

Sense of Community and Informal Social Control Among Lower Income Households: The Role of Homeownership and Collective Efficacy in Reducing Subjective Neighborhood Crime and Disorder

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Abstract We examine the link between homeownership, collective efficacy, and subjective neighborhood crime and disorder. Although prior research suggests that homeownership provides social benefits, the housing downturn and foreclosure crisis, coupled with mounting evidence that people self-select into housing, raise questions about the role of homeownership. We adjust for respondents' decision to own or rent using a nationwide sample of lower-income households. We account for demographic and neighborhood characteristics as well as ratings of individual efficacy. We present a structural equation model that identifies how sense of community and informal social control jointly contribute to collective efficacy. The latent collective efficacy construct mediates the impact of homeownership on resident's perceptions of neighborhood disorder. Such perceptions matter because they have been linked to resident's physical and mental health. Our findings demonstrate that when coupled with sustainable mortgages, homeownership exerts a robust yet indirect effect in reducing subjective neighborhood crime and disorder. Our model also links collective efficacy to neighborhood racial homogeneity, a finding which presents challenges for the study of diversity and community. We discuss sense of community research as well as sustainable mortgages and implications of the foreclosure crisis for the future of homeownership opportunities among lower income households and neighborhoods.

Keywords Housing · Mortgages · Crime prevention · Community development · Asset building · Neighborhood homogeneity and diversity

Introduction

Residents of all neighborhoods express concern over schools, jobs, and property values, but perhaps no issues resonate more deeply than residential safety and security. Neighborhood crime, graffiti, homelessness, juvenile delinquency, and other indicators of neighborhood disorder threaten not only property values, but also residents' physical and mental health (Ross 2000; Ross and Mirowsky 2001). Reducing neighborhood disorder has the potential to improve neighborhoods and enhance the quality of life for residents.

Homeownership is a key correlate of neighborhood disorder; homeowners report feeling more positive about their neighborhoods and aggregate homeownership rates are negatively correlated with crime rates. Homeownership has long been associated with neighborhood stability and urban redevelopment efforts, but in recent years the costs and benefits of homeownership have come under scrutiny due to the housing downturn in 2006, the financial crisis of 2008, and an unprecedented level of underwater mortgages that continues through 2012. The role of homeownership has also faced renewed questions by researchers amid evidence that people self-select into owning or renting their home. Selection effects cast doubt on a large body of earlier research that attributed positive social impacts to homeownership.

We address selection effects for homeowners who received 30-year fixed rate mortgages. We then examine the link between homeownership, collective efficacy, and

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subjective neighborhood disorder.¹ Prior research suggests that homeownership influences collective efficacy, which is defined as social cohesion among neighbors combined with their willingness to intervene on behalf of the common good. Collective efficacy, in turn, has been found to reduce perceptions of crime as well as actual homicides. However, our review indicates that the body of research on collective efficacy has not accounted for respondent's selection into the decision to own or rent their home. We pose the following question: Does homeownership reduce subjective neighborhood crime and disorder through collective efficacy once selection into homeownership is addressed?

Our study builds on Sampson et al. (1997) work and makes three contributions. First, we address potential confounds of the homeownership effect. Although homeownership has been linked to sense of community, collective efficacy, and lower rates of neighborhood crime and disorder, prior studies have not adjusted for potential confounds such as selection into homeownership. We address this shortcoming by modeling each respondent's decision to own or rent their home. We use the resulting matched sample of owners and renters to answer our primary research question. We also account for other potential homeownership confounds including the neighborhood's residential stability and homeownership rate, and the number of years respondents had lived in their neighborhood and home.

Respondents in our sample had lived in the same home and neighborhood for at least 1 year prior to their assessment of the major outcome, subjective neighborhood disorder. This 1-year lag strengthens our study in two ways. First, it assures that respondents had ample time to get to know their neighbors and neighborhood. Second, the 1-year lag establishes the temporal precedence of the decision to own or rent and thus instills confidence that our analytic model correctly specifies that the direction of causality flows from homeownership to subjective neighborhood disorder. Our overall approach allows us to isolate and better assess whether a true homeownership effect exists among homeowners who received sustainable mortgages.

As a second contribution, we focus on low-to-moderate income households. While Federal housing policy has long promoted homeownership in lower income populations, our review of the impacts of homeownership as well as research on sense of community and collective efficacy indicates that empirical studies in these areas rarely draw from lower income households. By studying this

population in isolation, our research can directly inform asset-building policies and community development efforts which target lower income households.

Finally, we advance sense of community theory. By linking sense of community with informal social control and nesting both dimensions within collective efficacy, we show that sense of community contributes to a broader understanding of how residents maintain and improve the social order of their neighborhoods. At the same time, we uncover the sobering finding that respondents in racially homogeneous neighborhoods exhibit a higher degree of collective efficacy. With these findings we empirically identify longstanding tensions between diversity and community. Overall, our research better situates sense of community within existing theory and suggests that sense of community is a useful measure of social cohesion that faces challenges in our increasingly diverse society.

In the remainder of this paper, we review research on neighborhood disorder and the impacts of homeownership. We also review research on sense of community and informal social control as they relate to collective efficacy. We identify a latent variable model that specifies the link between homeownership, collective efficacy, and subjective neighborhood crime and disorder. We present challenges for sense of community research and we discuss how mortgage products relate to the foreclosure crisis and the future of homeownership for lower income households.

Relevant Literature

Neighborhood Disorder and Social Control

Neighborhood order and its corollary, disorder, feature both objective and subjective components that are relevant to our study. Objective neighborhood order is characterized by clean and well maintained homes and buildings, and social interactions where residents show respect for one another and the personal and public property of others. These features contrast with the abandoned buildings, graffiti, litter, and excessive criminal activities that help identify objective disorder. Whereas objective disorder can be measured by outsiders, subjective disorder is specific to the perceptions of individual residents. In fact, subjective disorder exists and matters only when a resident views their neighborhood's physical and social features as a neighborhood problem.

Notably, the physical and social markers which define objective disorder often diverge from those that identify subjective disorder. In a longitudinal study of Baltimore neighborhoods, Taylor (2001) found that objective disorder did not correspond to the subjective disorder of residents. In fact, Taylor found wide variation in subjective disorder

¹ Whereas objective disorder can be measured by outsiders, subjective disorder is specific to the perceptions of individual residents. We prefer the terms subjective and objective to perceived and observed because the latter terms erroneously suggest that observed measures are not perceived.

among residents of the same neighborhoods, which suggests that subjective disorder is an individual rather than neighborhood construct. The far-reaching implication is that efforts to reduce neighborhood crime may be ineffective if they focus only on reducing litter, graffiti, loitering and other incivilities targeted by the “broken windows” approach to policing that gathered momentum in the 1980’s (Taylor 2001). Sampson and Raudenbush (2004) built on Taylor’s findings by explicitly comparing subjective versus objective disorder within and between neighborhoods, and found that measures of objective disorder were only weakly related to residents’ perception of neighborhood disorder.

Subjective disorder matters because it is associated with negative physical and mental health outcomes. In a series of studies, Catherine E. Ross showed that subjective neighborhood disorder negatively affects the well-being of residents even after accounting for poverty, single-parent families, and other features of disadvantaged neighborhoods. The first study found that measures of depression were associated with living in neighborhoods which residents rated high in disorder (Ross 2000). The second study found that subjective neighborhood disorder and fear function as stressors which in turn affect both chronic conditions and physical health (Ross and Mirowsky 2001). The third study associated subjective neighborhood disorder with feelings of powerlessness and mistrust (Ross et al. 2001). Together, these empirical studies show that even after controlling for neighborhood disadvantage, subjective neighborhood disorder influences health and well-being.

