and conflict scale. For the STRS dependency subscale scale, additional research remained necessary. Most studies use different versions of the scale, with the short form (Pianta, 2001a) being the most common. More recent studies have not been using the dependency subscale, presumably because of its lower reliability and internal consistency (Pianta, 2001b) and the time-demanding nature of the original version of the scale (Tsigilis & Gregoriadis, 2008). The current study will similarly focus only on the Conflict and Closeness subscales with the short version of the STRS (Pianta, 2001a).

Student–teacher relationships develop throughout the school year through interactions between teachers and their students, and both teacher and student beliefs, attitudes, and behaviors. Decades of foundational research on student–teacher

relationships have shown that students with more positive relationships (higher closeness) with their teachers feel safer, more competent, make more positive connections with peers, and have greater academic gains than those with less positive relationships (Ansari et al., 2020; Baker, 2006; Birch & Ladd, 1997; Ewing & Taylor, 2009; Goldberg & Iruka, 2022; Hughes et al., 2008). Similarly, high levels of conflict may hinder aspects of child development by making them unable to connect to academic and social resources in classrooms (Birch & Ladd, 1997, Bosman et al., 2022; Nguyen et al., 2020). This research has led to the development of multiple programs promoting school success by improving teacher-student relationships across the United States (Hamre & Pianta, 2006).

While student-teacher relationships have been extensively studied, the context of this research remained limited to monolingual settings, where students have one teacher and receive their education in one language. The present study investigated the nature of student-teacher relationships in Two-Way Immersion (TWI) programs, where students can have more than one teacher, and receive education in two languages. The study also focused on ethnicity matching (when students and their teachers share the same ethnicity) which, like student-teacher relationships, have only been studied in monolingual settings. TWI programs aim to promote the development of positive cross-cultural attitudes for both language-majority and language-minority students (Feinauer et al., 2013). The cultural diversity and appropriateness of these programs offer an interesting environment to investigate teacher-student relationships since students can have more than one teacher.

This study looks to expand the student–teacher relationship literature to the Dual Language Education (DLE) setting. First, I discuss the theoretical framework. Then, I explore the literature on how student–teacher relationships relate with socioemotional development, school performance, gender, and ethnicity. Additionally, I describe two-way immersion programs and explain why they are good environments for exploring Latine students’ experiences with student–teacher relationships. Finally, I share details about the study, including research questions, hypotheses, participants, variables, analyses, results, discussion, and limitations.

### **THEORETICAL FRAMEWORK**

Children's early attachment with their caregivers guides the formation of internal models of relationships (Ainsworth, 1989). These models formed with early caregivers subsequently direct the interpretation and interaction with other relational partners, in this case with teachers. Research, however, shows that teacher/caregiver characteristics may also change the children's mental representations of relationships (Buyse et al., 2011, as cited in Sabol & Pianta, 2012). Such representation yields a model of relationships in which early attachment is associated with teacher relationship quality. Early parental attachment is moderately associated with teacher relationship quality in early childhood. Upon entrance to school, teachers’ characteristics, particularly sensitivity, have the potential to modify relational schemata, and may offer unique opportunities to buffer poor attachment histories (Sabol & Pianta, 2012). As children develop and accumulate relational experiences in the school setting, the quality of the relationships they form with teachers may be less dependent on the quality of early attachment and more dependent on

the exposure to multiple teachers and other social agents during the school years (Sabol & Pianta, 2012). However, evidence suggests that the concurrent quality of caregiver–child relationships is still influential for children's relational functioning in school (Pianta et al., 1997). Children's relational functioning holds a close association with student–teacher relationships, and so do teachers' characteristics like sensitivity, responsiveness (Verschueren & Koomen, 2012), a teacher's attachment style, and level of availability towards the needs of children (Garcia-Rodriguez et al., 2023). Furthermore, it can be speculated that in the case of teachers, their individual characteristics are also associated not only with the quality of the relationship they form with their students, but also with aspects that correspond with the setting where their interactions occur, like school participation and academic performance (Garcia-Rodriguez et al., 2023).

Bronfenbrenner's bioecological theory posits that children are embedded within multiple contexts that interact with each other to influence their development (Bronfenbrenner & Morris, 1998). Through this lens, the contexts of the family and school (and others) are interactive sites where various processes (e.g., parental relationships, student–teacher interactions), influence the child's development. These contexts are part of the child's microsystem (Bronfenbrenner & Morris, 1998). Developmental outcomes are influenced by interactions within microsystems, or the immediate settings that contain the developing person (Eamon, 2001). In this study, the interactions that occur within classrooms and educational settings as microsystems are analyzed. This theory also supports the ecological models of educational persistence (Richman & Bowen, 1997, as cited in Brewster & Bowen, 2004), which maintain that



elements from multiple social systems (e.g., school and family) affect school performance. Another theoretical framework that aligns with these is the Contextual Systems Model (CSM), developed by Pianta and Walsh (1996). According to the CSM, children develop within various systems. Systems are organized sets of interrelated components that serve a function in relation to the activity of the whole system (Pianta & Walsh, 1996). Factors in each of the systems interact with one another to influence child development. Therefore, the effects of a factor in one system may influence and be influenced by factors in another system. In this case, for example, the quality of student–teacher relationships and children’s socioemotional development could influence one another. These theories stress the influence of the interactions among layers of context on child development, such as the relationships between students and their teachers and parents, and child outcomes, like school performance or socioemotional development.

### **Student–Teacher Relationships Across Grades**

An important question that the proposed study is trying to answer is how student–teacher relationships differ by student’s age/grade level. Most studies find that, in the early school years, student–teacher relationship closeness decreases as grade levels increase (Ansari et al., 2020; Baker, 2006; Pianta & Stuhlman, 2004). Ansari et al. (2020) studied student–teacher relationships between kindergarten and sixth grade and their association with academic outcomes. The findings revealed that, on average, teacher–student closeness ranged from 30.31 to 34.23, which on the STRS 1 to 5 scale corresponded to mean scores of roughly 3.79 to 4.28. However, despite these moderate to moderately high scores on teacher–student closeness, a series of paired t-tests revealed

that there was a significant decrease in closeness between kindergarten and sixth grade. Baker (2006) examined the extent to which student–teacher relationships contributed to school adjustment in kindergarten through fifth-grade, and the degree to which this relationship was moderated by student characteristics. Like Ansari et al.’s (2020) findings, Baker (2006) found that students in elementary school had lower closeness scores in later grades. Finally, Pianta and Stuhlman (2004) explored student–teacher relationships and academic skills in preschool, kindergarten, and first grade. Their results indicated decreasing levels of closeness reported by teachers over time.

### **A Methodological Note**

The association between student–teacher relationships and child outcomes has been studied in multiple ways. Single-time-point correlational studies and longitudinal studies are the most common. This literature review will show that studies that have used these designs (correlational and longitudinal) have found bidirectional associations between student–teacher relationships and child outcomes (specifically, socioemotional skills and school performance). This means that socioemotional skills and performance have been found to be correlated with student–teacher relationship quality at single points in time, as shown by the correlational studies. Furthermore, longitudinal studies show that child skills can also have effects on the quality of later student–teacher relationships, and vice versa. While these study designs can show an aspect of the current nature of student–teacher relationships, it is difficult to identify the causality between relationships and child outcomes, since it is impossible to have an experimental design in a study since relationships cannot be randomly assigned. All children that have a teacher will have a

relationship with them by consequence, and this relationship changes over time both within the same teacher and across new teachers.

Some studies have looked at school interventions that, by incorporating ways to improve student–teacher interactions and relationships, have influenced the child’s socioemotional and academic outcomes (Responsive Classroom Approach, Rimm-Kaufman et al., 2007; INSIGHTS, Rudasill et al., 2020). Other interventions comply with the multi-tiered systems of supports (MTSS), a model of preventative and differentiated instruction that is designed to meet the needs of all learners (Wackerle-Hollman et al., 2021). The MTSS comprises three tiers (1, 2 and 3) with Tier 1 representing the general curriculum offered to all students and teachers. Tiers 2 and 3 involve more individualized interventions (Wackerle-Hollman et al., 2021). For example, the Collaborative for Academic, Social, and Emotional Learning (CASEL) framework aims to improve children’s socioemotional learning in schools by looking to promote positive student–teacher relationships through curriculum implementations (Collaborative for Academic, Social, and Emotional Learning, 2020). The CASEL offers Tier 1 supports for all students and teachers with the goal of enhancing social and emotional learning.

The studies discussed above further expand on the nature of student–teacher relationships but still do not show a clear causal relation. They show that school interventions can improve relationships, and these subsequently influence child outcomes, but this has already been shown by correlational and longitudinal studies. Because of the difficult nature of assigning relationships to students, this review will go over studies that show bidirectional associations between student–teacher relationships,

socioemotional skills, and school performance, in correlational and longitudinal ways. The causal nature of these associations, however, remains to be determined.

### **STUDENT-TEACHER RELATIONSHIPS AND SOCIOEMOTIONAL SKILLS**

This section will review the literature on the association between student-teacher relationships and children's socioemotional development. The first section will discuss effects from the child on student-teacher relationships, and the second section will discuss this association in the other direction, that is, the impacts of student-teacher relationships on children's socioemotional development. Finally, I will explore how socioemotional skills may moderate the relation between student-teacher relationships and academic outcomes.

#### **Child effects on student-teacher relationships**

Child temperament has direct effects on student-teacher relationships. Rudasill and Rimm-Kaufman (2009) analyzed the contributions of child temperament (by measuring shyness and effortful control using a parent-report questionnaire at age four) to first grade student-teacher relationship quality. They found that four-year-old students with lower shyness and lower effortful control were likely to have more conflictual (and closer) relationships with first grade teachers. In addition, low shyness (spontaneous speech and sociability) predicted more student-initiated student-teacher interactions, and inability to inhibit inappropriate behavior predicted more teacher-initiated interactions, after controlling for gender.

Via meta-analysis, Nurmi (2012) also found that temperamental features (i.e., shyness and inhibition) were negatively associated with conflict, and positively

associated with closeness, in the student–teacher relationship. Nurmi (2012) analyzed 19 studies that focused on the topic of child characteristics influencing student–teacher relationships from preschool to 5th grade. The analysis yielded 23 effect size estimates showing that teachers reported more conflict and less closeness in student–teacher relationships when interacting with students who exhibited more shyness, more expressions of anger, and those with higher externalizing and internalizing behavior problems. The association between child behavior and student–teacher relationships, as we will see next, can also assume the opposite form, in the sense that student–teacher relationship quality can have effects on child behavior.

### **Student–teacher relationship effects on child behavior**

Many studies have shown that better socioemotional skills are outcomes associated with enhanced relationships between students and teachers in early childhood contexts (Hamre & Pianta, 2001; Maldonado-Carreño & Votruba-Drzal, 2011; O’Connor & McCartney, 2007). The studies discussed next have all used longitudinal methods, which account for a more accurate representation of the potential causal effect from student–teacher relationships to children’s socioemotional development. For example, Mortensen and Barnett (2015) explained in their literature review that student–teacher relationships viewed as high in closeness (i.e., warm and positive) and low in conflict (i.e., positive, good rapport) are associated with a variety of child prosocial outcomes throughout elementary school. Emotional engagement with teachers improved child socioemotional functioning, self-control, compliance, and reduced problem behaviors in young children.

Maldonado-Carreño and Votruba-Drzal (2011) observed how teacher-student relationships promote socioemotional development across elementary school. They found that, in the kindergarten through fifth grade, increases in student-teacher relationship quality over time were associated with reductions in behavior problems consistently through elementary school, as reported by mothers and teachers, and after controlling for child gender, race, maternal education, family income, and teacher's teaching experience. The importance of student-teacher relationships in kindergarten through fifth grade behavior is also explored in the work of Silver et al. (2005) who analyzed the contribution of student-teacher relationship quality to externalizing behavior trajectories during and after the transition from kindergarten to elementary school while controlling for gender and socioeconomic status. They found that student-teacher conflict in kindergarten contributed to greater increases in externalizing behavior through third grade. Additionally, decreases in externalizing behavior over time were associated with student-teacher closeness, especially for those who had higher levels of externalizing behavior upon school entry. This finding is supported by Jerome et al., who found that teacher-reported levels of conflict are related with greater externalizing behavior in students from kindergarten through sixth grade (Jerome et al., 2009). More recent works have shown similar findings. For example, Shi and Ettekal (2021) found that, in grades 1-12, students who showed yearly reoccurring internalizing and externalizing problems, also exhibited more sustained high student-teacher conflict. Additionally, Hasty et al. (2023) used a longitudinal cross-lagged model spanning across grades 3-5 and found a negative reciprocal association between student-teacher relationships and externalizing

behaviors, such that a more positive teacher-student relationship (with higher closeness and lower conflict) predicted fewer externalizing behaviors in the subsequent academic year, and fewer externalizing behaviors predicted a more positive teacher-student relationship one year later.

