

# Incivilities, place attachment and crime: Block and individual effects

Barbara B. Brown\*, Douglas D. Perkins, Graham Brown

*Environment and Behavior Area, Family and Consumer Studies, University of Utah, Salt Lake City, UT 84112-0080, USA*

## Abstract

The popular incivilities hypothesis suggests physical incivilities, such as unkempt lawns and litter, and weak social ties with neighbors encourage crime. Despite a strong impact on policing policies and public awareness, this hypothesis has seldom been tested. We extend this basic model to test whether place attachments protect from crime as well. In a suburban area facing decline, multilevel (hierarchical linear modeling) analyses reveal that renters, properties with more physical incivilities, and blocks with more physical incivilities experience more subsequent crimes. Although these actual physical incivilities were important predictors of crime, residents' perceptions of incivilities were not, suggesting that environmental incivilities act directly upon offenders, not through non-offender resident perceptions. A cross-level interaction indicated incivilities predicted crime less well on socially cohesive blocks, suggesting that social cohesion can buffer the effects of the physical environment. Weaker block level place attachments also contributed independently to individuals' risks of crime, demonstrating that place attachment merits greater attention in neighborhood revitalization and crime reduction interventions.

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## 1. Introduction

Incivility or disorder theories of crime undergird police practices, policies, and the public consciousness (see Taylor, 1999b, for a review). Well known versions (Wilson & Kelling, 1982; Skogan, 1990) assert that areas with multiple physical “incivilities,” such as litter or graffiti, broken windows, unkempt lawns, and homes in disrepair, suffer consequences beyond those of the immediate physical decay and disorder. Incivilities are hypothesized to become important symbols that residents and others cannot or will not protect their neighborhoods from crime and fear. It is further hypothesized that residents react to the symbolism of these incivilities by withdrawing from social activity in the neighborhood. Criminals also interpret these physical cues to mean that residents, through fear or apathy, have lost control over the neighborhood and will not interfere with criminal activity. The theory has led to calls for neighborhood clean-ups and police enforcement of public order (Kelling & Coles, 1996). Despite the popularity of the underlying idea, few empirical studies test whether physical incivilities relate to crime.

This study tests the link between incivilities and crime, but expands the incivilities model in two ways. First, we draw from environmental psychology to argue that place attachment could relate to incivilities and, independently, to crime. Second, we adopt an ecological model in which crime is related to social and physical qualities at both individual and residential block levels. Incivilities are assessed in two ways, given different conceptual and empirical justification for including both resident reports of incivilities and rater-observed incivilities. In sum, the study tests whether crime is related to perceived incivilities, observed incivilities, neighborhood social ties, and place attachment to the home. Our justification for each predictor of crime in the incivilities model, and potential relationships among predictors, starts by describing a traditional incivility model, before introducing place attachment.

### 1.1. *Incivilities, social ties, and crime-related outcomes*

*Observed incivilities:* A core requirement of incivilities models (Wilson & Kelling, 1982; Skogan, 1990) is that actual physical incivilities present in the environment contribute to crime. Criminals are hypothesized to feel emboldened in the presence of incivilities and residents are expected to be unwilling or unable to intervene to

\*Corresponding author. Tel.: 01-801-581-7111; fax: 01-801-581-5156.

*E-mail address:* barbara.brown@fcs.utah.edu (B.B. Brown).

prevent crime. Although central to the model, few studies combine labor intensive observational data on incivilities with official reports of crime.

The few studies of observed incivilities and official crime reports show some relationships between physical incivilities and crime at aggregate levels. In 66 Baltimore neighborhoods, physical incivilities correlated with police reports of serious crimes (Taylor, Shumaker, & Gottfredson, 1985). Neighborhood level incivilities in public spaces in Chicago predict police reports of robbery and homicide (but not burglary; Sampson & Raudenbush, 1999); neighborhood incivilities in Baltimore predict increases in police reports of homicide (but not robbery, assault, or rape; Taylor, 2001). Neighborhood litter predicts an index of quality of life crimes (e.g. drug dealing, harassment; but not serious crimes; Perkins, Wandersman, Rich, & Taylor, 1993). Graffiti and litter in public areas of Philadelphia blocks predict robbery and an index of social incivility crimes (but not six other types of crime); vandalism was related to three types of police reports (burglary, an index of calls for service, an index of physical incivility crimes) but not five others (Kurtz, Koons, & Taylor, 1998). These results show some aggregate level relationships in large, crime-prone city neighborhoods between incivilities and crime, particularly when broad crime indexes constitute the outcome variable. However, researchers posit that incivilities are especially important for crime related outcomes in neighborhoods with moderate incomes (Taylor, Shumaker, & Gottfredson, 1985; Taylor & Shumaker, 1990) or neighborhoods that are at risk for decline (Wilson & Kelling, 1982; Taub, Taylor, & Dunham, 1984). Taub et al. (1984) suggest that incivilities are more informative in a declining neighborhood. Taylor et al. (1985) suggest that better neighborhoods “guarantee confidence” while low-income neighborhoods “guarantee pessimism,” making incivilities more symbolically important in neighborhoods that could decline or improve. The present study will examine an index of crime in a predominantly moderate income inner suburb threatened by decline in Salt Lake City, a city less renowned for crime.

*Resident perceived incivilities:* Although the incivilities thesis relates observed physical incivilities to crime, empirical tests of the thesis often substitute measures that are easier to collect, relating resident reports of incivilities to resident reports of fear of crime (see many studies cited by Hale; 1996; Perkins & Taylor, 1996; Taylor, 1997b). Resident reports of incivilities were initially interpreted as valid indicators of physical incivilities (Skogan, 1990), but subsequent research demonstrates their differences. Perceived incivilities are often unrelated (Perkins, Wandersman, Rich, & Taylor, 1993; Taylor, 2001) or modestly related (Perkins & Taylor, 1996; Taylor, 1999a; McGuire, 1997) to observed incivilities. Perceived and observed incivilities also independently predict of fear of crime

(Box, Hale, & Andrews, 1988; Covington & Taylor, 1991), suggesting they are both distinct but useful indicators of crime-related problems. Taylor (Covington & Taylor, 1991; Taylor, 1997a) suggests that certain residents, with heightened environmental reactivity or complaint-proneness, perceive more incivilities than their neighbors. Such residents may be more fearful, either because of their pre-existing individual characteristics or their perception of more incivilities.

In addition to straying from the theory, the common practice of asking residents about incivilities and crime-related outcomes in the same interview creates two additional weaknesses. First, the few studies linking perceived incivilities to crime, not fear, are based on retrospective self-reports; those who recall crime victimization also recall that neighborhood incivilities were high (Borooah and Carcach (1997); Rountree, Land, and Miethe (1994); Skogan (1990), for robbery). Perhaps, crime victims begin to notice and report more incivilities or some individuals may have qualities that cause them to perceive or remember both crime and incivilities; in either case, retrospective self-report studies cannot test whether reliably observed physical incivilities relate to crime. In the present research we overcome both weaknesses by assessing both resident and trained observer reports of incivilities, then tracking subsequent police reports of crimes. Of two forms of police reports—initial calls for service and final reports—we chose final reports. Police reports require that the police agree that there is evidence of a crime, so they represent a measure with some convergence across resident and police assessments of crime.

