

# Reversing Broken Windows: Evidence of Lagged, Multilevel Impacts of Risk Perceptions on Perceptions of Incivility

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## **Abstract**

Despite a large number of studies testing Broken Windows Theory (BWT), the reverse theoretical pathway has never been assessed longitudinally (risk perceptions → incivilities perceptions). It is estimated here using panel data from Baltimore, Maryland. Results show lagged, multilevel impacts of risk perceptions on shifting incivilities perceptions. Furthermore, impacts of risk perceptions on later shifts in perceived incivilities vary significantly across streetblocks. Findings support Harcourt’s assertion that “disorder” is not a fixed and unambiguous label; rather, it is dependent on a person defining his or her surroundings. People who report a high degree of crime risk are “biased” toward defining neighborhood features as more problematic than those who do not.

## **Keywords**

incivilities, incivilities thesis, disorder theory, broken windows theory, crime risk perceptions, perception bias

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Since the 1970s, criminologists have shown that “fear of crime” is distinct from “fear” of “crime”—residents are fearful not only of actual crime, but of other physical and social cues to disorderly conditions in their communities (Garofalo & Laub, 1978). Residents’ reports of disorderly conditions connect to a number of adverse outcomes. Perceived incivilities affect stress and well-being, and consequently health (Ross & Mirowsky, 2001); reduce participation in local community organizations (Perkins, Brown, & Taylor, 1996); decrease the likelihood that residents will walk outdoors in their own neighborhoods (Gallagher et al., 2010); may be associated with later crime increases (Taylor, 2005); and might link to broader neighborhood deterioration (Skogan, 1990). There is empirical support for the cross-sectional, individual-level incivilities model (incivilities → fear). LaGrange, Ferraro, and Supancic (1992) and Wyant (2008) demonstrated that the multistep causal chain is incivilities → risk perceptions → fear. Many of these works, however, have relied on cross-sectional data, leaving open the question of causal direction.

Wilson and Kelling’s (1982) “Broken Windows” version of Wilson’s (1975) incivilities thesis made it microecological (Taylor, 1997) and longitudinal. Their version argued that unrepaired physical and unaddressed social incivilities<sup>1</sup> caused by local miscreants on a streetblock can lead to reduced resident-based informal control and reduced resident-based regular street use over time; furthermore, eventually serious offenders looking for street crime targets will be drawn into the locale. A mutually reinforcing dynamic involving resident withdrawal and fear, local misbehavior, and attractiveness to outside offenders spirals upward over time in *some* neighborhoods. The original Broken Windows Theory (BWT) focused on “teetering” neighborhoods.

Limited *longitudinal* empirical support for this model exists at the street-block level. Robinson, Lawton, Taylor, and Perkins (2003) used a 1-year follow-up design and found that earlier perceived incivilities show weaker-than-expected impacts on later changes in several reactions to crime—including fear. In short, longitudinal support for BWT is limited.

Recent work emerging from the incivilities paradigm emphasizes the subjective nature of disorder perceptions (Hipp, 2010; Sampson & Raudenbush, 2004; Wallace, 2015; Wickes, Hipp, Zahnow, & Mazzerolle, 2013). The assumption within BWT that “we know it when we see it” regarding incivilities is now called into question. Harcourt’s (2001) argument that people vary in terms of how they think about what constitute signs of incivility, and whether they reflect underlying “disorder,” has merit. In addition to confusion about variation in citizens’ views about incivilities and disorder, there are problems of conceptual confusion as well (Kubrin, 2008).

Given Harcourt's (2001) main point that some are more prone than others to see certain local conditions as concern-inspiring incivilities, the question arises, who will that be? Innes's (2004, 2005) concept of signal disorders and signal crimes provides a clue. Some people have "experience[s] of encountering people, places, objects and events that can be construed as indicating the presence of danger" (Innes, 2004, p. 343). It follows from this idea that those who more generally see a local "presence of danger" will be more likely to see specific local incivilities as problematic. In Hipp's (2010) terms, those seeing more danger have a "bias" in their incivility perceptions. More specifically, those who perceive more intense local crime risk will, over time, interpret local disorderly conditions as more problematic. In effect, this reconfigures BWT to argue that risk perceptions drive incivilities perceptions (risk → incivilities), rather than the more typically tested pathway (incivilities → risk). With our longitudinal data, both can be tested.

In addition to this proposed individual-level dynamic, we also can test the risk → incivilities idea at the streetblock or social-psychological level. These dynamics are specifically described by Wilson and Kelling (1982). Accordingly, the current work conducts a longitudinal ecological test of BWT and its reverse by aggregating risk and incivilities perceptions to the streetblock level and testing both pathways. We ask the following question: Do earlier incivilities perceptions aggregated to the streetblock level have impacts on later changes in individual perceptions of risk? And, do earlier risk perceptions aggregated to the streetblock level have impacts on later changes in individual perceptions of streetblock problems? Which model finds more empirical support?

The current work takes advantage of longitudinal and multilevel data to test BWT and its reverse formulation. This is the first study to examine this reverse ordering. (In a closely related investigation with a slightly different outcome, Brunton-Smith, 2011, used a cross-lagged design to examine the impacts of incivilities on fear and fear on incivilities and found more support for the traditional BWT model.)

## **Biased Perceptions: Reversing and Testing Key Elements in BWT**

A substantial literature considers what factors shape or "bias" perceptions of neighborhood problems (Franzini, Caughy, Nettles, & O'Campo, 2008; Harcourt, 2001; Hipp, 2010; Sampson & Raudenbush, 2004; Wallace, 2015; Wickes et al., 2013). With this literature's focus on the variability in how people define neighborhood problems as the backdrop, the current work uses a symbolic interactionist perspective, building on Harcourt (2001) and Innes

(2004) to clarify how perceptions of incivilities may also be a function of feelings of localized crime risk. Our empirical findings not only question the theoretical adequacy of the current articulation of BWT, they also will highlight another reason that perceptions of local incivilities are not the unambiguous and universal cues they were once thought to be. Rather, they are psycho-ecological constructions shaped by many individual differences including crime risk perception.

### *Incivilities Thesis Research*

Victimization surveys have revealed that fear of crime, especially in urban environments, is more ubiquitous than the actual number of people who became victims of crime (Cook & Skogan, 1984; Hunter, 1978; Taylor, 1999). This is why many have argued that “fear of crime” in urban environments is more complex than simply “fear” of “crime” (Garofalo & Laub, 1978; Hunter, 1978; Wilson, 1975). Linking social incivilities (i.e., loitering youth, panhandlers, and public drunkenness) and physical incivilities (i.e., litter, vandalism, vacant, and/or rundown structures; Perkins & Taylor, 1996), the initial research was individual level and focused on how the presence of incivilities within urban communities contributes to increased levels of fear for community residents. Wilson and Kelling’s (1982) version asserted that incivilities in certain “teetering” neighborhoods caused law-abiding residents to avoid those places out of fear, whereas those inclined to anti-social behavior would remain. If incivilities are not repaired or responded to, local teens and at-risk youth perceive lower potential sanctions for disorderly behavior, the problem behaviors or conditions proliferate, and at some point, serious street offenders move in to take advantage (Taylor & Covington, 1993). As such, their model predicts that crime will increase in areas with increasing or high levels of unrepaired incivilities over time, through social-psychological processes that occur at the streetblock level. Skogan’s (1990) version of the thesis argued that fear results primarily through risk perceptions occurring at the *neighborhood* level. Later, neighborhood deterioration may ensue, including later elevated crime and later increases in incivilities.

