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Relationship influences on teachers' perceptions of academic competence in academically at-risk minority and majority first grade students

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Abstract

This study examined the associations among child demographic variables, teacher perceptions of parent–teacher and student–teacher relationship quality, and teacher perceptions of children's academic abilities in an ethnically diverse sample of 607 academically at-risk first grade children. Relative to relationships with African American children and parents, teachers rated their relationships with White and Hispanic children and parents more positively. Measures of relationship quality added unique variance to teachers' perceptions of children's abilities, controlling for parent educational level and measured ability. Relationship variables fully mediated the association between African American status and teachers' perceptions of children's abilities. Implications of the findings for teacher in-service and professional development and for parent involvement programs are discussed.

Keywords

Achievement; School readiness; Teacher–student relationship; Parent involvement; Home–school relationship; Teacher expectations

Introduction

Children who enter first grade with below average literacy skills are at increased risk of low academic performance throughout their school careers (Alexander, Entwisle, & Horsey, 1997; Entwisle & Alexander, 1988; Finn, 1989). Minority and low socioeconomic status children often enter school with lower academic competencies as well as social and emotional readiness competencies (Evans, 2004; Stipek, 1997). Furthermore, many of these children continue along low performance pathways throughout their school careers [National Center for Educational Statistics (NCES), 2004].

Given that academic and social success in kindergarten and first grade forecasts future school trajectories, researchers have sought to identify school and classroom factors that either exacerbate or ameliorate individual differences in readiness competencies. Extensive research supports the view that teachers' achievement expectations in the early grades are among those factors that influence students' current and future school adjustment outcomes (e.g., Jussim, Eccles, & Madon, 1996). However, little is known about factors, other than students' abilities and background variables, that shape teachers' achievement expectations. Given the influence of teacher achievement expectations on children's academic trajectories,

it is important to understand factors that influence these perceptions. This study investigates the role of teacher perceptions of student–teacher and parent–teacher relationships in influencing teachers’ perceptions of first grade children’s academic abilities.

Teacher academic expectations

Research spanning nearly four decades demonstrates the effect of teacher expectations for students’ achievement on children’s learning (for reviews see Brophy, 1983; Jussim et al., 1996; Jussim & Harber, 2005). The conclusion reached by Rosenthal and Jacobson (1968) that teachers’ perceptions of students’ abilities are self-fulfilling has been challenged by scholars who point to methodological flaws in early research on teacher expectations (Elashoff & Snow, 1971; Snow, 1995; Wineburg, 1987). However, results of literally dozens of well designed studies using both experimental and naturalistic designs consistently support the conclusion that teacher perceptions of children’s achievement, whether accurate or not, affect students’ grades and scores on standardized achievement tests (Jussim & Harber, 2005). The effects are neither as dramatic as portrayed by some educators (Rist, 1970) nor as inconsequential as argued by others (Wineburg, 1987), and they do not have the same magnitude of effect on all students.

In Brophy’s (1983) narrative review, he concluded that between 5% and 10% of the variance in achievement can be accounted for by teacher expectancy effects. Jussim and Harber (2005) concluded that Brophy’s estimate has held up well in numerous meta-analyses conducted in the intervening past two decades. However, an average effect may mask important variability within and across classrooms. Teacher expectations have their strongest effects in the early grades and in classrooms in which teachers engage in more differential treatment of high and low ability students (Kuklinski & Weinstein, 2001). In addition, expectancy effects appear strongest for minority and low SES children (Gill & Reynolds, 1999; Jussim et al., 1996). Effects may also be stronger for low achieving students. In a study of middle school students, Madon, Jussim, and Eccles (1997) found a self-fulfilling prophecy effect size among low achievers of .26 on math achievement, whereas the self-fulfilling prophecy effect size among high achievers was only .08. African American or low SES children who are also low achieving appear to be the most affected by teacher expectations, with effect sizes for math achievement ranging from .4 to .6 (Jussim et al., 1996).

Considerable research has identified ways in which teachers treat high and low expectation students differently that may account for the expectancy-confirming impact of teacher expectations. For example, relative to low expectancy students, teachers demonstrate a positive bias in evaluating the work of high expectancy students (Jussim, 1989; Jussim & Eccles, 1992; Jussim et al., 1996); provide more response opportunities and praise and less criticism (Brophy, 1983); provide more challenging instruction (Brophy, 1983; Jussim, 1989), and interact in ways that are warmer and more accepting (Babad, 1992). In addition to the direct effect of expectations on achievement through differential curricular exposure, expectancy effects may be indirect through social-cognitive processes. Several researchers have proposed that children’s interpretations of differential treatment have implications for their perceptions of their own abilities and performance expectations (Weinstein & Middlestadt, 1979). Support for this view comes from studies reporting that students’ perceptions of teachers’ perceptions of their abilities partially mediate expectancy effects, especially in older grades (Kuklinski & Weinstein, 2001).