*Social ties and crime:* Research has shown that local social ties are a social strength that can protect neighborhoods and individuals from crime. Although some incivility models posit that incivilities erode social ties and thereby lead to crime (e.g. Wilson & Kelling, 1982), evidence suggests that weaker social ties directly increase vulnerability to crime (Sampson & Groves, 1989; Bellair, 1997; Warner & Rountree, 1997). In addition, collective efficacy, involving social ties plus informal social control, predicts fewer violent victimizations and homicides in Chicago neighborhoods (Sampson, Raudenbush, & Earls, 1997). Other studies find that social cohesion does not relate to crime when neighborhood differences, such as varying home ownership levels, are controlled (Greenberg, Rohe, & Williams, 1982; Taylor, Gottfredson, & Brower, 1984; Lynch & Cantor, 1992; Perkins et al., 1993). We test whether social ties protect from crime, controlling for demographic differences across blocks.

### 1.2. Place attachment, incivilities, and crime

We argue that place attachments merit integration into an incivilities model. Place attachment research has

different intellectual roots than incivilities models, arising from efforts to understand bonds between people and their social and physical settings (Brown & Perkins, 1992). Nevertheless, both approaches agree that physical settings are expressive, creating messages about resident identity, neighborliness, and commitments. Residences are often a source of pride, a vehicle for identity display, and a visible symbol of community standards and territorial commitment (Altman & Chemers, 1980; Brown, 1987). Bonds of attachment are cultivated by the accumulation of memories, the active investment of effort in personalizing or decorating one's house and yard, and in mundane acts of daily upkeep (Brown & Werner, 1985; Brown, 1987). Attachment is a rich concept that has been conceptualized and measured in different ways (see Brown & Perkins, 1992; Brown, Perkins, & Brown, 2003), including social ties, housing need fulfillment, and length of residence, among other measures. We focus on residents' home-based feelings of pride in their homes and home appearances as the aspect of place attachment most relevant to home-based physical incivilities.

We believe place attachments can be integrated into an incivilities model because they may foster behaviors and attitudes that protect directly against crime and through discouraging incivilities and enhancing social ties. More attached residents may be better territorial guardians (Felson, 1987), exhibiting greater vigilance and protectiveness toward their own and neighbors' residences. Indirectly, place attachment may guard against incivilities, as residents remove litter, trim lawns, and otherwise keep up appearances of places that are sources of pride and identity. Past research has even measured residents' bonds to house and property by timing how long it takes residents to remove litter deposited in front of their homes (Worchel & Lollis, 1982). Home personalization and maintenance investments can also engage or strengthen bonds between residents and their neighbors (Brown & Werner, 1985; Werner, Peterson-Lewis, & Brown, 1989). Thus place attachments are expected to relate to crime and have been found to relate to other predictors of the incivilities model.

The typical physical manifestations of place attachment may also provide some protection from crime. Personalized and well kept residences may reassure and welcome neighbors but put potential offenders on guard. Burglars in a suburban neighborhood were more likely to avoid personalized homes (those with prominent signs of resident names and/or addresses) in favor of less personalized neighboring homes (Brown & Altman, 1983). In one study naive raters of photos of homes were able to discern whether the resident felt high or low levels of place attachment (Harris & Brown, 1996). When asked why they judged some residents to be unattached, judges cited numerous physical cues, many of which included incivilities (e.g., unkempt lawn, poor condition of house exterior). When burglars are asked to

rate photographed houses as burglary targets, they say that poor burglary targets are homes that look as if the neighbors would react to their presence (Brown & Bentley, 1993). These judgments were made without having access to photos of neighboring homes, so it is clear that inferences about protective neighbors were related to appearances of the target house, not its neighbors. Thus ample conceptual and empirical evidence justifies including place attachment in a model of social ties, incivilities, and crime.

Place attachment should be distinguished from the effects of home ownership. Past research sometimes treats home ownership as interchangeable with attachment or part of its definition (Taylor, Gottfredson, & Brower, 1985; Sampson & Lauritsen, 1994). Home owners may feel more attached due to greater residential stability, control, and investment (see Rohe & Stewart, 1996 for a review). But ownership and long tenure are good but not perfect indicators of place attachment (Kasarda & Janowitz, 1974; Fried, 1982; Sampson, 1988); place attachment requires positive psychological bonds as well. Finally, renters also report place attachment to their home and neighborhood (Harris, Brown, & Werner, 1996), demonstrating that attachment is not synonymous with ownership. In order to determine whether place attachment merits an independent role in the incivilities model, it will be tested controlling for home ownership.

### *1.3. Block-level and individual-level vulnerability to crime*

Although most crime research focuses on crime variations across neighborhoods, Taylor has shown how crime also varies across blocks within one neighborhood (Taylor et al., 1984; Taylor, 1997b, 1988; Perkins & Taylor, 1996). The micro-ecology of street block processes, such as repeated exposure, casual surveillance, and shared norms, can create block level variations in residents' social and physical bonds (Taylor, 1997b). Indeed, blocks vary in cohesion and attachment, depending on block stability, norms, design, land use, traffic, and other qualities (Taylor, 1997b; Brown et al., 2003). Residential blocks are then an appropriate unit of analysis for studying crime.

Individual household level physical features should also relate to crime, although few studies have tested this possibility. We believe criminals do not pick random sites to victimize within blocks but use physical appearances to select properties that look least protected by the residents or their neighbors (Brown & Altman, 1981). As noted above, past research shows criminals pick targets that look less personalized than neighboring houses (Brown & Altman, 1983) and where they believe neighbors will not act as guardians of the property (Brown & Bentley, 1993). Indeed, recent research has begun to focus on crime "hot spots," highly crime prone buildings or parts of blocks (Eck, 1997). Although most

incivilities models do not address which property on the block will be most vulnerable, we extend the basic rationale of the incivilities model to test within-block and between-block vulnerability to crime in a declining neighborhood. Hierarchical linear models (HLMs), seldom used by environmental psychologists interested in nested variables, provide appropriate and separate tests for individual and block level predictors of crime. We anticipate that both individual and block level physical incivilities predict crime risk.

Another important advantage to examining household level connections between incivilities and crime is to understand the experiences of those living in properties with incivilities. In original statements of incivilities models, incivilities appeared as a result of outside forces, not internal neighborhood dynamics. For example, incivilities have been attributed to inebriates frequenting corner stores (Wilson & Kelling, 1982) or absentee landlords neglecting their large rental properties (Sae-gert, 1989). With an inner suburb dominated by single family detached houses, the incivilities are more likely a product of resident action or inaction. In this context, we predict that residents with more physical incivilities on their property have less attachment to their home. Thus, unlike other studies of incivilities in public spaces (Kurtz et al., 1998; Sampson & Raudenbush, 1999), we examine the effects of incivilities on private properties.

Although the ultimate test of such a model will require multiple waves of data, the present study provides several improvements over past cross-sectional, retrospective studies that relied exclusively on self-reports of both incivilities and crime. We assess physical incivilities through the use of trained raters, then interview residents to assess social ties and perceived incivilities, assessing all variables at individual and block levels, then track post-interview crime occurrences at study addresses through police reports.

*Hypotheses.* The incivilities thesis is that more physical incivilities and weak social ties predict crime. We extend this model in two ways. We posit that place attachments predict lower crime risks and we test the model ecologically, whereby both individual and block level predictors will relate to crime. We also test a common variant, that perceived incivilities predict crime independently of observed incivilities. In sum, our hypothesis is that weaker place attachments, more observed incivilities, more perceived incivilities, and weaker social ties, at both individual and block levels, predict crime.

