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**HOW DOES THE NEIGHBORHOOD "COME THROUGH THE DOOR?"
NEIGHBORHOOD DISADVANTAGE AND THE
HOME ENVIRONMENT FOR PRESCHOOLERS**

A Thesis in

Psychology

by

Emily M. May

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The thesis of Emily M. May was reviewed and approved* by the following:

Sandra T. Azar
Professor of Psychology
Thesis Adviser

Martha E. Wadsworth
Associate Professor of Psychology

Dawn. P. Witherspoon
Associate Professor of Psychology

Melvin M. Mark
Professor of Psychology
Head of the Department of Psychology

*Signatures are on file at the Graduate School.

ABSTRACT

Exposure to neighborhood poverty is particularly salient for children's cognitive development and later academic outcomes during early childhood. Home environments are thought to be a primary mechanism by which neighborhood disadvantage, including concentrated disadvantage and residential instability, impacts preschoolers. The current study examines the effects of neighborhood disadvantage on two aspects of the home environments that are important for preschoolers' development: the learning environment and the physical environment. In a sample of low-income urban families with preschool age children ($N = 187$), mothers' perceived neighborhood disorder and depressive symptoms were examined as mechanisms by which neighborhood disadvantage "comes through the door." Social support from family and friends and neighborhood social embeddedness were examined as protective factors and potential buffers of neighborhood effects. Results showed that neighborhood concentrated disadvantage had an indirect effect on the quality of the home learning environment and a direct effect on the quality of the home physical environment, controlling for income. Although indicators representing neighborhood residential instability were found to have low internal reliability, residential instability was correlated with the home learning environment. Social support did not buffer the effects of neighborhood disadvantage on the home environment. Neighborhood social embeddedness buffered the effects of neighborhood disadvantage on both the home learning environment and home physical environment. Study findings advance our understanding of the mechanisms by which living in a disadvantaged neighborhood may affect the home environment of young children. These findings also contribute to knowledge on differences in the way that children's home physical environments and home learning environments may be impacted by living in poverty. Finally,

study findings add support to the idea that parents' positive interactions with neighbors can ameliorate the effects of neighborhood disadvantage on families with young children.

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I contend that the pursuit of such questions is essential for the further development of knowledge and theory on the process of human development. Why essential? Because these questions focus on the impact on the child, both direct and indirect, of the *enduring environment in which he lives*, or might live if social policies and practices were altered. (Bronfenbrenner, 1974, p. 2)

How does the Neighborhood “Come through the Door?”

Neighborhood Disadvantage and the Home Environment of Preschoolers

Children growing up in disadvantaged urban neighborhoods are at risk for poor cognitive and school readiness outcomes, including low verbal ability and IQ and poor behavioral and socioemotional functioning (Brooks-Gunn, Duncan, Klebanov, & Sealand, 1993; Duncan, Brooks-Gunn, & Klebanov, 1994; Jeon, Buettner, & Hur, 2014; Leventhal & Brooks-Gunn, 2000; Roy, McCoy, & Raver, 2014a; Vaden-Kiernan et al., 2010). Living in a disadvantaged neighborhood also puts young children at heightened risk for poor physical health outcomes, including higher BMI, increased odds of having asthma, and measures of allostasis, including lower basal cortisol levels, and lower relative salivary telomere length (Camacho-Rivera, Kawachi, Bennett, & Subramanian, 2014; Chen & Paterson, 2006; Theall, Brett, Shirtcliff, Dunn, & Drury, 2013). Neighborhood disadvantage has measurable effects on children's development even after accounting for family socioeconomic status, and these effects are observable as early as preschool. From an ecological perspective, larger systems such as the neighborhood affect children's development through more proximal contexts (Bronfenbrenner, 1979, 1986). Particularly for young children, who have limited agency and are dependent upon caregivers as gatekeepers of their lives and activities, parenting and the home environment are thought to be primary mechanisms by which residential context impacts developmental outcomes (Leventhal & Brooks-Gunn, 2000). Although family-level poverty has negative implications for both learning and physical aspects of the home environment (Bradley, Corwyn, McAdoo, & Garcia Coll, 2001), the influence of neighborhood-level poverty on the home environment for preschoolers is less well-documented.

We need a better understanding of the role of neighborhood disadvantage in parenting and the home environment during early childhood for a number of reasons. First, poverty appears to have a greater effect on children's academic achievement and abilities in early childhood than in adolescence, and these effects may "carry forward" into subsequent developmental periods (Anderson, Leventhal, & Dupéré, 2014; Duncan & Brooks-Gunn, 1995). Additionally, empirical work on neighborhood context and children's proximal environments has focused on parental warmth, monitoring, and punitive parenting practices more than home learning experiences and the home physical environment (Cuellar, Jones, & Sterrett, 2015; Kohen, Leventhal, Dahinten, & McIntosh, 2008). Finally, few mechanisms by which the neighborhood context may impact the home environment for preschoolers have been empirically tested. The goal of this study is to examine the effects of neighborhood disadvantage on the home learning environment and home physical environment for preschoolers, including direct and indirect pathways of effect. Additionally, this study will examine social support from family and friends and neighborhood social embeddedness as protective factors which may buffer effects of neighborhood disadvantage on the home environment for preschoolers.

The Home Environment for Preschoolers

The learning environment. The home learning environment serves as a primary context in which preschoolers are appropriately supported and challenged. The home learning environment has been conceptualized as cognitively stimulating objects and experiences of which the child is an active recipient (Bradley, 1993; Totsika & Sylva, 2004), including the presence of books and learning materials, time spent reading with caregivers, and caregivers' provision of developmentally appropriate lessons such as teaching shapes, numbers, and letters. During the preschool years, the home learning environment is an important predictor of early

social development, academic achievement, and school readiness among poor and non-poor groups and among children of different ethnicities (Bradley, Corwyn, Burchinal, McAdoo, & García Coll, 2001; Luster & Dubow, 1992; Mistry, Benner, Biesanz, Clark, & Howes, 2010).

A relatively small group of studies have examined parents' provision of home learning experiences as a function of residential context. These studies have shown significant associations between neighborhood socioeconomic status and the home learning environment, as measured by learning materials and academically stimulating experiences (Dupere, Leventhal, Crosnoe, & Dion, 2010; Klebanov, Brooks-Gunn, & Duncan, 1994; Froiland, Powell, Diamond, & Son, 2013; Jeon et al., 2014). In several of these studies, the association of neighborhood context and the home learning environment became smaller in magnitude or statistically non-significant after accounting for various other factors, including family socioeconomic factors and parental depressive symptoms (Dupere, Leventhal, Crosnoe, & Dion, 2010; Jeon et al., 2014; Klebanov, Brooks-Gunn, & Duncan, 1994). This is notable for two reasons. First, as family income may be associated with neighborhood context (and may even have a role in determining neighborhood of residence), income should be accounted for when examining neighborhood effects on family outcomes (Leventhal & Brooks-Gunn, 2000). Second, because these studies showed that the link between neighborhood context and the home learning environment diminished when more proximal factors were accounted for, familial or parental factors may partly explain the effects of neighborhood disadvantage or contribute to indirect effects on the home environment. However, of the few studies that examined the association of objective neighborhood context and the home learning environment, only one was found to have tested any indirect pathways or mechanisms that may explain such an association (Kohen et al., 2008).

The physical environment. In the past decade, there has been a call to consider the physical environments children and families inhabit, particularly for families that are low-income. Evans (2004) and Sharkey and Faber (2014) have argued that psychology research has overlooked physical risk factors compared to psychosocial risk factors for children's developmental outcomes. Physical features of the environment have been shown to have important implications for children's developmental outcomes. The overall quality of the observed indoor and outdoor home physical environment, as measured by adequacy of furnishings, aesthetic appearance, and safe places to play, predicted receptive vocabulary for European American preschoolers and school age children and behavioral problems for European American school age children (Bradley, Corwyn, Burchinal, et al., 2001). Evans (2006) reviews in detail the physical aspects of the home environment that may impact young children's development. Exposure to crowding, high noise levels, and toxins such as lead and mercury have been associated with cognitive and behavioral outcomes, including lower verbal and math ability, IQ, and semantic memory, as well as higher levels of hyperactivity, impulsivity, social withdrawal, and aggression (Cohen, Evans, Stokols, & Krantz, 1986; Evans, 2006; Goduka, Poole, & Aotaki-Phenice, 1992; Gottfried & Gottfried, 1984; Koger, Schettler, & Weiss, 2005; Needleman, Schell, Bellinger, Leviton, & Allred, 1990; Wachs, 1987). The physical environment of the home may also affect the health and injury outcomes of young children. Poor housing quality is related to more frequent respiratory infection in children (Evans, 2006; Shaw, 2004). Exposure to indoor allergens and nicotine are associated with increased levels of wheezing and allergic sensitization in children as early as one year of age (Wood et al., 2011). A dark, noisy and cluttered home environment is related to greater injury risk for toddlers and school age children (Matheny, 1986; Mott, 1999).

Most attention on predictors of the home physical environment has focused on economic disadvantage at the family level; this research has shown that low family socioeconomic status is associated with a lower quality observed physical environment of the home, structural deficits and housing quality, rodent infestations in the home, and access to basic facilities such as clothes washers and dryers (Children's Defense Fund, 1994; Evans, 2004; Federman et al., 1996; Guo & Harris, 2000; Mayer, 1997; Stronks, van de Mheen, & Mackenbach, 1998). In addition to family economic disadvantage, neighborhood disadvantage likely has implications for physical aspects of the home environment. One study has shown that neighborhood disadvantage, as measured by proportion of neighbors with an income below \$10,000, was directly associated with a poorer quality observed home physical environment for preschoolers (Klebanov et al., 1994). Neighborhoods with high levels of poverty and residential mobility have homes and apartments that are of lower housing quality (Federman et al., 1996). Scarcity of resources and high turnover rates may also contribute to residents' and landlords' difficulty maintaining the structural and aesthetic integrity of properties. For these reasons, neighborhood disadvantage may be directly associated with the quality of the home physical environment. In addition to the direct implications that neighborhood disadvantage likely has for the home physical environment, neighborhood disadvantage may also affect the quality of the home physical environment indirectly through its effects on parents. Although aspects of the home physical environment may be constrained by the quality of housing and features of the neighborhood, parents can also partially regulate the home physical environment as experienced by the preschoolers. Examples of such capacities include eliminating hazards that endanger small children, maintaining a well-lit environment that is conducive to activities, discarding of waste, and prioritizing sanitation of areas used for food preparation and hygiene. However, few studies have examined the direct link

between neighborhood disadvantage and the home physical environment, independent of family income, and no research has examined indirect links of neighborhood disadvantage and the home physical environment for preschoolers, including the role of caregivers.

How Does the Neighborhood “Come through the Door?” Perceptions of Neighborhood Disorder and Maternal Depressive Symptoms as Possible Pathways of Effect

Sociological theories provide explanations of how neighborhood characteristics have the potential to impact individual behaviors and outcomes, parenting practices. Social disorganization theory (Shaw & McKay, 1942) was developed to explain the observed clustering of high crime rates in geographic areas of high concentrated disadvantage and residential instability. Although delinquency and crime were originally the phenomena of interest to social disorganization perspectives, psychological and developmental research has demonstrated that neighborhood structure and social processes are certainly important for other outcomes, including family processes and parenting (Molnar et al., 2016). In the same way that crime is thought to be, in part, a product of unfavorable community conditions, so too are maladaptive parenting behaviors, including child neglect (Coulton, Korbin, Su, & Chow, 1995; Drake & Pandey, 1996). Child neglect, more than physical abuse and sexual abuse, has been strongly associated with impoverished neighborhood environments (Drake & Pandey, 1996).

According to social disorganization theory, structural neighborhood disadvantage, including concentrated disadvantage and residential instability, disrupts neighborhood social control and social cohesion, which impedes residents' ability to realize collective values and goals (Sampson, 1997, 2003; Sampson & Groves, 1989; Shaw & McKay, 1942). This breakdown of informal social control has perceptible, visible cues of neighborhood disorder. Social disorganization theory has been used to explain many aspects of neighborhoods (Ross &

Jang, 2000) and has undergone refinement over the years (Coulton et al., 1995). Within this vast literature, many theorists including Jacobs (1961), Wilson and Kelling (1982), Sampson et al. (2002), Skogan (2015; 1990), Ross and Jang (2000), and others have remarked on the importance of neighborhood disorder and its meaning. Neighborhood disorder generally refers to conditions and activities, both criminal and non-criminal, which residents perceive as signs of breakdown in social control (Skogan, 1990; Wilson & Kelling, 1982). Visible cues of disorder - including unsupervised teen groups and public drinking or drug-dealing - can create a sense of danger for residents (Ross & Jang, 2000; Skogan, 1990).

Neighborhood disorder can be detrimental for mental health. Living in a neighborhood where one perceives high levels of disorder predicts a number of deleterious outcomes for parents and adults, including depressive symptoms, anxiety, and physiological measures of stress (Brisson, Lopez, & Yoder, 2014; Do et al., 2011; Giurgescu et al., 2015; Hill & Herman-Stahl, 2002; Hill, Ross, & Angel, 2005; Ross & Mirowsky, 2001; Wandersman & Nation, 1998), and this has even been the case after controlling for life events and daily hassles (Taylor, Perkins, Schumaker, & Meeks, 1991). Neighborhood context as measured by structural disadvantage is considered from a "social address" perspective (Bronfenbrenner, 1979); in contrast *perceptions* of neighborhood capture the neighborhood environment as experienced by the individual. Across a number of studies, perceptions of neighborhood disorder have mediated the effects of neighborhood disadvantage on individual outcomes, including depressive symptoms (Kim, 2010; Martin-Storey et al., 2012).