Objective and subjective order in neighborhoods is maintained through the process of social control. Formal social control denotes official enforcement of laws governing neighborhood activities. More pervasive is informal social control, which refers to the willingness of neighbors to take positive social actions. Examples of positive actions include efforts to do something about neighborhood problems such as graffiti or fights that arise near one’s home. Because positive actions are taken to address specific neighborhood problems, the actions are characterized as interventions. Informal social control, then, refers to the willingness of neighbors to intervene into neighborhood problems on behalf of the common good (Sampson et al. 1997).

Both formal and informal social control mechanisms denote the processes by which neighborhoods maintain order or fall into disorder. Bellair and Browning (2010) examined how informal social control mechanisms relate to neighborhood social networks, which they defined as local affiliations between family, friends, and neighbors. They note that criminologists have theorized that neighborhood crime and disorder might be diminished by a higher density of social networks within communities, yet

empirical studies show that high levels of crime persist in some communities that have dense social networks. Bellair and Browning (2010) show that the community attachment and social cohesion which accompany dense social networks are a necessary but not sufficient condition for crime reduction. To reduce crime, informal social control is also needed. While Bellair and Browning (2010) identify informal social control as the key lever in crime reduction, they emphasize that the building block of informal social control lies in community social cohesion.

Sense of Community as Social Cohesion

Social cohesion and informal social control make up the two dimensions of the collective efficacy construct originally tested by Sampson et al. (1997). We build on this framework and posit that social cohesion is analogous to sense of community, a concept posed originally by Sarason (1974) as perceived similarity and feelings of interdependence with others. Building on Sarason’s ideas, McMillan and Chavis (1986) defined sense of community as “a feeling that members have of belonging, a feeling that members matter to one another and to the group, and a shared faith that members’ needs will be met through their commitment to be together.” In contrast to the structural approaches to the study of community used by most other social scientists, both Sarason (1974) and McMillan and Chavis (1986) focused on feelings and experiences as key to understanding what they called the psychology of community.

McMillan and Chavis (1986) proposed that sense of community consisted of four parts: membership, influence, emotional connection, and reinforcement of needs. Chavis et al. (1986) operationalized the sense of community construct with items that referred to respondents’ experiences with their neighborhoods. Although later researchers have adapted these items to workplaces, classrooms, and virtual settings that extend beyond place-based communities, we examine sense of community in neighborhoods as originally proposed by Chavis et al. (1986). Our perspective aligns with Long and Perkins (2007) in that we conceive of sense of community as a place-based construct that is linked to the neighborhood.

Empirical studies of sense of community feature a wide variety of data sources, samples and settings. The generalizability of findings has not been a point of emphasis, and few meaningful patterns can be discerned among the wide range of individual demographic characteristics that have been empirically linked to sense of community. Respondent age is one of the few sensible individual-level features identified across multiple studies: older respondents report a higher sense of community (Robinson and Wilkinson 1995; Brodsky et al. 1999). Some evidence also suggests

that sense of community is associated with several aspects of residential housing. Household stability as measured by reduced mobility or longer time in residence predicts sense of community in several studies (Prezza et al. 2001; Farrell et al. 2004; Long and Perkins 2007). Home equity and homeownership have also been associated with elevated sense of community (Robinson and Wilkinson 1995). However, no published studies have evaluated whether the impacts of homeownership on sense of community persist after adjusting for the selection bias that is associated with respondents' decision to own or rent their home.

Only a handful of studies analyze sense of community as an independent or mediating variable that predicts outcomes which are conceptually distinct from sense of community. For example, sense of community has been shown to affect political activity and voting behavior (Davidson and Cotter 1989, 1993). Most relevant to our investigation are two studies which identified mediating effects for sense of community. One study found that a modified sense of community index mediated the impact of neighborhood disadvantage on juvenile delinquency as well as positive youth outcomes (Cantillon et al. 2003). A later study combined sense of community items into a latent factor which mediated the impact of perceived neighborhood stability on delinquency rates as well as prosocial activities (Cantillon 2006). The model included time in residence but not homeownership. We build on these findings yet conceive of sense of community as the social cohesion dimension of a larger construct: collective efficacy.

Collective Efficacy

Sampson et al. (1997) introduced collective efficacy, which they defined as social cohesion combined with the willingness to intervene on behalf of the common good, using data from Chicago neighborhoods. Their study showed that collective efficacy reduced three violent crime outcomes: subjective neighborhood violence, victimization in the neighborhood, and actual homicides. At the neighborhood level, concentrated disadvantage reduced collective efficacy while residential stability had a positive effect that was consistent with household-level findings: higher mobility reduced collective efficacy while homeownership increased collective efficacy. Age and higher socioeconomic status were also associated with greater collective efficacy while time in neighborhood and ethnicity were not significant. The Sampson et al. (1997) study has been widely cited and inspired further research, but to our knowledge, studies of collective efficacy have not addressed the respondent's choice of whether to own or rent and only one subsequent analysis has focused on lower-income

households (Brisson and Altschul 2011). As a result, it is not clear whether homeownership, particularly among lower-income households, affects collective efficacy and neighborhood disorder.

Homeownership, Collective Efficacy, and Neighborhood Disorder

There are several reasons why homeownership might relate to collective efficacy as well as neighborhood crime and disorder. First, because most homeowners view their home as a financial investment, they are motivated to maintain and improve their houses. Because local house prices depend on local neighborhood conditions, homeowners are motivated to attend not only to their own houses, but also to amenities within their neighborhood. When compared to similar renters, homeowners would seem to be financially more vested in their homes and thus have greater incentive to maintain and improve both their homes and neighborhoods (Dietz and Haurin 2003; Herbert and Belsky 2008; Rohe et al. 2000, 2002).

Second, homeowners are less mobile than renters, and this reduced mobility of homeownership may increase collective efficacy and reduce neighborhood disorder. Purchasing a home carries large transaction costs and typically requires up to 5 years for financial returns. Even in appreciating housing markets, recent homebuyers have an incentive to stay in their home for years rather than move away from their investment. In depreciating housing markets, mobility options may be further reduced due to negative home equity and an inability to sell the home at profit. With home sale financially undesirable, the house may constrain homeowners' option to move away from neighborhood problems, yet in this way also motivate residents to address problems in their neighborhood. The reduced mobility associated with homeownership may lead to residential stability which provides motive for homeowners to maintain and improve their neighborhood's social order (Dietz and Haurin 2003; Herbert and Belsky 2008; Rohe et al. 2000, 2002). Instead of moving to a different neighborhood or otherwise ignoring neighborhood problems, homeowners may be more motivated than renters to confront local problems such as neighborhood crime and disorder.

A large number of empirical studies support the idea that homeownership is associated with greater neighborhood social involvement and community participation (Cox 1982; Guest and Oropesa 1986; Lyons and Lowery 1989; Manturuk et al. 2009, 2010; Rohe and Stegman 1994; Rossi and Weber 1996). Several housing scholars have also written extensive reviews of research on the social impacts of homeownership (Dietz and Haurin 2003; Herbert and Belsky 2008; Rohe et al. 2000, 2002). These

reviewers recognize consistent positive empirical associations between residential ownership and social benefits, but also cite selection concerns raised by Green and White (1997) and DiPasquale and Glaeser (1998). In short, housing experts caution that most homeownership studies are hampered by endogeneity concerns that arise from respondents' choice of whether to own or rent their home.