Empirical tests of the theory have produced mixed results (Harcourt, 2001; Harcourt & Ludwig, 2006; Taylor, 2001). Re-analyzing Skogan’s data, Harcourt (2001) suggested the framework’s ability to predict crime generally was limited. Taylor’s (2001) neighborhood-level work looking at changes over a decade partially supported the thesis; physical and social incivilities in Baltimore were linked with some types of serious crime changes, but not others. The impacts of these incivilities, however, paled in comparison with the impacts of neighborhood demographic structure. More recently, Gau and

Pratt (2008) questioned the discriminability of crime and disorder perceptions; “citizens did not seem to differentiate between disorder and crime; rather, the two blended together in their eyes” (p. 181).

Because much of the individual-level BWT research examining perceived risk, perceived incivilities, and reactions to crime such as fear has been based on cross-sectional data, questions of causal direction persist. Is it perceiving incivilities that leads over time to an individual seeing heightened risks, feeling more fear, and withdrawing behaviorally? Or, alternatively, are those people who just see more crime risks in the environment led over time to see the local conditions as more disorderly (Perkins & Taylor, 1996; Taylor, 1999)? Innes’s (2004) work on signal disorders and signal crimes explains how this amplification of concern can operate over time.

### *But What Are “Disorder” and “Incivility”?*

Another challenge in this line of research centers on the need for conceptual clarity regarding the nature of incivility and disorder (Kubrin, 2008). Challenging the assumption that the perception of incivilities is an objective assessment of physical indicators of disorder, researchers have found evidence that people define disorder differently. Akin to George Kelly’s (1955) theory of personal constructs, which finds that “the correspondence between what people really think exists and what really does exist is a continually changing one” (p. 6), the inclination to perceive a certain indicator as a mark of disorder or incivility is dependent on different variables at both the individual and group levels (Innes, 2004, 2005). These variables include race, social cohesion, neighborhood attachment, and exposure to teens hanging out, among other factors (Hipp, 2010; Wallace, 2015; Wickes et al., 2013).

Extensive prior work on BWT focused on how incivilities and other neighborhood characteristics shape risk and fear outcomes—either at individual or neighborhood level (LaGrange et al., 1992; Markowitz, Bellair, Liska, & Liu, 2001; McGarrell, Giacomazzi, & Thurman, 1997; Robinson et al., 2003). In contrast, recent research has investigated how perceptions of neighborhood problems are shaped (Carvalho & Lewis, 2003; Franzini et al., 2008; Sampson & Raudenbush, 2004). Much of this work has investigated how perceptions of incivilities may not be simple reactions to unambiguous symbols (Harcourt, 2001). Rather, social and physical cues are defined and socially interpreted through a filtering process, causing more perceived problems among particular individuals, as well as among particular areas and at particular times (Innes, 2004, 2005). The limited research in this area supports the idea that incivilities perceptions are not solely a function of actual incivilities, but rather, they are (a) socially constructed—at least in part

(Hipp, 2010; Innes, 2004, 2005; Wallace, 2015), and (b) shaped by neighborhood structure such as racial and class composition (Franzini et al., 2008; Jackson, 2004; Sampson & Raudenbush, 2004; Wickes et al., 2013). It is about how much “signal” value is contained in certain crimes and disorderly conditions (Innes, 2004, 2005) by individuals and the community. Exactly what associates a high “signal” value to an event or condition, however, is not well understood.

The link between rater-assessed and community or individual rated incivilities is not as clear as the traditional model of BWT indicates. One cause for concern is the difference in findings when assessed indicators, constructed from trained rater or interviewer scores, rather than from resident survey responses, are used (Brunton-Smith & Sturgis, 2011; Perkins & Taylor, 1996; Sampson & Raudenbush, 2004; Taylor, 2001; Taylor & Covington, 1993). These findings might indicate that incivilities, underlying disorder, and risk may be linked in ways currently not understood (Taylor, 1999, 2001).

### *Current Investigation*

Is there a plausible theoretical basis to argue that perceptions of crime risk shape whether incivilities are seen as problematic? Harcourt (2001) and Innes (2004, 2005) provide such a basis. Harcourt argues that theoretical categories of “orderly” and “disorderly” are social constructions rather than reflections of a consensual reality. “The category of the disorderly is so unstable” and any sign of incivility “surely [has] . . . other plausible meanings” besides underlying disorder (Harcourt, 2001, p. 132). This of course is a straightforward extension of a symbolic interactionist perspective (Matsueda, 1992; Mead, 1934). Innes (2004, 2005), working in a risk communication framework, put it differently. Certain individuals in certain places at certain times, because of who they are and the history of their locale and recent events, will infuse certain crimes or conditions with a high signal value. These crimes or conditions are seen to be ominous portents of a worsening neighborhood future, “as a signifier of the potential for more serious problems to occur” (Innes, 2004, p. 347).

Furthermore, turning to the question of ecological variation, it follows both from Wilson and Kelling’s (1982) original focus on “teetering” neighborhoods, and from Innes’s (2004, 2005) model, that in some places, risk perceptions will more strongly affect incivility perceptions. In the systemic model of crime (Bursik & Grasmick, 1993), residential stability is one of the most important structural determinants of local parochial control. Residential stability can make residents feel less worried about crime and other neighborhood issues (Taylor, 1996). Therefore, we anticipate stronger impacts in less stable neighborhoods (Figure 1).

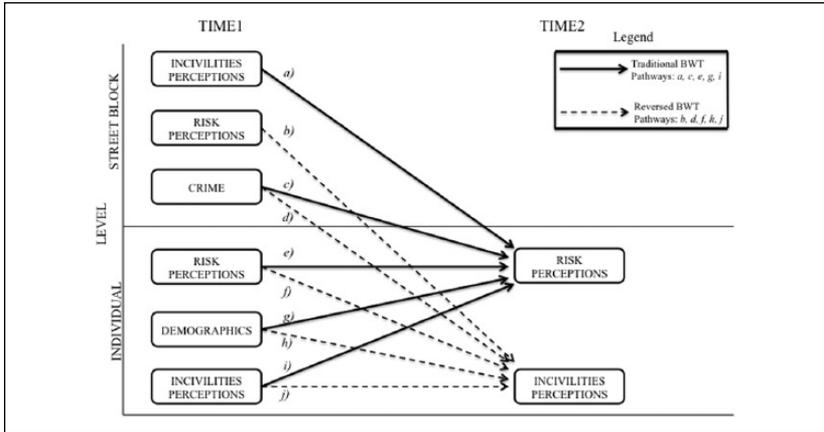


Figure 1. Conceptual model.