To complement this, closeness in kindergarten was also found to be positively related with later decreases in externalizing behavior problems (aggression and conduct disorders), and conflict in kindergarten was positively related with later increases over time in externalizing behavior and other negative behavioral outcomes (Silver et al., 2005). O'Connor et al. (2011), who also examined associations between student-teacher relationship quality and behavior problems in elementary-school students had findings consistent with this trend. They found that high quality student-teacher relationships predicted low externalizing behaviors from first to fifth grades. Positive student-teacher relationships contribute to lower externalizing behavior in early education and negative relationships have the opposite effect. These results were found after controlling for early externalizing behavior, child gender, family income, and maternal education, among others. According to these longitudinal studies, student-teacher relationships influence children's behavior when controlling for gender, ethnicity, family socioeconomic status, years of maternal education, quality of home and classroom environments, and teacher experience, among other covariates (Jerome et al., 2009; Maldonado-Carreño & Votruba-Drzal, 2011; O'Connor & McCartney, 2007; Silver et al., 2005).

## **CHILD BEHAVIOR/TEMPERAMENT AS A MODERATOR BETWEEN STUDENT–TEACHER RELATIONSHIPS AND OUTCOMES**

Children’s prior behavior and temperament moderate the relation between student–teacher relationships and other child outcomes. For example, students experiencing behavioral and learning problems are less able to benefit from close student–teacher relationships than their peers who do not experience the same problems (Baker, 2006). Hamre and Pianta (2001) looked at teachers’ perceptions of their relationships with students and ratings of students’ behavior, and how these predict school outcomes like discipline, grades, test scores, and work-habit ratings. Relational negativity (high dependency and conflict between students and teachers) was linked to poor academic and behavioral outcomes from kindergarten through eighth grade, but only for students who had previously shown high levels of behavior problems.

Student–teacher relationships can also moderate associations between temperament and later outcomes. O’Connor et al. (2011) found that high student–teacher relationship quality in elementary school students helped prevent students with initially high levels of internalizing behaviors (depressive symptoms and social withdrawal) develop long-term internalizing behavior problems (post-kindergarten). This points to the fact that positive student–teacher relationships can also serve as a buffer for students at risk for internalizing behaviors. In conclusion, student–teacher relationships influence socioemotional skills in the sense that positive relationships improve socioemotional development, and negative ones hinder it. This is shown by the number of longitudinal studies (Jerome et al., 2009; Maldonado-Carreño & Votruba-Drzal, 2011; Mortensen &



Barnett, 2015; O'Connor & McCartney, 2007; Silver et al., 2005). Next, I explain how similar results are found between student–teacher relationships and school performance.

### **STUDENT–TEACHER RELATIONSHIPS AND SCHOOL PERFORMANCE**

This section discusses the literature that supports the existence of associations between student–teacher relationships and school performance in both directions: student–teacher relationships influencing school performance, and school performance influencing student–teacher relationships. School performance will be observed under the following dimensions: school engagement (students' level of involvement with academic activities), school adjustment (students' views and experiences regarding their schools and academic skills), and school achievement (academic outcomes, academic and social skills, and scores/grades).

#### **Adjustment, engagement, and achievement effects on student–teacher relationships**

Ladd et al. (1999) suggested that as children enter school, their initial behavioral orientations influence the types of relationships they form with peers and teachers. They have found that antisocial behavior orientations were associated with more conflictual student–teacher relationships and low student–teacher closeness. Stressful aspects of students' peer and teacher relationships in the school environment adversely impact classroom participation and achievement. This was after controlling for child gender, behavioral styles, and classroom relationships. Additionally, kindergarten student–teacher relationship perceptions are predicted by teacher perceptions of student social adjustment in preschool (Howes et al., 2000) in that more sociability (in this case this was measured as level of extroversion) predicts closeness. School adjustment does not only relate to

better social adjustment (extroversion, externalizing prosocial behaviors, sociability) among peers, but it might relate to teacher perceptions of student–teacher relationship as well. This creates bidirectional associations between student–teacher relationships and school adjustment.

To complement these findings, Nurmi’s (2012) meta-analysis results also showed that less conflict and more closeness in student–teacher relationships were the results of interactions with students exhibiting high levels of motivation and engagement as compared to other students. Furthermore, teachers reported less conflict and more closeness in student–teacher relationships when interacting with students that showed a high level of academic performance. These were the result of concurrent correlational and longitudinal studies. These studies conclude that school performance (academic and social aspects) influences student–teacher relationship quality, but the causal direction is still unclear. As we will see next, the inverse effect can also be true.

### **Relationships effects on school engagement, adjustment, and achievement**

Roorda et al. (2011) conducted a meta-analytic investigation of the effects of affective qualities of student–teacher relationships on student school engagement among 92 different articles, varying from concurrent-correlational, cross-sectional, and longitudinal designs. Associations of both positive and negative relationships with engagement were medium to large ( $r = .40$ ). Some of these associations were weaker, but still statistically significant (Roorda et al., 2011). Again, more positive relationships predicted better engagement at school. In recent examples, Hosan and Hoglund (2016) found that student–teacher conflict in K-3 predicted school later emotional and

behavioral engagement, and Li et al. (2022) found a negative relation between student–teacher conflict and behavioral engagement from kindergarten to first grade. Both studies used cross–lagged panel models to examine the longitudinal associations among student–teacher relationship quality and behavioral engagement.

Regarding school adjustment, Birch and Ladd (1997) examined student–teacher relationships’ association with kindergarteners’ school adjustment by measuring closeness, conflict, and dependency concurrently. Being one of the few studies that utilize the STRS dependency subscale, they found that higher such ratings predicted lower academic performance, school attitudes, and positive engagement. Higher conflict ratings, alternatively, predicted lower scores of school liking, cooperative participation, and self-directedness, as well as higher school avoidance in kindergarten students. Finally, closeness positively predicted academic performance, school liking, and self-directedness in kindergarten. These results were found after controlling for gender.

Stronger associations have been found in longitudinal studies. Such is the case with Pianta et al.’s (1995) study, which replicated the findings that kindergarten students with close relationships with their teachers are better adjusted and have more positive student–teacher relationships in second grade than those with angry/dependent student–teacher relationships in kindergarten. This longitudinal study controlled for child race, gender, socioeconomic background, parental education, teacher race, gender, and years of experience. The introduction of different time-points for the measures reinforces the conclusion that positive relationships lead to better school adjustment. Also, controlling for covariates, present in most studies (e.g., Pianta & Stuhlman, 2004), shows that the

association with school adjustment goes above and beyond the relation with demographic variables.

The association between student–teacher relationships and school achievement is usually typically found to be positive. For example, Roorda et al. (2011) found in their meta-analytic investigation that associations between positive and negative student–teacher relationships with achievement existed to a small to medium ( $r = .25$ ) extent. This effect is further supported by many longitudinal studies that have replicated these findings. For example, Pianta and Stuhlman (2004) explored the relationship between student–teacher relationships and academic skills in preschool, kindergarten, and first grade. The authors ran the analysis by using hierarchical regression, which predicted students’ skills in first grade from student–teacher relationship quality in preschool and kindergarten. Student–teacher relationship quality, as well as social and academic skills, were closely associated with individual skill differences at first grade after controlling for prior problem behaviors, demographic variables (gender and socioeconomic status), and prior student–teacher conflict and closeness. Complementing these findings, Maldonado-Carreño and Votruba-Drzal (2011) observed teacher-student relationships and how they related to developments from kindergarten through 5th grade. They found that increases in student–teacher relationship quality are associated with improvements in teacher-reported academic skills consistently through elementary school.

McCormick et al. (2013) analyzed the relation between student–teacher relationships and academic achievement by introducing propensity score matching to better estimate causal effects and reduce selection bias. The matching included grouping

students with similar propensity to have higher-quality relationships with their teachers based on many covariates (child and parent gender, age, ethnicity, and parent education). The sample consisted of low-income Black and Hispanic children. Significant effects of high-quality student–teacher relationships in kindergarten on math achievement in first grade were found. However, no significant effects were detected for reading achievement. Similarly, O’Connor and McCartney (2007) found that early student–teacher relationship quality predicted later school achievement in preschool through third grade.

Another study, by McCormick and O’Connor (2015), examined between- (mean differences between individuals) and within-child (intraindividual changes) associations between student–teacher closeness and conflict and standardized measures of math and reading achievement from first through fifth grades. The distinction made amongst within- and between-child comparisons was done to discern the effects of variables that pertain to specific students versus a group of them; as well as to reduce the threats to internal validity caused by omitted variable bias. The authors found between-child effects of conflict and within-child effects of closeness on reading achievement for the full sample of children. They found an association between conflict and reading achievement when comparing levels of conflict among different students, and an association between closeness and reading achievement when comparing students’ own individual levels of closeness over time. The results suggested that increases in between-child average student–teacher conflict were associated with decreases in reading achievement. Also, increases in within-child average student–teacher closeness were associated with

increases in reading achievement over time. Finally, Roorda et al. (2011), in their meta-analysis, also found that positive relationships predict school achievement from preschool to high school. All these studies employed longitudinal methods, and controlled for child race, gender, age, socioeconomic background, free-lunch eligibility, parent education, parent employment, parent ethnicity, parental work status, quality of home environment, teacher race, gender, years of experience (Maldonado-Carreño & Votruba-Drzal, 2011; McCormick et al., 2013; McCormick & O'Connor, 2015; O'Connor & McCartney, 2007; Pianta & Stuhlman, 2004) which further suggests that the influence from student–teacher relationships on school achievement stands above and beyond other variables.

In conclusion, positive relationships are associated with better outcomes, like school achievement in kindergarten and elementary school. However, researchers have also found that school engagement mediates the relation between student–teacher relationships and school outcomes. Hughes et al. (2008) proposed that teacher-student relationship quality, along with effortful engagement and achievement, form a system of factors that influence each other. After a 3-year long data collecting period which started when participants were in 1st grade, the authors found that Year-2 effortful engagement (defined as effort, attention, persistence, and cooperative participation during learning activities in the classroom) mediated the relationship between Year-1 teacher-student relationship quality and Year-3 reading and math skills. This study highlights that student–teacher relationships can interact with other child characteristics, like school engagement and achievement, in different ways. Similarly, O'Connor and McCartney (2007) examined associations between student–teacher relationship quality and

achievement from preschool through third grade. A positive association was found between student–teacher relationship quality – which was measured every year from preschool to third grade – and school achievement in third grade. However, the positive student–teacher relationship effects on achievement were mediated through student and teacher classroom behaviors. Specifically, students with higher quality relationships demonstrated higher levels of classroom engagement than students with lower quality relationships, and teachers attended to students with whom they had higher quality relationships less often than to those with whom they had lower quality relationships. Teacher attention was in turn negatively associated with achievement.

As seen in this section of the literature review, the association between student–teacher relationships, socioemotional skills, and school performance is supported by single-time-point correlational, and longitudinal studies. However, a causal relation is still not supported by the literature. This can be because of relationships not being suitable for random assignment or controlling in experimental studies. Nevertheless, the number of studies showing these associations still show an important aspect of student–teacher relationships: they are indeed related to child outcomes. They also interact with other factors, like with child gender and ethnicity, which is explored next.

### **STUDENT–TEACHER RELATIONSHIPS AND GENDER**

Until now the discussion has been about all children. However, researchers have found gender and ethnic/race differences with respect to student–teacher relationships and student outcomes. In this section, and the next, I review the literature on gender and ethnicity effects related to student–teacher relationships. In terms of gender, Birch and

Ladd (1997) found that kindergarten teachers had significantly more closeness in their relationships with girls and significantly more conflictual relationships with boys. A few years later, Howes et al. (2000) found overall greater closeness and more dependency with girls than boys. The gap in closeness ratings between males and females also increased over the middle elementary school years (Howes et al., 2000). Additionally, closeness levels are found to be lower and conflict levels higher when children are male in kindergarten through sixth grade (Jerome et al., 2009). The same results were found by Rudasil and Rimm-Kaufman (2009) in first grade.

