



The role of household chaos in understanding relations between early poverty and children's academic achievement



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ABSTRACT

The following prospective longitudinal study used an epidemiological sample ($N = 1236$) to consider the potential mediating role of early cumulative household chaos (6–58 months) in associations between early family income poverty (6 months) and children's academic achievement in kindergarten. Two dimensions of household chaos, disorganization and instability, were examined as mediators. Results revealed that, in the presence of household disorganization (but not instability) and relevant covariates, income poverty was no longer directly related to academic achievement. Income poverty was, however, positively related to household disorganization, which was, in turn, associated with lower academic achievement. Study results are consistent with previous research indicating that household chaos conveys some of the adverse longitudinal effects of income poverty on children's outcomes and extend previous findings specifically to academic achievement in early childhood.

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1. Introduction

Family income poverty is the strongest predictor of school failure and is a stronger predictor of poor school achievement than either family structure or child neglect (Children's Defense Fund, 2004; Lacour & Tissington, 2011; Nikulina, Widom, & Czaja, 2011). Although the links between family income poverty and poor school achievement are well documented, the processes that account for these associations have not been thoroughly explored. Processes that occur within the family context have been identified as critically important to understanding these associations (Engle & Black, 2008). Numerous studies have shown that less sensitive parenting is associated with income poverty suggesting that parenting may be one of the key processes that account for relations between income poverty and children's achievement (Bradley & Corwyn, 2002; Vernon-Feagans & Cox, 2013). Another less fre-

quently studied aspect of the family context that has been identified as a possible process mechanism is household chaos (Brody & Flor, 1997; Evans, Gonnella, Marcynyszyn, Gentile, & Salpekar, 2005). Chaotic households are characterized by crowded noisy homes filled with distractions, limited structure and routines, and frequent changes in family structure and residential moves, all of which can undermine young children's developing regulatory and pre-academic skills and ability to focus on school-related activities (e.g., completing homework) (Evans & Wachs, 2010; Li-Grining, 2007; Vernon-Feagans, Willoughby, Garrett-Peters, & The Family Life Project Key Investigators, 2016). Thus, in the present study, we examined whether household chaos serves as a viable mechanism that conveys some of the adverse effects of early family income poverty on children's academic achievement.

Household chaos has been defined as "systems of frenetic activity, lack of structure, unpredictability in everyday activities, and high levels of ambient stimulation" (Bronfenbrenner & Evans, 2000, p. 121). Several studies have shown that individual indices of household chaos (e.g., noise, crowding, lack of family routines) can act as intervening or statistically mediating variables in associations between poverty and socioemotional and cognitive competencies among school-aged and adolescent children

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(Brody & Flor, 1997; Evans & English, 2002; Evans & Kim, 2007; Evans & Wachs, 2010). Only a single longitudinal study conducted by Evans et al. (2005) examined a composite index of general household chaos as a potential mediator in this pathway. These authors found that, among rural White 7th and 8th graders, a parent-report measure of chaos mediated the relations between income poverty and children's socioemotional adjustment, including learned helplessness, psychological distress, and self-regulation. To date, no studies have examined household chaos as a mediator of associations between family income poverty and children's early academic achievement. Further, the majority of previous studies have focused on the experience of household chaos during school-age and adolescent years rather than during early childhood.

Research suggests that the early childhood years may be a critical period during which environmental stressors, such as poverty and chaos, can be particularly harmful to children's early and later academic achievement. For example, by the time children enter kindergarten, the gap between poor and non-poor children is already substantial (Future of Children, 2005; Laird, Cataldi, Ramani, & Chapman, 2008). In addition, although poverty is remarkably stable, early poverty in the first five years of life has consequences for later academic achievement, as well as stress-related disorders and generally poorer life outcomes well into adulthood (Duncan, Magnuson, Kalil, & Ziol-Guest, 2012; Duncan, Ziol-Guest, & Kalil, 2010; Evans & Kim, 2013). The experience of poverty and its concomitant risks during early childhood may be more closely linked to the development of young children because the family context is so central to young children's experiences. Compared to their school-aged counterparts, younger children generally have fewer opportunities to interact with sources beyond the family context (e.g., teachers, classroom/neighborhood peers) (Bradley, Corwyn, Burchinal, McAdoo, & Garcia Coll, 2001).

