



Chaos as a social determinant of child health: Reciprocal associations?



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ARTICLE INFO

Article history:

Available online 14 March 2013

Keywords:

Chaos
Child health
Crowding
Clutter
Work stress
Noise
Childcare
Routine

ABSTRACT

This study informs the social determinants of child health by exploring an understudied aspect of children's social contexts: chaos. Chaos has been conceptualized as crowded, noisy, disorganized, unpredictable settings for child development (Evans, Eckenrode, & Marcynyszyn, 2010). We measure chaos at two levels of children's ecological environment – the microsystem (household) and the mesosystem (work-family-child care nexus) – and at two points in early childhood (ages 3 and 5). Using data from the Fragile Families and Child Wellbeing Study ($N = 3288$), a study of predominantly low-income women and their partners in large US cities, we develop structural equation models that assess how maternal-rated child health (also assessed at ages 3 and 5) is associated with latent constructs of chaos, and whether there are important reciprocal effects. Autoregressive cross-lagged path analysis suggest that increasing chaos (at both the household and maternal work levels) is associated with worse child health, controlling for key confounders like household economic status, family structure, and maternal health status. Child health has little effect on chaos, providing further support for the hypothesis that chaos is an important social determinant of child health in this sample of relatively disadvantaged children. This suggests child health may be improved by supporting families in ways that reduce chaos in their home and work/family environments, and that as researchers move beyond SES, race, and family structure to explore other sources of health inequalities, chaos and its proximate determinants may be a promising avenue for future research.

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Introduction

Child development researchers have become increasingly concerned about escalating levels of chaos, or the lack of order and routine in modern family life, and its consequences for child well-being (Bronfenbrenner, 2001). Family diversity, income inequality, and labor market instability in the U.S. have contributed to disorder and instability in households, families, and the workplace with potential implications for children's health (Lichter & Wethington, 2010). Research on the social determinants of child health has neglected this potentially important aspect of children's social contexts, focusing largely on SES, race, and family structure effects (Carr & Springer, 2010). Chaos in children's social contexts, which operates at multiple ecological levels through daily processes and interactions, may be an important determinant of child health.

Recently, Evans (2004); Evans, Eckenrode, Marcynyszyn (2010) identified chaos, conceptualized as crowded, noisy, disorganized, unpredictable settings for child development, as an important risk factor for poor child outcomes and as a potential mediator of the link between socioeconomic status and child outcomes (Evans, Gonnella, Marcynyszyn, Gentile, & Salpekar, 2005). A chaotic environment is associated with poor child socioemotional outcomes (Evans & English, 2002; Evans et al., 2005). Children's physical health has been linked to indicators of instability or routines in the household (Anderson & Whitaker, 2010; Hammons & Fiese, 2011), but no study to date has assessed how chaos at the household or other ecological levels is associated with child health.

Our goal is to examine chaos as a social determinant of child health using data from the Fragile Families and Child Wellbeing Study. In doing so, we focus on early childhood, a key stage in the life course when poor health can affect cognitive growth (Basch, 2011) and have long-term implications for health and SES later in the life course (Haas, 2008).

Using longitudinal data and multiple measures of chaos, we ask: in early childhood, does chaos decrease child health? We also consider reciprocal effects – whether children with poor health

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may increase chaos. Poor families may be exposed to relatively high levels of chaos (Evans, 2004), thus our data from a study of predominantly low-income women and their partners (Reichman, Teitler, Garfinkel, & McLanahan, 2001) are ideal for exploring chaos as a determinant of child health.

Chaos and the bioecological model

The bioecological model suggests that healthy child development requires that children engage in predictable, complex, reciprocal interactions with their environment over an extended period of time (Bronfenbrenner & Ceci, 1994). A child's environment is not limited to the home environment, but also includes other settings the child interacts within, such as school, and the interplay between home and related social environments, such as parental work contexts. The immediate home environment of the child is the microsystem, while the interactions between the home environment and the social contexts in which the family and its members function are the mesosystem. Chaos can occur at both levels.

Wachs and Evans (2010), drawing on Fiese (2006) and Wachs (1989), recently defined chaos as “environments that are characterized by high levels of noise, crowding, and instability, as well as a lack of temporal and physical structuring (few regularities, routines, or rituals; nothing has its time or place)” (pp. 5). Although chaos is associated with lower socioeconomic status (Brody & Flor, 1997; Evans & English, 2002; Moore, Vandivere, & Ehrle, 2000), chaos is a construct distinct from SES. Chaos is associated with poor child development 1) even after SES is accounted for (Dumas et al., 2005; Hart, Petrill, Deckard, & Thompson, 2007), 2) in samples that are largely homogamous with regard to SES (Brody & Flor, 1997), and 3) in natural experimental conditions (Evans, Bullinger, & Hygge, 1998). Further, chaos may be a mechanism linking SES and poor child development (Brody & Flor, 1997; Evans et al., 2005).