## 2. Method

### 2.1. Neighborhood context

The target Salt Lake City neighborhood had been undergoing gradual decline. Census data from 1970 to

1990 indicate that household incomes in this area have decreased from \$26,000 to \$19,000 (in constant 1989 dollars), despite a city average that remained stable at about \$29,000. The census block groups had an (unweighted) average of 29.4% in poverty compared with 16.4% city wide (Salt Lake City Corporation, 1993). An increase in ethnic diversity involved young families, as school enrollment figures showed that 42% of the student body were ethnic or racial minorities (Salt Lake City Corporation, 1994), compared to about 35% for the population at large. Although single family detached houses comprise the majority of the housing stock, owner occupancy decreased from 68% in 1980 to 56.6% in 1990. In sum, the neighborhood resembled a classic neighborhood in transition, with more transient housing conditions and poorer residents, reflecting the aging of long-term residents and the influx of younger ethnically diverse families. Census data from 1999, after study completion, indicates increasing income levels (\$23,591 in 1989 dollars) and a slight increase in home ownership (to 61%), but still 30% of households in poverty (N. Olsen, pers. comm., January 7, 2004).

*Sample selection.* The sample includes 349 interviews and 480 property assessments on 58 blocks. The study neighborhood is a first-ring suburban area just west of downtown with mostly single-family detached housing, some small scale apartments or duplexes, some schools and parks, but no large public housing complexes, employment centers, or malls. It involves nine contiguous census block groups comprising parts of three census tracts. The neighborhood is bisected by a river and largely bounded by major roads or freeways. Sampling was designed to eliminate atypical or non-residential blocks from the sampling frame but select eligible residential blocks randomly (following Perkins, Meeks, and Taylor (1992); see also Brown and Perkins (2002), for sampling details). We eliminated from the sampling frame three atypical blocks facing the western and northern arterial boundary roads that had over 100 addresses per block. To achieve sufficient sample sizes per block, eligible blocks also needed at least 10 residential addresses. Blocks were selected randomly using a probability proportionate to size procedure that weights each of the 164 eligible census blocks according to its number of residential households. In addition, five blocks were chosen at random from blocks located within two blocks of a future private housing development in order to over sample this area for a future study.<sup>1</sup> Households on these over sampled blocks do not differ from other households on any of the variables

<sup>1</sup>This study established baseline conditions to test the effects of a future housing subdivision to replace an abandoned school, plant nursery, and vacant lot. However, knowing about the new project and perceiving it to be in one's neighborhood had no effect on the subsequent HLM model, so no further reference is made to the intervention.



chosen for this study, with Bonferonni corrected *t*-tests for differences, so all data are combined. Individual properties were selected on chosen blocks by starting with the lowest address, then selecting every third residence until at least eight properties were selected. Although 59 blocks were assessed, police report data were missing for one block, so 58 blocks are included in the present study. Previous research and statistical power analyses also reveal that 58 blocks are an adequate sample size (i.e. for an alpha level of 0.05, effect size of  $r = 0.30$  for block data, power is approximately 0.75, 1-tailed; for the individual house level power is greater than 0.995; see Taylor and Perkins (1989) for a discussion of sample size per block). Given the power limitations inherent in 58 blocks, as well as past practices (Perkins & Taylor, 1996) and recommendations (Kenny & la Voie, 1985) to increase probability levels for more reliable group data, Level 2 probability levels will be adjusted to 0.10. All analyses were conducted using HLM 5.01 (Raudenbush, Bryk, Cheong, & Congdon, 2000).

## 2.2. Data collection procedures

*Environmental inventories.* The environmental assessment measured physical signs of decay or improvement visible on the 480 residential properties sampled across 58 blocks. Environmental inventories were completed by trained raters. Pairs of raters assessed 365 of the properties, with resulting inter-rater reliabilities acceptably high, ranging from 0.70 to 0.93.

*Survey administration.* Across the 58 blocks, at least five residents were interviewed on most blocks (one block had three interviews and three had four interviews), for a total of 349 interviews, representing a 72.71% response rate for the 58 blocks. Bonferonni corrected *t* tests revealed no significant differences between the physical conditions for residents who participated in interviews and those who did not.

Purchased telephone lists proved inadequate so telephone interviews were supplemented by at-home in-person interviews. In order to avoid the intrusiveness of requesting a household enumeration of residents, the adult who had the most recent birthday was selected for the interview (O'Rourke & Blair, 1983). Spanish and English versions of the approximately 25-min interview addressed perceptions of neighborhood social fabric, crime problems, perceived physical conditions, and awareness of ongoing city revitalization plans.

## 2.3. Measures

Given that many composite measures included items with different response metrics, raw scores were converted to *z*-scores to compute the composites. Internal consistencies of composites were tested with

Cronbach alpha coefficients. In order to form Level 2, block level, variables for the Hierarchical Linear Models (HLM), the individual composites or variables were simply aggregated to block mean. This is appropriate because HLM divides variance in outcome measures into two independent parts representing two distinct levels of analysis—individuals within blocks and residential blocks.

*Home attachment.* Place attachment exists at many different geographic levels, from rooms in a home to cities. However, we focused on residents' attachment expressed in pride in their homes and in appearance of the home exterior as the most relevant measures, given the research focus on physical incivilities present on private properties. A 3-item composite assessed how proud residents are of their house, the way their front yard looks, and the way their house exterior looks (using a 1–10 scale, from “not at all” to “extremely” proud, adapted from Brown and Werner (1985); coefficient alpha = 0.88).

*Home incivilities.* An 8-item composite included objectively observed amounts of litter and peeling paint (on 10-point scales); roof conditions (0 = new, 1 = average, 2 = needs repair); the presence (1 = yes, 0 = no) of broken windows or lights; graffiti; lawns, and sidewalks in poor condition; and the absence of flower or vegetable garden (coefficient alpha = 0.69; adapted from reliably rated inventories by Brown & Altman, 1983; Perkins et al., 1992, 1993).

*Perceived incivilities.* A 10-item composite indicating whether the block, in the past 12 months has had vacant homes/buildings, neighbors who do not keep up their property, house or place on the block where the resident suspects drug dealing occurs, houses on the block burglarized, incidents of street robbery or assault on the block, or evidence of gang activity (1 = yes, 0 = no). Residents also rated, on a 10-point scale, the degree to which their block had experienced, in the past 12 months, problems with graffiti, loud neighbors, traffic, and loose or stray dogs and cats (adapted from LaGrange, Ferraro, and Supancic (1992); Taylor and Hale (1986); coefficient alpha = 0.73).

*Social ties/collective efficacy.* Social ties involved six items measuring the frequency (never, less than once a month, monthly, weekly, daily) of four different informal neighboring contacts: borrowing/loaning something, visiting, speaking with a neighbor about a neighborhood problem, and keeping watch on neighbors' homes while they are away. Residents also reported how many block neighbors they knew by sight or name (5 options, from “none” to “all or almost all”) and how much they felt they had in common with neighbors (nothing, not much, a little, a lot; adapted from Brown and Werner (1985); coefficient alpha = 0.74). Exploratory analyses also substituted a broader measure of collective efficacy, which combines

social cohesion with social control (Sampson et al., 1997). Social cohesion includes the above measures of social ties, plus a measure of neighbor friendliness. Social control items include wanting to be involved in neighborhood improvements; willingness to join a block association; feeling in control of the sidewalk in front of the home; belief that their neighbors would confront kids, talk to neighbors, and/or call the police when they see kids spraying graffiti; and having called the government or community council about a neighborhood problem in the last year (14 items, coefficient alpha = 0.73).

*Home ownership and other sociodemographic variables.* Home ownership indexes whether the residents reported owning (not renting) their home. Other social and demographic variables collected include gender, age, income, racial/ethnic identity, marital status, religious affiliation, type of housing, and years of residence.