It is important to note that teachers’ achievement expectations are most strongly predicted by students’ actual abilities. In recognition of this fact, expectancy researchers typically have considered a significant relation between teacher perceptions of ability and subsequent achievement beyond what prior levels of that variable would suggest, as evidence of an

expectancy effect (Alexander & Entwisle, 1988; Jussim et al., 1996; Kuklinski & Weinstein, 2001). These studies offer strong evidence that factors other than achievement influence teachers' achievement expectations and that these expectations affect student learning regardless of whether they are based on students' academic skills. Jussim and Harber (2005) estimate that about 75% of the overall predictive validity of teacher expectations for standardized test scores reflects accuracy, and the remaining 25% reflects self-fulfilling prophecy.

Some researchers (e.g., Alexander, Entwisle, & Thompson, 1987) have suggested that low expectations are a factor in low socioeconomic status and minority children's persistently low academic performance. Alexander et al. (1987) found that among urban first graders, achievement discrepancies between African American and White children were greatest in classrooms taught by high socioeconomic status teachers and that this effect was stronger for teacher-determined grades than for scores on standardized tests. Other researchers (Murray, 1996) have documented race-based teacher perceptions of students. For example, Jackson (2002) found that Euro-American elementary teachers' expectations for the causes of school problems differ based on student ethnicity. Teachers tended to attribute Euro-American children's problem behaviors to situational factors (e.g., child has problems at home) and African American and Hispanic children's problem behaviors to within-child factors (i.e., personality and motivation). Previous studies have found that teachers are less accurate in rating minority children's academic ability than the ability of Caucasian children and react differently to the same behaviors exhibited by African American and Caucasian children (Murray, 1996; Partenio & Taylor, 1985). These findings take on increased significance in light of research indicating that the effects of student-teacher relationship dynamics on achievement are stronger for African American and low SES children than for majority children and higher SES children (Gill & Reynolds, 1999; Jussim et al., 1996).

The influence of teacher expectations on children's achievement is best viewed from a transactional perspective (Dodge & Pettit, 2003). That is, higher student achievement leads to higher teacher expectations, which leads to more challenging, warm, and responsive instruction, which leads to higher achievement (Jussim et al., 1996). According to this transactional view, differing teacher expectations at the beginning of school serve to magnify initial achievement differences. When these expectations are based, in part, on children's background variables such as ethnicity and SES, they contribute to the widening disparities in educational attainment between majority and minority students and between high and low SES students. Thus, it is important to understand processes that influence teachers' achievement expectations for students.

Student-teacher relationships

Evidence accumulated during the past decade has shown that the quality of students' relationships with their teachers is associated with current and future adjustment to schools. Children who experience supportive, positive relationships with their teachers have more positive attitudes toward school (Connell & Wellborn, 1991; Ryan, Stiller, & Lynch, 1994), are more academically engaged and achieve more (Midgley, Feldlaufer, & Eccles, 1989), and enjoy higher levels of peer acceptance (Howes, Hamilton, & Matheson, 1994; Hughes, Cavell, & Willson, 2001). Conversely, students whose relationships with teachers are characterized by conflict are more likely to drop out of school, to be retained in grade, and to experience peer rejection (Hughes et al., 2001; Ladd, Birch, & Buhs, 1999; Pianta, Steinberg, & Rollins, 1995). The associations between teacher perceptions of student-teacher relationship quality and subsequent adjustment hold when previous levels of adjustment are statistically controlled (Hughes, Cavell, & Jackson, 1999; Ladd et al., 1999; Meehan, Hughes, & Cavell, 2003). Similar to teacher expectancy effects, student-teacher relationship effects may be strongest in the early grades, although no studies have directly

compared effect sizes at different ages. Silver, Measelle, Armstrong, and Essex (2005) reported that teacher perceptions of higher levels of student–teacher conflict in kindergarten predicted positive growth trajectories for externalizing problems from kindergarten to 3rd grade. Hamre and Pianta (2001) found an effect for teacher perceptions of student–teacher relationship quality assessed in first grade eight years later, controlling for relevant baseline child characteristics. Similarly, student–teacher relationship quality may be more predictive of future school trajectories for minority than for majority students (Burchinal, Peisner-Feinberg, Pianta, & Howes, 2002; Meehan et al., 2003) and for children with less supportive parent–child relationships (Burchinal et al., 2002; Copeland-Mitchell, Denham, & DeMulder, 1997). Thus, children who are of a minority group and are more often viewed by teachers as least capable may be most affected by teacher expectations.