The conceptual model illustrates how both models are tested (solid lines indicate BWT; broken lines indicate our reversed hypotheses). Using data from 50 streetblocks in Baltimore City, we examine the impact of Pathway *b* (broken line)—the impact that risk perceptions at the streetblock level at baseline has on later changes in perceptions of incivilities at follow-up, while controlling for baseline incivilities at the individual (Pathway *j*) and other key controls. A parallel investigation on the individual level—Pathway *f*—will examine the impact that risk at baseline has on later incivilities at follow-up, while holding baseline incivilities and other predictors constant. In an attempt to control for potential confounds, we also hold constant demographics at the individual level and recent crime changes at the streetblock level (Pathways *d* and *h*) to see whether the impacts of Pathways *b* and *f* survive. Respectively, Pathways *a* and *i* test the streetblock- and individual-level models as articulated in the traditional BWT model.

## Method

### Setting

Panel data used in this analysis derived from a probability sample of Baltimore City residents (for a detailed description of the data and procedures, see Perkins, 1989). Baltimore during this period was not unlike many other older urban cores in the United States that were experiencing the harsh effects of deindustrialization (Taylor, 2001). Once a booming industrial center featuring

a bustling maritime port, the City experienced a 6.5% decrease in population and dramatic job losses between 1980 and 1990, marked by a 38% reduction in manufacturing jobs, a 12% drop in the trades, and a 21% decrease in infrastructure jobs (U.S. Bureau of Economic Analysis, 2011). Relatedly, the population was poor, with median household incomes of US\$12,811 and US\$24,045 in 1980 and 1990, respectively, and in the same years, 56% and 33% of households earned incomes of less than US\$15,000 (in 2009 inflation-adjusted dollars). The population was young, with 60% between ages 5 and 44 in 1980, and 61% between the same ages in 1990. A city characterized by a sizable African American population, 56% of the population in 1980 was non-White, and this rose to 60% by 1990 (U.S. Census Bureau, 2009).

The violent crime rate in 1985 was 2009/100,000, and this would decline marginally during the next 2 years before spiking in the early 1990s (Federal Bureau of Investigation [FBI], 2012). Property crime rates followed a similar trend, at 6,565/100,000 in 1985, followed by a 0.8% decrease in 1986, and a 2.8% increase in 1987. Despite the apparent stability of the city's property crime problem during these 3 years, rates increased in each of the following 8 consecutive years, peaking in 1995 at 10,300/100,000 (FBI, 2012).

### Sample

Heads of households were surveyed in 1987,<sup>2</sup> and 1 year later in 1988, using a multistage, stratified, clustering sampling design (Shadish, Cook, & Campbell, 2002). Out of 237 ecologically defined and geographically stratified neighborhoods, 50 neighborhoods were randomly selected with a proportional probability to the population size for inclusion. Within these neighborhoods, streetblocks were randomly sampled according to a probability proportional to streetblock population size (referenced via the number of residential, phone number listings for each streetblock; Perkins, 1989). These narrowly defined and small ecological units reduce the risk of systematic bias (Hipp, 2010). Fieldworkers sampled 12 households from each streetblock using an interval sampling procedure with a random start. Household heads, randomly sampled if necessary (i.e., multiples heads), were designated respondents within households. The first wave of interviews was conducted in late winter and early spring of 1987 ( $N = 412$ ), whereas the follow-up interviews took place 1 year later ( $N = 305$ ; Perkins, 1989).

The initial sampling frame was 601 respondents (Robinson et al., 2003). Thirteen households were never used, and 13 others were identified as abandoned/vacant. This leaves a total sampling frame of 575 households where interviews were attempted. If this number is used as the denominator, the response rate was 72% for Time 1 (412/575). Analyses of on-site ratings of

houses and streetblock characteristics showed no significant differences between houses where an interview was successfully completed and houses where an interview could not occur. One year later, 336 of the original 412 interviewees were available for re-interview. Seventy of the original 412 had moved off their streetblock, and were therefore ineligible for re-interview. Six others had passed on. Of these available 336, a total of 305 were re-interviewed, for a response rate of 91% (Robinson et al., 2003). Analyses were conducted to explore differences between the Time 1 and Time 2 samples. The samples showed to be very similar. At the Bonferroni adjusted alpha level, the two groups were not different on sex, age, race, or education. There was a small over-representation of homeowners (as compared with renters) in the Time 2 sample. Accordingly, a weight was created and used in the analyses to account for this small bias.

An issue common in survey research stems from non-generalizable samples due to complex sampling strategies and procedures (Tracy & Carlin, 2014). As such, we compared our sample with U.S. Census data from 1990 and found the groups to be similar. In the 1987 sample, the respective percentages of African Americans and Whites were 52% and 46%. Data from the 1990 census show 57% for African Americans and 41% for Whites. This pattern of decreasing White populations and therefore increasing proportions of African Americans accords with the changing demographics of Baltimore at the time (Taylor, 2001). In addition, in the 1987 sample, 58% were homeowners and 42% were renters. By 1990, 52% were homeowners and 48% were renters. This is also a pattern we would expect given people that wealthier people, who were more likely to own, were moving out of the City, and the remaining concentration of poorer residents were more likely to rent. Taken together, we conclude that our sample does not need weighting as it is fairly representative of the Baltimore population of the time.

At follow-up (Table 1), the sample was 45% White and 55% African American. Thirty-three percent of the respondents were male, and 64% had completed high school. The average age was 47 years; 58% of the sample were homeowners and the remaining were renters. Average household size was 2.9 persons. Approximately half the sample had a household income of less than US\$20,000 per year. The average length of residence in the neighborhood was 14.6 years, and the mean length of residence at the current address was 12.6 years (Perkins, 1989; Robinson et al., 2003).

