

ABSTRACT

Title of Document: MAKING SENSE OF BROKEN WINDOWS:
THE RELATIONSHIP BETWEEN
PERCEPTIONS OF DISORDER, FEAR OF
CRIME, COLLECTIVE EFFICACY AND
PERCEPTIONS OF CRIME

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The broken windows thesis has had a profound impact on policing strategies around the world. The thesis suggests that police can most effectively fight crime by focusing their efforts on targeting disorder—minor crimes and nuisance behaviors such as loitering, public drinking and vandalism, as well as dilapidated physical conditions in a community. The strategy was most prominently used in New York City in the 1990s, and has been often credited for the crime drop observed in the city over that decade. Despite the widespread influence of the broken windows thesis, there has been relatively little rigorous empirical research which has sought to test the validity of its theoretical propositions.

This dissertation aimed to address this shortcoming by using structural equation modeling to test the relationships between perceived disorder, fear of crime, collective efficacy and perceptions of crime suggested by the broken windows thesis using survey data collected during a randomized, experimental evaluation of broken windows policing

in three cities in California. The results are supportive of the broken windows thesis, but also raise some challenges. Perceptions of disorder were found to increase fear of crime, reduce collective efficacy and lead to crime as suggested. However, fear of crime was not significantly related to collective efficacy as suggested, and the direct effect of perceived social disorder on perceptions of crime was the strongest effect in every model. Nevertheless, the findings do suggest that a reduction of disorder in a community may have positive effects in the form of reducing fear and promoting collective efficacy, and suggest the limitations of studies which only test for direct effects of disorder on crime and/or do not examine the variables at the perceptual level. Future research needs to further examine the broken windows thesis, ideally involving a prospective longitudinal study of crime at place.

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By

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CHAPTER 1: INTRODUCTION

It is hard to imagine that even James Q. Wilson or George Kelling (1982) foresaw the impact their nine page “Broken Windows” article in the *Atlantic Monthly* would have in the world of policing and in criminology more generally. Interest in the thesis proposed in this article still rages in debates in scholarly journals in the 21st century, and the idea has had a tremendous impact on policing strategies around the world. In the policing arena, broken windows has remained popular after being widely credited for the crime drop in New York City in the 1990s (Bratton & Knobler, 1998; Giuliani & Kurson, 2002; Karmon, 2000; Kelling & Sousa, 2001; Maple & Mitchell, 1999; Silverman, 1999). From the “quality of life policing” in New York to “Zero Tolerance” in England (Dennis & Mallon, 1998) police agencies around the world have adopted the idea that focusing on less serious offenses can yield important benefits in terms of community safety and crime prevention(see Kelling & Sousa, 2001).

Yet despite this continued academic interest and the great impact the article has had on police practice, the broken windows thesis itself has received relatively little empirical research. Indeed, even the impacts of the broken windows policing strategies derived from this thesis have received relatively little direct study, and these studies have been heavily criticized for methodological and other shortcomings (for example, see Harcourt, 2001). This gap between research and policy is jarring, especially for a police strategy which critics say widens the net of police contacts, may lead to overly harsh punishments for minor offenses, leads to increased complaints against the police (Greene, 1999) and could disproportionately affect minorities (see Golub, Johnson & Dunlap, 2007; Harcourt, 2001; Herbert, 2001).

While there is, as noted, also a lack of quality research on the impacts of broken windows policing strategies there is an even more jarring dearth of research on the propositions of the broken windows thesis itself. In short, we have little knowledge of whether the theory behind this prominent policing strategy has any validity. To have a police innovation gain the popularity of broken windows policing with so little research on either the theory behind it or the effectiveness of the policing strategy itself is a prime example of the barriers facing the evidence-based crime prevention movement (see Weisburd & Braga, 2006; Sherman, Farrington, Welsh, & MacKenzie, 2002).

This dissertation aims to address this shortcoming by testing the relationship between the key variables in the broken windows hypothesis using data collected during an ongoing randomized, experimental evaluation of broken windows policing. While much past research has examined the impacts of observed levels of disorder on crime rates (i.e. Sampson and Raudenbush, 1999; Taylor, 2001) this dissertation aims to explore the broken windows thesis at the individual, perceptual level. This is key as from its introduction the broken windows thesis has been a social-psychological theory which argues that people's *perceptions* of disorder and crime in their neighborhoods affects their behavior by increasing fear of crime and causing residents to withdraw from this community. Objectively measured disorder (i.e. systematic social observations) is no doubt useful, and studies using such measures remain important, but at the same time the level of disorder in a community will not have the hypothesized impacts if residents do not perceive and react to cues of untended disorder. As such, this dissertation's central contribution is shedding light on the impact of perceptions of disorder on fear of crime, collective efficacy and perceptions of crime. Long-term impacts of disorder on crime

rates in communities is also an important issue related to the broken windows thesis, but addressing that topic is not the goal of the present study. The broken windows thesis is outlined briefly below.

In their seminal article, Wilson and Kelling (1982) argued that minor crimes and nuisances (hereafter called disorder) such as litter, graffiti and public drinking could be a starting point for neighborhood decay and eventually even crime. They suggested this happened through the followings set of events. The cycle first begins with disorders going untended. That is to say, for example, graffiti is not painted over, trash is not picked up and drunkards are allowed to drink in the street. In turn, residents perceive these acts flourishing with no repercussions and become fearful. The fact that these disorders are not dealt with leads them to conclude that social controls have broken down, and that their community is less safe. As such, they spend less time outside, keep their kids inside and take other cautionary measures. “Good” residents may move away, while “bad” residents may move in. This process thus has the net effect of further lowering neighborhood surveillance and social control.

Wilson and Kelling argued that at this point disorderly people and eventually criminals from both within the neighborhood and from outside areas will begin stepping up their activity in this area as they too perceive social control to be low. Thus, they believe their risk of detection and arrest in the area to be low and consequently conduct more of their activities in such neighborhoods. In response to this thesis Wilson and Kelling suggested that police could more effectively fight crime by targeting disorders in an effort to prevent this cycle of decline from occurring.

While police latched on to this idea, there has been relatively little research on whether the relationships between disorder, fear, collective efficacy and crime hypothesized by Wilson and Kelling hold true. As the literature review in the following chapter will show, there has been a good deal of research (largely outside of the specific realm of broken windows) examining individual relationships between these variables—for example, that disorder does tend to lead to fear and fear often leads to withdrawal. However, there have been no studies which have simultaneously examined the relationship between disorder, fear, withdrawal and crime with relationships tested in the order suggested by the broken windows thesis. As an example of this problem, recent research by Sampson and Raudenbush (1999), Taylor (1999; 2001) and St. Jean (2007) have conducted studies related to the broken windows thesis, but they have not examined it in the framework of the hypothesis outlined above.

Rather than following the broken windows thesis' suggestion that disorder affects crime *indirectly* through fear and withdrawal/lowering of social controls, Sampson and Raudenbush (1999) tested whether disorder affected crime *directly*. They found that it did not and concluded that disorder and crime were merely spuriously related and that collective efficacy explained both crime and disorder. Taylor (1999; 2001) similarly found little support for a direct relationship between disorder and crime in a panel study using data collected 13-years apart in Baltimore. St. Jean (2007), on the other hand followed the proper interpretation of the broken windows thesis throughout most of his study, but his substantive work examined only the offender decision-making portion of the hypothesis, testing whether disorder and low levels of collective efficacy attracted offenders to certain locations. It did not examine in detail whether disorder led residents

to become fearful and withdraw from the community. These studies will be reviewed in more detail in the following chapter, but for current purposes they illustrate that there is still a dearth of research on the broken windows hypothesis as laid out by Wilson and Kelling (1982).

Advocates of the broken windows thesis (see Bratton & Kelling, 2006, Gault & Silver, 2008 and Xu, Fiedler & Flaming, 2005) took exception to these interpretations as they argued that the broken windows thesis never suggested a direct path between disorder and crime, but rather always asserted that the path was indirect. Disorder was said to increase fear of crime, which in turn would reduce social control/collective efficacy and leave neighborhoods vulnerable to criminal invasion. As such, some argued that Sampson and Raudenbush's (1999) findings may actually have supported, rather than challenged, the broken windows thesis as some analyses they presented suggested that perceptions of disorder reduced collective efficacy which could indirectly increase crime.

In addition to only testing for a direct relationship between disorder and crime, another related shortcoming of this research has been the continued insistence that the broken windows thesis and collective efficacy are completely separate and distinct constructs. As such, research has treated them as competing explanations for crime. This is not necessarily the case. Collective efficacy has been defined as "social cohesion among neighbors combined with their willingness to intervene on behalf of the common good" (Sampson, Raudenbush & Earls, 1997, p. 918). This concept would seem to fit within Wilson and Kelling's broken windows thesis. Their main argument is that untended disorder leads to residents becoming fearful and withdrawing from the community or even moving away. This is said to lower informal controls and make the

neighborhood vulnerable for criminal invasion. Thus, an area with rampant, untended disorder is one where social cohesion will be eroded and fearful residents will be less likely to intervene.

In short, the broken windows thesis essentially argues that untended disorder leads to crime by beginning a process which diminishes collective efficacy in a community and eventually allows crime to flourish. That is to say that collective efficacy should be expected to mediate the effects of disorder on crime. This point is well argued in a recent essay by Gault and Silver (2008), who suggested that when considering this mediation possibility Sampson and Raudenbush's study may actually be supportive of the broken windows thesis—they simply missed this by mis-specifying their model by assuming a direct link between disorder and crime rather than the indirect developmental sequence outlined by Wilson and Kelling (1982). This issue will be explored in more detail in the next chapter.

In sum, despite over twenty years of scholarly attention and the wide fame of broken windows policing strategies we still have very little knowledge of whether disorder, fear and collective efficacy are related to crime in the manner the broken windows thesis suggests—both due to a dearth of research and studies treating broken windows and collective efficacy only as competing explanations for crime. While we can be reasonably confident that disorder does lead to fear of crime, studies have failed to simultaneously examine whether this in turn leads to resident withdrawal, a lowering of collective efficacy and eventually to crime.

This dissertation aims to improve understanding of these issues by examining the relationship between perceptions of disorder, fear of crime, collective efficacy and

perceptions of crime at the individual level using structural equation modeling to estimate the hypothesized relationships between these variables using data collected during a randomized, experimental evaluation of broken windows policing in three cities in the San Bernardino Valley area of California. In short, the current study attempts to shed light on this “direct or indirect” debate by examining whether the indirect paths from perceptions of disorder and crime hypothesized by proponents of the broken windows thesis are supported in the current data. Do perceptions of disorder increase fear of crime and erode collective efficacy? Are these variables subsequently related to perceptions of crime? These are important questions as no study to date has tested the relationships among perceptions of disorder, fear of crime, collective efficacy and perceptions of crime with the correct model specification.

The San Bernardino Valley Broken Windows Policing Experiment involved delivering a broken windows policing intervention to selected street segments (one street block, including both block faces, from one intersection to the next) in three cities—Colton, Ontario and Redlands, California. The data source for the current study is responses to a telephone survey of residences and businesses located on the target and control street segments. The design of the San Bernardino Valley Broken Windows Policing Experiment provides a unique opportunity for testing the propositions of the broken windows thesis for two main reasons.

First, the study was conducted at the street-segment level. A good deal of recent research has argued that such micro-place units of analysis are most appropriate for studies of crime (Appleyard, 1981; Eck & Weisburd, 1995; Jacobs, 1961; Smith, Frazee, & Davidson, 2000; Taylor, 1997; Weisburd, Bushway, Lum, & Yang, 2004). The street

segment is a particularly useful unit of analysis for the current study, as the relationships hypothesized by Wilson and Kelling (1982) seem most likely to operate at the micro level. For instance, it seems reasonable that people will be more likely to be aware of disorder occurring on the block on which they live compared to other areas of the neighborhood or city.

This is especially important as studies have found that even in high crime and disorder areas (i.e. hotspots) not all blocks are plagued by such problems (Groff, Weisburd & Morris, 2009; St. Jean, 2007; Weisburd & Green, 1994; Weisburd & Morris, 2009; Weisburd, Morris & Groff, forthcoming; Weisburd et al., 2004). Thus a study using a larger unit of analysis such as neighborhoods would likely have the problem of some residents in a high disorder neighborhood perceiving little or no disorder. While this may seem illogical as they live in a high crime neighborhood, such a finding may simply be reflective of the fact that the person lives on a relatively low disorder block nested within a high disorder neighborhood. Similarly, the level of disorder on a person's home block should be most appropriate for testing the impact of disorder on fear of crime for similar reasons. If a person is most aware of the level of disorder and crime on their block, then that is where those variables should most strongly impact their fear of crime. For instance, a person may feel unsafe on their block due to the level of disorder and crime they perceive, but perfectly safe in other areas of the community that are less problematic. Conversely, they may feel safe on their block, but fearful in other areas of their neighborhood which have higher levels of disorder.

Finally, the street segment is also appropriate for examining the impact of disorder and fear on collective efficacy as a resident's withdrawal in the broken windows

framework should have a direct impact on the level of collective efficacy on their block. Residents staying indoors more, or even moving away, in response to increased signs of disorder means fewer watchful eyes on that block and thus lower levels of collective efficacy on that street segment as people are less likely to intervene on behalf of the common good. Thus, use of the street segment as the unit of analysis allows the current study to have accurate measures of the variables of interests, as the survey questions asked respondents about crime, disorder and collective efficacy on their blocks rather than in a larger unit of reference such as neighborhood.

The second advantage the data offers is that the survey collected a wealth of data on perceptions of social and physical disorder, fear of crime, collective efficacy and perceptions of crime. As such the data allows for the relationships between the key variables of interest to the broken windows thesis to be tested simultaneously using structural equation modeling. Thus this dissertation offers a robust test of the theoretical propositions of the broken windows thesis, and offers the advantage of being able to test the relationships at the individual, perceptual level which is appropriate given the social-psychological nature of the broken windows thesis. The analyses will shed light on a thesis that has had a profound impact on policing over the past quarter century, as well addressing the debate between supporters of collective efficacy theory and advocates of broken windows outlined above and discussed in detail in the next chapter.

Summary and Outline

The current study will improve our knowledge of the broken windows thesis by exploring the hypothesized relationships between disorder, fear, collective efficacy and

crime at the individual level with data collected during a randomized, experimental evaluation of broken windows policing. The broken windows hypothesis suggests that perceived disorder should increase fear of crime, and in turn, those who become fearful should withdraw from the community thus lowering informal social control/collective efficacy and leaving the community vulnerable to criminal invasion. This dissertation tests these hypotheses through a series of structural equation models in the latent variable path analysis framework and assesses whether the relations between these variables is consistent with the expectations of the broken windows thesis.

The remainder of this dissertation is as follows. In Chapter 2 the relevant literature is reviewed. This will include the development of the broken windows thesis, a review of its impact on policing as well as empirical studies examining the broken windows thesis and broken windows policing, with more emphasis on the former. In particular the review will suggest the need to stop treating collective efficacy and broken windows and entirely competing explanations for crime at place. Chapter 3 outlines the specific theoretical models to be tested in the current study. Chapter 4 provides a description of the three cities in the San Bernardino Valley Broken Windows Policing Experiment and details the process of selecting specific street segments to be included in the study in each city. Chapter 5 will detail the data collection efforts and outline the creation of the latent variables for the SEM analyses. Chapter 6 presents the statistical models and results. Finally, Chapter 7 concludes with a discussion of the findings and suggestions for future research.

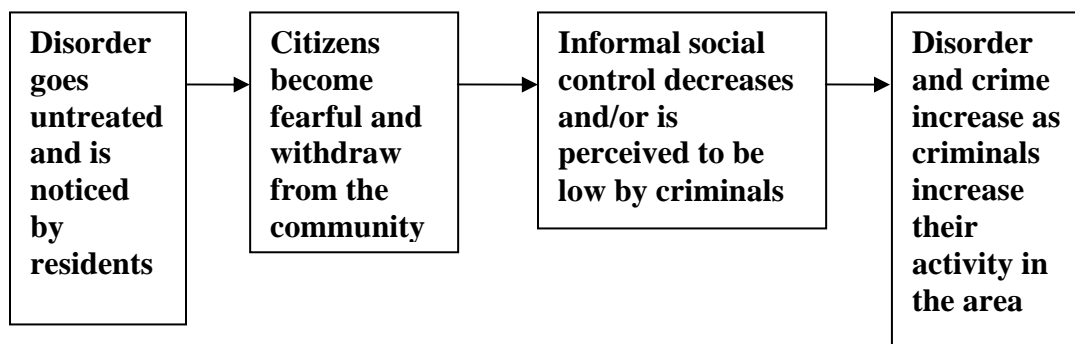
CHAPTER 2- LITERATURE REVIEW

As noted in Chapter 1, the broken windows thesis was originally put forth in 1982 in a seminal article by James Q. Wilson and George Kelling published in *The Atlantic Monthly*. In this article the authors argued that police could more effectively fight crime by focusing on more minor annoyances which plague communities. This encapsulated both rundown physical conditions in the form of litter, dilapidated buildings, graffiti, etc. as well as social nuisances such as panhandling, loitering and public drinking. Their idea that crime could be prevented through targeting these issues was based on their thesis that such social ills eventually lead to community decline if left untended. If these nuisances, hereafter referred to as disorder, are left untended they eventually begin to accumulate and start a process of community erosion which may eventually lead to crime.

This process begins with disorder not being dealt with in a timely manner. Trash is not picked up; loiterers are not asked to move on. In time this invites more trash being thrown in the vacant lot, more loiterers to gather, and more people to start drinking in public. As this disorder accumulates it sends a message to residents that things are getting out of control and that social controls have failed in their neighborhood. The key here is that residents *perceive* untended disorder. It will likely have little impact if residents are not aware of the disorder in the community. In turn, Wilson and Kelling (1982) suggested that residents who perceive worsening disorder problems eventually become fearful and begin to withdraw from the community. They spend less time outside, become less likely to intervene and ward off disorderly people, and, in the extreme, “good” residents may move away. The net effect is a lowering of informal social controls, which leads to more and more disorder and minor crimes occurring as

people perceive that they can get away with such behavior in these areas where they routinely see disorderly behavior going unpunished. In time criminals also take these signs of untended disorder as a cue that such a neighborhood is a good place for them to work with relative impunity. In Wilson and Kelling's terms such neighborhoods are vulnerable to criminal invasion. It is not inevitable, but such places are much more likely, in their view, to see an increase in crime than neighborhoods which exert control in regulating the occurrence of disorder. Once crime occurs, residents also notice this and the cycle of fear and withdrawal is likely to worsen (see also Skogan, 1990). The broken windows thesis, as outlined above, can be visualized as shown in Figure 2.1.

Figure 2.1- The Broken Windows Thesis



As such, a main thrust of Wilson and Kelling's argument was that police could thus fight crime more effectively by dealing with disorder. If they stop disorder from accumulating and prevent neighborhoods from reaching the tipping point where they become vulnerable for criminal invasion they can have a great impact on crime. Wilson and Kelling do not discuss what police may do in neighborhoods already past the tipping point and fully invaded by criminal behavior, but one could imply that cleaning up

disorder would still play a role in restoring informal social control in such neighborhoods and helping residents take back the streets. In any case, as will be shown later in this chapter, their suggestion has had a wide impact on policing over the past 25 years. However, before going into the impact of the broken windows thesis on policing it is important to first examine the theoretical underpinnings of Wilson and Kelling's work.

Theoretical Development of the Broken Windows Thesis

While Wilson and Kelling are credited with developing the broken windows thesis, they were not the first to examine the role disorder played in communities. In the area of criminology concern over disorder can partly be traced to early research on fear of crime. One issue that drove interest in the topic was a body of research that consistently found that fear of crime had seemingly little to do with crime. For instance, most studies found that females and the elderly reported the highest levels of fear of crime¹ (see Ferraro, 1995 chapters six and seven for a review of studies on these topics), yet the National Crime Surveys conducted by the Bureau of Justice Statistics consistently showed young males to have the highest rates of victimization. Thus fear of crime did not appear to be driven by actual victimization risk. This notion was furthered by studies finding that fear of crime was not clearly correlated with neighborhood crime rates (Lewis & Salem, 1986) and that while fear increased with increases in crime it does not fall as rapidly when crime declines (Taylor & Hale, 1986). These findings naturally led criminologists to question what was driving fear of crime if it not crime itself.

¹ However, Ferraro (1995) notes later that the effects of age on fear disappear when controlling for other factors (p. 70-71).

A number of studies turned to disorder to explain fear of crime. For example, James Q. Wilson first noted in 1975 that people were troubled not only by crime but also by:

“The daily hassles they are confronted with on the street—street people, panhandlers, rowdy youths, or ‘hey honey’ hassles—and the deteriorated conditions that surround them—trash strewn alleys and vacant lots, graffiti, and deteriorated or abandoned housing—inspire concern” (p. 66).

Similarly, Garofalo and Laub (1978) stated that “...what has been measured in research as the ‘fear of crime’ is not simply fear of crime” (p. 245) and tied fear to quality of life and concern for the community. Ideas closely related to the broken windows thesis are most clearly seen in work by Hunter (1978) presented at the Annual Conference of the American Society of Criminology. Hunter’s work suggested that disorder affected both fear of crime and actual crime through a process in which disorder signaled to residents that local controls had failed and caused them to become personally at risk of victimization. He suggested that this would increase crime and further increase fear. His work can easily be seen as an early version of the broken windows thesis.

Finally, Wilson and Kelling’s ideas were greatly influenced by a social-psychological experiment conducted by Stanford psychologist Philip Zimbardo in 1969, as indicated by the detailed discussion of the experiment in their broken windows article. Zimbardo abandoned a car with its hood up in two places—the Bronx in New York City and on the Stanford Campus in Palo Alto, California. The car in the Bronx was vandalized within 10 minutes, and within 24 hours everything of value was removed. The car in Palo Alto, however, was not touched for more than a week. Zimbardo then smashed the windshield with a sledgehammer, and from that point on people passing by

and saw the activity and the damaged car and joined in the destruction. This is where the broken windows metaphor came from for Wilson and Kelling, and with the above work on fear of crime and disorder formed the basis for their ideas that untended disorder is what eventually leads to a neighborhood becoming crime plagued. Just like the broken window on the car in Palo Alto invited more vandalism, untended disorder is a visual cue in a community which invites more disorder and eventually more serious crime.

While the theoretical underpinnings of the broken windows thesis can clearly be seen in this early work on fear of crime and the Zimbardo experiment, the law enforcement portion of Wilson and Kelling's ideas were directly influenced by earlier work they had done on policing. Most notably, this is seen in the work of Wilson and Boland (1978) who noted that aggressive policing can reduce crime. Their main point was that the police may reduce crime not by how many are on patrol, but rather by *what* they do while on patrol. They suggest that if police are aggressive in arresting criminals they can have more of an impact on crime. This idea can be seen as a response to the Kansas City Preventive Patrol Experiment which found that routine patrol had no effect on crime (Kelling, Pate, Dieckman, & Brown, 1974). They used traffic citations for as a proxy for aggressive policing² and found a negative relationship between police aggressiveness and crime rates.

George Kelling was also greatly influenced by his earlier work on policing. In particular, the broken windows article (Wilson and Kelling, 1982) repeatedly makes reference to his experience working on an evaluation of foot patrol in Newark, New Jersey (Kelling, Pate, Ferrara, Utne & Brown, 1981). In the Broken Windows article

² It is important to note that this method and other parts of their study were critiqued by Jacob and Rich (1980; 1981; see Wilson and Boland, 1981 for response).

Kelling elaborates on how his experiences on this study showed him that by being active in the community the police could maintain order and make residents feel better which could have positive impacts even if the police strategy was not directly reducing crime.

The above discussion lays out the theoretical foundation for Wilson and Kelling's broken windows thesis. It is clear how work both on causes of fear of crime, and studies of specific police practices laid the groundwork for their ideas that police could fight crime by tackling smaller problems—the disorder in a community that made residents fearful and uneasy. In the quarter century since its inception the broken windows thesis has had a profound impact on policing and continues to be a subject of theoretical debate in scholarly journals. The following sections review research on broken windows policing and work testing the broken windows thesis itself, respectively.

Broken Windows Policing

Since the 1982 publication of the original broken windows article, the idea has had a profound impact on policing. A large part of this impact is due to the highly publicized use of broken windows policing in New York City in the 1990s. Broken windows based policing was a central focus of the efforts of police commissioner William Bratton and Mayor Rudolph Giuliani to clean up the city. Crime decreased dramatically during this period and as such broken windows policing was widely touted as an effective way for police to fight crime (Bratton & Knobler, 1998; Giuliani & Kurson, 2002; Karmon, 2000; Kelling & Sousa, 2001; Maple & Mitchell, 1999; Silverman, 1999). For instance, Kelling and Sousa (2001) estimated that one violent crime was prevented for every 28 misdemeanor arrests in NYC from 1989-1998. As

such, the increase in misdemeanor arrests as part of the broken windows policing program was estimated to have averted more than 60,000 violent crimes. Another study noted that arrestees in NYC said they were aware of the crackdown on disorder and reported having scaled back their activity as a result, suggesting a deterrent impact of the broken windows policing program (Golub, Johnson, Taylor, & Eterno 2003).

However, other recent research on broken windows policing in NYC has been less favorable. Some have argued that the decline in NYC was just part of the general decline of the mid-1990s as similar declines were seen in all big cities in the US over this period, and as such the decline was likely due to broad factors such as the waning of the crack cocaine epidemic (Bowling, 1999; Eck & Maguire, 2000). Additionally, Harcourt and Ludwig (2006) re-analyzed data from NYC and showed that the reduction in crime was likely due to simple mean reversion—what goes up must come down. Yet other studies have found that broken windows policing tactics likely had an effect on crime in NYC, but that its reach may be more limited than suggested by Kelling and Sousa (2001). Ronsenfeld, Fornango and Rengifo (2007) found that broken windows policing was significantly related to declines in homicide and robbery rates, but that the magnitude of the impact was relatively modest. Another study found impacts for homicides involving firearms, but not for non-gun homicides (Messner, Galea, Tardiff, Tracy, Bucciarelli, Piper, Frye, & Vlahov, 2007). Finally, Corman and Mocan (2005) found that misdemeanor arrests in NYC from 1974-1999 were significantly, negatively related to robbery, motor vehicle theft and grand larceny after controlling for economic conditions and deterrence, but were not significantly related to the other four index crimes.

