Journal of Environmental Psychology 50 (2017) 17–23

Contents lists available at ScienceDirect

Journal of Environmental Psychology

journal homepage: www.elsevier.com/locate/jep

Housing and neighborhood physical quality: Children's mental health and motivation

Kimberly A. Rollings [a, *], Nancy M. Wells [b], Gary W. Evans [c], Amanda Bednarz [d], Yizhao Yang [d]

[a] School of Architecture, University of Notre Dame, 110 Bond Hall, Notre Dame, IN 46556, USA
[b] Design and Environmental Analysis, Cornell University, 1411 Martha Van Rensselaer Hall, Ithaca, NY 14853, USA
[c] Design and Environmental Analysis, Human Development and the Bronfenbrenner Center for Translational Research, Cornell University, 1411 Martha Van Rensselaer Hall, Ithaca, NY 14853, USA
[d] Department of Planning, Public Policy & Management, University of Oregon, 115 Hendricks Hall, Eugene, OR 97403, USA

ARTICLE INFO

Article history:
Received 3 July 2015
Received in revised form
17 March 2016
Accepted 23 January 2017
Available online 26 January 2017

Keywords:
Housing quality
Neighborhood quality
Mental health
Built environment
Children

ABSTRACT

This longitudinal study examined relations between the physical quality of housing, neighborhood, and their interactive effect on the life course development of 341 U.S. rural children from ages 9–24 years. Standardized instruments assessed housing quality (structural, clutter/cleanliness, indoor climate, hazards, crowding/privacy) and neighborhood quality (street connectivity, density, land use mix; proximate building/sidewalk conditions; neighborhood stability; proximity to nature/amenities). Analyses focused on two critical components of child development: 1) psychological health and 2) helplessness. Growth curve analyses with multilevel modeling revealed that lower quality housing was associated with poorer psychological health (internalizing and externalizing symptoms) as well as marginally more helplessness on a behavioral task over 15 years, from ages 9–24 years. All analyses statistically controlled for income level. Neither neighborhood quality nor its interaction with housing quality was related to psychological health or motivation.

1. Introduction

Nearly four decades ago Urie Bronfenbrenner (1979) noted that child development largely consisted of the study of children interacting with strange people in strange places. Although developmentalists have made considerable progress in addressing this paradigm-altering critique (Friedman & Wachs, 1999), we still do not know much about how children respond to the places where they spend most of their time - the home and neighborhood. In this respect, psychological science lags far behind public health which for over two centuries has examined housing and neighborhood physical quality in relation to physical health (Braubach, Jacobs, & Ormandy, 2011; Matte & Jacobs, 2000; Shaw, 2004). The purpose of this article is to examine the relations between the physical quality of housing, neighborhood, and their interactive effect on U.S. children's development from elementary school through young adulthood. We focus on two critical components of child development: psychological health and motivation. Based on prior, nearly exclusively cross-sectional evidence (Evans, Wells, & Moch, 2003; Halpern, 1995; Leventhal & Brooks-Gunn, 2000; Leventhal & Newman, 2010; Wandersman & Nation, 1998), we hypothesize that both poor quality housing and poor quality neighborhoods will be associated with adverse outcomes in the realms of both psychological health and motivation. Although there are little data to go on, we also expect that when housing and neighborhood quality are both low quality, their adverse developmental sequelae will be accentuated.

1.1. Housing quality and child development

Studies of housing and child development date back several decades, but initially were primarily cross-sectional in design. Davie and colleagues examined a nationally representative sample of seven year old British children and found that poor amenities as reported by parents (e.g., absence of hot water, no indoor plumbing), independent of household socioeconomic status (SES),

* Corresponding author.
E-mail addresses: krolling@nd.edu (K.A. Rollings), nmw2@cornell.edu (N.M. Wells), gwe1@cornell.edu (G.W. Evans), yizhao@uoregon.edu (Y. Yang).

http://dx.doi.org/10.1016/j.jenvp.2017.01.004
0272-4944/

were detrimental to children's social adjustment at school as assessed by their teachers (Davie, Butler, & Goldstein, 1972). In another UK study, independent ratings of housing problems were positively associated with psychological distress in elementary age school children among a sample of low-income families (Blackman, Evason, Melaughs, & Woods, 1989). Similar trends were uncovered among a wider range of SES households with children up the age of sixteen (Hunt, 1990), and largely replicated among elementary school-aged children by Gifford and Lacombe (2006). The latter study incorporated a wide range of statistical controls for SES and other family and personal variables.