### *Dependent Variable*

To measure the incivility variable, respondents' perceptions of incivilities on their respective streetblocks were formed into an error-free latent index

**Table 1.** Descriptive Statistics of Individual and Streetblock Variables.

Variable	<i>n</i>	<i>M</i>	<i>SD</i>	Minimum	Maximum
<b>Individual</b>					
Race (1 = White, 0 = non-White)	305	0.46	0.50	0.00	1.00
Sex (1 = male, 0 = female)	305	0.33	0.47	0.00	1.00
Age	303	49.26	15.52	20.00	88.00
Marital status (1 = married, 0 = other)	305	0.53	0.50	0.00	1.00
Work full-time (1 = yes, 0 = other)	305	0.49	0.50	0.00	1.00
Work part-time (1 = yes, 0 = other)	305	0.12	0.32	0.00	1.00
Children living in home (1 = yes, 0 = other)	305	0.62	0.49	0.00	1.00
Occupational prestige	278	38.80	23.93	6.00	93.00
Homeownership (1 = yes, 0 = no)	305	1.00	0.11	0.91	1.15
Baseline risk	305	0.28	0.41	0.04	1.72
Follow-up risk	305	0.22	0.37	0.03	1.66
Baseline incivilities	305	0.40	0.35	0.06	1.58
Follow-up incivilities	305	0.32	0.30	0.06	1.46
<b>Streetblock</b>					
Baseline risk	305	0.29	0.22	0.04	1.02
Baseline incivilities	305	0.39	0.23	0.06	1.01
Robbery (logged)	305	6.55	1.00	3.9	8.42
Homeownership (proportion)	305	0.61	0.35	0	1.00

Note. *N* = 305 residents of Baltimore City nested within 50 streetblocks in 1987-1988. At the individual level, risk and incivilities were group-mean centered; age and occupational prestige were grand mean centered. Risk and incivilities were grand mean centered at the streetblock level. Robbery change variable was for the years 1985 through 1987 and was logged. Homeownership was weighted to account for fewer renters in follow-up sample.

variable based on eight distinct items. With possible response categories of “big” (2)/“somewhat” (1)/and “not” (0), individuals estimated the degree to which each of the following neighborhood features presented a problem: (a) “Vandalism, like people breaking windows or spray painting buildings?” (b) “Vacant housing?” (c) “People who don’t keep up their property or yards?” (d) “People who say insulting things or bother other people when they walk down the street?” (e) “Litter or trash in the streets?” (f) “Vacant lots with trash or junk?” (g) “Groups of teenagers hanging out on the street?” and (h) “People fighting or arguing?” The use of an index variable to measure perceived incivilities follows previous work by Rountree and Land (1996a, 1996b). Confirmatory structural equation modeling (SEM) was used and error-adjusted factor scores were computed to build the “error-free” latent variable. “Fighting” was the referent variable.

## *Independent Variables*

Items from Ferraro's (1995) work were used to create crime risk perception as a latent index variable that contained four items gauging the perceived local probability of four crimes. Using response categories "big" (2)/"some-what" (1)/"not" (0), individuals estimated how much of a problem (a) "Burglary?" (b) "People selling illegal drugs?" (c) "People getting robbed on the street?" and (d) "People getting assaulted or beaten up on the street?" were on their particular streetblock. We found that using this constructed variable, rather than a dichotomous variable indicating whether an individual feels safe or not on her streetblock (Rountree & Land, 1996a, 1996b), provides a more diversified measure of perceived risk, allowing for more variability in this variable, and producing more efficient estimates of the effect of perceived risk on the change in future incivilities. Furthermore, another benefit of our variable is that it is measured at the streetblock level—a relatively small unit of measurement that is not as susceptible to the threats to validity present when measuring at higher levels of aggregation such as the census tract (Hipp, 2010). In terms of our proposed theory, an individual seeing more local crime risk than his or her neighbors may be more tuned in to, or more likely to give weight to, later shifts in incivilities on his or her streetblock. For this reason, we group-mean centered perceived risk to gauge differences between people on the same streetblock (see Firebaugh, 1980, for more on group-mean centering).

In addition, BWT argues that elements at streetblock and neighborhood levels have impacts on individual perceptions. As such, we also controlled for the baseline perceived risk at the streetblock level by using streetblock mean scores based on the average of the individual-level risk index scores (before group-mean centering) to capture streetblock variations in perceived risk. These scores were entered grand mean centered to compare differences across streetblocks.

## *Covariates*

Perceptions of incivilities at the individual level and at baseline were entered as a control variable. The benefit of controlling for the outcome at baseline is that the remaining variation of incivilities at follow-up reflects changes in incivilities perceptions; in other words, the inclusion of this variable in the model allows for a lagged analysis of earlier factors on later changes in incivilities. The eight-item index was constructed identically to the error-free latent index outcome variable. Because of the possibility of omitted variable bias for the estimated effect of perceived risk on perceived incivilities from

not including a control for crime, the logged neighborhood robbery rates per 100,000 in Baltimore from the 2 years prior to the beginning of the surveys (1985-1986) and for the first year of the survey (1987) were included in the final model.

### *Demographics*

Harcourt (2001) argued that perceptions of disorder are variable and are influenced by many individual factors. As such, and to limit the amount of bias in the estimate(s) of interest, it was necessary to control for individual demographic variables. Indeed, recent research shows individual factors have significant effects on the perception of disorder (Hipp, 2010; Wallace, 2015). Perception of disorder has shown to significantly decrease with age (Wallace, 2015), but not just because, all else equal, an older individual will perceive less incivility than a younger person. Rather, the lifestyles of an older individual versus a younger individual are different, leading to differences in how disorder is perceived. Therefore, age was included as a lifestyle proxy and grand mean centered. Along the same lines, occupational prestige was entered as an indicator of socioeconomic status (Duncan, 1961), and was grand mean centered. A number of dichotomous demographic variables were also included in our models. A gender indicator was included to account for the safety concerns that may cause females to be more aware of dangers in the environment (Hipp, 2010). This variable was coded "0" (females) and "1" (males). Background effects were controlled for with a race variable that was coded "0" for non-White and "1" for White. A neighborhood attachment variable (homeowner) was included to control for community attachment. This variable was coded "0" (renter household) and "1" (owner occupied). To account for perceptions of incivilities associated with being responsible for the safety of dependent children, a variable that captured whether children resided in the home "1" or not "0" was included in the model. Furthermore, a married variable was also included and coded "1" for married individuals and "0" for all others. Last, two employment dummy variables were included for full-time and part-time workers. These variables captured working full-time "1" or not "0" and working part-time "1" or not "0," respectively.

### *Analytic Strategy*

Hierarchical linear models (HLM; Hox, 2010; Raudenbush & Bryk, 2002) permitted separating psychological from ecological impacts of risk and incivilities perceptions (Taylor, 2010). Four models are presented here: Model A, an ANOVA in HLM, assessed whether significant ecological variation in the

outcome incivilities perceptions appeared. Model B (ANCOVA) entered baseline perceived incivilities to learn whether significant ecological variation remained in changes in incivilities between baseline and follow-up. Model C (ANCOVA) added risk perceptions at both the individual (L1) and streetblock (L2) levels (Pathways *e* and *b*, respectively) permitting the estimation of each on changes in perceived incivilities.