Current research has focused on the effect of student–teacher relationships on students and, to a lesser degree, on antecedents of student–teacher relationship quality (i.e., child and teacher characteristics that predict a supportive student–teacher relationship). For example, researchers cite differences in student–teacher relationship quality based on child gender (Birch & Ladd, 1997), race (Entwisle & Alexander, 1988; Saft & Pianta, 2001), temperament (Brophy, 1983), behavior problems (Howes, 2000), and teacher race and socioeconomic status (Alexander et al., 1987). For example, African American children are less likely to experience supportive relationships with teachers, especially when their teacher is non-African American (Saft & Pianta, 2001). Entwisle and Alexander (1988) found that first grade teachers responded differently to African American and White children displaying the same behavior, indicating they interpret behavior differently based on race.

Additionally, girls are more likely to experience close relationships with teachers than are boys, whose relationships are characterized by higher levels of conflict (Birch & Ladd, 1998, Silver et al., 2005). Furthermore, the dimensions of student–teacher relationships that are most predictive of children’s school trajectories differ for boys and girls. For boys, level of relational conflict in kindergarten is more predictive of future adjustment, whereas for girls, level of relational support is more predictive of adjustment in future years (Hamre & Pianta, 2001).

Home–school relationship

Extensive research documents positive associations between parent–teacher relationships and children’s academic and behavioral adjustment, especially in the early grades (for review see Henderson & Mapp, 2004). In a study of low-income kindergarten grade classrooms, Hauser-Cram, Sirin, and Stipek (2003) investigated the association between teachers’ perceptions of children’s abilities and their perceptions of congruence between their education-related values and those of parents. Controlling for students’ assessed academic skills and socioeconomic status, teachers rated children as less competent when they perceived value differences with parents. The authors concluded that the mismatch between background of the teachers and the students leads to their perceived differences in educational-related values, which, in turn, influences the teachers’ perceptions of children’s academic abilities.

The purpose of the present investigation was to assess predictors of teachers’ perceptions of academic ability for students in an ethnically and racially diverse sample of first grade students. First, we examined the associations between student racial/ethnic classification (African American, Hispanic, and White), socioeconomic status, relationship variables, and teachers’ perceptions of children’s academic ability. Second, we investigated whether relationship variables uniquely predicted teachers’ perceptions of children’s abilities, after controlling for children’s measured abilities and background variables. Third, we determined whether these associations between relationship constructs and teacher

expectancies differ on the basis of student racial/ethnic membership (hereafter referred to simply as ethnic membership). Finally, we tested a model that posits that relationship variables mediate the association between student ethnic membership and teachers' academic expectancies, after controlling for students' assessed abilities.

This study advances our understanding of the formation of teacher achievement expectations in several ways. It is the first study to examine the associations between teachers' perceptions of children's abilities and the affective quality of their relationships with students and their parents. We examined these relations in a sample with adequate representation of each of the three largest ethnic groups in U.S. schools (African American, Hispanic, and White). In addition, we included parent education level when investigating the associations between ethnic group membership and both relationship variables and teacher perceptions of ability, based on findings that racial and ethnic differences are often explained by socioeconomic variables (Lara-Cinisomo et al., 2004).

Methods

Participants

Participants were 607 (52.1% male) first grade children attending one of three school districts (1 urban, 2 small city) in Southwest Texas, drawn from a larger ($N = 784$) sample of children participating in a longitudinal study examining the impact of grade retention on academic achievement. Participants were recruited across two sequential cohorts in first grade during the fall of 2001 and 2002. Children were eligible to participate in the longitudinal study if they scored below the median score on a state approved district-administered measure of literacy. On the basis of this criterion, we consider the sample to be academically at risk. Of 1374 children who were eligible to participate in the study, written parental consent was obtained for 784 (57%). Children with and without consent to participate did not differ on age, gender, ethnic status, family language, language status (i.e., limited english proficiency), or literacy test scores. Children with consent were somewhat more likely to receive free or reduced lunch (62%) than children without consent (38%), perhaps because parents of participants received \$25.00 for completing questionnaires.

A total of 642 participants had complete data on teacher questionnaires and an individually administered test of academic achievement. Children with and without complete data did not differ on any demographic or achievement measures. Participants were those 607 participants with complete data who were either African American ($N = 147$), White Hispanic (Hispanic, $N = 236$), or White-Non-Hispanic (White, $N = 224$), based on official school records. At entrance to first grade, children's mean age was 6.57 ($SD = .39$) years. The mean score of children's intelligence as measured with the Universal Nonverbal Intelligence Test (Bracken & McCallum, 1998) was 92.9 ($SD = 14.05$), confirming the academically at-risk status of the sample. Based on family income, 57.6% of participants were eligible for free or reduced lunch. For 37%, the highest educational level in the household was high school or below. The ethnic composition for the 173 teachers (93.4% female) completing the teacher questionnaires was 145 (79.2%) White, 20 (10.9%) Hispanic, 4 (2.2%) African American, 2 (1.1%) Asian, 1(0.5%) American, and 1 (0.5%) Other.