A few studies have attempted to overcome the selection bias that has characterized research on the social impacts of homeownership. Manturuk et al. (2010) address selection concerns using a treatment effects model and find that after taking endogeneity into account, homeownership increases social capital for lower income households by providing greater access to social resources through contacts with social networks. With regard to political participation, Manturuk et al. (2009) address selection into owning or renting with an instrument variable that first balances owner and renter samples. Findings show not only that homeownership affects political participation, but also that the impacts of homeownership on local voting are greater in disadvantaged neighborhoods. Engelhardt et al. (2010) addresses endogeneity with an instrument based on a randomly assigned homeownership treatment provided for lower income households through an Individual Development Program located in Tulsa, Oklahoma. Engelhardt et al. report that after addressing selection concerns, findings for political involvement provide no evidence that homeowners are more politically engaged than renters. These more recent studies address methodological concerns raised by Green and White (1997) and DiPasquale and Glaeser (1998) and show that empirical associations between homeownership and social benefits do appear more nuanced once empirical adjustments are made to account for each respondent's decision to own or rent their home.

Methods

Data

We make use of data collected for the Community Advantage Program, which began as a secondary mortgage market program developed out of a partnership between the Ford Foundation, Fannie Mae, and Self-Help, a leading community development financial institution in North Carolina. The goal of this program is to purchase conventional, fixed-rate prime mortgages that were originated to low- to moderate-income families who, given their credit profile, would have otherwise received a sub-prime mortgage or been unable to purchase a home at all. Mortgages have to meet one of the following criteria for consideration: (1) borrowers have an annual income of no

more than 80 % of the area median income (AMI), (2) borrowers are minority with an income not in excess of 115 % of AMI, (3) borrowers purchased the home in a high-minority (>30 %) or low-income (<80 % of AMI) census tract and have an income not in excess of 115 % of AMI. By the end of 2004, more than 28,000 mortgages had been purchased. Mortgages in our study were originated as home purchase loans between 1999 and 2003 with fixed interest rates and without prepayment penalties or balloon payments.

Our data come primarily from the Community Advantage Panel Survey (CAPS). The purpose of CAPS is to gather data about the housing experiences of low-to-moderate income households. The survey effort collects comprehensive demographic and household data in addition to financial and social behaviors. Addresses are geo-coded and linked to data available from the U.S. Bureau of the Census. RTI International collects CAPS data. Online reports provide technical information about survey procedures, response rates, and attrition bias (Riley et al. 2010).

Participating homeowners were drawn from the Community Advantage Program described earlier. Renters were identified in 2003–2004 based on public telephone directory lists. Renters were obtained by randomly selecting households who paid rent, met income and race/ethnicity criteria similar to CAPS homeowners, and lived within the same census block as a CAPS homeowner. When matching renters could not be found within the census block, the radius was expanded up to four miles. While this matching procedure diminished the demographic differences between homeowners and renters, we do not rely solely on this original sampling strategy. We also apply the propensity score analysis described in the [Appendix](#) to further refine and obtain a matched sample that minimizes household and neighborhood differences between homeowners and renters.

Riley et al. (2009) compared baseline CAPS demographics with a sample of low-income homeowners who participated in the Current Population Survey. Results show that the CAPS respondents are similar to low-income and minority Current Population Survey respondents with respect to household income, minority representation, and household size distributions. CAPS respondents overrepresent the South and are more educated and more attached to the labor force than comparable Current Population Survey respondents.

Sample

The starting point for our sample is 2,720 households that responded to both the 2006 and 2007 surveys. Only these 2 years contain the indicators that we analyze in this paper. We use measures from both years and construct our dataset as a cross-sectional analysis consisting of one row per

household. Because we are interested in homeownership and neighborhoods, we hold these values constant by removing 13 % of survey respondents who moved during the 2006–2007 study period. We also perform listwise deletion for item non-response. The resulting sample consists of 1,902 respondents, which comprises 1,426 homeowners and 476 renters. From this sample, we then perform a nearest-neighbors propensity score match to address endogeneity concerns that relate to selection into homeownership. As described in the [Appendix](#), the propensity score analysis provides a one-to-one match of 375 renters to 375 homeowners.

Measures

Our key outcome is subjective neighborhood crime and disorder. Participants were asked, “What do you consider to be the biggest problem in your neighborhood? Would you say crime, schools, the availability of jobs, changes in the neighborhood, traffic, or some other issue?” People who said crime were coded 1 for subjective neighborhood disorder, all others 0. We then read through the open-ended responses from a follow-up open-ended question for those who said, “some other issue”. People who responded with an answer indicative of neighborhood disorder—graffiti, noise, delinquency, homelessness—were then recoded to 1. While subjective neighborhood disorder would ideally be assessed using multiple indicators, one strength of the measure that we use is that during surveying, the interviewers asked respondents to consider six neighborhood problems as valid response options. Only during the analytic stage did we combine five of these response options in order to create a dichotomous indicator which would better focus on the outcome of interest. Of the final matched sample of 750 respondents, 147, or 19.6 %, indicated that crime or disorder was the biggest problem in their neighborhood, and of these, 63 (16.8 %) were homeowners and 84 were renters (22.4 %). [Table 1](#) displays descriptive statistics for the matched sample.

We constructed our intermediate outcome, collective efficacy, using a second-order confirmatory factor analysis that assesses the construct’s two dimensions: social cohesion and informal social control. Two items from Chavis’ 1986 sense of community index are duplicated exactly in the five-item 1995 measure of social cohesion proposed by Sampson, Raudenbush, and Earls. The other 10 sense of community items are very similar to the 3 remaining social cohesion items. Given the overlap, we contend that the measure of social cohesion later proposed by Sampson et al. (1997) taps into the same underlying construct put forth earlier by Chavis et al.’s (1986) sense of community index. The introductory script for the sense of community items said, “Now I have a few questions about your

neighborhood. Please tell me how strongly you agree or disagree with each of the following statements.” We administered in 2006 all 12 sense of community items originally proposed by Chavis et al. (1986). We used a five-item likert scale that ranged from strongly agree to strongly disagree.

The second dimension of the collective efficacy construct is informal social control, which denotes a willingness to intervene on behalf of the common good. We assess informal social control using 3 of the 5 measures that were originally identified by Sampson et al. (1997).² Our 2007 survey presented respondents with the following introductory narrative: “I am going to describe situations that may arise in a neighborhood. Please rate how likely it is that your neighbors would do something in response to the situation.” Respondents were then asked, “If a fight broke out in front of your house, how likely is it that your neighbors would do something about it? Would you say it is very likely, likely, unlikely, or very unlikely?” These same response options were presented for two additional situations: children were showing disrespect to an adult and children spray-painting graffiti on a local building. Respondents’ assessments of their neighbors’ willingness to “do something” about these hypothetical situations constitute the indicators of the informal social control dimension.

Homeowner is a dichotomous indicator of whether or not a respondent was a non-moving homeowner or renter across both study years. By holding mobility and ownership constant across both study years, we assure that respondents had lived in their home for at least 1 year—and thus had at least 1 year to get to know their neighbors and neighborhood—prior to their assessment of subjective neighborhood disorder. This 1 year lag therefore establishes the temporal precedence of the decision to own or rent and instills confidence that the direction of causality flows from the respondent’s 2006 owner or renter status to the 2007 measure of subjective neighborhood disorder. We address the selection bias that could remain due to observed differences in respondents’ residential and neighborhood preferences using the propensity score analysis described in the [Appendix](#).

Our analysis also tested a host of exogenous control variables that may influence collective efficacy and subjective disorder. At the household level, we adjust for respondents’ sense of individual efficacy with responses to the following question: “Overall, how much of a difference do you think people like you can make on [reducing crime/

² We omit two of the original informal social control items (“if the fire station was threatened with budget cuts” and “if children were skipping school and hanging out on a street corner”) due respectively to potential income disparity effects and conjunctive question wording.