Studies of broken windows policing outside of NYC have produced similarly mixed results. Sherman (1990) found that stepped up enforcement of public drinking laws and parking regulations had no impact on serious crimes, while another study found that increased patrols for disorderly behavior did not reduce robbery or burglary rates (Novak, Hartman, Holsinger, & Turner, 1999). Katz, Webb, and Shaefer (2001) found that broken windows policing reduced disorder and public morals offenses such as prostitution but had no impact on serious crimes. An evaluation of a program aiming to reduce the “signs of crime” in Newark New Jersey found that targeting social and physical disorder did not achieve any of its primary goals (Pate, Wycoff, Skogan & Sherman, 1986). In fact, the evidence showed that the program may have actually backfired as it appeared to have led to higher levels of perceived personal crime problems and lower levels of satisfaction with the area among residents of the program areas. Similar findings were produced in a study by Hinkle and Weisburd (2008) which found that an intensive police crackdown on disorder actually increased fear of crime among residents of the targeted areas.

On the other hand, some studies outside of NYC have reported favorable impacts of broken windows policing on crime. A recent study by Anthony Braga and Barbara Bond (2008) reported reductions in crime in target areas in a randomized, experimental test of broken windows style policing in Lowell, Massachusetts, while Worrall (2002) found misdemeanor arrests and filings to be significantly and negatively related to property crime rates in California.

In short, two things stand out from this review on broken windows policing. First, there are relatively few rigorous, empirical evaluations of the strategy. Second, the

existing literature consists of a widely mixed results and debate over the validity of the findings of the study most widely cited in support of broken windows style policing (Kelling and Sousa, 2001). One possible reason for these mixed results is that perhaps the broken windows thesis itself is misguided. Perhaps disorder is not related to crime in the manner Wilson and Kelling (1982) suggested. Or maybe the relationship is more complex than they implied.

As Harcourt (2001) noted, these types of questions are not addressed by research on broken windows policing. Finding that broken windows policing does or does not reduce serious crime has little bearing on the validity of the theoretical propositions of the broken windows thesis. For instance, broken windows style policing may reduce crime simply through enhanced deterrence resulting from the police being more proactive in enforcement in the community rather than through making residents feel safer and thus increasing informal social controls in the community as suggested by the broken windows thesis. If these propositions are not supported, then broken windows policing may not be the most efficient use of limited police resources. Given the mixed research findings on the impacts of broken windows policing and concerns that the strategy disproportionately impacts minorities (Golub, Johnson, & Dunlap, 2007; Herbert, 2001) it is crucial to examine whether the ideas behind the theoretical model are actually supported.

Testing the Broken Windows Thesis

If the lacking research on broken windows policing was surprising, the dearth of direct empirical research on the propositions of the broken windows thesis itself is

shocking. Few recent theories have had as broad an impact on policy, yet there are few studies which directly examine the broken windows thesis itself. As this section will show, there are a number of studies which have examined individual propositions of the broken windows thesis (often with no direct connection to or mention of broken windows), but few studies have set out to explicitly and directly test the entire broken windows thesis.

Looking at the broken windows thesis outlined above, one can see that there are three main theoretical propositions that make up the path from disorder to more serious crime (see Figure 2.1 above). First, disorder must increase fear of crime among residents. In particular, perceptions of disorder are most relevant here. If residents are unaware of disorder on their block, it is unlikely to impact their levels of fear. Secondly, residents who became fearful must withdraw from the community, thus lowering informal social controls/collective efficacy. Third, crime must increase in the area in response to this withdrawal as criminals perceive the area to be a place to commit crimes with relative impunity. This latter issue requires longitudinal data to adequately test, and thus will not be examined directly in the current study.

However, the current study will examine impacts on residents' perceptions of crime. This is an important issue which has not received much empirical research. Perceptions of crime are central to the broken windows thesis (Wilson and Kelling, 1982) and other theories of neighborhood decline (Skogan, 1990). As disorder increases and causes a rise in fear and a weakening of social controls, the resulting crime that is hypothesized to occur should increase perceptions of crime in the community. These perceptions are then expected to further increase fear of crime and withdrawal in these

communities. Residents who perceive their neighborhood to be crime plagued will be less likely to intervene and in the extreme will be more likely to move away to what they perceive to be a better neighborhood. As such, perceptions of crime are an important outcome to be examined in studies of the broken windows thesis, and thus this dissertation aims to make an important contribution in our understanding of how disorder, fear of crime and collective efficacy are involved in forming perceptions of crime.

As noted, there has been research conducted on each of these theoretical propositions outlined above, most done with little or no reference to the broken windows thesis (i.e. studies of fear of crime), but there has to date been no study testing these propositions simultaneously and with the proper model as specified by the broken windows thesis. This dissertation aims to remedy this shortcoming, but it is first useful to review the existing research on these propositions.

Does disorder cause fear of crime?

Wilson and Kelling (1982) suggested very clearly that disorder's first effect was increasing resident fear of crime.

The prospects of a confrontation with an obstreperous teenager or a drunken panhandler can be as fear-inducing for defenseless persons as the prospect of meeting an actual robber; indeed to a defenseless person, the two kinds of confrontation are often indistinguishable (para 17).

A number of studies have explored this issue by testing the connection between disorder and fear of crime. A neighborhood-level study by Covington and Taylor (1991) found that both objectively measured disorder, as well as survey measured perceptions of

disorder, were related to fear of crime. In particular, their perceived disorder measure was the dominant effect in the model, suggesting support for Wilson and Kelling's notion that residents become fearful when they personally notice signs of untended disorder. Again, it is perceptions that are key as disorder likely will not increase fear if residents are not aware of its presence. Another study involving a panel interview of residents in Baltimore found that between the two surveys those whose perceptions of disorder increased reported less satisfaction with the block they lived on, as well as showing greater increases in feelings of vulnerability and fear of crime (Robinson, Lawton, Taylor, & Perkins, 2003). Also of note, some research has suggested that social disorder has a stronger relationship with fear of crime than physical disorder (LaGrange, Ferraro, & Supancic, 1992).

Other research has suggested that the relationship between disorder and fear may not be straightforward. Taylor and Shumaker (1990; see also Taylor, Shumaker & Gottfredson, 1985) also found a relationship between disorder and fear of crime, but noted that it may not be linear. Their findings suggested a quadratic relationship where disorder does increase fear, but as disorder gets higher the strength of the relationship weakens. They note that perhaps people in high disorder areas get somewhat inoculated to disorder, just as people living in areas plagued by natural disasters may fear earthquakes or hurricanes less than people from other areas. In short, some people may be accustomed to disorder and not bothered by it as much. This gets to Harcourt's (2001) recent arguments that disorder is socially constructed and may not be interpreted the same by everyone. However, of note for current purposes was that Taylor and Shumaker

(1990), like the other researchers, found clear evidence of a relation between disorder and fear, regardless of the intricacies of this relationship.

More recent research has also supported the link between disorder and fear. One study tested a variation of the broken windows/decline hypothesis very similar to the model in Figure 1 using a sample of neighborhoods from three waves of the British Crime Survey (Markowitz, Bellair, Liska & Liu, 2001). Their findings suggested the model was correct. Of particular interest to the current research, they found that “the dominant effect in the cycle is the effect of disorder on fear” (p. 310). The authors thus concluded that their findings were consistent with the broken windows/decline hypothesis as they show that disorder may increase crime indirectly by increasing levels of fear which in turn reduce the level of social cohesion which may then lead to crime. Finally, a recent study by Hinkle and Weisburd (2008) found that perceived disorder was strongly linked to fear of crime in a study using survey data, systematic social observations and official police data collected during the Jersey City Displacement and Diffusion study (Weisburd, Wyckoff, Ready, Eck, Hinkle & Gajewski, 2006).

In short the studies reviewed above illustrate that the link between disorder and fear of crime has been consistently found in past research (for more examples of studies finding support for a link between disorder and fear see Austin, Farr & Spine, 2002; Lewis & Maxfield, 1980; Lewis & Salem, 1986; Maxfield, 1984; McGarrell, Giacomazzi, & Thurman, 1997; Skogan & Maxfield, 1981; Spelman, 2004; Taylor & Hale, 1986).³ Thus there is reason to believe that Wilson and Kelling (1982) and those

³ This is not to say that all studies found a link. For instance Taylor’s (1999; 2001) well-known study in Baltimore found that incivilities measured in 1981 & 1982 were not related to changes in fear of crime in these neighborhoods between 1982 and 1994. However, one could argue that this 12-13 year time lag may have missed more immediate effects of disorder on fear of crime. A study by Crank, Giacomazzi, & Heck,

before them (e.g. Garafalo & Laub, 1978; Hunter, 1978; Wilson, 1975) were correct in asserting that signs of disorder make people feel uneasy and even fearful of being victimized by crime in their neighborhood. What does the research say about the next link in the broken windows theory—that fear of crime causes people to withdraw from the community?

Does fear of crime lead to withdrawal?

As with the link between disorder and fear of crime, there has been work examining whether fear of crime leads to community withdrawal. Again, most of this work is done without explicit reference to broken windows, but there are studies of the topic in other areas such as tests of variables related to social control or collective efficacy (Sampson, et al., 1997). Garafalo (1981) found that fear of crime was related to a host of social outcomes related to collective efficacy such as heightened interpersonal distrust, withdrawal of support for formal control agencies and decreased social interaction. Another study examined fear of crime in a non-urban setting and found that fear of crime led to withdrawal, though the results varied across different measures of fear (Crank, Giacomazzi, & Heck, 2003.)

The Markowitz et al. (2001) study cited above which found a link between disorder and fear also found that fear in turn reduced social cohesion. This study is arguably the most complete test of the broken windows thesis to date as it found that cohesion was negatively related to disorder, while disorder was positively related to fear

(2003) found mixed support depending on type of disorder and the particular fear measure used. Though they note that their study was conducted in a rural area where overall fear levels may have been too low as things had not deteriorated very much—in other words the setting may have not been ideal for a test of the tenets of the broken windows thesis.

which in turn reduced cohesion. On the other hand, a Canadian study found that fear of crime was not related to neighborhood cohesion or social activity, but was related to satisfaction with the community as a place to live (Hartnagel, 1979). However, it is important to note that the author suggests that the null findings may simply be due to insufficient variation in fear of crime and the generally low levels of fear in the sample.

Additionally, some studies have neglected to directly examine the impact of fear on collective efficacy, but have looked for a direct relationship between perceived disorder and items related to collective efficacy. Geis and Ross (1998) found that disorder led to heightened feelings of powerlessness. Other studies have not been supportive of such direct links. Taylor (1996) found deterioration unrelated to community attachment/involvement, while a later study by this author (Taylor, 1999a; 2001) found that initial neighborhood structure, rather than disorder, explained changes in variables such as homeownership, education level and poverty which may be seen as proxies for collective efficacy. Finally, other researchers have tested the impact of collective efficacy on fear of crime but not looked at the reciprocal. Gibson, Zhao, Lovrich, & Gaffney (2002) found that collective efficacy was negatively related to fear of crime and that it mediated the effect of social integration on fear (though see Taylor, 2002 for critique).

As with the link between disorder and fear, we see that research on the link between fear and withdrawal/collective efficacy (and related constructs) is generally supported in past research, though the findings here are more mixed. The majority of the studies reviewed find that increases in fear of crime are tied to reductions in things such as neighborhood cohesion, social involvement and interpersonal trust. Skogan (1986)

provides a review examination of why fear of crime should be expected to have such effects. The key point for this dissertation is that the links between disorder and fear and between fear and withdrawal suggested by Wilson and Kelling (1982) have garnered a fair amount of support in the empirical literature. Moving to the final theoretical proposition, what does the research say about the impacts of withdrawal and reductions in social control/collective efficacy on crime?

Does withdrawal/weakening of social controls lead to crime?

This link of the broken windows thesis really gets at the notion that reductions in informal social lead to increases in crime. This topic has received a fair amount of research attention in work examining the impact of social control/collective efficacy on crime, as well as work on social disorganization theory. In this brief review I will focus on work on collective efficacy, as that is the theory that will be most closely dealt with in this dissertation given the recent debates between collective efficacy theorists and supporters of broken windows (see Sampson and Raudenbush, 1999; Bratton and Kelling, 2006; Gault & Silver, 2008; Xu et al., 2005). Collective efficacy refers to the notion that crime can be controlled in a community where there is a high level of social cohesion and willingness to intervene for the common good (Sampson et al., 1997). In general, the collective efficacy literature has been supportive of the notion that low collective efficacy is tied to low crime rates. For instance, in the work first advancing the concept, Sampson and colleagues (1997) found that collective efficacy was negatively associated with violence after controlling for individual factors and prior violence.

A study by Morenoff, Sampson and Raudenbush (2001) found that collective action for social control was negatively related to homicide, but found little support that social ties mattered. Thus it appears to be important that communities have shared goals and that residents are willing to intervene for the common good, but that social cohesion/social ties may not necessarily be a key component of collective efficacy. Other work has also challenged the importance and relevance of social ties in preventing crime (see Warner and Rountree, 1997). What matters is whether a community can work together to solve crime and disorder problems. Residents may not have to have strong social ties/cohesion to share mutual goals for the community and be willing to intervene to achieve these goals. These findings fit with the broken windows thesis as Wilson and Kelling's (1982) work focused on the notion that disorder led people to become fearful and less willing to intervene in the community. Social cohesion was not explicitly focused on in their work, as they focused more on the notion of people being too afraid to intervene and/or even moving away in response to rising untended disorder in their neighborhood.

A number of other studies have examined the impacts of collective efficacy on crime. For instance, Browning (2002) found that collective efficacy was negatively related to partner violence. Sabol, Coulton, and Korbin (2004) found that collective efficacy reduced youth violence, child maltreatment and intimate partner violence. Ford and Beveridge (2004), in looking at illegal drug sales, noted that collective efficacy can prevent drug sales not only by resisting undesirable factors (like drug dealers) but also through increasing the capacity to attract positive factors (i.e. legal businesses).

In short, work looking at the relationship between collective efficacy and crime has generally been supportive and builds on the findings of early studies of social disorganization theory (Shaw and McKay, 1942) and the systemic model of social disorganization (Kasarda & Janowitz, 1974; Lowenkamp, Cullen, & Pratt, 2003; Sampson, 1988; Sampson & Groves, 1989) that a community's ability to exert informal social control is a powerful predictor of crime rates. As such, the final link of broken windows has been supported with a long history of criminological work which suggests that withdrawal and other factors that reduce informal social control, collective efficacy etc. are likely to lead to increases in crime.

What Does All of This Mean?

What the above review shows is that there is a fair amount of support for the individual theoretical propositions behind the broken windows thesis. However, this support comes largely from a body of unrelated studies, few of which examine more than one step of the broken windows model and even for the individual propositions there are still mixed findings at times. In turn, there is still a great deal of debate about the validity of the broken windows thesis. While some authors have strongly advocated the model and/or broken windows policing (e.g. Bratton & Kelling, 2006; Kelling & Coles, 1996; Kelling & Sousa, 2001) some recent research has challenged the broken windows thesis by suggesting that the relationship between disorder and crime is spurious and explained by collective efficacy (see Sampson & Raudenbush, 1999). The following section will review this issue, as a goal of this dissertation is to shed some light on a recent debate

over whether testing for a direct relationship between disorder and crime is a fair test of the broken windows thesis.

A Direct or Indirect Relationship between Disorder and Crime?

As noted, a recent study by Sampson and Raudenbush (1999) sparked considerable debate over the broken windows thesis. Sampson and Raudenbush set out to test the broken windows thesis and collective efficacy theory (Sampson et al., 1997) using data collected as part of the Project on Human Development in Chicago Neighborhoods (PHDCN). These data included systematic social observations of physical and social disorder which were collected by videotaping segments with video cameras mounted to a vehicle which drove through study areas at five miles per hour recording both sides of the streets. The tapes were then coded by members of the PHDCN research team to record levels of social and physical disorder on the study blocks. Collective efficacy and other individual-level variables were obtained through a resident survey, while crime was measured through official police data (and survey measured victimization in some models).

Sampson and Raudenbush used weighted regression analysis and measured variable path analysis in their study and found that disorder was positively related to crime. However, when they added collective efficacy to the model they found that the relationship between disorder and crime disappeared—except for robbery where it remained significant. As such they concluded that the broken windows thesis was not supported as disorder and crime were only spuriously related—their results showed both to be a result of low collective efficacy. Disorder and crime were simply different

degrees of the same problem with the same underlying cause, rather than being causally related as the broken windows thesis suggests. As such, they concluded "...that neighborhoods high in disorder do not have higher crime rates in general than neighborhoods low on disorder once collective efficacy and structural antecedents are held constant" (p. 638).

Other studies have also examined this notion of a direct link between disorder and crime and produced findings that challenged the broken windows thesis. A study by Taylor (1999, 2001) found that disorder measured in 1981 was not strongly related to crime in 1994 after controlling for initial neighborhood structure. A more recent study found that neither collective efficacy nor disorder were sufficient explanations for crime (St. Jean, 2007).⁴ While high collective efficacy and low social disorder (physical disorder did not matter) explained low crime, places with low levels of collective efficacy and/or high levels of social disorder were found to be about equally likely to have high or low crime rates. Finally, in another study using sixteen years of census-block-level data collected in Seattle, Yang (2007) found that the trends between violent crime and disorder were correlated. The direction of causation, however, was opposed to what was suggested by the broken windows thesis. The results from Granger causality tests generally showed no causal relationship between disorder and violence, and in a few places the causality appeared to run from violent crime to disorder.

However, one recent social-psychology experiment conducted in the Netherlands did find some support for a direct link between the presence of disorder and minor

⁴ To be fair to St. Jean, he acknowledged that the relationship between disorder and crime was indirect according to the broken windows thesis, and this portion of his analysis was not a test of the thesis, but rather an illustration that neither theory could sufficiently explain why some blocks in crime hot spots are crime prone while others are relatively crime free.

criminal behavior (Keizer, Lindenberg & Steg, 2008). The study manipulated the levels of disorder in places (graffiti, trash etc.) and tested whether it had an impact on behavior among passersby. Most of the tests looked at the spread of disorder—for instance, one of the experiments which was part of this study found that the presence of graffiti in a researcher manipulated area led to a higher likelihood of people littering (throwing a flyer attached to their bicycles on the ground) compared with another area where the researcher did not place graffiti (but also attached flyers to bicycles). However, one part of another experiment examined minor theft. This experiment involved placing an envelope with a small amount of money clearly visible sticking out of a mailbox. In the control setting there was no graffiti or trash around the mailbox and in the two experimental conditions there was graffiti on the mailbox in one setting and trash strewn around it in the other. In both cases, passersby in the conditions with disorder (graffiti or trash) present were significantly more likely to steal the envelope than those in the control condition. Of course, it is impossible to say from this study if the presence of disorder could lead to more serious crimes as suggested by the broken windows thesis suggests, or if it is just another example of how disorder spreads (which was the main focus of the study) given the very minor nature of the crime in question.

While the methodologies of these studies are sound, and the negative results of all but the Netherlands study seem to be a large challenge to the tenets of the broken windows thesis, this body of work has been criticized as an unfair test of broken windows. The challenge to this work comes from its assertion that crime and disorder are *directly* related—that disorder directly leads to crime. Supporters of broken windows, including Kelling himself, have denied that broken windows ever implied a direct

relationship between disorder and crime (Bratton & Kelling, 2006; Gault & Silver, 2008; Xu et al., 2005), but rather has always posited an *indirect* relationship between disorder and crime:

Sampson and Raudenbush also misrepresented the broken windows hypothesis. They claimed that broken windows posits a *direct* link between disorder and serious crime. From the first presentation of broken windows we have argued, to the contrary, that the link, while clear and strong, is *indirect*. Citizen fear, created by disorder, leads to weakened social controls, thus creating the conditions in which crime can flourish. (Bratton and Kelling, 2006, para 9).

A reading of Wilson and Kelling's (1982) article would seem to support the Bratton and Kelling's (2006) assertion that they have always posited an indirect relationship between crime and disorder. For instance, Wilson and Kelling stated "...at the community level, disorder and crime are usually inextricably linked, in a kind of developmental sequence" (para 11). A developmental sequence does not imply a direct relationship. Further, later in the article they very clearly lay out this developmental sequence in such a manner that it is hard to see how anyone ever thought they were suggesting a direct relationship between disorder and crime:

We suggest that 'untended' behavior also leads to the breakdown of community controls. A stable neighborhood of families who care for their homes, mind each other's children, and confidently frown on unwanted intruders can change, in a few years or even a few months, to an inhospitable and frightening jungle. A piece of property is abandoned, weeds grow up, a window is smashed. Adults stop scolding rowdy children; the children, emboldened, become more rowdy. Families move out, unattached adults move in. Teenagers gather in front of the corner store. The merchant asks them to move; they refuse. Fights occur. Litter accumulates. People start drinking in front of the grocery; in time, an inebriate slumps to the sidewalk and is allowed to sleep it off. Pedestrians are approached by panhandlers.

At this point it is not inevitable that serious crime will flourish or violent attacks on strangers will occur. But many residents will think that crime,

especially violent crime, is on the rise, and they will modify their behavior accordingly. They will use the streets less often, and when on the streets will stay apart from their fellows, moving with averted eyes, silent lips, and hurried steps. 'Don't get involved' (para 14-15).

As these passages illustrate, it is very clear that the broken windows thesis has always posited an indirect path from disorder to crime. From the beginning, going back as far as Zimbardo's 1969 experiment, the broken windows thesis has been a social-psychological theory. It has never suggested that disorder in a community directly causes crime. Rather it has always posited that perceptions of disorder created through visual cues of untended disorder in a community increase fear and lead to residential withdrawal which leaves communities vulnerable to criminal invasion. Studies that look for a direct relationship between observed disorder and crime ignore the social-psychological foundation of the broken windows thesis, and thus are not complete tests of the theory. This dissertation's central contribution is addressing these issues by testing the indirect paths between perceptions of disorder, fear of crime, collective efficacy and perceptions of crime put forth by the broken windows thesis.

However, supporters of broken windows should not be overly harsh on Sampson and Raudenbush for construing the thesis to assert a direct link between disorder and serious crime. One of the most often cited works in support of the broken windows thesis is Skogan's (1990) *Disorder and Decline* which found support for a direct relationship between disorder and serious crime. These findings have since been challenged on methodological grounds (Harcourt, 1998, 2001; though see Xu et al., 2005 for a critique of Harcourt's re-analysis), but regardless of the validity of Skogan's findings, his book started a line of thinking that broken windows posited a direct link between disorder and

crime that from the above view is clearly a misrepresentation of the broken windows thesis.

Given this flaw, the impact of Sampson and Raudenbush's study, and other work testing for a direct relationship between disorder and crime, is severely challenged. If Sampson and Raudenbush had specified their model in accordance with the propositions and social-psychological foundation of the broken windows thesis their data may have actually supported the broken windows thesis. A correct specification would test whether perceptions of disorder were positively related to levels of fear, and then test whether fear in turn was negatively related to collective efficacy (the informal social control portion of the broken windows thesis) and whether collective efficacy was related to crime. Given that they found collective efficacy inversely related to crime, a finding that disorder, through increased fear of crime, reduced collective efficacy would be supportive of the broken windows notion that disorder erodes informal social controls and leads to increases in crime.

Sampson and Raudenbush (1999) themselves even made some statements that are supportive of a true reading of broken windows. For instance, in their conclusion they state that "[e]radicating disorder *may* indirectly reduce crime by stabilizing neighborhoods...." (p. 648). This is likely based on an analysis presented in passing on page 636 in which they found that "[t]he results indicated that observed disorder increases perceived disorder, which in turn reduces collective efficacy. The significant reciprocal relationship between violence and collective efficacy nonetheless remained intact....". Thus, if Sampson and Raudenbush had set up their study to test the *indirect* link between perceived disorder and crime as outlined above, their conclusions likely

would have been very different, as others have noted (Gault & Silver, 2008; Xu et al. 2005). Even in its current form, side points in their article are supportive of the notion that disorder may reduce collective efficacy and lead to crime.

Additionally, another flaw in Sampson and Raudenbush's study is treating collective efficacy as an entirely separate, competing theory from broken windows. While collective efficacy theory is by no means fully subsumed by the broken windows thesis, there is considerable overlap. Recall from above that Wilson and Kelling (1982) suggested that disorder leads to crime by increasing fear and subsequently causing people to withdraw from the community. People spend less time outdoors, are less likely to intervene for the common good and in some cases move away in response to rising disorder. As such, informal social controls in the community are weakened. What is this if not a reduction in collective efficacy?

Collective efficacy has been defined as: "...social cohesion among neighbors combined with their willingness to intervene on behalf of the common good" (Sampson et al., 1997, p. 918) and more recently as "cohesion among neighborhood residents combined with shared expectations for informal social control of public space" (Sampson and Raudenbush, 2001, p. 1). From these definitions, collective efficacy would seem to fit very neatly with the types of social control that Wilson and Kelling argued that broken windows erode through fear and withdrawal. This was similarly noted by Xu et al. (2005), who stated "...collective efficacy, as a very important ecological concept, is not totally new to the broken windows theory. In fact, as the bottom line of informal social control, it is implicitly part of the explanatory mechanisms in the theory."