Measures

During the Spring semester of first grade, trained research staff individually administered the Woodcock Johnson III Broad Reading and Broad Math tests or the comparable Spanish test, the Bateria Woodcock-Munoz. Also during the Spring semester, teachers were mailed a questionnaire that included the following scales: teacher perception of student-teacher

support, teacher perception of parent–teacher alliance and parent involvement in school, and teacher perception of student ability. Teachers received \$25.00 for completing and returning each student questionnaire. A questionnaire sent to parents obtained information on the highest level of parent education in the home.

Academic achievement

The WJ-III Achievement Battery (Woodcock, McGrew, & Mather, 2001) is an individually administered measure of academic achievement for individuals ages 2 to adulthood. For our purposes we only used the Broad Reading W Scores (Letter–Word Identification, Reading Fluency, Passage Comprehension subtests) and the Broad Math W Scores (Calculations, Math Fluency, and Math Calculation Skills subtests). W scores are based on the Rasch measurement model, yielding an equal interval scale. Extensive research documents the reliability and construct validity of the WJ-III (Woodcock & Johnson, 1989; Woodcock et al., 2001).

The Bateria Woodcock–Muñoz: Pruebas de aprovechamiento-Revisada (Woodcock & Munoz, 1996) is the parallel Spanish version of the *Woodcock–Johnson Tests of Achievement-Revised* (Woodcock & Johnson, 1989), the precursor of the WJ-III. If children or their parents spoke any Spanish, children were administered the Woodcock–Munoz Language Test (Woodcock & Munoz-Sandoval, 1993) to determine the child’s language proficiency. Based on the results of this test, 79 children were administered the Bateria. The Woodcock Compuscore program yields W scores for the *Bateria-R* that are comparable to W scores on the *WJ-R* (Woodcock & Mather, 1989, 1990).

Teacher perception of achievement

Teachers were asked to describe child-participants’ academic performance on 3 items using a Likert-type scale ranging from 1 (almost never) to 6 (almost always). The items were “Performing academically at grade level”, “Able to read grade level material and answer questions about what he/she has read” and “Able to solve grade level math problems”. The internal consistency (alpha) of the scale for this sample was .94.

Teacher perceived student–teacher support

The 22-item Teacher Relationship Inventory (TRI; Hughes et al., 2001) is based on the Network of Relationships Inventory (Buhrmester & Furman, 1987). Teachers indicate on a 5-point Likert-type scale their level of support (16 items) or conflict (6 items) in their relationships with individual students. An exploratory factor analysis on 335 participants from the first cohort of the larger study from which current participants were drawn suggested three factors: support (13 items), intimacy (3 items) and conflict (6 items). Results of confirmatory factor analysis on 449 participants from the second cohort of the larger study found that the three factor model provided a good fit for the data ($\chi^2 = 697.803$ (204), $p < .001$; CFI = .92, NFI = .89, RMSEA = .074). For the combined cohorts, the fit indices were also good: CFI = .89; NFI = .87, and RMSEA = .06. Furthermore, the null hypothesis of factor invariance across cohorts and times could be retained at the .01 level. Because the intimacy and support scales were moderately correlated (.43) and both assess positive relatedness, a total support score was computed as the mean item score on these 16 items. The internal consistency was .92 for the support score and .60 for the conflict score. Example support scale items include “I enjoy being with this child”; “This child gives me many opportunities to praise him or her”; “I find I am able to nurture this child”; and “This child talks to me about things he/she doesn’t want others to know”. In a previous study with second and 3rd grade children, the TRI Support score correlated moderately with teachers’ reports of student–teacher relational conflict ($r = -.56$) and with peer nominations of student–teacher relationship support ($r = .53$) (Hughes, Yoon, and Cavell, 1999, April). In a

longitudinal study of behaviorally at-risk elementary students, the TRI Support score predicted changes in behavioral adjustment and peer relationships (Meehan et al., 2003).

We used only the Support Scale, based on our own (Hughes et al., 1999,2001) and others' (Birch & Ladd, 1998;Silver et al., 2005) findings that teacher reports of relational conflict are difficult to discriminate from their reports of child conduct problems. Silver et al. (2005) suggested that teacher reports of conflict in the teacher–child relationship may reflect child-driven effects on teachers' interpretations of relationships, whereas teacher reports of closeness may be “more representative of a teacher's ability to foster trust and warmth with a child” (p. 54).

