



## Relations between early family risk, children's behavioral regulation, and academic achievement

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### ABSTRACT

This study examined relations among early family risk, children's behavioral regulation at 54 months and kindergarten, and academic achievement in first grade using data on 1298 children from the National Institute of Child Health and Human Development (NICHD) Study of Early Child Care and Youth Development. Family risk was indexed by ethnic minority status, low maternal education, low average family income from 1 to 54 months, and high maternal depressive symptoms from 1 to 54 months. Results of structural equation modeling indicated that minority status, low maternal education, and low family income had significant negative effects on reading, math, and vocabulary achievement in first grade. Modest indirect effects were also found from ethnicity, maternal education, and maternal depressive symptoms, through 54-month and kindergarten behavioral regulation to first-grade achievement. Discussion focuses on the importance of behavioral regulation for school success especially for children facing early risk.

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The early years are crucial for the development of skills that help children succeed in school. Development of important cognitive, literacy, and language skills takes place early in life and large individual differences in children's skill levels are evident by preschool and school entry (Denton & West, 2002; Morrison, Bachman, & Connor, 2005). Consequently, many children enter school without the social and behavioral regulation skills necessary to be successful (McClelland, Morrison, & Holmes, 2000; Rimm-Kaufman, Pianta, & Cox, 2000). The development of early academic and behavioral regulation skills is not only important for a successful transition to school, but also for later academic achievement since trajectories for future educational attainment are formed and shaped during children's early educational experiences (Alexander & Entwistle, 1988; Chen, Lee, & Stevenson, 1996; Hamre & Pinata, 2001). For example, children who have difficulty during the first few years of school have more problems with later behavioral, emotional, academic, and social adjustment and are at increased risk of dropping out prior to the completion of formal schooling (Alexander, Entwisle, & Kabbani, 2001; Gutman, Sameroff, & Cole, 2003). In addition, academic shortfalls lead to lower lifetime earnings, poorer health, and higher incarceration rates as well as have a costly impact on the national economy (McKinsey & Company, 2009).

In order to more fully understand children's development, attention must be given to specific aspects of the child's environment that can contribute to or threaten the successful mastery of early academic skills. In particular, children with socio-demographic risk factors, such as ethnic minority status, low maternal education, low family income, and mothers with depression, are more likely to suffer poor academic and developmental outcomes (Burchinal, Peisner-Feinberg, Pianta, & Howes, 2002; Huffman, Mehlinger, & Kerivan, 2000; Luster & McAdoo, 1994; McLoyd, 1998). It is also important to consider

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mechanisms by which these risks can be mediated by other developmental processes. In particular, children's behavioral regulation, or the ability to control, direct, and plan behavior, has been shown to be an important predictor of early academic achievement (McClelland, Cameron, Connor, et al., 2007). The present study examined the relations among family risk factors (between 1 and 54 months), behavioral regulation during the transition to formal schooling, and children's achievement in first grade.

## 1. Family risk factors as predictors of academic achievement

Children who experience risk factors during early childhood are more likely to start school unprepared, which can result in later school failure (Burchinal, Roberts, Zeisel, Hennon, & Hooper, 2006; Gutman et al., 2003; Luster & McAdoo, 1994; Raver, 2004). This is particularly evident for children who experience multiple family risk factors or risk factors over long periods of time (Huffman et al., 2000; Laucht, Esser, & Schmidt, 1997; Rutter, 1979; Wachs, 2000). Although a number of studies have illuminated links between proximal factors, such as parenting and the quality of the home environment, and children's academic outcomes (e.g., Morrison et al., 2005; NICHD Early Child Care Research Network [NICHD ECCRN], 2003a), less research has examined how more distal family risk factors such as ethnic minority status, low maternal education levels, low family income, and maternal depressive symptoms contribute to children's achievement directly and indirectly through their behavioral regulation. This study tested the hypothesis that children experiencing any of these factors may be deprived of stimulating resources and interactions which may have detrimental effects on their early behavioral regulation and achievement (Bradley, Corwyn, McAdoo, & Garcia Coll, 2001; Evans, 2004).

