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ORIGINAL ARTICLE

How Does the Neighborhood "Come through the Door?" Concentrated Disadvantage, Residential Instability, and the Home Environment for Preschoolers

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Highlights

- Expands limited literature on indirect links of neighborhood demographics and home environment.
- Advances understanding of socioeconomic- and place-based disparities in developmental outcomes.
- Identifies protective factors which may ameliorate effects of neighborhood disadvantage on families.
- Contributes to knowledge on risk for child neglect using direct assessments of home environment.
- Informs interventions aimed at lessening the effects of neighborhood disadvantage on families.

Abstract Living in a disadvantaged neighborhood is associated with heightened risk for poor school readiness and health outcomes in early childhood, and the home environment is thought to be a primary mechanism by which neighborhood context impacts preschoolers. This study examined the effects of neighborhood concentrated disadvantage and neighborhood residential instability on the home physical environment and home learning environment for preschoolers in economically disadvantaged families (N = 187). Using structural equation modeling, mothers' perceived neighborhood disorder and depressive symptoms were examined as mechanisms by which neighborhood context "comes through the door." Mothers' neighborhood social embeddedness was also explored as a protective factor. Results showed that concentrated disadvantage was negatively associated with the quality of the home physical environment, and residential instability was negatively associated with the quality of the home learning environment. Concentrated disadvantage had an indirect effect on the home learning environment through mothers' perceived neighborhood disorder and depressive symptoms. The effects of concentrated disadvantage on the home environment were buffered by mothers' neighborhood social embeddedness. Study findings advance understanding of socioeconomic- and place-based disparities in developmental outcomes and identify potential targets for interventions aimed at lessening effects of neighborhood disadvantage on families with young children.

Keywords Poverty · Neighborhood disorder · Parenting · Depression · Social embeddedness · Home learning environment

Indroduction

Children growing up in disadvantaged neighborhoods are at heightened risk for poor cognitive, school readiness, and physical health outcomes, even after accounting for family socioeconomic factors (Chen & Paterson, 2006; Jeon, Buettner & Hur, 2014; Leventhal & Brooks-Gunn, 2000; Roy, McCoy & Raver, 2014). The effects of neighborhood disadvantage are observable as early as preschool, and these effects may carry forward to subsequent developmental periods (Anderson, Leventhal & Dupéré, 2014; Duncan & Brooks-Gunn, 1995). Particularly during early childhood, when children have limited agency and are dependent on caregivers, neighborhood context is thought to impact development through more proximal

[Correction added on January 24, 2018, after first online publication: the first part of the title was omitted.]

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contexts, including the home environment (Bronfenbrenner, 1986; Leventhal & Brooks-Gunn, 2000). We need a better understanding of the associations between neighborhood context and the home environment for preschoolers, including parents' provision of home learning experiences and a safe and sanitary home physical environment.

Although economic disadvantage has negative implications for both the physical environment and the learning environment of the home, the effects of neighborhood context on these aspects of the home environment for preschoolers are less well-documented (Bradley, Corwyn, McAdoo & García Coll, 2001; Vaden-Kiernan et al., 2010). Empirical work on neighborhood context and children's proximal environments has focused on parental warmth, monitoring, and punitive practices far more than home learning experiences and the home physical environment (Cuellar, Jones & Sterrett, 2015; Kohen, Leventhal, Dahinten & McIntosh, 2008). Additionally, few mechanisms by which neighborhood context may impact preschoolers' home environments have been tested.

The Physical Environment and Learning Environment of the Home for Preschoolers

In the past decade, there has been a call to consider the physical environments that children and families inhabit, particularly for families with low income (Evans, 2004; Sharkey & Faber, 2014). Physical features of the environment have important implications for children's health and development (Evans, 2006). A dark, noisy, and cluttered home environment is associated with greater injury risk for toddlers and school-age children (Matheny, 1986; Mott, 1999), and poor housing and home physical environment quality predicted lower school readiness for preschoolers (Bradley, Corwyn, Burchinal, McAdoo & García Coll, 2001; Coulton, Richter, Kim, Fischer & Cho, 2016). Economically disadvantaged families generally live in homes and apartments of lower housing quality (Evans, 2006), but few studies have examined the link between neighborhood concentrated disadvantage and children's home physical environment. One study reported that the proportion of neighbors with low income was associated with a poorer quality home physical environment for preschoolers (Klebanov, Brooks-Gunn & Duncan, 1994). Neighborhood residential instability may also contribute to residents' and landlords' difficulty maintaining integrity of properties.