Neighborhood disorder is associated with parenting behaviors and family interaction patterns, including lower parental warmth and consistency and higher parent-child conflict (Ceballo & McLoyd, 2002; Deng, 2006; Gonzales et al., 2011; Kotchick, Dorsey, & Heller,

2005; Pinderhughes & et al, 2001). Researchers have begun to use family process perspectives to examine this association, whereby poverty-related stressors affect parenting practices via parents' psychological well-being, including depression (Cuellar et al., 2015; Jeon et al., 2014; Kohen et al., 2008; Kotchick et al., 2005; Wadsworth & Ahlkvist, 2015; Yeung, Linver, & Brooks-Gunn, 2002). This study examines mothers' perceptions of neighborhood disorder as a mechanism by which structural neighborhood characteristics may influence parental depressive symptoms, and in turn, the home environment.

A large body of research has shown that depressive symptoms in mothers are related to many aspects of parenting, including provision of learning experiences (Nievar, Moske, Johnson, & Chen, 2014; Oyserman, Mowbray, Meares, & Firminger, 2000). Mothers with depression make less age-appropriate utterances, make fewer suggestions and ask fewer questions, and in general, engage in fewer sustained verbal exchanges with children (Cox, Puckering, Pound, & Mills, 1987; Herrera, Reissland, & Shepherd, 2004; Oyserman et al., 2000). Preschool age children whose mothers had even low levels of depressive symptoms were less likely to have stimulating learning materials, spend time reading, and experience academic stimulation compared to preschoolers whose mothers had no symptoms of depression (Conners-Burrow et al., 2014).

As there is less research on predictors of children's home physical environments in general, the association of maternal depressive symptoms to the home physical environment for preschoolers is not well documented. A limited number of studies have shown that maternal depressive symptoms are related to measures of home safety, including poison accessibility, dangerous objects, exposure to second-hand smoke in the home, and not having electric socket covers (Conners-Burrow et al., 2014; Zajicek-Farber, 2010). Maternal depressive symptoms

were also associated with the overall observed quality of the home physical environment for preschoolers in one study (Klebanov, Brooks-Gunn, McCarton, & McCormick, 1998).

Social Support and Neighborhood Social Embeddedness as Protective Factors for Parents in Low-Income Neighborhoods

Social support from friends and family. Many low-income and single mothers engage in positive parenting behaviors despite facing economic hardship and neighborhood stressors, and identifying factors that promote parenting effectiveness under stress can help inform appropriate targets for intervention (Kotchick et al., 2005; Murry, Bynum, Brody, Willert, & Stephens, 2001). One factor that has been shown to protect parental well-being under stressful conditions is social support, which refers to strong ties with family, kin, and close friends that help individuals "get by" and cope with the demands and stressors of everyday life (Belsky, 1984; de Souza Briggs, 1998; Dominguez & Watkins, 2003). Social support has been posited to be a particularly important protective factor for African American parents, as strong networks with family and friends can serve as culturally-based sources of support for childrearing and buffer the effects of stress on family functioning (McLoyd, 1990; Murry et al., 2001). Social support from extended family and friends may also be especially important for single mothers when no partner is present to assist with childcare responsibilities (Gringlas & Weinraub, 1995; Murry et al., 2001). Among low-income African American mothers, social support has been linked to self-esteem and psychological well-being, which in turn were associated with effective parenting practices (Simons, Lorenz, Wu, & Conger, 1993; Taylor & Roberts, 1995). Theoretically, according to family process perspectives, environmental stressors compromise parenting by contributing to psychological distress. By alleviating the effects of perceived neighborhood disorder on parents' well-being and depressive symptoms, social support may help

to promote parental functioning across multiple domains. Empirically, the literature on social support as a buffer of the link between neighborhood stressors and mental health is mixed. Kotchick et al. (2005) found that neighborhood stressors predicted parental psychological distress and inconsistent parenting for parents who had low social support, but this association did not exist for parents with high levels of support from family and friends, suggesting that this support served as a protective factor. Conversely, Latkin and Curry (2003) found that social support did not impact the association of perceived neighborhood disorder with depressive symptoms.

Neighborhood social embeddedness. In addition to friends and family members, neighbors can also serve as sources of support for parents. Networks among neighbors can facilitate interactions which are important for family well-being, including exchange of information regarding developmentally appropriate parenting, exchange of information about community resources, and even exchange of services such as childcare. Conversely, social isolation can limit parents' ability to call for assistance when in need and can allow for maladaptive parenting patterns to develop (Garbarino, 1977). Social embeddedness with neighbors may be particularly relevant for extremely disadvantaged families. The inability to purchase support in the marketplace combined with a lack of informal and communal support networks may put families at greatest risk (Garbarino & Ganzel, 2000). Social disorganization theory posits that the ties among residents at the neighborhood level are diminished by conditions of concentrated disadvantage and residential instability. Even within the most disadvantaged neighborhoods, however, residents' levels of social embeddedness can vary greatly from individual to individual. Pluralistic neighborhood theory argues that residents in the same neighborhood may engage with their neighborhood differently, and that neighborhoods can

have strengths despite having risks (Aber & Nieto, 2000; Witherspoon & Ennett, 2011). For instance, Browning, Soller, Gardner, & Brooks-Gunn (2013) found that neighborhood collective efficacy reduced the effect of neighborhood disorder on girls' internalizing symptoms. Ross & Jang (2000) found that social ties with neighbors reduced fear associated with neighborhood disorder. Similarly, mothers' level of social embeddedness within their neighborhood may be a potential strength that reduces the effects of neighborhood disadvantage and disorder on parenting in the home environment.

Current Study

Considering the importance of the home environment for young children, we need a better understanding of the role of neighborhood factors in this environment for children, particularly during a critical developmental period when poverty can have lasting effects on cognitive developmental outcomes (Anderson et al., 2014). The current study examines associations between structural neighborhood disadvantage (including concentrated disadvantage and residential instability), perceived neighborhood disorder, depressive symptoms, social support, social embeddedness, and the home environment in a sample of low-income mothers of preschoolers living in relatively disadvantaged urban neighborhoods. This study extends research on parenting and neighborhood context in the following ways. First, a majority of research on parenting in neighborhood context has focused on the effects of neighborhood disadvantage on parental warmth, monitoring, and behavioral control and often in families of adolescents. This study examines the role of neighborhood context in two other domains of the home environment that are important for preschoolers' development: the home learning and home physical environments. Second, few previous studies have explicitly tested mechanisms by which structural neighborhood context may influence these parenting outcomes. This study explicitly

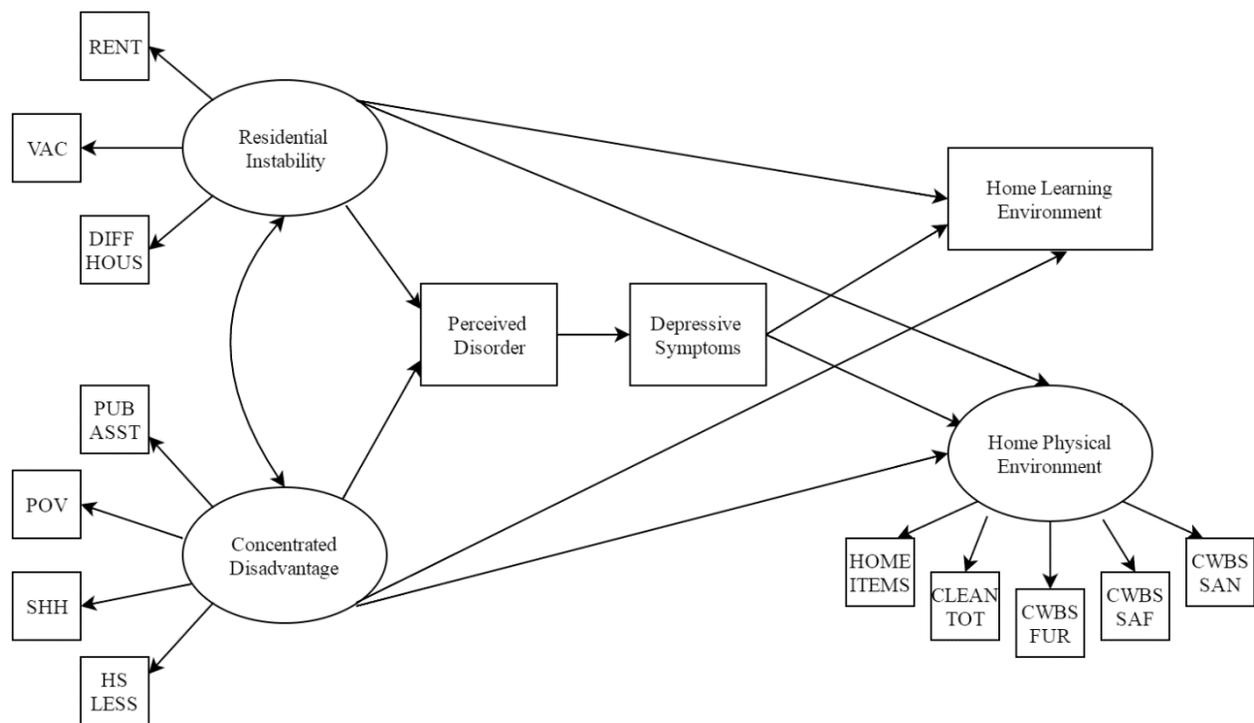
tests mothers' perceived neighborhood disorder and depressive symptoms as mechanisms by which neighborhood disadvantage may influence the home environment. Finally, this study is designed to identify protective factors which may ameliorate the effects of neighborhood context. Social support from friends and family and neighborhood social embeddedness are examined as potential protective factors that may buffer the effects of neighborhood disadvantage on the home environment for preschoolers. This study has the potential to advance understanding on the ways in which neighborhood may "come through the door" as well as identify targets for interventions aimed at lessening the effects of neighborhood stressors on parents. This study tests the following questions: 1) how is structural neighborhood disadvantage associated with the home learning environment and home physical environment for preschoolers? 2) do mothers' perceptions of neighborhood disorder and depressive symptoms indirectly link structural neighborhood disadvantage with the home learning environment and home physical environment for preschoolers? and 3) do neighborhood effects on the home environment differ for mothers with low versus high social support or low versus high neighborhood social embeddedness?

Hypotheses. The hypothesized model paths are illustrated in Figure 1. It is hypothesized that:

- Neighborhood disadvantage variables, including concentrated disadvantage and residential instability, will be negatively associated with home learning environment through mothers' perceived disorder and depressive symptoms. Direct effects of neighborhood disadvantage on home learning environment will be explored.

- Neighborhood disadvantage variables will be negatively associated with home physical environment both directly and indirectly through mothers' perceived disorder and depressive symptoms.
- Social support and social embeddedness will moderate the effects of neighborhood disadvantage, such that the effects of neighborhood disadvantage on the home environment will be lessened for those who reported having higher levels of social support and social embeddedness. The moderating effects of social support and social embeddedness on different model paths will be explored.

Figure 1. *Hypothesized Model – Home Environment Outcome Variables Regressed on Predictor Variables, Controlling for Income*



RENT: % occupied residences that are renter occupied, **VACANT:** % residences that are vacant, **DIFF HOUSE:** % of residents that lived in a different house than one year ago, **PUB ASST:** % families receiving public assistance, **POV:** % families living below poverty line, **SHH:** % families with single head of household, **HS LESS:** % adults with less than high school education, **HOME ITEMS:** EC-HOME physical environment items, **CLEAN TOT:** CLEAN total score, **CWBS FUR:** CWBS furnishings adequacy rating, **CWBS SAF:** CWBS safety rating, **CWBS SAN:** CWBS sanitation rating

Method

Participants

Participants were 187 mothers of children ages 3 to 5 living in a large Northeastern city. A majority of participants' families (90%) reported approximate annual income at or below the poverty line (Office of the Assistant Secretary for Planning and Evaluation, 2012). Participant demographic characteristics are presented in Table 1 (see Appendix A). Participants resided in a total of 111 different census tracts. A majority of these census tracts (86.49%) represented 1 or 2 participating families. The greatest number of families residing in any census tract was 7.

Because perpetration of neglect was of interest for the larger study funded by the National Institute of Child Health and Human Development (#R01HD053713; PI: Azar), participants consented to a review of Child Protective Services (CPS) records. Sixty-nine participants (36.90%) had CPS records of neglect with participant as perpetrator, and 16 participants (8.56%) had another type of record with CPS (e.g., perpetration of physical abuse; inadequate record information to determine type of maltreatment). One-hundred and three participants (55.08%) had no CPS records of neglect. Such a rate of involvement with CPS may not be atypical in disadvantaged urban populations; for example, a longitudinal study estimated that 46.6% children who lived in inner-city neighborhoods in Cleveland were investigated for child maltreatment compared to 19.0% of children who lived in the suburbs (Coulton, Crampton, Irwin, Spilsbury, & Korbin, 2007; Sabol, Coulton, & Polousky, 2004). Perpetration of neglect is often characterized by or associated with physical inadequacies of the home and limited cognitive stimulation for preschoolers. Indeed, the measures used in this study were included in the larger study as direct measures of neglect to both validate CPS neglect status but to test predictors of neglect in a continuous way, beyond designation as neglectful by a social service

agency. As such, the current study sample exhibits considerable variability in these outcome measures. Thus, the current study allows for testing how variability in neighborhood disadvantage is associated with variability in the home environment in a disadvantaged population and a population for whom adequacy of home environment is a relevant concern.

Procedure

Participants were recruited from agencies that provide services to disadvantaged populations (i.e., day cares, Head Start) as well as agencies that are contracted specifically to provide parenting services to child protection cases. Study measures were administered by trained interviewers during three interview sessions in the mothers' homes. In the first session, participants provided informed consent to participate in the study and informed consent for review of CPS records. All questionnaire measures were read aloud to mothers to ensure understanding and completeness. Participants were compensated for their participation.