It is unclear if these results are generalizable outside of the United States, even though similar results were found elsewhere (Greece - Gregoriadis & Tsigilis, 2008; The Netherlands - Koomen et al., 2012; Italy - Sette et al., 2018). Education system structures between countries are different, however, the trend of girls having higher closeness and boys having higher conflict is still present. Bosman et al. (2022) created a Dutch version of the STRS and examined demographic profiles related to different student–teacher relationships in the Netherlands. To examine student–teacher relationship patterns, the authors performed finite mixture modeling in Mplus. In finite mixture modeling, the likelihood that a particular student belongs to a certain pattern or class is computed from the parameter estimates of the model. Class membership is determined by the highest probability. The relationship patterns found were labeled as positive (characterized by high closeness, low conflict, and low dependency), mildly insecure (moderate closeness, moderate conflict, and moderate dependency) and dysfunctional (moderate closeness, very high conflict, and high dependency). Bosman et al. (2022) found that boys were



overrepresented in both the mildly insecure relationship pattern and the dysfunctional relationship pattern (high conflict and moderate closeness) while also being underrepresented in the supportive relationship pattern (no high closeness). Overall, the literature suggests that female students tend to have closer relationships with teachers than males. Since the association between gender and student–teacher relationships is present, it is worth exploring if gender also moderates the relation between student–teacher relationships and other outcomes.

Ewing and Taylor (2009) examined the role of gender, along with ethnicity and ethnic match, in moderating the link between student–teacher relationship quality and classroom behavioral adjustment in Head Start. The authors found that conflict was a stronger predictor of aggressive behavior for boys than girls. On the other hand, closeness appeared to be a better predictor of school behavioral competence (teacher-reported behavior) for girls than boys. Hamre and Pianta (2001) found that relational negativity (marked by conflict and dependency) was predictive of poor academic and behavioral outcomes from elementary school through eighth grade, and this effect was stronger for boys than for girls. Additionally, McCormick and O’Connor (2015) found that gender moderated the effects of student–teacher conflict and math achievement as measured in first, third, and fifth grades. While gender had a significant interaction with conflict, the negative effect of conflict on math achievement was stronger in girls. Girls with more conflictual relationships showed less growth and lower overall levels of math achievement compared to boys with similar relationships. Gender appears to be a moderator between student–teacher relationships and other outcomes, in that conflict

better predicts negative behavioral outcomes in boys and negative school achievement in girls. Due to the effects of gender on student–teacher relationships in prior work, this study incorporated child gender into relevant analyses.

### **STUDENT–TEACHER RELATIONSHIPS AND ETHNICITY**

Like gender, ethnicity has been found to have direct effects on relationships, and it may moderate the association between relationships and other outcomes. The specifics of these interactions are discussed in this section, as well as the possibility of ethnic match being an important factor to consider when studying student–teacher relationships and its outcomes.

Teachers have, on average, closer relationships with White than Latine students, and more conflictual relationships with Black students than those of other races in pre-K according to Goldberg and Iruka (2022). Goldberg and Iruka (2022) used data from 1,228 boys in 660 pre-K classrooms to analyze mean differences in student–teacher relationship quality between races. They found that on average, pre-K teachers had closer relationships with White boys than Latino boys and more conflictual relationships with Black boys than boys of other races. Most White boys in this sample had White teachers (90.1%), nearly half of Latino boys had Latino teachers (48.8%), and the majority of African American boys had teachers that were African American, Asian, Native American, or Multiracial (64.5%). However, teacher race/ethnic data were not available for this study. Therefore, ethnic match analyses could not have been performed. A similar result was found by Jerome et al. (2009), who examined general trends in teacher-reported conflict and closeness among 878 students from kindergarten through sixth

grade. They found that Black students had significantly higher levels of conflict with teachers in kindergarten than White students, after controlling for gender, academic achievement, maternal education, and hours in childcare. This study did not have access to teacher race/ethnic data. Overall, White students tend to have closer relationships with their teachers (Redding, 2019, as cited in Goldberg & Iruka, 2022), but replicating these studies should give a clearer view. Due to these associations, authors typically control for ethnicity when analyzing student–teacher relationships. The proposed study, on the other hand, will have ethnicity as a predictor since existing literature found that ethnicity has a moderating effect.

### **Ethnicity moderating relations between relationships and other outcomes**

Ethnicity moderated the relationship between pre-K student–teacher relationship quality, language gains and conduct problems in a study that looked exclusively at boys (Goldberg & Iruka, 2022). It was found that close student–teacher relationships serve as a better promotive factor for Latine and Black boys’ teacher-reported language gains than for White boys. At the same time, student–teacher conflict better predicted conduct problems for Black boys than for other groups (Goldberg & Iruka, 2022). Burchinal et al. (2002) found that closer relationships with teachers was positively related to language skills only for African American students through kindergarten. Similarly, Meehan et al. (2003), who investigated the association between teacher-student relationship quality and teacher- and peer-reported child levels of aggression over two years in second and third grade, found that positive teacher-student relationships had a stronger buffering effect on aggression for African American and Hispanic students than for Caucasian ones. In a

more recent example, Garner and Mahatmya (2015) assessed whether the association between preschooler's emotion knowledge and emotion regulation and student–teacher relational quality was moderated by student race/ethnicity. The authors used multilevel modeling to account for the non-independence in the data structure and correlations to assess the relationship between students' Affective Social Competence and student–teacher relationship quality. The authors found that both emotion knowledge and emotion regulation were positively correlated with closeness and negatively correlated with conflict scores. Overall, student–teacher relationships have more positive effects for Black and Hispanic students on outcomes like language gains, emotion regulation, and behavior than for White students (Burchinal et al., 2002; Goldberg & Iruka, 2022; Meehan et al., 2003).

Further study would support improvements for teachers' relationships with students who are part of less-privileged groups, since research shows that minoritized groups benefit more from stronger teacher-student relationships than their more privileged counterparts (Ewing & Taylor, 2009; Goldberg & Iruka, 2022; Meehan et al., 2003; Saft & Pianta, 2001). However, there are still mixed findings regarding race effects on relationships (Burrell-Craft et al., 2022; Goldberg & Iruka, 2022; Jerome et al., 2009). I posit that this could be partially explained by ethnic matching between teacher and student having effects on relationships and outcomes.

### **Ethnic match effects on student–teacher relationships**

Ethnic match between students and teachers has been investigated and found to be related to child outcomes. For example, when students have teachers that share their same

ethnic identity, they show higher English language skills (Bratsch-Hines et al., 2023), higher math skills (Egalite et al., 2015), and less behavior problems (Downer et al., 2016), among others. However, the effects that ethnic match might have on student-teacher relationships is still being investigated, with prior literature yielding varied results.

Having teacher-student dyads that share the same ethnicity might serve as a factor that could predict positive relationships as rated by the teachers. Saft and Pianta (2001) investigated the effects of ethnic match on preschool and kindergarten teacher's perceived relationships with their students. The sample consisted of 840, roughly divided between male and female students, and 197 teachers from different states (Arizona, California, Connecticut, Colorado, and North-Carolina), where most (71%) teachers and most (71%) students were Caucasian and most (70%) of students had a teacher that shared their same ethnic background. This study controlled for child age, gender, maternal education, and family income. The authors found that when the students and teacher had the same ethnicity (both being Black, Hispanic, or White), teachers rated their relationships with students more positively. On the other hand, teachers perceived more conflict in their relationships with students whose ethnicity differed from their own. Le and Nguyen (2019) found similar results in their study looking at 9,040 students and 6,410 teachers, from a total of 1,510 elementary schools from across the United States. Most of the students were White (60%), with Hispanic and Black students consisting of 27% and 13% of the sample respectively. The authors found that minoritized students (Black and Hispanic) received higher closeness scores when matched with a minority

teacher (either Black or Hispanic) than White students, after controlling for student retention status, special education status, and socioeconomic measures.

Other studies have not found ethnic match effects on student–teacher relationships. Choi and Dobbs-Oates (2016) found that student–teacher ethnic match was not significantly related to either student–teacher closeness or conflict in preschool, after controlling for child age, gender, math ability, days attending childcare per week, parent education, teachers’ years of experience, and childcare subsidy status. This study had a population of 159 mostly White students (60% of the sample), as well as Asian, multiracial, Hispanic, African American and others. The students were on average four and a half years old, were mostly girls, and were from 20 preschools located in a suburban area in Indiana, USA. Similarly, Bratsch-Hines et al. (2023) gathered data from a sample of 447 children in rural North Carolina counties who were enrolled in 63 state-funded randomly selected prekindergarten classrooms and were identified by their parents as Black (34%), Latinx (42%), and/or non-Latinx White (24%). After collecting student–teacher relationship data every year from prekindergarten to first grade, the authors found that ethnic match was not significantly associated with teacher-reported conflict or closeness, when controlling for teacher education and classroom quality (emotional support, classroom organization, and instructional support).

One real difference among these studies is that the Choi and Dobbs-Oates’ sample consisted of slightly more girls (56%). It is also notable that the studies not finding ethnic match effects were those that controlled for more factors and the ones that included teacher education and classroom quality as covariates. Classroom quality (especially

when measured by the CLASS, which was the case in Bratsch-Hines et al., 2023), in a way, already includes student teacher relationship quality in the measure, so that may be a questionable covariate to include. In any case, there are only mixed findings. Because of these mixed findings, I will explore if teacher characteristics (education and experience) relate to student–teacher relationships, since this might be what studies like Bratsch-Hines et al. (2023) have found. Ethnic match remains a concept to be further explored as well as its association with student–teacher relationships.

### **A FOCUS ON LATINE POPULATIONS**

Latines are one of the fastest-growing groups in the United States, the largest foreign-born group, and are expected to become the largest minority group by 2044 (Colby & Ortman, 2015). Additionally, teachers across the United States have remained mostly the same in the last years in that 80% of them are White and female, which does not mirror the demographics of the students in the classroom (U.S Department of Education, 2010; as cited in Moreno & Gaytan, 2012). Thus, Latines are growing as a population, yet they are still less likely to have Latine teachers, and less likely to receive the positive outcomes of having positive relationships with teachers with which they share the same ethnicity. Mismatch between teacher and students can lead to cultural misperceptions, student alienation, and low academic expectations that hinder academic development (Moreno & Gaytan, 2012), which is what awaits new Latine students according to the recent trends.

White families value social success more strongly than academic success whereas Latine families value academic and social success equally, and more strongly (Ryan et

al., 2010). These differences are largely accounted for by cultural orientations, or the extent to which families participate in either Latine culture or non-Latine, White American culture. Educational practices that consider these cultural differences seem more likely to improve academic outcomes (Ryan et al., 2010). Since Latine families value formal education and are constantly working toward their children's academic success (Greenfield & Quiroz, 2013), and Latine parents are more likely than White parents to endorse the involvement of other adults in their children's education (Ryan et al., 2010), it is important to investigate what factors influence student–teacher relationships and consequently academic success in this population. Additionally, studying the effects of ethnic match on Latine populations and how this relates to student–teacher relationships can help give a clearer view of what can better serve this understudied population in their education. Given that many Spanish speakers at home are enrolled in various types of bilingual education programs, I propose that a good environment to conduct this research is in the unique multicultural setting of two-way immersion (TWI) programs.

### **TWO-WAY IMMERSION PROGRAMS**

As seen, student–teacher relationships are possibly more beneficial for minoritized students than for their White counterparts (Burchinal et al., 2002; Goldberg & Iruka, 2022; Meehan et al., 2003) which include Latine populations along with Black students. To further study Latine populations and student–teacher relationships among them, this study looks at bilingual education programs. These programs are appropriate



for this study since many Latine families choose to enroll their children in such programs due to their efforts to preserve Spanish and raise bilingual children (Parkes, 2008).

More than 3,600 dual language programs exist in US public schools, with about 80% of these being Spanish programs (American Councils Research Center, 2021). Dual Language Education (DLE) programs can generally take two forms: one-way dual language programs and two-way dual language programs. Both promote goals related to bilingualism, biliteracy, and biculturalism. One-way dual language programs primarily serve students from one home language group (i.e., English learning students or English proficient students) whereas two-way dual language programs jointly serve both students who are English learners and students who are proficient in English.