Table 1 Descriptive statistics

Variable group	Variable	Mean	Median	Standard deviation	Minimum	Maximum	Kurt	Skew	
Outcome	Crime/disorder perceived as biggest neighborhood problem	0.20	–	–	0.00	1.00	–	–	
Treatment	Respondent is a homeowner	0.50	–	–	0.00	1.00	–	–	
Household characteristics	Age in years	43.92	43.50	12.48	21.00	83.00	–0.58	0.34	
	Age (51 years or older)	0.31	–	–	0.00	1.00	–	–	
	Education (college degree)	0.35	–	–	0.00	1.00	–	–	
	Education (high school graduate)	0.32	–	–	0.00	1.00	–	–	
	Employment (retired)	0.11	–	–	0.00	1.00	–	–	
	Employment (unemployed)	0.06	–	–	0.00	1.00	–	–	
	Household income (relative income)	0.82	0.72	0.53	0.01	4.36	5.08	1.61	
	Household income (actual income in dollars)	30177.14	27000.00	20878.90	0.00	200000.00	9.30	2.10	
	Race/ethnicity (Black)	0.30	–	–	0.00	1.00	–	–	
	Race/ethnicity (Latino)	0.12	–	–	0.00	1.00	–	–	
	Race/ethnicity (other)	0.03	–	–	0.00	1.00	–	–	
	Gender of respondent (male)	0.29	–	–	0.00	1.00	–	–	
	Partner status (single)	0.25	–	–	0.00	1.00	–	–	
	Partner status (widowed)	0.32	–	–	0.00	1.00	–	–	
	Children in household (one or more)	0.48	–	–	0.00	1.00	–	–	
	Respondent's individual efficacy	2.24	2.00	1.07	1.00	4.00	–1.19	0.29	
	Region of U.S. (south)	0.71	–	–	0.00	1.00	–	–	
	Neighborhood characteristics	Cost of Living (index)	94.31	84.43	35.47	72.21	262.22	9.82	3.13
		Residents who lived in same house 5+ years	0.49	0.51	0.11	0.06	0.78	0.25	–0.53
		Concentrated Affluence (index)	–0.24	–0.44	0.79	–1.52	3.10	1.42	1.25
People per household		0.06	0.04	0.07	0.00	0.56	14.19	3.28	
Housing cost to rent (ratio)		2.02	1.95	0.50	0.00	5.90	7.35	1.57	
House value (dollars)		94973.60	87450.00	42835.82	22000.00	323100.00	4.62	1.71	
Immigrant concentration		–0.09	–0.37	0.78	–0.69	4.71	7.59	2.60	
Income Per Household (dollars)		38187.54	36148.50	13060.85	10230.00	112617.00	2.44	1.15	
Income per person (dollars)		18408.12	17348.91	6707.67	4156.86	61563.55	4.05	1.40	
Minority (percent)		0.40	0.32	0.29	0.00	1.00	–0.75	0.67	
Neighborhood disadvantage (index)		0.10	–0.10	0.59	–0.75	2.75	1.18	1.20	
Homes owned		0.60	0.62	0.19	0.01	0.99	0.18	–0.64	
Population density		7.37	7.63	1.34	2.04	10.67	0.28	–0.69	
Rent (median)		468.36	438.00	152.74	175.00	1393.00	3.22	1.32	
Residential stability (index)		–0.11	–0.05	0.50	–2.62	1.08	1.39	–0.74	
Percent with children		0.33	0.33	0.09	0.02	0.61	0.40	0.04	
Educational homogeneity (of neighborhood)		0.28	0.27	0.04	0.20	0.54	6.73	1.68	
Employment homogeneity		0.51	0.50	0.06	0.34	0.73	0.32	0.54	
Household size homogeneity		0.24	0.24	0.05	0.15	0.61	8.60	1.80	
Income homogeneity		0.18	0.16	0.06	0.13	0.57	7.13	2.18	
Marital status homogeneity	0.35	0.33	0.07	0.23	0.85	4.56	1.45		
Occupational homogeneity	0.25	0.23	0.06	0.19	0.58	8.14	2.63		
Racial homogeneity	0.62	0.61	0.18	0.27	1.00	–1.00	0.18		

Table 1 continued

Variable group	Variable	Mean	Median	Standard deviation	Minimum	Maximum	Kurt	Skew
Sense of community	I think my neighborhood is a good place to live	3.83	4.00	–	1.00	5.00	–	–
	My neighbors and I want the same things from the neighborhood	3.89	4.00	–	1.00	5.00	–	–
	I can recognize most of the people who live in my neighborhood	3.68	4.00	–	1.00	5.00	–	–
	I feel at home in my neighborhood	4.13	4.00	–	1.00	5.00	–	–
	I care what my neighbors think of my actions	3.57	4.00	–	1.00	5.00	–	–
	If there is a problem in this neighborhood people who live here can get it solved	3.63	4.00	–	1.00	5.00	–	–
	It is very important to me to live in this particular neighborhood	3.34	4.00	–	1.00	5.00	–	–
	I expect to live in this neighborhood for a long time	3.37	4.00	–	1.00	5.00	–	–
Informal social control	If a fight broke out in front of your house	3.14	3.00	–	1.00	4.00	–	–
	If children were showing disrespect to an adult	2.87	3.00	–	1.00	4.00	–	–
	If children were spray-painting graffiti on a local building	3.36	4.00	–	1.00	4.00	–	–

Sample of 750 households comprises 375 owners and 375 renters matched through propensity score analysis as described in the [Appendix](#)

improving schools/unemployment/neighborhood change/traffic/etc.]”, where the bracketed text is filled with the respondents’ response to the previously described question, “What do you consider to be the biggest problem in your neighborhood?” In this way, we address Bandura’s (2000) point that collective efficacy is rooted in the beliefs of individuals. Thus, we control for the potential confound to collective efficacy that is posed by respondents’ ratings of individual efficacy.

Other household variables include age, education, race/ethnicity, marital/partner status, and presence of children in the home. We also test neighborhood variables that are measured at the census tract level. Our trimmed analytic model includes population density (logged) and three standardized indices of summed percentages: residential stability (occupied residences, lived in same house for 5 or more years), concentrated affluence (college educated, managerial profession, income >75,000), and neighborhood disadvantage (single parents, unemployed, on public assistance, and in poverty).

Finally, we test measures of neighborhood homogeneity. The rationale for including neighborhood homogeneity rests with the principle of social homophily, which asserts that people have a propensity to interact more frequently with others like themselves. Social homophily fits well with the perceived similarity and feelings of interdependence that originally defined sense of community (Sarason 1974). We apply the social homophily principle by identifying the proportion of people in a census tract with a

particular demographic characteristic, as originally put forth by Blau (1977). We create sum of squared component indices that range from 0 to 1. Higher values indicate greater homogeneity. Prior research has linked neighborhood racial homogeneity with civic engagement (Rotolo 2000) and trust in neighbors (Putnam 2007). We test neighborhood homogeneity for the following demographic characteristics: education, income, race, occupation, marital status, employment, household structure and size.

Analysis

We specify a latent variable structural equation model that provides several advantages over more traditional, single equation regression techniques. By using a multi-equation approach, structural equation modeling permits more realistic as well as more nuanced specifications of the features that characterize and influence social problems. Structural equations which use latent variables reduce measurement error through confirmatory factor analytic models that use multiple indicators per latent variable and weight indicators based on their empirical contributions. When compared to observed variable models, latent variable models provide better estimates, particularly when modeling abstract concepts such as social cohesion (Bollen 1989).

Although structural equation models traditionally assumed continuous variables for indicators, recent advances permit the modeling of categorical variables within a latent variable framework. We take advantage of

such developments to combine a confirmatory factor analysis of the latent variable collective efficacy to predict a dichotomous outcome. Because subjective neighborhood crime and disorder has a single indicator, we test it as an observed (rather than latent) measure that we specify as categorical. Similarly, we specify as categorical the 11 ordinal indicators that form the measurement model of the latent variables. We analyze our data using *Mplus* 5.1 and we cluster our analysis by census tract. In order to maximize the model fit to the data, we perform two-tailed hypothesis testing at the $P < 0.05$ level. We also trim non-significant covariates that do not improve model fit.