More recent research on housing quality has begun to incorporate stronger, quasi-experimental research designs coupled with broader and more objective, developmental outcome assessments. Obasanjo (1998) took advantage of the fact that residents in public housing projects have little or no choice over where they reside given long waiting lists to obtain public housing. Public housing tenants' quasi-random assignment to a particular housing unit largely reflects seniority on a waiting list, household size, and availability of units. It is much less likely that some family characteristic omitted from the analyses could account for any housing quality outcomes in this study design and thereby undermine internal validity. Adolescents in lower physical quality public housing units had more psychosomatic symptoms and diminished executive functioning on a standard neurocognitive index of inhibitory control. In two different longitudinal studies, changes in housing quality were associated with changes in mental health among low-income women (Evans, Wells, Chan, & Saltzman, 2000; Wells & Harris, 2007). More recently, Coley, Leventhal, Lynch, and Kull (2013) were able to track housing quality over a six year period in relation to low-income child well-being in a multilevel model that incorporated numerous statistical covariates (e.g., multiple indicators of SES, gender, ethnicity). Housing quality predicted changes in children and adolescents' psychological distress over the six year period. Moreover these housing quality effects were partially mediated by deteriorating maternal mental health. Note that the latter finding replicates Wells and Evans' two different longitudinal studies on housing quality and women's mental health (Evans et al., 2000; Wells & Harris, 2007). Another important and unique contribution of Coley et al (2013) work is the finding that housing quality impacts on child welfare were stronger and independent of other aspects of housing characteristics including affordability, residential instability, and use of housing assistance subsidies. Housing structural quality is what mattered to children's psychological health.

1.2. Neighborhood quality and child development

Although there is an increasingly large literature on neighborhood effects and child development (Leventhal & Brooks-Gunn, 2000; Mayer & Jencks, 1989; Sampson, Morenoff, & Gannon-Rowley, 2002), this work largely equates neighborhood quality with SES, ignoring the potential role the physical quality of neighborhoods may play in affecting children's development (Rollings, Wells, & Evans, 2015). A few cross-sectional studies reveal elementary-aged school children have greater psychological distress in poorer physical quality urban neighborhoods, independent of household SES (Gifford & Lacombe, 2006; Homel & Burns, 1989). The Moving to Opportunity (MTO) public housing voucher program provided a rare field experiment, randomly assigning public housing tenants to voucher programs enabling them to move to different types of neighborhoods or remain in public housing. Female but not male youth who relocated from inner city, public housing projects to middle SES neighborhoods had improvements in mental health relative to their peers remaining in low SES neighborhoods (Kling, Liebman, & Katz, 2007). Unfortunately the MTO work could not tease out the respective role of changes in housing quality versus neighborhood physical quality in these neighborhood relocation effects.

1.3. The interaction of housing and neighborhood quality

Examining the potential interaction of housing quality and neighborhood quality is important for several reasons. The bioecological theory of child development posits that a fuller understanding of child development requires examination of cross-contextual interactions in the multiple spheres children inhabit (Bronfenbrenner & Morris, 1998; Bronfenbrenner, 1979). Bronfenbrenner termed such interactions as the analysis of mesosystems. Given evidence reviewed above that each of the microsystems of housing and neighborhood, respectively, can influence child development, research is needed to investigate their potential interplay as they influence child development. Another reason why there is value in examining the interaction of these two primary microsystems in children's lives is the well-documented fact that exposure to multiple risk factors is more consequential for children than singular risk exposure (Evans, Li, & Whipple, 2013; Obradovic, Shaffer, & Masten, 2012; Pressman, Klebanov, & Brooks-Gunn, 2012; Sameroff, 2006).

We have uncovered only three studies that examined the interaction of housing and neighborhood quality, and all of them were restricted to adult samples. Furthermore all of these studies relied exclusively on subjective indices of adult well-being. Housing quality was more strongly linked to psychological distress among adults living in lower quality neighborhoods (Kasl, Will, White, & Marcuse, 1982). High-rise housing was associated with poorer adult mental health among those living in low-versus middle-SES neighborhoods (McCarthy, Byrne, Harrison, & Keithley, 1985). A recent analysis of over 5000 adult residents in eight European cities examined the interaction of housing physical quality and neighborhood physical quality (Jones-Rounds, Evans, & Braubach, 2013). Housing quality's adverse relation to psychological well-being was stronger among adults residing in lower quality neighborhoods. This finding was independent of household SES and other individual characteristics. Note that all of the prior research on the interaction of housing and neighborhood quality is cross-sectional with adults and relied solely on subjective mental health outcome measures. Furthermore, only the Jones-Round and colleagues' study had well developed assessments of physical housing and neighborhood quality conducted by independent raters.

1.4. Aims and significance of present study

The aims of the present study were to examine associations between physical housing quality, physical neighborhood quality, and their interaction, in relation to children's mental health and motivation beginning in elementary school through early adulthood. This study is the only study to jointly examine housing and neighborhood quality among children, and is only the second housing and children study to use growth curve modeling (see Coley et al., 2013) so that we could examine the developmental trajectories of well-being from childhood into young adulthood. We also employed reliable, valid, observer-based instruments to assess physical housing and neighborhood quality rather than self-reported ratings. Herein, physical housing quality was assessed by trained raters during a residential walk-through. Physical neighborhood quality assessment relied on trained observers' neighborhood reconnaissance in conjunction with extensive GIS indices of census tract, land cover, and parcel maps. Another contribution we make is to look at the role of physical housing and