Teacher perception of parent–teacher relationship

We developed the teacher-report home school relationship questionnaire to assess parent involvement in education. The measure was initially derived from a pool of 28 items. Twenty-one items were adapted from the Parent–Teacher Involvement Questionnaire–Teacher-Report (Kohl, Lengua, & McMahon, 2000), and 7 items were adapted from the teacher version of the Joining Scale of the Parent–Teacher Relationship Scale (Vickers & Minke, 1995). An exploratory factor analysis based on the teachers of 675 first grade children participating in the larger study yielded a 3-factor solution that accounted for 55.5% of the variance. The three factors were Alliance (8 items; $\alpha = .93$) (sample item: “I can talk and be heard by this parent”), General Parent Involvement (8 items; $\alpha = .75$) (sample item: “How often does this parent ask questions or make suggestions about his/her child”), and Teacher Initiation (4 items; $\alpha = .66$) (sample item: “How often do you tell this parent when you are concerned”). A confirmatory factor analysis on a second sample of teachers of 898 first and second grade children found that the three factor model provided an adequate fit for the data ($\chi^2 = 1216.608$ (167), $p < .001$; CFI = .86, RMSEA = .084). Furthermore, the factor structure was invariant across times (χ^2 difference test = of 27 (20), $p = .135$). Because the teacher initiative scale assesses a teacher's involvement behaviors toward parents in general rather than a teacher's relationships with individual parents, only the Alliance and General Parent Involvement Scales were used in this study.

Results

Preliminary analysis and overview of data analytic approach

The data set was examined for outliers and violations to the assumptions of multivariate normality. Univariate normality was assessed through the use of SPSS, which yielded measures of skewness that ranged from $-.65$ to $.70$ and measures of kurtosis that ranged from $-.88$ to $.60$. As such, all variables met standards of univariate normality as outlined by Kline (1998). Inter-correlations together with the means and standard deviations for all analysis variables are available in Table 1.

First, we present ethnic and gender group differences on relationship measures and teacher perceptions of students' abilities. Second, we used hierarchical regression analysis to investigate whether relationship variables explain individual differences in teacher perceptions of children's academic abilities after controlling for children's individually assessed achievement in reading and math and whether gender or ethnicity moderates these associations. Finally, we used path analysis to test a model positing that relationship variables mediate the association between children's ethnic membership and teachers' perceptions of abilities.

Ethnic and gender differences

To test for ethnic and gender group differences on teacher perceived student–teacher support, parent–teacher alliance, parent involvement, and child abilities, four separate three by two analysis of covariance models were conducted controlling for the parents' highest level of education. The *F*-statistics for these analyses and the adjusted means for all four analysis variables by gender and ethnicity are reported in Table 2. Ethnicity was found to be a significant factor on all four variables of interest ($p < .001$). White and Hispanic students were rated by teachers as experiencing more teacher support and as having higher academic abilities and higher parent–teacher alliance than African American students. Teachers rated White students' parents as more involved than parents of Hispanic students, who were rated as more involved than parents of African American students.

Gender was found to be a significant predictor of teachers' perceptions of parent–teacher alliance ($p < .05$) and student–teacher support ($p < .001$). Results suggest that girls experience higher student–teacher support and higher parent–teacher alliance than do boys. No interaction effect between ethnicity and gender was found on any of the three relationship variables.

Predicting teacher perceptions of ability from teacher perceptions of relationships

The bivariate correlations of all the variables used in the regression analyses are reported in Table 1. Due to the dispersion of students across classrooms, we were not able to apply multi-level modeling methods that take advantage that students are nested in classrooms. With three ethnic groups, only two orthogonal contrasts for ethnicity are possible (Cohen, Cohen, West, & Aiken, 2003). Two orthogonal ethnic contrasts were formed to compare the minority versus majority groups (African American = 1, Hispanic = 1, White = -2), and African American vs. Hispanic groups (African American = 1, Hispanic = -1, White = 0). Separate hierarchical regression analyses were run for each of the three relationship variables. Teacher perceptions of child ability were the dependent variable in each hierarchical regression analysis. For each analysis, first, we entered the child's Broad Reading and Broad Math W scores. Next, we entered child gender, ethnic contrast, and parent educational level. In step 3, we entered the relationship score, and in step 4, the two-way interaction term for ethnicity contrasts and gender with the relationship variable. It should be noted that our decision to run separate regression analyses for different relationship variables rather than to include them all in one regression was informed by Aguinis and Pierce (1998), who demonstrated that the statistical power of moderated multiple regression to detect the effects of dichotomous moderator variables is significantly diminished by the main and interactive effects of sample size and magnitude of the moderating effect.

Table 3 reports the beta weights and *R*-square changes for the analyses involving each of the three relationship variables (teacher perceptions of teacher–parent alliance, parent involvement, and student–teacher support). Models 1 and 2 are the same for each analysis. Because there were no interactions between ethnicity and gender with relationship variables, we only present the beta weights for Model 3. Consistent with previous literature (Jussim et al., 1996), children's measured abilities are the strongest predictors of teachers' perceptions of children's abilities, accounting for 28% of the variance. In Model 2, parent education and the African American vs. Hispanic ethnic contrast made unique contributions to predicting teachers' perceptions of children's abilities. Next we present results from Model 3 for each relationship variable.