Xu et al. (2005), in their study of community policing, found that perceived disorder had strong direct and indirect impacts on perceived crime after controlling for collective efficacy (Xu et al., 2005) and thus challenge the assertion made by Sampson and Raudenbush. However, Xu et al. also did not model the relations in the specific order suggested by the broken windows thesis and thus limited the ability of their study to test the theoretical propositions behind the broken windows thesis. Namely, collective efficacy is only included as an exogenous variable in their structural equation models. Collective efficacy (along with community policing variables) is said to affect disorder and crime, which in turn affect fear of crime and perceptions of quality of life which then affect satisfaction with the police. As outlined above, a true test of the broken windows thesis as outlined by Wilson and Kelling (1982) would test the impact of disorder on fear of crime, which should in turn affect collective efficacy and crime.

An aim of this dissertation is to shed some light on these issues by testing the relationship between disorder, fear of crime, collective efficacy and perceptions of crime in the specific manner outlined by the broken windows thesis in effort to test whether these indirect paths from disorder to crime suggested by supporters of the broken windows thesis are supported empirically. In particular, this dissertation acknowledges the social-psychological nature of the broken windows thesis and examines the role of perceptions of disorder in shaping fear of crime and collective efficacy in a community. While examining impacts on long-term crime rates is beyond the scope of the current study, analyses will examine the impact on residents' perceptions of crime problems in their communities. This is an important advance in our understanding of the broken windows thesis. As part of the cycle of decline, perceptions of crime are key. As

disorder, fear and eroding collective efficacy lead to increases in perception of crime, those perceptions should in turn further increase fear of crime, perceptions of disorder etc. going forward. As such, it is important to understand the way perceptions of crime are formed.

As such, the current study aims to advance knowledge on the validity of some of the key theoretical propositions of the broken windows thesis. It also addresses some of the above shortcomings of the Xu et al. (2005) study by testing the relationships in the sequence suggested by Wilson and Kelling (1982) by placing collective efficacy as an endogenous variable affected by disorder and fear rather than as an exogenous variable which leads to disorder and crime (and eventually fear). It also allows for a more robust test of the broken windows thesis by utilizing data collected at the street-segment level in three cities in California rather than data from a single city-wide survey. The specifics of the theoretical models to be tested in the current study will be outlined in the following chapter.

CHAPTER 3- THEORETICAL MODELS TO BE TESTED

Chapter 2 illustrated the dearth of knowledge about the validity of the propositions of the broken windows thesis. For an idea that has had such a broad impact on policy, and received a fair amount of debate in scholarly circles, the thesis has received relatively few attempts at empirical falsification. Additionally, as noted in the last chapter, there is an ongoing debate on the issue of whether the relationship between disorder and crime is direct or indirect. This dissertation aims to address this debate by testing the relationships between perceptions disorder, fear of crime, collective efficacy and perceptions of crime at the individual level using structural equation modeling.

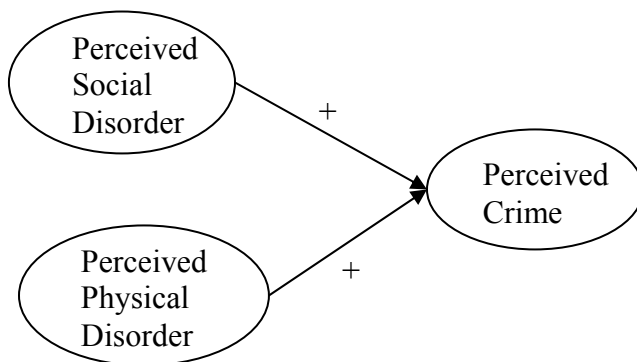
Structural equation modeling (SEM) is used as it offers a couple of important advantages over approaches such as multiple regression or HLM. First, the method allows for simultaneously testing the relationships between a set of variables and allows variables to serve as both exogenous and endogenous variables in the same models. Second, SEM uses a latent variable approach which adds power by parceling out measurement error. Rather than using summated scales of observed variables (to measure perceptions of disorder for instance) the approach uses factor analysis to create underlying latent factors that these observed indicators are tapping into, and the subsequent SEM analyses model structural relations among these latent factors. For overviews of SEM see Bollen (1989), Byrne (1998) and Kelloway (1998). The specific analysis strategy and models to be tested are outlined below. Chapter 5 will outline the creation of the latent factors depicted in these models.

A main goal of this dissertation is to attempt to shed light on the debate over whether the relationship between disorder and crime is direct or indirect. The first step in

this process is to see if Sampson and Raudenbush's (1999) findings can be reproduced with data from the broken windows policing experiment. It is important to note that this will not be a replication as their data used aggregate census tract level analyses, and included variables related to social disorganization theory. Also, as outlined earlier, this dissertation is focused on the impacts of *perceptions* of disorder on fear, collective efficacy and perceptions of crime, while their study primarily examined the relationship between researcher-observed levels of disorder and crime rates. Thus these analyses are testing whether their findings hold at the individual, *perceptual* level which is important given the social-psychological origins of the broken windows thesis outlined in the prior chapter.

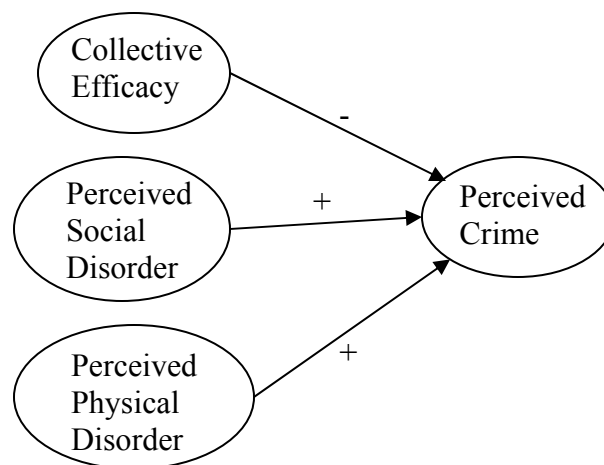
The first model of this dissertation simply tests whether perceptions of disorder and crime are related in a simple latent variable model as illustrated in Figure 3.1. All models will be estimated in LISREL 8.80. The +'s and -'s in the models represent the direction of the hypothesized relationships between variables which will be tested in the models.

Figure 3.1- Model 1-Perceived Disorder and Perceived Crime



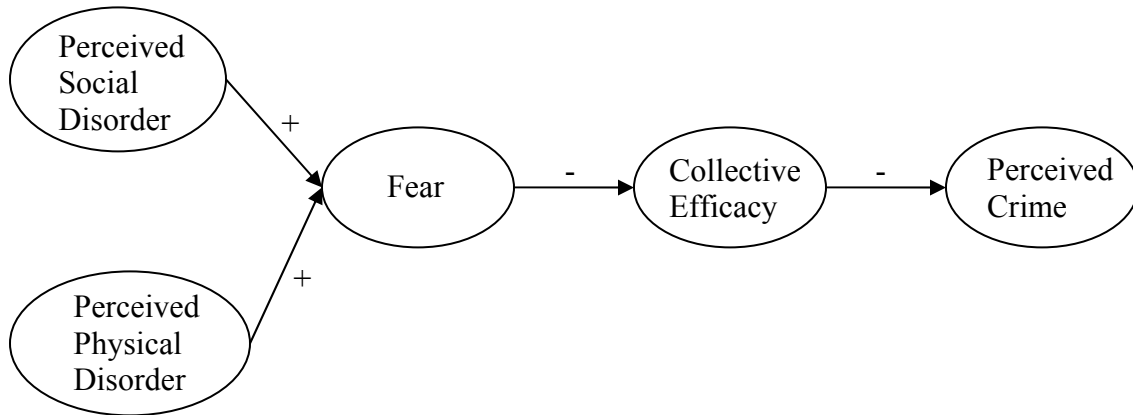
Sampson and Raudenbush found a significant, positive relationship between disorder and crime, and that finding is expected to be reproduced in this perceptual-level analysis. However, when they added collective efficacy to the model this relationship disappeared, and they concluded that the relation between disorder and crime was spurious, and that collective efficacy explained both. Thus the next step is to add collective efficacy to the model and see if that finding is also reproduced at the perceptual level.

Figure 3.2- Model 2-Perceived Disorder, Collective Efficacy and Perceived Crime



Regardless of whether Sampson and Raudenbush's finding that collective efficacy eliminated the direct effect of disorder on crime is reproduced in Model 2, it is important to move forward and test the actual broken windows thesis. A shortcoming of Sampson and Raudenbush's study was that it did not include fear and did not model any indirect paths from disorder to crime. The broken windows thesis suggests that disorder increases fear, which in turn erodes collective efficacy/informal social control which may lead to crime. Model 3A tests these theoretical propositions at the individual level, by examining whether perceptions of disorder influence fear of crime, and whether fear in turn reduces reports of collective efficacy and leads to higher perceptions of crime.

Figure 3.3: Model 3A-Perceived Disorder, Fear of Crime, Collective Efficacy and Perceived Crime



Finally, while Model 3A depicts a simple reading of the broken windows thesis, it is possible that the relationship of disorder on these variables is more complex. Perhaps, for example, perceived disorder has direct impacts on collective efficacy irrespective of its impact on fear. Additionally, if the findings of Model 2 revealed that perceived disorder remained directly related to perceived crime after adding collective efficacy to the model, it is possible that disorder may also retain direct impacts on perceived crime in a full model including both fear and collective efficacy. Model 3B below adds a direct link from perceived disorder to fear. Model 3C, which will only be tested if perceived disorder remained significantly related to perceived crime in Model 2, goes a step further by adding direct paths from perceived disorder to perceived crime. These models are shown in Figures 3.4 and 3.5 below.

Figure 3.4- Model 3B-Perceived Disorder, Fear of Crime, Collective Efficacy and Perceived Crime—with Direct Effect of Perceived Disorder on Collective Efficacy

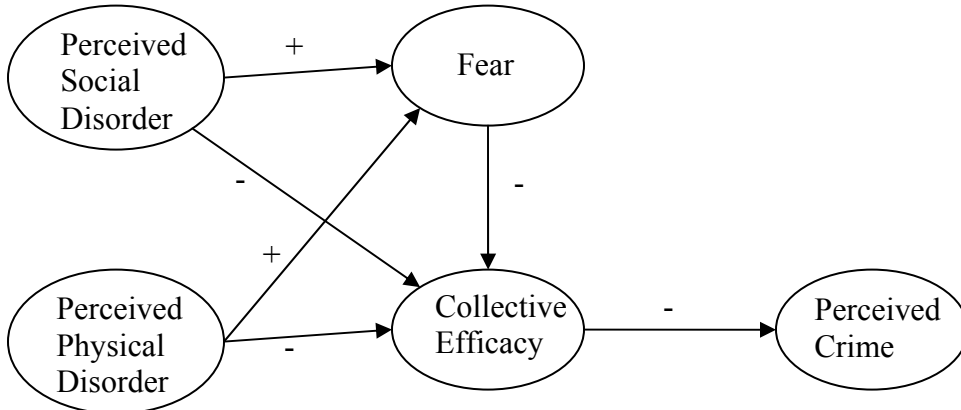
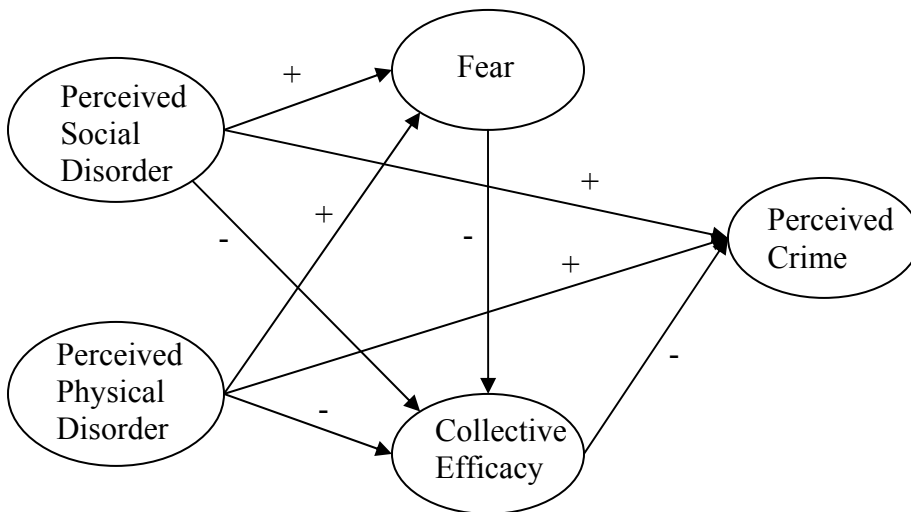


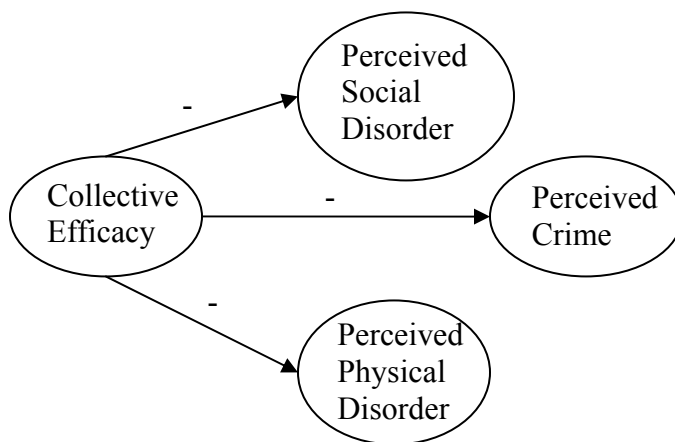
Figure 3.5- Model 3C-Perceived Disorder, Fear of Crime, Collective Efficacy and Perceived Crime—with Direct Effect of Perceived Disorder on Collective Efficacy and Perceived Crime



Finally, with structural equation modeling, it is important to remember that a good fitting model is only one possible explanation for the patterns in the observed data. As such, even if the models presented above in Figure 3.3, 3.4 and 3.5 supported the hypothesized relationships, and had good model fit, they would not “prove” the broken windows thesis. Such findings would simply show that the broken windows thesis was a tenable explanation for the patterns in the observed data. As such, it would remain

possible that a model which posited both disorder and crime as outcomes of collective efficacy as suggested by Sampson and Raudenbush (1999) could also be a possible explanation. Model 4 below in Figure 3.6 tests this. If this model fits as well or better than the broken windows based models outlined in Model 3, then the current analyses can shed little light on this debate, and would suggest that longitudinal data is needed to really answer this question of which comes first—low collective efficacy or high disorder. If the fit was poor for this model, the broken windows models could be claimed as a better explanation for the patterns in the observed data, though caution would be needed, as differences could potentially arise from using perceptual measures of disorder and crime as opposed to observational measures of disorder and official crime data.

Figure 3.6- Model 4-Disorder and Crime as Outcomes of Collective Efficacy



Summary

This dissertation aims to improve our understanding of the theoretical propositions behind the broken windows thesis. In particular it aims to use structural equation modeling to test the indirect paths from disorder to crime that have been

suggested by supporters of the broken windows thesis (see Bratton and Kelling, 2006) at the individual, perceptual level, in effort to shed some light on the long-standing debate over whether the path from disorder to crime is direct or indirect. The following chapter outlines the selection of study sites for San Bernardino Valley Broken Windows Experiment. Chapter 5 outlines the data collection methodology and how the latent variables for the models above were created.

CHAPTER 4- DESCRIPTION OF THE STUDY CITIES AND STREET SEGMENT SELECTION PROCESS

This chapter outlines how the study sites, and study street segments within them, were selected during the Broken Windows Policing Experiment, which is the source of the data used in this dissertation. The first step of the process was to find city police departments who were willing to participate in the experiment. One of the keys to a successful policing experiment is partnering with police agencies that understand and are committed to the importance of research in shaping police activities. If the agencies, and particularly the police chiefs, do not understand the value of randomized experimental evaluations and the importance in sticking to the designed protocols such studies are doomed to fail. As such, the choice of cities in which to conduct a randomized experimental evaluation of broken windows policing led to Redlands, California. Chief James Bueermann of the Redlands Police department has a history of interest in and commitment to randomized experiments in policing.

One drawback which was encountered during the initial development of the original project was the realization that Redlands was too small a city to get enough sites with crime and disorder problems that were not right on top of each other⁵ to allow for the design of a statically powerful (Cohen, 1988) test of broken windows policing. In effort to solve this problem, it was decided to attempt to attempt add other cities in the neighboring San Bernardino Valley area to the study. Through Chief Bueermann's efforts, two additional cities—Ontario and Colton—were added to the study. This both solved the sample size issue, and also added to the generalizability of the study by

⁵ As will be covered in more detail below, it was deemed crucial that street segments in the study be isolated from each other by at least one block in every direction in order to prevent treatment contamination in the control sites.

providing sites that represent three mid-sized cities located in the Los Angeles metropolitan area that vary in size and other factors as outlined in the descriptions below.

Redlands: Located on the San Bernardino County border with Los Angeles County, Redlands is a distant suburb, 63 miles east of Los Angeles and 110 miles to the north of San Diego. Redlands has a predominantly white (approximately 74 percent-- Census, 2000) population of approximately 70,145 people (Uniform Crime Report, 2005) that sprawls across approximately 36 square miles. As of the 2000 Census, the median income for a household in the city was \$48,155, and 10.5 percent of the population was below the poverty line. The 2005 Uniform Crime Report (UCR) showed that Redlands experienced 310 Part I violent offenses and 2,799 Part I property offenses during the 2005 calendar year. The Redlands Police Department has a strength of approximately 78 sworn officers, 77 civilian employees, 102 volunteers and a 50 member Civilian Volunteers group with 25 patrol cars, 15 unmarked cars, numerous other vehicles and four community policing substations. As noted above, the police chief in Redlands, James Bueermann, is an important national leader in innovation in policing, and Redlands has been the site of a number of Department of Justice studies.

Colton: Situated 56 miles east of Los Angeles, and approximately 9 miles west of Redlands, Colton is the site of Colton Crossing, one of the busiest at-grade railroad crossings in the United States. According to the 2005 UCR report, there were 51,723 people residing in the city of approximately 16 square miles. From the 2000 Census, 61 percent of the population was Hispanic or Latino of any race. In 2000, the median household income was \$35,777, and 19.6 percent of the population was below the poverty line. The 2005 UCR report shows that Colton experienced 267 Part I violent

offenses and 1,941 Part I property offenses during the 2005 calendar year. Under the leadership of Chief Bob Miller, the Colton police department employs 74 sworn officers including five county funded positions (ARMC) and one school resource officer funded by the school system. The Colton Police Department also employs over 40 civilians and well over 200 adult and teen volunteers.

Ontario: Ontario is one of California's first planned communities (<http://www.ci.ontario.ca.us/>) and is located 36 miles east of Los Angeles and 28 miles northeast of Anaheim. The city spans an area of 50 square miles and is the home of the LA/Ontario International Airport and Ontario Mills shopping mall, the largest mall in Southern California and one of the largest in North America. Sixty percent of Ontario's 171,186 residents (UCR, 2005) are Hispanic or Latino of any race. Demographically Ontario is a very young city with a median age of 27.6 years; less than 12 percent of the population is over age 55 (Census, 2000). As of the Census of 2000, the median household income was \$42,452, and 15.5 percent of the population was below the poverty line. Ontario is one of Southern California's fastest growing cities and with the substantial residential development, it is anticipated that the population will grow by 100,000 by 2020. The 2005 UCR report showed that Ontario experienced 866 Part I violent offenses and 6,744 Part I property offenses during the 2005 calendar year. Police Chief Jim Doyle is a career officer with the Ontario Police Department; he began as a police cadet in 1973, and was promoted to Chief of Police in 2004. The Ontario Police Department employs 218 sworn officers and approximately 100 civilians (UCR, 2005).

Unit of Analysis

While the overall unit of analysis for this dissertation is the individual, the questions regarding perceptions of disorder and crime, fear and collective efficacy on the survey ask the respondents to bound their responses to the street segment they live on (see Chapter 5 for details on data collection and measurement of variables of interest). For example, questions regarding perceptions of disorder asked them how often they thought various types of disorder occurred on their block.

The street segment (sometimes referred to as a street block or face block) which is defined as the two block faces on both sides of a street (excluding both of the intersections that are connected to the street block). As Weisburd et al. (2004) note, the street segment has long been seen as a key organizing unit with in cities (Appleyard, 1981; Jacobs, 1961; Smith et al., 2000; Taylor, 1997). Taylor (1997) pointed out a number of characteristic of street blocks which make them a useful unit of analysis for social research (see also Hunter and Baumer, 1982; Taylor et al., 1984; Weisburd et al., 2004). He argued that street blocks are unique compared to larger units of analysis for the following reasons. First, residents see and get to know each other on the blocks on which they live. Second, residents of a block have interrelated role obligations. Third, norms about acceptable and unacceptable behavior are generally shared on blocks. Fourth, blocks have regularly recurring rhythms of activity. Fifth, blocks are isolated from impacts of events on neighboring blocks due to physical boundaries, thus events on a block have strongest impacts on residents of that specific block. Finally, blocks have unique histories (i.e. as residential or commercial blocks or a change from one to the other and so forth) which impact events within their borders.

For the San Bernardino Valley Broken Windows Policing Experiment, the same factors were viewed to make the street segment a useful unit for the application of police programs (e.g. see Sherman and Weisburd, 1995). In case of the current study, Taylor's (1997) arguments are particularly insightful in illustrating why the street segment is an appropriate unit of measurement for studying the relationships between perceived disorder, fear of crime, collective efficacy and perceptions of crime at the individual level. For example, it is likely that disorder will have the strongest impacts on residents on the blocks where it occurs, as Taylor argues that physical boundaries often limit the impact of events to a single block. As such, a group of teenagers loitering on one block is unlikely to affect the fear levels of people living a few blocks away who are likely not even aware of their presence. Similarly, graffiti on a building is unlikely to raise alarm among people who do not live on the block where the building is located. Thus the block-level measures are a key advantage, given the current study's focus on the role of perceived disorder. So in terms of the present study, disorder would be mostly likely to affect fear of crime and/or collective efficacy among residents of the blocks on which it occurred.

For collective efficacy, Taylor's arguments about role obligations and social norms being tied to blocks is also relevant for the current study as these are among the elements of collective efficacy (Sampson et al., 1997). For the current study, it is argued that in the framework of the broken windows thesis, disorder on a block would be expected to increase fear of crime among residents of a block. In turn this should lower collective efficacy on the block. In Taylor's terms disorder and fear would erode agreement on social norms, role obligations and other dimensions of informal social

control which he suggests operate at the block level. In short, for the current study street segments are an ideal unit of reference for measuring individual perceptions of disorder, fear, collective efficacy and perceptions of crime and testing the relationships between them at the individual level.

Selection of Study Street Segments within the Three Cities

Selection Criteria

Having the study cities selected and on board, the next step was to develop protocols for selecting specific street blocks for inclusion in the San Bernardino Valley Broken Windows Policing Experiment. Based on the size of the cities, and agreements from the three police chiefs on how many sites they could consistently deliver a broken windows policing program to over a six-month period, we came to the following goals for maximum numbers of street segments to be included in the study in each city: 80 in Ontario, 60 in Redlands and 40 in Colton for a maximum of 180 street segments. However, various limitations to be discussed later resulted in a final sample of 110 segments across the three cities.

The first step in choosing study sites was to develop selection criteria to generate a pool of potential study street segments. After discussions with the police chiefs, the following selection criteria were decided upon. First, that the street segment evidence enough emergency calls for service for disorder⁶ to identify the site as needing intervention; second, that the street segment also show some degree of serious crime as

⁶ Disorder was defined to include all calls for service for prostitution, drug possession, disturbing the peace, vandalism, public drinking, misdemeanor DUI, noise complaints, fights, and thefts from automobiles.

illustrated by reports of Part I offenses;⁷ and third, that the study sites be distant enough one from another to reduce the risk of possible contamination of treatment into control sites.

In discussions with the police agencies, they suggested that a threshold of 10 or more disorder calls and three or more UCR part 1 crime calls in a year would be reasonable for the purposes of the experiment. This number is based on the assumption that calls to the police only represent a small part of the crime and disorder problems in the areas affected, and that these levels of emergency calls for service for disorder and crime at the street-segment level in normal operations in these small cities would indicate places deserving of special police attention.

The third criterion is a result of the fact that many street segments with disorder problems are likely to cluster in the same areas. This creates a significant possibility for contamination of treatment and control sites within each department. Contamination may come from the overlap of treatment to a nearby control site, or from displacement of disorder, or diffusion of crime control benefits (Clarke and Weisburd, 1994; Weisburd et al., 2006). To deal with this limitation, a rule was included that required final study segments to be separated by at least one full street segment in all directions. This meant that our sampling frame must start with a large number of sites that met a minimal threshold for disorder and crime (criteria 1 and 2), which could then be examined to identify an optimal geographic distribution of sites to minimize possible contamination.

⁷ Part 1 crime included the FBI defined part 1 offenses, excluding thefts from autos which were included as a disorder. In talking with the representatives of the Redlands Police Department we learned that they considered such offenses to be disorder/minor crime as they generally just anger residents and largely go unsolved and do not get much police attention. Thus we felt that thefts from automobiles fit with the types of disorder/minor crime that the broken windows theories suggest should be targeted by police.

A fourth criterion was added during the initial site selection process. As much of the initial NIJ study and this dissertation were dependent on having quality survey data, it was crucial to have a large sample of phone numbers to call so that all segments in the study have enough phone numbers in the sample to ensure that we obtained completed surveys from every block in the study. Initial analyses of the PowerFinder reverse telephone directory program from InfoUSA revealed that many blocks had very few phone numbers present.⁸ As such we added an additional selection criteria that a block must have at least seven phone numbers present in the PowerFinder data to be eligible for inclusion as a study site. Finally, a handful of segments were excluded for having problems such as extending beyond city limits, changing names before an intersection, having different names on each side of the street and so forth as these created issues with police jurisdiction and getting accurate crime data for these blocks.