*Police reports of crime.* In 1995, after interviews were completed, we tracked subsequent police reports of crime occurrences at each address until fall, 1996, 9 months after the end of all the interviews. We focused on police reports of crime because they are integral to the original incivilities thesis and they have the advantage of separation in time and data collection method from the other predictors of crime. We retained all categories of crime given the small sample size and the fact that past research shows that crime indexes are more predictable than single crime categories. We recognized the importance of multiple victimizations (Sherman, Gartin, & Buerger, 1989) by coding data into four categories: No reports (54.5%), 1 report (19.8%), 2–3 reports (14.8%), and 4 or more reports (11.0%) after the interview. Because the number of months varied between each individual's interview and the date of the last police report data collection, we computed a per month rate of police reports per address. This measure ranged from 0 to 0.33 crime reports per month.<sup>2</sup>

*Self-reported crime.* Police report data for the months preceding the interviews were not available. To complement police reports we asked residents if they or other household members had been victimized by several common types of crime during the previous 12 months. These included residential burglaries (attempted or completed); theft from home, car, or property; vandalism or graffiti of household property or vehicle; and household mugging, robbery, or physical attack.

### 3. Results

#### 3.1. Description of sample

Descriptive data in Table 1 show that fully 71% of respondents are home owners, 88% live in single family

detached homes, and they have lived in the neighborhood on average for over 14 years. Most are female (62%), slightly over half are married (54%) or have children (52%), and incomes are relatively low (under \$24,000 per household on average). Some type of household criminal victimization in the past year was reported by 43% of the residents in the interviews, with police reports showing subsequent crime reports by 45.5% of the sample.

#### 3.2. Correlational results

Individual and block level correlations (Tables 2 and 3) provide some insight into whether expected linkages exist. As expected, home attachments are stronger among home owners (Table 2,  $r = 0.31$ ,  $p < 0.01$ ) and aggregated block averages for attachments are higher when blocks have more home owners (Table 3,  $r = 0.41$ ,  $p < 0.01$ ). Those with greater attachments also have fewer physical incivilities visible on their properties ( $r = -0.32$ ,  $p < 0.01$ ) and have more extensive social contacts with their neighbors ( $r = 0.23$ ,  $p < 0.01$ ). The amount of incivilities on one's property is not related to the resident's perception of incivilities in the vicinity; however, blocks with more observed incivilities have higher levels of perceived incivilities ( $r = 0.33$ ,  $p < 0.05$ ). Counter to the incivilities hypothesis, neither individuals nor blocks with higher perceived incivilities report less neighboring, suggesting that residents' perceptions should fuel neither crime nor social withdrawal in this neighborhood. However, individuals with more observed incivilities do report less neighboring, suggesting that incivilities indicate less engaged residents. Both observed physical incivilities ( $r = 0.34$ ,  $p < 0.01$ ) and attachments to home ( $r = -0.13$ ,  $p < 0.05$ ) were related to police reports, but perceived incivilities and neighboring were not. In sum, expected relationships were confirmed for place attachments but not social ties.

#### 3.3. HLM analysis strategy

Because the sampling frame included block groups chosen to be sociodemographically similar, fewer demographic control variables should be required than for studies that combine multiple distinct neighborhoods. We followed Bryk and Raudenbush's (1992) recommended strategies for model building. This includes keeping HLM models as simple as possible, testing theoretically important predictors but dropping unneeded control variables, and conducting preliminary tests to determine if predictors vary in their effects across blocks. To simplify discussion, only a final trimmed HLM model is presented, given that all significant effects in the full model retain significance when insignificant predictors are dropped out (full

<sup>2</sup>We also explored a log-transformed measure that reduced skew of the measure, but results were largely the same.

Table 1  
Level 1 Descriptive Statistics at Levels 1 and 2

Name	Description	N	Min	Max	Mean	S. D.
Level 1: Individuals						
COP4MO1	Calls to police/month	349	0.00	0.33	0.05	0.07
PHYCIV8	Housing incivilities	480	-0.86	2.09	-0.01	0.56
OWNHOME	Home owner	342	0.00	1.00	0.71	0.45
PCIV10	Perceived incivilities	349	-1.12	1.25	-0.02	0.54
PRSELF	Home attachment	349	-2.79	1.04	-0.01	0.90
SOCNBOR6	Social ties	349	-1.32	1.68	0.02	0.66
VIC4YES	Self reported victimization	348	0.00	1.00	0.43	0.50
RESYRS	Years of residence	347	0.00	74.00	14.54	16.05
AGE	Respondent age	345	18.00	94.00	46.86	18.66
LDS	LDS religion	324	0.00	1.00	0.46	0.50
MARRIED	Married	345	0.00	1.00	0.54	0.50
FEMALE	Female	343	0.00	1.00	0.62	0.49
HAVEKIDS	Children in home	349	0.00	1.00	0.52	0.50
INCOME	Income	310	2.50	42.50	23.55	10.60
SFDHOME	Single family detached house	347	0.00	1.00	0.88	0.32
WHITE	White (non-Hispanic)	336	0.00	1.00	0.69	0.46
Level 2: Blocks						
A1COP4MO	Calls to police/month	58	0.00	0.16	0.04	0.04
A1HCIV8	Housing incivilities	58	-0.79	1.00	0.00	0.35
A1OWNER	Home owner	58	0.00	1.00	0.71	0.22
A1SNBR6	Social ties	58	-0.80	0.64	0.01	0.29
A1RESYR	Years of residence	58	3.00	40.75	14.13	7.55
A1AGE	Respondent age	58	29.00	68.50	46.56	8.26
A1LDS	LDS religion	58	0.00	0.80	0.45	0.23
A1MARRIED	Married	58	0.00	1.00	0.53	0.24
A1FEMALE	Female	58	0.17	1.00	0.61	0.24
A1KIDYES	Children in home	58	0.00	1.00	0.52	0.21
A1INC	Income	58	7.50	37.50	23.28	5.65
A1SFD	Single family detached house	58	0.00	1.00	0.89	0.19
A1WHITE	White (non-Hispanic)	58	0.00	1.00	0.69	0.22
A1PCIV10	Perceived incivilities	58	-0.69	0.46	-0.01	0.27
A1PRSELF	Home attachment	58	-0.90	0.67	-0.03	0.37
A1V4YES	Self-reported victimization	58	0.00	1.00	0.43	0.21
T1NRBLK	Non-residential property	58	0.00	1.00	0.34	0.48

Table 2  
Correlations among individual level variables

	Police report	Home incivility	Home owner	Perceived incivility	Attachment	Socialties
Police report	1.00					
Home incivilities	0.34**	1.00				
Home owner	-0.24**	-0.27**	1.00			
Perceived incivilities	0.03	0.02	-0.02	1.00		
Home attachment	-0.13*	-0.32**	0.31**	-0.14**	1.00	
Social ties	-0.07	-0.11*	0.11*	0.08	0.23**	1.00
Self reported past crime	0.08	0.07	-0.11*	0.26**	-0.15**	0.03
Years of residence	-0.21**	-0.28**	0.41**	-0.05	0.33**	0.20**
Age	-0.14*	-0.25**	0.35**	-0.10	0.34**	0.10
LDS	-0.14*	-0.10	0.22**	0.05	0.12*	0.22**
Married	-0.13*	-0.16**	0.13*	-0.05	0.18**	0.05
Female	0.03	-0.04	-0.10	0.00	0.08	0.04
Children present	0.09	0.12*	-0.22**	-0.05	-0.19**	-0.04
Income	-0.08	-0.11*	0.25**	0.06	0.12*	0.14*
Single family home	-0.00	-0.14*	0.32**	-0.03	0.04	0.00
White (non-Hispanic)	-0.08	-0.10	0.16*	0.14**	0.05	0.23**
Collective efficacy	-0.07	-0.13*	0.13*	-0.00	0.28**	0.88**

\*  $p < 0.05$ .