Model D was a random coefficients regression (RCR) HLM model that controlled for compositional effects (Pathway *h*) and recent neighborhood robbery rates (Pathway *d*). Although finding the average effect of the individual's perception of risk on later incivilities is an important test of this reversed model, understanding how ecological and psychological variables might moderate that effect gives a much more comprehensive understanding of risk perceptions' impact on incivilities, and gives us clues about causal mechanisms. Therefore, in Model E, we estimated an intercepts-and-slopes-as-outcomes (IASAO) model that allowed the effect of individual risk perceptions on incivilities to vary and tested whether streetblock stability significantly moderates risk and incivilities perceptions. Model F was an RCR model that tested the traditional BWT pathway.

In Model G, following Hipp (2010) and Wallace (2015), we used a fixed effect model to control for unobservable differences on each streetblock that may bias the estimation of the resulting coefficients. In the fixed effect model, a dummy variable representing every streetblock but one is included in the model. This effectively absorbs all of the variation between each streetblock. Doing so results in coefficient estimates that are found using only the variation of individuals within the same streetblock, producing consistent results albeit with the sacrifice of less efficiency. Thus, in this model, any differences in incivility perceptions among the respondents are due to individual differences and are not a function of the streetblock environment (Halaby, 2004; Wallace, 2015).

## Results

Model A (table not shown) revealed significant ecological variation in perceived incivilities and that more than a third of the variation in incivilities perceptions is ecological ( $\chi^2 = 207.596, p < .001, r^2 = .350$ ).

As expected, Model B (Table 2) revealed a significant impact of baseline on follow-up incivilities perceptions. Significant ( $p < .01$ ) ecological variation remained in the outcome, which is now *changes* in perceived incivilities after the baseline interview.

In Model C (ANCOVA), results showed that both individual and streetblock differences in baseline risk perceptions shaped later changes in incivilities

**Table 2.** ANCOVA (B and C), RCR (D), and IASAO (E) Models of Changes in Incivilities Perceptions.

Fixed effects	Model B		Model C		Model D		Model E	
	<i>b</i>	SE	<i>b</i>	SE	<i>b</i>	SE	<i>b</i>	SE
Individual-level variables								
Time 1 incivilities	0.618***	0.047	0.501***	0.066	0.507***	0.064	0.519***	0.063
Time 1 risk			0.094*	0.049	0.090*	0.048	0.197*	0.084
Proportion homeowners slope							-0.202†	0.113
Marital status (1 = married, 0 = other)					-0.014	0.028	-0.007	0.026
Homeownership (1 = yes, 0 = no)					-0.039	0.023	-0.051*	0.023
Gender (1 = male, 0 = female)					-0.033	0.023	-0.028	0.021
Work full-time (1 = yes, 0 = other)					0.003	0.029	0.005	0.025
Work part-time (1 = yes, 0 = other)					-0.035	0.034	-0.050	0.032
Race (1 = White, 0 = non-White)					-0.001	0.030	-0.001	0.031
Age (years)					-0.001	0.000	-0.001	0.000
Children living at home (1 = yes, 0 = no)					-0.018	0.025	-0.005	0.025
Occupational prestige					-0.001	0.001	-0.001	0.001
Streetblock-level variables								
Time 1 risk			0.311***	0.080	0.279**	0.077	0.269**	0.077
Robbery					-0.004	0.013	-0.004	0.013
Random effects								
	$\chi^2$	<i>p</i> <						
Risk (individual level)					71.642	.01	67.217	.05
Intercept	77.886	.01	65.387	.05	53.104	ns	58.938	ns

Note. *N* = 305 residents of Baltimore City nested within 50 streetblocks in 1987-1988. At the individual level, risk was group-mean centered; age and occupational prestige were grand mean centered. Risk was grand mean centered at the streetblock level. Robbery change variable was for the years 1985 through 1987 and was logged. Homeownership was weighted to account for fewer renters in follow-up sample. RCR = random coefficients regression; IASAO = intercepts-and-slopes-as-outcomes.

†*p* < .05, one-tailed. \**p* < .05. \*\**p* < .01. \*\*\**p* < .001.

perceptions ( $p < .001$  and  $p < .05$ , respectively). Those respondents perceiving more risk than their neighbors were more likely later to see local deterioration emerging. In addition, streetblocks where residents initially saw elevated risk were also more likely to see more deteriorated conditions emerging subsequently ( $p < .001$ ). Even after factoring in the multilevel impacts of perceived risk on later changes in incivilities perceptions, significant ( $p < .05$ ) ecological variation in the latter persisted.

Model D (RCR) controlled for demographics/compositional effects at the individual level, and a local crime rate variable (robbery) at the streetblock level. Both the ecological and psychological impacts of perceived risk remained significant. Standard errors of coefficients were clustered around streetblock to account for autocorrelations of the independent variables of neighbors living on the same streetblock.

Model E (IASAO) results showed that the impact of risk perceptions indeed varied significantly across streetblocks ( $\chi^2 = 65.22, p = .014$ )<sup>3</sup> and could be predicted by homeownership. An indicator of stability, the proportion of streetblock homeownership (0 – 1) was entered into the model individually for each observation and was able to significantly predict the varying slope of risk on incivilities perceptions. The intercept for risk perceptions at Level 1 was .197 and the impact of a resident's streetblock homeownership proportion on the slope of risk predicting incivilities perceptions was  $-.202$ . This estimation led to an interesting theoretical interpretation: As a streetblock's score on stability increases, the impact of perceived risk on perceived incivilities decreases. We conclude that residents who live on a block with higher stability attribute less "signal" (Innes, 2004) to specific local crimes. Thus, they are less likely to associate heightened perceptions of risk to heightened perceptions of unexplained incivilities. In this model, ecological variation on the outcome was now no more than sampling error.

Model F (RCR; Table 3) shows the results for testing a segment of the traditional BWT model (incivilities  $\rightarrow$  risk). Here we find partial support. Although no evidence is found for perceived incivilities shaping later perceived crime risk at the individual level, we do find an ecological effect—incivilities at the streetblock level predict later changes in risk perceptions.

In the fixed effect analyses (Table 4), we accounted for possible bias in the coefficient estimates due to persistent, unexplained neighborhood variables that account for correlation in neighbors' responses in the explanatory and explained variables. We find that perceived risk still significantly predicts future unexplained incivilities, although the estimated coefficient on Time1 risk drops from .197 in Model E to .118 in Model G (see Table 4). This finding highlights that perceived risk's effect on future unexplained incivilities is not due to similarities in variables from living on the same streetblock as your neighbors. The neighborhood robbery rate was dropped from the model due to its lack of variability at the streetblock over time. Now, we turn to the results where we tested part of BWT by using the fixed effect modeling to see whether perceived incivilities had a significant effect on future unexplained risk perceptions after controlling for all other factors including 49 dummy variables for each streetblock. We find no significant effect (see Table 4).