The home learning environment serves as a primary context in which preschoolers are appropriately supported and challenged (Totsika & Sylva, 2004) and has been conceptualized as the presence of books, learning materials, and provision of developmentally appropriate lessons such as shapes, numbers, and letters (Bradley, 1993). During the preschool years, the home learning environment is an important predictor of social development and academic achievement among poor and non-poor groups and among children of different ethnicities (Bradley, Corwyn, Burchinal et al., 2001). Several studies have shown that neighborhood socioeconomic status is negatively associated with caregivers' provision of home learning experiences (Jeon et al., 2014; Klebanov et al., 1994). Concentrated disadvantage may directly impact the ability to acquire learning materials over and above family-level disadvantage by limiting access to institutional as well as informal resources (Garbarino & Ganzel, 2000; Jencks & Mayer, 1990).

Although no studies to date have explicitly tested the association of neighborhood residential instability and the home environment for preschoolers, Coulton, Korbin, Su and Chow (1995) found that both neighborhood residential instability and disadvantage were associated with higher rates of child maltreatment. Child neglect in particular is often characterized by lack of cognitive stimulation and physical inadequacies of the home (Azar, Stevenson & Johnson, 2012) and has been found to be more strongly associated with neighborhood disadvantage than other types of child maltreatment (Drake & Pandey, 1996).

How Does the Neighborhood "Come through the Door?" Considering Parents' Perceived Neighborhood Disorder and Depressive Symptoms

Social disorganization theory was developed to explain clustering of high crime rates in geographic areas of concentrated disadvantage and residential instability (Sampson, 2003; Sampson & Groves, 1989; Shaw & McKay, 1942). In the same way that crime is thought to be, in part, a product of unfavorable community conditions, so too are maladaptive parenting behaviors in the home environment, including child neglect (Coulton et al., 1995; Drake & Pandey, 1996). By disrupting informal social control processes, concentrated disadvantage and residential instability can result in visible cues of disorders such as unsupervised teen groups and public drinking or drug-dealing (Sampson & Groves, 1989; Skogan, 1990). Living in a neighborhood where one perceives high levels of disorder is associated with depressive symptoms for adults (Brisson, Lopez & Yoder, 2014; Wandersman & Nation, 1998).

The current study is one of a small number of studies (Jeon et al., 2014; Jocson & McLoyd, 2015; Kohen et al., 2008; Kotchick, Dorsey & Heller, 2005) that expands the family stress model to consider neighborhood stressors as aspects of economic disadvantage that may impact parental functioning in the home via parental depressive symptoms. The family stress model posits that economic stress

influences parenting practices by compromising parents' psychological well-being. Few studies have simultaneously considered perceived neighborhood disorder, depressive symptoms, and parenting behaviors in the home environment (Lin & Reich, 2016), and fewer have also incorporated structural neighborhood characteristics of concentrated disadvantage and residential instability.

A large body of research has shown that maternal depressive symptoms are associated with less cognitive stimulation in the home, including less time spent reading with children, fewer age-appropriate verbal exchanges, and fewer stimulating learning materials (Conners-Burrow et al., 2014; Herrera, Reissland & Shepherd, 2004; Nievar, Moske, Johnson & Chen, 2014). Although aspects of the home physical environment may be constrained by features of the built environment, caregivers can also partially regulate this environment as experienced by preschoolers. Such capacities—including eliminating hazards, maintaining a well-lit environment, discarding waste, and prioritizing sanitation of food preparation areas—may be hindered by depression. A limited number of studies have shown that depressive symptoms in mothers of toddlers and preschoolers are associated with higher levels of home safety risks such as poison accessibility, dangerous objects, exposure to second-hand smoke, and not having electric socket covers (Conners-Burrow et al., 2014; Zajicek-Farber, 2010).

Neighborhood Social Embeddedness: A Proposed Moderator

Social disorganization theory posits that the ties among residents at the neighborhood level are diminished by conditions of concentrated disadvantage and residential instability (Sampson & Groves, 1989). However, even within the most disadvantaged neighborhoods, residents' levels of social embeddedness can vary greatly from individual to individual, and neighborhoods can have strengths despite having risks (Aber & Nieto, 2000; Witherspoon & Ennett, 2011). The construct of social embeddedness, which includes material and instrumental support and ties with neighbors, is more akin to neighborhood social support or social capital than to the construct of collective efficacy, which refers to the ability of a neighborhood to realize its common values (Sampson, Morenoff & Earls, 1999). Social embeddedness among one's neighbors may enable exchange of informal services such as childcare, sharing information about community resources and developmentally appropriate parenting strategies, and even intervention on children's behalf (Garbarino, Bradshaw & Kostelny, 2005; Garbarino & Ganzel, 2000). A lack of informal and communal support, combined with the inability to purchase support in the marketplace, may put extremely disadvantaged families at greatest risk (Garbarino & Ganzel, 2000).