Findings

Measurement Model: Confirmatory Factor Analyses

Table 2 displays items, variation explained (R-squared), measurement error (residual variance), factor loadings, and standard errors for the 11 indicators and 3 latent variables: sense of community, informal social control, and collective

efficacy. With a factor loading of 1.039, sense of community contributes slightly more to collective efficacy than informal social control, which is set to 1 in order to estimate the model. We model informal social control with 3 indicators and corroborate work by Sampson et al. (1997). We model sense of community with a confirmatory factor analysis for all 12 sense of community items (not shown), but due to empirical loadings as well as the approach taken by Peterson et al. (2008), we dropped the 4 negatively worded items to improve model fit. We tested the remaining 8 items as a 2nd order factor consisting of the 4 original subscales (membership, influence, shared emotional connection, reinforcement of needs) and found an improved model fit (Chi-Square = 230.021, CFI = 0.954, TLI = 0.962, RMSEA = 0.053), which corroborates work by Peterson et al. (2008). However, our 2nd order sense of community factor also featured undefined estimates for the influence subscale as well as warnings of linear dependence among latent variables. Consequently, we decided to analyze sense of community as a single or 1st order factor. While this decision reduced our overall model fit, the parameter estimates are nearly identical under both approaches.

Table 2 Endogenous variables: Measurement model results

Outcome or factor	Indicators	R-squared	Residual variance	Factor loading	95 % confidence interval	Standard error
Crime/disorder	Crime/disorder is the biggest problem in this neighborhood	0.206	0.883	–	–	–
Collective efficacy	Sense of community and informal social control	0.126	0.229	–	–	–
	Sense of community	0.431	0.373	1.039	[0.700, 1.378]	0.173
	Informal social control	0.597	0.177	1.000	[1.000, 1.000]	0.000
Sense of community	I can recognize most of the people who live in my neighborhood	0.369	0.644	0.757	[0.684, 0.830]	0.037
	I feel at home in my neighborhood	0.576	0.438	0.952	[0.893, 1.010]	0.030
	I care what my neighbors think of my actions	0.172	0.835	0.515	[0.436, 0.594]	0.040
	If there is a problem in this neighborhood people who live here can get it solved	0.433	0.581	0.822	[0.756, 0.888]	0.034
	It is very important to me to live in this particular neighborhood	0.581	0.432	0.956	[0.897, 1.016]	0.030
	I expect to live in this neighborhood for a long time	0.364	0.649	0.752	[0.685, 0.820]	0.034
	I think my neighborhood is a good place to live	0.634	0.380	1.000	[1.000, 1.000]	0.000
	My neighbors and I want the same things from the neighborhood	0.452	0.561	0.841	[0.781, 0.900]	0.030
Informal social control	If a fight broke out in front of your house	0.424	0.595	1.000	[1.000, 1.000]	0.000
	If children were showing disrespect to an adult	0.578	0.442	1.174	[1.032, 1.315]	0.072
	If children were spray-painting graffiti on a local building	0.703	0.314	1.301	[1.151, 1.452]	0.077

Table presents variation explained (R-squared), measurement error (residual variance), unstandardized factor loadings with 95 % confidence intervals, and standard errors as appropriate for the observed outcome, latent variables, and indicators. All indicators are statistically significant. Crime/disorder is an observed, binary outcome identified by 19.6 % of respondents. Collective efficacy is tested as a second-order factor measured by two first-order factors: sense of community and informal social control. See text for question wording and response options. Model structure, fit indices, and unstandardized coefficients are displayed in Fig. 1

Latent Variable Structural Equation Model

Table 3 shows path estimates, standard errors, and two-tailed *P* values for direct and indirect effects. We display Specification 1 to show that homeownership directly impacts collective efficacy while controlling for residential stability, yet homeownership has no direct effect on subjective neighborhood disorder. Specification 1 also shows that residential stability has neither direct nor indirect (via collective efficacy) significant effects.

With Specification 2, we trim the non-significant direct path of homeownership on subjective neighborhood crime and disorder. We also trim the non-significant direct path of residential stability on collective efficacy (and thus also the indirect path of residential stability via collective efficacy). We retain the non-significant direct path of residential stability on subjective disorder because doing so improves model-level statistics. Inclusion of this non-significant direct path from residential stability to subjective neighborhood crime and disorder does not alter the parameter estimates of other variables.

Modifying the paths as noted above improves the overall fit of the model. The Chi-Square of Specification 2 (273.477, *df* = 68) is not large but is statistically significant. Model level Chi-Square significance is common in structural equation models even though ideally, this value would *not* be statistically significant. Other model-level values such as the CFI (0.933) and TLI (0.946) both exceed 0.90 as desired. The RMSEA would ideally fall below 0.05, but the 0.063 value that we observe is acceptable. Overall, these model-level statistics indicate that the structural model we impose with Specification 2 provides a good fit to the data.

Figure 1 displays results of the latent structural equation model from preferred Specification 2. The circles in Fig. 1 represent latent variables whose indicators are shown in Table 2. The rectangles in Fig. 1 represent observed variables; rounded corners identify household measures while straight corners distinguish neighborhood measures. All paths displayed in Fig. 1 are statistically significant at the two-tailed *P* value level of 0.05. We present unstandardized path coefficients because standardized coefficients would not make sense for categorical predictors—such as whether the respondent owns their home—because such variables do not have meaningful standard deviations. Our data is clustered by census tract and our final outcome is binary and observed. In these circumstances, the *Mplus* 5.1 estimator (WLSMV) is a probit linking function which does not report odds ratios.

Figure 1 and Specification 2 show that our outcome, subjective neighborhood crime and disorder, is directly impacted by two variables: neighborhood disadvantage and collective efficacy. The probit estimates indicate that

neighborhood disadvantage has a positive effect (0.430) on subjective crime and disorder, and this positive effect corroborates findings from the series of studies led by Ross (2000, Ross and Mirowski 2001) and the related measure of concentrated advantage put forth by Sampson et al. (1997). The results also show that collective efficacy exerts a negative effect (−0.716) on subjective neighborhood disorder. This negative effect corroborates earlier research which shows that social cohesion and informal social control jointly reduce neighborhood crime and disorder (Bellair and Browning 2010; Sampson et al. 1997).

In addition to these direct effects, Specification 2 shows that subjective neighborhood crime and disorder is also impacted indirectly, from homeownership, through collective efficacy. Homeownership exerts a positive direct effect on collective efficacy: homeowners score an average of 0.181 higher than their matched renters on the collective efficacy latent variable. The total effect of homeownership on subjective neighborhood crime and disorder equals the direct effect of homeownership on collective efficacy (0.181) times the direct effect of collective efficacy on disorder (−0.716). Thus, the indirect and total effect of homeownership on subjective neighborhood crime and disorder is −0.130. Specification 2 of Table 3 displays the −0.130 (standard error = 0.043) indirect path coefficient of homeownership to subjective neighborhood crime and disorder via collective efficacy and shows that the *Mplus* 5.1 test of this specific indirect effect is statistically significant (*P* < 0.003).

Our results also show a positive effect for individual efficacy, as measured by respondents' ratings of the ability of people like themselves to solve their neighborhood's biggest problem. Age matters, with respondents 51 years or older providing higher ratings of collective efficacy. Population density negatively influences collective efficacy while concentrated affluence and racial homogeneity have positive effects.

The racial homogeneity effect corroborates prior research (Putnam 2007; Rotolo 2000). Note that we also tested neighborhood homogeneity of education, income, occupation, marital status, employment, household structure, and size, but we trimmed these measures due to non-significance. These findings suggest that the racial diversity of neighborhoods remains a key part of understanding neighborhood sense of community and informal social control.