Risk is defined as an "elevated probability of a negative or undesirable outcome in the future" (Masten & Gewirtz, 2006, p. 24). In a developmental sense, risk implies a threat to a child's trajectory which can result in poor developmental outcomes. Minority status, maternal education level, family income, and maternal depressive symptoms are not by themselves risk factors and may be protective at certain levels (such as high education and income levels or low maternal depressive symptoms). When studying risk, researchers often either dichotomize status indicators of risk or use continuous scores. When risk is categorized, individuals are seen as being at risk if they are above or below a cut-off point (e.g., have less than so many years of education or live under the poverty threshold). This option, however, may be based on arbitrary cut-off points and also loses important variability (NICHD ECCRN, 2000). Thus, in the present study, we used continuous scores to conceptualize the risk factors of maternal education level, family income, and maternal depressive symptoms in order to retain variability and avoid arbitrary cut-off points.

For ethnic minority children, a significant gap has been documented in achievement when compared to their majority counterparts in early childhood as well as in later school years (Alexander et al., 2001; Chatterji, 2006; Denton & West, 2002; Huffman et al., 2000; Jencks & Phillips, 1998; McLoyd, 1998). Specifically, Black and Hispanic children have historically performed at significantly lower levels than White children starting in early elementary school and continuing throughout the elementary and secondary years (Humphreys, 1988; Stevenson, Chen, & Uttal, 1990). Recent research has found that Black and Hispanic students are academically an average of two to three years behind White children of the same age, with the gap worsening the longer the child is in school (McKinsey & Company, 2009). The sources of the test score gap are difficult to isolate (Jencks & Phillips, 1998), but evidence suggests that minority children may experience a constellation of factors such as racism, residential, economic, and social segregation, unsafe neighborhoods, and schools with fewer resources and qualified teachers, all of which can negatively influence early achievement (Garcia Coll et al., 1996). In addition, socioeconomic status may account for a large part of the disparity in test scores among minority children (Magnuson & Duncan, 2006). Compared to White children, minority children are more likely to experience poverty, especially persistent poverty (Duncan, Brooks-Gunn, & Klebanov, 1994).

Maternal education and family income have also been closely associated with poor academic outcomes (Amato & Ochlertree, 1986; Downer & Pianta, 2006; McLoyd, 1998). In one study, children whose mothers had lower educational attainment had substantially lower levels of cognitive development in the toddler and preschool years than peers of mothers with higher education (Petterson & Albers, 2001). In addition, children of mothers with lower education had significantly lower scores on reading, math, and vocabulary in the early elementary years (Luster & McAdoo, 1994). Research has also found that children living in poverty are at increased risk of poor achievement outcomes (Chatterji, 2006; Denton & West, 2002; Huffman et al., 2000). In particular, recent research by McKinsey and Company (2009) indicated that impoverished students are academically two years behind same-age students from higher income families. This achievement gap appears early and often persists through the school years. Moreover, children who experience poverty over longer periods of time have lower academic achievement than children who experience poverty infrequently or who have never been poor (McLoyd, 1998). In the present study, income was averaged over six time points from 1 to 54 months, reflecting the view that a child's development is the result of the accumulation of experiences that have occurred up to that point in time (Laucht et al., 1997; NICHD ECCRN, 2003b).

Research has documented that children who live in poverty tend to have significantly fewer educational materials and resources in the home and are exposed to fewer learning opportunities than children who are not poor, which can negatively affect achievement (Bradley & Corwyn, 2002; Bradley et al., 2001; Evans, 2004; Gershoff, Aber, Raver, & Lennon, 2007; McLoyd, 1998; Yeung, Linver, & Brooks-Gunn, 2002). This lack of cognitive enrichment and investment may lead to fewer opportunities to stimulate children's early learning and behavioral regulation. Poverty has also been linked with higher rates of birth complications and prematurity, increased exposure to health risks (such as lead), and reduced access to services

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