Current Study

The goal of this study was to examine the associations among neighborhood concentrated disadvantage, residential instability, and the physical and learning environment of the home for preschoolers. Mothers' perceived neighborhood disorder and depressive symptoms were examined as mechanisms by which neighborhood structural characteristics may be indirectly linked with the home environment as experienced by preschoolers. Neighborhood social embeddedness was examined as a protective factor and potential buffer of the effects of neighborhood disadvantage. This study advances understanding of the ways in which neighborhood may "come through the door" and has the potential to inform interventions aimed at ameliorating the effects of neighborhood stressors for families with young children.

It was hypothesized that neighborhood concentrated disadvantage and residential instability would be negatively associated with home environment outcomes directly. Neighborhood concentrated disadvantage and residential instability were also hypothesized to have indirect effects on the home environment outcomes through mothers' perceived disorder and depressive symptoms. Finally, it was hypothesized that neighborhood social embeddedness would buffer the effects of neighborhood concentrated disadvantage and residential instability. Based on previous research, it was hypothesized that the association of concentrated disadvantage with perceived disorder would be moderated by social embeddedness (Ross & Jang, 2000). However, all associations were explored for moderation by social embeddedness.

Methods

Participants

Participants were 187 mothers of children age 3–5 years (M = 4.22, SD = 0.86) living in the city of Philadelphia. A majority of study participants (90.1%) reported annual household income at or below the poverty line, with median family income between $12,000 and $14,000 (Office of the Assistant Secretary for Planning and Evaluation, 2012). Participants were African American non-Hispanic (n = 135, 72.2%), Caucasian Hispanic (n = 16, 8.6%), Caucasian non-Hispanic (n = 12, 6.4%), and other races/ethnicities (n = 24, 12.8%) and ranged in age from 18 to 43 years (M = 27.36, SD = 5.46). Level of education ranged from 6th grade to some college, with approximately

one-third of participants completing less than high school (n = 65, 34.8%). Most participants were unemployed (n = 143, 76.5%) and were not married (n = 170, 90.9%). Participants lived in their neighborhood for 5.65 years on average (SD = 7.75). Participants resided within a total of 111 different census tracts, a majority of which (57.67%) represented only one participating family. Of the remaining census tracts, 28.82% represented two participating families, 12.61% represented three to five participating families, and one tract (0.9%) had seven participating families.

Because perpetration of neglect was of interest for the larger study funded by the NICHD (#R01HD053713; PI: Azar), participants consented to a review of Child Protective Services (CPS) records. In all, 69 participants (36.9%) had CPS records of neglect as perpetrator, and 16 participants (8.56%) had another type of CPS record (e.g., perpetration of physical abuse). Perpetration of neglect is often characterized by physical inadequacies of the home and limited cognitive stimulation for preschoolers, and as such, the current study sample exhibits considerable variability in the outcome measures. Thus, this study allows for testing how neighborhood context is associated with variability in the home environment in 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) and agencies that are contracted to provide parenting services to families involved with child protection. Study measures were administered by trained interviewers during three interview sessions in the mothers' homes. Participants provided informed consent to participate in the study and informed consent for review of CPS records. All questionnaires were read aloud to ensure understanding and completeness. Participants were compensated $150. The study had the approval of the university institutional review board.

Measures

Demographic information

Participants were asked to provide their age, education attainment, race/ethnicity, family income, employment status, marital status, home address, and number of years they lived in their current neighborhood.

Concentrated disadvantage and residential instability

Consistent with previous research, neighborhood demographic indicators were used to represent two measures of structural neighborhood disadvantage: concentrated disadvantage and residential instability (Coulton, Korbin & Su, 1996; Sampson & Groves, 1989; Veysey & Messner, 1999). Using each participant's address at the time of study, structural characteristics for participants' census tract of residence were extracted from the American Community Survey for the aggregated years 2008–2012. Concentrated disadvantage was indexed by percentage of families below the federal poverty line (M = 32.54, SD = 16.16), percentage of families receiving public assistance (M = 13.12, SD = 7.33), percentage of families with a single head of household (M = 25.83, SD = 8.46), and percentage of civilian population in the labor force unemployed (M = 18.53, 6.93). Residential instability was indexed by percentage of residences that are renter-occupied (M = 50.05, SD = 15.21) and percentage of residents that lived in a different house 1 year ago (M = 13.42, SD = 7.52).

Perceptions of neighborhood disorder

Mothers' perceptions of neighborhood disorder 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 includes perceiving crimes such as public drinking, loitering, and graffiti, which are thought to share similar causal processes including lack of social control (Ross & Jang, 2000). The scale consists of nine 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") endorsed on a 5-point Likert scale. Items were coded and summed so that higher scores reflect a higher level of perceived disorder. Internal consistency was excellent (Cronbach's α = .91).