A direct effect for homeownership on crime and disorder is most plausible at the neighborhood rather than household level, so in a separate model (not shown), we examined whether higher *rates* of homeownership reduced perceptions of crime and disorder. But as with the measure of residential stability shown in our models, we find that after propensity score matching, the homeownership rate

Table 3 Latent structural equation model of collective efficacy and subjective neighborhood crime/disorder

Outcome	Predictor	Specification 1				Specification 2				
		Estimate	Standard error	Two-tailed P value	95 % confidence interval	Estimate	Standard error	Two-tailed P value	95 % confidence interval	
Collective efficacy	Homeowner	0.179	0.052	0.001	[0.077, 0.281]	0.181	0.052	0.000	[0.080, 0.282]	
	Individual efficacy	0.051	0.023	0.026	[0.006, 0.095]	0.051	0.023	0.026	[0.006, 0.095]	
	Age (51 years or older)	0.163	0.056	0.003	[0.054, 0.271]	0.162	0.056	0.003	[0.053, 0.271]	
	Neighborhood population density	-0.055	0.020	0.007	[-0.094, -0.015]	-0.055	0.020	0.007	[-0.094, -0.015]	
	Neighborhood racial homogeneity	0.356	0.156	0.022	[0.051, 0.661]	0.356	0.155	0.022	[0.051, 0.660]	
	Neighborhood concentrated affluence	0.090	0.041	0.027	[0.010, 0.169]	0.090	0.041	0.027	[0.010, 0.169]	
	Neighborhood residential stability	0.035	0.055	0.523	[-0.073, 0.144]	-	-	-	-	
	Collective efficacy	-0.711	0.151	0.000	[-1.008, -0.415]	-0.716	0.150	0.000	[-1.010, -0.423]	
	Subjective Crime/ Disorder	Homeowner via collective efficacy	-0.057	0.117	0.623	[-0.287, 0.172]	-	-	-	-
		Neighborhood disadvantage	-0.127	0.044	0.004	[-0.213, -0.041]	-0.130	0.043	0.003	[-0.214, -0.045]
Neighborhood residential stability		0.430	0.121	0.000	[0.194, 0.666]	0.430	0.121	0.000	[0.194, 0.666]	
via collective efficacy		-0.011	0.130	0.932	[-0.265, 0.243]	-0.036	0.128	0.776	[-0.288, 0.215]	
<i>Model statistics</i>										
Chi-Square (df)		297.494 (71)		0.000		273.477 (68)		0.000		
CFI		0.926				0.933				
TLI		0.943				0.946				
RMSEA		0.065				0.063				

Table 3 presents unstandardized estimates with 95 % confidence intervals. Estimates for two indirect effects are shown in rows labeled 'via Collective Efficacy.' Preferred Specification 2 retains the non-significant path for residential stability on subjective crime/disorder because doing so improves overall model fit. Subjective crime/disorder is an observed, binary outcome identified by 19.6 % of respondents. Collective efficacy is a 2nd order latent factor measured by two 1st order latent factors: sense of community and informal social control. Indicators and measurement models for all latent factors are shown in Table 2. Model results are also shown in Fig. 1

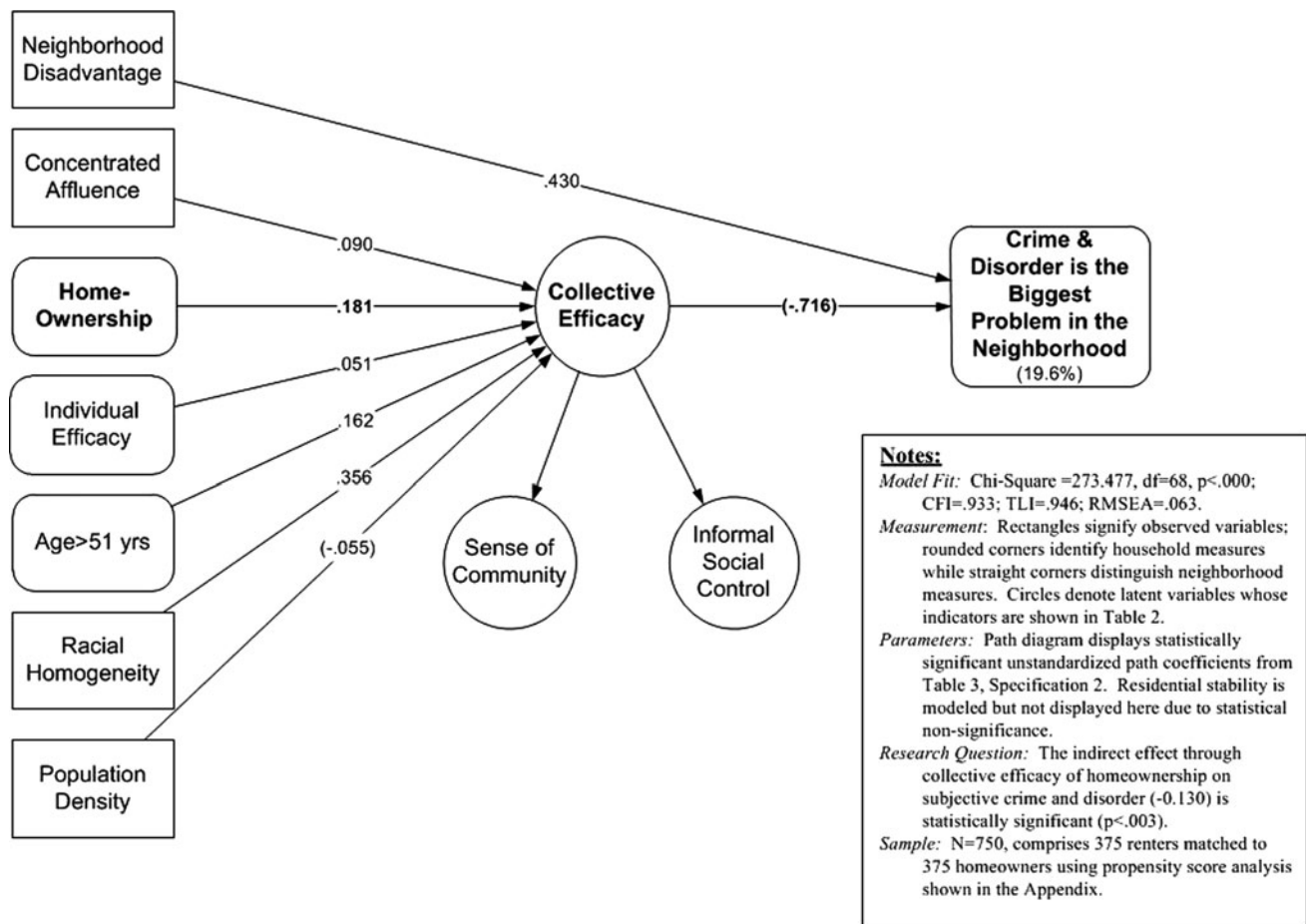


Fig. 1 A latent structural equation model of subjective neighborhood crime and disorder among lower-income households: Collective efficacy mediates homeownership

within the census tract has neither direct nor indirect effects on our respondent's perception of neighborhood crime and disorder. Finally, we consider that the effect of homeownership on subjective crime and disorder could be magnified in disadvantaged neighborhoods. However, the interaction between homeownership and neighborhood disadvantage does not approach statistical significance. Overall, the findings of this study show that the indirect effect of homeownership in reducing subjective neighborhood crime and disorder stands while controlling for both respondent and neighborhood characteristics and addressing respondents' initial decision of whether to own or rent their home.