Teacher perception of parent–teacher alliance

After controlling for WJ-III (or Bateria-R) scores and demographic variables, teacher perceptions of parent–teacher alliance accounted for an additional 6.9% of the variance in teacher ratings of student ability. In Model 3, WJ reading ($t = 10.754, p < .001$), parent education ($t = 2.241, p = .025$), and alliance ($t = 8.156, p < .001$) made unique contributions. The ethnic contrasts did not make a unique contribution to the prediction of teacher perceptions of child ability above the effects of other demographic variables, measured achievement, and parent–teacher alliance.

Teacher perception of parent involvement

After controlling for WJ-III scores and demographic variables, parent involvement explained an additional 3.2% of the variance in teacher perception of child ability. WJ reading ($t = 10.600, p < .001$), Hispanic vs. African American ethnic contrast ($t = 2.321, p = .021$), parent education ($t = 2.682, p = .008$), and parent involvement ($t = 5.345, p < .001$) made unique contributions to the prediction of teachers' perceptions of children's abilities. African American status was associated with lower teacher perceptions of child ability above other demographic variables, measured achievement, and parent involvement.

Teacher perception of student–teacher support

After controlling for WJ-III scores and demographic variables, student–teacher support contributed an additional 8.8% of the variance in teacher perceptions of children's abilities. In Model 3, WJ reading ($t = 11.502, p < .001$), gender ($t = 2.724, p = .007$), parent education ($t = 3.583, p < .001$), and student–teacher support ($t = 9.330, p < .001$) made unique contributions. The ethnic contrasts did not make a unique contribution to the prediction of teacher perceptions of child ability above the effects of other demographic variables, measured achievement, and student–teacher support.

Supplementary mediation analyses

An analysis of the correlations among ethnic contrasts, relationship variables, and teacher perceptions suggested that relationship variables may mediate the association between the African American–Hispanic contrast and teacher perceptions of child ability. Specifically, an analysis of the decrement in the beta coefficients for this contrast from Model 2 to Model 3 (without and with the relationship variables) in the analyses involving parent–teacher alliance and student–teacher support suggested these two relationship variables mediate the association between this ethnic contrast and teacher perceptions of child ability. Therefore, we used path analysis to test a dual mediation model in which teacher perceptions of parent–teacher and student–teacher relationship qualities account for the association between African American status (0=White or Hispanic; 1 = African American) and teacher perceptions of child abilities. We elected to create this new contrast based on both the regression analyses (in which only the Hispanic vs. African American contrast was significant at step 2) and the ANCOVA results showing that African American children differed from the other ethnic groups on mean levels of teacher perceptions of alliance, support, and child ability. This analysis permits an estimate of the joint mediation of teacher perceptions of parent–teacher and student–teacher relationships on the association between African American status and teacher perceptions of child abilities.

Three nested path models were tested: a direct-effect model in which all the mediation paths through the parent–teacher alliance and student–teacher support were constrained to zero; an indirect-effect model in which all the mediation paths were present but the direct effect from the African American status to teachers' perceptions of children abilities was fixed at zero; and a mediation model where all the paths were freed to be estimated from the sample data.

All the path models were fitted using AMOS (Version 5.0). All the direct and indirect effects were statistically significant in the individual model. The indirect-effect model [$\chi^2(4) = 178.2$] and the mediation model [$\chi^2(3) = 176.6$] provided a significantly better fit to the data than did the direct-effect model [$\chi^2(7) = 324.7, 7$] ($p < .001$). Furthermore, the standardized path coefficient for the path from African American status to teacher perceptions of child abilities dropped from $-.10$ in the direct paths model to $-.04$ (ns) in the mediation model, confirming the existence of the mediation effects. The mediation model that includes the standardized path coefficients is depicted in Fig. 1.

Discussion

This study produced several important findings. This is the first study to report ethnic group differences in teacher perceptions of parent–teacher and student–teacher relationship quality after controlling for parent educational level. In each case, teachers report higher relationship quality with Hispanic and White children and their parents, relative to African American children and their parents. These findings are consistent with studies reporting more negative teacher perceptions of African American children’s personality traits, adaptive competencies, and learning ability (Horwitz, Bility, Plichta, Leaf, & Haynes, 1998). Fewer supportive interactions with teachers may negatively impact African American children’s peer relationships, positive self-identity, and motivation (Comer, 1989; McCarthy & Crichlow, 1993; Meehan et al., 2003).