Maternal depressive symptoms

Depressive symptoms were assessed using the Center for Epidemiology Scales for Depression (CES-D; Radloff, 1977). This self-report measure includes 20 symptoms in the past week such as "I had trouble keeping my mind on what I was doing," and "I talked less than usual," and "I felt hopeful about the future," which are endorsed on a 4-point Likert scale. Raw scores at or above 16 indicate risk for depression (Radloff, 1977); in the current sample, 45.7% of participants exhibited risk for depression based on this criterion. Internal consistency was excellent (Cronbach's α = .90).

Neighborhood social embeddedness

The Social Embeddedness subscale of the PNS (Martinez et al., 2002) consists of nine items such as "How often do

you casually visit with neighbors, either going over to their place or their coming over to yours?" and "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)?" which were endorsed on 5-point Likert scales, coded such that higher scores reflect higher social embeddedness. Internal consistency in the current study sample was good (Cronbach's $\alpha = .84$).

Physical environment for preschoolers

The physical environment was assessed with multiple observational measures administered by trained interviewers. First, the Checklist for Living Environments to Assess Neglect (CLEAN; Watson-Perczel, Lutzker, Greene & Mcgimpsey, 1988) is an interviewer-rated observational measure of the home environment which was designed to assess home cleanliness problems associated with child neglect. For each living room, kitchen, and bathroom, the CLEAN was used to assesses three dimensions of cleanliness: whether the room is clean or dirty (based on presence of dust, food, chemical products, etc.), the number of clothing items and linens that do not belong in the room, and the number of objects not belonging in the room (e.g., items that can be thrown away or that require more appropriate storage, including garbage, tools, etc.). The Physical Environment subscale of the Home Observation for the Measurement of the Environment—Early Childhood (EC-HOME; Caldwell & Bradley, 1984) was also used to measure the overall quality of the home physical environment. The subscale includes seven interviewer-rated items (e.g., "Building appears safe and free of hazards" and "House is reasonably clean and minimally cluttered"). Two items were excluded because they refer to the quality of the neighborhood or outside environment. Finally, the Child Well Being Scales (CWBS; Magura & Moses, 1986) have been used to measure child neglect in prior studies (Azar et al., 2012). Three modules were used in the current study: household furnishings, household sanitation, and physical safety. Ratings were converted into seriousness scores, which have a possible range of 0 (most seriously inadequate) to 100 (most adequate), as recommended by Magura and Moses (1986). In the current study, inter-rater agreement for a subsample of participants ($n = 73$) was .87.

Learning environment for preschoolers

The home learning environment was assessed using subscales of the EC-HOME, which is a widely used measure to assess the home environment for children and has shown substantial correlation with children's cognitive development (Caldwell & Bradley, 1984; Totsika & Sylva, 2004). A composite measure of the home learning environment with a range of 0–23 was created using ratings on three subscales: Language Stimulation (7 items, e.g., "Parent encourages child to talk and takes time to listen"), Academic Stimulation (5 items, e.g., "Child is encouraged to learn colors"), and Learning Materials (11 items, e.g., "Child has toys or games which help teach numbers"), consistent with previous research on the home learning environment (Brooks-Gunn, Klebanov & Liaw, 1995; Klebanov et al., 1994). Cronbach's alpha for the home learning environment items was .76. In the current study, inter-rater reliability for a subsample of participants ($n = 73$) was .82.

Results

Preliminary Analyses

Less than 1% of data was missing, and variables exhibited no more than mild levels kurtosis. Means, standard deviations, and bivariate correlations of study variables are presented in Tables 1 and 2.

Structural Equation Modeling Analyses

The hypothesized model was tested with structural equation modeling using maximum likelihood estimation in MPlus (Muthén & Muthén, 2005). Family income was included as a covariate in all path models. The length of time living in the neighborhood, up to 5 years, was also included as a covariate to control for exposure of the preschooler's home to the neighborhood. Given that so few census tracts had multiple respondents (96 of the 111 census tracts had one or two families), ordinary least squares regression was used rather than multilevel modeling. The fit indices used were Chi-square (non-significant χ^2 value indicates good fit), the root mean square error of approximation (RMSEA $\leq .06$ indicates good fit), the comparative fit index (CFI $\geq .95$ indicates good fit), and standardized root mean square error residual (SRMR $\leq .08$ indicates acceptable fit), as recommended by Hu & Bentler (1999). Bootstrapping was used to test for indirect effects (Shrout & Bolger, 2002).