\*\*  $p < 0.01$ .

Table 3  
Correlations among aggregated block level variables

	Police report	Home incivility	% Home owners	Neighboring	Perceived incivility	Home attachment
Police reports	1.00					
Home incivilities	0.63**	1.00				
% Home owners	-0.29*	-0.34**	1.00			
Social ties	-0.12	-0.14	0.35**	1.00		
Mean years residence	-0.32*	-0.32*	0.32*	-0.02	-0.14	0.34**
Mean age	-0.18	-0.13	0.13	-0.20	-0.06	0.26*
% LDS	-0.05	-0.03	0.24	0.32*	0.04	0.06
% Married	-0.26	-0.31*	0.04	0.03	-0.15	0.27*
% Female	-0.07	-0.11	0.02	-0.09	-0.14	0.26
% Have kids	0.07	0.04	-0.22	0.12	-0.24	-0.26
Mean income	-0.15	-0.23	0.58**	0.26*	0.03	0.22
% Single family homes	-0.05	-0.11	0.42**	0.12	-0.02	0.14
% White	-0.01	-0.04	0.34*	0.13	0.15	0.11
Perceived incivilities	0.33*	0.33*	-0.05	-0.20	1.00	-0.39**
Home attachment	-0.52**	-0.51**	0.41**	-0.01	-0.39**	1.00
Self-report vic	0.13	0.12	-0.12	-0.19	0.26*	-0.18
Non-residential block	0.22	0.25**	-0.28*	-0.02	-0.15	-0.23
Collective efficacy	-0.23	-0.24	0.47**	0.88**	-0.32*	0.21

\*  $p < 0.05$ .

\*\*  $p < 0.01$ .

model table available upon request from first author). All hierarchical linear models (HLMs) utilize full maximum likelihood estimation procedures and pairwise elimination of missing variables, given the low levels of missing data.<sup>3</sup> All Level 1 data are centered for the block and all Level 2 data are centered for the entire sample. Therefore significant Level 1 variables are those that differ from their block means and significant Level 2 variables are those blocks that differ from the means of other blocks.

### 3.4. Crime differences across blocks

Given that blocks were chosen for socio-demographic similarity based on 1990 census data, it is reasonable to question whether blocks differ in crime reports among participants. In HLM the first step is an unconditional model, which tests whether Level 2 units—blocks—differ in their level of crime reports. This analysis is akin to computing a oneway analysis of variance on police reports across the blocks, weighted by differing sample sizes across blocks. Results show that the blocks do differ ( $t(57) = 8.87, p < 0.001$ ) and that HLM's ability to handle nested data is a necessary feature of the analysis.

The HLM analysis also allows computation of variance components to show how the total variance in police reports is divided between Level 1, individuals within blocks, and Level 2, blocks. Block level differences account for 34.62% of the total variance in police reports (block level variance divided by total variance =  $0.00161/0.00465$ ). This is a significant amount

of the total variance ( $\chi^2(57) = 304.43, p < 0.001$ ). So even when street blocks were chosen from three contiguous and fairly similar census tracts, crime variability within the neighborhood is substantial. Remaining analyses can test which individual and block level variables are associated with greater risk of household crime victimization.

### 3.5. Control variable selection

Bryk and Raudenbush (1992) describe how to determine if potentially important variables need to be present in HLM models, cautioning that fewer variables often yield better model fit and respond better to sample size limitations. Compared to other hierarchical studies of diverse neighborhoods, many of the demographic qualities within this intact neighborhood do not relate to the crime outcome or alter the effects of other predictors, reducing the need for many control variables. Potential control variables tested and eliminated for lack of significance include gender, child(ren) present, income, single-family-detached house type, and white (non-Hispanic) ethnicity/race. As shown in Table 2, five variables (home ownership, length of residence, age, married status, and LDS religion—Latter-Day Saints or Mormon religion is dominant in the state) had significant simple correlations with crime reports, but given the levels of intercorrelations, only home ownership contributes significantly to the final analysis. Although years of residence is initially significant when entered alone, its correlation with home ownership ( $r = 0.41$ ) reduces its significance when both years of residence and home ownership are included. At the block level, both variables are also correlated with

<sup>3</sup>A reanalysis of the final model using listwise missing data specifications yields the same significant predictors.



Table 4  
Final HLM model predicting police reports from blocks ( $n = 58$ ) and individuals ( $n = 349$  interviews and 480 property assessments)

Fixed effects	Coefficient	S.E.	<i>t</i>	<i>p</i>	
Intercept, $\gamma_{00}$	0.051985	0.004339	11.98	0.00	
Level 2: Blocks					
Home attachment, $\gamma_{01}$	-0.031257	0.013255	-2.36	0.02	
Home incivilities, $\gamma_{02}$	0.065792	0.014311	4.60	0.00	
Level 1: Individuals within blocks					
Home owner, $\gamma_{10}$	-0.015468	0.006243	-2.48	0.01	
Home incivilities, $\gamma_{20}$	0.013157	0.006887	1.91	0.06	
Home incivilities by Block social ties, $\gamma_{21}$	-0.047040	0.021348	-2.20	0.03	
Random Effects	S.D.	Variance component	d.f.	$\chi^2$	<i>p</i>
Intercept, $U_0$	0.02760	0.00076	55	193.72	0.00
Home incivilities, $U_2$	0.02553	0.00065	56	73.25	0.06
Level 1, $R$	0.05202	0.00271			

each other and with less crime (see Table 3). We chose home ownership to carry the variance, given that omitting years of residence does not alter the significance of any other variable. Similarly, substituting years of residence for home ownership also would not substantially alter the results.

### 3.6. Final trimmed HLM model

Bryk and Raudenbush (1992, pp. 201–202) recommend testing for random effects to see if variables have different effects across blocks and simplifying models where possible. Therefore a trimmed model is presented that deletes non-significant predictors and tests as recommended for random effects. Tests showed that individual level observed physical incivilities deserved to be treated as a random effect ( $\chi^2(57) = 80.62$ ,  $p = 0.021$ ), prompting a search for a cross level interaction, whereby a block level variable could help explain variability in the physical incivilities. The sociable quality of the block was found to explain part of this variability. Less sociable blocks had stronger relationships between home incivilities and police reports. Below median sociability blocks had a simple correlation between home incivilities and crime of  $r = 0.37$  ( $p < 0.01$ ). Above median sociability blocks had a simple correlation between home incivilities and crime of  $r = 0.21$  ( $p < 0.01$ ).<sup>4</sup> Thus, greater ties on the block

reduce the linkage between individual crime victimization and physical incivilities (Table 4).

In the final trimmed model both home ownership and home incivilities merited retention at the individual level. Home owners experience fewer police reports of crime ( $p = 0.01$ ). Residences with more observed physical incivilities had higher police report rates ( $p = 0.06$ ). Recall that incivilities include items such as graffiti, litter, poor roofs, broken windows, and poor lawns or the absence of gardens. At the block level, individuals who live on blocks with more observed incivilities on private properties experienced more police reported crime ( $p < 0.001$ ). Finally, blocks with lower levels of place attachment, indexed by less pride in the property expressed by the residents, had higher police report rates ( $p = 0.02$ ).

Neither perceived incivilities nor social ties relate directly to crime at either level. Although place attachment was significantly correlated with crime at the individual level, its relationship to other predictors in the HLM model reduced to insignificance its individual level relationship to crime.