As expected, we found that relationship variables predicted teacher perceptions of academic ability above children’s measured achievement. Children’s measured achievement accounted for 23% of the variance in teacher perceptions of academic ability in the classroom. Even so, each relationship variable accounted for additional variance. Controlling for children’s actual abilities, parent educational level, and child ethnicity and gender, when teachers viewed their relationships with children and parents as less affectively positive, they rated children as less competent academically. In separate analyses, these variables accounted for 3.2% (parent involvement), 6.9 % (parent–teacher alliance) and 8.8 % (student–teacher support) additional variance in teachers’ achievement expectations. It is interesting to note that teacher perceptions of the quality of their relationships with parents appear to be a stronger predictor of teacher perceptions of child ability than teacher perceptions of parents’ actual involvement in school. Teachers’ comfort with parents, in terms of perceived shared goals and values and ease of communication, may translate into higher teacher expectations more easily than does their perception of parents’ level of actual school involvement.

Using path analyses and controlling for measured ability, both teacher rated parent–teacher alliance and student–teacher support accounted for the association between African American status and teacher perceptions of ability. Given the strong evidence that teacher perceptions of ability have consequences for children’s academic trajectories, these findings suggest that improving home–school and student–teacher relationships offer a possible route for narrowing the achievement gap for African American students.

Several possibilities may explain the lower social relatedness of African American students and their parents. Regardless of source or method, African American children in the early grades exhibit more under-controlled behavior and have more active and assertive interactional styles (Alexander, et al., 1987; Hudley, 1993; Pigott & Cowen, 2000). Through a transactional process, initial differences in African American children’s behavioral styles may contribute to less satisfactory connections across home and school and within the classroom, which lead to diminished teacher perceptions of child ability.

Differences in the parenting practices, communication styles, and educational beliefs between our predominantly (80%) White teachers and African American parents are a second possibility for lower teacher relatedness for African American students and parents. When parties do not share a common culture, it is more difficult to establish shared understanding and to build trust. Research supporting this interpretation has found that ethnic congruence between teachers and students is associated with higher teacher ratings of closeness and lower ratings of student conflict and dependency (Saft & Pianta, 2001).

Study limitations

These findings need to be interpreted in the context of study limitations. The most important limitation is the reliance on one source, the teacher, to report on both relationship constructs and perceptions of child ability. To partially address this limitation, we re-analyzed the path model using a composite measure of student–teacher support based on both teacher report of the relationship and a measure of student–teacher support derived from sociometric assessments (i.e., peer ratings). The sociometric score was based on individual interviews with classmates of study children using procedures described in Hughes et al. (2001). Specifically, peers were asked to nominate as few or as many children as they wanted who best fit different behavioral descriptors, including the teacher support item of interest in this study: “These children get along well with their teachers. They like to talk to their teachers, and their teachers enjoy spending time with them. What kids in your class are like this”? Each classmate received a student–teacher support score based on the number of nominations that child received. Sociometric scores were standardized within classrooms. Because this procedure yields reliable scores when a minimum of 40% of classmates participate in the sociometric interviews (Terry, 1999), data were available only for those 484 children who were in classrooms that had a minimum of 40% participation. The composite measure of student–teacher support was the standardized score on the TRI Support Scale and the standardized peer nomination support score ($r=.31$).

When the path model was reanalyzed using the composite measure of student–teacher support, the results were virtually unchanged. The standardized path coefficient from the African American contrast to student–teacher support changed from $-.18$ to $-.15$ ($p < .001$). The path coefficient from student–teacher support to teacher perception of achievement changed from $.21$ to $.22$ ($p < .001$). The standardized path coefficient from the African American contrast to parent–teacher alliance changed from $-.22$ to $-.17$ ($p < .001$) and the path coefficient from parent–teacher alliance to teacher perception of achievement changed from $.20$ to $.16$ ($p < .001$). The standardized coefficient from the African American contrast to teacher perception of achievement remained unchanged at $.04$ ($p=.358$).

A second limitation of the study is the lack of sufficient ethnic diversity among the teachers to investigate whether these findings might be moderated by student–teacher ethnic match. Saft and Pianta (2001) found that teachers rated relationships with children whose ethnicity matched theirs as closer and less conflicted than they did for children whose ethnicity was different from theirs. With only six African American children taught by African American teachers, we were not able to investigate the role of ethnic congruence on teacher perceptions of relationship constructs and child ability.

Given that study participants were selected on the basis of scoring below average on a test of early literacy, our findings may not generalize to high achieving students. Also, the cross-sectional nature of our data does not permit conclusions regarding causal pathways. Consistent with transactional models of development, we believe it is most likely that teachers’ perceptions of children’s abilities and relationship processes influence each other in a reciprocal fashion. Indeed, a model in which teacher perceptions of child ability account

for the associations between African American status and teacher perceptions of student–teacher and parent–teacher relationships also provided a good fit to the data. Future longitudinal investigations are needed to determine how teacher perceptions of parent–teacher and student–teacher relationships and teacher academic expectations interact across time in accounting for children’s school careers.