Two-way DLE programs are distinguished by language of instruction goals and structures. Some programs follow a 50/50 model (50% instruction in Spanish and 50% instruction in English) or a 90/10 model (90% instruction in the Spanish and 10% instruction in English) that ultimately transitions gradually to a 50/50 model over the years (National Academies of Sciences, Engineering, and Medicine, 2017). These models can include the presence of one or two teachers. In the case of having a single, bilingual teacher, teachers divide their instruction time into equal parts where they teach in either English or the second language. Teachers switching instructional languages in the middle of the day, each day is usually known as the 50/50 self-contained model. In cases where the students have two different teachers (one for English and one for Spanish), they each teach in one language only, and can be divided by having different teachers/languages every other day for the whole day (50/50 alternate), or by switching teachers in the

middle of the day, each day of the week (50/50 switch). Theoretically, DLE programs' language diversity is supposed to allow for a more culturally appropriate environment for dual-language learners since it focuses on better reflecting their students' home languages and cultures through instruction in Spanish (Mora et al., 2001).

Two-Way Immersion (TWI) programs are associated with overall good language and school achievement outcomes (Collins, 2014; Feinauer et al., 2013; Raikes et al., 2019), former students' positive attitudes toward school and college (Lindholm-Leary & Borsato, 2001), as well as strong relationships among Latine students and their cultures and families (Block, 2012), and increasing Latine students' pleasure with Spanish reading and comfort speaking Spanish in public (Block, 2012). The cultural diversity and appropriateness of these programs should offer an interesting environment to investigate teacher-student relationships since students with English and Spanish as their first language are part of the same classroom along with Spanish and English teachers. These programs have also shown to be beneficial for students' English Language Arts (ELA) scores. Valentino and Reardon (2015) followed 13,750 bilingual students who entered school in kindergarten between the 2001-2002 and the 2009-2010 academic years. Authors found that students in TWI programs showed significantly higher growth rates in ELA compared to students in English only programs. Findings indicated that students in TWI programs who entered the program with lower scores showed a faster rate of increase after second grade compared to students in Transitional-Bilingual programs. Another study, by Molina (2020), investigated the achievement in ELA of grades 4-6

students in 50/50 two-way DLI programs. The author found that students in the DLI program outperformed their peers in the non-DLI program on the ELA assessments.

Recent studies have started investigating language and ethnic matching in dual language learners in early childhood education, and how these interact with student–teacher relationships and other outcomes (Partika, 2023; Rojas et al., 2023; Stephens et al., 2023). For example, Partika (2023) found that when Spanish-English dual language learners had a Spanish-speaking teacher in first or second grade they showed higher levels of attention and memory in third grade than their peers who did not have a Spanish-speaking teacher. Partika (2023) also explored if having a Spanish-speaking teacher who is also Hispanic/Latine would have bigger effects on memory and attention, but this was not the case. Rojas et al. (2023) showed that teachers in early childhood education programs understand the importance of speaking Spanish and they think that using Spanish in the classroom helps strengthen their relationships with their Spanish-speaking students. Stephens et al. (2023) found that Spanish-English DLLs in Head Start showed better approaches to learning (teacher reports of student motivation, persistence, independence in learning, attention, and organization) when they experienced more use of Spanish in the classroom either by their peers or the teacher. These studies explored the importance of language and ethnic match in students’ academic outcomes. To date, however, no studies have analyzed student–teacher relationships or student–teacher ethnic match in the context of elementary school TWI programs for either English-speaking or Latine, Spanish-speaking students, or in any context where students had more than one teacher.

## **THE CURRENT STUDY**

The literature on student–teacher relationships leaves gaps regarding Latine experiences, two-way immersion programs, and student–teacher ethnicity matching that this study seeks to fill, as well as expanding on how student–teacher relationships differ across grades, while drawing comparisons among different groups. Particularly, this study looked for differences in student–teacher relationships with students that share or do not share the same ethnicity as teachers. There were six preliminary questions for the study whose answers guided later decisions: 1) What is the correlation between the closeness and conflict subscales?, 2) For students that have two teachers, is student–teacher relationship quality similar for the English and Spanish teacher?, 3) Is student–teacher relationship quality similar for students that have one versus two teachers?, 4) To what extent does gender relate to student–teacher conflict and closeness?, 5) To what extent are teacher education, experience, length at school, and parent education correlated with student–teacher conflict and closeness?, and 6) To what extent is cohort (pre-Post COVID) correlated with student–teacher conflict and closeness?

The main research questions for this study are: 1) What is the quality of student–teacher relationships for all students, and does this vary by grade (grades K-3)?, 2) Do student–teacher relationships vary as a function of student ethnicity and teacher ethnicity, and if so, does this vary across different grades?, 3) Do student–teacher relationships vary as a function of ethnic match between student and teacher, and if so, does this vary across different grades?, and 4) Specifically for Hispanic students, how much does having a Hispanic teacher matter for their student–teacher relationship quality?

For the first research question, I expected students to have lower closeness scores in later grades. For the second research question, I expected minority (Latine and Black) students and teachers to show higher conflict scores than their White counterparts. For the third research question, I expected that teachers that match ethnicity with a student will report having higher closeness than those who are not matched. For the last research question, I expected that Latine students who have a Latine teacher will have higher closeness scores.

## **METHOD**

### **Participants**

Data were drawn from a larger study examining early elementary school students' experiences in Spanish-English, two-way immersion, DLE programs (LaForett et al., 2023). Data are from 203 Kindergarten through 3rd-grade students from 35 two-way immersion classrooms (Spanish-English) in 3 districts in North Carolina over 3 cohorts (AY 18-19, 19-20, 21-22). The participants in this study were different each year/cohort, therefore, this study's research design is cross-sectional, not longitudinal. These classrooms followed one of four different instructional models: 90/10 transitional/immersion, 50/50 self-contained, 50/50 switch, and 50/50 alternate. Students were 41% male, and their cultural backgrounds were as follows: 58% Hispanic/Latine, 15% Black, and 27 White/Asian.

Parents completed a home language survey on the language use with up to three adult interlocutors in the home using a 5-point scale (1=All Spanish, 5=All English). Students were classified into three language groups: mostly/all Spanish at home (n = 67,

33%), both Spanish and English (n = 44, 22%), and mostly/all English (n = 92, 45%) at home, according to the home language survey. From this sample, 21% of students (n = 42) were part of the 90/10 transitional/ immersion instructional model, where kindergarten and first grade students were primarily taught in Spanish by one bilingual teacher. The remaining 79% of students (n = 161) were part of a 50/50 instructional model, where they received half of their instruction in Spanish and half in English each grade/year. Of these students, 11% (n = 22) received half of their instruction in Spanish and half in English by one single teacher in a 50/50 self-contained model. The other 68% (n = 139) of students received instruction from two different teachers where one taught in English only and the other taught in Spanish only. Of the students with two teachers, 45% (n = 91) switched from one teacher to another for half of each day for instruction in each language in the 50/50 switch model. The remaining 24% (n = 48) of students with two teachers alternated teachers/languages every other day in the 50/50 alternate model.

There were 33 Kindergarten through 3rd-grade teachers (Kindergarten: n = 10, 30%, 1st grade: n = 11, 33%, 2nd grade: n = 6, 18%, and 3rd grade: n = 6, 18%) in the sample. Teachers in six classrooms used the 90/10 instructional model. The remaining 27 teachers used the 50/50 instructional model. Of these teachers, three were part of the self-contained model. The other 24 teachers were partnered in teaching pairs, where 16 were part of the 50/50 switch model, and eight implementing the 50/50 alternate model.

At the beginning of the school year, lead teachers were 37 years old on average ( $SD = 7.25$ ), and 94% were female. They described their ethnic backgrounds as follows: White (n = 16, 49%), Hispanic/Latine (n = 12, 36%), multiethnic (n = 4, 12%), and

Black/African American ( $n = 1$ , 3%). All multiethnic teachers described themselves as White and Hispanic. For analyses purposes, teachers that have described themselves as the combination of Latine and White were re-categorized as Hispanic/Latine, which gave a total of 16 (48%) Hispanic/Latine teachers. The sample was relatively split regarding the number of years teachers had lived in the United States, with 36% living in the U.S. less than five years and 49% being born in the U.S. from U.S.-born parents. The remaining teachers (15%) either had lived in the U.S. for 6-10 years, 11-20 years, or were born in the U.S. from immigrant parents. Most teachers reported being fluent in English (88%) and Spanish (64%), with 9% also reporting they were fluent in an additional language. For educational background, most teachers reported either having a Bachelor's degree (70%) or a Master's degree (30%). For educational experience, on average, teachers reported being a teacher for 11.4 years ( $SD = 7.97$ ), being at their current school or program for 5.25 years ( $SD = 5.89$ ), teaching in a DLE program for 5.08 years ( $SD = 4.52$ ), and teaching at their current grade/age level at the time of the study for 6.27 years ( $SD = 5.33$ ).

## **Measures**

*Student-Teacher Relationships.* Developed by Pianta (2001a), the Student-Teacher Relationship Scale (STRS) was used for examining a teacher's relationship with individual students in their classroom. The scale contains items that comprise two separate dimensions: conflict and closeness (Pianta, 2001b). Closeness refers to the degree of warmth and support in the relationship (e.g., "I share an affectionate and warm relationship with this child"). Conflict refers to the degree of coercion and discordance in

the relationship (e.g., “This child and I always seem to be struggling with each other”). The items are measured on a 5-point Likert scale ranging from 1 (definitely does not apply) to 5 (definitely applies). This scale has 15 items (seven for closeness and eight for conflict). This measure was filled out by the teachers during the January/February of their respective year. Each subscale’s overall score was calculated by averaging the teacher’s responses to all items that pertained to that subscale (range of 1-5).

In the case of this study, where students had either one ( $n = 64$ ) or two ( $n = 139$ ) teachers, there are cases in which students ( $n = 139$ ) had two different teachers providing conflict and closeness scores for the same student. Due to this, some analyses included English and Spanish teacher STRS scores separately, in cases where students have two teachers. Other analyses (e.g., when comparing students who have one teacher with those who have two teachers) used a combined score, which was the average of STRS scores between conflict and closeness for students who had two teachers.

Overall reliability scores (using a combined score for English and Spanish teachers) for the full sample were .71 for the closeness subscale, and .97 for the conflict subscale. In contexts where students only had one teacher, the reliability scores were .39 for the closeness subscale, and .94 for the conflict subscale. In contexts where students had two teachers, the reliability scores were .83 for the closeness subscale and .97 for the conflict subscale for the English teachers, and .69 for the closeness subscale and .98 for the conflict subscale for the Spanish teachers.

*Ethnic match.* This was based on the four ethnic classifications found in the participants: White, Hispanic, Black, and Asian. What has always been done in the



literature is the classification of match as a dichotomous variable (Yes/No ethnic match). A '1' is given when dyads of teacher and student both identify as the same ethnicity (e.g., both student and teacher marked their ethnicities as Hispanic/Latine) and a '0' is given for kids with any type of mismatched ethnicity. Thus, a dichotomous "ethnic match" variable noted whether the student shared ethnicity with their teacher (e.g., if both were Hispanic) (= 1) or not (= 0). Importantly, this only works for students who have only one teacher (the usual scenario). However, the situation is more complicated when students have two teachers, as is the case for many of our students here in TWI programs. Thus, I had to approach this in a few different ways. First, I made the variable described above for those 64 students who only had one (bilingual) teacher. The matching scenario for these students is shown in Table 1. For students who have only one teacher ( $n = 64$ ), 29 (45%) of them shared the same ethnicity as their teacher (eight White and 21 Hispanic students) and 35 (55%) did not – these are color coded in Table 1.

For those who have two teachers ( $n = 139$ ), the more complicated matching scenarios are described in Table 2 (for match with the Spanish teacher), Table 3 (for match with the English teacher), and Table 4 (for match with two teachers). For students with two teachers, three White and 70 Hispanic students had an ethnic match with their Spanish teacher (Table 2), and 25 White students matched ethnicities with their English teacher (Table 3).

For students with two teachers, there were 70 students who matched ethnicity with only their Spanish teacher, and another 22 who matched ethnicity with only their English teacher, and three students who matched ethnicity with both teachers (see Table

4). Therefore, 92 of the students with two teachers only matched ethnicities with one of them. Additionally, 44 out of these students did not match ethnicity with either of their two teachers. Thus, I decided to create a three-level ethnicity categorical/ordinal variable to classify the extent to which students matched ethnicity with all their teachers, regardless of whether they had one or two teachers. A '2' was given to  $n = 42$  students who always matched with their teacher ( $n = 39$  for those with 1 teacher and  $n = 3$  for those who matched with both teachers). A '1' was given to students with two teachers who only matched ethnicities with one of them ( $n = 92$ ), and students who never matched ethnicities with any teacher were given a '0' ( $n = 79$ ;  $n = 35$  for 1 teacher +  $n = 44$  for two teachers). This variable was used in some analyses and was treated as an ordinal and sometimes a categorical variable.