Selection Process

After lists of eligible segments meeting the criteria above were compiled in each city the eligible sites were mapped in ArcView. These maps were used to manually select the “best” sites possible while enforcing the rule that all sites in the final sample must be isolated from each other by at least one full segment in every direction. Many segments were clustered together, as expected due to the well known fact of crime and disorder clustering in “hot spots” (Sherman and Weisburd, 1995) within cities. In such cases, every effort was made to retain the blocks with the highest number of crime and disorder calls for service, as these places would be the best candidates for a broken

⁸ In Redlands and Colton we were able to obtain an additional source of phone numbers from the cities’ water departments. This will be detailed further in the discussion of the data in chapter 5.

windows policing intervention. In the cases of two or more clustered blocks having similar levels of crime and disorder problems the number of phones present in the PowerFinder data was used as a tie breaker, due to the importance of being able to obtain survey responses from each block.

Once a final list of eligible segments in a city that met the one block buffer criterion was generated, members of the research team conducted site visits with a city police officer. These visits served two purposes. Firstly, they allowed sites that met the selection criteria but in actuality were not good sites for a broken windows style intervention or were not ideal for our survey to be weeded out. The former were sites where the officers did not feel there were enough problems to warrant the intervention and suggested and that the crime and disorder counts may have been inflated due to miscoding of events. In other words, in some cases the line officers' experiences led them to advise that some blocks were not problematic enough to warrant receiving a police crackdown on disorder. The latter issue involved street segments that only contained large chain businesses such as Target. These are problematic as piloting of the survey among businesses in a city removed from the study area revealed that these chain franchises largely have policies of not participating in any surveys. As such, blocks that only contain such businesses would likely be dropped from analyses anyway due to having no survey data (or very few responses). In such cases attempts were made to find replacement segments for the sites that were excluded for these reasons.

Secondly, the site visits allowed us to record the physical address ranges on each block, which proved invaluable in pulling our survey sample (see Chapter 5). Having outlined the selection criteria and process, the following section outlines the specifics of

the selection process in each of the three cities. The section will also present basic descriptive stats on the level of crime and disorder problem among the final sample of street segments in each city. The crime and disorder data presented below covers the period of July 1, 2006 through June 30, 2007.

Selection of Redlands' Study Sites

In Redlands there were 78 segments which met the initial eligibility criterion of having 10 or more disorder calls for service and three or more UCR part 1 crime calls in the prior year, as well as having seven or more phone numbers present in the PowerFinder data. These segments were mapped out in ArcView, and enforcing the one block buffer criterion as outlined above left 50 segments eligible for inclusion in the study. Site visits and further analysis led to the exclusion of 10 of these segments for reasons such as being flagged by the police as not being a problematic block, containing all or mostly chain stores, segments that changed names in the middle of the segment, and geocoding errors which led to one block being right on top of another site with higher crime problems, and segments containing only/mostly medical offices and/or hospitals.

The next step was to see if there were any replacements for these excluded segments among other eligible sites that were previously dropped during the enforcement of the one block buffer rule. Two replacements were gained, putting the sample at 42 segments. However, during further site visits it was realized that 14 of these 42 blocks contained less than 100 addresses. This was problematic as the initial phone number estimates in Redlands were obtained by counting all phone numbers in the PowerFinder database within 100 blocks as we were informed that most of the city was on the 100

block scheme (i.e. 100 E State Street should contain addresses ranging from 100-199). This caused problems as it was found that 14 of the included segments did not follow the 100 block scheme, and when using the actual address ranges obtained during the site visits to recount the number of phones it was found that seven of these 14 sites no longer met the threshold of having seven or more phone numbers present in the data. This dropped the sample from 42 to 35.

One replacement street segment dropped during the buffer phase of site selection was available with the removal of these seven sites, bringing the sample for the pre-intervention survey collection to 36 street segments in Redlands. Finally, after collecting the pre-intervention survey five sites were dropped for having fewer than three surveys collected (see next chapter for more on the survey collection process), and one segment with only three completed interviews was dropped to give a balanced design, leaving a final sample of 30 street segments in Redlands. This is well short of our initial goal of obtaining 60 segments in Redlands. This is because we were overly optimistic of how many segments would remain after the one block buffer criterion was enforced and we did not anticipate needing the minimum phone number threshold which cut the initial pool of eligible segments down. As will be seen, the same occurred in the other cities but we were still able to obtain a large enough sample to have sufficient statistical power for the experiment. This dissertation uses an individual-level analysis, so this is not a concern for the current analyses.

It is important to note that Redlands was the first city in which site selection was conducted. As such, our experience there led us to base the initial phone counts used to select segments which met the criteria of having seven or more numbers present in the

PowerFinder data in the other two cities on the address ranges in the ArcView street layer files provided by the city police departments. While these were still not completely accurate, they were much more precise than assuming a 100 block scheme on every street segment, and using these address ranges lessened the problem of overestimating phone number counts in Ontario and Colton. Table 4.1 below presents descriptive statistics on the levels of crime and disorder among the 30 Redlands' street segments in the final sample.

Table 4.1: Descriptive Statistics for Redlands Sample (N=30)

	Mean	Standard Deviation	Median	Minimum	Maximum
Disorder	25.87	17.20	19.00	10.00	80.00
Part 1 Crime	8.87	7.98	5.50	3.00	36.00

Selection of Ontario Study Sites

In Ontario, the largest of the three cities in the study, there were 197 street segments which met the initial selection criterion. Enforcing the one block buffers and removing a few problem segments (segments that changed street names, street segments that split in multiple directions and so forth) left 82 potentially eligible segments which received site visits. Seven sites were removed after the visits due to officer input and/or being places that only contained chain businesses. One segment was removed as the east side of the street was in the city of Chino, California. Finally three additional segments were removed as the actual address ranges were narrower than the ones in ArcView used to make the estimates of phone numbers present in the PowerFinder data. Using the actual, physical address ranges for these three segments dropped them below the minimum threshold of having seven or more phone numbers in the database. As such,

during this portion of the site selection process a total of 10 segments were lost and in Ontario there were no eligible replacements available.

Next, as with Redlands, we dropped sites with fewer than three completed pre-intervention telephone surveys, which removed an additional nine segments from the study. At this stage of the selection process an additional three street segments we also dropped as upon further discussion with the police these blocks did not appear to be ideal sites for a broken windows policing intervention. These three segments were not busy areas and police suspected that miscoding of calls may have led to their inclusion in the study. Thus the final sample in Ontario consists of 60 street segments, again falling short of under the initial goal of 80 street segments in Ontario. Table 4.2 below presents descriptive statistics on crime and disorder problems on these 60 street segments.

Table 4.2: Descriptive Statistics for Ontario Sample (N=60)

	Mean	Standard Deviation	Median	Minimum	Maximum
Disorder	35.80	25.54	24.00	10.00	109.00
Part 1 Crime	17.23	14.83	12.00	3.00	72.00

Selection of Colton Study Sites

In Colton, the smallest of the three cities in the study, there were 32 street segments that met the initial eligibility criteria. Enforcing the one block buffers and excluding the types of problem segments outlined above left 24 potentially eligible segments which then received site visits. Four segments were dropped after site visits for reasons such as having a different name on each side of the street or not having enough problems to warrant the intervention in the view of the police. There were no eligible replacements for any of these four segments, which left a sample of 20 segments in Colton, well short of the initial goal of 40. There were no segments with fewer than three

completed interviews in the pre-intervention survey in Colton, thus these 20 segments comprised the final sample. Table 4.3 below shows the descriptive stats for the final sample in Colton.

Table 4.3: Descriptive Statistics for Colton Sample (N=20)

	Mean	Standard Deviation	Median	Minimum	Maximum
Disorder	47.85	56.99	30.5	1	266
Part 1 Crime	12.75	16.68	6.5	3	78

The Overall Sample

The site selection process left us with an overall total of 110 street segments in the final sample across all three cities. For the current dissertation, data from respondents on all 110 blocks will be used in the individual-level analyses. These data provide a unique chance to test the theoretical propositions of the broken windows thesis. First, having a multi-site study adds variability to the sample. Second, another advantage is that within cities, there is a good deal of variation in the levels of crime and disorder across the final study blocks. This can be seen through the large standard deviations of crime and disorder in Tables 4.1-4.3.

In regards to city level demographics, the three cities in this study offer a good deal of differences in terms of size, demographics and their levels of crime and disorder. Table 4.4 compares the three cities side by side. As the information in Table 4.4 indicates, the three cities in this study differ on several elements—especially when comparing Redlands to the other two cities. While Redlands is the second largest city in terms of square miles, it is much less densely populated than the other two. Additionally, Redlands has a majority white population, while the other two cities are majority Hispanics of any race.

Also notable is that residents in Redlands are better off than those in the other two cities with a median income nearly \$3,000 greater than that in Ontario and over \$7,000 greater than the median income in Colton, which is the poorest of the study sites with 19.5 percent of it's population living below the poverty line. In terms of crime rates, overall the cities are fairly comparable. Redlands has a slightly lower violent crime rate than the other two cities, while Colton's property crime rate is slightly lower. Finally, in terms of the actual street segments in the study we see that Redlands has lower disorder and crime counts (based on median) compared to the other two cities. The Colton sites have the highest median amount of disorder, while the Ontario study sites have the highest median amount of part 1 crime.

Table 4.4: Comparing the Three Cities⁹

	Redlands	Ontario	Colton
Population	70,145	171,186	51,723
Square Miles	36	50	16
Population Density¹⁰	1,948.47	3,423.72	3,232.68
Median Income	\$48,155	\$42,452	\$35,777
Percent Below Poverty Line	10.5%	15.5%	19.6%
Percent White	73.7%	47.8%	42.7%
Percent Hispanic (any race)	24.1%	59.9%	60.7%
Percent Black	4.3%	7.5%	11.0%
2005 UCR Part 1 Violent Crime Rate (per 100,000)	441.94	505.88	516.21
2005 UCR Part 1 Property Crime Rate (per 100,000)	3990.31	3939.57	3752.68
Median Crime per Study Segment	5.5	12	6.5
Median Disorder per Study Segment	19	24	30.5

⁹ Population and 2005 Part 1 offenses are from the 2005 Uniform Crime Report. Median Income, Percent below Poverty Line and the Race variables are from the 2000 Census. The Crime and Disorder means are from the street-segment level data provided by the Redlands, Ontario and Colton Police Departments.

¹⁰ Population Density is simply the cities population divided by its square mileage.

In sum, the final sample of 110 segments across three cities offer a unique chance to test the assumptions of the broken windows theory at the micro-place level. The multiple city design, as well as the variation in levels of crime and disorder problems among segments within each city will provide for a powerful test of the relationships between perceived disorder, fear of crime, collective efficacy and perceived crime which are central to the broken windows theory.

The Overall Sample and Issues of Bias

As outlined above, the sampling process led to a final sample of 110 street segments across the three cities which vary greatly in levels of crime and disorder. It is important to note that this is not a random sample, but rather a systematic sample designed to gain the largest possible number of sites in these three cities which contained sufficient crime and disorder problems to warrant receiving the broken windows policing intervention during the original study. The pool of eligible segments were selected on the thresholds listed above (10+ disorders, 3+ part 1 crimes and 7+ total phones) and the final sample was selected by systematically selecting the highest disorder and crime segments when enforcing the one segment buffer rule to prevent treatment contamination.

As such, this sample cannot be viewed as representative of all areas in these cities. Rather it can be viewed as representative of all areas with relatively high disorder and crime problems in these cities. While having a more representative sample is desirable, this is not a major weakness for the current study. For instance, testing the impacts of perceived disorder on fear of crime and collective efficacy requires having a sample of people who live in areas in which there is disorder present. As noted, all street segments

in this sample have a minimum of 10 disorder calls for service in the past year and a maximum of 266. Thus the sample of segments selected largely on their level of disorder may be viewed as an appropriate sample for testing the impacts of perceptions of disorder on other key variables in the broken windows thesis.

Another issue with the sampling that is important to look at is whether enforcing the buffer rule left a sample representative of the initial pool of segments which met the selection criteria. It is possible, for instance, that selecting based on disorder and crime levels when enforcing the one block buffer rule may have resulted in getting just the “worst of the worst” from the initial pool. However, this should be limited by the fact that many of the lower disorder segments in the initial pool were more isolated and thus were likely to stay in the sample simply because there were no other eligible segments within a few blocks of them. High disorder segments tended to be more clustered and thus were more likely to be left out of the final sample. Thus while the final sample is likely to exhibit higher levels of crime and disorder compared to sites excluded while enforcing the buffer rule, the differences should not be of great concern. Table 4.5 below compares the crime and disorder levels in the final sample to those in the segments from the initial pool that were excluded from the final sample.

Table 4.5: Comparing the Final Sample (N=110) to the Excluded Eligible Street Segments (N=197)

	Final Sample Mean	Excluded Segments Mean	Mean Difference	T-Statistic (p-value)
Disorder	35.28	27.60	7.68	2.51 (.013)*
Part I Crime	14.14	11.77	2.37	1.40 (.162)

* = significant at the .05 level

** = significant at the .01 level

The descriptive statistics presented in Table 4.5 fit the expectations outlined above. Overall, the sites in the final sample have higher levels of disorder and crime

problems due to the nature of the selection process which favored street segments with higher levels of these problems. The difference in disorder is statistically significant, while the difference in crime is not. However, the differences are not enormous, especially when looking at the median rather than the means. The final sample's median disorder is 4.00 higher than the eligible segments that were left out, while its median for part 1 crimes is 1.50 higher. As such, the final sample can be viewed as fairly representative of the population of street segments with crime and disorder problems in these three cities. However, when interpreting the findings of this dissertation, it is nevertheless important to keep in mind that it is a sample of high disorder and crime street segments in three cities, and thus the findings are not generalizable to all blocks in these cities.

Summary

In sum, the sample selection process led to final sample of 110 segments with disorder and crime problems across three cities that vary a good deal in size and demographics. This variation, along with the micro-level unit of analysis allows for a unique opportunity to test the relationships between disorder, fear, collective efficacy and crime hypothesized by the broken windows thesis. The only caveat of the sample is that the study design of the Broken Windows Policing Experiment required a sampling of high crime and disorder street segments, rather than a random sample of segments in the three cities. As such, the findings of this dissertation should only be generalized to areas with sufficient levels of disorder and crime problems. This is not a major drawback as the broken windows model can be viewed as most applicable in areas with at least some

minimal level of disorder and crime. As such, the study sites from the Broken Windows Policing Experiment may be viewed as an appropriate context for testing the theoretical propositions of the broken windows hypothesis.

CHAPTER 5- DATA COLLECTION METHODOLOGY

As noted earlier, this dissertation uses data collected during the San Bernardino Valley Broken Windows Experiment to test the broken windows thesis. The data source used in this study is a survey that was given to residents and business owners/managers/supervisors or who lived or worked on the study blocks. This dissertation uses the first wave of the survey which was administered in the three months prior to the beginning of the broken windows policing intervention. This chapter will outline the data collection methodology for the survey, and detail how these data are used in this dissertation.

Resident and Business Survey Data Collection Methodology

The data used in this dissertation come from telephone surveys collected during the broken windows policing experiment. Responses from both residential and business addresses during the pre-intervention surveys will be used in this dissertation as the broken windows thesis is relevant for both groups. The thesis argues that untended disorder in a community increases perceptions of disorder which leads to fear of crime and eventually undermines informal social control and allows crime to flourish. Informal social control may be exercised by any regular actors in a community, including both people who live there and people who work there and/or own or manage businesses in the community. As such, it is not expected that models would differ by whether the respondents were business owners/managers or residences of the blocks. However, to be thorough, differences across these groups will be examined by estimating models on subsets of the data and assessing whether there are any important differences.

Data from the pre-intervention survey is used to create measures of perceived social and physical disorder, fear of crime, collective efficacy, and perceptions of crime. Demographic information on race, gender and whether the respondent was a resident or worked in a business on a study block were also created from this data and will be used to create data subsets to allow separate group models to be ran to test whether findings differ across these dimensions. The pre-intervention household survey instrument is included in Appendix A; the business survey is not presented to save space as all the questions relevant to the current study are included in identical formats in both surveys. Below I describe the methodology for selecting the survey sample and collecting the telephone surveys, and then detail how latent variables were created from this dataset.

Survey Sampling Methodology

The survey design called for interviewing both residential and commercial addresses. For residential addresses the first person over 18 in a household willing to participate in the survey was interviewed, while for businesses the owner/manager was asked for. If the owner/manager was never around, the interviewers asked to speak with the person on site who was in charge of day-to-day operations. The experiment used the street segment as the unit of analysis, and it was important to have a sufficient sample within each block. The initial goal of the broken windows policing experiment was to obtain 10 completed surveys per street segment in the study. As will be detailed below, it proved impossible to obtain 10 responses on every block, and the study ended up settling on a criterion of three or more responses per block in the study. As noted in the last chapter, at the end of the phone survey segments with fewer than three responses were

dropped, and those with three or four responses were brought up to five through door-to-door surveying on this handful of blocks, with the exception of two street segments which remained at three completed surveys but were decided to be kept in the study. It is important to recall that this dissertation uses an individual-level analysis, so this issue is less of a concern for the current study. Below I detail how the survey sample was selected and collected.

The initial sample for the telephone survey was pulled from the PowerFinder software provided by InfoUSA. This software is an extensive reverse telephone directory, and it allowed us to pull out all the phone numbers present in the data for our study street segments by selecting all addresses that were within the address ranges for these blocks. All cases on every segment were then exported into a database—with one file for each of the 110 street segments. Again, this included both residential numbers and business numbers in our sample. This file was then randomly sorted in SPSS and the first 30 cases were to be the initial, released sample for the survey on each segment. However, we discovered that on many segments we had far fewer than 10 phone numbers present in the data, which would obviously make it impossible to reach our initial goal of 10 completed surveys per block. This led us to seek out an additional source of phone numbers to sample, in the hopes that we could obtain some addresses on these street segments which were not included in the PowerFinder database.

One of the police chiefs recommended getting a list of phone numbers between our address ranges from the city water departments. We choose to pursue this route, and did obtain data from the water departments in Redlands and Colton. However, obtaining this data took longer than expected, and we were forced to start collecting surveys in

Redlands before acquiring the water data, to avoid further delaying the start date of the broken windows policing program. This complicated our sampling strategy in Redlands as we could no longer just randomly take the first 30 cases on each block—ideally we would have first merged the water data and the PowerFinder data to create a database containing all the unique phone numbers from each source. Then we could have simply randomly sorted the file and released the first 30 cases on each street segment into the initial sample. As this was not an option, we used the following strategy in Redlands to approximate a random sample from both data sources.

1. We released the first 12 cases on each segment in Redlands from the randomly sorted PowerFinder files for each segment to allow the survey to get started in order to avoid having to delay the start of the police intervention.
2. Once we obtained the water data, we used the following strategy to attempt to approximate a random sample from both sources. The goal was to get the final sample to closely resemble what we would have randomly obtained if we had been able to combine the two data sources together at the outset and pull 30 cases at random from the full database.
 - a. The first step was to pull an equal percentage of cases from the water data by randomly selecting the same percentage we had pulled from the PowerFinder data in step 1. For instance, if a block had 24 numbers present in the PowerFinder data, taking 12 of them in step 1 meant we took 50 percent of that data for the initial sample. As such, we would then take 50 percent of the unique numbers from the water data on that sample, and add it to the 12 cases already released into the sample from the PowerFinder data. For example, if there were 10 cases in the water data for this block, we randomly selected five cases and added them to the released sample, putting the releases sample for that street segment up to 17 cases total.
 - b. The next step was to fill out the initial sample to the maximum of 30 per block. In the above example, the sample sits at 17 cases—12 from the PowerFinder data, and the five from the water data. To get the additional 13 cases needed to fill out the sample for this segment, we combined the remaining PowerFinder and water data into one database, randomly sorted it and released the first 13 cases. If less than 13 cases had been available, randomization would not have been required as all cases would be released into the sample.

c. Finally, any remaining sample was saved in a reserve file, and these cases were to be released into the sample if the full 10 responses were not obtained from the 30 cases initially released.

While this is a complicated sampling strategy, we felt it was the best way to get as close as possible to a random sample from the PowerFinder and water databases in Redlands where we could not afford to wait until both data sources were in hand before beginning the survey. In Colton, we were able to wait on obtaining the water data and thus were able to merge the two data sources and simply randomly sort them and take the first 30 cases for each segment (or all cases for segments that had less than 30 cases total). In Ontario, we never obtained data from the water department, so we simply randomly sorted the PowerFinder data to take up to the first 30 cases, with the rest going in reserve files. This was not a major limitation as Ontario is much larger and more densely populated (see Chapter 4) than the other two cities so we had many fewer problems with lack of phone numbers in the PowerFinder data compared to the other two cities.

The telephone surveys were collected by a team of undergraduate and graduate students at California State University-San Bernardino. The interviewers were trained by members of the research team, and were supervised by Dr. Christine Famega, who served as Project Field Supervisor for the Broken Windows Policing experiment. Eligible respondents were defined as the first person in a household over the age of 18 to agree to participate in the survey. For businesses the interviewers asked to speak to the owner or manager who was most often on the premises and responsible for supervising the day-to-day operations of the establishment. The pre-intervention telephone surveys began in early March 2008, and ran through early June 2008. As noted in the last chapter, at this

point all segments with fewer than three completed surveys were dropped from the study. A handful of blocks had three or four completed surveys and door-to-door interviews were done in early June to get all of these blocks up to five or more responses. As mentioned above, this goal was achieved on all but two street segments which remained with only three completed surveys. The door-to-door interviews completed the pre-intervention survey period, and the police intervention began on June 16, 2008. Overall a total of 836 responses were obtained on the final 110 street segments. Of these 836 completed surveys, 489 (58.5 percent) were residential surveys and 347 (41.5 percent) were business surveys. The 836 surveys accounted for a response rate of 38.4 percent for the pre-intervention surveys. A cooperation rate, which represented the ratio of completed surveys in sampled households where a member of the interview team spoke directly to a person and were refused or unable to complete the survey is 46.1 percent.¹¹

This cooperation rate, while lower than optimal, falls in the middle of the range for response/cooperation rates for recent telephone surveys in the research on fear of crime. Specifically, a study using random digit dialing in the state of Kentucky had a response rate of 27.5% (Rader, May & Goodrum, 2007), a study of fear in Dallas neighborhoods had a response rate of 33.4% (Ferguson and Mindel, 2007), Xu et al. 2005's study mentioned before had a rate of 60%, and a study in Philadelphia had a response rate of 77% (Wyant, 2008). It is worth noting that the Xu et al. data was collected by a police department (and respondents may be less likely to refuse a survey

¹¹ The cooperation rate excludes cases that were coded as chronic no answer/busy/answering machine (n=307) and cases where there was a language (not an English or Spanish speaker) or cognitive barrier (N=59) from the denominator. The cooperation rate may be higher as 755 cases which were not completed surveys were coded as "other" as the final code and given a note on why they were not completed. On going data cleaning efforts may identify some of these to be cases in which the interviewers never spoke to directly someone in that household which would thus decrease the denominator and increase the cooperation rate.

collected directly by the police) and the Wyant study involved a \$10 monetary reward for respondents to encourage participation. In sum, the cooperation rate of 46.1% is relatively typical for recent phone surveys in the age of telemarketing, people screening their calls and people switching to only having unlisted cell phones and not having landlines.

The Final Sample

The final sample size for analysis is 773 cases. The drop from the 836 total completed surveys was due to dropping cases with missing values on gender and race, as well as cases that were missing over 20% of data points. Remaining missing data was imputed using EM imputation in SPSS. With missing data, there is no perfect solution, but with a decent amount of missing data, it is generally preferable to impute missing values, as opposed to using listwise deletion, particularly with SEM analyses (see Enders, 2006). Complete case analysis has been shown to produce biased estimates (see Brame & Paternoster, 2003). A missing value analysis and full details on the imputation process are provided in Appendix B. Overall, as shown in Table 5.1 below, the final sample was 58% female, 69% non-white and 60% of respondents were residents of the block (vs. 40% who worked on the block and received the business survey). As noted above in this chapter (and in Chapter 3) there is no theoretical reason to expect these demographic variables to mediate or moderate any of the relationships between disorder, fear of crime, collective efficacy and crime, but separate group models will be ran to allow for an examination of whether structural relation estimates vary across groups.

Table 5.1: Descriptive Statistics for Demographic Variables

Variable	Mean	Std. Deviation	Min	Max
Business Respondent	.40	.49	0	1
Female	.58	.49	0	1
White	.31	.46	0	1
Black	.07	.25	0	1
Asian	.04	.21	0	1
Hispanic	.53	.50	0	1
Other Race	.05	.21	0	1

Creation of Variables

This section will outline how variables were created. As noted in Chapter 3, the analyses in this dissertation will use a latent variable approach rather than scale variables for measuring perceived social and physical disorder, fear, collective efficacy and perceived crime. As such, no descriptive statistics are available for these variables as they are not directly observed. Table 5.2 at the end of this chapter presents descriptive statistics on the individual items used to make up these factors. For the factors themselves, the final models from confirmatory factor analyses (CFA) conducted in LISREL are presented. Principle component analyses were conducted in SPSS beforehand to ensure that the items used, and the number of factors extracted in the CFA models below, were appropriate. These principle component results are not presented, and all supported the structure of the CFA models presented below. The CFA analyses' modification indices were used to identify correlated error variances of observed items which needed added to the model. Additions were only made if it made sense that the items in question should be correlated.