Measures

Demographic information: Demographic characteristics, including participants' age, education, marital status, race/ethnicity, family income, household composition, and employment status were obtained from a Background Questionnaire.

Structural neighborhood disadvantage: Consistent with previous research, neighborhood demographic indicators were used to represent two measures of structural neighborhood disadvantage: concentrated disadvantage and residential instability (Bogges & Hipp, 2010; Coulton, Korbin, & Su, 1996; Sampson & Groves, 1989; Veysey & Messner, 1999; Witherspoon & Ennett, 2011). Using each participant's address at the time of study, neighborhood structural characteristics for participants' census tract of residence were extracted from the American Community Survey for the aggregated years 2008-2012, the time period

during which all other data collection occurred. Neighborhood concentrated disadvantage was indexed by: percentage of families living below the federal poverty line, percentage of families receiving public assistance, percentage of families with a single head of household, and percentage of population 25 years and older with less than a high school degree.

Although unemployment rate has been considered an indicator of neighborhood disadvantage in previous studies, it was not included in the model due to poor fit with the concentrated disadvantage latent variable in the current sample. Unemployment rates in the United States climbed steadily in 2008 during the Great Recession and reached peak levels at the end of 2009 and beginning of 2010 calendar years, during the time period that the American Community Survey data for the current study was collected (2008-2012). As individuals who had previously been employed became unemployed, the association of unemployment rate with other indicators of disadvantage may have changed, creating a poor fit with concentrated disadvantage. Residential instability was indexed by: percentage of residences that are renter-occupied, percentage of residents that live in the same house as one year ago, and percentage of residences that are vacant.

Perceptions of neighborhood disorder: Mothers' perceptions of their neighborhoods were obtained using the Perceived Crime subscale of the Perceived Neighborhood Scale (PNS), which was created for use with parents of young children (Martinez, Black, & Starr, 2002). Although disorder is not equivalent to crime, disorder often includes perceiving low-level or "soft" crimes such as public drinking, loitering, and evidence of graffiti, which are thought to share similar causal social processes at the community-level, including (perceived) lack of social control (Ross & Jang, 2000; Sampson, 2012; Skogan, 2015). The Perceived Crime scale of the PNS (Martinez et al., 2002) includes items regarding such crimes or anticipation that such crimes

may occur based on perceived cues. The Perceived Crime subscale has shown moderate correlations with census tract poverty rates, which has been interpreted to indicate that objective levels of poverty are associated with perceptions of disorder (Martinez et al., 2002). The perceived crime subscale has also been shown to have a positive association with depressive symptoms among mothers of 3-year-olds (Martinez et al., 2002). This subscale includes 9 items (e.g., “There are troublemakers hanging around in my neighborhood,” “There is public drinking in my neighborhood,” and “People are scared of being mugged in my neighborhood”) which were endorsed on a 5-point Likert scale ranging from strongly agree to strongly disagree. Items were coded and summed so that higher scores reflect a higher level of perceived disorder. The subscales of the PNS have been shown to have good to excellent internal consistency, with Cronbach's alpha ranging from .80 to .91 (Martinez et al., 2002). Internal consistency for the perceived disorder items in the current sample was excellent (Cronbach's $\alpha = .91$).

Maternal depressive symptoms: Depression symptoms were measured using the Center for Epidemiology Scales for Depression (CES-D), which is a widely used measure developed by the National Institute of Mental Health for the assessment of depressive symptoms in the general population (Radloff, 1977). The CES-D has high validity and has been shown to have high sensitivity and adequate specificity as a screening instrument for DSM-IV depression (Radloff & Locke, 1986; Zimmerman & Coryell, 1988). The measure includes 20 depressive symptoms experienced in the past week, including "I had trouble keeping my mind on what I was doing," "I talked less than usual," and "I felt hopeful about the future" which are endorsed on a 4-point Likert scale ranging from rarely or none of the time to most or all of the time ($M = 17.81$, $SD = 11.89$). Raw scores at or above 16 indicate risk for depression (Lewinsohn, Seeley, Roberts, & Allen, 1997; Radloff, 1977). In the current sample, 45.70% of participants exhibited risk for

depression based on this criterion, which may be considered elevated given the 12-month prevalence of depression and mood disorders in the general population (Salokangas et al., 2012), but which is not inconsistent with risk for depression in studies whose samples represent disadvantaged populations or which include a large proportion of ethnic minority participants (Kingston, 2013; Latkin & Curry, 2003; McBarnette, 1996; Skuban, Shaw, Gardner, Supplee, & Nichols, 2006). The CES-D has been shown to have good to excellent internal consistency (Lewinsohn et al., 1997; Radloff, 1977) and equivalent factor structure across samples of Caucasian and African American participants (Nguyen, Kitner-Triolo, Evans, & Zonderman, 2004; Radloff, 1977). Internal consistency for the current sample was excellent (Cronbach's $\alpha = .90$).

Social support from family and friends: Mothers' receipt of social support from family and friends was measured using subscales from the Social Support Inventory (SSI; Crnic, Greenberg, Ragozin, Robinson, & Basham, 1983). The SSI contains items targeting both availability of and satisfaction with social support. Both availability of network members as well as mother's ratings of satisfaction with support are associated with parenting behaviors and parent-child interactions (Au, Chan, Cheung, Yeun, & Lee, 2008; Bishop & Leadbeater, 1999). Mothers responded to items about availability of social support using multiple choice responses regarding frequency of contact with family and friends (e.g., "Think of a typical week. About how many times did you talk on the phone with your friends?") and number of family members and friends available for support (e.g., "If you were to become upset or angry, would you have someone in your family to talk honestly to, who is not involved? How many people?"). Participants rated their satisfaction with each of these situations on a 4-point Likert scale ranging from very dissatisfied/wish things were very different to very satisfied/really pleased. For the

current study, a sum of 16 items measuring both availability of social support and satisfaction with social support from family and friends will be used ($M = 43.12$, $SD = 8.79$). Internal reliability for these items of the SSI was good (Cronbach's $\alpha = .81$).

Neighborhood social embeddedness. Neighborhood social embeddedness, including social support from and for neighbors, was assessed using the social embeddedness subscale of the PNS (Martinez et al., 2002). The PNS scales have shown adequate content and criterion validity (Martinez, 2000; Martinez et al., 2002). The social embeddedness subscale has shown positive correlations with measures of social support, informal kinship support, and satisfaction with neighborhood among mothers of young children (Martinez et al., 2002). The subscale includes 9 items (e.g., “How often do casually visit with neighbors, either going over to their place or their coming over to yours?” “How likely is it that you get help from a neighbor (e.g., watch your place if you’re away, take care of your child when you’re sick)?” and “How likely is it that you help a neighbor (e.g., watching their place if they’re away, taking care of their child if they are sick)?”), endorsed on a 5-point Likert scale ranging from “very likely” to “very unlikely” and “very seldom” to “very often.” Items were coded so that higher scores reflect higher social embeddedness. Internal consistency of the social embeddedness items in the current sample was good (Cronbach's $\alpha = .84$).

Learning environment: The Early Childhood Home Observation for the Measurement of the Environment (EC-HOME; Caldwell & Bradley, 1984, 2001) is a widely used measure to assess the home environment for children age 3 to 6. The EC-HOME comprises 55 interviewer-rated items, which are administered using both interview questions with mothers and direct observations of the home environment. The home learning environment as measured by the EC-HOME has shown substantial correlation with children's cognitive development (Bradley,

Corwyn, McAdoo, et al., 2001; Totsika & Sylva, 2004). Consistent with previous research on the home learning environment (Brooks-Gunn, Klebanov, & Liaw, 1995; Klebanov et al., 1994), a composite measure of the home learning environment was created using three subscales of the EC-HOME including Language Stimulation (e.g., “Child is encouraged to learn the alphabet” and “Parent encourages child to talk and takes time to listen”), Academic Stimulation (e.g., “Child is encouraged to learn colors” and “Child is encouraged to learn to read a few words”), and Learning Materials (e.g., “Child has at least 10 children’s books” and “Child has toys or games which help teach numbers”) ($M = 16.85$; $SD = 3.66$). Cronbach's alpha for the home learning environment items was .76. In previous studies, inter-rater reliability has reached .90. In the current study, inter-rater reliability for home learning environment for a subsample of participants ($N = 73$, 38.89%) was .82.

Physical environment: The physical environment of the interior of the home, including safety and sanitation, was measured using items from multiple scales: the Checklist for Living Environments to Assess Neglect (CLEAN; Watson-Perczel, Lutzker, Greene, & McGimpsey, 1988), the Child Well Being Scales (CWBS; Magura & Moses, 1986), and the physical environment subscale of the EC-HOME (Caldwell & Bradley, 1984, 2001). The CLEAN is an interviewer-rated observational measure of the home environment which was designed to assess home cleanliness problems associated with child neglect. The CLEAN was used to assess three dimensions of cleanliness in each of three rooms – the living room, kitchen, and bathroom: 1) whether the room is clean or dirty (based on presence of organic decaying matter such as grease spots, heavy dust, and food liquids; and nonorganic matter such as spilled chemicals, petroleum products, and cosmetic material), 2) the number of clothing items and linens that do not belong there, and 3) the number of objects not belonging in the room (e.g., items that can be thrown

away or that have a more appropriate storage place, including garbage, tools, paper towels, etc.). The CLEAN has good face validity for assessing unhealthy and inadequate conditions for children, has been used to assess the effectiveness of a home hygiene training program, and has shown excellent inter-rater reliability (Azar, Stevenson, & Johnson, 2012).

The CWBS was developed as a measure to evaluate the impact of child welfare services (Magura & Moses, 1986). Observational ratings were completed by trained interviewers following the home visits. Three modules of this measure were used in the current study: assessment of the adequacy of household furnishings, household sanitation, and physical safety. Ratings for each module were then converted into Seriousness Scores (Magura & Moses, 1986) for analysis. These scales have been used to measure neglect in prior studies (Azar et al., 2012; Dubowitz, Pitts, & Black, 2004) and have discriminated between neglectful and non-neglectful parents (Casady & Lee, 2002; Dubowitz et al., 2004; Gaudin, Polansky, & Kilpatrick, 1992). Interrater reliability has been excellent in previous studies (Dubowitz et al., 2004). In the current study, interrater agreement for a subsample of participants ($N = 73$, 38.89%) was .87.

Finally, the physical environment subscale of the EC-HOME, a widely used measure of the home environment, has 7 interviewer-rated observational items that measure the overall quality of the physical environment for the preschool age child. The subscale has 4 items that assess the interior of the home that are rated as present or not present (e.g., "Building appears safe and free of hazards" and "House is reasonably clean and minimally cluttered"). Two items of the EC-HOME physical environment subscale are not used because they refer to the quality of the neighborhood or the environment outside of the home ("Neighborhood is aesthetically pleasing" and "Outside play environment appears safe"). The EC-HOME scale as a whole has

shown good to excellent internal consistency and inter-rater reliability (Azar et al., 2012; Totsika & Sylva, 2004).

Data Analytic Plan

Hypotheses were tested with structural equation modeling (SEM). SEM was conducted using Maximum Likelihood estimation in MPlus, which is a flexible system that can estimate models and provide estimates of the significance of indirect effects (Muthén & Muthén, 2005). Confirmatory factor analysis (CFA) was used to examine the factor structure of the indicators for each of the latent variables, concentrated disadvantage, residential instability, and home physical environment. Path analyses were used to test the hypothesized associations among structural neighborhood characteristics, perceptions of neighborhood disorder, maternal depressive symptoms, and the home learning environment and home physical environment outcomes. To control for family income when estimating neighborhood effects, income was allowed to covary with the exogenous neighborhood variables and was included as a covariate in every path model. To test the moderating role of social support and neighborhood social embeddedness, multigroup structural equation models were conducted for participants with high and low levels of social support and high and low levels of neighborhood social embeddedness.

To evaluate the fit of the hypothesized models, multiple fit indices were used, as no single indicator of fit provides unbiased estimates across ranges of sample sizes and distribution characteristics. The fit indices used were Chi-square (non-significant χ^2 value indicates good fit), the root mean square error of approximation (RMSEA < .06 indicates good fit), and the comparative fit index (CFI > .95 for a good fit) as recommended by (Hu & Bentler, 1999). In tests of moderation, in which comparisons were made between the fit of two models. The test of Chi-square difference was used to determine whether additional model constraints holding the

two groups equal affected model fit. The Chi-square difference test was used to examine whether removing constraints from single model paths significantly improved model fit (Cheung & Rensvold, 2002; Vandenberg & Lance, 2000).

Results

Preliminary Analyses

Data preparation. Data was checked for consistency and completeness for all variables for the sample of $N = 187$. Preliminary analyses included examination of missing data, variable distributions, bivariate correlations, and descriptive statistics. Bivariate correlations, means, and standard deviations of neighborhood disadvantage variables, including the indicators of concentrated disadvantage and residential instability indicators, are presented in Table 2 (see Appendix A). Bivariate correlations, means, and standard deviations of home learning environment and home physical environment variables are presented in Table 3 (see Appendix A). Means and standard deviations of perceived disorder, depressive symptoms, social support, and social embeddedness are presented in Table 4 (see Appendix A). Bivariate correlations among each home environment variable and all other study variables are presented in Table 5. Finally, correlations among all latent and observed predictor and outcome variables are presented in Table 6 (see Appendix A).

Missing data. Data was checked for completeness for all variables of interest for the sample of $N = 187$. Summaries of missing data showed that less than 1% of data was missing. One participant was missing one of the twenty items on the CES-D scale, and the item's mean for the entire sample was substituted before calculating the CES-D total score. Three participants were missing several items from the primary rater on subscales of the observational HOME-EC measures. As a subsample of participants had scores from two raters, the rating from the second

rater was substituted wherever possible, which resulted in 185 complete measures of the home learning environment outcome.