*Demographic data.* Child gender, grade level, parent education, whether the student had one or two teachers, teacher years of education, years teaching at the same school, and years of teaching experience were included in analyses. Gender was measured as a binary variable (0 = male, 1 = female). Grade level was a categorical variable with four grade categories (0 = kindergarten, 1 = first grade, 2 = second grade, 3 = third grade) that was sometimes treated categorical and sometimes as continuous/ordinal. Parent education was a continuous variable with values describing the highest-level education attained by the parent (1 = less than 8<sup>th</sup> grade, 2 = 8-12<sup>th</sup> grade, not high school diploma, 3 = high school graduate, 4 = some college, no degree, 5 = Associate's degree, 6 = Bachelor's degree, 7 = graduate/professional degree, 8 = other).

These variables were included in the required IRB and Data Use agreement with the University of North Carolina (UNC), which have already been completed.

## RESULTS

### Preliminary question 1

*For students who have two teachers, is student–teacher relationship quality the same for the English and Spanish teacher?* A paired samples t-test compared student–teacher relationship quality for the same students’ relationships with their Spanish versus English teachers. Two Pearson correlations for closeness and conflict scores between the Spanish and English teachers, for students who had two teachers ( $n = 139$ ) were done as well.

Results are shown in Table 5. For those students who had two teachers ( $n = 139$ ), no significant difference was found between the closeness means between their Spanish and English teachers,  $t(138) = -.994, p = .32$ . Similarly, no significant difference was found between the students’ conflict scores with their Spanish and English teachers,  $t(138) = .158, p = .875$  (see Table 5). Additionally, closeness scores from English and Spanish teachers were positively correlated,  $r(137) = .36, p < .01$ , as well as the conflict scores  $r(137) = .67, p < .01$ . Not only were the means of closeness and conflict between English and Spanish teachers not significantly different, but they were positively correlated as well. When students who have two teachers have high conflict or closeness with their English teacher, they tended to also have higher conflict or closeness with their Spanish one, and vice versa. Due to these findings, subsequent analyses that include

closeness and conflict scores of students who had two teachers used the average score between the two teachers.

### **Preliminary question 2**

*What is the correlation between the closeness and conflict subscales?* Four Pearson correlations between conflict and closeness scores were conducted. One for all students, one only for those who only had one teacher, and two for the students that had two teachers (one per teacher). I expected these to be negative, in line with past research ( $r = -.30$ ; Pianta & Stuhlman, 2019). Results are shown in Table 6. Three correlations found between closeness and conflict scores were significantly negative: for all students,  $r(201) = -.24, p < .01$ ; and for those who had two teachers, for scores from Spanish teachers,  $r(137) = -.19, p < .01$ , and English teachers,  $r(137) = -.36, p < .01$ . These findings are consistent with prior research (Pianta & Stuhlman, 2019). However, the correlation between closeness and conflict scores for those who only had one teacher was in the same direction but not significant,  $r(62) = -.14, p = .26$ . Due to these negative correlations between both subscales, these were analyzed separately, like most studies do.

### **Preliminary question 3**

*Is student–teacher relationship quality the same between students who have one versus two teachers?* Two independent samples t-tests compared the conflict and closeness means among the students with one teacher ( $n = 64$ ) and those with two teachers ( $n = 139$ ), using the average conflict and closeness scores for those who have two teachers. Results are shown in Table 5. Closeness scores were significantly different,  $t(145.09) = 5.88, p < .01$ , with students with one teacher having higher closeness scores

than those with two teachers. Conflict scores were not significantly different,  $t(201) = .08$ . Students with one teacher did not have significantly different scores than those with two teachers. These findings indicate that when teachers experience less time with a student (in this case by half the time for those with two teachers) they build less closeness.

#### **Preliminary question 4**

*To what extent does gender relate to student–teacher conflict and closeness?*

Since prior research has found associations between gender and student–teacher closeness (Howes et al., 2000) and conflict (Jerome et al., 2009), it is important for analyses regarding relationships to include gender. Two independent samples t-tests compared the conflict and closeness means among girls ( $n = 120$ ) and boys ( $n = 83$ ) in the full sample, using the average conflict and closeness scores for those who have two teachers. More independent samples t-tests analyzed the differences in conflict and closeness between boys and girls in students with one teacher, students with only their English teacher when they have two, and students with only their Spanish teacher when they have two. In total, eight different t-tests were conducted. I expected girls to have closer relationships with teachers than males due to existing evidence (Birch & Ladd, 1997). If a significant association is found between gender and student–teacher relationships, gender will then be controlled for in the model.

As shown in Table 5, closeness scores were not significantly different,  $t(201) = -.84, p = .4$ , between girls and boys. Conflict scores were marginally significantly different,  $t(147.31) = 1.88, p = .06$ , between girls and boys with the latter having higher conflict

scores. These findings are consistent with prior literature (Birch & Ladd, 1997) in that boys had more conflictual relationships with their teachers than girls. Due to this, gender was included in further analyses. See below (research question two) for findings on gender differences by language of instruction and teacher ethnicity.

### **Preliminary question 5**

*To what extent are teacher education, experience, length at school, and parent education correlated with student–teacher conflict and closeness?* Since some prior research has found that ethnic match was not related to student–teacher relationships when controlling for teacher characteristics (Bratsch-Hines et al., 2023), it is important for analyses regarding relationships to explore these factors. Pearson correlations were performed between conflict and closeness scores for all students and English and Spanish teacher years of experience, education, length at school, and parent education (see Table 7). I expected all these factors to be positively correlated with closeness and negatively correlated with conflict scores. There was a positive, significant correlation between conflict and Spanish teacher education,  $r(201) = .17, p < .05$ , and a negative, significant correlation between conflict and English teacher experience,  $r(201) = -.18, p < .05$ . This implies that Spanish teachers with higher educational backgrounds had less conflictual relationships, and English teachers with more teaching experience had more conflictual relationships with their respective students. There were also positive, significant correlations between closeness and English teacher education,  $r(201) = .23, p < .01$ , and English teacher experience.  $r(201) = .14, p < .05$ . English teachers with higher educational backgrounds and teachers with more teaching experience had closer

relationships with their respective students. Length at time at the school and parent education were not correlated with either closeness,  $r(201) = .07, p = .33$ , or conflict,  $r(201) = -.02, p = .74$ , nor was Spanish teacher education with closeness,  $r(201) = .03, p = .72$ , English teacher education with conflict,  $r(201) = -.01, p = .88$ , or Spanish teacher experience with either closeness,  $r(201) = .09, p = .22$ , or conflict,  $r(201) = .10, p = .17$ .

While some of these factors were positively correlated with closeness, as expected, some were also positively correlated with conflict (i.e., Spanish teacher education). Due to this, two additional Pearson correlations between English and Spanish teacher education and experience were run and showed that, for Spanish teachers, education and experience were not significantly correlated,  $r(201) = -.06, p = .38$ ; for English teachers, on the other hand, education and experience were significantly correlated,  $r(201) = .33, p < .01$ . Due to the inconsistency of these findings, and to the lack of a theoretical explanation from the literature on these, none of the factors mentioned in this question were added in further analyses.

### **Preliminary question 6**

*To what extent is cohort (pre-post COVID) correlated with student–teacher conflict and closeness?* In 2020, the COVID-19 pandemic interrupted the data collection process for the larger study that examined DLE programs (LaForett et al., 2023), which provided the data for this thesis. The original goal for this project was to collect data from three different cohorts in three different school years (2018-2022). Since data collecting was not possible during the pandemic, data were collected the following year. Participants from the 2021-2022 cohort went back to school after a year of social

distancing and minimized interactions. It is important to assess this as it could influence student–teacher relationship dimensions.

Two independent samples t-tests compared the conflict and closeness means among students in cohorts before (years 2018-2019 and 2019-2020,  $n = 179$ ) and after (2021-2022,  $n = 24$ ) the COVID-19 pandemic, using the average conflict and closeness scores for those who have two teachers. Results are shown in Table 5. Closeness scores were not significantly different,  $t(37.78) = 1.43$ ,  $p = .16$ , between pre-COVID and post-COVID students. Conflict scores, however, were significantly different,  $t(43.72) = 3.37$ ,  $p < .01$ , between pre-COVID and post-COVID students, with the pre-COVID cohorts showing higher conflict scores. Because of small sample sizes, however, cohort (pre- and post-COVID) was not included as a control variable for further analyses.

### **Research question 1**

What is the overall quality of student–teacher relationships in DLE classrooms, and does this vary by grade (in grades K-3)? Two ANOVAs with grade as the X and means on closeness and conflict as the Ys were conducted to see differences in means between grades. Also, a Pearson correlation between the conflict and closeness values and the continuous grade level (0-3) explored the association between relationship quality (closeness and conflict) and grade in school. My hypothesis was that teachers and students in later grades would have less closeness than in earlier grades. This is because research shows declining patterns of this subscale in the first years of education (Ansari et al., 2020; Pianta & Stuhlman, 2004).



A one-way ANOVA revealed a significant effect of grade level on closeness scores (Table 8),  $F(3, 199) = 6.49, p < 0.01$ , between kindergarten, first, second, and third grades, with later grades showing lower closeness scores (each lower than the last) Grade level and closeness scores were also negatively correlated (Table 7),  $r(201) = -.28, p < .01$ . The ANOVA using conflict scores (Table 8) did not show a significant effect of grade level, and a significant correlation was not found between conflict scores and grade level. Tables 9 and 10 list the means for these analyses, and Figure 1 illustrates these results. The hypothesis for this question (that later grades show lower closeness) is supported, consistent with prior literature (Ansari et al., 2020; Pianta & Stuhlman, 2004). Just like in this study, prior literature found closeness means to be lower in later grades. For example, Ansari et al. (2020) found that closeness means from kindergarten to third grade went from 34.23 to 33.08 (which correspond to 4.28 and 4.14, respectively, on the STRS 1 to 5 scale). In my sample, the closeness means from kindergarten to third grade went from 4.4 to 3.99. Due to this finding, subsequent analyses included grade level when possible given sample sizes.

## **Research question 2**

Do student–teacher relationships vary as a function of student ethnicity and teacher ethnicity, and if so, does this vary across grades? Two 3x4 factorial ANOVAs analyzed the association between the three categories of *student ethnicity* (White/Asian, Hispanic, Black), grade level (0,1,2,3), and an interaction term as *X*'s; and student–teacher relationship closeness and conflict scores as the *Y*'s, one at a time. This was in

order to get main effects for grade level, student ethnicity, and for the interaction term showing if the differences observed among ethnicities were the same across grades.

#### *Child Ethnicity*

Regarding student ethnicity and student–teacher closeness, Table 9 shows significant effects for grade [ $F(3, 179) = 6.71, p < 0.01$ ] between kindergarten, first, second, and third grade students (see Table 10 for the means). Figure 2 illustrates the significant interaction between grade and child ethnicity [ $F(6, 179) = 2.25, p < 0.05$ ] for student–teacher closeness. The decrease over time in student–teacher closeness is strongest for Black students, with the Black kindergarten students having quite high closeness with their teachers but for each grade after that the Black students had lower closeness with their teachers. These results indicate that students had higher closeness with their teachers when they were in earlier grades or they were female. No main effect was found for student ethnicity [ $F(2, 179) = .42, p = 0.66$ ].

In terms of student–teacher conflict, Table 9 shows no significant effects from any variable, including grade [ $F(3, 179) = 1.10, p = .35$ ] between kindergarten, first, second, and third grade students (see Table 10 for the means); student ethnicity [ $F(2, 179) = .99, p = 0.37$ ] between Black/African American, White/Asian, or Hispanic/Latine students, or the interaction term between grade and child ethnicity [ $F(6, 179) = 1.48, p = 0.19$ ].

#### *Teacher Ethnicity*

Because the sample only included one Black teacher, she was grouped with the White/other teachers for analyses. Additionally, the categories of teacher ethnicity were

not distributed well across grades (only Black/African American or White English teachers and Hispanic/Latine Spanish teachers were part of all four grades), so grade level could not be added as a variable in this analysis. Therefore, two 2x2 factorial ANOVAs analyzed the association between the two categories of *teacher ethnicity* (White/Black, Hispanic), child gender, and an interaction term as *X*'s; with student-teacher closeness and conflict scores as the *Y*'s. This was in order to get main effects for child gender, teacher ethnicity, and for the interaction term showing if the differences observed among ethnicities are the same across child gender categories.