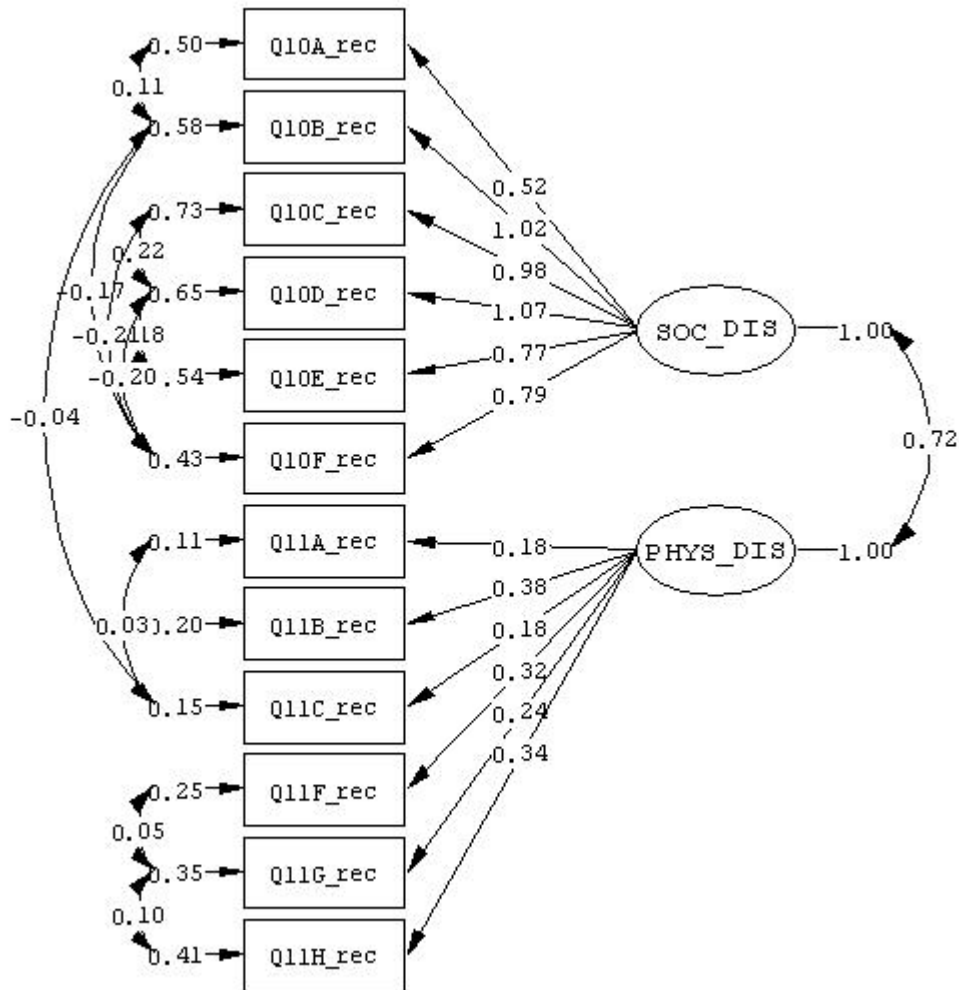
Perceived Disorder

As noted earlier, rather than having an omnibus measure of perceived disorder it was decided at the outset to include separate factors for perceptions of social and physical disorder (see Skogan, 1990) as recent studies have found differential impacts of the two types of disorder on crime (see St. Jean, 2007; Yang, 2007). The two-factor CFA results are presented in Figure 5.1 below. The perceived social disorder factor contains a series of items on the survey which asked residents to report how often various types of social disorder occurred on their block (see Question 10 in Appendix A). The question was collected as an ordinal variable with response options of: “once month or less,” “a few times a month,” “a few times a week,” “everyday,” or “not at all.” Items capturing the following social disorders were included: fist fights, loitering, public drinking, public intoxication, panhandling, and vandalism. Items were recoded from the survey so that the variable ranged from zero for “not at all” to four for “everyday.”

The perceived physical disorder was created in a similar manner by including responses to the items in question 11 in the attached survey which asked respondents to indicate the prevalence of various physical conditions on their block. They were given response options of “none,” “a few” or “many” to indicate the prevalence of these physical disorder problems. The items include: homes or buildings with broken windows, graffiti, abandoned or boarded up homes, litter, street or sidewalk in need of repair and areas in need of better lighting. Similar to the social disorder measure, the items were recoded to range from zero for “none” up to two for “many.”

The two-factor CFA model for disorder is shown in Figure 5.1 below. Model fit is good with an RMSEA of .030.¹² The other fit statistics provided also indicate good model fit.

Figure 5.1: Two Factor CFA of Perceived Disorder



N=773; df=43
 SRMR=.028; RMSEA= .030; CFI= .99

¹² An RMSEA of less than or equal to .06 is defined as good model fit. For the other reported fit statistics, the cut offs for good fit are SRMR≤.08 and CFI≥.95 (see Hu and Bentler, 1999).

Fear of Crime

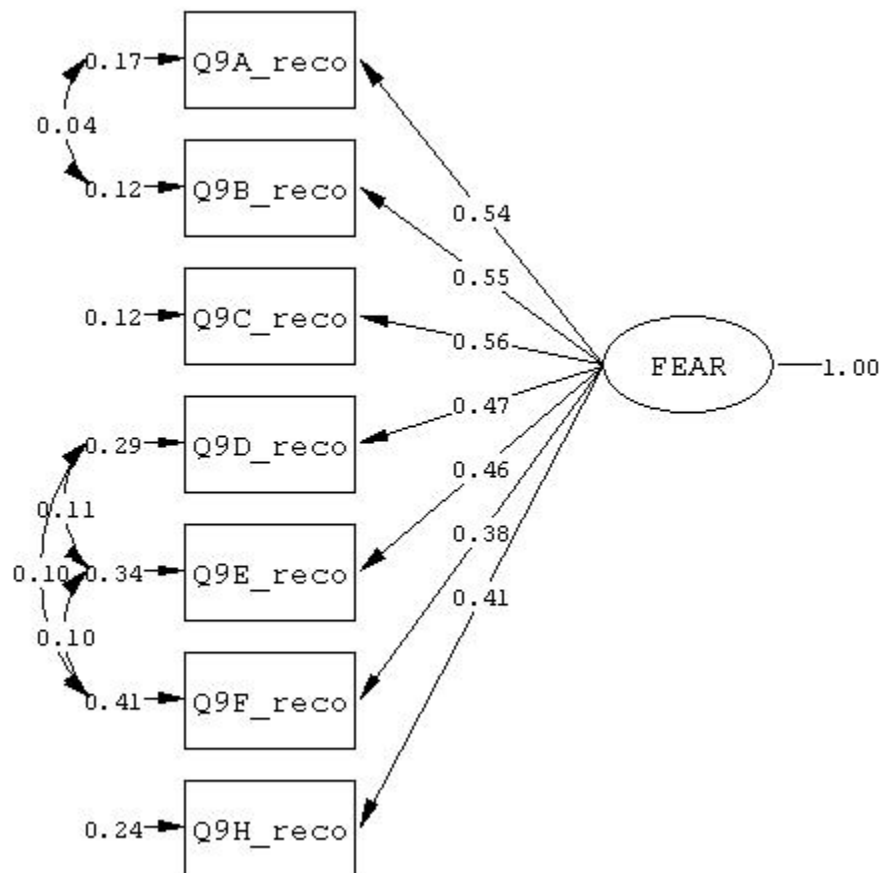
Measuring fear of crime is much trickier. In the past, the standard fear of crime question was to ask how safe respondents felt walking outside by themselves at night (or sometimes in the day as well). However, this question has come under attack in recent years, with critics arguing that it is a poor measure of fear of crime. Some have argued that this question taps more into perceptions of risk than fear of crime, and as such may overstate actual levels of fear (Farrall, 2004; Farrall & Gadd, 2004; Ferraro, 1995). They suggest, instead, that fear of crime measures should tap into the emotional response to crime. This work also suggests that it may be more beneficial to also measure the frequency people feel afraid of crime as well as the magnitude of this fear if we are to really understand this issue.

However, for this dissertation, a perceived risk measure is viewed as appropriate in a study of the broken windows thesis as a reading of broken windows literature implies that fear of crime is related to individuals' concerns about becoming victims of crime in their neighborhood that arise in response to signs of untended disorder in their neighborhood. Rather than using the simple question of how safe respondents feel at night, the current study uses a scale of perceived risk created from question nine in the attached survey which asks respondents how likely they feel they will be victims of a series of crimes in the next six months. This issue of how fear of crime can best be conceptualized is an important one. However, addressing it is beyond the scope of this dissertation.¹³

¹³ The pre-intervention survey for the Broken Windows Policing experiment did include alternate measures of fear of crime (see questions 6, 7 and 8), and it is planned to explore this issue in a future work examining whether different measures of fear/perceived risk lead to different substantive findings for the broken

For simplicity's sake, this variable will be referred to as fear of crime in this dissertation. The fear of crime factor was created by including responses to all of the items in question 9¹⁴ in the attached survey (see Appendix A) with the exception of 9G which related to sexual assault. This was excluded as it is a gender specific question and thus could bias combined results as it is unlikely that men will report a high likelihood of becoming victims of sexual assault. The CFA analysis for fear is presented in figure 5.2 below. Model fit is good with a RMSEA of .031

Figure 5.2: One Factor CFA of Fear of Crime



N=773; df=10
 SRMR=.014; RMSEA= .031; CFI= 1.00

windows hypothesis. However, the items described above were deemed most appropriate for use in the analyses of this dissertation.

¹⁴ The measurement for this item was based in part on an earlier study by Mark Warr (1984).

Collective Efficacy

Given the goal of the current study is to not only shed light on the broken windows hypothesis, but to also examine in part the debate between Sampson and Raudenbush (1999) and supporters of the broken windows thesis (Bratton and Kelling, 2006), it was key to have a measure of collective efficacy. In particular, it was crucial to have a measure consistent with Sampson and Raudenbush's conceptualization of collective efficacy. As such, the collective efficacy measures were modeled directly after those used in Sampson and Raudenbush's study, with the wording altered to refer to the respondent's block rather than their neighborhood given the unit of analysis in the Broken Windows Policing Experiment. In addition to being consistent with the Sampson and Raudenbush (1999) measure, the questions used also represent adequate measures of collective efficacy as defined earlier. As outlined in Chapter 2 the two main components of collective efficacy are social cohesion and willingness to intervene for the common good and the questions used to measure collective efficacy tap directly into these two phenomena.

The items used to make up the collective efficacy factor are represented in questions 3 and 4 in the attached survey. Question 3 measures social cohesion/trust, while question 4 is a measure of shared expectations for informal social control which asks respondents how likely it was that their neighbors would intervene in various situations. Questions 3a, 3b and 3c were recoded so that "1" corresponded to a response of "strongly disagree" and "4" to a response of "strongly agree" so that higher numbers corresponded to higher levels of trust/cohesion. Questions 3d and 3e (which were included in Sampson and Raudenbush's 1999 scale) had large problems with missing

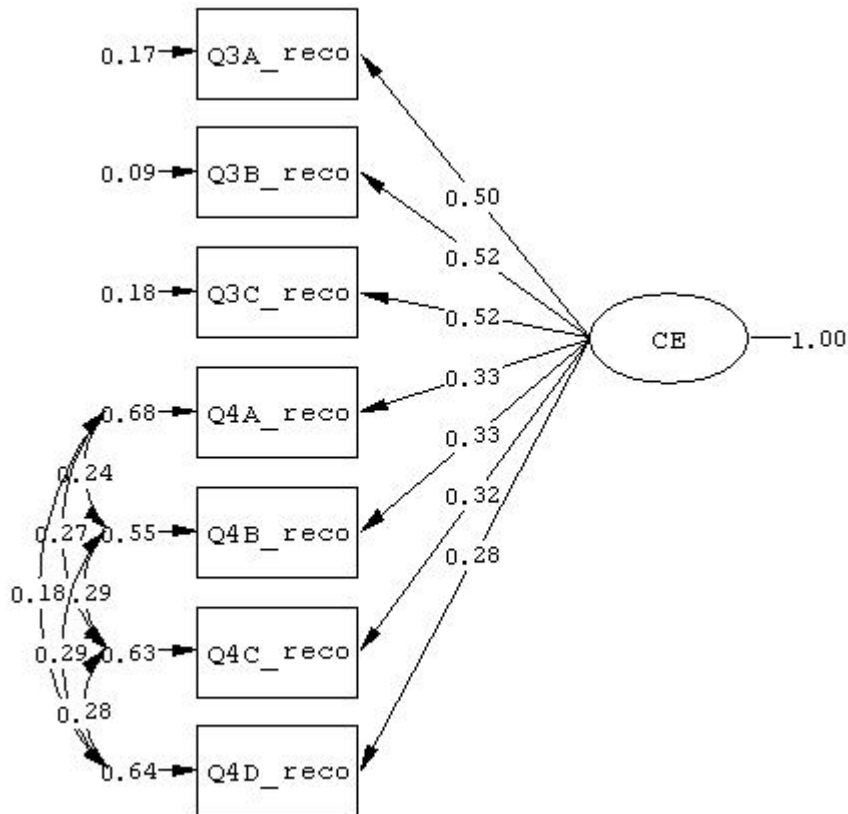
values in the form of “I don’t know” responses and were thus dropped from the analysis.

See the missing value analysis in Appendix B for a full discussion of this issue.

Questions 4a through 4d were reverse coded so that higher numbers indicated higher expectations for informal social control.

These items are combined into a single factor to create a measure of collective efficacy in line with the definition presented by Sampson and colleagues in 1997. The CFA for this factor is presented in Figure 5.3 below. Model fit is good with an RMSEA of .021.

Figure 5.3: One Factor CFA of Collective Efficacy

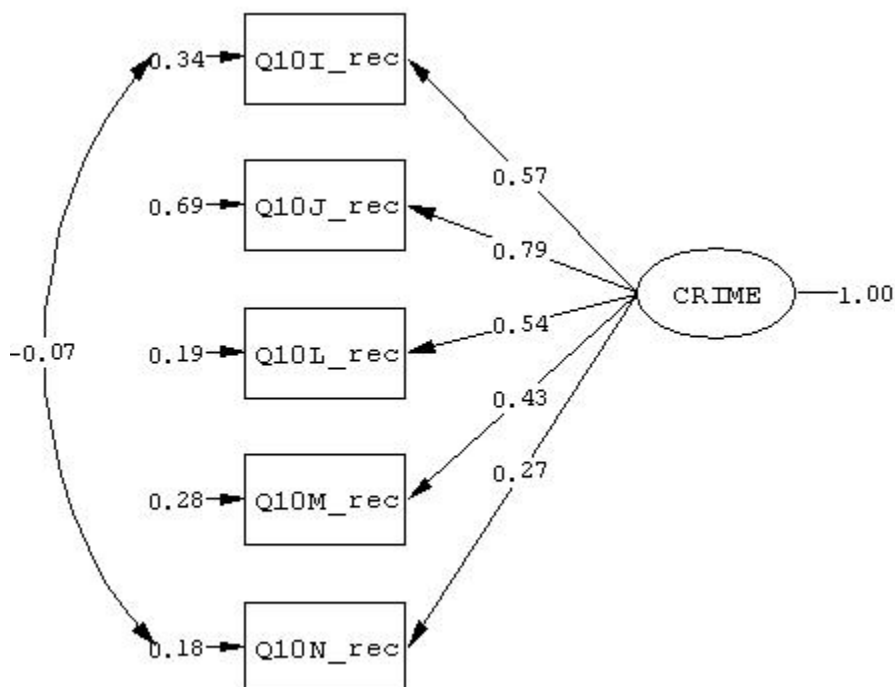


N=773; df=8
SRMR=.013 RMSEA= .021; CFI= 1.00

Perceptions of Crime

Residents' perceptions of crime were created using responses to the crime-related items in question 10 in the survey (see Appendix A). Specifically the questions relating to breaking into cars, selling drugs, burglary, robbery, and shooting guns in public were used. The CFA model of perceived crime is presented in Figure 5.4 below. Model fit is acceptable with a RMSEA of .041.

Figure 5.4: One Factor CFA of Perceived Crime



N=773; df=4
SRMR=.017; RMSEA= .041; CFI= 1.00

Summary

As outlined above, the current dissertation uses a wealth of data collected during the Broken Windows Policing Experiment to examine the key theoretical propositions of the broken windows thesis. These data will be used in a host of structural equation models designed to test the relationships between perceptions of disorder, fear of crime,

collective efficacy and perceptions of crime at the individual level. These analyses will improve our knowledge of the empirical validity of a series of theoretical propositions that have had a tremendous impact on police policy and practice over the past quarter of a century.

Table 5.2: Descriptive Statistics for Survey Items that Make up Factors¹⁵

Item	Mean	Std. Deviation	Min	Max
Q3A_recoded	2.85	.644	1	4
Q3B_recoded	2.88	.600	1	4
Q3C_recoded	2.74	.675	1	4
Q4A_recoded	2.63	.893	1	4
Q4B_recoded	3.17	.815	1	4
Q4C_recoded	2.82	.855	1	4
Q4D_recoded	3.07	.846	1	4
Q9A_recoded	2.12	.683	1	4
Q9B_recoded	2.09	.651	1	4
Q9C_recoded	2.14	.660	1	4
Q9D_recoded	2.24	.715	1	4
Q9E_recoded	2.32	.739	1	4
Q9F_recoded	2.43	.740	1	4
Q9H_recoded	1.88	.633	1	4
Q10A_recoded	.53	.882	0	4
Q10B_recoded	.94	1.278	0	4
Q10C_recoded	.96	1.298	0	4
Q10D_recoded	.96	1.347	0	4
Q10E_recoded	1.06	1.459	0	4
Q10F_recoded	.66	1.029	0	4
Q10I_recoded	.51	.815	0	4
Q10J_recoded	.60	1.150	0	4
Q10L_recoded	.31	.692	0	4
Q10M_recoded	.28	.682	0	4
Q10N_recoded	.17	.501	0	4
Q11A_recoded	.14	.371	0	2
Q11B_recoded	.41	.584	0	2
Q11C_recoded	.19	.430	0	2
Q11F_recoded	.34	.590	0	2
Q11G_recoded	.41	.639	0	2
Q11H_recoded	.59	.727	0	2

¹⁵ See the survey instrument in Appendix A for the questions these items represent. All were recoded as outlined in the text above.

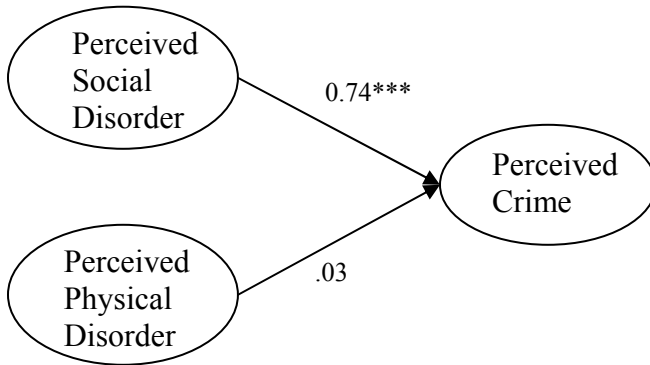
CHAPTER 6- FINDINGS

Having outlined the methodology of the current dissertation, this chapter now presents the results from SEM models testing the theoretical propositions of the broken windows thesis outlined in the conceptual models presented in Chapter 3. The main analyses are individual-level models testing the relationships between perceptions of disorder, fear of crime, collective efficacy and perceptions of crime suggested by the broken windows thesis. All models in these analyses use latent variable path analysis estimated in LISREL 8.80. The latent factors in the models were outlined in the previous chapter.

Latent Variable Path Analyses

As noted in the preceding chapter, the data comes from the 836 respondents who completed the pre-intervention resident interview survey from the San Bernardino Valley Broken Windows Policing Experiment, with a final sample of 773 after the missing value analysis (see Appendix B). With SEM analyses the first step is to run a measurement model. This simply combines all the CFA analyses (see Chapter 5) into one model where all the latent factors are allowed to co-vary, but no structural relations between factors are included. This is to ensure that in a combined model the latent factor structure produces an acceptable overall model fit. In the present data, the measurement model did indeed produce acceptable fit (SRMR=.067; RMSEA=.046, CFI=.97). The structural models begin by testing the simple relationship between perceptions of disorder and crime as depicted in Figure 6.1 and Table 6.1. All estimates are standardized, as the latent factors themselves were standardized in the CFA analyses presented in chapter 5.

Figure 6.1: Model 1-Perceived Disorder and Perceived Crime



* = $p < .05$; **= $p < .01$; ***= $p < .001$; $N=773$; $df=105$
 SRMR=.038; RMSEA=.046; CFI=.98

Table 6.1: Estimates (standard errors) and z-statistics for Model 1

Endogenous Variables	Exogenous Variables	
	Perceived Social Disorder	Perceived Physical Disorder
Perceived Crime	.74*** (.070) z=10.53	.032 (.049) z=0.47

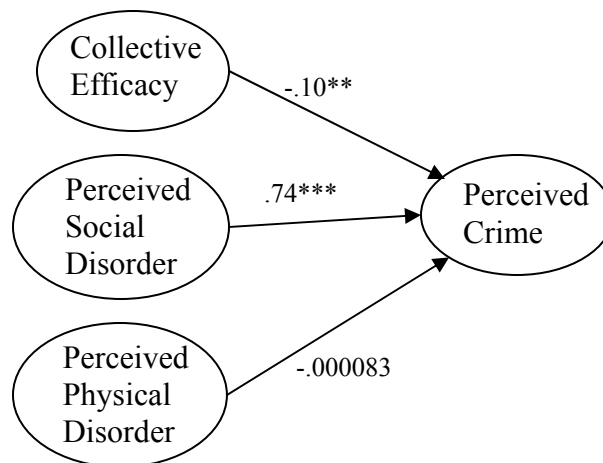
*= $p < .05$; **= $p < .01$. ***= $p < .001$

The results of Model 1 depicted in Figure and Table 6.1 show that perceived social disorder has a strong, positive relation to perceptions of crime, while perceived physical disorder is unrelated to perceived crime in this data. This is consistent with recent research that has challenged the existence of a direct link between physical disorder and crime (St. Jean, 2007; Yang, 2007). Model fit is fairly good with an RMSEA of .046.¹⁶ Thus the results are consistent with Sampson and Raudenbush’s (1999) finding that disorder was related to crime in a simple model using systematic social observations of disorder and official crime data. Recall that they then found that when collective efficacy was added to the model the relationship between disorder and crime was rendered non-significant. The model tested below examines whether this

¹⁶ An RMSEA of less than or equal to .06 is defined as good model fit. For the other reported fit statistics, the cut offs for good fit are $SRMR \leq .08$ and $CFI \geq .95$ (see Hu and Bentler, 1999).

finding is reproduced in the current data. It is important to keep in mind that this is not a replication of their analysis, as their work used measured variable regression and path analysis with aggregate census tract data and included a host of social disorganization variables in addition to their collective efficacy scale, as well as using measures of observed disorder and official crime data. This analysis can only assess whether their findings are reproduced in an individual-level, latent variable approach only examining perceptual measures of disorder and crime.

Figure 6.2: Model 2-Perceived Disorder, Collective Efficacy and Perceived Crime



* = $p < .05$; ** $p < .01$; *** $p < .001$; $n=773$; $df=229$
 SRMR=.051; RMSEA=.042; CFI=.98

Table 6.2: Estimates (standard errors) and z-statistics for Model 2

Endogenous Variables	Exogenous Variables		
	Perceived Social Disorder	Perceived Physical Disorder	Collective Efficacy
Perceived Crime	.74*** (0.069) z=10.61	.000083 (.070) z=-.012	-.097** (.037) z=-2.63

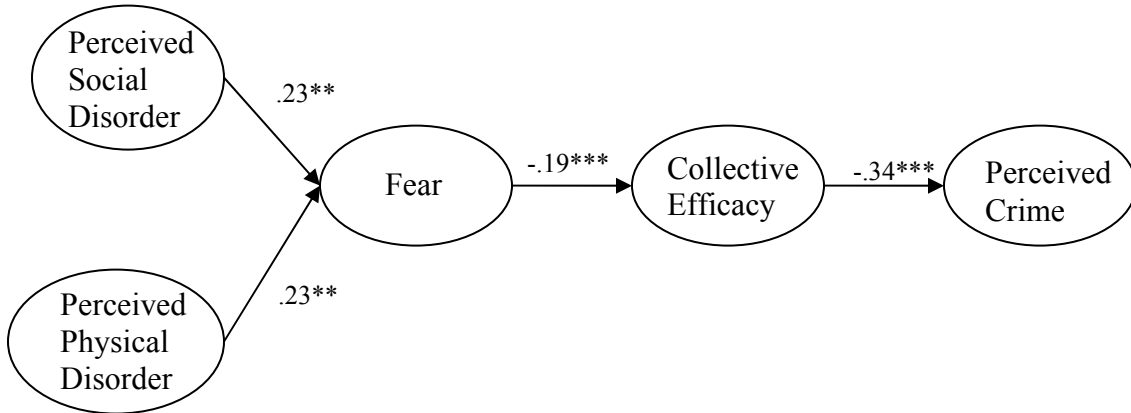
*= $p < .05$; **= $p < .01$. ***= $p < .001$

The results from Model 2 show that collective efficacy is significantly and negatively related to perceived crime. However, adding it to the model had no impact on the direct effect of perceived social disorder on perceptions of crime. Again, this should

not be viewed as a large challenge to Sampson and Raudenbush's (1999) findings, given the differences in the data and analyses. However, the findings do suggest that when looking at individual perceptions of disorder, collective efficacy and crime, social disorder has a strong impact on reports of crime irrespective of collective efficacy, while collective efficacy is negatively related to reports of crime as would be expected by the theory. The findings are consistent with those of Xu et al. (2005) who similarly found that disorder remained related to perceptions of crime after controlling for collective efficacy in their analyses.