Measurement models

A latent variable was estimated for concentrated disadvantage with neighborhood demographic indicators standardized as z-scores, $\chi^2(2) = 1.21$, $p = .55$; RMSEA $< .001$, 90% CI [0.00, 0.13]; CFI = 1.00; SRMR = .01. Standardized factor loadings ranged from .62 to .92. A latent

Table 1 Means, standard deviations, and bivariate correlations of home environment outcomes with observed study variables

	Physical Environment					Learning Environment
	HOME ITEMS	CLEAN TOTAL	CWBS FUR	CWBS SAN	CWBS SAF	
Income	.04	−.03	.06	.07	.01	−.03
Time in neighborhood[a]	−.12	−.15*	.06	−.19**	−.15*	.07
Concentrated disadvantage						
Poverty	−.17*	−.12	−.20**	−.11	−.06	−.05
Single head of house	−.19**	−.19**	−.15†	−.11	−.04	−.04
Unemployment	−.18*	−.10	−.11	−.12†	.03	.03
Public assistance	−.20**	−.10	−.21**	−.09	−.11	.05
Residential instability	−.09	.05	−.07	.03	−.08	−.16*
Perceived disorder	−.10	−.16*	−.21**	−.08	−.13†	−.04
Depressive symptoms	−.12†	−.10	−.10	−.05	−.07	−.29**
Social embeddedness	−.17*	−.05	.04	−.06	−.16*	.11
M	4.05	78.20	94.75	86.93	69.17	16.91
SD	1.25	17.20	9.27	17.83	28.45	3.66
Range	0–5	25.42–99.58	54–100	21–100	31–100	4–23

HOME ITEMS: physical environment items from the EC-HOME; CLEAN TOTAL: total ratings from the CLEAN; CWBS FUR: adequacy of furnishings; CWBS SAF: safety ratings; CWBS SAN: sanitation ratings.
[a]Time living in neighborhood, up to 5 years, to control for amount of time preschooler's environment was exposed to neighborhood.
**$p < .01$
*$p < .05$
†$p < .10$

Table 2 Means, standard deviations, and bivariate correlations of covariate, intermediary, and moderator variables

	Income	Time in Neighborhood[a]	Perceived Disorder	Depressive Symptoms	Social Embeddedness
Income	–				
Time in neighborhood[a]	−.02	–			
Perceived disorder	−.10	.07	–		
Depressive symptoms	−.12	−.10	.16*	–	
Social embeddedness	−.03	.24**	.16*	−.15*	–
Concentrated disadvantage					
Poverty	.07	.04	.28**	−.06	.12†
Single head of house	.09	.07	.23**	−.02	.06
Unemployment	.10	.07	.12†	−.03	.05
Public assistance	.10	.04	.28**	−.08	.15*
Residential instability	−.01	.07	.24**	−.04	.02
M	15,316.49	2.74	3.15	17.82	2.75
SD	8628.37	1.92	0.97	11.86	0.93
Range	4000–57,500	0.01–5.00	1.00–5.00	0–54	1.00–4.89

[a]Time living in neighborhood, up to 5 years. Prior to transformation, $M = 5.65$, $SD = 7.75$.
**$p < .01$
*$p < .05$
†$p < .10$

variable was also estimated for home physical environment, $\chi^2(5) = 11.37$, $p = .04$; RMSEA = .08, 90% CI [.01, .14]; CFI = .98; SRMR = .03, with standardized factor loadings ranging from .43 to .81.

Estimation of hypothesized path model

The full model, depicted in Fig. 1, had good fit to the data, $\chi^2(76) = 89.85$, $p = .13$; RMSEA = .03, 90% CI [0.00, 0.05]; CFI = 0.98; SRMR = .05. Concentrated disadvantage was directly and negatively associated with the quality of the home physical environment (β = −.24, $SE = .08$, $p < .01$, 90% CI [−.37, −.11]) but not the home learning environment (β = .02, $SE = .08$, $p = .85$, 90% CI [−.11, .14]). Conversely, residential instability was directly and negatively associated with the quality of the home learning environment (β = −.18, $SE = .07$, $p < .05$, 90% CI [−.29, −.06]), but not the home physical environment (β = .02, $SE = .08$, $p = .85$, 90% CI [−.11, .14]). Concentrated disadvantage and residential instability

