



Can teacher-child relationships alter the effects of early socioeconomic status on achievement in middle childhood?☆



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ABSTRACT

Using data from the NICHD SECCYD ($N = 1053$), we used two-level hierarchical linear models with site fixed effects to examine whether teacher-child closeness and conflict moderated associations between two indicators of early socioeconomic status (maternal education and family income) and standardized measures of children's math and reading achievement at 54 months, 1st, 3rd, and 5th grades. Children whose mothers had lower levels of education and conflictual relationships with teachers exhibited lower reading achievement, on average, across elementary school. At the same time, children with less educated mothers who experienced increases in teacher-child closeness and decreases in teacher-child conflict exhibited improvements in reading achievement across elementary school. Finally, low teacher-child closeness elevated the risk for poor math achievement posed by low family income. Implications for intervention design and development are discussed.

1. Introduction

Children born into poverty are more likely to begin formal schooling at risk for school failure and remain at risk for academic underachievement throughout elementary school (Rutter & Maughan, 2002; Sabol & Pianta, 2012). Accordingly, policymakers have highlighted the importance of closing income-based achievement gaps when children are young, through high-quality preschool or early elementary school (Reardon, 2011; Waldfogel, 2016). In response, researchers have sought to identify factors that promote school readiness and academic development for children born into families with low socioeconomic status (SES) (Raver et al., 2011). A number of research studies have found that relational factors in early and middle childhood, such as children's relationships with their teachers, may be critical for supporting academic achievement (McCormick, O'Connor, Cappella, & McClowry, 2013; O'Connor, 2010; Pianta & Stuhlman, 2004; Roorda, Koomen, Spilt, & Oort, 2011; Rudasill, 2011). In general, studies have found that children's academic skill development is supported – both concurrently and prospectively – through teacher-child relationships characterized by high levels of closeness and low levels of conflict (Baker, 2006; Hamre & Pianta, 2001; Maldonado-Carreño & Votruba-Drzal, 2011; McCormick & O'Connor, 2015).

The bulk of research on teacher-child relationships and achievement has examined these associations using either large samples made up primarily of middle and upper income students (e.g., Baker, 2006; Curby, Rimm-Kaufman, & Ponitz, 2009; O'Connor & McCartney, 2007; Roorda et al., 2011), or smaller, within-group samples of low-SES children (Hughes & Kwok, 2007;

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Liew, Chen, & Hughes, 2010; McCormick et al., 2013). Few studies have considered differences in associations for children from low and higher SES families and explicitly examined whether teacher-child relationship quality is a protective factor mitigating the elevated risk for poor academic outcomes faced by children from low SES families. Existing work suggests that high-quality teacher-child relationships should benefit all students, regardless of SES (Roorda et al., 2011). Yet, when aiming to apply research findings to efforts to improve academic outcomes for low-income children, it can be more helpful to consider these associations in a risk and resilience framework, guided by ecological theory (Bronfenbrenner & Morris, 1998). In such a model, more so than examining simple associations between teacher-child relationships and academic outcomes, one would be interested in whether teacher-child relationship quality can protect against risk for poor outcomes posed by low SES. Without increased evidence for such a protective effect, it is unclear whether implementing interventions that aim to improve teacher-child relationship quality – spurred by a desire to close early income-based achievement gaps – will actually have the intended compensatory benefits for low-SES children.

In addition, when examining low-income samples, few studies have considered multiple components of family SES, such as maternal education and family income. Although these indicators do overlap with one another for certain families, they also have unique direct and interactive associations with achievement and teacher-child relationship quality (Bradley & Corwyn, 2002; El-Sheikh et al., 2013; Von Rueden, Gosch, Rajmil, Bisegger, & Ravens-Sieberer, 2006). Past studies have generally not found differential effects of teacher-child relationship quality on academic outcomes and learning behaviors (e.g., Cornelius-White, 2007; Garner & Waajid, 2008; Ladd & Burgess, 2001). Yet, prior work has not considered multiple components of SES, typically relying on indicators of free and reduced price lunch eligibility and/or a proxy for family income in their operationalization of SES. Failing to incorporate these distinctions in research studies may mask important implications for targeting and adapting educational programs and policies focused explicitly on teacher-child relationships in elementary school settings serving low-SES children (Harding, Morris, & Hughes, 2015).