However, as noted in chapter 2, a key drawback of this general form of the broken windows model tested by Sampson and Raudenbush (1999) is that it neglects the indirect paths from disorder to crime by failing to even include fear of crime, a key variable in the broken windows thesis, in the model. Model 3A, presented below in Figure and Table 6.3, adds fear of crime for the model and tests the broken windows thesis' hypothesis that perceptions of disorder increases fear of crime, which in turn weakens collective efficacy which can lead to crime (measured here as residence perceptions of crime on their blocks).

Figure 6.3: Model 3A- Perceived Disorder, Fear of Crime, Collective Efficacy and Perceived Crime



* =p <.05; **p <.01; ***p <.001; n=773; df=408
 SRMR=.13; RMSEA=.058; CFI=.95

Table 6.3: Estimates (standard errors) and z-statistics for Model 3A

Endogenous Variables	Exogenous Variables			
	Perceived Social Disorder	Perceived Physical Disorder	Fear	Collective Efficacy
Fear	0.23** (.071) z=3.19	0.23** (.078) z=2.98		
Collective Efficacy			-0.19***(.041) z=-4.69	
Perceived Crime				-0.34*** (.044) z=-7.62

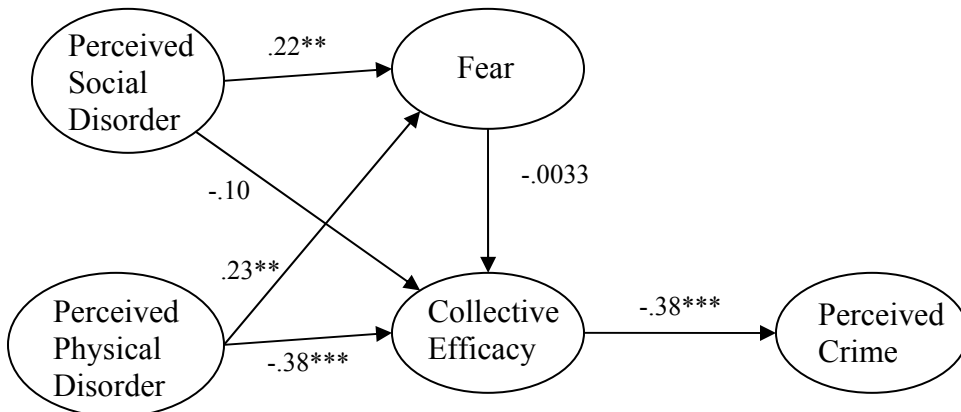
*=p<.05; **=p<.01. ***=p<.001

The findings from Model 3A are consistent with the expectations of the broken windows thesis. Perceptions of social and physical disorder increase fear of crime, and in turn fear of crime reduces collective efficacy. Lastly, collective efficacy is negatively related to perceptions of crime. Thus perceived disorder appears to be indirectly related to perceptions of crime by increasing fear and reducing the levels of collective efficacy in the community. Additionally, while perceptions of physical disorder were not directly related to perceived crime in the prior analyses, this model shows that perceived physical

disorder may have an indirect effect on perceptions of crime through increasing fear. In regards to model fit, model 3 is borderline. The RMSEA and CFI come in right around the .06 and .95 cutoffs respectively, while the SRMR is a good bit above the .08 cutoff (see Hu and Bentler, 1999).

As such, the model may be overly simplistic. As outlined in chapter 3, it is possible that perceptions of disorder may have indirect effects on perceived crime not only through increased fear, but perhaps by also directly reducing levels of collective efficacy. For instance, people who perceive higher levels of disorder may think their neighborhood is not close knit or that their neighbors are unlikely to intervene irrespective of their levels of fear. This is tested in Model 3B below which adds direct paths from perceived social and physical disorder to collective efficacy.

Figure 6.4: Model 3B-Perceived Disorder, Fear of Crime, Collective Efficacy and Perceived Crime—with Direct Effect of Perceived Disorder on Collective Efficacy



* = $p < .05$; ** $p < .01$; *** $p < .001$; $n=773$; $df=406$
 SRMR=.11; RMSEA=.056; CFI=.96

Table 6.4: Estimates (standard errors) and z-statistics for Model 3B

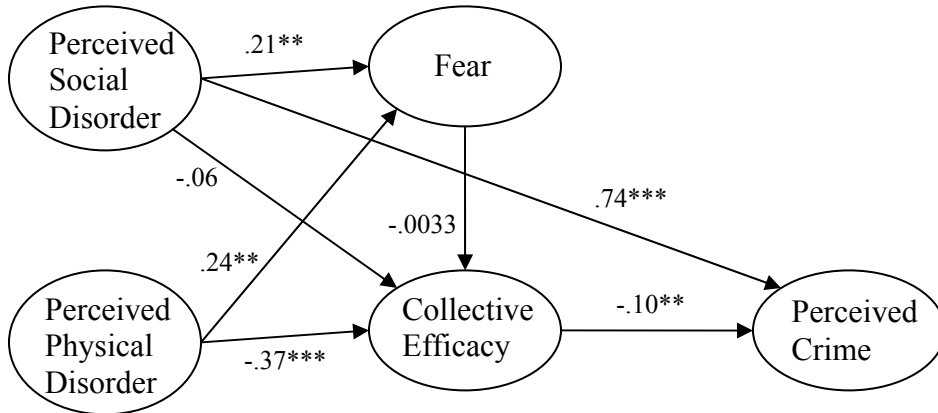
Endogenous Variables	Exogenous Variables			
	<i>Perceived Social Disorder</i>	<i>Perceived Physical Disorder</i>	<i>Fear</i>	<i>Collective Efficacy</i>
<i>Fear</i>	0.22** (.045) z=3.08	.23** (.079) Z=2.92		
<i>Collective Efficacy</i>	-0.097 (.073) z=-1.33	-.38*** (.083) Z=-4.53	-.0033 (.21) z=-.075	
<i>Perceived Crime</i>				-.38*** (.045) Z=-8.45

*=p<.05; **=p<.01. ***=p<.001

The results of model 3B show that perceived physical disorder has a significant, negative direct effect on collective efficacy. Perceived social disorder is negatively related to CE, but is not statistically significant. Additionally, adding these direct paths made the effect of fear on collective efficacy non-significant. This suggests that fear of crime may not play a key role in the path from perceived disorder to perceived crime, and perhaps the significant path from fear to collective efficacy in the prior model was picking up the non-specified direct effect of disorder on collective efficacy.

Model fit, however, was barely improved from that of Model 3A. One additional possibility is that perceived social disorder still has direct effects on perceptions of crime. Recall from Model 2 that perceived social disorder had a direct impact on perceived crime after adding collective efficacy to the model. To test this, Model 3C below in Figure and Table 6.5 adds a direct path from perceived social disorder to perceived crime to Model 3B. A direct effect for perceived physical disorder was not added as physical disorder was not related to crime even in Model 1.

Figure 6.5: Model 3C-Perceived Disorder, Fear of Crime, Collective Efficacy and Perceived Crime—with Direct Effect of Perceived Disorder on Collective Efficacy and Perceived Social Disorder on Perceived Crime



* = $p < .05$; **= $p < .01$; ***= $p < .001$; $n=773$; $df=405$
 SRMR=.066; RMSEA=.047; CFI=.97

Table 6.5: Estimates (standard errors) and z-statistics for Model 3C

Endogenous Variables	Exogenous Variables			
	Perceived Social Disorder	Perceived Physical Disorder	Fear	Collective Efficacy
Fear	.21** (.070) z=2.96	.24** (.079) Z=3.02		
Collective Efficacy	-.057 (.073) z=-.78	-.37*** (.084) Z=-4.43	-.0033 (.21) z=-.074	
Perceived Crime	.74*** (.048) z=15.37			-.096*** (.035) Z=-2.77

*= $p < .05$; **= $p < .01$. ***= $p < .001$

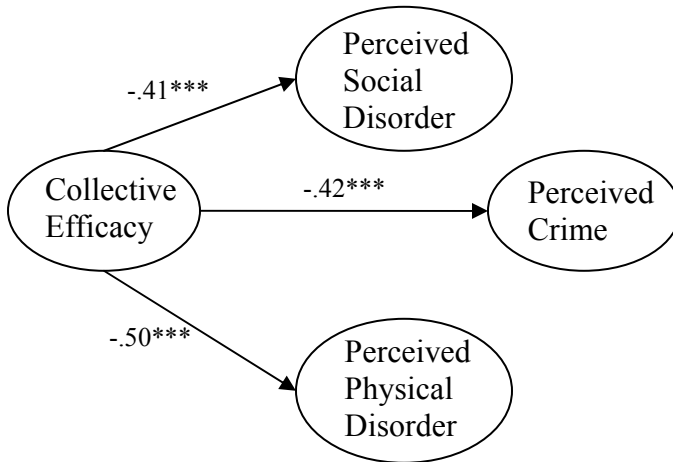
The results of Model 3C show that perceived social disorder does indeed retain a strong direct effect on perceptions of crime. In fact, that path is the strongest effect in the entire model. Additionally, model fit has been improved and now meets the cutoffs for all three reported fit statistics. We also see that the direct effect of collective efficacy on crime was reduced by about one-third from what was found in Model 3B, though it remains statistically significant. Fear still has no impact on collective efficacy in this model.

Overall, these series of findings throughout Models 3A, 3B and 3C are supportive of the existence of indirect paths from disorder to crime as suggested by advocates of the broken windows thesis (see Bratton & Kelling, 2006; Gault & Silver, 2008; Xu et al., 2005) in response to the negative findings for direct relationships (Harcourt, 2001; Sampson & Raudenbush, 2009; Taylor, 2001). However, the models also suggest that a simple reading of the broken windows thesis as implying that disorder has no direct effects on crime (or collective efficacy) is not strongly supported in the current data. In Model 3A where disorder only affected fear, model fit was borderline. Fit was best in Model 3C where both perceived physical and social disorder were allowed to directly affect collective efficacy and social disorder was allowed to directly affect perceptions of crime. More importantly, Models 3B and 3C suggest that fear of crime may not be an important part of the pathway from disorder to crime. In both models the path from fear to collective efficacy was rendered non-significant by allowing disorder to directly affect collective efficacy and crime respectively. Additionally, findings suggest that while perceptions of disorder (particularly physical disorder) have indirect effects on crime through collective efficacy, the direct effect of social disorder appears to be the most salient relationship in an individual-level analysis with perceptual measures of disorder and crime.

However, in considering the meaning of these findings for the direct or indirect debate, it is important to remember that with SEM a good fitting model is only one possible explanation for the patterns in the data. As such, it is possible that a model which explained both perceptions of disorder and crime as simultaneous outcomes of low collective efficacy as Sampson and Raudenbush suggest could also be supported in the

data. This possibility is examined in Model 4 below which predicts levels of disorder and crime as outcomes of the level of reported collective efficacy.

Figure 6.6: Model 4-Perceived Disorder and Perceived Crime as Outcomes of Collective Efficacy



* = $p < .05$; ** $p < .01$; *** $p < .001$; $n=773$; $df=232$
 SRMR=.12; RMSEA=.07; CFI=.95

Table 6.6: Estimates (standard errors) and z-statistics for Model 4

Endogenous Variables	Exogenous Variables
	<i>Collective Efficacy</i>
	-0.41*** (.046)
<i>Perceived Social Disorder</i>	Z=-8.96
<i>Perceived Physical Disorder</i>	-0.50*** (.062)
	Z=-8.05
<i>Perceived Crime</i>	-0.42*** (.044)
	Z=-9.46

*= $p < .05$; **= $p < .01$. ***= $p < .001$

The results of Model 4 show that collective efficacy is significantly and negatively related to perceptions of social disorder, physical disorder and crime. As levels of collective efficacy increase, perceptions of disorder and crime decrease--or conversely they all rise as collective efficacy decreases. However, model fit is not ideal with an RMSEA of .07 and a SRMR of .12. However, a RMSEA of .07 is still considered “moderate” fit (Byrne, 1998). Thus it is important to be cautious in making

conclusion that model 3C is the preferred model as longitudinal data is needed to firmly answer the direct or indirect debate.

While the findings of this analysis are important, and are supportive of the broken windows thesis, it is important to remember that this study is only examining these relationships between these variables at the individual, perceptual level. A key question in this debate, given that the indirect paths from disorder to crime suggested by the broken windows thesis appear to be a reasonable possibility (see Models 3A-3C), is the following: Which comes first in communities which develop crime problems—low collective efficacy or increasing levels of disorder? As such, the only way to settle this debate is with long-term longitudinal data that included both perceptual and objective measures disorder, collective efficacy, fear and crime. The need for such a study will be elaborated on further in the discussion/conclusion in Chapter 7.

Nevertheless, the current findings are important, and improve our understanding of the broken windows thesis as the relationships found between perceived disorder, fear of crime, collective efficacy and perceptions of crime clearly show the importance of tests of the broken windows thesis to acknowledge its social-psychological foundation and include perceptual measures with indirect paths to crime.

Do the models vary by city, whether respondent was a business owner/manager or resident, or by gender or race?

Control variables in the traditional regression sense cannot be incorporated in SEM models. SEM handles such variables as either mediators or moderators (see Holmbeck, 1997). A mediator is a variable which reduces the direct effect of an independent variable on a dependent variable. A moderator is a variable (like gender)

that changes the effect of an independent variable on a dependent variable—for instance perhaps a certain risk factor only increases the chances of delinquency for males.

Nominal variables such as gender, race, respondent type (resident or business) and city cannot serve as mediators as such variables cannot be changed by the impact of another variable. However, they could serve as moderators, as some of the structural paths estimated may only exist for certain groups. However, it is important to be cautious in examining the possibility of moderators in these models as there are no theoretical expectations in the literature for the relationships between perceived disorder, fear of crime, collective efficacy or perceived crime to differ across these factors.

Nevertheless, it is important to ensure that a model that does not account for group differences is not biased. This is accomplished by estimating Model 3C on datasets split by groups based on city (Redlands, Ontario and Colton), whether the respondent was a resident or worked in a business on the study block, race (white vs. nonwhite) and gender. The goal is not necessarily to look for and assess every differing path estimate across groups, but rather to check that there are not major differences in the overall structural model between groups which could invalidate the combined sample models presented above. As such, discussion will focus on any estimates that vary a great deal between groups—i.e. those that involve a loss of significance.

Model 3C above is used for these group comparisons as it was the most complex and best fitting model. Path diagrams are not presented again, as it is more intuitive to present the results in tables where differences in path estimates can be readily compared. There are four sets of tables below, one for each set of group comparisons. The left most column labels the paths using intuitive abbreviations for the latent variables, and the

following columns present the estimates by group along with the original estimates from the combined sample analysis in Model 3C above. The analyses begin by comparing estimates in each of the three cities separately in Table 6.7 below.

Table 6.7: Model Fit and Structural Estimates by City

Model	N	SRMR	RMSEA	CFI
Redlands	230	.079	.054	.96
Ontario	397	.072	.051	.96
Colton	146	.092	.072	.93
Parameter Estimates				
	Overall			
	Model	Redlands	Ontario	Colton
SD→Fear	.21**	.37**	.13	.40**
SD→CE	-.06	-.16	.06	-.36*
SD→Crime	.74***	.68***	.72***	.85***
PD→Fear	.24**	.01	.29*	.09
PD→CE	-.37***	-.35*	-.50***	.14
Fear→CE	-.0033	.12	.06	-.19
CE→Crime	-.10**	-.14*	-.08	-.02

*=p<.05; **=p<.01. ***=p<.001

From Table 6.7, we see model fit was acceptable for Redlands and Ontario, but a bit outside the cutoffs outlined above for Colton. This could be partly due to the small sample size, with only 146 cases in Colton. Looking at the estimates, we do see that Colton appears different on a few of the links. First, perceived social disorder was significantly and negatively related to collective efficacy in Colton, while it was insignificant in the other two cities. Second, perceived physical disorder was not significantly related to collective efficacy in Colton (and the estimate was positive), while it was significantly and negatively related to collective efficacy in the other cities. Looking at the other cities and other links in the models, there are few other differences of note. One other difference which stands out is that perceived social disorder was not significantly related to fear in Ontario, while it was in the other cities. Conversely, perceived physical disorder was related to fear in Ontario, while the relationship was

insignificant in the other cities. These differences could relate to Harcourt's (2001) notion that disorder is a socially-defined phenomenon that may have different definitions and impacts in different communities. Again, the broken windows thesis is a social-psychological theory and perhaps the type of disorder that bothers people and makes them fearful varies by city. However, again any such interpretations must be made with caution as differences in significance levels across groups could result from the differing sample sizes across the groups.

In all, the overall model is fairly similar across cities, and in particular the direct effect of perceived social disorder on perceptions of crime is highly significant and is the largest effect in all models. Thus it appears that the structural model is largely the same across three cities, with the few differences outlined above aside. Table 6.8 below compares models of respondents who lived on the study blocks versus respondents who worked on the study blocks.

Table 6.8: Model Fit and Structural Estimates by Resident vs. Business Owner/Supervisor

Model	N	SRMR	RMSEA	CFI
Residents	462	.063	.043	.97
Businesses	311	.086	.06	.96
Parameter Estimates				
	Overall Model	Residents	Businesses	
SD→Fear	.21**	.26**	.25***	
SD→CE	-.06	-.17	-.03	
SD→Crime	.74***	.82***	.63***	
PD→Fear	.24**	.17	.25*	
PD→CE	-.37***	-.19	-.60*	
Fear→CE	-.0033	-.05	.11	
CE→Crime	-.10**	-.01	-.18**	

*=p<.05; **=p<.01. ***=p<.001

The comparison of models for residential respondents to business respondents shows that both models fit the data reasonably well (with the residential sample fitting

better) and that again the structural paths are fairly similar. For business respondents perceived physical disorder was positively related to fear and negatively related to collective efficacy, and collective efficacy was related to perceived crime. For residents these relationships were in the same direction, but not statistically significant. The next comparison looks at models of male and female respondents.

Table 6.9: Model Fit and Structural Estimates by Gender

Model	N	SRMR	RMSEA	CFI
Males	326	.09	.053	.96
Females	447	.062	.047	.96
Parameter Estimates				
	Overall Model	Males	Females	
SD→Fear	.21**	.18	.26**	
SD→CE	-.06	-.13	-.03	
SD→Crime	.74***	.80***	.68***	
PD→Fear	.24**	.26	.21*	
PD→CE	-.37***	-.19	-.47***	
Fear→CE	-.0033	-.06	.03	
CE→Crime	-.10**	-.03	-.16***	

*=p<.05; **=p<.01. ***=p<.001

The gender comparisons show the models fit the data fairly well for both groups, but there are some differences in estimates, particularly regarding the effects of perceived disorder. Both perceived social and physical disorder significantly increase fear among females, but not among males. This could be indicative of the standard findings that females are simply more fearful than males (see Ferraro, 1995), but it is important to be cautious as estimates for males are in the same direction and the size of the standardized estimates doesn't differ much (and the estimate for perceived physical disorder→fear is actually larger for males). So again it could be the differing sample sizes throwing off significance tests. Additionally collective efficacy is significantly and inversely related to crime for females but not for males.

The final group comparison examines any differences between whites and non-whites in the sample. This is shown below in Table 6.9.

Table 6.9: Model Fit and Structural Estimates by Race

Model	N	SRMR	RMSEA	CFI
Whites	239	.095	.06	.96
Non-Whites	534	.062	.047	.97
Parameter Estimates				
	Overall Model	Whites	Non-Whites	
SD→Fear	.21**	.36***	.21*	
SD→CE	-.06	-.14	-.10	
SD→Crime	.74***	.78***	.71***	
PD→Fear	.24**	.14	.22*	
PD→CE	-.37***	-.47***	-.27*	
Fear→CE	-.0033	.20*	-.04	
CE→Crime	-.10**	-.07	-.11	

*=p<.05; **=p<.01. ***=p<.001

For the final comparison, we see that the models fit reasonably well for whites and non-whites, and that again the estimates are very similar. However there is one exception, for whites fear of crime is *positively* related to collective efficacy. In the original model, and in every other group comparison presented above, this relationship had been non-significant. Additionally, theory would expect fear to be negatively related to collective efficacy. This counter-intuitive finding would seem to imply that even though whites appear to be more fearful, that still think their neighbors share the same values and are willing to intervene for the common good. Though it is important to note that the groups here are very unbalanced (239 whites vs. 534 non-whites) so this finding could just be a statistical artifact.

In sum, these group-based models suggest that the overall structural model presented in Model 3C in Figure and Table 6.5 above generally holds across the groups examined. As is to be expected there is a good bit of variation in the magnitude of estimates, but there is not a great deal of change regarding differences in statistical

significance or directions of relationships. And in the majority of such cases that do differ, the estimates are generally not that different from one another in magnitude and the lack of significance versus the other group may be due to differing sample sizes. The differing magnitudes do, however, suggest that future research on the broken windows thesis should explore demographic differences in relationships among the key variables. For current purposes, the general overall similarities suggest that the overall model presented in Figure 6.5 (and all the combined analyses in general) are not biased and that the structural model for the combined sample is a reasonable model for this data.

Summary

Overall, the models presented in this chapter support the notion that there are indirect paths from perceived disorder to perceived crime. As such, approaches which only test for direct paths from disorder to crime (see Harcourt, 2001; Sampson & Raudenbush, 1999; Taylor, 2001) may miss some important impacts of disorder on crime. The findings also show the importance of acknowledging the social-psychological foundation of the broken windows thesis and including perceptual measures in studies of its theoretical propositions. However, the models also suggested that a pure reading of the broken windows thesis which implies only *indirect* effects of disorder on crime (and collective efficacy) may be overly simplistic. The best fitting model was one that allowed perceived disorder to affect perceptions of crime indirectly through fear of crime and collective efficacy, but also allowed perceived disorder to have direct impacts on both collective efficacy and crime. In fact, the direct effect of perceived social disorder on perceptions of crime was the largest effect in every model examined. Subsequent

group-based models found some differences (mainly in the magnitude of relationships) across city, type of respondent (resident vs. business owner/supervisor), gender and race, but there was much more similarity in the structural models than there were differences of note. As such, the discussion in the chapter to follow will focus on the models run on the combined sample.

The final chapter of this dissertation will provide an overview of the findings and discuss the implications of the findings for the broken windows thesis and broken windows policing. Chapter 7 will also outline the limitations of this current study and make suggestions for how future research needs to build on this work and the existing literature to further advance our understanding of the validity of a thesis which has had a profound impact on police strategies around the globe over the past quarter century.

CHAPTER 7: DISCUSSION AND CONCLUSIONS

This dissertation set out to improve our understanding of the broken windows thesis. Put forth by Wilson and Kelling in 1982, this idea suggests that police can best fight crime by focusing more resources on minor problems that plague a community. Commonly termed disorder, these minor problems include both social nuisances like loitering, public drinking and panhandling, and also physical decay in a community as indicated by things such as litter, graffiti, and boarded up, abandoned buildings. Wilson and Kelling suggested that when such things go untended in a community, residents perceive these increasing problems and become fearful and withdraw from the community. This withdrawal leaves fewer watchful eyes in the street and fewer people willing to intervene and deal with problems in the community. In short, it leads to a reduction in collective efficacy/informal social control which leaves communities vulnerable to criminal invasion. As such, they suggested that police should target disorder in effort to thwart this cycle of decline.

This idea has had a tremendous impact on police policy and practice over the past three decades, as police departments around the world have adopted strategies related to the broken windows thesis. Most famously, the strategy was adopted in NYC in the 1990s, and is often credited with the crime decline that occurred over that period (Bratton & Knobler, 1998; Giuliani & Kurson, 2002; Karmon, 2000; Kelling & Sousa, 2001; Maple & Mitchell, 1999; Silverman, 1999). However, such claims have been repeatedly challenged (see (Bowling, 1999; Eck & Maguire, 2000; Harcourt, 2001; Harcourt & Ludwig, 2006), and in reality we know relatively little about the effectiveness of broken windows based policing strategies in reducing serious crime.

More importantly, as Harcourt (2001) noted, studies of whether or not broken windows policing is effective in fighting crime tell us nothing about the validity of the broken windows thesis itself. For instance, crime may go down simply because of a deterrent effect of the increased visibility of the police who are being more active by cracking down on disorders which they would have ignored in traditional police strategies such as random patrol. Conversely, a lack of impact could be due to weak implementation rather than disorder not being related to crime as the broken windows thesis suggests. In short, testing the validity of the broken windows thesis requires studies designed specifically to examine the relationships between disorder, fear, collective efficacy and crime.

As the literature review in Chapter 2 made clear, there is surprising dearth of research on the theoretical propositions of the broken windows thesis. There has been a good deal of research that looks at some of the individual links—that disorder leads to fear, that fear reduces collective efficacy and that collective efficacy reduces crime—but the bulk of these studies were unrelated to one another and made no reference to the broken windows thesis. Additionally, while the findings were generally supportive of those links, the research was still mixed at times. More recently, some studies have attempted to test the broken windows thesis, but have been criticized as doing so improperly.

Namely, several studies have tested for a direct link between disorder and crime (Harcourt, 2001; Sampson & Raudenbush, 1999; Taylor, 2001) and have not found much support that such a direct link exists after controlling for factors such as collective efficacy and initial neighborhood structure. Key supporters of the broken windows thesis

took exception to these studies, asserting that that broken windows thesis had always posited an *indirect* relationship between disorder and crime (Bratton & Kelling, 2006). These studies rarely tested for such indirect effects, and many studies didn't even include all the key variables of the broken windows thesis. For instance, the Sampson and Raudenbush (1999) study did not include fear of crime. Additionally, these studies tended to use researcher observed measures of disorder, and thus ignore the importance of residents' perceptions of disorder given the social-psychological foundation of the broken windows thesis. Subsequently, some scholars agreed with the broken windows advocates that such tests were not fair representations of the thesis. For example, Gault and Silver (2008) noted that some of Sampson and Raudenbush's (1999) findings may have been supportive of the indirect paths from disorder to crime suggested by Wilson and Kelling (1982), as some models briefly discussed suggested that perceived disorder could reduce collective efficacy and lead to crime.