(footnote continued)

variable had no effect on the model. These controls are not ideal, given that the location of the events were not specified for robbery and included cars, which might have been at home or not. Collective efficacy did not add significantly to the HLM model at either the individual or the block levels, or when substituted for neighboring. Finally, some researchers argue that all neighborhood studies should control for social status, stability, and race/ethnicity (Skogan, 1990; Bursik & Grasmick, 1993). Although we believe these controls are more necessary when sampling diverse neighborhoods, not one neighborhood, we added household income and white non-Hispanic ethnicity to be sure. For neither the individual nor the block levels were the results of income and ethnicity significant nor was model fit improved. In sum, the results appear to be robust, after testing a number of variations.

<sup>4</sup>The basic model was tested with variations to control for self reported crime, to substitute collective efficacy for the narrower construct of informal neighboring, and to explore additional social controls. Police report data for study households were not available prior to resident interviews, but a partial control for past crime is available in resident self-reported residential burglaries, vandalism or graffiti of home or vehicle, theft from home (or property or car); or robbery, mugging, or physical attack; averaging these into a composite

In sum, the HLM analyses showed perceived incivilities to be non-significant predictors of crime in the present study. However, the block-level psychological variable of attachment to and pride in the home, the individual-level variable of home ownership, and the individual- and block-level observational variables of home incivilities were important predictors of subsequent crime. Social ties among neighbors on the block are important in an indirect way, dampening the positive relationship between home incivilities and crime.

#### 4. Discussion

This study shows that observed incivilities and weak place attachments are important predictors of crime. Observed incivilities were related to police reported crime at both individual and block levels. Households with more observed incivilities than their neighbors are more likely to be involved in crime occurrences. A cross level interaction shows that this effect is heightened for householders who have fewer social contacts with neighbors. Previous research showed that social support buffers the relationship between perceived incivilities and fear (Ross & Jang, 2000); the present study demonstrates a buffering role for social support between observed incivilities and crime. Blocks with high incivilities relative to other blocks also pose greater crime risks to individual households, regardless of that property's level of incivilities. As hypothesized, place attachment deserves integration into the incivilities model, given that blocks with low levels of home attachment had higher crime.

Despite the fact that most of the prior research suggested that perceived incivilities might provide better predictors of crime outcomes than observed incivilities, the present study found the reverse (as did Perkins et al., 1993). Individuals who perceive more incivilities did not experience more crime, but individual properties with more observed incivilities did experience more crime. These measures should not be viewed as directly comparable, given that perceived incivilities assess the resident's perception of block conditions surrounding their property while individual-level observed incivilities assess observed conditions on the resident's own property. Nevertheless, past research has argued strongly in favor of using individual level perceived incivilities as superior predictors of crime-related outcomes. Covington and Taylor (1991) found that perceived incivilities were three times as important as observed incivilities in predicting fear of crime. On the basis of such results, Taylor (1997a) cautioned against expecting significant effects of observed incivilities at neighborhood levels and recommended focusing on perceived incivilities at the individual level. The present

study did find that block level perceived incivilities were significantly correlated with block level crime reports ( $r = 0.33$ , Table 3), suggesting that blocks where neighbors agree that incivilities exist may have crime problems (although these effects dropped to insignificance in the multilevel model). We believe that perceived incivilities may be useful predictors of fear, but our study reinforces the important role of observed physical incivilities in predicting crime. Moreover, this study demonstrates that incivilities on personal properties are also an indicator of crime vulnerability at that address, consistent with the idea that incivilities invite offenses.

Home ownership, which was correlated with householder age and years of residence, was associated with lower rates of subsequent police reports. These results are consistent with past studies that found home ownership (Sampson & Wooldredge, 1987; Borooah & Carcach, 1997) or stability (Sampson, 1985; Skogan, 1990; Perkins et al., 1993; Kelling & Coles, 1996; Taylor, 1997b) is related to lower crime risk. Scholars are divided as to the rationale underlying this effect. Possibly, renters are younger and more transient, so that crime risks are higher and protective neighborhood social norms and relationships are less likely to develop. Alternatively, crime reports may be inflated in rental properties due to their design. Rental units are often smaller properties and with shared party walls. In such close quarters, neighbors may hear or see trouble better, so that problems are called to the attention of the police more frequently for renters than for more insulated home owner households. Poorer surveillance opportunities for apartments than houses may also relate to lessened guardianship (Brown & Altman, 1993; Newman, 1972). For example, one memorable block in the study had all the home owned structures facing the street with clear views between house and street. The rental structures on the same block all turned blind sides to the street, with visual contact available only between apartments and their parking lot, not the street. Finally, our data cannot determine whether rental structures have more incivilities because they produce more incivilities, because residents or landlords clean up incivilities less frequently or completely, or both. Rental structures might have more observed incivilities simply because greater use leads to more wear and tear. In sum, a variety of explanations exist for the link between home ownership and lowered crime risk.

The HLM analysis is able to assess effects at both individual and block levels, an improvement over earlier research that had to rely on misspecified error terms for individual level effects when individuals are clustered in blocks or other natural aggregations. The HLM confirms that street blocks vary significantly in crime risks. In fact, almost 35% of total variability is due to blocks, confirming Taylor's longstanding argument that

blocks matter, and over half that variability is explained by observed home incivilities and home attachment. This does not mean that the more typical higher level of aggregation (e.g., census tracts) is unimportant, for researchers have also found important predictors of crime there as well. Nevertheless, it may be especially important to use a block level approach when neighborhoods are undergoing decline. Decline, as illustrated by the cross level interaction involving observed incivilities, is not a pervasive phenomenon that strikes all blocks equally. Instead, the HLM analysis suggests that one's gut level response to declining neighborhoods is accurate. Some blocks feel more run down than others and moreover, within the block, some properties are more unkempt than others; results show that both situations are associated with crime.

Generally, the results argue that neighborhood improvements should focus on incivility reduction and encourage the positive bonds of place attachment as well. Communities need to be able to create positive bonds between people and places in their neighborhoods to make them truly viable. In some places, it may be sufficient to enhance sociability or guardianship. But programs that do so, such as Neighborhood Watch, are notoriously difficult to sustain where they are most needed—in areas with high residential turnover and crime (DuBow & Podolefsky, 1982). Therefore, it may be easier to draw upon latent place attachment bonds, given how pervasively these bonds are created, in places as varied as middle income suburban communities (Brown & Werner, 1985), traditional urban row houses (Fried, 1963), and landlord abandoned rentals in Harlem (Saegert, 1989). Declining communities, aging residents, and poor residents certainly face barriers to maintaining the appearances of strong place attachment bonds, but programs that allow these bonds to flourish may be more long lasting than those that have tried to capitalize on fear of crime as a motivator of community protection.

The effects of observed incivilities also suggest changes to the focus of neighborhood clean up campaigns. Past crime research has led to recommendations that abandoned stores (Kurtzt et al., 1998) or the presence or quality of non-residential properties (Perkins et al., 1993) become the focus of clean up campaigns. However, the present study involved a residential neighborhood where public and commercial spaces constitute only a fraction of land use, and incivilities associated with private lots were associated with crime. With problematic nonresidential properties, it is straightforward to mobilize residents against the incivilities caused by outsiders. Different sensitivities may be needed when the problem properties are owned by or inhabited by neighbors. Clean up campaigns, in order to cultivate motivations based on place attachment, may need to be recast as “our block” campaigns

involving neighbors helping neighbors. Taylor (1997b) reminds us that Gans found that middle class neighbors will tease each other about lawns having “elephant grass” in order to provide gentle reminders of neighborhood standards of appearance. In neighborhoods with fewer resources, if such informal mechanisms are insufficient, more organized efforts, including financial supports, may be needed. Exploratory analyses revealed that those with more incivilities typically reported that their homes were in poorer condition; given that residents are aware of their housing condition, they may desire to participate in campaigns that promote property clean ups but also sustain the dignity of residents. Furthermore, if the results of the present study replicate, residents need to know that their incivilities or those of their neighbors put them at risk of crime.