For Spanish teachers, Table 11 shows no significant effects from either teacher ethnicity [ $F(1, 199) = 1.01, p = 0.32$ ] between Black/African American or White and Hispanic/Latine teachers (see Table 12 for the mean); child gender [ $F(1, 199) = .32, p = 0.57$ ] between males and females, or the interaction between the two [ $F(1, 199) = .91, p = 0.92$ ] on closeness scores. Similarly for conflict, there was not a significant effect from teacher ethnicity [ $F(1, 199) = 1.42, p = 0.52$ ] between Black/African American or White and Hispanic/Latine teachers (see Table 13 for the means). However, there was a significant effect from child gender [ $F(1, 199) = 2.77, p < .05$ ] between males and females with males showing higher conflict scores than females with their Spanish teacher. In other words, in their relationships with Spanish teachers, students that are male had more conflictual relationships than female students. There was no significant effect from the interaction between child gender and teacher ethnicity on Spanish teacher conflict scores [ $F(1, 199) = 2.04, p = 0.15$ ].

For English teachers, Table 14 shows a significant effect of teacher ethnicity [ $F(1, 199) = 8.02, p < 0.01$ ] between Black/African American or White and Hispanic/Latine teachers on closeness scores (see Table 15 for the means). This shows that, in their relationships with English teachers, students had closer relationships with teachers that were Hispanic/Latine than with teachers that were Black/African American or White. There were no significant effects for either child gender [ $F(1, 199) = .14, p = 0.71$ ], between males and females, or the interaction between the two [ $F(1, 199) = .50, p = 0.48$ ], on closeness. For conflict, there were no significant effects from either teacher ethnicity [ $F(1, 199) = .18, p = 0.67$ ] between Black/African American or White and Hispanic/Latine (see Table 16 for the means); child gender [ $F(1, 199) = 1.15, p = .14$ ] between males and females; or from the interaction between child gender and teacher ethnicity [ $F(1, 199) = .03, p = 0.87$ ].

### **Research question 3**

Do student–teacher relationships vary as a function of ethnic match between student and teacher, and if so, does this vary across different grades? To fully answer this question across the different contexts (of having one versus two teachers), five different analyses were conducted:

1. Two independent samples t-tests compared closeness and conflict scores between matched and mismatched teachers, for those who only have one teacher ( $n = 64$ ).
2. Two independent samples t-tests only for those students who have no match ( $n = 79$ ) vs. full match ( $n = 32$ ) (those with a “0” or a “2” in the three-level

match variable, excluding the partial match kids) compared closeness and conflict scores between them.

3. Two paired samples t-tests for only those who have a partial match (have two teachers but only matched ethnicities with one,  $n = 92$ ), compared the closeness and conflict scores between their ethnic matched and mismatched teachers (regardless of whether the teacher teaches in English or Spanish).
4. Using all students, two 3x2 factorial ANOVAs with the three-level ethnic match variable (no match, partial match, and full match) as the X's, and closeness and conflict scores (combined scores for those with 2 teachers) as the Y's, for all students ( $n = 203$ ).
5. Two Pearson correlations with the three-level ethnic match variable (0,1,2 treated continuously) as the X, and closeness and conflict scores as the Y's, for all students ( $n = 203$ ).

I expected that ethnically matched dyads would have closer relationships than mismatched ones (Saft & Pianta, 2001) for all groups. I also expected that more “match” (partial and full match) would be related with higher closeness and lower conflict than no match.

The following results are shown in Table 17. The first analysis showed closeness scores were not significantly different,  $t(62) = .74, p = .46$ , between matched and mismatched students who only had one teacher. The conflict scores were also not significantly different  $t(62) = -1.64, p = .11$ . The second analysis (Figure 3) showed that closeness scores were not significantly different,  $t(109) = -1.01, p = .32$ , between students

with a full match and no match. Their conflict scores were also not significantly different  $t(109) = -.80, p = .43$ . The third analysis showed closeness scores were not significantly different,  $t(91) = -.31, p = .76$ , between matched and mismatched student–teacher combinations for those who had two teachers but only matched ethnicity with one teacher. Their conflict scores were also not significantly different  $t(91) = -.13, p = .90$ .

These three analyses were done again but selecting only boys and girls separately to check for gender differences. There were no significant effects for gender in either case indicating that, when analyzing ethnic match scenarios in students, gender did not show to be associated with the results.

The fourth analysis (Table 18) showed that there was a significant effect for the three-level ethnic match variable on closeness scores [ $F(2, 200) = 3.23, p < 0.05$ ] between students with no match, students with a partial match, and students with a full match (see Table 17 for the means). Additionally, a significant effect for the three-level ethnic match variable was also found on conflict scores [ $F(2, 200) = 3.54, p < 0.05$ ] between students with no match, students with a partial match, and students with a full match. Figure 3 shows that groups with no and full match (the two extremes of the variable) had more closeness and conflict than students with a partial match. These results are confounded with the prior results that showed that students with only one teacher had higher closeness scores than students with two teachers. This is due to students in the partial match group always having two teachers (Table 19), while students in the two other groups (full and no match) had either one or two teachers. A chi-square test was performed to examine the relation between the two variables (three-level ethnic

match and whether the student has one or two teachers) and found it to be significant,  $\chi^2(2, 203) = 100.11, p < .01$ . Since these results support that the three-level ethnic match variable is confounded with number of teachers, I decided to not interpret the 3-level match variable results.

The fifth and final analysis yielded non-significant results from the correlation between the three-level ethnic math variable with closeness scores  $r(201) = .02, p = .76$ ; and conflict scores  $r(201) = .01, p = .92$ . This is to be expected given that the 0,1,2, grouping variable ended up not being linear as shown in the 4<sup>th</sup> analysis above.

#### **Research question 4**

*Specifically for Hispanic students (n = 117), how much does having a Hispanic teacher matter for their student–teacher relationship quality?* All five procedures used for the third research question above were used for this question but selecting only Latine students. I expected that Latine students who shared the same ethnicity with their teacher will have more positive closeness and lower conflict scores than the mismatched dyads' since minority students tend to have closer relationships with minority teachers throughout elementary school (Le & Nguyen, 2019).

The following results are shown in Table 20. The first analysis showed closeness scores were not significantly different,  $t(27) = 1.66, p = .11$ , between matched and mismatched students who only had one teacher. The conflict scores were also not significantly different  $t(27) = -1.16, p = .26$ . The second analysis showed closeness scores were not significantly different,  $t(44.12) = -1.66, p = .11$ , between students with a full match and no match. Their conflict scores were also not significantly different  $t(45) = -$

.04,  $p = .97$ . The third analysis showed closeness scores were not significantly different,  $t(69) = -1.33$ ,  $p = .19$ , between matched and mismatched students who had two teachers but only matched ethnicities with one teacher. Their conflict scores were also not significantly different  $t(69) = .34$ ,  $p = .73$ .

The fourth analysis showed no significant effect for the three-level ethnic match variable on closeness scores [ $F(2, 11) = 1.92$ ,  $p = 0.15$ ] between students with no match, students with a partial match, and students with a full match (see Table 20 for the means). However, similar to the findings on closeness, a significant effect for the three-level ethnic match variable was found for conflict [ $F(2, 114) = 4.60$ ,  $p < 0.05$ ] between students with no match, students with a partial match, and students with a full match. Groups with no and full match had higher conflict scores than students with a partial match. This result will not be interpreted because of the confound with this variable and number of teachers.

The fifth and final analysis yielded non-significant results from the correlation between the three-level ethnic math variable with closeness scores  $r(115) = .15$ ,  $p = .11$ ; and conflict scores  $r(115) = -.02$ ,  $p = .85$ .

## **DISCUSSION**

TWI programs are regarded as appropriate for families that want to preserve their heritage and language to their students (Parkes, 2008). These programs promote goals related to bilingualism, biliteracy, and biculturalism by jointly serving both students who are English learners and students who are proficient in English. TWI programs have been studied for the last few decades with regard to language and school achievement



outcomes (Collins, 2014; Feinauer et al., 2013; Raikes et al., 2019), relationships among Latine students and their cultures and families (Block, 2012), and Latine students' pleasure with Spanish reading and comfort speaking Spanish in public (Block, 2012). Student–teacher relationships have also been extensively researched, but only in monolingual education programs. To date, no studies have looked at the nature of student–teacher relationships in TWI programs, or any education contexts in which students have more than one teacher. The present study is the first one aimed at investigating the nature of student–teacher relationships in DLE TWI programs to shed light on how students experience these relationships when having one bilingual vs. two monolingual teachers. Specifically, this study looked at whether ethnic match associates with the conflict and closeness dimensions of relationships among the different scenarios and pairings between students and teachers that these kinds of programs provide.

Preliminary questions for this study analyzed the effects of language of instruction, number of teachers, gender, teacher characteristics and being part of a cohort before or after the COVID-19 pandemic. The main research questions asked if conflict and closeness were associated with grade level, if student–teacher relationships vary as a function of student ethnicity teacher ethnicity, or ethnic match; and if there are ethnic match effects in the subsample of Hispanic students. An important finding from the preliminary analyses was that closeness scores were significantly different between students with one and two teachers, with students with one teacher having closer relationships than those with two. This is a novel finding and contribution to the literature since this is the first study that analyzed student–teacher relationships in contexts where

students had more than one teacher. This finding suggests that, in TWI programs, the number of teachers is important for student–teacher relationships. These programs could consider this finding and try to implement interventions that aim at strengthening student–teacher relationships for those with two teachers. This would be the case for students in 50/50 switch, 50/50 alternate, or any models in which students have more than teacher.

The preliminary results also showed an effect of gender on student–teacher relationship quality with boys having more conflictual relationships with their teachers than girls. This finding is consistent with (old and recent) literature that found boys having lower closeness in elementary school in the United States (Birch & Ladd, 1997; Jerome et al., 2009; Rudasil and Rimm-Kaufman, 2009) and around the world (Greece - Gregoriadis & Tsigilis, 2008; The Netherlands - Koomen et al., 2012; Italy - Sette et al., 2018). Education system structures are different between decades and countries but the trend of girls having higher closeness and boys having higher conflict is present throughout. Education programs, especially in elementary school, (not only in TWI programs) should take this evidence into consideration and try to implement interventions aimed at improving relationships between teachers and male students. Additionally, teachers can individually be mindful in their relationships with male students during instruction.

The main analyses first found closeness scores to be lower in later grades from kindergarten to third grade for all students in the sample. This is consistent with prior literature that found that closeness tends to be lower in later grades in elementary school

(Ansari et al., 2020; Pianta & Stuhlman, 2004). This is an aspect that seemingly both monolingual and bilingual schools share. It is important for education programs of any kind to consider this finding when developing instructing practices, and teachers should keep this in mind when forming relationships with their students in later grades.

There were two main findings regarding the effects of child ethnicity on student–teacher relationships. First, minoritized students (Black/African American and Latine) from the full sample had higher conflict scores than their White counterparts. Prior literature has found that Black/African American students have more conflictual relationships with their teachers (Goldberg & Iruka, 2020; Jerome et al., 2009) than those of other ethnicities. The results from the present study are consistent with that literature. The second main finding is that Black/African American students showed larger declines in closeness scores between kindergarten and third grades than students from other ethnicities. The effect of lower closeness in later grades was stronger for Black/African American students, meaning that these students experienced a steeper decline in closeness by grade than students of other ethnicities (as shown in Figure 2). Schools should take this evidence into consideration by targeting specifically Black/African American students in their efforts to improve student–teacher relationships overall and in later grades. Regarding teacher ethnicity, we found that it had an association with closeness but only for English teachers. Hispanic/Latine English teachers showed overall closer relationships with their students than Black/African American or White English teachers. This may be because of the focus on Hispanic populations from the Spanish-English TWI programs. It is good that these programs are focusing on being inclusive for

Hispanic/Latine families, however, it is important for them to target non-Hispanic teachers' relationships with their students. This is to ensure the same experience for all students and not overcompensate and create inequities.