Indeed, the components of SES are not perfectly correlated. For example, a family's head of household might be highly educated but have experienced a recent job loss and have a low income (Duncan & Magnuson, 2003, 2012). Exploring the separate components of SES is important because they can have unique relationships with particular developmental outcomes and can influence these outcomes through different processes (Hoff, Laursen, & Tardif, 2002). Indeed, Duncan and Magnuson (2003, 2012) have argued that a key limitation of research linking child SES to future outcomes is the dependence on a sole measure of socioeconomic status. It has only been through recent avenues that researchers have uncovered unique mechanisms explaining associations between differing components of SES (e.g., maternal education, family income) and children's outcomes in middle childhood and into adolescence and adulthood (Dahl & Lochner, 2012; Harding et al., 2015). For example, Gershoff, Aber, Raver, and Lennon (2007) have found that early family income relates to children's academic outcomes through mechanisms such as parental social-emotional competence and material hardship. In contrast, research by Magnuson (2007) suggests that early maternal education predicts children's early achievement through engagement in cognitively stimulating and in-home educational activities. Development of interventions to enhance student outcomes can be stifled when SES is only understood through one singular measure, or even a composite measure of maternal education and family income, because intervention resources may be limited such that they cannot be directed at multiple SES-related risk factors.

In considering these questions, it is particularly important to use rigorous longitudinal methods that allow researchers to look at both average and time-varying associations between SES, teacher-child relationship quality, and academic achievement as children move from infancy to early childhood, and into middle childhood. Accordingly, the current study will use a longitudinal framework to build on previous research and help elucidate whether teacher-child closeness and conflict do protect against or exacerbate the negative effects of two indicators of low SES – maternal education and family income – on standardized measures of children's math and reading achievement in middle childhood.

1.1. Socioeconomic status and academic achievement in a longitudinal framework

It is well established in the literature that low SES in early childhood – measured through indicators like family education and income (Duncan & Murnane, 2011)¹ – places children at-risk for poor achievement outcomes in early and middle childhood (Duncan & Magnuson, 2013a, 2013b; Herbers et al., 2012; Yoshikawa, Aber, & Beardslee, 2012). Emerging research suggests the importance of considering the role that very early SES plays in development. Indeed, children's experiences in infancy and early brain development (Blair & Raver, 2015; Luby et al., 2013) are critical factors in predicting future outcomes (Cohen, Janicki-Deverts, Chen, & Matthews, 2010; Duncan, Morris, & Rodrigues, 2011; Luo & Waite, 2005; Walker, Greenwood, Hart, & Carta, 1994). By measuring SES in infancy, researchers are able to isolate the exogenous effect of early SES, and limit challenges posed by disentangling it from future confounding variables in early and middle childhood.

Harding et al. (2015) note that human capital theories are particularly helpful for understanding the role of maternal education and family income in early academic skill development. These perspectives argue that maternal human capital – developed through higher education – provides the potential for a cognitive environment for a child that better supports early learning (Coleman, 1988). Mothers who have achieved higher levels of education (e.g., attaining a college degree) are better able to use their own cognitive skills in interactions (e.g., using higher levels of vocabulary, modeling positive educational behaviors) that promote their children's

¹ A third component of SES is typically assessed as the status of one's occupation, or level of employment (Duncan & Murnane, 2011). Given little information available about employment in the data used in this study, we do not discuss it explicitly. However, we certainly see understanding employment in greater detail as a direction for future research.

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