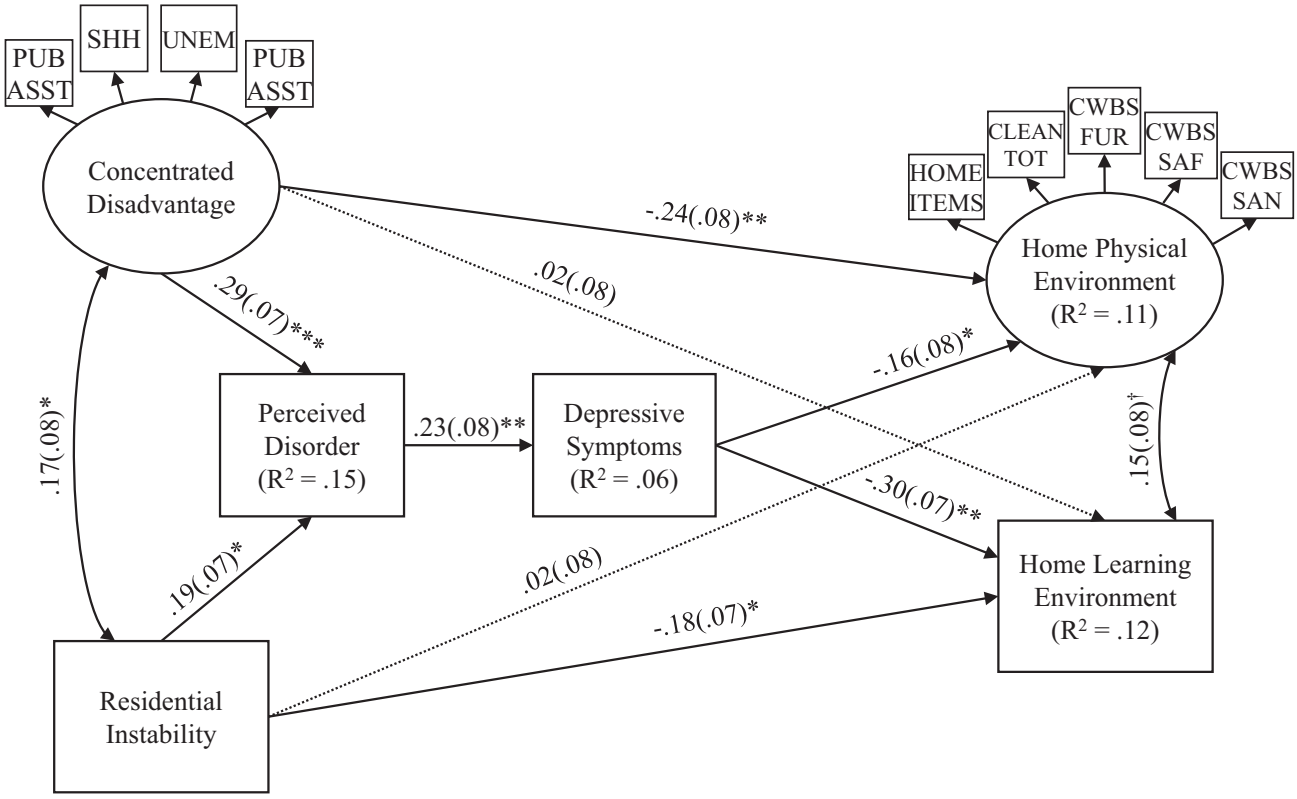

Fig. 1 Maximum likelihood estimation of the model showing standardized path coefficients, controlling for family income and length of time living in the neighborhood. Model fit statistics: $\chi^2(76) = 89.85$, $p = .13$; RMSEA = .03, 90% CI [0.00, 0.05]; CFI = 0.98; SRMR = .05. POV: percentage of families living below poverty line; SHH: percentage of families with single head of household; UNEM: percentage of civilian population in the labor force unemployed; PUB ASST: percentage of families receiving public assistance; HOME ITEMS: physical environment items from the EC-HOME; CLEAN TOT: total ratings from the CLEAN; CWBS FUR: adequacy of furnishings; CWBS SAF: safety; CWBS SAN: sanitation. $^{**}p < .01$, $^{*}p < .05$, $^{\dagger}p < .10$.

were both associated with higher perceived disorder (β = .29, *SE* = .07, $p < .01$, 90% CI [.18, .41]; β = .19, *SE* = .07, $p < .01$, 90% CI [.08, .30]), which was associated with higher levels of depressive symptoms (β = .23, *SE* = .08, $p < .01$, 90% CI [.10, .35]). Depressive symptoms, in turn, were negatively associated with both the quality of the home physical environment (β = −.16, *SE* = .08, $p < .05$, 90% CI [−.29, −.04]) and home learning environment (β = −.30, *SE* = .07, $p < .01$, 90% CI [−.41, −.19]). Examination of indirect effects using bootstrapping (bootstrap = 1000) showed that concentrated disadvantage had a marginally significant indirect effect on the home learning environment through mothers' perceived disorder and depressive symptoms (β = −.02, *SE* = .01, $p = .08$, 90% CI [−.04, −.01]). There were no other indirect effects of concentrated disadvantage or residential instability on the home environment.