The main reason this study included ethnic match as a variable is because of the existing divergence between studies that have found (and not found) associations between ethnic match and student–teacher relationships. Saft and Pianta (2001) found positive effects from ethnic match after investigating student–teacher relationships in preschool and kindergarten in that dyads who shared the same ethnicity had higher closeness and lower conflict than those who did not share ethnicities. The sample from that study consisted of 840, roughly divided between male and female students, and 197 teachers from different states (Arizona, California, Connecticut, Colorado, and North-Carolina), where most (71%) teachers and most (71%) students were Caucasian and most (70%) of students had a teacher that shared their same ethnic background. Saft and Pianta controlled for child age, gender, maternal education, and family income. Similarly, Le and Nguyen (2019) had the same results in their study looking at 9,040 students and 6,410 teachers, from a total of 1,510 elementary schools from across the United States. Most of the students were White (60%), with Hispanic and Black students consisting of 27% and 13% of the sample respectively. The authors found that minoritized students (Black and Hispanic) received higher closeness scores when matched with a minority teacher (either Black or Hispanic) than White students, after controlling for student retention status, special education status, and socioeconomic measures.

Other studies found no effects of ethnic match on student–teacher relationships in either direction. Choi and Dobbs-Oates (2016) found this in preschool after controlling for child age, gender, math ability, days attending childcare per week, parent education, teachers’ years of experience, and childcare subsidy status. This study had a population of 159 mostly White students (60% of the sample), as well as Asian, multiracial, Hispanic, African American and others. Students were on average four and a half years old, were mostly girls, and were from 20 preschools located in a suburban area in Indiana, USA. Similarly, Bratsch-Hines et al. (2023) gathered data from a sample of 447 prekindergarten and first grade students in rural North Carolina counties who were enrolled in 63 state-funded randomly selected prekindergarten classrooms and were identified by their parents as Black (34%), Latinx (42%), and/or non-Latinx White (24%). The authors found no ethnic match effects after controlling for teacher education and classroom quality (emotional support, classroom organization, and instructional support).

While prior studies have found different results, all have only looked at monolingual education settings. The main difference between these two groups of studies is that the ones that found no ethnic match effects controlled for many teacher characteristics (education and experience, along with parent education, and sometimes observed quality in the classroom). The present study found no consistent correlations between teacher characteristics and relationship quality, which is why these variables were not included in the main analyses. The results in the current thesis were that ethnic match *did not* relate to student–teacher relationships in either the whole sample or the

Latine-only subgroups. The strongest evidence for this finding is shown in the results of research question three. Specifically, when the relationships between matched and mismatched teachers in students with two teachers (Table 17) were analyzed. This analysis accounts for the existing confounding between students who have one and two teachers because it is a within-subjects test. This test deals with inter-individual differences that could influence the relation between ethnic match and student–teacher relationship quality. If there were going to be effects from ethnic match on student–teacher relationship quality, they would have been found in this analysis. This finding is consistent with the literature that found no ethnic match effects on student–teacher relationships in monolingual education settings (Bratsch Hines et al., 2023; Choi & Dobbs-Oates, 2016). We suggest that this finding is because TWI programs are efficient at providing inclusive education in context where ethnicity differences are not as salient as in monolingual settings. Ethnic match might be important in monolingual settings (Le & Nguyen, 2019; Saft & Pianta, 2001) since the educational goals are not as focused on inclusion as in TWI programs. Ethnic match not being as important in TWI programs may confirm that these programs are better at offering culturally inclusive and reflective education for multiple ethnic groups.

#### **LIMITATIONS**

The sample size of 203 students yielded a few limitations for the present study. Mainly, analyses were underpowered due to the overall sample size and to the small numbers of participants in certain categories. There were only 24 participants in the post-COVID cohort, which is why cohort was not included in the analyses even though it was

associated with conflict scores. There were also not enough participants distributed across categories to accurately analyze some of the interaction terms, like child gender by ethnicity by grade in research question two. Additionally, there were not enough participant to have all possible scenarios of ethnic match (Asian and Black/African American students have never had a match with their teachers).

The main reason why we had small sample sizes is because of the interruption of data collection that we experienced during the 2020-2021 year due to the COVID pandemic. Since we could not collect data for that cohort, we were left with an incomplete picture of the TWI programs and could not explore the differences between the instruction models. This is another limitation, since instruction models are the most distinctive aspect of TWI programs, it is a missed opportunity that we could not explore the differences in conflict and closeness among these models.

Another limitation relates to the nature of the student–teacher relationship scale used in this study. The STRS used is a teacher-reported measure of student–teacher relationship quality. Since it is teacher-reported, only a dimension of student–teacher relationships is captured. No observational or student-reported measures were used for this study. Thus, the nature of the relationship quality we have for this study is limited. Recommendations for future research regarding this and the other limitations mentioned are discussed next.

## **FUTURE RESEARCH**

Future research should use bigger sample sizes and strive for evenly distributed participants across categories (e.g., by instruction models) to effectively analyze the

characteristics of TWI programs. Future research should do this by including program models in analyses and check for differences in conflict and closeness among them.

Additionally, future research should also take number of teachers into consideration when studying these programs. Since the STRS used in this study is only teacher-reported, future studies should consider using a different method of measuring relationship quality and see if there would be any differences in the findings compared to the ones in this study. The present study found that ethnic match was not important for student–teacher relationships. Future research should investigate this further by replication. This is to confirm that ethnicity is not as important in TWI programs than it is for monolingual settings. Finally, since this study only looked at the effects of ethnic match on student–teacher relationships, it is possible that ethnic match could still have effects on other aspects of education (e.g., academic achievement, socioemotional outcomes, etc.). Therefore, it is important for future studies to not discount ethnic match but rather continue including it in analyses and explore its effects on students’ experiences in TWI programs.

## **CONCLUSION**

The present study expands on the literature on student–teacher relationships in the unique context of Dual Language Education K-3 programs. It was found that student–teacher closeness for all students was highest in kindergarten and lower for subsequent grades, with Black students showing particularly high closeness in kindergarten but steeper declines by third grade compared to other students. Boys had more conflictual relationships with their teachers than girls, and minorized groups had more conflictual



relationships with their teacher than their White peers. Hispanic English teachers had more closeness with their students than teachers of other ethnicities. Ethnic match between student and teacher was not associated with teacher closeness or conflict but number of teachers was in that students with two teachers had lower closeness with their teachers than students with only one teacher. Ethnic match is not as important as the number of teachers for student–teacher relationship quality in TWI programs. Overall, TWI programs are efficient at producing an inclusive environment for families of diverse ethnicities as was shown by the lack of significant effects from ethnic matching on the quality of student–teacher relationships.

## TABLES

**Table 1: Crosstabs of teacher by child ethnicity for students with one teacher**

	Teacher ethnicity		
	White	Hispanic/Latino	Total
Black	1	10	11
Asian	0	4	4
White	8	12	20
Hispanic/Latine	8	21	29
Total	17	47	64

**Table 2: Crosstabs of Spanish teacher by child ethnicity for students with two teachers**

	Teacher ethnicity		Total
	White	Hispanic/Latino	
Black	3	16	19
Asian	0	3	3
White	3	26	29
Hispanic/Latine	18	70	88
Total	24	115	139

**Table 3: Crosstabs of English teacher by child ethnicity for students with two teachers**

		Teacher ethnicity		
		Black	White	Total
Black		0	19	19
Asian		1	2	3
White		4	25	29
Hispanic/Latine		3	85	88
Total		8	131	139

**Table 4: Crosstabs of ethnic match for students with two teachers**

		Student and English teacher		Total
		Not matched	Matched	
Student and Spanish teacher	Not matched	44	22	66
	Matched	70	3	73
Total		114	25	139

**Table 5: T-tests for conflict and closeness between different groups of students**

	Conflict		Closeness	
	<i>n</i>	<i>M (SD)</i>	<i>n</i>	<i>M (SD)</i>
<i>Gender</i>				
Girls	120	1.34+ (.6)	120	4.3 (.51)
Boys	83	1.53+ (.77)	83	4.24 (.55)
<i>Number of teachers</i>				
1 Teacher	64	1.42 (.67)	64	4.56** (.43)
2 Teachers	139	1.41 (.69)	139	4.15** (.52)
<i>Two teachers</i>				
Spanish teacher	203	1.42 (.77)	139	4.12 (.6)
English teacher	139	1.41 (.74)	139	4.18(.66)
<i>Cohort</i>				
Pre-Pandemic	179	1.46** (.7)	179	4.29 (.54)
Post-Pandemic	24	1.12** (.41)	24	4.17 (.37)

+  $p < .1$ , \*\*  $p < .01$

**Table 6: Correlations between closeness and conflict under different conditions**

	<i>All students using combined ratings (n = 203)</i>	<i>Just those with 1 teacher (n = 64)</i>	<i>Just Spanish teacher (n = 139)</i>	<i>Just English teacher (n = 139)</i>
Conflict with closeness	-.24**	-.14	-.19*	-.36**

\*\*  $p < .01$

**Table 7: Correlations between closeness and conflict and teacher and parent education, teacher length at school, and teacher experience for all students**

	<i>Spanish teacher education</i>	<i>English teacher education</i>	<i>Spanish teacher experience</i>	<i>English teacher experience</i>	<i>Spanish teacher length at school</i>	<i>English teacher length at school</i>	<i>Parent education</i>	<i>Grade Level</i>
Conflict	.17*	-.01	.10	-.18*	.03	-.01	-.02	-.01
				.14*	-.07	-.08	.07	-
Closeness	.03	.23**	.09					.28**

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



**Table 8: ANOVAs for differences in student–teacher relationship quality between grades**

	Sum of Squares	Degrees of Freedom	Mean Square	F	Sig.
<i>Closeness</i>					
Between Groups	4.96	3	1.65	<b>6.49*</b>	.000
Within Groups	50.72	199	.26		
Total	55.69	202			
<i>Conflict</i>					
Between Groups	.491	3	.164	.347	.791
Within Groups	93.681	199	.471		
Total	94.172	202			

\*  $p < .05$

**Table 9: ANOVA for effects of grade and child ethnicity on closeness and conflict**

	Type III Sum of Squares	Degrees of Freedom	Mean Square	F	Sig.
<i>Closeness</i>					
<b>Grade</b>	4.88	3	1.63	<b>6.71*</b>	.00
Child Ethnicity	.20	2	.10	.42	.66
<b>Grade * Child Ethnicity</b>	3.28	6	.55	<b>2.25*</b>	.04
<i>Conflict</i>					
Grade	1.53	3	.51	1.10	.35
Child Ethnicity	.92	2	.46	.99	.37
Grade * Child Ethnicity	4.12	6	.69	1.48	.19

\*  $p < .05$

**Table 10: Closeness scores by grade and child ethnicity**

		Closeness	Conflict	
		<i>M(SD)</i>	<i>M(SD)</i>	<i>n</i>
Kindergarten	Black/African American	4.83 (0.22)	1.66 (0.72)	13
	White/Asian	4.32 (0.55)	1.20 (0.42)	21
	Hispanic/Latine	4.29 (0.56)	1.46 (0.71)	35
	Total	4.40 (0.54)	1.42 (0.65)	69
1st grade	Black/African American	4.38 (0.53)	1.09 (0.14)	10
	White/Asian	4.54 (0.60)	1.37 (0.72)	17
	Hispanic/Latine	4.29 (0.54)	1.50 (0.81)	39
	Total	4.37 (0.55)	1.40 (0.73)	66
2nd grade	Black/African American	4.03 (0.48)	1.87 (1.12)	5
	White/Asian	3.94 (0.45)	1.59 (0.99)	9
	Hispanic/Latine	4.24 (0.38)	1.39 (0.70)	22
	Total	4.14 (0.42)	1.50 (0.83)	36
3rd grade	Black/African American	4.00 (0.71)	1.86 (0.51)	2
	White/Asian	3.97 (0.38)	1.28 (0.25)	9
	Hispanic/Latine	4.00 (0.37)	1.31 (0.47)	21
	Total	3.99 (0.38)	1.34 (0.43)	32
Total	Black/African American	4.49 (0.52)	1.52 (0.71)	30
	White/Asian	4.27 (0.57)	1.32 (0.62)	56
	Hispanic/Latine	4.23 (0.50)	1.43 (0.70)	117
	Total	4.28 (0.53)	1.42 (0.68)	203

**Table 11: ANOVAs for effects of teacher ethnicity and child gender on relationships with Spanish teachers**

	Sum of Squares	Degrees of Freedom	Mean Square	F	Sig.
<i>Closeness</i>					
Teacher Ethnicity	.35	1	.35	1.01	.32
Child Gender	.11	1	.11	.32	.57
Teacher Ethnicity *	.00	1	.00	.01	.92
Child Gender					
<i>Conflict</i>					
Teacher Ethnicity	.23	1	.23	.42	.52
<b>Child Gender</b>	<b>2.77</b>	1	<b>2.77</b>	<b>5.17*</b>	.02
Teacher Ethnicity *	1.10	1	1.10	2.04	.15
Child Gender					