Xu et al. (2005) agreed with this view of broken windows, and found perceptions of disorder remained related to perceptions of crime after controlling for collective efficacy. Unfortunately their model only included collective efficacy as an exogenous variable, and did not test for indirect paths from disorder to crime in the manner suggested by the broken window thesis. This is a general flaw in the broken windows literature—no study to date had simultaneously tested the relationships between disorder, fear of crime, collective efficacy/informal social control and crime in the correct sequence suggested by the broken windows thesis.

The central contribution of this dissertation was to address this shortcoming. This study used structural equation modeling to simultaneously test the relationships between

the key variables of the broken windows thesis at the individual, perceptual level with the proper specification suggested by Wilson and Kelling (1982; see also, Bratton & Kelling, 2006). This study used survey data collected during the San Bernardino Valley Broken Windows Policing Experiment to create measures of perceived social and physical disorder, fear of crime/perceived risk, collective efficacy and perceived crime. A host of structural equation models were tested, which tested for both direct and indirect effects of perceived disorder on perceptions of crime in effort to shed light on the debate outlined above.

This is an important contribution as this dissertation is the first study to both recognize the social-psychological nature of the broken windows thesis by including perceptual measures of crime and disorder and to model the relationships between the variables of interest in the proper sequence put forth by Wilson and Kelling (1982; see also, Bratton & Kelling, 2006). Overall, findings were supportive of the notion that there are indirect paths from perceived disorder to perceptions of crime, but the direct path from social disorder to crime was the strongest effect in the models.

Model 1 showed that perceived social disorder was positively and significantly related to perceptions of crime, while perceived physical disorder was not. This is in line with recent studies which have suggested that social disorder is more salient for crime than physical disorder (St. Jean, 2007; Yang, 2007). Model 2 added collective efficacy to the model to see whether it eliminated the direct effect of perceived disorder on perceptions of crime as Sampson and Raudenbush (1999) found. As noted in earlier chapters, it is important to note that this was not a replication of their work. Their study used aggregate census tract level data in regression and measured variables path analysis

models and included a host of variables related to social disorganization. Additionally, crime was measured in their study through official police data and survey victimization reports (depending on model in the paper), while disorder was measured through systematic social observations. The analyses for this dissertation simply tested whether this finding was reproduced in an individual-level test using latent variable path analysis and perceptual measures of disorder and crime, which is in keeping with the social-psychological foundation of the broken windows thesis.

The results of Model 2 showed that the impact of perceived social disorder on perceptions of crime was not reduced by the introduction of collective efficacy to the model—though collective efficacy was significantly and negatively related to crime as expected. Thus at the individual, perceptual level, social disorder has a direct effect on perceptions of crime irrespective of the individual's rating of collective efficacy on their block. The next step was to test the full broken windows hypothesis and see whether perceived disorder increased fear of crime, and whether fear reduced collective efficacy which in turn should be negatively related to perceptions of crime.

The results of this test were presented in Model 3A, and were supportive of the broken windows thesis. Both perceived social and physical disorder increased fear of crime, and fear reduced collective efficacy which remained negatively related to perceptions of crime. So while perceived physical disorder has no direct impacts on perceptions of crime in this data, it has indirect effects through increasing fear which would have been missed in a study which only tested for direct impacts of disorder on crime. However, model fit was not ideal, suggesting that the model may have been missing some links between variables. As noted in Chapter 3, a possible shortcoming of

a pure reading of the broken windows thesis is that the path from disorder to crime may not be completely indirect. For instance, rather than only increasing fear, perhaps perceptions of disorder also directly reduces collective efficacy and/or directly increases perceived crime.

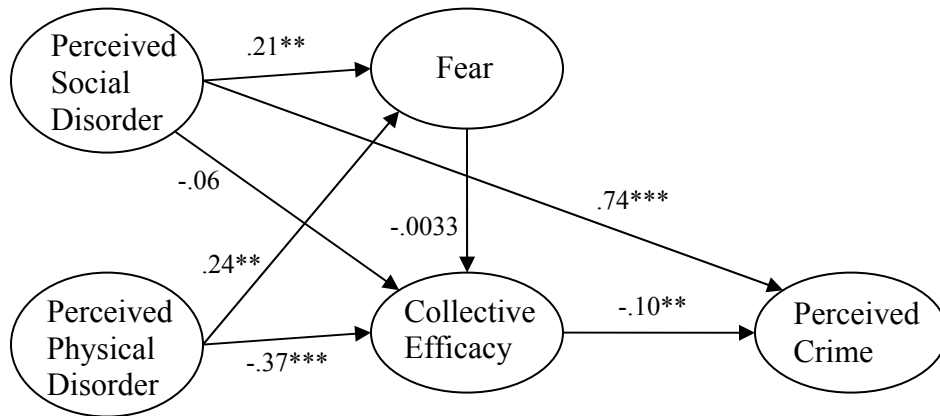
These possibilities were examined in Models 3B and 3C. Model 3B added direct paths from both types of perceived disorder to collective efficacy. The results showed that perceived physical disorder significantly reduced collective efficacy, but perceptions of social disorder was not directly related. This again shows the importance of testing for indirect effects. Perceived physical disorder was not directly related to crime, but was subsequently found to increase fear of crime and reduce collective efficacy. However, another important change that occurred in this model is that adding the direct paths from disorder to collective efficacy rendered the effect of fear on collective efficacy non-significant. This suggests that perhaps fear is not a key intervening variable in the path from disorder to crime—at least at the individual, perceptual level.

Model 3C added a direct path from perceived social disorder to perceptions of crime to the above model. Perceived physical disorder was not specified to have a direct effect, as it was unrelated to perceived crime even in the simple Model 1 which only contained the two types of disorder. The results show that perceived social disorder retains its significant direct effect on perceptions of crime in this model, and in fact this effect is the largest effect in the model. This implies that while looking for the indirect effects was important (again the impact of physical disorder on perceptions of crime would have been missed if only direct effects had been examined) the direct impact of

perceived social disorder on perceived crime is the most salient relation among the key variables of the broken windows hypothesis examined in this study.

One way to further examine this is to compare the direct and indirect effects of perceived disorder on perceptions of crime. As all the coefficients presented are standardized estimates, indirect effects can be obtained by simply multiplying all the relevant path coefficients between the types of disorder and crime. Model 3C presented again, to aid with this process.

Figure 7.1: Model 3C-Perceived Disorder, Fear of Crime, Collective Efficacy and Perceived Crime—with Direct Effect of Perceived Disorder on Collective Efficacy and Perceived Social Disorder on Perceived Crime



* = $p < .05$; ** $p < .01$; *** $p < .001$; $n=773$; $df=405$
 SRMR=.066; RMSEA=.047; CFI=.97

From Figure 7.1 we see the direct effect of perceived social disorder on perceived crime is .74. The indirect effect of perceived social disorder through fear is .0000693 (.21 x -.0033 x -.10) while the indirect effect through collective efficacy is .006 (-.06 x -.10), for a total indirect effect on perceived crime of .0060693. For perceived physical disorder there is no direct effect, but there are indirect effects through fear of .0000792 (.24 x -.0033 x -.10) and through collective efficacy of .037 (-.37 x -.10), for a total indirect effect on perceived crime of .0370792. As such, indirect effects are present, but

they are quite small—especially for perceived social disorder. But again it is important to note that the impact of perceptions of physical disorder (an indirect effect of approximately .04) would have been missed by only looking for direct effects.

So overall, the models tested were generally supportive of the broken windows thesis' hypotheses—with exception of the apparent lack of importance of fear of crime. However, it is important to remember that with structural equation modeling, a good fitting model like Model 3C is only one possible explanation for the patterns in the observed data. As such, perhaps Sampson and Raudenbush's (1999) theory that disorder and crime are both simply outcomes of low collective efficacy is also a possible explanation. This was tested in Model 4, which found that collective efficacy was significantly and negatively related both types of perceived disorder and to perceptions of crime.

This is supportive of their suggestion that low levels of collective efficacy can explain both disorder and crime. However, the model fit was not particularly good (RMSEA=.07; SRMR=.12), but as the fit is still moderately good (Byrne, 1998) caution should be made in declaring the broken windows thesis a “winner” in this debate. Before going further in discussing the implications of these findings for the broken windows thesis and broken windows policing, it is necessary to expand on this and other limitations of the current study.

Limitations

The first and main limitation of this study is the reason why it cannot clearly resolve the direct or indirect debate as discussed above. While the models of the broken

windows thesis fit better than Sampson and Raudenbush's (1999) collective efficacy centered model, with cross sectional data it is simply impossible to pick a "winner" in this debate with any confidence. The broken windows based model in Model 3C is simply the best fitting possibility tested in this dissertation. To really sort out this debate requires long-term, longitudinal data. The key question is the following: Which happens first in crime plagued communities—an increase in disorder or a weakening of collective efficacy?

Unfortunately, there is no such current data that has measures of disorder, collective efficacy, fear of crime and crime for the same place over a long period of time. Two longitudinal studies related to the topic have been done to date, and have not been supportive of the broken windows thesis. Taylor (2001) conducted a panel study of disorder and crime in Baltimore neighborhoods, and found disorder was not strongly related to crime after controlling for initial neighborhood structure. However, this study used data collected at two points in time 13-years apart and thus is not capable of testing the full developmental sequence of the broken windows thesis. Another study used 16-years of data on crime and disorder in Seattle and found no evidence of any causal relationships between the two. This study had no data on fear or collective efficacy, but nevertheless poses a stronger challenge to the broken windows thesis. In short, over a 16-year period there should be some evidence of increases in disorder preceding increases in crime if the broken windows thesis is correct—regardless of whether the impact of disorder on crime is direct or indirect. However, a full study with measures of the variables of interest is needed to definitively explore these issues.

In sum, the debate between collective efficacy theorists and advocates of the broken windows thesis will not be resolved until there is long-term, quality data on place with good measures of disorder (preferably both observed and perceived measures), fear of crime, collective efficacy and crime. Nevertheless, the results of the current study make an important contribution, and make clear the importance of looking for indirect effects between disorder and crime, as well as the importance of acknowledging the social-psychological foundation of the broken windows thesis and including perceptual measures of disorder and crime. The results certainly are more supportive of the broken windows' notion that disorder has indirect effects on perceptions of crime through collective efficacy—though the role of fear is questioned. However, the direct or indirect debate can simply not be definitively resolved without quality, longitudinal data on places.

Collecting such data will be a long and expensive proposition as such a study would need annual measures of levels of disorder and crime, as well as an annual household survey to allow for gauging changes in factors such as perceived disorder and crime, fear, collective efficacy, socio-economic status, residential mobility and so forth. Irrespective of the costs and manpower required, such a study would be invaluable to the field of criminology. Such data is not only relevant to broken windows and collective efficacy, but would present a chance to greatly advance our knowledge of all place-based theories of crime and move forward the emerging area of the field interested in the study of crime and place (for example, see Weisburd, Bernasco, & Bruinsma, 2009; Eck & Weisburd, 1995). More benefits of such a longitudinal study for improving our knowledge of the broken windows thesis will be discussed in more detail below.

The second potential limitation of this dissertation deals with the measurement of crime in this study. As noted throughout, using perceptual measures of disorder and crime is beneficial as the broken windows thesis is a social-psychological theory, concerned with the impact of *perceptions* of disorder (and subsequently crime) on residents behavior in the form of withdrawal. However, the theory is also concerned with actual increases in long-term crime rates at places in response to the social-psychological impacts of disorder and crime on behavior which leave communities vulnerable. This issue cannot be explored with the present data, but will be a key topic for future studies to explore in detail with quality, longitudinal measures of both objectively measured disorder and crime as well as perceptual measures.

An additional limitation of using a perceptual measure of crime is that relationships between perceptions of disorder and crime could potentially be partly a result of the measures coming from the same survey. While confidence is added in the findings due to most of the statistically significant relationships being significant at the .01 or .001 level, it is impossible to rule out that some of the relationships may exist simply because all variables were measured from the same survey. Perhaps findings would be different if an independent measure of crime (say from police reports) could have been used.

Xu et al. (2005) also used perceptual measures of disorder and crime and also found that disorder was related to crime after controlling for collective efficacy. Sampson and Raudenbush (1999) used systematic social observations of disorder and official crime data (and sometimes victimization reports from a survey) in their models and found no direct impact of disorder on crime after controlling for collective efficacy.

Though as noted above, one side point finding in their study did find that observed disorder increased perceptions of disorder (measured from their survey), and that perceptions of disorder were negatively related to collective efficacy and thus could increase crime.

With the current data, it is difficult to use an independent measure of crime. At the individual level it is not feasible, as there is no individual measure of crime beyond perceptions in the current data. One cannot simply use the actual level of crime on a respondent's block, as it is a fallacy to predict an aggregate-level variable with individual-level data. For example, if a block had 10 respondents they would all likely have different values for perceived disorder, fear of crime and collective efficacy, but they would all have the same amount of crime on their block. Thus their individual level reports of disorder etc. could have no predictive relevance to the level of crime on their block.

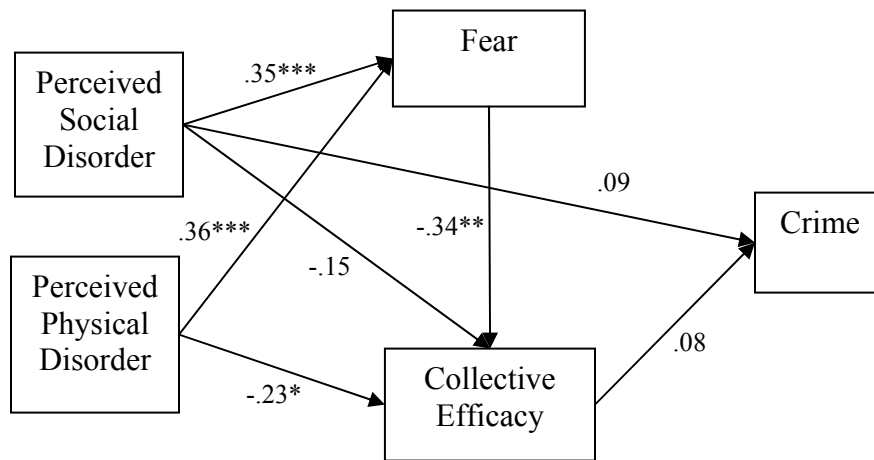
The only way to use official crime data is to aggregate to the block level by using average ratings of disorder, fear and collective efficacy on the blocks to predict the blocks' crime counts. However, doing so encounters a problem of a small N. There are only 110 blocks in the study, which is a small sample for structural equation models. Moreover, for the current dissertation, only 90 blocks have crime data currently available as data for the 20 blocks in Colton are still being collected and processed. As such, power would likely be low in such a model, both due to the small N and to losing variability in the measures from using aggregate averages of individual responses to questions relating to perceived disorder, fear and collective efficacy.

Nevertheless, for exploratory purposes, Model 3C is recreated at the block level in Model 5 below in Figure 7.2 using measured variable path analysis. A latent variable approach isn't tenable with such a small sample. Scales of perceived social and physical disorder, fear and collective efficacy were created by summing the aggregate average responses on the blocks to the items that were used in each latent factor as outlined in Chapter 5. Crime is measured as crime counts over a six-month period beginning from the start of the pre-intervention survey.¹⁷ The crime variable included all calls for service for: murder, arson, robbery, burglary, assault/battery, grand theft, petty theft, rape, motor vehicle theft, drugs, man with gun and car jackings.

Again, this is an exploratory analysis and the results, and any differences from the individual-level analyses presented in the prior chapter should be interpreted with extreme caution. For instance, any lack of significance could very likely be due to the low sample size and the lower power of the measured variable approach compared to the latent variable approach which parcels out measurement error.

¹⁷ During the last two and a half months of this period, the broken windows police intervention was being delivered in the control blocks. Differences were tested by running separate models on the target and control blocks, though caution is needed since the N for each is only 45. The results were largely the same as the combined model, with the following differences. Fear was not significantly related to collective efficacy in the target blocks. In the control blocks, perceived physical disorder was not significantly related to collective efficacy, while the effect of perceived social disorder on collective efficacy became significant in this model.

Figure 7.2: Model 5-Block-Level Analysis of Perceived Disorder, Fear of Crime, Collective Efficacy and Crime Counts



* = $p < .05$; ** $p < .01$; *** $p < .001$; $n=90$; $df=2$
 SRMR=.22; RMSEA=.00; CFI=1.0

The results of this block-level test presented do show that using an independent measure of crime leads to different results. The relationships among perceived social disorder, perceived physical disorder, fear of crime and collective efficacy are nearly identical to the individual level Model 3C in terms of direction and significance. The only difference is that fear retains a significant negative effect on collective efficacy in this aggregate level analysis, whereas it lost significance in Models 3B and 3C at the individual level. With regard to the official police data measure of crime, we see that neither perceived social disorder nor collective efficacy have significant effects in this block-level model.

However, again, these differences must be interpreted with great caution due to the sample only having 90 blocks. As for what this model means for the individual-level findings that are the focus of this dissertation, they lend confidence in the relationships found among perceptions of social and physical disorder, fear and collective efficacy.

While, on the other hand, they suggest some caution in interpreting the relationships among those variables and individual perceptions of crime as these findings suggest that such relationships may not hold with an independent measure of crime and may be limited to affecting individuals' perceptions of crime problems on their block. Though again, this impact on perceptions of crime is an important finding for the broken windows thesis, which would expect residents who have heightened perceptions of crime to subsequently become more fearful and more likely to withdraw, thus furthering the cycle of decline.

Moving on, the final limitation to be discussed involves missing values. As outlined above, there were problems with non-usable data in the form of "I don't know" responses to survey questions. This problem, and missing data issues in general, were dealt with in the following fashion. First, one case was dropped for missing values on gender, and 23 were dropped for missing values on race. These data had to be present for the group-based models discussed in Chapter 6. Next, 39 cases were dropped as they were missing more than 20% of data points. This left the final sample of 773 cases used in all analyses. Finally, two items that were potential components of the collective efficacy measure (Questions 3D and 3E in the survey provided in Appendix A) were dropped due to missing a large percentage of cases and having missing values related to several other items respectively. After this was done, missing values were imputed using EM estimation in SPSS. The means and standard deviations for all items in the imputed dataset were nearly identical to those from the full dataset using listwise deletion. Thus this issue is not deemed a major limitation to the results of this dissertation, as the imputation appears to have worked well and avoids the bias inherent in using listwise

deletion (see Brame & Paternoster, 2003; Enders, 2006). Full details on the missing data process can be found in Appendix B.

Having outlined the limitations of this dissertation, the discussion now turns to what the findings of this study mean for the broken windows thesis and broken windows policing, and outline what issues need to be further explored in future research.

Implications for the Broken Windows Thesis

As noted above, despite having a major impact on police practice and policy, the broken windows thesis itself has received relatively little direct, empirical study. This dearth of research is worsened by the fact that the few existing studies had failed to test the theoretical propositions in the specific manner suggested by the original authors (Wilson and Kelling, 1982; see also, Bratton and Kelling, 2006). The central contribution of this dissertation was to test the relationships among perceptions of disorder, fear of crime, collective efficacy and perceptions crime at the individual level and in the proper model specification according to the broken windows thesis.

Despite the limitations outlined above, the results of this dissertation offer some support for the broken windows thesis, while also raising some challenges. First, consistent with prior studies (most not related to the broken windows thesis) both perceived physical and social disorder significantly increase fear of crime. However, for the next link of the broken windows thesis the findings were less supportive. Fear of crime was negatively related to collective efficacy in a simple model, but when disorder was allowed to have direct impacts on collective efficacy and/or crime this relationship was rendered non-significant.

While this would seem to imply that fear may not be as important as Wilson and Kelling (1982) and others have implied, it is important to be cautious in making such a firm conclusion. For instance, perhaps fear lowers collective efficacy in ways the measures used in this study cannot capture. The collective efficacy measure taps into whether respondents feel the community is close knit and shares values and whether they think their neighbors are likely to intervene in various instances of delinquency/minor crime. Perhaps fear has an impact on individual's own levels of efficacy, but not on their ratings of their neighbors'. For instance, a fearful individual may be unlikely to intervene themselves, but may still feel hopeful that their neighbors are keeping a watchful eye out and exerting control in the community. Another possibility is that fearful people may be likely to move away when they can, and then they may be replaced by people less likely to intervene or likely to engage in disorderly or criminal behavior themselves—which would lower collective efficacy. This latter possibility would fall inline with Skogan's (1990) cycle of decline. In any case, the impact fear of crime has on a community is likely very complex and these are issues that need to be explored in detail in future research on the broken windows thesis.

When looking at the last links of the broken windows thesis, it was found that reports of collective efficacy were negatively related to perceptions of crime as expected. So in short the links between perceived disorder and fear, and between collective efficacy and perceptions of crime posited by the broken windows thesis were supported in these individual-level analyses, but the relationship between fear and collective efficacy appears to be more complex. In fact, as noted in above, this simple reading of the broken windows thesis itself appeared overly simplistic.

The best fitting model was one that allowed both types of perceived disorder to directly affect collective efficacy (rather than only indirectly through fear) and allowed perceived social disorder to have a direct effect on perceptions of crime. These findings suggest that future research needs to further investigate the reasons behind these direct paths. For instance, research should explore why disorder has direct effects on collective efficacy. This direct effect implies that the process by which disorder erodes collective efficacy is more than simply people making people fearful and causing them to withdraw from the community as suggested by the broken windows thesis. There could be a host of possible explanations. Maybe disorder reduces collective efficacy by making people feel that their block is a lost cause and they would just be wasting their time trying to intervene regardless of whether they are fearful. Or perhaps disorder is just a nuisance which does not make most people fearful, but annoys people enough that they move away and the new residents who replace them (who are willing to move into a disorderly neighborhood) are apathetic or disorderly people themselves, thus lowering collective efficacy.

Finally, when considering the effects of disorder on crime (both direct and indirect) and the implications of these findings for the broken windows thesis, it is important to recall the limitations of using a perceptual measure of crime. While significant effects were found in the individual-level models, neither disorder nor collective efficacy were related to crime measured through police calls for service in the limited block-level analysis presented above. Though again it is hard to say if that is a real finding or an artifact resulting from only having 90 blocks in the sample. The key implication here is that future research needs to collect larger samples of places to allow

for a more robust test of the relationships between disorder, fear, collective efficacy and crime at the aggregate level.

Ideally, this would be in the form of a long-term longitudinal study of place and the people who live there suggested above. Such data would allow for robust tests of the relationships between the variables of interest to the broken windows thesis. First, such longitudinal data would allow for establishing causal ordering. It is difficult, if not impossible, with cross-sectional data to tell whether disorder lowers collective efficacy or if disorder and crime are simultaneous outcomes of low collective efficacy. The key question is which comes first in communities which develop crime problems—an increase in disorder or low collective efficacy which allows disorder and crime to flourish? A longitudinal study of place that has good measures of disorder, fear, collective efficacy and crime is necessary to fully test the broken windows hypothesis and establish causality.

Even with such data, it is still a complicated matter. For instance, if an area already has disorder and crime problems at the outset of such a longitudinal study, it is still going to remain difficult to tease out the causal sequence. The key of such a study will be to have a wide variety of places in the sample—including those with crime and disorder problems and those that are free of such problems at the outset of the study. The ideal “laboratory” for testing broken windows would be areas that have not yet hit the tipping point--places where disorder and crime have not yet begun to flourish. The subset of these places which develop disorder and crime problems over the course of a prospective longitudinal study would provide an ideal scenario to examine *what* led to the decline in those communities. Did disorder problems begin to arise and subsequently

increase fear and/or reduce collective efficacy? Or did other factors diminish collective efficacy and allow disorder and crime to spread?

Another question that is crucial to the broken windows thesis, and can only be addressed with longitudinal data, is whether there are reciprocal effects among the variables of interest. For instance, even if it is clearly found that disorder increases fear which erodes collective efficacy and leads to crime, this would essentially only be the first “iteration” of the cycle of decline. For example, after crime problems have begun to emerge, it is likely that the crime itself would then subsequently have direct effects on increasing fear and reducing collective efficacy, which in turn would allow more disorder and crime to spread in the community furthering the cycle of decline. These types of feedback loops can only be properly examined with long-term longitudinal data.

The downside of such a prospective longitudinal study is that it will be very costly to collect and it will be years from the start of such a project before there is enough data ready for such analyses. As such, some questions would remain largely to be addressed by the next generation of criminologists who would have a couple decades of data to analyze. However, many studies of crime and place could be conducted along the way utilizing the data as it is being collected, and this is no different than the prospective longitudinal studies of individuals that have been conducted over the past few decades in the work of scholars such as the Gluecks, Sampson and Laub, Moffitt, Loeber and Thornberry. An investment in such a study of places is worthwhile because of the benefits to our understanding of crime at place that can only be gained through access to long-term longitudinal data on places. Fortunately, the possibility of undertaking such a

study is being developed by the Crime and Place Working Group at the Center for Evidence-Based Crime Policy at George Mason University.

While such longitudinal data is necessary for future research to fully explore the broken windows thesis, there are steps that can be taken in the meantime. For instance, as noted above, even a cross-sectional study that has a larger number of places to allow for more powerful tests of the broken windows thesis at an aggregate level with official measures of crime can improve our current understanding of the validity of the thesis. As such, in the short term, it would be beneficial to move forward with such studies that test the direct and indirect paths between disorder, fear, collective efficacy and crime.

Additionally, the group-based models presented in Chapter 5 established that while there were differences in some structural relations across various group comparisons, the overall model generally held. However, future studies should be designed to explicitly explore differences in how factors such as perceptions of disorder vary across communities. Harcourt (2001) argued persuasively that disorder is socially constructed, and that what is considered a nuisance or unacceptable behavior in one community may be within the norms of another community. However, this is an empirical question and should be studied directly by examining whether such things vary significantly by community factors such as racial composition, SES, the type of street (business, residential, mixed, single family homes or apartments etc.) and so forth. Such issues cannot be explored with the current data since such information is not available at the block level.