Social Embeddedness Moderation Analyses

Multiple group structural equation models were estimated using groups with high ($n = 95$) and low ($n = 92$) social embeddedness, based on the median value (*Mdn* = 2.67). Chi-square difference tests were used to compare overall fit of subsequent models. Both latent variables were shown to be metrically invariant across social embeddedness groups, as holding the factor loadings equal across groups did not worsen the model fit for concentrated disadvantage, $\Delta\chi^2 = 1.91(3)$, $p = .59$; or home physical environment, $\Delta\chi^2 = 5.81(4)$, $p = .21$. Next, model paths were constrained to be equal for high and low social embeddedness groups, which worsened overall model fit, $\Delta\chi^2(20) = 30.61$, $p < .10$. To test each path for moderation, equality constraints were removed one at a time, sequentially guided by theory and modification indices.

The first path examined for moderation was concentrated disadvantage to perceived disorder. Removal of this constraint resulted in a better model fit, $\Delta\chi^2(1) = 9.12$, $p < .01$. In the low social embeddedness group, concentrated disadvantage was associated with higher perceived disorder (β = .46, *SE* = .09, $p < .001$, 90% CI [.31, .60]) and had indirect effects on the home learning environment (β = −.04, *SE* = .02, $p < .05$, 90% CI [−.08, −.01]. In the high social embeddedness group, however,

concentrated disadvantage was not associated with perceived disorder (β = .09, *SE* = .10, *p* = .36, 90% CI [−.07, .26]), which buffered the indirect effect on the home learning environment (β = −.01, *SE* = .01, *p* = .39, 90% CI [−.02, .01). Next, freeing the equality constraint on the path from concentrated disadvantage to home physical environment resulted in a better model fit, $\Delta\chi^2(1) = 3.78$, $p < .10$. Concentrated disadvantage was negatively associated with the home physical environment in the low social embeddedness group (β = −.37, *SE* = .10, *p* < .001, 90% CI [−.53, −.20]) but not in the high social embeddedness group (β = −.08, *SE* = .11, *p* = .48 90% CI [−.27, .11]). Removal of the remaining equality constraints individually showed no further improvement of model fit. To summarize, neighborhood social embeddedness buffered the effects of concentrated disadvantage on mothers' perceived disorder, and in turn, the home learning environment. Neighborhood social embeddedness also buffered the effect of concentrated disadvantage on the home physical environment.

Discussion

This study examined the associations of neighborhood concentrated disadvantage and residential instability with the home physical environment and home learning environment for preschool-age children in low-income urban families. The first hypothesis—that concentrated disadvantage and residential instability would be directly associated with the home environment for preschoolers—was partially supported. Concentrated disadvantage was directly and negatively linked with the overall sanitation, furnishings, and safety of the home physical environment for children. Unlike concentrated disadvantage, residential instability was not associated with the physical environment of the home. Concentrated disadvantage may limit caregivers' access to material resources such as adequate home furnishings. In the same way that families' monetary and material resources are particularly important for physical aspects of the home, the monetary resources of the neighborhood may also be important for supporting physical conditions and access to resources that are conducive to healthy child development (Brooks-Gunn et al., 1995; Guo & Harris, 2000). The physical environment of the home may reflect not only caregivers' behavior in the home, but also the quality and safety of the housing and the built environment in which the family lives. Future research must examine the roles of housing quality and availability in the association of neighborhood context with children's more proximal physical environments (Coley, Kull, Leventhal & Lynch, 2014), including the extent to which housing, relative to caregiver behaviors, accounts for variability in the home physical environment as experienced by children.

Residential instability was directly associated with lower quality of the home learning environment for preschoolers, including fewer learning materials and less cognitive stimulation. This is the first study to date to test the association of neighborhood residential instability and preschoolers' home learning environments. High rates of residential turnover in disadvantaged neighborhoods may lead to a lack of communal childrearing norms and fear of retaliation for intervening on behalf of children in other families (Korbin, Coulton, Lindstrom-Ufuti & Spilsbury, 2000). Concentrated disadvantage, on the other hand, was not directly associated with the home learning environment. In the interpretation of these findings, it is important to consider that, in prior studies, neighborhood residential stability was linked with neighborhood friendship networks to a greater extent than concentrated disadvantage (Veysey & Messner, 1999). Neighborhood friendship networks and social cohesion (which are neighborhood-level processes and distinct from the individual construct of social embeddedness) may impact childrearing norms and families' capacities to provide cognitively stimulating home environments. Indeed, Kohen et al. (2008) found that neighborhood social cohesion was associated with the home literacy environment through family functioning. Future research must continue to consider how parenting behaviors and children's proximal environments are impacted by social processes at the neighborhood level, including social cohesion and informal social control.