Table 5.

Bivariate Correlations among Home Environment Observed Variables and All Other Study

Variables

| | Home Learning Environment | Home Physical Environment | | | | |
|---------------------------|---------------------------|---------------------------|-------------|--------------|-------------|----------|
| | | HOME Phys | CLEAN Total | CWBS Furnish | CWBS Safety | CWBS San |
| Income | -.04 | -.24** | -.19** | .06 | .01 | .07 |
| Concentrated Disadvantage | | | | | | |
| POV | -.03 | -.17* | -.13† | -.21** | -.07 | -.10 |
| SHH | -.02 | -.19** | -.20** | -.15* | -.04 | -.10 |
| HS LESS | -.03 | -.14† | -.04 | -.10 | -.06 | -.04 |
| PUB ASST | .07 | -.21** | -.11 | -.21** | -.12† | -.07 |
| Residential Instability | | | | | | |
| RENT | -.14† | -.14† | -.04 | -.20** | -.14† | -.07 |
| DIFF HOUSE | -.13† | -.01 | .12 | .09 | .01 | .12 |
| VACANT | -.13† | -.12† | -.13† | -.13† | -.13† | -.10 |
| Perceived Disorder | -.03 | -.10 | -.16* | -.21** | -.13† | -.08 |
| CES-D | -.28** | -.12† | -.10 | -.10 | -.07 | -.05 |
| Social Support | .17* | -.05 | -.01 | -.01 | -.08 | -.06 |
| Social Embeddedness | -.11 | .17* | -.05 | .04 | -.16* | -.06 |

** $p < .01$, * $p < .05$, † $p < .10$; **POV**: % families living below poverty line, **SHH**: % families with single head of household, **HS LESS**: % adults with less than a high school degree **PUB ASST**: % families receiving public assistance, **HOME ITEMS**: items HOME-EC physical environment subscale, excluding items about neighborhood **CLEAN TOT**: CLEAN total score, **CWBS FUR**: CWBS adequacy of furnishings rating, **CWBS SAF**: CWBS safety rating, **CWBS SAN**: CWBS sanitation rating

Normality and outliers. All study variables were examined for non-normality. Study variables had an absolute value of skewness less than 1 and an absolute value of kurtosis less than 4, indicating no more than mild levels of skewness and kurtosis. The variables were also examined for outliers. There were no outliers that were more than 3 standard deviations higher or lower than the mean of any of the variables, indicating no reason for concern (Howell, Rogier,

Yzerbt, & Bergsten, 1998). Finally, bivariate linearity of all variables was examined using scatterplots. No bivariate associations raised concerns about non-linearity.

Measurement Models

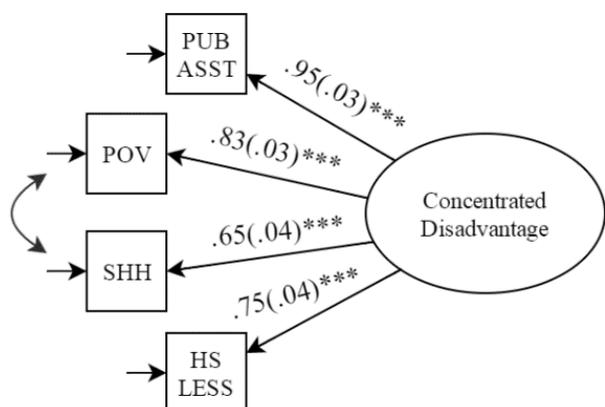
Concentrated disadvantage measurement model. First, a latent variable was estimated for the neighborhood construct concentrated disadvantage. A CFA was estimated with the census demographic indicators representing concentrated disadvantage: percent of families living below the poverty line, percentage of family households with single head of household, percentage of adults with less than a high school education, and percentage of households receiving public assistance. The overall fit of the model was not considered acceptable according to some fit indices ($\chi^2(2) = 10.65, p < .01, RMSEA = .15, 90\% CI [.07, .25]; CFI = .98$).

The modification indices showed that allowing the errors of two indicators (percentage of families living below the poverty line and percentage of families with single head of household) to correlate would decrease the Chi-square value (M.I. = 9.08), resulting in a better model fit. Theoretically, allowing the errors of these indicators to correlate may account for unmeasured variance explained by percentage of adults unemployed. Due to these theoretical reasons, a confirmatory factor model was then fitted to the indicators of concentrated disadvantage, allowing the errors of the two said indicators (percentage of families living below the poverty line and percentage of families with single head of household) to correlate. Statistics of overall model fit for the final measurement model reveal a good overall fit ($\chi^2 = .16, p = .69, df = 1; RMSEA < .01, 90\% CI [.00, .14]; CFI = 1.00$). Examination of the component fit of the final measurement model also revealed good fit. Standardized factor loadings were high, ranging from .65 to .95. The standard errors of the estimates were small, ranging from .03 to .05. The final

measurement model for concentrated disadvantage to be used in subsequent structural equation models is depicted in Figure 2.

Figure 2.

Concentrated Disadvantage Measurement Model



*** $p < .001$;

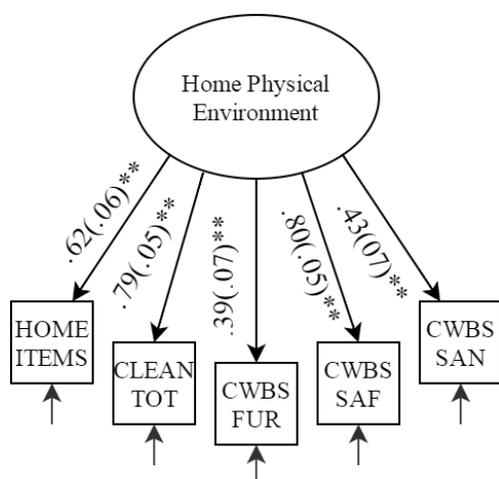
POV: % families living below poverty line, **SHH:** % families with single head of household, **HS LESS:** % adults with less than high school education, **PUB ASST:** % families receiving public assistance

Residential instability measurement model. Next, to estimate a latent variable for residential instability, a confirmatory factor model was fitted to the covariance matrix of the census tract indicators of residential instability: percentage of occupied residences that are reentered, percentage of residences vacant, percentage of residents who lived in a different residence than the previous year. Internal reliability for the three indicators of residential instability was poor (Cronbach's $\alpha = .51$), and the model was not identified (i.e. could not be estimated). As an alternative to estimating a latent variable, the mean of the indicators of residential instability was computed to be used as an observed variable in descriptive and structural path analyses. However, the overall fit indices of hypothesized structural equation models that included the residential instability observed variable were considered poor. After examining residential instability variables in preliminary analyses, the residential instability

observed variable was excluded from subsequent structural equation analyses due to poor internal consistency among the indicators chosen to represent the construct and poor overall fit with path models.

Home physical environment measurement model. A confirmatory factor model was estimated for the physical environment indicators to create the latent variable home physical environment. The five indicators included: a sum of HOME-EC physical environment items (excluding items referring to the outside area or neighborhood), CLEAN total score, CWBS furnishings rating, CWBS sanitation rating, and CWBS safety rating. The measurement model showed good overall fit ($\chi^2 = 8.31, p = .14, df = 5; RMSEA = .06, 90\% CI [.00, .13]; CFI = .98$). Evaluation of the component fit of the final measurement model for home physical environment showed acceptable fit. Standardized factor loadings ranged from .39 to .79, with standard errors ranging from .04 to .07. The R^2 values for the observed variables range from .15 to .65. The final measurement model for home physical environment is depicted in Figure 3.

Figure 3. *Home Physical Environment Measurement Model*



** $p < .001$;

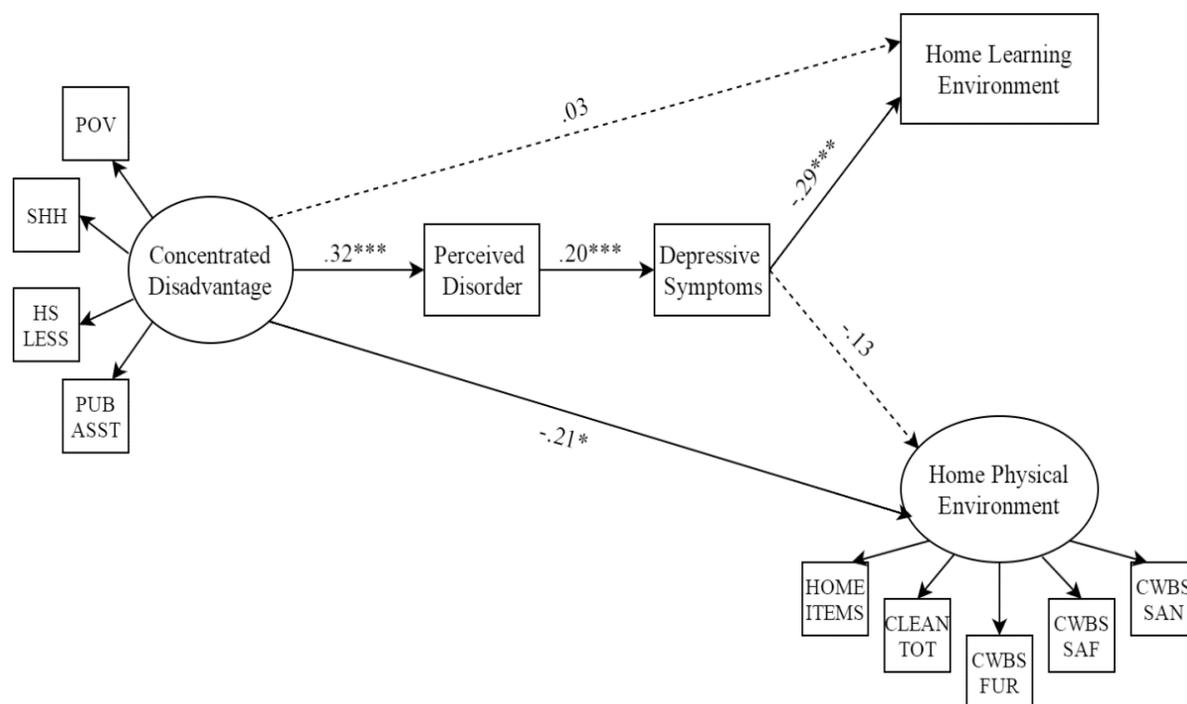
HOME ITEMS: EC-HOME physical environment items, **CLEAN TOT:** CLEAN total score, **CWBS FUR:** CWBS furnishings adequacy rating, **CWBS SAF:** CWBS safety rating, **CWBS SAN:** CWBS sanitation rating

Structural Equation Models

Associations of concentrated disadvantage, perceived disorder, depressive symptoms, home learning environment, and home physical environment. After the measurement models for neighborhood concentrated disadvantage and home physical environment were estimated, a structural equation model was estimated to examine the hypothesized associations of concentrated disadvantage with the home environment outcome variables both directly and indirectly through mother's perceived disorder and depressive symptoms, controlling for income. Figure 4 depicts the model and path estimates.

Figure 4.

Estimated Model – Home Environment Outcome Variables Regressed on Predictor Variables, Controlling for Income



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

POV: % families living below poverty line, **SHH:** % families with single head of household, **HS LESS:** % adults with less than a high school degree **PUB ASST:** % families receiving public assistance, **HOME ITEMS:** items HOME-EC physical environment subscale, excluding items about neighborhood **CLEAN TOT:** CLEAN total score, **CWBS FUR:** CWBS adequacy of furnishings rating, **CWBS SAF:** CWBS safety rating, **CWBS SAN:** CWBS sanitation rating

The overall model fit for the hypothesized model was good ($\chi^2 = 62.26, p = .23, df = 55$; RMSEA = .03, 90% CI [.00, .06]; CFI = .99). Examination of the model paths showed that, as hypothesized, concentrated disadvantage was positively associated with perceived disorder ($\beta = .32, SE = .07, p < .001$), which was positively associated with depressive symptoms ($\beta = .20, SE = .08, p < .001$), controlling for income. Depression was negatively associated with home learning environment ($\beta = -.29, SE = .07, p < .001$), but not home physical environment ($\beta = -.13, SE = .08, p = .11$), holding other variables constant. As such, concentrated disadvantage had significant indirect associations with home learning environment ($\beta = -.02, SE = .01, p < .05$) but not home physical environment ($\beta = -.01, SE = .01, p = .19$). Direct associations of concentrated disadvantage with home environment outcomes were also examined. Concentrated disadvantage was directly negatively associated with home physical environment ($\beta = -.21, SE = .08, p < .05$) but not home learning environment ($\beta = .03, SE = .08, p = .74$).

Because participants in the current study sample included individuals with and without history of child neglect, the hypothesized model was then examined with neglect group status as a covariate to determine whether hypothesized associations were impacted by neglect group status. † Findings suggest that hypothesized associations were not better explained by neglect group status.

† Neglect group status was dummy coded (0 = non-neglect group; 1 = neglect group) and entered as a covariate in all path analyses. Because a dichotomous neglect group status could not be determined for some participants ($N = 16$), the sample size for this analysis was $N = 171$. The overall fit of the model with neglect as a covariate was considered good according to most fit indices ($\chi^2 = 82.189, df = 62, p = .044, RMSEA = .042, 95\% CI [.01, .06], CFI = .97$). Neglect group status was significantly associated with home physical environment ($\beta = -.25, SE = .08, p < .01$), home learning environment ($\beta = -.21, SE = .07, p < .01$), and depressive symptoms ($\beta = .15, SE = .08, p < .05$). Importantly, the pattern of findings for the model paths described and depicted in Figure (4) did not change with the inclusion of neglect group status as a covariate. To summarize, neglect status predicted higher depressive symptoms and lower quality of home learning and home physical environment, but the hypothesized associations remained statistically significant after controlling for neglect.