**Table 3.** HLM Model of Changes in Risk Perceptions (Traditional BWT Model).

Fixed effects	Model F	
	<i>b</i>	SE
Individual-level variables		
Time 1 incivilities	-0.005	0.077
Time 1 risk	0.603***	0.084
Marital status (1 = married, 0 = other)	0.044	0.035
Homeownership (1 = yes, 0 = no)	-0.054	0.043
Gender (1 = male, 0 = female)	0.010	0.031
Work full-time (1 = yes, 0 = other)	0.033	0.036
Work part-time (1 = yes, 0 = other)	-0.025	0.042
Race (1 = White, 0 = non-White)	0.071	0.049
Age (years)	0.000	0.001
Children living at home (1 = yes, 0 = no)	-0.044	0.032
Occupational prestige	0.000	0.000
Streetblock-level variables		
Time 1 incivilities	0.233*	0.103
Robbery	-0.012	0.031
Random effects		
	$\chi^2$	<i>p</i> <
Intercept	78.462	.01

Note. *N* = 305 residents of Baltimore City nested within 50 streetblocks in 1987-1988. At the individual level, incivilities was group-mean centered; age and occupational prestige were grand mean centered. Incivilities was grand mean centered at the streetblock level. Robbery change variable was for the years 1985 through 1987 and was logged. Homeownership was weighted to account for fewer renters in follow-up sample. HLM = hierarchical linear model; BWT = Broken Windows Theory.

\**p* < .05. \*\**p* < .01. \*\*\**p* < .001.

In summary, intra- and inter-streetblock differences in perceived risk at baseline significantly shaped later changes in perceived incivilities,<sup>4</sup> even after controlling for compositional differences and neighborhood crime. Streetblock residents' perceptions of later shifts in local deteriorated conditions were significantly shaped by the entire streetblock's perceptions of crime risk, and by residents' perceptions of crime risk relative to their on-block neighbors. This impact varied significantly by streetblock. Those blocks that had a high percentage of homeownership felt virtually no impact of crime risk on later neighborhood problems, whereas streetblocks that had low homeownership felt double the average impact of risk. Testing the traditional BWT model, we find support for the ecological component but not for

**Table 4.** Fixed Effects Model of Changes in Incivilities and Risk Perceptions.

Independent variables	Model G			
	Dependent variable			
	Time 2 incivilities		Time 2 risk	
	<i>b</i>	SE	<i>b</i>	SE
Time 1 incivilities	0.442***	0.0690	-0.0118	0.0869
Time 1 risk	0.118*	0.0520	0.599***	0.0819
Marital status (1 = married, 0 = other)	0.0206	0.0284	0.0833	0.0428
Homeownership (1 = yes, 0 = no)	-0.0198	0.0356	-0.0512	0.0480
Gender (1 = male, 0 = female)	-0.0398	0.0256	0.0113	0.0364
Work full-time (1 = yes, 0 = other)	0.0195	0.0338	0.0160	0.0470
Work part-time (1 = yes, 0 = other)	-0.0165	0.0391	-0.0362	0.0525
Race (1 = White, 0 = non-White)	0.0277	0.0570	0.1065	0.0613
Age (years)	-0.0003	0.0011	-0.0004	0.0014
Children living at home (1 = yes, 0 = no)	0.0031	0.0261	-0.0139	0.0368
Occupational prestige	0.0001	0.0006	0.0002	0.0007
<i>F</i> test ( <i>df</i> 60, 242)	15.52		6.94	
<i>p</i> <	.001		.001	
<i>R</i> <sup>2</sup>	.6805		.6336	

Note. *N* = 305 residents of Baltimore City nested within 50 streetblocks in 1987-1988. Analysis does not show coefficients for 49 dummies representing all but 1 streetblock. Robbery change variable was for the years 1985 through 1987 and was logged. Homeownership was weighted to account for fewer renters in follow-up sample. \**p* < .05. \*\**p* < .01. \*\*\**p* < .001.

the individual-level, psychological model. Finally, accounting for possible bias in the coefficient estimates due to omitted streetblock-level variables, the fixed effects model confirms the individual-level results of our HLM models.

## Discussion

Robinson et al. (2003) speculated that the causal ordering suggested by the incivilities thesis might have been viewed too narrowly: “It also seems plausible the connection may be working the other way, with changing fear and changing satisfaction driving changes in perceived problems” (p. 268). Perkins and Taylor (1996) and Taylor (1999) have mentioned that incivilities, risk, and fear may be ordered and related in ways we do not yet understand

fully. Harcourt (2001) has emphasized the subjective interpretation of incivilities and Innes's (2004, 2005) concept of signal disorders and signal crimes clarifies the processes involved in making these interpretations. Building on these ideas, this work targeted a key version of the incivilities thesis—the “broken windows” version—and tested a central longitudinal link in that version—the incivilities → risk link. However, it also tested a model assuming a temporal ordering opposite than that suggested by Wilson and Kelling (1982). Results more strongly supported this reversed ordering: Earlier risk, operating through two pathways, altered later incivilities perceptions. This is the first empirical test, of which we are aware, finding multilevel, lagged impacts of risk perceptions on later shifts in local perceived incivilities.

Wilson and Kelling's influential 1982 piece argued that incivilities in communities are identified and interpreted by residents and passersby as an indication of imminent breakdowns in resident-based informal control over people and events in their immediate surrounds. This results in increased perceptions of threat to personal safety—ultimately causing law-abiding people to withdraw from common residential spaces. Underlying this contention is the assumption that residents in fact see and interpret cues—specifically incivilities—similarly. Wilson and Kelling quote Glazer (1979) to support their contention:

... the proliferation of graffiti, even when not obscene, confronts the subway rider with the inescapable knowledge that the environment he must endure for an hour or more a day is uncontrolled and uncontrollable, and that anyone can invade it to do whatever damage and mischief the mind suggests. (p. 4)

Our results do not support such a view. Rather, results support an alternative view that crime risk perceptions themselves may shape how problematic the locale is seen to be. Individuals feeling more at risk of crime locally were more likely to see their immediate surroundings as more problematic later. Furthermore, an ecological dynamic was also operative: Those on streetblocks where average perceived risks were initially higher reported more local deterioration 1 year later. These findings potentially suggest two pathways for how individual incivilities perceptions might be framed. The first involves an individual-level, psychological process producing these perceptions based on feelings of crime risk. The second involves a pathway whereby something in the streetblock microecology (Taylor, 1997), possibly discussions or interactions with other streetblock residents, shapes how ambiguous cues are defined. These findings are consistent both with Harcourt's (2001) view on incivility construction and Innes's (2004, 2005) model of signal disorders. Furthermore, and as importantly, these two pathways connect. The

finding that streetblock stability conditions the risk perception → incivility perception link supports Innes's (2004) idea. In more stable settings, particular events and conditions have less ominous portent for the local community future. It also supports Wilson and Kelling's (1982) original focus of their model on "teetering" neighborhoods.