In this prospective longitudinal study, we contribute to the extant literature by examining whether household chaos experienced prior to school entry serves as a process mechanism through which early family income poverty is linked to academic achievement in kindergarten. Because we focus specifically on income poverty in this study, references to poverty throughout the manuscript reflect family income exclusively as opposed to other limited resources (e.g., neighborhood poverty, social capital). To provide a rigorous test of our model, we controlled for a host of important covariates that tend to co-occur with income poverty and that have not been included as controls in many other studies, such as race, maternal education/employment, children's early cognitive functioning, and particularly important, the quality of observed parenting. In addition, as described in detail below, our assessment of household chaos provides several advantages over previous work as our measurement includes a cumulative index of two dimensions of household chaos (i.e., disorganization and instability) experienced across the first five years of life, as well as multi-informant and observed ratings of chaos.

1.1. Poverty and chaos

Over the past 40 years, there have been significant changes to the ways in which families function owing in part to an increase in dual-earner and single-parent families. In addition, the rise of the "24 hour economy" (Presser, 2004) has created a family context with less predictability and less parent-child time because work schedules often require evening and weekend hours, especially for poorer families who are more likely hold service industry jobs. These factors have contributed to an increase in household chaos that can disrupt family life and impact children's development (Evans & Wachs, 2010). This is particularly true for poor children whose developmental ecologies are imbued with chaos at

multiple contextual levels, including the macrosystem (i.e., the context of poverty) and the microsystem (i.e., the family context), each of which has independent and reciprocal influences on the developing child (Bronfenbrenner & Morris, 2006). Thus, poor children are likely to experience aspects of household chaos that are associated with conditions of poverty (e.g., crowded homes and noisy neighborhoods), as well as chaos that emerges from the changing structure of family life (e.g., parents working irregular work hours) (Presser, 2004; Vernon-Feagans, Burchinal, & Mokrova, 2015).

Poor children and families who live in rural areas may be especially vulnerable to experiencing chaos in their homes. The disadvantaged economies of life in rural contexts include fewer jobs with standard work hours, longer distances to work, childcare, and schools, limited public transportation, and less access to a variety of health and human resources that can promote a stable and predictable family life (Vernon-Feagans, Garrett-Peters, De Marco, & Bratsch, 2012). These unique features of rural life underscore the importance of examining the potential deleterious effects of living in chaotic households on the development of rural children.

1.2. Chaos and academic achievement

Chaotic home environments are hypothesized to interfere with children's abilities to extract the rules of discourse and social exchanges (Wachs, 1989), as well as the development of attentional and regulatory processes (Li-Grining, 2007; Vernon-Feagans et al., 2016), that are important for school success. When experienced in early childhood prior to school entry, household chaos appears to undermine the development of both cognitive and non-cognitive competencies that are vital to academic achievement. For example, preschoolers who live in chaotic homes are likely to demonstrate low expectations, lack of persistence, and withdrawal from academic challenge (Brown & Low, 2008). Excessive noise and crowding in chaotic homes may undermine children's developing regulatory systems that support their ability to focus and sustain attention. Children living in chaotic homes likely need to expend greater effort to concentrate and maintain focus and attention, which might hinder their ability and desire to engage in activities that require focused attention that can facilitate learning and achievement.

Chaotic homes also create stressful situations that can diminish opportunities for positive and sustained interactions between children and adults that support learning (Bronfenbrenner & Evans, 2000; Bronfenbrenner & Morris, 1998). Indeed, mothers living in more chaotic homes demonstrate less positive parenting during interactions with their children (Zvara et al., 2014). Chaotic home environments may cause fatigue and have been linked to elevated negative mood (Evans, Bullinger, & Hygge, 1998) thereby depleting emotional and psychological resources that parents might otherwise invest in their children. Parents in chaotic homes may rely more often on authoritarian parenting (e.g., reprimands) and may be less likely to engage in positive sustained verbal exchanges and cognitively-stimulating interactions with their children. Indeed, children in chaotic homes demonstrate poorer language and cognitive development, which can impede the acquisition of basic reading skills that are essential for later school achievement (Petrill, Pike, Price, & Plomin, 2004; Vernon-Feagans, Garrett-Peters, Willoughby, Mills-Koonce, & The Family Life Project Key Investigators, 2012). Thus, the experience of chaotic home environments early in life may thwart the development of critical foundational cognitive and non-cognitive competencies (e.g., attention regulation, language development, persistence) that are essential to children's later academic success.

Children living in chaotic homes may adapt to the environment by blocking out and withdrawing from the overstimulation in the home (Matheny, Wachs, Ludwig, & Phillips, 1995). Researchers con-

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