Multigroup SEM moderation analyses: high and low social support from family and friends. It was hypothesized that the effects of neighborhood disadvantage on the home environment would be buffered by higher social support from family and friends. To test the hypothesized moderating role of social support, multigroup SEM was used. The median value of the social support variable ($Mdn = 45$) was used to create two groups of participants: a high social support group ($N = 94$) and a low social support group ($N = 93$).

First, a multigroup model was estimated, allowing all parameters to vary freely between the two groups ($\chi^2 = 139.19, p = .08, df = 117; RMSEA = .05, 90\% CI [.00, .07]; CFI = .97$). Next, to test for invariance of factor loadings, a multigroup model was estimated with constraints holding the factor loadings to be equal between groups ($\chi^2 = 161.64, p = .02, df = 127; RMSEA = .05, 90\% CI [.02, .08]; CFI = .95$). The fit of the freely estimated model was compared to the fit of the model with the loadings constrained. The change in χ^2 test was significant ($\Delta \chi^2 = 22.45, df = 10, p = .01$), indicating that constraining the factor loadings to be equal across groups yielded a significantly worse model fit. This suggests that the latent factors were not invariant between high and low social support groups (i.e., factor loadings of latent variables differed for high and low social support groups). The factor loading constraints could not be removed, however, because testing for path moderation requires equivalent units of measurement between groups.

A multigroup structural equation model was then estimated with constraints holding all model paths and factor loadings equal between groups ($\chi^2 = 171.01, p = .04, df = 140; RMSEA = .05, 90\% CI [.01, .07]; CFI = .96$). The overall fit of the model with constrained paths was compared to the overall fit of the model with only constrained factor loadings. The change in χ^2 test was not significant ($\Delta \chi^2 = 9.37, df = 13, p = .74$), suggesting that constraining model paths

did not significantly worsen the model fit (i.e. model paths did not significantly differ for high and low social support groups). However, because factor loadings were not invariant between high and low social support groups, poor overall model fit in the fully constrained model may have been due to loading constraints rather than path constraints. The effect of perceived disorder on depressive symptoms was hypothesized to be moderated by social support. To test this hypothesis, the equality constraint on the path from perceived disorder to depressive symptoms was removed. Allowing this model path to vary freely between groups did not improve model fit ($\Delta \chi^2 < .001$, $df = 1$, $p = .99$), suggesting that social support did not moderate the association of perceived disorder and depressive symptoms. Modification indices were also explored for evidence of moderation. Modification indices suggested that freeing the constraint on the path from concentrated disadvantage to home learning environment may result in a better model fit (M.I. = 4.35). Removing this constraint improved the overall model fit slightly ($\Delta \chi^2 = 4.59$, $df = 1$, $p = .03$). Further examination showed that the association of concentrated disadvantage and home learning environment was not significant in either group (High social support group: $B = -.46$, S.E. = .34, $p = .16$; Low social support group: $B = .69$, S.E. = .42, $p = .11$). The overall fit statistics of multigroup models for testing social support moderation are presented in Table 7.

In conclusion, because factor loadings were not invariant across the high and low social support groups, the use of multigroup structural equation modeling was not ideal for testing moderation by social support due to potential variance in ideal units of measurement in the latent variables across subgroups of this sample. However, statistical tests showed that the overall fit of the model was no better when all paths were allowed to differ between groups than when all model paths were constrained to be equivalent between groups, providing no evidence for

moderation by social support. Overall, the hypothesis that social support would buffer the negative effects of neighborhood disadvantage on the home environment outcomes was not supported.

Multigroup SEM moderation analyses: high and low neighborhood social embeddedness. The moderating effect of neighborhood social embeddedness was explored using multigroup SEM. It was hypothesized that social embeddedness would buffer negative effects of neighborhood disadvantage on home environment outcomes. The median value of neighborhood social embeddedness ($Mdn = 24$) was used to create two groups of participants: one with high neighborhood social embeddedness ($N = 95$) and one with low neighborhood social embeddedness ($N = 92$).

First, a multigroup model was freely estimated, allowing the parameters to vary between the high and low social embeddedness groups ($\chi^2 = 118.36, p = .45, df = 117; RMSEA = .01, 90\% CI [.00, .05]; CFI = 1.00$). Next, to test for invariance of factor loadings between groups, a multigroup model was estimated with constraints holding the factor loadings to be equal across groups ($\chi^2 = 129.20, p = .40, df = 140; RMSEA = .02, 90\% CI [.00, .05]; CFI = 1.00$). A comparison of the freely estimated model with the loadings constrained model showed that the change in Chi-square test was not significant ($\Delta \chi^2 = 10.85, df = 9, p = .29$), indicating that the factor loadings were invariant between high and low social embeddedness groups (i.e., factor loadings of latent variables did not significantly differ between groups).

Next, a multigroup model was estimated holding all model paths and factor loadings equal between groups ($\chi^2 = 158.33, p = .14, df = 140; RMSEA = .04, 90\% CI [.00, .06]; CFI = .97$). The change in Chi-square test showed that this model was significantly worse than the freely estimated model ($\Delta \chi^2 = 39.97, df = 23, p < .05$) and the model with loadings only

constrained ($\Delta \chi^2 = 29.13$, $df = 14$, $p < .05$). This suggests that the model paths were not equivalent between the high and low social embeddedness groups.

Equality constraints on model paths were removed one at a time, sequentially guided by both theory and modification indices. Examination of modification indices suggested that freeing the constraint on the path from concentrated disadvantage to perceived disorder may significantly improve the model fit (M.I. = 7.29). Theoretically, one's interpretation of neighborhood cues of disorder in the context of disadvantage may be dependent on their level of social embeddedness with neighbors. For instance, Ross & Jang (2000) found that social ties with neighbors buffered the effects of disorder on fear of crime. Indeed, removal of the equality constraint holding the path from concentrated disadvantage to perceive disorder resulted in a significantly better model fit ($\Delta \chi^2 = 7.90$, $df = 1$, $p < .01$), suggesting moderation by social embeddedness. Examination of unstandardized coefficients showed that higher concentrated disadvantage was associated with higher perceived disorder in the low social embeddedness group ($B = 4.64$, S.E. = 1.02, $p < .001$). In the high social embeddedness group, the association of concentrated disadvantage and perceived disorder was not significant ($B = 1.07$, S.E. = .77, $p = .17$). Examination of unstandardized coefficients for indirect effects revealed that the indirect effect of concentrated disadvantage on home learning environment was significant in the low social embeddedness group ($B = -.12$, S.E. = .06, $p < .05$) but not in the high social embeddedness group ($B = -.03$, S.E. = .02, $p = .23$).

Modification indices also showed that allowing the path from concentrated disadvantage to home physical environment to vary freely may result in a better overall model fit. Theoretically, social embeddedness with neighbors may compensate for scarcity of resources in disadvantaged neighborhoods by allowing for exchange of material resources and informal

services or may prevent against maladaptive practices that may develop in the context of extreme disadvantage and social isolation. A model was estimated allowing the path from concentrated disadvantage to home physical environment to freely vary between high and low social embeddedness groups ($\chi^2 = 146.80, p = .29, df = 138; RMSEA = .03, 90\% CI [.00, .06]; CFI = .99$). Removal of the equality constraint on the path from concentrated disadvantage to home physical environment resulted in a significantly better model fit ($\Delta \chi^2 = 3.69, df = 1, p < .05$), suggesting moderation by social embeddedness. Examination of unstandardized path coefficients showed that concentrated disadvantage was associated with lower quality of home physical environment in the low social embeddedness group ($B = -.37, S.E. = .13, p < .001$). The association of concentrated disadvantage and home physical environment was not significant in the high social embeddedness group ($B = -.04, S.E. = .12, p = .76$), suggesting a buffering effect.

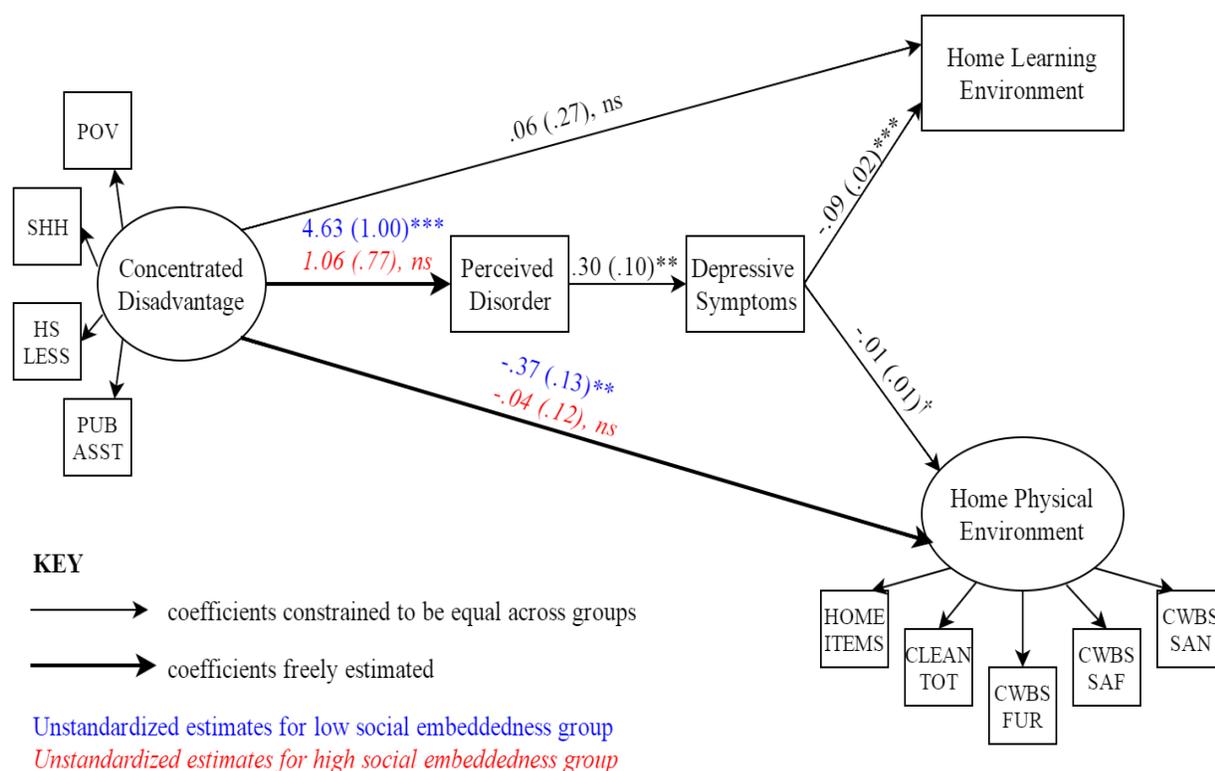
The next model path that was examined for moderation was the effect of perceived disorder on depressive symptoms. Theoretically, having a form of social support from neighbors may reduce psychological distress associated with perceived neighborhood stressors. Removing this equality constraint did not improve the overall model fit ($\Delta \chi^2 = 1.97, df = 1, p = .16$), suggesting that this path was not moderated by social embeddedness. Removal of the remaining equality constraints individually showed no further improvement of model fit.

The multigroup SEM test of social embeddedness moderation with unstandardized path estimates is depicted in Figure 5. The overall fit statistics of multigroup models for testing social embeddedness moderation are presented in Table 8. The findings of these moderation tests suggest that having a higher level of social embeddedness in one's neighborhood buffers the effect of concentrated disadvantage on mothers' perceived disorder, and in turn, the indirect effect of concentrated disadvantage on depressive symptoms and the home learning environment.

Findings also suggest that having higher levels of social embeddedness protects against the effects of neighborhood disadvantage on the home physical environment.

Figure 5.

Social Embeddedness Multigroup SEM Estimation – Unstandardized Path Coefficients for Home Environment Variables Regressed on Predictor Variables, Controlling for Income



POV: % families living below poverty line, **SHH:** % families with single head of household, **HS LESS:** % adults with less than a high school degree **PUB ASST:** % families receiving public assistance, **HOME ITEMS:** items HOME-EC physical environment subscale, excluding items about neighborhood **CLEAN TOT:** CLEAN total score, **CWBS FUR:** CWBS adequacy of furnishings rating, **CWBS SAF:** CWBS safety rating, **CWBS SAN:** CWBS sanitation rating

Discussion

The purpose of the current study was to examine the association of neighborhood disadvantage, including concentrated disadvantage and residential instability, with the home

learning environment and home physical environment for preschool children in a sample of low-income urban families, including mechanisms by which the neighborhood “comes through the door.” Mothers’ perceived neighborhood disorder and depressive symptoms were examined as mechanisms by which neighborhood disadvantage impacts provision of an enriching, safe, and sanitary home environment for preschoolers. Mothers’ social support from family and friends and neighborhood social embeddedness were examined as potential protective factors and buffers of the impacts of neighborhood disadvantage.

Studies have shown that children’s cognitive development and physical health are compromised by neighborhood disadvantage, and the home environment is thought to be a primary mechanism by which neighborhood context impacts developmental outcomes in early childhood (Kohen et al., 2008; Leventhal & Brooks-Gunn, 2000; Schrier & Chen, 2013). However, few existing studies have considered the impact of neighborhood disadvantage on the home environment of preschoolers after accounting for the contributions of family income. The results of this study provide support for the negative effect of concentrated disadvantage on the home learning environment and home physical environment. Although a goal of this study was to examine the effects of neighborhood residential instability, the low internal consistency among its indicators raised questions about the internal validity of its association with other variables. Thus, the current study focused on how concentrated disadvantage, which has more evidence for effects on individual outcomes than residential instability, impacts children’s home environments. Study findings also increase our understanding of how concentrated disadvantage in the communities in which children live impacts their home environment, both directly and indirectly, and suggest that the negative impact of concentrated disadvantage can potentially be mitigated for parents who are socially embedded in their neighborhoods.