Chaotic environments provide the opposite of what young children need for their development. Chaos in the home environment is often characterized as noise, crowding, and general confusion in the household (Evans et al., 2010). The most commonly used measure of chaos, the “Confusion, Hubbub, and Order Scale” (Matheny, Wachs, Ludwig, & Phillips, 1995), includes items such as: “The children have a regular bedtime routine”; “You can't hear yourself think in our home”; and “There is usually a television turned on somewhere in our home”. Children in more chaotic households tend to have lower cognitive and verbal abilities (Asbury, Wachs, & Plomin, 2005; Hart et al., 2007) and more behavior problems (Coldwell, Pike, & Dunn, 2006; Dumas et al., 2005). Further, parents are also affected by chaos; in more chaotic homes, parents of infants had less responsive and stimulating parenting (Corapci & Wachs, 2002) and parents of 4–8 year old children were less warm and more hostile (Coldwell et al., 2006).

Because parents of young children often work, chaos operates not only in the household, but at the mesosystem as well – at the intersection of work, childcare, and family. Repetti and Wang (2010) recently argued that chaos in the mesosystem is marked by work stress, inflexible and unsupportive work environments, nonstandard work schedules, and working multiple jobs. Further, Corapci (2010) and Bradley (2010) both suggested that childcare is a source of chaos for many families, and that childcare multiplicity (having multiple childcare arrangements) and unreliable childcare are two important sources of chaos that families of young children must cope with.

Little work has examined mesosystem level indicators of chaos though Evans and Wachs (2010) highlighted chaos at the mesosystem in their recent edited volume. Marcynyszyn, Evans, and Eckenrode (2008) found that mesosystem chaos, as measured by

change in parental intimate partners, work hours, residences, and schools, was associated with poorer socioemotional wellbeing and increased risky behaviors among adolescents. Moore et al. (2000) found that mesosystem chaos was associated with greater emotional problems in school-age children, but they included a significant child or parental health problem as an indicator of chaos.

Chaos effects on child health

This study furthers research on the social determinants of child health by examining chaos in children's lives in both the home environment and mesosystem. Fig. 1 depicts our theoretical framework of how chaos may affect children's health status. We aim to capture the disorder and instability that children experience through their interactions at these levels. Chaos is expected to influence child health through several pathways: increasing exposures to toxins, pollutants and germs; increasing parental and child stress and reducing emotional support; reducing parents' ability to prevent and effectively treat illnesses; and, reducing the quantity and quality of parental supervision needed to reduce illness, avoid accidents, and encourage healthy behaviors.

Research suggests that crowding (Solari & Mare, 2012) and unorganized household environments (Suglia, Duarte, Sandel, & Wright, 2010) are associated with worse child health outcomes, while regular routines may support better child health (Anderson & Whitaker, 2010; Hammons & Fiese, 2011). Indirect evidence suggests that ambient noise (Corapci & Wachs, 2002; Kirkorian, Pempek, Murphy, Schmidt, & Anderson, 2009) and the Matheny et al. (1995) measure described above are associated with lower-quality parenting and increased child stress (Coldwell et al., 2006; Dumas et al., 2005), which have been suggested to have lifelong consequences for child health (Repetti, Taylor, & Seeman, 2002).

Thus, chaos in the household, which in our study includes physical disorder, social disorder, and ambient noise/distractions, may have important implications for children's health. Using latent variable constructs allows us to capture the chaotic nature of the multiple elements in children's household contexts beyond what can be gleaned from any one item. No study to date has considered the association between a broad construct of household chaos that incorporates these multiple elements of children's household environments with children's overall health status.

Our second major concept is chaos in the mesosystem (work-family-child care nexus). We conceptualize this level of chaos in two ways: maternal work chaos and childcare chaos. Maternal work chaos represents the instability and unpredictable nature of mothers' work, which can translate into more maternal stress and less predictable interactions with children. Childcare chaos reflects

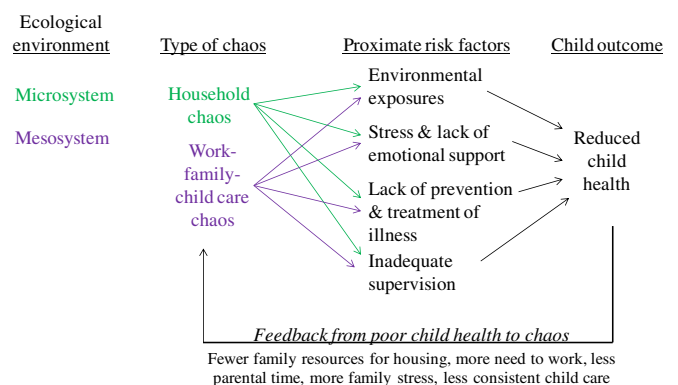


Fig. 1. Theoretical model of chaos and child health.

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