Implications for school practice

The discourse in the school readiness literature has emphasized what children bring to school, in terms of competencies, to the relative neglect of the capacities of classrooms and schools to provide a welcoming and appropriately challenging environment to children. Our findings suggest an increased emphasis on relationship processes may be one means of helping children at risk for academic failure get off to a good start in school. In a national study of school transition practices (Early, Pianta, Taylor, & Cox, 2001), kindergarten and first grade teachers were unlikely to receive training in building home–school relationships. However, those teachers who receive such training were more likely to use all types of strategies to promote parent involvement in schools, including personal contacts with parents. Although this study demonstrates the importance of training to teachers’ efforts, the research basis to guide pre-service and in-service programs to enhance teachers’ abilities to connect with diverse families is quite scant (Boethel, 2003). Developing empirically supported interventions to improve the affective quality of the relationships teachers establish with minority and low SES children represents a critical direction for future research.

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Fig. 1.

The mediation model of student–teacher support and parent–teacher alliance on the relationship between the African American status (African American = 1; Others = 0) and teacher perception of child ability.

Table 1
Inter-correlations and descriptive statistics of the independent variables in regression analyses

Variable	1	2	3	4	5	6	7	8	9	10
1 Teacher-perceived abilities										
2 WJ reading	.526**									
3 WJ Math	.338**	.515**								
4 Gender ^a	-.017	-.113**	.010							
5 Minority contrast	-.089*	-0.062	-.309*	-.064						
6 Hispanic contrast	.196**	.234**	.079	.024	0 ^b					
7 Parent education	.151**	.036	.299**	.038	-.397**	-.127**				
8 Parent-teacher alliance	.401**	.224**	.148**	-.072	-.109**	.171**	.172**			
9 Parent involvement	.313**	.217**	.146**	.005	-.230**	.083*	.201**	.628**		
10 Student-teacher support	.383**	.174**	.093*	-.199**	-.025	.179**	.004	.494**	.319**	
Mean	4.02	96.35	100.58					3.73	2.30	3.73
S.D.	1.41	17.87	13.66					.67	.63	.77

* $p < .05$.

** $p < .01$.

*** $p < .001$.

^aFemales were coded as 0 and males as 1.

^bThe minority-majority contrast (Hispanic and African American as 1 and Caucasian as -2) and Hispanic contrast (African American as 1 while Hispanic as -1 and Caucasian as 0) are orthogonal.

F-statistics and adjusted means for the ethnicity and gender differences on the four variables of interest from ANCOVA

Table 2

Variable	F	Ethnicity		F	Gender	
		African American	Hispanics		Female	Male
		<i>N</i> = 147 <i>M</i> (s.e.)	<i>N</i> = 236 <i>M</i> (s.e.)		<i>N</i> = 291 <i>M</i> (s.e.)	<i>N</i> = 316 <i>M</i> (s.e.)
Parent-teacher alliance	14.27***	3.49 (.05) _a	3.85 (.04) _b	5.226*	3.77 (.04)	3.65 (.04)
Parent involvement	13.59***	2.09 (.05) _a	2.30 (.04) _b	.077	2.29 (.04)	2.27 (.04)
Teacher-student support	12.46***	3.48 (.06) _a	3.86 (.05) _b	27.827***	3.87 (.04)	3.54 (.04)
Teacher-rated achievement	16.74***	3.48 (.11) _a	4.30 (.09) _b	1.219	4.01 (.08)	3.89 (.08)

Means in the same row under Ethnicity that do not share subscripts differ at $p < .05$ in the LSD significant difference comparison. The adjusted means are evaluated at the covariate (highest level of parent education) value of 5.28.

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

Table 3
Beta weights and *R*-square changes of regressing teacher perception of child ability on parent-teacher alliance

	Model 1	Model 2	Model 3	
			Alliance	Involvement Support
<i>R</i>-square change	.283***	.023*	.069***	.088**
Standardized beta weights				
WJ reading	0.48***	0.480***	.429***	.438*** 0.448***
WJ Math	0.09*	0.041	.050	.056 0.038
Gender ^a		0.029	.047	.027 0.090**
Minority vs. majority contrast ^b		− 0.007	.012	.030 0.009
Hispanic vs. AA contrast ^c		0.097**	.052	.081* 0.045
Parent education		0.130***	.082*	.101** 0.128***
Model 3 relationship variable			.279***	.189*** 0.311***

* $p < .05$.

** $p < .01$.

*** $p < .001$.

WJ=Woodcock-Johnson III or Bateria (for Spanish speaking children).

^aFemales were coded as 0 and males as 1.

^bIn the minority-majority contrast Hispanic and African American were coded as 1 and Caucasian as − 2.

^cHispanic vs. AA=Hispanic versus African American (African American as 1 while Hispanic as − 1 and Caucasian as 0).