At the same time, these results raise questions about the above three pathways. Different modeling approaches provided the strongest support for the first pathway, the individual-level dynamic, which received support in both the multilevel models and the fixed effects models. However, potential roles of other psychological dynamics, such as anxiety, have yet to be examined. Are those seeing more crime risk and heightened incivilities later simply those with higher levels of state anxiety, for example? For the second pathway, the ecological impact, it is not clear whether this is a streetblock dynamic operating separately from neighborhood dynamics. Given recent attention to crime on streetblocks operating somewhat independently of neighborhood crime dynamics (Weisburd, Groff, & Yang, 2012), this needs attention.

However, the most important "takeaway" point is that residents reporting a high, localized risk of crime are "biased" (Hipp, 2010) toward seeing ambiguous features of their streetblock as problematic. This supports Harcourt's (2001) questioning of a fundamental assumption underpinning the *policy utility* of the broken windows version of the incivilities thesis—that people see and define their surroundings similarly.

Turning to the systemic model of crime (Bursik & Grasmick, 1993), higher levels of homeownership—higher residential stability—insulated certain streetblocks from more ominous interpretations of perceived crime risk, perhaps because levels of parochial control were stronger there (Taylor, 1997). That it is stability that proves important supports an earlier suggestion: "stability . . . makes [neighbors] feel less vulnerable to crime and *related problems*" (Taylor, 1996, p. 67, emphasis added). The connections seen here open up future questions about how demographic residential context conditions interpretations of how much "signal" is in a crime or condition (Innes, 2004). Hopefully, a cleaner integration of the systemic model of crime and the signal crime/disorder model is possible.

## Conclusion

Using panel data looking at changes over a year, and focusing specifically on one portion of the broken windows version of the incivility thesis, results supported the original (Wilson & Kelling, 1982) formulation (incivilities → risk), and a reversed version (risk → incivilities), the latter based on Innes's (2004) signal crimes and signal disorders model, and Harcourt's (2001)

dissection of the incivilities construct. The revised version was more strongly favored by the results, and appeared to operate microecologically (Taylor, 1997) as well psychologically. Furthermore, also in line with Wilson and Kelling's (1982) original focus on "teetering" neighborhoods, and the systemic model of crime, the impact of perceived risk on perceived incivilities was moderated by residential stability. These findings raise important questions about the fundamental premises behind programs and policies based on the Wilson and Kelling model.

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### Notes

1. Charis Kubrin (2008) recently highlighted the issue of varying terminology in disorder and incivilities research. As such, we have chosen to refer to the visible social and environmental cues in this study as "incivilities." Albert Hunter (1978) used the term "disorder" to indicate the broader social conditions of some neighborhoods (so that incivilities might result from disorder), but recent scholarship has used it as synonymous with incivilities, decay, and neighborhood problems. Thus, the term *incivilities* is used here over "disorder" because it is less ambiguous in this way. When we use the term *disorder*, it is in relation to work that specifically uses the term *disorder*.
2. Indeed, these data were collected in the late 1980s and some might call them "old." However, whether any results derived from their use are still relevant today is a question of external validity; Taylor, 1994), which can only be answered with further empirical testing.
3. When estimating the Random Coefficients Regression (RCR) model, hierarchical linear models (HLM) deleted four streetblocks for the chi-square analysis. These four streetblocks were areas where respondents reported the lowest possible risk scores at Time 1. HLM used all 50 cases to estimate the impacts of the fixed effect variables and the variance component. Degrees of freedom between this model and Model D were unchanged.

4. Incivilities perceptions indeed varied over the 1-year observation period. Linear regression models regressing Time 2 incivilities on Time 1 incivilities showed an  $R^2$  value of 55%. Similarly, risk perceptions varied as well, with Time 1 risk explaining 48% of the variation in Time 2 risk.

## References

- Brunton-Smith, I. (2011). Untangling the relationship between fear of crime and perceptions of disorder. *British Journal of Criminology*, *51*, 885-899.
- Brunton-Smith, I., & Sturgis, P. (2011). Do neighborhoods generate fear of crime? An empirical test using the British Crime Survey. *Criminology*, *41*, 331-369.
- Bursik, Jr., R. J., & Gasmick, H. G. (1993). *Neighborhoods & crime*. Lanham: Lexington Books.
- Carvalho, I., & Lewis, D. A. (2003). Beyond community: Reactions to crime and disorder among inner-city residents. *Criminology*, *41*, 779-812.
- Cook, F. L., & Skogan, W. G. (1984). Evaluating the changing definition of a policy issue in Congress: Crime against the elderly. In H. R. Rodgers (Ed.), *Public policy and social institutions* (pp. 47-66). Greenwich, CT: JAI Press.
- Duncan, O. D. (1961). A socioeconomic index for all occupations. In A. J. Reiss (Ed.), *Occupations and social status* (pp. 109-138). New York, NY: Free Press.
- Federal Bureau of Investigation. (2012). *Uniform Crime Reports*. Prepared by the National Archive of Criminal Justice Data. Retrieved from <http://www.fbi.gov/about-us/cjis/ucr/crime-in-the-u.s/2012/crime-in-the-u.s.-2012>
- Ferraro, K. F. (1995). *Fear of crime: Interpreting victimization risk*. Albany: State University of New York Press.
- Firebaugh, G. (1980). Groups as contexts and frog ponds. In K. Roberts & L. Burstein (Eds.), *Issues in aggregation* (pp. 43-52). San Francisco, CA: Jossey-Bass.
- Franzini, L., Caughy, M. O., Nettles, S. M., & O'Campo, P. (2008). Perceptions of disorder: Contributions of neighborhood characteristics to subjective perceptions of disorder. *Journal of Environmental Psychology*, *28*, 83-93.
- Gallagher, N. A., Gretebeck, K. A., Robinson, J. C., Torres, E. R., Murphy, S. L., & Martyn, K. K. (2010). Neighborhood factors relevant for walking in older, urban, African American adults. *Journal of Aging and Physical Activity*, *18*, 99-115.
- Garofalo, J., & Laub, J. (1978). The fear of crime: Broadening our perspective. *Victimology*, *3*, 242-253.
- Gau, J. M., & Pratt, T. C. (2008). Broken windows or window dressing? Citizens' (in) ability to tell the difference between disorder and crime. *Criminology & Public Policy*, *7*, 163-194.
- Glazer, N. (1979). On subway graffiti in New York. *The Public Interest*, *54*, 3-12.
- Halaby, C. N. (2004). Panel models in sociological research: Theory into practice. *Annual Review of Sociology*, *30*, 507-544.
- Harcourt, B. E. (2001). *Illusion of order: The false promises of Broken Windows Policing*. Cambridge, MA: Harvard University Press.
- Harcourt, B. E., & Ludwig, J. (2006). Broken windows: New evidence from New York City and a five-city social experiment. *University of Chicago Law Review*, *1*, 271-320.