Discussion

Our study shows that homeownership and collective efficacy reduce perceptions of neighborhood crime and disorder. Homeownership does not directly affect subjective crime and disorder but instead exerts an indirect effect. Because we adjust for bias related to each respondent's

decision to own or rent their home and also test other competing explanations for homeownership's impact including household mobility, neighborhood stability, and the neighborhood homeownership rate, our findings demonstrate that a homeownership effect exists among our sample of lower income homeowners, all of whom received traditional, fixed-rate mortgages.

Whether the 2006–2007 homeownership effect that we observe will be influenced by the more recent foreclosure crisis is worth consideration. If homeowners were to compensate for neighborhood decline with a higher degree of prosocial activities than similar renters, then the impact of homeownership in elevating collective efficacy and reducing subjective crime and disorder could be more pronounced in high foreclosure neighborhoods.³ Given the

³ To test this idea, we analyzed two neighborhood level measures affected by the foreclosure crisis: the homeownership rate and residential stability (a standardized measure of occupied housing combined with residents who have lived in same house for 5 years). Two-tailed significance tests indicate that the neighborhood homeownership rate approached but did not reach the 0.05 level for two interactions: homeownership times the homeownership rate on

depth and duration of the housing downturn and foreclosure crisis, further study is warranted.

Several caveats are noteworthy. First, propensity score analysis does not address unobserved differences that may exist between renters and owners which could reasonably affect our findings. Instead of homeownership indirectly reducing subjective neighborhood disorder, as we conceptualize, it is possible that the same people who prefer homeownership are more inclined to perceive neighborhood order. As a second caveat, some measures are not ideal. While others have assessed perceptions of neighborhood disorder using confirmatory factor analysis that use multiple indicators, our data do not permit this analytic approach. Similarly, our measure of sense of community used the original 12 items rather than the more recent and revised 24-item index. Finally, our data do not permit an informative assessment of neighborhood effects through specification of a multi-level model.

Lower Income Households, Sustainable Mortgages, and the Future of Homeownership Opportunities

Homeownership has long been promoted as a way to revitalize neighborhoods and build household wealth, but in recent years many have questioned the wisdom of such policies. Severe house price declines began in late 2006, and housing played a major role in the financial crisis of 2008 and ensuing recession. Through 2012, nearly a quarter of homeowners with mortgages continue to owe more than their homes are worth, and large drops in home equity have reduced homeowners' traditional options of either selling their home or refinancing their mortgage. Given these conditions, policies pertaining to homeownership deserve scrutiny, and some point toward federal housing policy as unwisely promoting homeownership for lower-income households. By promoting homeownership, some critics suggest that federal policy turned the American Dream into a nightmare for lower income borrowers (Saegert et al. 2009; Shlay 2006).

One problem with such critiques is a tendency to neglect more compelling causes of the housing downturn and foreclosure crisis, particularly the lack of financial regulation of mortgage products. An exhaustive report on the root causes of the foreclosure crisis points not

toward homeownership, but rather unfavorable subprime mortgages (U. S. Department of Housing and Urban Development 2010).

A second problem is a tendency to conflate lower-income homeownership with sub-prime mortgages. Lower-income and minority families did receive disproportionately higher rates of subprime mortgages, yet it was the unfavorable mortgage terms which largely determined the higher rates of mortgage delinquency among subprime borrowers (Carr and Mulcahy 2010; Ding et al. 2011; Quercia et al. 2011).

When coupled with traditional, fixed-rate mortgages, lower income households can and do sustain homeownership. When borrower characteristics are made comparable, lower income homeowners with subprime mortgages are four times more likely to experience serious mortgage delinquency than similar homeowners who receive 30-year fixed-rate mortgages (Ding et al. 2011).

But in the wake of the housing downturn and foreclosure crisis, this key distinction between mortgage lending and homeownership itself has been muddled by not only the media and general public, but also by many scholars.

If the future of housing finance is one of large down payment requirements and constrained mortgage lending, then the coming decade is likely to be characterized by fewer homeownership opportunities in which lower income households delay their first home purchase or opt to rent permanently. As lower income households remain renters for longer periods, will they feel a stronger sense of community within their neighborhoods? Will long-term renters develop the elevated informal social control that has been associated with homeowners? Our findings suggest that there is something about owning a home which produces socially desirable outcomes for lower income households. Given this link and the fact that homeownership has traditionally driven neighborhood revitalization efforts, how will a future of declining homeownership opportunities impact lower income residents and their neighborhoods?

Challenges for Sense of Community

Our study also raises questions for research on sense of community. Dozens of studies suggest that sense of community is influenced by a host of related social dimensions that include community ties and support, neighboring behavior and social networks, neighborhood cohesion and satisfaction, and participation in community organizations. Unfortunately, few if any studies establish how or whether these social dimensions are distinct from sense of community. Is sense of community different from social cohesion? Our findings suggest not. Overall, sense of community research suffers from a lack of discriminant validity because it fails to conceptually articulate and

Footnote 3 continued
collective efficacy ($P < 0.059$) and the indirect effect of homeownership times the homeownership rate (via collective efficacy) on subjective crime and disorder ($P < 0.076$). Interactions with residential stability did not reach or approach statistical significance. These results indicate that we did not empirically identify a mechanism by which the foreclosure crisis itself would differentially affect homeowners' and renters' collective efficacy and subjective neighborhood crime and disorder. Thus, we find no evidence that the foreclosure crisis will alter the homeownership effect that we observe.

empirically demonstrate how sense of community differs from an array of seemingly related and potentially tautological social dimensions.

With its face validity and appealing name, sense of community is usually modeled as an outcome inherently worthy of pursuit, yet Dunham (1986) observed that the Ku Klux Klan would rate highly on sense of community. Indeed, the effect we observe for neighborhood racial homogeneity raises challenges for sense of community within racially diverse neighborhoods that others have discussed at length (Briggs 2008; Putnam 2007). More work is needed to identify conditions under which sense of community fills a desirable niche, and studies which link sense of community to conceptually distinct outcomes will provide greater clarity about the construct’s utility, shortcomings, and challenges.

Our study provides evidence that homeownership among lower income households reduces perceptions of neighborhood crime and disorder. Such perceptions matter because they have been linked to residents’ physical and mental health (Ross 2000; Ross and Mirowsky 2001). The impact of homeownership is not direct but rather operates through collective efficacy, which we measure by specifying a new role for sense of community as social cohesion. Overall, our study identifies the robust yet indirect role of sustainable homeownership, through collective efficacy, in reducing subjective neighborhood crime and disorder.

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Appendix

Homeownership presents analytic challenges because we cannot randomly assign people to be homeowners or renters, and because people do not randomly become homeowner or renters. People choose to own or rent based on their resources and preferences as well as factors which we do not observe. Without adjustment for these selection effects, bias can result and skew findings.