The present paper has enlarged the debate about incivilities and crime in three ways. First, it tied individual property conditions to police reports, providing insight into high incivility properties. Second, place attachment, a predictor that has been implicit in the incivilities to crime linkages, was explicitly found to be associated with other predictors and the crime outcome. Third, the statistical technique of HLM allows the findings to be specified properly at both individual and block levels.

Future research is needed to address the generality of these findings, with multiple aspects of the study providing good starting points for future research. The study improved on past retrospective, self-report, cross-sectional research by including observational data and predicting post-interview police reports of crime. Future research should test whether observed incivilities predict increases in crime by controlling for address level crime reports collected prior to residents interviews. We acknowledge that our police reports of crime only tap those crimes occurring after research contact with the residents; a longer view of crime would likely reveal more victims and more repeat victims and introduce more comprehensive controls. Past research suggests that criminals are also more likely to be victims (see Bursik & Grasmick, 1993); future research with larger samples might determine whether criminal offenders live in residences with more incivilities and victimizations themselves. The study also focuses on home-based place attachments, with an emphasis on housing pride. Other research in this neighborhood has shown that home-based attachments relate more to home features and block or neighborhood attachments relate more to features on the block, so choosing an appropriate level of analysis for place attachment can be important (Brown et al., 2003). Finally, this study demonstrates that incivilities in a suburban area just outside of a downtown are important. Other studies of incivilities have typically focused on larger and more urban sites; additional suburban tests of the model are warranted.

The results underscore the tangible reality of incivilities in this suburban neighborhood. Incivilities observed to be real in the physical environment, compared to incivilities perceived by residents, related to crime reports. Furthermore, like the risks inherent in second hand smoke, second hand incivilities—those present on one's neighbors' properties—pose risks of crime. Criminal offenders may read incivilities as indicative of blocks where neighbors will not notice or intervene in crimes. Suburban incivilities, despite being less serious affronts than those initially cited by Wilson and Kelling (1982), deserve attention as a crime risk factor. Conversely, place attachment is a protective psychological bond associated with lower crime. The effects of place attachment in the present study allow insight into the feelings of residents living in neighborhoods beset with incivilities. A cultivation of place attachment bonds may not only be experienced as positive in their own right, but may help protect from crime as well.

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### References

- Altman, I., & Chemers, M. M. (1980). *Culture and environment*. Monterey, CA: Brooks/Cole.
- Bellair, P. E. (1997). Social interaction and community crime: Examining the importance of neighbor networks. *Criminology*, 35, 677–703.
- Borooh, V. K., & Carcach, C. A. (1997). Crime and fear: Evidence from Australia. *British Journal of Criminology*, 37, 635–657.
- Box, S., Hale, C., & Andrews, G. (1988). Explaining fear of crime. *British Journal of Criminology*, 28, 340.
- Brown, B. B. (1987). Territoriality. In D. Stokols, & I. Altman (Eds.), *Handbook of environmental psychology* (pp. 505–531). New York: Wiley.
- Brown, B. B., & Altman, I. (1981). Territoriality and residential crime: a conceptual framework. In P. J. Brantingham, & P. L. Brantingham (Eds.), *Environmental criminology* (pp. 55–76). Beverly Hills: Sage.
- Brown, B. B., & Altman, I. (1983). Territoriality, defensible space, and residential burglary: An environmental analysis. *Journal of Environmental Psychology*, 3, 203–220.
- Brown, B. B., & Bentley, D. L. (1993). Residential burglars judge risk: The role of territoriality. *Journal of Environmental Psychology*, 13, 51–61.
- Brown, B. B., & Perkins, D. D. (1992). Disruptions in place attachment. In I. Altman, & S. Low (Eds.), *Place attachment* (pp. 279–304). New York: Plenum.
- Brown, B. B., & Perkins, D. D. (2002). *Neighborhood revitalization and disorder: An intervention evaluation*. Final project report. Retrieved from <http://www.ncjrs.org/pdffiles1/nij/grants/196669.pdf>
- Brown, B. B., Perkins, D. D., & Brown, G. (2003). Place attachment in a revitalizing neighborhood: Individual and block levels of analysis. *Journal of Environmental Psychology*, 23, 259–271.
- Brown, B. B., & Werner, C. M. (1985). Social cohesiveness, territoriality, and holiday decorations: The influence of cul-de-sacs. *Environment and Behavior*, 17, 539–565.
- Bryk, A. S., & Raudenbush, S. W. (1992). *Hierarchical linear models: applications and data analysis methods*. Newbury Park, CA: Sage.
- Bursik, R. J., & Grasmick, H. G. (1993). *Neighborhoods and crime*. Lexington, MA: Lexington Books.
- Covington, J., & Taylor, R. B. (1991). Fear of crime in urban residential neighborhoods: Implications for between- and within-neighborhood sources for current models. *Sociological Quarterly*, 32, 231–249.
- DuBow, F., & Podolefsky, A. (1982). Citizen participation in community crime prevention. *Human Organization*, 41, 307–314.
- Eck, J. (1997). Preventing crime at places. In L.W. Sherman, D. Gottfredson, D. MacKenzie, P. Reuter, & S. Bushway (Eds.), *Preventing crime: What works, what doesn't, what's promising*. Washington, D.C.: US Department of Justice, National Institute of Justice, NCJ 165366.
- Felson, M. (1987). Routine activities and crime prevention in the developing metropolis. *Criminology*, 25, 911–931.
- Fried, M. (1963). Grieving for a lost home. In L. J. Duhl (Ed.), *The urban condition* (pp. 151–171). New York: Basic Books.
- Fried, M. (1982). Residential attachment: Sources of residential and community satisfaction. *Journal of Social Issues*, 38, 107–119.
- Greenberg, S. W., Rohe, W. M., & Williams, J. R. (1982). *Safe and secure neighborhoods: physical characteristics and informal territorial control in high and low crime neighborhoods*. Washington, DC: National Institute of Justice, US Department of Justice.
- Hale, C. (1996). Fear of crime: A review of the literature. *International Review of Victimology*, 4, 79–150.
- Harris, P. B., & Brown, B. B. (1996). The home and identity display: Interpreting resident territoriality from home exteriors. *Journal of Environmental Psychology*, 16, 187–203.
- Harris, P. B., Brown, B. B., & Werner, C. M. (1996). Privacy regulation and place attachment: Predicting attachments to a student family housing facility. *Journal of Environmental Psychology*, 16, 287–301.
- Kasarda & Janowitz, M. (1974). Community attachment in mass society. *American Sociological Review*, 39, 328–339.
- Kelling, G., & Coles, C. (1996). *Fixing broken windows: Restoring order and reducing crime in our communities*. New York: Free Press.
- Kenny, D. A., & la Voie, L. (1985). Separating individual and group effects. *Journal of Personality and Social Psychology*, 48, 339–348.
- Kurtz, E. M., Koons, B. A., & Taylor, R. B. (1998). Land use, physical deterioration, resident-based control, and calls for service on urban streetblocks. *Justice Quarterly*, 15, 121–149.
- LaGrange, R. L., Ferraro, K. F., & Supancic, M. (1992). Perceived risk and fear of crime: Role of social and physical incivilities. *Journal of Research in Crime and Delinquency*, 29, 311–334.
- Lynch, J. P., & Cantor, D. (1992). Ecological and behavioral influences on property victimization at home: implications for opportunity theory. *Journal of Research on Crime & Delinquency*, 29, 335–362.
- McGuire, J. B. (1997). The reliability and validity of a questionnaire describing neighborhood characteristics relevant to families and young children living in urban areas. *Journal of Community Psychology*, 25, 551–566.