Neighborhood Disadvantage, Perceived Disorder, and Depressive Symptoms

Neighborhood disadvantage was positively associated with mothers' perceived neighborhood disorder, accounting for income. This finding is consistent with existing sociological and psychological literature on perceivable cues of disorder and breakdown of social control in economically disadvantaged neighborhoods (Martinez et al., 2002; Ross & Jang, 2000; Skogan, 2015). Neighborhood disadvantage and mothers' perceived neighborhood disorder were also positively associated with depressive symptoms. These findings are consistent with empirical literature that provides strong support for the associations of neighborhood disadvantage, perceptions of disorder, and depressive symptoms, even after accounting for family poverty-related stress (Kim, 2010; Latkin & Curry, 2003; Ross, 2000; Santiago, Wadsworth, & Stump, 2011; Wandersman & Nation, 1998). This study is the first to date to test whether perceived neighborhood disorder and depressive symptoms indirectly link structural neighborhood characteristics with the home learning environment and home physical environment for preschoolers. Study results suggest that perceived disorder and depressive symptoms link neighborhood disadvantage with the home learning environment and potentially other parenting outcomes that are impacted by maternal depression.

Neighborhood Disadvantage and the Home Environment: Direct and Indirect Effects

Concentrated disadvantage and the home learning environment. Given the impact of poverty on caregiver's well-being and parenting practices, it was predicted that higher levels of neighborhood disadvantage would negatively impact the home learning environment for preschoolers (i.e., fewer learning materials, less academic and language stimulation). Consistent with hypotheses, higher neighborhood disadvantage was associated with more perceived neighborhood disorder, which was associated with higher levels of depressive symptoms, which

was associated with lower quality of home learning environment for preschoolers. These findings are consistent with existing literature on the impact of maternal depression on provision of cognitive stimulation to children (Conners-Burrow et al., 2014; Oyserman et al., 2000).

Although the effects of neighborhood disadvantage on the home learning environment were hypothesized to be primarily indirect, direct effects were also examined. However, concentrated disadvantage did not have direct effects on the home learning environment.

Concentrated disadvantage and the home physical environment. Neighborhood disadvantage was also predicted to be associated with a lower quality of the observed physical environment of the home for preschoolers, including overall sanitation and cleanliness, safety hazards, appearance, and adequacy of furnishings. It was hypothesized that neighborhood disadvantage would have both direct and indirect effects on the home physical environment. Consistent with hypotheses, concentrated disadvantage was directly linked with a lower quality of the observed home physical environment. Contrary to hypotheses, however, maternal depressive symptoms were not associated with the home physical environment, and as such, neighborhood disadvantage did not have indirect effects on the home physical environment.

Very few existing studies have reported the effects of maternal depressive symptoms on physical aspects of home environment for children such as appearance, safety, sanitation, and adequacy of furnishings. One such study (Zajicek-Farber, 2010) combined items measuring safety hazards (i.e., presence of smoke alarm and electric socket plug covers) with items measuring corporal punishment and well-health visits to construct a measure of “risky parenting,” and the effects of maternal depression on this measure of “risky parenting” may have been due to aspects of parenting that are less relevant to home safety risks. Another such study (Conners-Burrow et al., 2013) reported that maternal depressive symptoms was positively linked

with physical environmental safety risks (i.e. second-hand smoke, accessibility of poison, accessibility of dangerous objects, and vehicle safety); but the sample was less economically disadvantaged overall compared to the sample of the current study. Depressive symptoms may be a less relevant predictor of home physical environment characteristics for relatively highly disadvantaged populations whose home physical environment potential is more constrained by limited financial capital and material resources, crowding, and housing quality than in studies whose samples represent a larger range of socioeconomic statuses. The relatively elevated levels of depressive symptoms and economic disadvantage in the sample of the current study may have limited ability to detect any significant effect of depression on the home physical environment as hypothesized. To date, there is a limited amount of evidence to support the link between parental depressive symptoms and aspects of the home physical environment that are relevant for young children; the current study also did not support this link.

Home learning environment vs. home physical environment: Differential mechanisms of effect. The current study allowed for examination of the ways that living in a disadvantaged neighborhood may impact the home learning environment and the home physical environment differently. Existing literature suggests that economic disadvantage at the family level has a greater and more direct impact on the physical aspects of the home environment than cognitive stimulation in the home environment (Guo & Harris, 2000). Some aspects of the home learning environment, such as learning materials, have the potential to be impacted directly by investment capacity and material resources. Other aspects of the home learning environment are less likely affected directly by economic disadvantage but more likely indirectly via caregivers. For example, existing research suggests that mothers' provision of child-directed speech and developmentally appropriate academic lessons are impacted by parental non-monetary capacities

and well-being, including maternal depressive symptoms (Cox et al., 1987; Nievar et al., 2014; Oyserman et al., 2000).

The findings of the current study - that neighborhood disadvantage is directly associated with the physical environment and indirectly associated with the home learning environment - are consistent with existing literature on family economic disadvantage and physical versus other aspects of the home environment for children. The current study also extends this body of literature by examining these differences with regard to neighborhood economic disadvantage. The physical environment of the home reflects not only parental investments in the child's physical home environment but also the quality and safety of the housing in which the family lives (Brooks-Gunn et al., 1995; Guo & Harris, 2000). Poorer neighborhoods have lower quality housing stock with residents and landlords who may be less able to maintain properties (Evans, 2004, 2006; Mayer, 1997). Results suggest that, in the same way that families' monetary and material resources are particularly important for physical aspects of the home environment, the monetary and material resources of the neighborhood are also important for supporting physical housing conditions that are conducive to health child development. Thus, the current study advances literature on the multiple ways in which poverty can impact different aspects of children's environments.

Residential instability and the home environment. In addition to the effects of concentrated disadvantage, it was hypothesized that neighborhood residential instability would be associated with the home environment for preschoolers. The impact of residential instability as planned (i.e., as a latent factor) could not be examined due to low cohesion among indicators: percentage of residents who lived in a different residence one year ago, percentage of residences that were renter occupied, and percentage of residences vacant. In previous research guided by

social disorganization theory, residential instability has had less impact on neighborhood social processes and other outcomes than neighborhood poverty and concentrated disadvantage. Furthermore, its impact has been less frequently examined, and the indicators used to measure residential instability have been inconsistent across studies (Roy, McCoy, & Raver, 2014; Sampson, 2012; Veysey & Messner, 1999). The demographic indicators selected for the current study did not form an internally reliable measure of residential instability as a construct. In the current study, percentage of residences vacant was not strongly associated with percentage of residents who lived in a different residence one year ago. Frequent moves by neighbors and a high number of vacancies may each have import for residents, but for different reasons or in different ways. For instance, the concept that neighbors are moving may have a different impact on mothers than passing long-abandoned buildings on the street.

As an alternative to estimating a latent variable for the construct of residential instability, an observed variable was created using the mean of the residential instability indicators (i.e., percentage of residents who lived in a different residence one year ago, percentage of residences that were renter occupied, and percentage of residences vacant). Although the effects of residential instability were not examined using structural equation modeling due to poor overall model fit, the bivariate association of residential instability with the home environment outcomes were examined. Residential instability showed a small correlation with the home learning environment outcome but not the home physical environment outcome (see Table 5 and Table 6 for correlations).

Social Support and Social Embeddedness as Protective Factors

Social support and social capital have been shown to be linked with parental functioning, including protecting against negative effects of poverty-related stressors. Social support was

examined as a buffer of indirect neighborhood effects on the home environment for preschoolers. As social capital has a multiplicity of sources and various forms, both social support from family and friends and neighborhood social embeddedness were examined in the current study.

Social support from family and friends. It was hypothesized that the indirect effects of neighborhood disadvantage, particularly the effect of perceived disorder on depressive symptoms, would be buffered by high levels of social support from family and friends. Contrary to hypotheses, the association of perceived disorder and depressive symptoms was not significant for either high or low social support groups. There was also no indirect effect of concentrated disadvantage on home environment outcomes through perceived disorder and depressive symptoms for either group. As such, social support was not found to buffer the indirect effect of neighborhood disadvantage on the home learning environment.

There are multiple reasons that social support from family and friends may not have protected against the effects of neighborhood disadvantage and perceived disorder. First, it was noted that social support and depressive symptoms were strongly linked in the current study. Mothers with less social support from family and friends had significantly higher levels of depressive symptoms than mothers who had more social support from family and friends. Thus, the narrow range in depressive symptoms in each group may have limited the ability to detect an association of perceived disorder with depressive symptoms in either group. Also, for mothers who are socially isolated with a high level of depressive symptoms, the level of perceived disorder may be expected to have little impact on depression. Although social support from family and friends was associated with lower depression and a better quality home environment in general, the current study suggests that it may not buffer the effects of neighborhood-specific stressors.

Neighborhood social embeddedness. Neighborhood social embeddedness was also examined as a potential protective factor and buffer of the indirect effects of concentrated disadvantage on the home environment. Results showed that when social embeddedness was high, the impact of concentrated disadvantage on mothers' perceived disorder was lessened, which diminished the indirect effect of neighborhood disadvantage on the home learning environment. Social embeddedness also buffered the effect of concentrated disadvantage on the home physical environment. The negative effect of concentrated disadvantage on the quality of the home physical environment was only statistically significant in the group with low social embeddedness. Social embeddedness with neighbors who are also parents may be more relevant than social support from family and friends for buffering neighborhood-specific stressors. Social embeddedness in this study included willingness to provide help for neighbors, perceived likelihood that neighbors would provide help, and positive or friendly interactions with neighbors. Individuals who experience positive interactions with neighbors may perceive fewer signs of disorder in disadvantaged neighborhoods or may be less concerned about dangerous events occurring in their neighborhood than individuals who are unfamiliar with neighbors or are socially isolated. Neighborhood social embeddedness in this study also included material support such as perceived likelihood that a neighbor would loan a few dollars to buy food and likelihood that a neighbor would provide childcare. Informal exchange of material resources and services such as these may be particularly helpful for buffering the effects of economic hardship, which has been shown in this study and other studies to impact the quality of the home physical environment for disadvantaged families.

Limitations

The results of this study should be interpreted in light of its limitations. The measures of neighborhood disadvantage in the current study were based on census tract characteristics. Census tracts of residence may not be representative of where parents actually spend their time (Basta, Richmond, & Wiebe, 2010; Matthews & Yang, 2013) Further, individuals' perceptions of the same census tract may differ based not only on geographic location within the census tract but also by individual differences in appraisals. Future research on parenting in context should utilize mixed methods approaches and multiple measures of neighborhood and place, including census tract demographics, measures of activity space, and perceptions of neighborhood. A strength of the current study was that both objective and subjective measures of neighborhood were included, which allows for heterogeneity in perceptions of neighborhood (Aber & Nieto, 2000; Witherspoon & Hughes, 2014).

As parents in this study included only mothers, these findings should not be generalized to fathers or other caregivers. These findings also may not be generalizable to parents in middle- and high-income families. Finally, as with all neighborhood studies that are non-experimental, the directionality of the association between neighborhood characteristics and parenting is not conclusive, as families may be "selected" into certain neighborhoods systematically by socioeconomic or other characteristics. To address this in the current study, the effects of income were controlled in all analyses.

Theoretical Implications

As we have moved beyond the question, "Do neighborhoods matter," Sharkey and Faber (2014) have encouraged neighborhood researchers and developmental psychologists to consider *how* residential context matters. Mothers' perceptions of neighborhood disorder were important in the indirect link between structural neighborhood factors and the home environment in the

current study. Considerations of individuals' perceptions of their neighborhoods are relevant, as these perceptions likely more closely reflect their lived reality than census-wide demographic measures. Measures of perceived neighborhood attributes also account for individual differences in appraisals, which can impact well-being (Martin-Storey et al., 2012). In this way, considering residents' perceptions of their own neighborhoods, is an approach to understanding *how* objective neighborhood characteristics matter for individuals. The current study highlights the importance of considering both objective and subjective measures of neighborhood context. As empirical literature on the effects of neighborhood disadvantage on individual and developmental outcomes is growing, researchers should strive to advance knowledge on the ways in which children and families are affected by neighborhood context, including quantitative, qualitative, and mixed methods approaches to understanding how individual perceptions of neighborhood are linked with individual outcomes.

In the current study, residential instability was associated with the home learning environment but not the home physical environment at the bivariate level. Conversely, concentrated disadvantage was directly associated with the home physical environment but not with the home learning environment. These differential associations of home environment aspects with neighborhood characteristics should be interpreted in light of the evidence that residential instability and concentrated disadvantage each have differing (albeit related) effects on neighborhood-level social processes. Recent empirical tests of social disorganization theory have shown that residential instability and concentrated disadvantage have indeed had differential impacts on neighborhood-level social processes. While neighborhood residential stability (as measured by percentage of residents who lived within fifteen minutes walking distance of where they grew up) had effects on local friendship networks, neighborhood

socioeconomic status had effects on other social processes (Veysey & Messner, 1999). Local friendship networks and neighborhood social cohesion, which are neighborhood-level constructs and distinct from the construct of social embeddedness, may impact families' non-monetary capacities to provide cognitively stimulating home environments. Indeed, Kohen et al. (Kohen et al., 2008) found that social cohesion at the neighborhood level was indirectly associated with the home literacy environment through family functioning. This study and other studies have shown that neighborhood context does matter for parenting and home environment outcomes (Jeon et al., 2014; Klebanov et al., 1994; Kohen et al., 2008), and the crucial next step in this field of research is to examine which neighborhood characteristics matter for which outcomes and in what way. Future research should examine the differential effects of residential instability and concentrated disadvantage on children and families through social processes aggregated at the neighborhood level.