We draw from Heckman’s (1979) demonstrations that selection effects should be taken into consideration when estimating causal impacts, and that sample selection should be explicitly modeled. In light of Heckman’s insight and those of later researchers, we use a propensity score analysis to adjust for non-random selection into the treatment (homeownership) and control (renters) groups. Propensity score analysis helps address the selection bias that

Table 4 Propensity score analysis predicting homeownership: Pre and post match

Variable group	Predictor	Original sample (n=1,902; 476 renters and 1,426 homeowners)			Matched sample (n=750; 375 renters and 375 homeowners)				
		Odds ratio	Standard error	Two-tailed P value	95 % confidence interval	Odds ratio	Standard error	Two-tailed P value	95 % confidence interval
Household characteristics	Education (college degree)	1.12	1.18	0.00	[0.8, 1.55]	1.20	1.21	0.22	[0.82, 1.73]
	Education (high school graduate)	0.79	1.19	0.00	[0.56, 1.11]	1.04	1.22	0.81	[0.71, 1.53]
	Employment (retired)	0.62	1.29	0.00	[0.38, 1.01]	0.76	1.31	0.13	[0.45, 1.3]
	Employment (unemployed)	0.29	1.22	0.00	[0.2, 0.43]	0.66	1.24	0.06	[0.43, 1.01]
	Household income (relative)	7.20	1.17	0.00	[5.29, 9.81]	1.69	1.18	0.00	[1.21, 2.35]
	Race/ethnicity (Black)	0.88	1.22	0.00	[0.6, 1.3]	0.92	1.24	0.47	[0.6, 1.41]
	Race/ethnicity (Latino)	1.12	1.30	0.75	[0.66, 1.88]	0.97	1.34	0.50	[0.55, 1.72]
	Race/ethnicity (other)	0.95	1.45	0.56	[0.46, 1.98]	0.74	1.54	0.31	[0.32, 1.73]
	Gender of respondent (male)	2.49	1.18	0.00	[1.82, 3.43]	1.15	1.20	0.75	[0.80, 1.64]
	Partner status (single)	1.41	1.21	0.00	[0.98, 2.04]	1.06	1.23	0.56	[0.70, 1.59]
Partner status (widowed)	1.23	1.20	0.00	[0.87, 1.75]	1.15	1.21	0.81	[0.79, 1.67]	

Table 4 continued

Variable group	Predictor	Original sample (n=1,902; 476 renters and 1,426 homeowners)				Matched sample (n=750; 375 renters and 375 homeowners)			
		Odds ratio	Standard error	Two-tailed P value	95 % confidence interval	Odds ratio	Standard error	Two-tailed P value	95 % confidence interval
Neighborhood characteristics	Children in house (one or more)	1.39	1.16	0.00	[1.04, 1.86]	1.09	1.18	0.24	[0.79, 1.51]
	Respondent's individual efficacy	1.06	1.07	0.86	[0.93, 1.2]	0.98	1.07	0.49	[0.85, 1.13]
	Region of U.S. (south)	0.50	1.20	0.00	[0.35, 0.71]	0.77	1.23	0.33	[0.51, 1.15]
	Cost of Living	1.00	1.00	0.39	[1, 1.01]	1.00	1.00	0.75	[0.99, 1.01]
	Lived in house 5+ years	61.81	5.63	0.00	[2.09, 1826.48]	1.06	7.78	0.97	[0.02, 59.1]
	Concentrated affluence	2.12	1.44	0.00	[1.04, 4.33]	1.25	1.51	0.63	[0.56, 2.8]
	People per household	0.26	12.35	0.00	[0, 35.59]	4.42	18.10	0.39	[0.02, 1291.33]
	Housing cost to rent	1.28	1.28	0.54	[0.79, 2.06]	1.03	1.30	0.64	[0.62, 1.73]
	House value	1.00	1.00	0.02	[1, 1]	1.00	1.00	0.88	[1, 1]
	Immigrant concentration	0.69	1.22	0.00	[0.46, 1.02]	0.77	1.26	0.26	[0.48, 1.21]
	Income per household	1.00	1.00	0.00	[1, 1]	1.00	1.00	0.16	[1, 1]
	Income per person	1.00	1.00	0.00	[1, 1]	1.00	1.00	0.76	[1, 1]
	Minority	1.60	1.67	0.00	[0.59, 4.36]	1.10	1.78	0.13	[0.36, 3.42]
	Neighborhood disadvantage	0.40	1.43	0.00	[0.2, 0.8]	0.70	1.51	0.31	[0.31, 1.56]
	Homes owned	7.81	2.37	0.00	[1.44, 42.43]	1.22	2.63	0.12	[0.18, 8.11]
	Rent	1.00	1.00	0.19	[1, 1]	1.00	1.00	0.77	[1, 1]
	Residential stability	0.41	1.36	0.00	[0.22, 0.74]	0.87	1.44	0.85	[0.43, 1.79]
	Percent with children	1.22	5.30	0.00	[0.05, 32.08]	0.61	6.79	0.25	[0.01, 26.09]
	Educational homogeneity	697.96	16.80	0.72	[2.77, 175974]	7.39	25.11	0.73	[0.01, 4094.3]
	Employment homogeneity	0.07	7.27	0.00	[0, 3.38]	0.21	8.94	0.46	[0, 15.41]
Household size homogeneity	0.00	23.00	0.07	[0, 0.5]	0.19	35.07	0.55	[0, 198.24]	
Income homogeneity	2.55	9.03	0.00	[0.03, 190.36]	1.32	11.88	0.34	[0.01, 169.25]	
Marital status homogeneity	22.33	5.14	0.00	[0.9, 552.51]	1.10	6.20	0.12	[0.03, 39.36]	
Occupational homogeneity	0.02	24.27	0.80	[0, 9.75]	0.79	33.43	0.90	[0, 765.57]	
Racial Homogeneity	0.54	1.68	0.00	[0.2, 1.5]	0.87	1.78	0.31	[0.28, 2.71]	

The matching method is nearest-neighbors with 1/4 standard deviation caliper

is inherent in observational studies and which is not addressed using traditional regression models which rely on covariate control (Guo and Fraser 2009). Our propensity score analysis helps minimize household and neighborhood differences between renters and homeowners.

Using *STATA 10*, we perform a one-to-one propensity score match which uses a nearest-neighbor approach with 1/4 standard deviation caliper with replacement. Nearest-neighbor matching relies on an algorithm to identify the renter who is most similar to each homeowner. In order to minimize the possibility that the matching results are sensitive to the matching algorithm, and to avoid extreme matches, homeowners are only matched if there is a renter available within the same caliper. Results yield 375 renters who are matched to 375 homeowners.

Table 4 displays results before and after we match renters to homeowners via propensity score analysis. The column labeled ‘original sample’ shows results of a logistic regression model which uses both household and neighborhood level measures to predict whether a respondent is a homeowner in the original sample ($n = 1,902$). The column labeled ‘matched sample’ re-runs the same analysis on the matched sample ($n = 750$). Table 4 shows that following the match, all but 1 of the 36 parameter estimates drops from statistical significance in the prediction of homeownership. Furthermore, a comparison of the odds ratios displayed under each sample reveals that the propensity score match dramatically reduced the magnitude of effects of household and neighborhood characteristics in predicting homeownership. Overall, the results under the ‘matched sample’ column indicate that the selection bias associated with the likelihood of being a homeowner, which is evident in results under the ‘original sample’ column, has been largely negated through the propensity score match.

Two caveats are noteworthy. First, even after our propensity score match, one variable remains a statistically significant predictor of the decision to own or rent: relative income is positively associated with homeownership. Relative income does not relate conceptually to our outcomes of interest (collective efficacy and crime/disorder), nor does it predict either outcome with statistical significance in the structural equation model. As a further check for potential bias, we ran a separate model (not shown) in which we substitute relative income for homeownership. Findings indicate that even when excluding homeownership, there are no statistically significant effects of relative income on either collective efficacy (estimate = -0.030 , standard error = 0.045 , $P < 0.500$) or subjective crime and disorder (estimate = -0.041 , standard error = 0.106 , $P < 0.699$). Furthermore, the sign of relative income on collective efficacy is negative, which runs counter the positive effect for relative income on the decision to own a home and the positive effect of homeownership on

collective efficacy. Therefore, although we do observe a homeowner/renter difference in relative income, this difference does not substantively alter our evaluation of the impact of homeownership on collective efficacy and subjective neighborhood crime and disorder.

A second caveat relates to our matching procedure. Propensity score analysis matches on observed variables but does not necessarily address unobserved differences between renters and homeowners. Inclusion of a large number of predictors in the propensity score analysis helps reduce such unobserved differences, but the potential remains for unobserved differences to persist even after propensity score matching. In addition, a large number of propensity score methods are available to researchers. Here we used a one-to-one match. An alternate propensity score analysis could produce a different set of matched households.

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