- Newman, O. (1972). *Defensible space: Crime prevention through urban design*. New York: Macmillan.
- O'Rourke, D., & Blair, J. (1983). Improving random respondent selection in telephone surveys. *Journal of Marketing Research*, 20, 428–432.
- Perkins, D. D., & Taylor, R. B. (1996). Ecological assessments of community disorder: Their relationship to fear of crime and theoretical implications. *American Journal of Community Psychology*, 24, 63–107.
- Perkins, D. D., Meeks, J. W., & Taylor, R. B. (1992). The physical environment of street blocks and resident perceptions of crime and disorder: Implications for theory and measurement. *Journal of Environmental Psychology*, 12, 21–34.
- Perkins, D. D., Wandersman, A., Rich, R. C., & Taylor, R. B. (1993). The physical environment of street crime: Defensible space, territoriality and incivilities. *Journal of Environmental Psychology*, 13, 29–49.
- Raudenbush, S., Bryk, A., Cheong, Y. F., & Congdon, R. (2000). *HLM 5: hierarchical linear and nonlinear modeling*. Lincolnwood, IL: Scientific Software International.
- Rohe, W. M., & Stewart, L. S. (1996). Homeownership and neighborhood stability. *Housing Policy Debate*, 7, 37–80.
- Ross, C. E., & Jang, S. J. (2000). Neighborhood disorder, fear, and mistrust: The buffering role of social ties with neighbors. *American Journal of Community Psychology*, 28, 401–420.
- Rountree, P. W., Land, K. C., & Miethe, T. D. (1994). Macro–micro integration in the study of victimization: A hierarchical logistic model analysis across seattle neighborhoods. *Criminology*, 32(3), 387–414.
- Saegert, S. (1989). Unlikely leaders, extreme circumstances: Older black women building community households. *American Journal of Community Psychology*, 17, 295–316.
- Salt Lake City Corporation (1993). *West Salt Lake Community master plan*. Salt Lake City: Community and Economic Development Department, Planning Division.
- Salt Lake City Corporation (1994). *West Salt Lake Community master plan: Research Report*. Salt Lake City: Community and Economic Development Department, Planning Division.
- Sampson, R. J. (1985). Neighborhood and crime: The structural determinants of personal victimization. *Journal of Research in Crime and Delinquency*, 22, 7–40.
- Sampson, R. J. (1988). Local friendship ties and community attachment in mass society: A multilevel systemic model. *American Sociological Review*, 53, 766–779.
- Sampson, R. J., & Groves, W. B. (1989). Community structure and crime: Testing social disorganization theory. *American Journal of Sociology*, 94, 774–802.
- Sampson, R. J., & Lauritsen, J. L. (1994). Violent victimization and offending: Individual-, situational-, and community level risk factors. In: A. J. Reiss & J. A. Roth (Eds.), *Understanding and preventing violence, Vol 3: Social influences*. Washington DC: National Academy Press.
- Sampson, R. J., & Raudenbush, S. W. (1999). Systematic social observation of public space: A new look at disorder in urban neighborhoods. *American Journal of Sociology*, 105, 603–651.
- Sampson, R. J., Raudenbush, S. W., & Earls, F. J. (1997). Neighborhoods and violent crime: A multi-level study of collective efficacy. *Science*, 277, 918–924.
- Sampson, R. J., & Wooldredge, J. D. (1987). Linking the micro- and macro-level dimensions of lifestyle-routine activity-opportunity models of predatory victimization. *Journal of Quantitative Criminology*, 3, 371–393.
- Sherman, L. W., Gartin, P. R., & Buerger, M. E. (1989). Hot spots of predatory crime: Routine activities and the criminology of place. *Criminology*, 27, 27–55.
- Skogan, W. G. (1990). *Disorder and decline: Crime and the spiral of decay in american cities*. New York: Free Press.
- Taub, R. P., Taylor, D. G., & Dunham, J. (1984). *Paths of neighborhood change race and crime in urban america*. Chicago: University of Chicago Press.
- Taylor, R. B. (1997a). Crime, grime, and responses to crime: relative impacts of neighborhood structure, crime and physical deterioration on residents and business personnel in the twin cities. In S. P. Lab (Ed.), *Crime prevention at a crossroads* (pp. 63–75). Cincinnati, OH: Anderson Publishing.
- Taylor, R. B. (1997b). Social order and disorder of street blocks and neighborhoods: Ecology, microecology, and the systemic model of social disorganization. *Journal of Research in Crime and Delinquency*, 34, 113–155.
- Taylor, R. B. (1988). *Human territorial functioning: An empirical, evolutionary perspective on individual and small group territorial cognitions, behaviors, and consequences* (pp. 136–165). New York: Cambridge University Press.
- Taylor, R. B. (1999a). *Crime, grime, fear and decline: a longitudinal look*. Research in brief. Washington, DC: National Institute of Justice.
- Taylor, R. B. (1999b). The incivilities thesis: theory, measurement, and policy. In R. H. Langworthy (Ed.), *Measuring what matters* (pp. 65–88). Washington, DC: US Department of Justice, National Institute of Justice, Office of community oriented policing services.
- Taylor, R. B. (2001). *Breaking away from broken windows*. Boulder, CO: Westview.
- Taylor, R. B., Gottfredson, S. D., & Brower, S. (1985). Attachment to place: Discriminant validity and impacts of disorder and diversity. *American Journal of Community Psychology*, 13, 525–542.
- Taylor, R. B., Gottfredson, S. D., & Brower, S. (1984). Block crime and fear: Defensible space, local social ties, and territorial functioning. *Journal of Research in Crime and Delinquency*, 21, 303–331.
- Taylor, R. B., & Hale, M. (1986). Testing alternative models of fear of crime. *Journal of Criminal Law and Criminology*, 77, 151–189.
- Taylor, R. B., & Perkins, D. D. (1989). *Mental health: adaptive coping with urban crime and fear: final report to nimh*. Philadelphia, PA: Temple U.
- Taylor, R. B., & Shumaker, S. A. (1990). Local crime as a natural hazard: Implications for understanding the relationship between disorder and fear of crime. *American Journal of Community Psychology*, 18, 619–642.
- Taylor, R. B., Shumaker, S. A., & Gottfredson, S. D. (1985). Neighborhood-level links between physical features and local sentiments: Deterioration, fear of crime, and confidence. *Journal of Architectural Planning and Research*, 2, 261–275.
- Warner, B. D., & Rountree, P. W. (1997). Local social ties in a community and crime model: Questioning the systemic nature of informal social control. *Social Problems*, 44, 520–537.
- Werner, C. M., Peterson-Lewis, S., & Brown, B. B. (1989). Inferences about homeowners' sociability: Impact of christmas decorations and other cues. *Journal of Environmental Psychology*, 9, 279–296.
- Wilson, J. Q., & Kelling, G. L. (1982). Broken windows. *Atlantic Monthly*, 211, 29–38.
- Worchel, S., & Lollis, M. (1982). Reactions to territorial contamination as a function of culture. *Personality and Social Psychology Bulletin*, 8, 370–375.