This study showed that neighborhood disadvantage had effects on the home learning environment and home physical environment in the group of mothers with low neighborhood social embeddedness but not in the group of mothers with high neighborhood social embeddedness. Although social disorganization theory posits that concentrated disadvantage has deleterious effects on social ties of the neighborhood as a whole (Sampson, Raudenbush, & Earls, 1997), the current study shows that the effects of census tract measures of neighborhood context are not uniform for all residents. Consistent with pluralistic neighborhood theory, neighborhoods may have strengths despite having risks, and different individuals perceive and interact with the same neighborhood differently. Future research which finds significant neighborhood impacts on individual outcomes should consider whether this is the case for all residents, or whether this effect may vary systematically. Similarly, future research which finds

no link between neighborhood context and individual outcomes should consider the presence of unexamined moderating factors (Cuellar et al., 2015). The current study highlights that the impact of neighborhood characteristics on individual outcomes may be dependent on moderating factors, such as social embeddedness.

Implications for Policy and Practice

Results showed that mothers' level of neighborhood social embeddedness protected against the effect of neighborhood structural disadvantage on the home learning environment and the home physical environment. Targeting neighborhood social processes such as informal support networks and may help to address the effects of structural disadvantage on families. Participation in neighborhood collective events, including recreational activities, public meetings, festivals, church congregations, and workshops can provide families with the opportunities to increase positive interactions with others in their neighborhood (Kimbrough-Melton & Melton, 2015; McDonnell, Ben-Arieh, & Melton, 2015; Sampson, 2012).

As the current study design is cross-sectional, directionality of these effects cannot be conclusive; it is possible that within a census tract, there are differences in the extent to which residents compete for scarce resources, which may correspond with differing levels of reciprocal interactions among neighbors within that part of the census tract. However, evidence from a quasi-experimental and mixed methods intervention study provides support for the idea that increasing neighborhood informal and institutional support for parents can change parenting practices, increase parents' community engagement, and increase child safety (Kimbrough-Melton & Melton, 2015; McDonnell et al., 2015). The Strong Communities initiative, which was a multi-year community-based intervention utilizing pre- and post-test design and a matched comparison sample, was an initiative to reduce rates of child maltreatment (Kimbrough-Melton

& Melton, 2015; McDonnell et al., 2015). In this intervention, community outreach workers' key strategies included organizing activities that facilitated reciprocal social and material support among parents as well as mobilizing support for parents' community engagement (Kimbrough-Melton & Melton, 2015; McDonnell et al., 2015). These efforts were shown to increase sense of neighborhood social support, alter perceptions of community parenting norms (e.g., perceptions that other parents in the community enacted safety precautions such as using appropriate baby gates), and increase parents' own implementation of safety precautions in the home (Kimbrough-Melton & Melton, 2015). The results of the current study, put into context of literature on community-based interventions, provide evidence that improving the quality of conditions for families and preschool age children are best approached by considering not only parents' support for children, but also communities' support for parents and families.

A small but significant amount of the variance in the home learning environment was also explained by indirect effects of neighborhood disadvantage. These findings suggest that improvement in the quality of the home environment for preschoolers may require structural interventions to address concentration of economic disadvantage in neighborhoods. This may particularly relevant for the physical aspects of the home environment. Affordable housing, including publicly subsidized housing such as Section 8, is needed for families with low income to allocate reasonable proportions of income to non-housing necessities (e.g., food, transportation, medical care, etc.). Policymakers may also address concentrated disadvantage by focusing on exclusionary zoning laws that have restricted access to affordable housing in certain communities, contributing to economic and racial segregation. Finally, as preschool serves as another important proximal environment in addition to the home environment, universal access

to quality preschool may supplement cognitive stimulation and learning experiences at home prior to kindergarten for at-risk families.

Directions for Future Research

In the current study, maternal depression was not associated with the quality of the home physical environment. It should not be concluded based on this finding that individual differences among parents are not important for the quality of the physical home environment for preschoolers. There are likely other capacities that interact with or are impacted by environmental stress. For example, measures of maternal executive functioning - including measures of cognitive flexibility and problem-solving - have been linked to both the learning environment and the physical environment of the home for preschool age children (Azar et al., 2012). Parents' attentional and organizational capacities may be further taxed by stressful or chaotic neighborhood conditions. For mothers with executive functioning or problem-solving deficits, support from neighbors and the community may serve as compensatory factors in situations of high family risk.

Parental injury prevention beliefs may also play a role in the association of neighborhood disadvantage and the home physical environment. Living in a disadvantaged neighborhood may be associated with supervision practices and injury prevention beliefs that are thought to be maladaptive. Injury prevention beliefs that are thought to be maladaptive - including believing that fate and chance play a large role in children's injury outcomes and believing that injuries can have positive outcomes - have been associated with childhood injuries and child neglect (Azar, Miller, Stevenson, & Johnson, In press; Morrongiello & Corbett, 2006). Research on neighborhood disadvantage and parental monitoring and supervision shows mixed findings (Cuellar et al., 2015). A subset of parents may be able to increase their vigilance and supervision

in response to high perceived neighborhood risks, including attending to physical risks in home environment. On the other hand, living in a neighborhood that is disadvantaged and perceived to be disordered may be associated with the development injury prevention beliefs that are thought to be maladaptive. For instance, believing that injuries make people stronger is an understandable way of coping in a place where injuries happen often. Future research should continue investigate individual caregiver differences, including cognitive flexibility, problem-solving abilities, and supervision practices, and injury prevention beliefs in the association of neighborhood disadvantage and the home physical environment. Identifying individual characteristics which exacerbate effects of disadvantage on preschoolers' environments may help identify families in greatest need of targeted services.

Conclusion

The effects of the environment on family processes are usually neither direct nor simple, and involve interdependent shifts in the context, the characteristics of the individuals, and their behavior (Bronfenbrenner, 1986; Garbarino, Bradshaw, & Kostelny, 2005). Parenting should be understood not only in terms of dyadic parent-child interactions, but also in terms of the larger context (Osofsky & Thompson, 2000; Wadsworth & Ahlqvist, 2015), including the extent to which environmental characteristics can be both inhibiting and promoting (Garcia Coll, 1996). Bronfenbrenner challenged developmental and psychological researchers to consider, "How are intrafamilial processes affected by extrafamilial conditions?" (Bronfenbrenner, 1986). At the time of this assertion, a majority of developmental research had considered the family as the sole context in which human development occurs. Thirty years later, the field of psychology has much ground yet to cover on the development of children with regard to extrafamilial influences, including neighborhood context. Sampson (2012, p. 424) has asserted that "*linking investments*

in in early childhood development with community context is thus an idea whose time has come.”

The current study is a step in the direction of understanding how the neighborhood “comes through the door” to impact the home environments of young children in low-income families and informs efforts to address and improve existing socioeconomic disparities in early childhood development.

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APPENDIX A: ADDITIONAL TABLES

Table 1.

Participant Demographic Information

| | M | (SD) |
|---|-------|--------|
| Age | 27.33 | (5.46) |
| Years of education | 11.45 | (1.33) |
| Number of children | 2.80 | (1.14) |
| Number of people living in the home | 4.75 | (1.99) |
| Years living in the neighborhood | 5.65 | (7.75) |
| | % | (N) |
| Income annually | | |
| Less than \$8,000 | 14.89 | (28) |
| \$8,001-\$16,000 | 45.21 | (85) |
| \$16,001-\$26,000 | 31.38 | (59) |
| More than \$26,001 | 8.51 | (16) |
| Race/Ethnicity | | |
| African American (non-Hispanic) | 72.30 | (136) |
| African American/Hispanic | 4.80 | (9) |
| Caucasian (non-Hispanic) | 6.40 | (12) |
| Hispanic | 8.50 | (16) |
| Other Races/Ethnicities | 8.00 | (15) |
| Marital Status | | |
| Unmarried (single, separated, divorced) | 90.96 | (171) |
| Married | 9.04 | (17) |
| Employment | | |
| Unemployed | 76.10 | (143) |
| Full time | 11.17 | (21) |
| Part time | 12.77 | (24) |

N = 187

Table 2.

*Bivariate Correlations, Means, and Standard Deviations of Census Tract Demographic**Variables from the American Community Survey*

| | Concentrated Disadvantage | | | | Residential Instability | | |
|-----------------------------------|---------------------------|-------|-------|-------|-------------------------|-------|-------|
| | Variables | | | | Variables | | |
| | 1. | 2. | 3. | 4. | 5. | 6. | 7. |
| 1. % below poverty line | - | | | | | | |
| 2. % single head of household | .69** | - | | | | | |
| 3. % adults less than H.S. degree | .71** | .48** | - | | | | |
| 4. % receiving public assistance | .80** | .64** | .74** | - | | | |
| 5. % residences renter occupied | .33* | .12 | .22** | .36** | - | | |
| 6. % different house 1 year ago | .06 | -.14† | .08 | .01 | .35** | - | |
| 7. % vacant housing units | .11 | .01 | .07 | .11 | .34** | .12† | - |
| M | 32.63 | 25.83 | 27.61 | 13.12 | 50.05 | 13.42 | 17.51 |
| SD | 16.16 | 8.46 | 11.24 | 7.32 | 15.21 | 7.52 | 8.02 |

** $p < .01$, * $p < .05$, † $p < .10$

Table 3.

Bivariate Correlations, Means, and Standard Deviations of Home Learning Environment and Home Physical Environment Variables

| | 1. | 2. | 3. | 4. | 5. | 6. |
|------------------------------|-------|-------|-------|-------|-------|-------|
| 1. Home Learning Environment | - | | | | | |
| 2. HOME Physical Items | .19** | - | | | | |
| 3. CLEAN Total | .07 | .47** | - | | | |
| 4. CWBS Furnishings | .08 | .30** | .30** | - | | |
| 5. CWBS Safety | -.08 | .18* | .40** | .16* | - | |
| 6. CWBS Sanitation | .16* | .53** | .63** | .30** | .32** | - |
| M | 16.86 | 4.05 | 78.20 | 93.75 | 69.17 | 84.93 |
| SD | 3.65 | 1.25 | 17.20 | 9.27 | 28.45 | 17.83 |

** $p < .01$, * $p < .05$, † $p < .10$

Table 4.

Means and Standard Deviations of Perceived Disorder, Depressive Symptoms, Social Support, and Social Embeddedness Variables

| | M | (SD) |
|---------------------|-------|---------|
| Perceived Disorder | 28.36 | (8.46) |
| Depressive Symptoms | 17.84 | (11.86) |
| Social Support | 43.89 | (6.59) |
| Social Embeddedness | 24.73 | (8.34) |

Table 6.

Correlations among all latent and observed predictor and outcome variables

| | 1. | 2. | 3. | 4. | 5. | 6. | 7. | 8. | 9. |
|------------------------------|------|--------|-------|------|--------|-------|------|-----|----|
| 1. Family Income | - | | | | | | | | |
| 2. Residential Instability | -.02 | - | | | | | | | |
| 3. Concentrated Disadvantage | .09 | .21** | - | | | | | | |
| 4. Perceived Disorder | .10 | .27** | .31** | - | | | | | |
| 5. Depressive Symptoms | .12 | -.04 | -.12 | .16* | - | | | | |
| 6. Social Support | .10 | -.02 | -.03 | .01 | -.30** | - | | | |
| 7. Social Embeddedness | .03 | .01 | .08 | .16* | -.15* | .21** | - | | |
| 8. Home Learning Environment | .04 | -.19** | .05 | .03 | -.28** | .17* | .11 | - | |
| 9. Home Physical Environment | .07 | -.03 | -.11 | -.09 | -.14 | -.09 | -.10 | .11 | - |

** $p < .01$, * $p < .05$, † $p < .10$

Table 7.

Model Fit for Social Support Multigroup Moderation Models

| | Model Fit | Change in Chi-Square test from previous model |
|--------------------------------------|--|--|
| 1. All parameters free | $\chi^2 = 139.19$, df = 117, $p = .079$ | |
| 2. Loadings constrained | $\chi^2 = 161.63$, df = 127, $p = .021$ | $\Delta \chi^2 = 22.452$, df = 10, $p = .013$ |
| 3. Loadings and paths constrained | $\chi^2 = 171.01$, df = 140, $p = .038$ | $\Delta \chi^2 = 9.372$, df = 13, $p = .744$ |

Table 8.

Model Fit for Social Embeddedness Multigroup Moderation Models

| | Model Fit | Change in Chi-Square test from previous model |
|---|---|--|
| 1. All parameters free | $\chi^2 = 118.36$, df = 117, $p = .45$ | |
| 2. Loadings constrained | $\chi^2 = 129.20$, df = 126, $p = .40$ | $\Delta \chi^2 = 10.85$, df = 9, $p = .29$ |
| 3. Loadings and paths constrained | $\chi^2 = 158.33$, df = 140, $p = .14$ | $\Delta \chi^2 = 29.13$, df = 14, $p = .01$ |
| 4. Free constraint of perceived disorder on concentrated disadvantage | $\chi^2 = 150.48$, df = 139, $p = .24$ | $\Delta \chi^2 = 7.90$, df = 1, $p < .01$ |
| 5. Free constraint of physical environment on concentrated disadvantage | $\chi^2 = 146.80$, df = 138, $p = .29$ | $\Delta \chi^2 = 3.69$, df = 1, $p < .05$ |

APPENDIX B: MEASURES

American Community Survey

Indicators of neighborhood disadvantage at the census tract level were downloaded from the American Community Survey.