- Hipp, J. (2010). Resident perceptions of crime and disorder: How much is "bias," and how much is social environment differences? *Criminology*, 48, 475-508.
- Hox, J. J. (2010). *Multilevel analysis* (2nd ed.). Hove, UK: Routledge.
- Hunter, A. (1978, November, 8-12). *Symbols of incivility: Social disorder and fear of crime in urban neighborhoods*. Paper presented at the 1978 meeting of the American Society of Criminology, Dallas, TX.
- Innes, M. (2004). Signal crimes and signal disorders: Notes on deviance as communicative action. *British Journal of Sociology*, 55, 337-355.
- Innes, M. (2005). What's your problem? Signal crimes and citizen-focused problem solving. *Criminology & Public Policy*, 4, 187-200.
- Jackson, J. (2004). Experience and expression: Social and cultural significance in the fear of crime. *British Journal of Criminology*, 66, 946-966.
- Kelly, G. A. (1955). *A theory of personality: The psychology of personal constructs*. New York, NY: W.W. Norton.
- Kubrin, C. E. (2008). Making order of disorder: A call for conceptual clarity. *Criminology & Public Policy*, 7, 203-213.
- 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 & Delinquency*, 29, 311-344.
- Markowitz, F. E., Bellair, P. E., Liska, A. E., & Liu, J. (2001). Extending social disorganization theory: Modeling the relationships between cohesion, disorder, and fear. *Criminology*, 39, 293-319.
- Matsueda, R. L. (1992). Reflected appraisals, parental labeling, and delinquency: Specifying as symbolic interactionist theory. *American Journal of Sociology*, 27, 1577-1611.
- McGarrell, E. F., Giancomazzi, A. L., & Thurman, Q. C. (1997). Neighborhood disorder, integration, and the fear of crime. *Justice Quarterly*, 14, 479-500.
- Mead, G. H. (1934). *Mind, self, and society* (Charles W. Morris, Ed.). Chicago, IL: University of Chicago Press.
- Perkins, D. D. (1989). *Description of data set and methods: NIMH final grant report appendix A* (Grants #R01-MH40842-01 and -02). Unpublished manuscript. Philadelphia, PA: Department of Criminal Justice, Temple University.
- Perkins, D. D., Brown, B. B., & Taylor, R. B. (1996). The ecology of empowerment: Predicting participation in community organizations. *Journal of Social Issues*, 52, 85-111.
- 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.
- Raudenbush, S., & Bryk, A. S. (2002). *Hierarchical linear models: Applications and data analysis*. Thousand Oaks, CA: Sage.
- Robinson, J. B., Lawton, B. A., Taylor, R. B., & Perkins, D. D. (2003). Multilevel longitudinal impacts of incivilities: Fear of crime, expected safety, and block satisfaction. *Journal of Quantitative Criminology*, 19, 237-274.
- Ross, C. E., & Mirowsky, J. (2001). Neighborhood disadvantage, disorder, and health. *Journal of Health and Social Behavior*, 42, 258-276.

- Rountree, P. W., & Land, K. C. (1996a). Burglary victimization, perceptions of crime risk, and routine activities: A multilevel analysis across Seattle neighborhoods and census tracts. *Journal of Research in Crime & Delinquency*, 33, 147-180.
- Rountree, P. W., & Land, K. C. (1996b). Perceived risk versus fear of crime: Empirical evidence of conceptually distinct reactions in survey data. *Social Forces*, 74, 1353-1376.
- Sampson, R. J., & Raudenbush, S. (2004). Seeing disorder: Neighborhood stigma and the social construction of "Broken Windows." *Social Psychology Quarterly*, 67, 319-342.
- Shadish, W. R., Cook, D. T., & Campbell, D. T. (2002). *Experimental and quasi-experimental designs for generalized causal inference*. Boston, MA: Houghton Mifflin.
- Skogan, W. G. (1990). *Decline and disorder: Crime and the spiral of decay in American neighborhoods*. New York, NY: Free Press.
- Taylor, R. B. (1994). *Research methods in criminal justice*. New York, NY: McGraw-Hill.
- Taylor, R. B. (1996). Neighborhood responses to disorder and local attachments: The systemic model of attachment, social disorganization, and neighborhood use value. *Sociological Forum*, 11, 41-74.
- Taylor, R. B. (1997). Order and disorder of streetblocks and neighborhoods: Ecology, microecology, and the systemic model of social organization. *Journal of Research in Crime & Delinquency*, 34, 113-155.
- Taylor, R. B. (1999). The incivilities thesis: Theory, measurement, and policy. In R. H. Langworthy (Ed.), *Measuring what matters* (pp. 65-88). Washington, DC: Office of Community Oriented Policing Services, National Institute of Justice.
- Taylor, R. B. (2001). *Breaking away from broken windows: Baltimore neighborhoods and the nationwide fight against crime, grime, fear and decline*. New York, NY: Westview Press.
- Taylor, R. B. (2005). The incivilities or "Broken Windows" thesis. In L. E. Sullivan (Ed.), *Encyclopedia of law enforcement* (pp. 30-35). Thousand Oaks, CA: Sage.
- Taylor, R. B. (2010). Communities, crime, and reactions to crime multilevel models: Accomplishments and meta-challenges. *Journal of Quantitative Criminology*, 26, 455-466.
- Taylor, R. B., & Covington, J. (1993). Community structural change and fear of crime. *Social Problems*, 40, 374-397.
- Tracy, P. E., & Carkin, D. M. (2014). Adjusting for design effects in disproportionate stratified sampling designs through weighting. *Crime & Delinquency*, 60, 306-325.
- U.S. Census Bureau. (2009). *Population, households, population by age, population by race, labor force and income: Data from the American Community Survey, 2009*. Retrieved from <http://www.baltometro.org/content/view/148/210/#sources>
- Wallace, D. (2015). A test of the routine activities and neighborhood attachment explanations for bias in disorder perceptions. *Crime & Delinquency*, 63(4), 587-609.

- Weisburd, D. L., Groff, E. R., & Yang, S. M. (2012). *The criminology of place: Street segments and our understanding of the crime problem*. New York: Oxford University Press.
- Wickes, R., Hipp, J. R., Zahnow, R., & Mazzerolle, L. (2013). "Seeing" minorities and perceptions of disorder: Explicating the mediating and moderating mechanisms of social cohesion. *Criminology*, 51, 519-560.
- Wilson, J. Q. (1975). *Thinking about crime*. New York, NY: Basic Books.
- Wilson, J. Q., & Kelling, G. L. (1982, March). Broken windows. *Atlantic Monthly*, 211, 29-38.
- Wyant, B. R. (2008). Multilevel impacts of perceived incivilities and perceptions of crime risk on fear of crime: Isolating endogenous impacts. *Journal of Research in Crime & Delinquency*, 45, 39-64.

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