\* $p < .05$

**Table 12: Closeness scores by Spanish teacher ethnicity and child gender**

		<u>Mean</u>	<u>(SD)</u>	<u>N</u>
Black or White	Male	4.31	0.57	19
	Female	4.36	0.50	22
	Total	4.34	0.52	41
Hispanic/Latine	Male	4.20	0.63	64
	Female	4.26	0.58	98
	Total	4.24	0.60	162
Total	Male	4.22	0.61	83
	Female	4.28	0.57	120
	Total	4.26	0.59	203

**Table 13: Conflict scores by Spanish teacher ethnicity and child gender**

		Mean	(SD)	N
Black or White	Male	1.74	1.14	19
	Female	1.26	0.54	22
	Total	1.48	0.89	41
Hispanic/Latine	Male	1.47	0.71	64
	Female	1.36	0.69	98
	Total	1.40	0.69	162
Total	<b>Male</b>	1.53*	0.83	83
	<b>Female</b>	1.34*	0.66	120
	Total	1.42	0.74	203

\*  $p < .05$

**Table 14: ANOVAs for effects of teacher ethnicity and child gender on relationships with English teachers**

	Sum of Squares	Degrees of Freedom	Mean Square	F	Sig.
<i>Closeness</i>					
<b>Teacher Ethnicity</b>	2.98	1	2.98	<b>8.02*</b>	.01
Child Gender	.05	1	.05	.14	.71
Teacher Ethnicity *	.19	1	.19	.50	.48
Child Gender					
<i>Conflict</i>					
Teacher Ethnicity	.10	1	.10	.18	.67
Child Gender	1.15	1	1.15	2.22	.14
Teacher Ethnicity *	.01	1	.01	.03	.87
Child Gender					

**Table 15: Closeness scores by English teacher ethnicity and child gender**

		Mean	(SD)	N
Black or White	Male	4.17	0.64	62
	Female	4.28	0.65	94
	<b>Total</b>	4.23*	0.65	156
Hispanic/Latine	Male	4.53	0.44	21
	Female	4.50	0.49	26
	<b>Total</b>	4.51*	0.46	47
Total	Male	4.26	0.62	83
	Female	4.33	0.62	120
	<b>Total</b>	4.30	0.62	203

\*  $p < .05$



**Table 16: Conflict scores by English teacher ethnicity and child gender**

		Mean	(SD)	N
Black or White	Male	1.52	0.86	62
	Female	1.32	0.62	94
	Total	1.40	0.73	156
Hispanic/Latine	Male	1.55	0.81	21
	Female	1.39	0.60	26
	Total	1.46	0.70	47
Total	Male	1.53	0.84	83
	Female	1.33	0.61	120
	Total	1.41	0.72	203

**Table 17: Mean differences for conflict and closeness between students with ethnically matched and mismatched teachers**

	Conflict		Closeness	
	<i>n</i>	<i>M (SD)</i>	<i>n</i>	<i>M (SD)</i>
<i>Students with one teacher</i>				
Matched	29	1.57 (.79)	29	4.51 (.41)
Mismatched	35	1.30 (.54)	35	4.59 (.45)
<i>Three-level ethnic match</i>				
No match	79	1.49 (.73)	79	4.32 (.56)
<b>Partial match</b>	92	<b>1.29*</b> (.56)	92	<b>4.18*</b> (.49)
Full match	32	1.61 (.81)	32	4.44 (.50)
<i>Two teachers but only</i>				
<i>matched with one</i>				
Matched teacher	92	1.28 (.57)	92	4.17 (.59)
Mismatched teacher	92	1.29 (.64)	92	4.20 (.61)

\*  $p < .05$ ,

**Table 18: ANOVAs for differences in closeness and conflict between students with no match, partial match, and full match**

	Sum of Squares	Degrees of Freedom	Mean Square	F	Sig.
<i>Closeness</i>					
Between Groups	1.74	2	.87	<b>3.23*</b>	.04
Within Groups	53.95	200	.27		
Total	55.69	202			
<i>Conflict</i>					
Between Groups	3.22	2	1.61	<b>3.54*</b>	.03
Within Groups	90.96	200	.46		
Total	94.17	202			

\*  $p < .05$

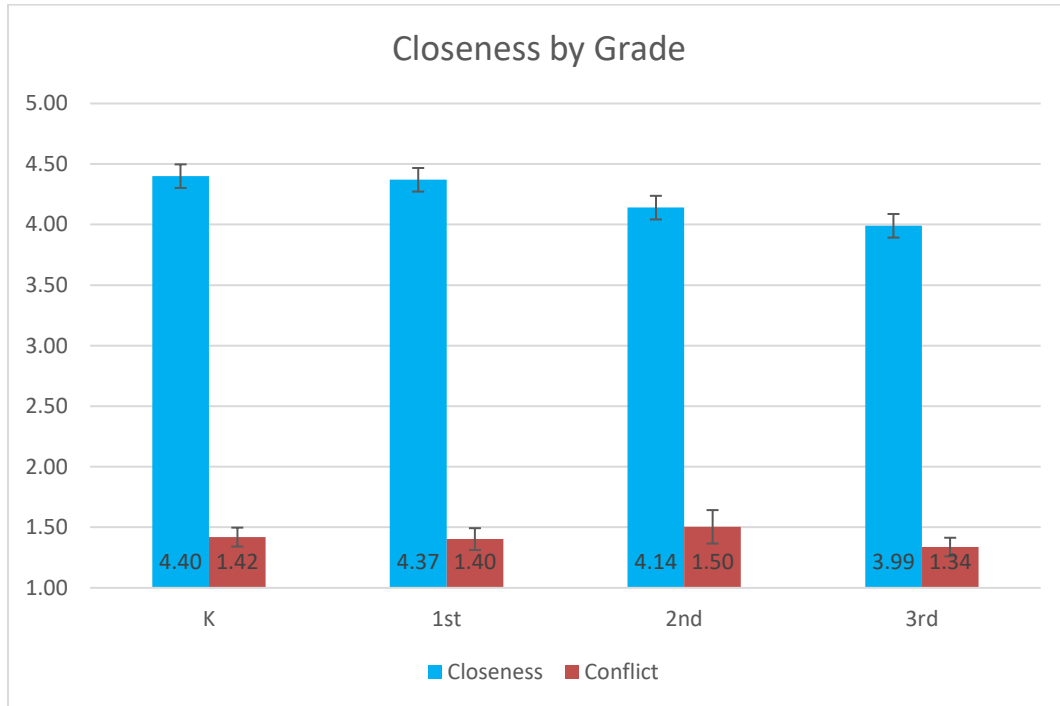
**Table 19: Crosstabs of three-level ethnic match and whether students have one or two teachers**

		Three-level ethnic match			Total
		No match	Partial match	Full match	
Number of Teachers	One	35	0	29	64
	Two	44	92	3	139
Total		79	92	32	203

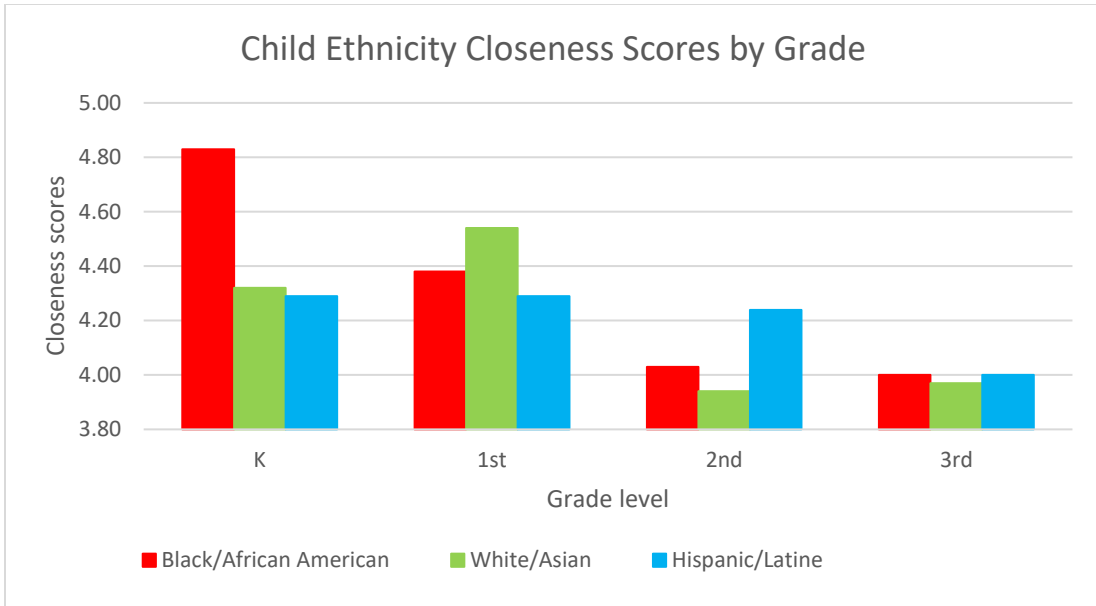
**Table 20: Mean differences for conflict and closeness between students with ethnically matched and mismatched teachers – Latine students only**

	Conflict		Closeness	
	<i>n</i>	<i>M (SD)</i>	<i>n</i>	<i>M (SD)</i>
<i>Students with one teacher</i>				
Matched	21	1.67 (.80)	21	4.42 (.42)
Mismatched	8	1.32 (.51)	8	4.69 (.30)
<i>Three-level ethnic match</i>				
No match	26	1.66 (.93)	26	4.17 (.61)
Partial match	70	1.28 (.52)	70	4.19 (.47)
Full match	21	1.67 (.80)	21	4.42 (.42)
<i>Two teachers but only</i>				
<i>matched with one</i>				
Matched teacher	70	1.29 (.58)	70	4.14 (.59)
Mismatched teacher	70	1.27 (.56)	70	4.24 (.57)

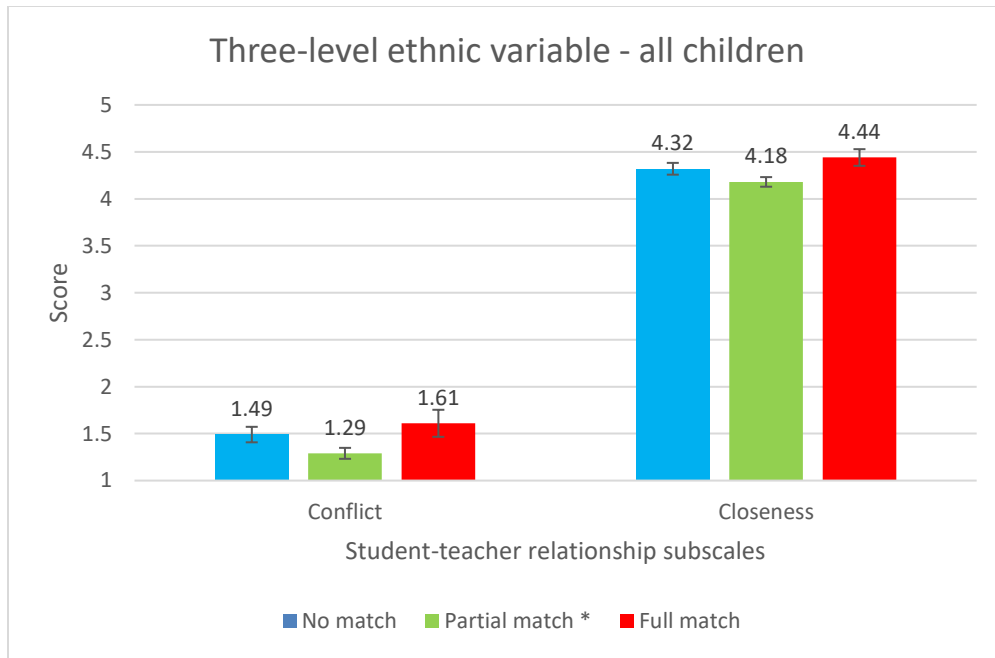
## FIGURES



**Figure 1: Closeness by Grade**



**Figure 2: Child Ethnicity Closeness Scores by Grade**



**Figure 3: Three-level Ethnic Variable – All Students**



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## **BIOGRAPHY**

Diego Josue Ordonez Rojas received his Bachelor of Arts in Sociology and Psychology from Portland State University in 2020, then went on to George Mason University to work toward his Master of Arts in Applied Developmental Psychology.