The second hypothesis—that mothers' perceived neighborhood disorder and depressive symptoms would indirectly link neighborhood context with the home environment for preschoolers—was also partially supported. Both concentrated disadvantage and residential instability were associated with higher perceived neighborhood disorder, which was associated with higher levels of maternal depressive symptoms. This is consistent with literature that provides strong support for the associations of neighborhood disadvantage, perceptions of disorder, and depressive symptoms (Kim, 2010; Wandersman & Nation, 1998). The only indirect effect was concentrated disadvantage on the home learning environment, and this effect was at the margin of statistical significance. This study is the first to date to test whether perceived neighborhood disorder and depressive symptoms indirectly link structural neighborhood characteristics with the home environment for preschoolers. The findings suggest that parents' perceived neighborhood disorder and depressive symptoms may link neighborhood disadvantage with cognitive stimulation in the home environment and potentially with other parenting behaviors that are impacted by depression. Although maternal depression was also associated with

the home physical environment, there were no indirect effects of neighborhood context on the physical environment through depression. This finding must be interpreted in light of the possibility that this study lacked sufficient variability to detect such indirect effects, given the relatively elevated levels of economic disadvantage and depressive symptoms in this sample.

The final hypothesis—that social embeddedness would moderate the effects of neighborhood context—was supported for concentrated disadvantage but not for residential instability. Specifically, concentrated disadvantage was not associated with perceived disorder for mothers with high social embeddedness, and this buffered indirect effects on the preschooler's home learning environment. Theoretically, individuals who experience positive interactions with neighbors in disadvantaged neighborhoods may be less concerned about danger than individuals who are unfamiliar with neighbors or are socially isolated (Ross & Jang, 2000). The effects of residential instability were not buffered by social embeddedness, however, which may indicate that even high levels of engagement with one's neighbors may have little benefit when the neighborhood is marked by high instability and turnover. Social embeddedness also buffered the direct effects of concentrated disadvantage on the home physical environment, such that concentrated disadvantage was not associated with the home physical environment for mothers with high levels of social embeddedness. Neighborhood social embeddedness in this study included material support such as perceived likelihood that a neighbor would loan a few dollars to buy food or provide childcare. Informal exchange of material resources and services such as these may be particularly helpful for buffering the effects of economic hardship on the child's home physical environment. Being socially embedded with one's neighbors may also prevent against maladaptive norms that may develop in the context of extreme disadvantage and social isolation. Targeting neighborhood social processes such as informal support networks 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 may provide families with the opportunities to increase positive interactions with others in their neighborhood (McDonell, Ben-Arieh & Melton, 2015).

The results of this study should be interpreted in light of its limitations. The participants in the current study lived in relatively disadvantaged neighborhoods, contributing to limited variability in measures of concentrated disadvantage and residential instability. Because of this limited variability, coupled with relatively high levels of depressive symptoms overall, the magnitude of the effects of neighborhood context on the home environment, both directly and indirectly through depression, may have been underestimated. In addition, given the rate of CPS involvement in this study sample, it is difficult to estimate the extent to which findings generalize to low-income urban populations. In most studies of this kind, the rate of CPS involvement is unknown. However, Sabol, Coulton and Polousky (2004) report that 46.6% of children in the city of Cleveland had any report of maltreatment (the majority of which was neglect), and maltreatment reports are often disproportionately high among minority populations. Thus, the CPS involvement rate of 45.5% of families in the current study may not be unusual for this population. The sample of this study also lent to its strength. The known presence of participating families who had involvement with CPS allowed for testing *how* and *in what way* neighborhood context is associated with children's home environment in families that are at greatest risk for child neglect. Furthermore, given the limitations of relying on official child maltreatment reports, particularly when assessing the role of neighborhoods in child maltreatment (Coulton, Crampton, Irwin, Spilsbury & Korbin, 2007), this study contributes to existing knowledge on neighborhood context and risk for child neglect using direct measures of children's home environments. An additional limitation is that, as with all non-experimental neighborhood studies, conclusions about causal effects cannot be made, as families may be "selected" into certain neighborhoods systematically by socioeconomic or other characteristics. This study controlled for the effects of income and length of time exposed to the neighborhood in all analyses, contributing to the strength of the conclusions, given the study design.

Children's environments should not only be understood in terms of parent–child interactions, but also in terms of the larger context, including the extent to which environmental characteristics can be both inhibiting and promoting (García Coll, 1996). Study findings advance understanding of how neighborhood context matters for low-income families with children and informs efforts to address and improve existing socioeconomic disparities in early childhood development. This study adds to limited existing literature on neighborhood context and young children's proximal environments in disadvantaged families, including how the neighborhood may "come through the door" for low-income families.

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Conflicts of interest

The authors declare that they have no conflicts of interest.

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