Concentrated Disadvantage

- % families receiving public assistance
- % families with income in 2011 below poverty level
- % family households with single head of house
- % civilian population 16 and older unemployed
- % 25 and older with less than high school degree

Residential Instability

- % different house than 1 year ago
- % occupied housing units: renter occupied
- % housing units vacant

Perceptions of Neighborhood Scale

Perceived Crime Subscale

| | 1 | 2 | 3 | 4 | 5 |
|---|----------------|-------|----------|----------|-------------------|
| | Strongly Agree | Agree | Not Sure | Disagree | Strongly Disagree |
| There are troublemakers hanging around in my neighborhood. | | | | | 1 2 3 4 5 |
| There is public drinking in my neighborhood. | | | | | 1 2 3 4 5 |
| There is open drug abuse/dealing in my neighborhood. | | | | | 1 2 3 4 5 |
| It's safe to walk alone in my neighborhood at night. | | | | | 1 2 3 4 5 |
| Some friends and relatives don't visit me at home because they don't feel safe. | | | | | 1 2 3 4 5 |
| People are scared of being robbed in my neighborhood. | | | | | 1 2 3 4 5 |
| People are scared of being raped in my neighborhood. | | | | | 1 2 3 4 5 |
| People are scared of being mugged in my neighborhood. | | | | | 1 2 3 4 5 |
| People are scared of being murdered in my neighborhood. | | | | | 1 2 3 4 5 |

Social Embeddedness Subscale

| | 1 | 2 | 3 | 4 | 5 |
|---|-----------------------|-------------------|------------------------|-----------------------|---------------|
| | Very Likely | Likely | Not Sure | Unlikely | Very Unlikely |
| How likely is it that you could ask a neighbor to loan you a few dollars for some food? | | | | | 1 2 3 4 5 |
| How likely is it that a neighbor could ask you to borrow a few dollars for some food? | | | | | 1 2 3 4 5 |
| How likely is it that you get help from a neighbor (e.g., watch your place if you're away, take care of your child when you're sick)? | | | | | 1 2 3 4 5 |
| How likely is it that you help a neighbor (e.g., watching their place if they're away, taking care of their child if they are sick)? | | | | | 1 2 3 4 5 |
| | 1 | 2 | 3 | 4 | 5 |
| | Very Often (daily) | Often (1/week) | Sometimes (1/month) | Seldom (1/3 month) | Very Seldom |
| How often do you greet your neighbors when you see them? | | | | | 1 2 3 4 5 |
| How often do you casually visit with neighbors, either going over to their place or their coming over to yours? | | | | | 1 2 3 4 5 |
| How often do you go to neighborhood activities (e.g., church fair, neighborhood meetings, sports events)? | | | | | 1 2 3 4 5 |
| How often do you exchange/share child care with a neighbor? | | | | | 1 2 3 4 5 |
| How often do you talk to neighbors who are also parents? | | | | | 1 2 3 4 5 |

Center for Epidemiology Scales for Depression

Instructions: In this last instrument, we want to turn to how you are doing in your life now. Many moms have struggled around other issues in their lives and these last set of questions asks about these. The following questions have to do with feelings. Circle the number of each statement which best describes how often you felt or behaved this way during the past week.

| | Rarely or none of the time (less than 1 day) | Some or a little of the time (1-2 days) | Occasionally or a moderate amount of the time (3-4 days) | Most or all of the time (5-7 days) |
|--|--|---|--|---|
| During the past week: | | | | |
| 1) I was bothered by things that usually don't bother me | 0 | 1 | 2 | 3 |
| 2) I did not feel like eating; my appetite was poor | 0 | 1 | 2 | 3 |
| 3) I felt that I could not shake off the blues even with help from my family and friends | 0 | 1 | 2 | 3 |
| 4) I felt that I was just as good as other people | 0 | 1 | 2 | 3 |
| 5) I had trouble keeping my mind on what I was doing | 0 | 1 | 2 | 3 |
| 6) I felt depressed | 0 | 1 | 2 | 3 |
| 7) I felt that everything I did was an effort | 0 | 1 | 2 | 3 |
| 8) I felt hopeful about the future | 0 | 1 | 2 | 3 |
| 9) I thought my life had been a failure | 0 | 1 | 2 | 3 |
| 10) I felt fearful | 0 | 1 | 2 | 3 |
| 11) My sleep was restless | 0 | 1 | 2 | 3 |
| 12) I was happy | 0 | 1 | 2 | 3 |
| 13) I talked less than usual | 0 | 1 | 2 | 3 |
| 14) I felt lonely | 0 | 1 | 2 | 3 |
| 15) People were unfriendly | 0 | 1 | 2 | 3 |
| 16) I enjoyed life | 0 | 1 | 2 | 3 |
| 17) I had crying spells | 0 | 1 | 2 | 3 |
| 18) I felt sad | 0 | 1 | 2 | 3 |
| 19) I felt that people disliked me | 0 | 1 | 2 | 3 |
| 20) I could not get "going" | 0 | 1 | 2 | 3 |

Home Observation for the Measurement of the Environment – Early Childhood

| | Not Present | Present |
|--|----------------|---------|
| Academic Stimulation Items | | |
| Child is encouraged to learn colors (ask) | 0 | 1 |
| Child is encouraged to learn patterned speech (ask) | 0 | 1 |
| Child is encouraged to learn spatial relationships (ask) | 0 | 1 |
| Child is encouraged to learn numbers (ask) | 0 | 1 |
| Child is encouraged to learn to read a few words (ask) | 0 | 1 |
| Learning Materials Items | | |
| Child has toys which teach colors, sizes, and shapes (observe or ask) | 0 | 1 |
| Child has 3 or more puzzles (observe or ask) | 0 | 1 |
| Child has a record, tape or CD player and at least 5 children's records, tapes or CDs (observe or ask) | 0 | 1 |
| Child has toys or games permitting free expression (observe or ask) | 0 | 1 |
| Child has toys or games which help teach numbers (observe or ask) | 0 | 1 |
| Child has at least 10 children's books (observe or ask) | 0 | 1 |
| At least 10 books are visible in the apartment or home (observe or ask) | 0 | 1 |
| Family buys and reads a daily newspaper (ask) | 0 | 1 |
| Family subscribes to at least one magazine (ask) | 0 | 1 |
| Child is encouraged to learn shapes (ask) | 0 | 1 |
| Language Stimulation Items | | |
| Child has toys that help teach names of animals (ask) | 0 | 1 |
| Child is encouraged to learn the alphabet (ask) | 0 | 1 |
| Parent teaches child simple verbal manners (e.g., please, thank you, I'm sorry; ask) | 0 | 1 |
| Parent encourages child to talk and takes time to listen (ask) | 0 | 1 |
| Child is permitted choice in breakfast or lunch menu (ask) | 0 | 1 |
| Parent uses correct grammar and pronunciation (observe) | 0 | 1 |
| Parent's voice conveys positive feelings about child (observe) | 0 | 1 |

Home Observation for the Measurement of the Environment – Early Childhood

| Physical Environment Subscale Items | Not | |
|--|---------|---------|
| | Present | Present |
| Interior of home or apartment is not dark or perceptually monotonous (observe) | 0 | 1 |
| Building appears safe and free of hazards (observe) | 0 | 1 |
| Rooms are not overcrowded with furniture (observe) | 0 | 1 |
| House has 100 square feet of living space per person (observe) | 0 | 1 |
| House is reasonably clean and minimally cluttered (observe) | 0 | 1 |

Checklist for Living Environments to Assess Neglect**Living Room**

Number of clothes and linens not belonging

Number of objects not belonging

Overall cleanliness rating

Kitchen

Number of clothes and linens not belonging

Number of objects not belonging

Overall cleanliness rating

Bathroom

Number of clothes and linens not belonging

Number of objects not belonging

Overall cleanliness rating

Child Well-Being Scales

Household Furnishings

- 1. Adequate
 - (a) Has basic, essential furnishings, kitchen (stove, refrigerator) and bathroom facilities, that are in fair and good condition and in working order
 - (b) Needed repairs or replacements made quickly
 - (c) Has specialized infant/child care items (e.g., crib, high chair, carriage), if needed
 - (d) No more than one or two minor problems (e.g., needs more glassware; repairman on call; desire for nicer furniture)
- 2. Mildly inadequate
 - (a) Has all essential appliances and facilities in working order
 - (b) Has most basic furnishings, but some are very worn though usable
 - (c) Needs one or two furniture items (e.g., another bed, table, more chairs) or infant care items
 - (d) Quantity of several items insufficient in relation to family size (linens, towels, blankets, glassware, utensils)
- 3. Moderately inadequate
 - (a) Has all essential appliances and facilities, but most are old and in need of frequent repairs, resulting in non-operable periods (e.g., hot plate might substitute for stove, frequent inability to refrigerate perishable foods, etc)
 - (b) Needs several additional furnishings (e.g., some mattresses on floor, or family members must crowd on beds, or no large table for family meals)
 - (c) Many items are insufficient in quantity in relation to family size
 - (d) Available utensils or furnishings often used for other than intended use (e.g., pots as bowls, sofa as bed)
 - (e) May lack space heater or fans when needed seasonally
- 4. Seriously inadequate
 - (a) Essential household and sanitary functions cannot be pursued due to lack of (or inoperability of) essential kitchen appliances or bathroom facilities
 - (b) Few furnishings, most beyond repair or functional use
 - (c) There are no (or almost no) linens, towels, blankets, utensils, pots, pans. Makeshift items used (e.g., crates for tables or seating)
 - (d) Household has a "bare" look

Household Sanitation

- 1. Adequate
 - (a) Generally clean and orderly
 - (b) Carpet and tile swept often and washed as needed (but some lint, threads, paper scraps may be seen)
 - (c) Regular dusting (no more than thin layer of dust on tables)
 - (d) Pleasant to neutral odors

- (e) Home is orderly (but articles for daily living may be around: newspapers, books, coats not hung up)
 - (f) Dishes washed or at least put in sink after each meal
 - (g) Groceries properly stored
 - (h) Linens clean; no vermin
- 2. Mildly inadequate
- (a) Untidy, dusty, minor dirt buildup
 - (b) Carpet and tile have many particles of debris and are spotted; swept sometimes but rarely washed
 - (c) Tables, shelves, objects are very dusty; cobwebs in corners
 - (d) Stale, stuffy odors. Garbage not kept in proper receptacle
 - (e) Home is not picked up; things are all over (but no “piles” of trash)
 - (f) Dirty dishes lay around home; washed at night or next day
 - (g) Groceries lay all around (but perishable foods generally refrigerated)
 - (h) Some creeping vermin, but few in number, appearing mainly at night (no rats)
 - (i) Walls, windows, doors, bathroom fixtures are spotted, stained, streaked with dirt
- 3. Moderately inadequate
- (a) Carpet and tile have dirt buildup; carpet smells
 - (b) Dust and dirt are layered all over and accumulated in corners
 - (c) Home smells of mildew, rot, spoilage; bathroom has strong smells of urine/feces (but little visible)
 - (d) Trash is around, and some corners or rooms are used to pile up junk or trash, which is rarely moved; garbage not kept in any receptacle
 - (e) Dishes only washed when no clean ones are left
 - (f) Perishable food found unrefrigerated and sometimes spoiled
 - (g) Creeping vermin frequent during daylight; home may have mice (no rats)
 - (h) Walls, doors, bathroom fixtures are discolored from and smeared with dirt and grease
 - (i) Linens used after becoming dirty
- 4. Seriously inadequate
- (a) Carpet, tile, walls, doors, bathroom fixtures are layered with encrusted dirt, debris, food wastes; human or animal waste prominent
 - (b) Thick dust and grease coat everything
 - (c) Home smells overwhelmingly of urine/feces/spoilage throughout
 - (d) Trash and junk piled up and layered on the floor so that it is difficult to get around
 - (e) Dishes are not washed; family eats off dirty dishes, or doesn't use them
 - (f) Perishable foods found spoiled; spoiled foods not promptly discarded
 - (g) Heavy rodent infestation; creeping vermin have “taken over”
 - (h) Family sleeps on dirty mattresses, or on linens black with dirt and soil
 - (i) But no children are ill as a result
- 5. Severely inadequate
- (a) Household exhibits many of the conditions described under (4), “seriously inadequate”

- (b) As a result of this poor sanitation, at least one child is physically ill (e.g., intestinal disorder, food poisoning) required medical treatment

Physical Safety in Home

- 1. Safe
 - (a) There are no obviously hazardous conditions in the home (see examples below)
- 2. Somewhat unsafe
 - (a) There are one or two hazardous conditions in the home (but child has not sustained injury as a result)
- 3. Moderately unsafe
 - (a) There are many hazardous conditions in the home (but child has not sustained injury as a result)
- 4. Seriously unsafe
 - (a) There are one or two hazardous conditions in the home. Child has sustained a physical injury requiring medical treatment as a result
- 5. Severely unsafe
 - (a) There are many obviously hazardous conditions in the home. Child has sustained a physical injury requiring medical treatment as a result

Social Support Inventory

Social Support from Family

Think of a typical week. About how many times did you talk on the phone with your family?
How satisfied are you with this amount of phone visiting?

In a typical week, how many times do you visit your family? _____
How satisfied are you with this amount of visiting?

If you were to become upset or angry, would you have someone in your family to talk honestly to, who is not involved? How many people?
How satisfied are you with this situation?

When you are happy, is there someone in your family you can share it with - someone who will be happy just because you are?
How satisfied are you with this situation?

Social Support from Friends

Think of a typical week. About how many times did you talk on the phone with your friends?
How satisfied are you with this amount of phone visiting?

In a typical week, how many times do you visit with your friends? _____
How satisfied are you with this amount of visiting?

If you were to become upset or angry, would you have a friend to talk to honestly, who is not involved? How many people?
How satisfied are you with this situation?

When you are happy, is there a friend you can share it with – someone who will be happy just because you are?
How satisfied are you with this situation?