Finally, continuing with this notion that disorder may be a social construction, it is important for studies to examine what peoples' perceptions of disorder in their

communities really represents. Perceptions of disorder are crucial to the broken windows thesis, as again disorder will not be likely to have the hypothesized impacts on fear, withdrawal and crime if residents are not aware of its presence. So the key question is whether residents are accurately aware of the level of disorder on their blocks or in their neighborhoods. Few studies have examined this issue, but results thus far have suggested that perceptions of disorder are shaped by more than the objectively measured levels of disorder in a person's community.

Sampson and Raudenbush (2004) found that perceptions of disorder were influenced by the actual level of disorder, but were also shaped by neighborhood racial context—as percentage of blacks in a neighborhood increased, so to did reports of perceived disorder by other racial groups. Gau and Pratt (2008) found that residents did not distinguish disorder from crime, challenging the conceptual clarity between the two concepts. Finally, Hinkle and Yang (2008) found that perceived social disorder at the block level did not correspond with systematic social observations of social disorder on those blocks. Respondents were about equally likely to over- or under-report the level of disorder compared with the measures from the social observations, and no individual-level demographic variables predicted the size of this difference across individuals.

As such, this very limited evidence is mixed on whether residents accurately perceive the level of disorder in their neighborhood, and what factors may explain any differences between perceived disorder and actual levels of disorder. As such, it is important for future research to not treat perceptions of disorder as a black box, and to make direct efforts to further our understanding of what perceived disorder really means. If perceptions of disorder are only partly formed through actual levels of disorder, then

police efforts to reduce disorder may not have as strong an impact on improving residents' satisfaction with their neighborhoods, making them feel safer, or getting them more involved in the community as suggested by the broken windows thesis.

The results of the current study make clear the importance of perceptions of disorder in understanding levels of fear of crime, collective efficacy and perceived crime in communities, thus it is important to understand all of the factors which go into perceptions of disorder so interventions can be tailored to be effective in cleaning up communities and reducing perceptions of disorder as cost-effectively as possible.

Implications for Broken Windows Policing

Having outlined the implications of the current findings for the broken windows thesis, the discussion now turns to considering what the findings mean for broken windows policing. Broken windows policing is used to refer to any policing strategies which aim to prevent crime by focusing police resources on the reduction of disorder. In all, the findings of this dissertation are supportive of the notion that police focus on disorder can have positive effects on the community, but any implications for the effectiveness of disorder reduction on crime prevention are tenuous at best.

The models presented above consistently found that perceived social and physical disorder increase fear of crime, and that physical disorder reduces collective efficacy. As such, any police effort which reduces perceptions of disorder can at the least reduce fear of crime and perhaps bolster collective efficacy (or at least prevent its erosion). This should certainly be expected to have a positive impact on quality of life among residents who are less fearful and have a cleaner community to live in. However, any impacts on

crime are not easy to assess from the findings. The individual-level analyses showed that social disorder had a direct impact on perceptions of crime, while both types of disorder had indirect effects. However, again it is key remember that the crime here is measured by individual perceptions. The limited block-level analysis above found no such affects on police calls for service—though the lack of effects could be due to the low sample size. Again, it is important to note that the findings of this study in regard to perceptions of crime are important, as the broken windows thesis would expect increases in perceptions of crime to increase fear and withdrawal and leave communities more vulnerable to further criminal invasion.

Nevertheless, it is important to directly study the impact of reduction on disorder on actual, long-term crime rates at place, and this is an issue which should be explored in detail in direct studies of broken windows policing. Such studies can assess whether reductions in disorder are followed by reductions in crime. Of course, it is key to have good measures of what the police did in the field while carrying out broken windows policing to really answer this question. If the treatment is measured as a black box (an area either got broken windows policing or not) it is impossible to know whether any crime reduction was achieved because of a reduction in disorder or just as a deterrent result of the enhanced police presence which comes with the police being proactive in targeting things they would have ignored in standard police practices. Such studies need to track the activities of police in the target areas, and see if reductions in crime vary by the amounts of disorder problems dealt with. The San Bernardino Valley Broken Windows Policing Experiment collected log sheets from project officers which outlined

their activities in the target areas, and hopefully future analyses as part of that study will shed some light on this issue.

Lastly, studies of broken windows policing must also focus not only on examining the impact on crime, but must also examine any impacts on residents of the targeted areas. Past studies have found that broken windows policing increased fear of crime among residents of targeted areas (Hinkle & Weisburd, 2008), increased complaints against the police (Greene, 1999) and may disproportionately affect minorities (Golub, Johnson & Dunlap, 2007; Harcourt, 2001; Herbert, 2001). It is key for any evaluation of broken windows policing (or any police strategy that focuses on places/hotspots for that matter) to examine such impacts on the community. This is another area of focus of the San Bernardino Valley Broken Windows Policing Experiment, which aims to test whether the randomly delivered police crackdowns on disorder had impacts on fear of crime, collective efficacy and police legitimacy in the target areas.

Conclusion

This dissertation makes an important contribution to our knowledge of the broken windows thesis by simultaneously testing the relationships among all of the key variables of the broken windows thesis with the proper model specification suggested by the originators of the idea (Bratton and Kelling, 2006; Kelling and Coles, 1996; Wilson and Kelling, 1982). The findings offered some support for their models, but also suggested modifications. The best fitting model expanded on the simple broken windows

hypothesis by adding direct effects of perceived disorder on collective efficacy and perceptions of crime.

In all, these findings improve our knowledge of the broken windows thesis in two important ways. First, the findings show the importance of paying attention to the social-psychological roots of the broken windows thesis and including perceptual measures of disorder and crime in future studies, along with any objective measures. Secondly, the findings show that there are indirect relationships between perceptions of disorder, fear of crime, collective efficacy and crime which must not be ignored in a fair test of the broken windows thesis. In particular, perceived physical disorder was found to have no direct impacts on perceived crime, but was found to have indirect impact through increasing fear and reducing collective efficacy.

However, while these results challenge research that only looks for direct effects between disorder and crime, it cannot refute them for a couple of reasons. First, while there were indirect effects of perceived disorder on perceived crime, they were fairly small and the largest effect in the model was the direct effect of social disorder on crime. Second, the possibility that both disorder and crime are essentially the same constructs (just at different ends of the seriousness continuum) which both result from low collective efficacy could not be firmly refuted. Such a model did not fit the data particularly well (see Model 4 in Chapter 5), but the model fit statistics fell in what is generally considered to be a “moderate” fit (see Byrne, 1998).

Thus, while this dissertation makes an important contribution to our understanding of the broken windows thesis, it also raises a host of questions for future

research. In all, these can be summarized in five main questions for future research to address.

1. Do the direct and indirect relationships between disorder and crime found in the individual-level perceptual analyses hold in an aggregate-level analysis with a sufficiently large sample of places?
2. Which comes first in crime plagued communities—disorder or low collective efficacy?
3. Are there longitudinal, reciprocal effects among disorder, fear, collective efficacy and crime over time?
4. Do the relationships between disorder, fear, collective efficacy and crime differ by the demographic make-up of the community in question?
5. Do residents accurately perceive the level of disorder in their communities? What other factors influence perceptions of disorder?

Answering questions one, four and five requires at the least a large dataset which contains both perceptual and objective measures of disorder and crime at the block level, as well as measures of fear and collective efficacy. Questions two and three require the same type of data, but in a longitudinal format covering a number of years. Such a dataset, while a tremendous investment of money, manpower and time to collect, is a crucial need in the field of criminology. Every theory of crime at place has questions which can only be answered with analyses of longitudinal data which can firmly establish temporal ordering. Only with such data can we ever have a full understanding of the validity of the broken windows thesis, or satisfactorily resolve the debate over broken windows and collective efficacy.

**APPENDIX A: BROKEN WINDOWS POLICING EXPERIMENT
PRE-INTERVENTION HOUSEHOLD SURVEY INSTRUMENT**

1. NOT APPLICABLE (business survey only)

I would like to speak with a member of this household who is at least 18 years old.

(INTERVIEWER: IF NO HOUSEHOLD MEMBER 18 OR OLDER IS AVAILABLE, ASK WHEN TO CALL BACK AND ENTER BELOW)

Hi, my name is [INTERVIEWERS FULL NAME]. I'm calling from a research center at California State University-San Bernardino. We're interviewing residents in [CITY] about crime and disorder and the quality of policing on their block. Your participation in this survey would be really appreciated. It should only take about 15 minutes. As part of this study, we will be contacting participants again in 6 months to conduct a follow-up interview. Your participation in this survey is completely voluntary. You may choose not to take part at all. If you decide to participate in this survey, you may stop participating at any time and may skip any questions that you are not comfortable answering. Your answers will be kept strictly confidential and used only for research purposes and your name will not be attached to any research reports.

CONTINUE WITH SURVEY (GO TO Q.1a)

1a. Do you live on [**READ ADDRESS STREET NAME ONLY**] *between STREET A and STREET B*?

YES.....1 (**GO TO Q.2a**)

NO.....0 (**GO TO Q.1b**)

1b. I just want to confirm that I dialed correctly. Is this [**READ PHONE NUMBER**]

YES.....1

I'm sorry, we're looking to speak to people who live on [**READ ADDRESS STREET NAME ONLY**]. Thank you very much for your time and cooperation.

NO.....0

Thank you very much for your time and cooperation.
(REDIAL)

2a. How long have you lived on this block? _____

[**IF LESS THAN SIX MONTHS:** We're looking to speak with people who have resided on your block for at least 6 months. Thank you very much for your time and cooperation.]

2b. Do you own or rent your home?

Own.....1 (**GO TO Q. 3a**)

Rent.....0 (**GO TO Q. 2c**)

DON'T KNOW.....-8

REFUSED.....-9

2c. Which best describes the property that you are renting?

House1 (**GO TO Q. 3a**)

Townhouse, Condominium or Apartment in a complex with 4 or fewer buildings2 (**GO TO Q. 3a**)

Townhouse, Condominium or Apartment in a complex with 5 or more buildings.....0 (**GO TO Q. 3b**)

2d. **NOT APPLICABLE (business survey only)**

2e. **NOT APPLICABLE (business survey only)**

3a. Most of the questions on this survey are about the block you live on.

When I talk about your block, I mean [**ADDRESS STREET NAME ONLY**] *between STREET A and STREET B*, including both sides of your street.

I'd like to begin with a few questions about how people get along on your block as well as some general questions about living on your block.

3b. Most of the questions on this survey are about the block you live on.

When I talk about your block, I mean [**ADDRESS STREET NAME ONLY**] *between STREET A and STREET B*, including both sides of your street.

If your apartment is within a large complex, also consider your whole apartment complex.

I'd like to begin with a few questions about how people get along on your block as well as some general questions about living on your block.

3. For each of the following statements, please tell me if you strongly agree, agree, disagree or strongly disagree.

	STRONGLY AGREE	AGREE	DISAGREE	STRONGLY DISAGREE	DON'T KNOW	REFUSED
3a. This block is a close-knit community.	1	2	3	4	-8	-9
3b. People on this block are willing to help each other.	1	2	3	4	-8	-9
3c. In general, people on this block can be trusted.	1	2	3	4	-8	-9
3d. People on this block generally do NOT get along with each other.	1	2	3	4	-8	-9
3e. People on this block do NOT share the same values.	1	2	3	4	-8	-9

4. Please tell me if it is very likely, likely, unlikely or very unlikely that these things would happen on your block.

	VERY LIKELY	LIKELY	UNLIKELY	VERY UNLIKELY	DON'T KNOW	REFUSED
4a. If a group of kids were skipping school and hanging out on the street, how likely is it that one of your neighbors would do something about it?	1	2	3	4	-8	-9
4b. If a group of kids were spray painting graffiti on a building, how likely is it that one of your neighbors would do something about it?	1	2	3	4	-8	-9
4c. If a kid was showing disrespect to an adult, how likely is it that one of your neighbors would say something to the kid?	1	2	3	4	-8	-9
4d. If there was a fight in front of your home and someone was being beaten up or threatened how likely is it that one of your neighbors would break it up?	1	2	3	4	-8	-9

5. There are different ways to be involved in neighborhood activities. To the best of your knowledge, has any member of your household has been involved in the following activities in the last 6 months?

	YES	NO	DON'T KNOW	REFUSED
5a. Spoken with a local politician about a problem on your block.	1	0	-8	-9
5b. Spoken to a person or group that was causing problems on your block.	1	0	-8	-9
5c. Attended a neighborhood meeting about a problem on your block?	1	0	-8	-9
5d. Spoken to a local religious leader about doing something to improve your block?	1	0	-8	-9
5e. Gotten together with neighbors to do something about a problem on your block or to organize efforts to improve your block?	1	0	-8	-9

6. How safe do you feel when walking alone at night on your block?

- Very safe,1
- Somewhat safe,2
- Somewhat unsafe, or3
- Very unsafe4
- DON'T KNOW**-8
- REFUSED**-9

7a. In the past 6 months, have you felt afraid of becoming a victim of crime on your block?

- Yes1
- No.....0 (**SKIP TO Q. 8**)
- DON'T KNOW**.....-8 (**SKIP TO Q. 8**)
- REFUSED**.....-9 (**SKIP TO Q. 8**)

7b. How often did you feel afraid of becoming a victim of crime on your block in the past 6 months?

- Only a Few Times1
- About Once a Month.....2
- About Once a Week3
- A Few Times a Week.....4
- Everyday5
- DON'T KNOW**.....-8
- REFUSED**.....-9
- N/A**.....-99

7c. And on the last occasion, how fearful did you feel?

- Not very fearful.....1
- A little bit fearful,2
- Quite fearful3
- Very fearful.....4
- DON'T KNOW**.....-8
- REFUSED**.....-9
- N/A**.....-99

8. In the last 6 months do you think that your block has...

- Become a better place1
- Stayed about the same,.....2
- Become a worse place3
- DON'T KNOW**.....-8
- REFUSED**-9

8a. **NOT APPLICABLE (business survey only)**

9. In your opinion how likely is it that you will become a victim of the following crimes sometime in the next six months. Do you think it is very likely, likely, unlikely, or very unlikely.

	VERY LIKELY	LIKELY	UNLIKELY	VERY UNLIKELY	DON'T KNOW	REFUSED
9a. Being threatened with a weapon for money or valuables.	1	2	3	4	-8	-9
9b. Having something taken from you by force.	1	2	3	4	-8	-9
9c. Being attacked by a stranger. About how likely do you think that is?	1	2	3	4	-8	-9
9d. Having someone break into your home. About how likely do you think that is?	1	2	3	4	-8	-9
9e. Having your car stolen.	1	2	3	4	-8	-9
9f. Having your property damaged or vandalized.	1	2	3	4	-8	-9
9g. Being sexually assaulted.	1	2	3	4	-8	-9
9h. Being murdered.	1	2	3	4	-8	-9

Ok, now I'll ask you some questions about specific crimes and public disorders that may occur on your block.

10. How often do you think the following activities have occurred on your block over the past 6 months?

Do you think each of the following happens once a month or less, a few times a month, a few times a week, everyday or not at all?

	ONCE A MONTH OR LESS	A FEW TIMES A MONTH	A FEW TIMES A WEEK	EVERYDAY	NOT AT ALL	DON'T KNOW	REFUSED
10a. People getting into fist fights.	2	3	4	5	1	-8	-9
10b. People hanging out on your street being disorderly.	2	3	4	5	1	-8	-9
10c. People drinking alcohol in public.	2	3	4	5	1	-8	-9
10d. People drunk or high on your street.	2	3	4	5	1	-8	-9
10e. Panhandlers or homeless people asking for money.	2	3	4	5	1	-8	-9
10f. People damaging property.	2	3	4	5	1	-8	-9
10g. People making too much noise late at night.	2	3	4	5	1	-8	-9
10h. Gambling on the sidewalk or in an alley. About how often do you think this happens?	2	3	4	5	1	-8	-9
10i. People breaking into cars.	2	3	4	5	1	-8	-9
10j. People selling drugs.	2	3	4	5	1	-8	-9
10k. People engaging in prostitution.	2	3	4	5	1	-8	-9
10l. People breaking into homes and buildings.	2	3	4	5	1	-8	-9

Do you think each of the following happens once a month or less, a few times a month, a few times a week, everyday or not at all?

	ONCE A MONTH OR LESS	A FEW TIMES A MONTH	A FEW TIMES A WEEK	EVERYDAY	NOT AT ALL	DON'T KNOW	REFUSED
10m. People robbing others outside in your neighborhood [PROBE : BY ROBBERY I MEAN BEING THREATENED TO GIVE UP MONEY OR VALUABLES]	2	3	4	5	1	-8	-9
10n. People shooting guns in public. [PROBE : HANDGUNS, RIFLES]	2	3	4	5	1	-8	-9
10o. People getting stabbed with knives or other sharp objects.	2	3	4	5	1	-8	-9
10p. People being sexually assaulted.	2	3	4	5	1	-8	-9

11. Ok, now I'm going to ask you some questions about the physical conditions of your block. For each question please respond with none, a few or many.

	NONE	A FEW	MANY	DON'T KNOW	REFUSED
11a. Are there any homes or buildings with broken windows on your block?	1	2	3	-8	-9
11b. Are there any homes, other buildings or other places on your block which have graffiti on them?	1	2	3	-8	-9
11c. Are there any abandoned or boarded up homes or buildings on your block?	1	2	3	-8	-9
11d. Are there any vacant lots on your block?	1	2	3	-8	-9
11e. Are there any abandoned cars on the street on your block?	1	2	3	-8	-9
11f. Are there areas on your block where litter is a problem?	1	2	3	-8	-9
11g. Are there areas on your block where the street or sidewalk needs repairs?	1	2	3	-8	-9
11h. Are there areas on your block that need better lighting?	1	2	3	-8	-9

12. Ok, now I'm going to ask you some questions about the [CITY] police. Over the past six months...

[READ QUESTION, THEN RESPONSE OPTIONS:

Once a month or less, a few times a month, a few times a week, everyday, not at all]

	ONCE A MONTH OR LESS	A FEW TIMES A MONTH	A FEW TIMES A WEEK	EVERYDAY	NOT AT ALL	DON'T KNOW	REFUSED
12a. How often have you seen [CITY] police officers on your block? [PROBE: DOING ANYTHING]	2	3	4	5	1	-8	-9
12b. How often have you seen the [CITY] police talking to people on your block?	2	3	4	5	1	-8	-9
12c. How often have you seen the [CITY] police searching people on your block?	2	3	4	5	1	-8	-9
12d. How often have you seen the [CITY] police arresting someone on your block?	2	3	4	5	1	-8	-9

13. Overall, do you think the [CITY] police are doing.....

- A very good job1
- A good job.....2
- A fair job.....3
- A poor job4
- A very poor job5
- DON'T KNOW**.....-8
- REFUSED**.....-9

14. Please tell me if you strongly agree, agree, disagree, or strongly disagree with the following statements about the [CITY] police.

	STRONGLY AGREE	AGREE	DISAGREE	STRONGLY DISAGREE	DON'T KNOW	REFUSED
14a. I have a lot of respect for the [CITY] police.	1	2	3	4	-8	-9
14b. On the whole [CITY] police officers are honest.	1	2	3	4	-8	-9
14c. I feel proud of the [CITY] police.	1	2	3	4	-8	-9
14d. I am very supportive of the [CITY] police.	1	2	3	4	-8	-9
14e. The [CITY] police treat people fairly.	1	2	3	4	-8	-9

15. How likely is it that you would call the police if each of the following situations happened tomorrow: Do you think it is very likely, likely, unlikely or very unlikely.

	VERY LIKELY	LIKELY	UNLIKELY	VERY UNLIKELY	DON'T KNOW	REFUSED
15a. You have a complaint against someone causing problems on your block?	1	2	3	4	-8	-9
15b. You have an emergency situation?	1	2	3	4	-8	-9
15c. You see suspicious activity on your block?	1	2	3	4	-8	-9

Ok, now I'm going to ask you some questions about personal experiences you have may had with the [CITY] police in the past 6 months.

STOPS

16. Have you been stopped or questioned by the [CITY] police during the past 6 months?

- YES1
- NO.....0 (**SKIP to Q.21**)
- DON'T KNOW**.....-8 (**SKIP to Q.21**)
- REFUSED**-9 (**SKIP to Q.21**)

17. How many times have you been stopped or questioned by [CITY] police during the past 6 months?

18. Were you stopped by [CITY] police on your block?

- YES1
- NO.....0
- DON'T KNOW**.....-8
- REFUSED**-9
- N/A**.....-99

19. Overall, how satisfied are you with the way in which the [CITY] police handled the situation [DURING THE MOST RECENT ENCOUNTER] Were you...

- Very satisfied1
- Somewhat satisfied2
- Somewhat dissatisfied or3
- Very dissatisfied?.....4
- DON'T KNOW**.....-8
- REFUSED**.....-9
- N/A**.....-99

20. I would also like to ask you about the way you were treated by the [CITY] police officers who stopped you [DURING YOUR MOST RECENT ENCOUNTER]. Please answer yes or no to the following questions.

	YES	NO	DON'T KNOW	REFUSED	N/A
20a. Were the [CITY] police polite to you?	1	2	-8	-9	-99
20b. Did they show a concern for your rights?	1	2	-8	-9	-99
20c. Did they listen to your side of the story?	1	2	-8	-9	-99
20d. Did they ask for all the necessary information?	1	2	-8	-9	-99
20e. Were the police honest with you?	1	2	-8	-9	-99
20f. Did the police do anything that you thought was improper?	1	2	-8	-9	-99
20g. When you think about your experience, do you feel frustrated with the police?	1	2	-8	-9	-99

Ok, now I am going finish up with some questions about yourself.

21. In what year were you born? _____

22. **[DO NOT ASK, BUT IS THE RESPONDENT.....]**

FEMALE.....1
MALE0
DON'T KNOW.....-8

23. Are you currently?

Married.....5
Single (never married)4
Divorced.....3
Widowed2
Or Separated1
DON'T KNOW.....-8
REFUSED.....-9

24. How much school have you completed?

Some High School1
High School Diploma2
Some College3
College Degree.....4
Masters/Graduate or Professional
Degree5
DON'T KNOW.....-8
REFUSED.....-9

25. How would you best describe your work situation?

Working full-time	1
Working part-time.....	2
Not working	3
Retired.....	4
or some other arrangement	6
DON'T KNOW	-8
REFUSED	-9

26. Are you currently a full time or part time student?

Full time	1
Part time	2
No.....	0
DON'T KNOW	-8
REFUSED	-9

27. Including all adults and children, how many people live in your home? _____

(IF 0, MARK Q. 28 AS "NO/0" AND SKIP TO Q. 29)

28. Do you have children under 18 living with you?

Yes	1
No.....	0
DON'T KNOW	-8
REFUSED	-9

29. In the past 6 months, about how often did you read the local newspaper?

- Everyday1
- Several days a week2
- Once or twice a week3
- Almost never4
- Or not at all5
- DON'T KNOW**-8
- REFUSED**-9

30. In the past 6 months, about how often how often did you watch the news on TV?

- Everyday1
- Several days a week2
- Once or twice a week3
- Almost never4
- Or not at all5
- DON'T KNOW**-8
- REFUSED**-9

31. Have you or any member of your household been a victim of a crime in the past 6 months?

- Yes.....1
- No.....0
- DON'T KNOW**-8
- REFUSED**-9

32. Do you know anyone else who lives on your block who has been a victim of a crime in the past 6 months?

Yes.....1
No.....0
DON'T KNOW.....8
REFUSED.....9

33. Would you best describe yourself as.....

White.....0
African American.....1
Asian2
Hispanic3
Or some other group_____

DON'T KNOW.....-8
REFUSED.....-9

34. What is your current annual household income from all sources before taxes.....

Less than \$10,0001
Between \$10,000 and \$25,000.....2
Between \$25,000 and \$40,000.....3
Between \$40,000 and \$60,000.....4
Between \$60,000 and \$80,000.....5
More than \$80,0006
DON'T KNOW.....-8
REFUSED.....-9

END

Thank you very much for your time and cooperation. Your participation is really appreciated.

As I mentioned before, we would like to contact you in 6 months for a follow up interview. May I please have your first name so that I may ask for you specifically when I call back in 6 months?

First Name: _____

APPENDIX B- MISSING VALUE ANALYSIS

As with any survey data, the current data used in this dissertation has missing values. The vast majority of the absent data are from “I don’t know” responses to questions, and a very small amount were refusals to answer certain questions. Although these types of responses are not in the true sense missing values, from an analytical standpoint these types of responses cannot be analyzed. As such they are treated as missing values in this dissertation and for simplicity’s sake all will be referred to as missing values in this appendix.

The first step, especially given that most of the missing values were “I don’t know” responses, was to make sure the missing value patterns were not correlated with factors such as age, race and gender. An inspection of t-tests in the SPSS missing value pattern output showed that no item’s missingness was related to any of those demographic categories. Another possibility was that “I don’t know” responses were more prevalent among those who had not lived on the blocks very long. This would be of concern as it would indicate that responses of “I don’t know” could reflect a true lack of knowledge of the street. However, an inspection of the data revealed that this was not the case. “I don’t know” responses were distributed across people who had been there a relatively short time (the minimum for inclusion in the study was 6 months living or working on the block) and people who had lived there a very long time.

Given that the “I don’t know” responses are not related to demographics and do not appear to be tied to knowledge of the street (using time at residence as a proxy), it is deemed justifiable to treat them as missing values for the purposes of the analyses in this dissertation. This dissertation uses the approach of EM imputation in SPSS to replace

missing values and the remainder of this appendix outlines the missing value analysis and how the final sample and data for analysis were created.

To start, there were 836 completed surveys in the database. The first step was to take out cases that had missing values on key variables that could not be imputed due to the nature of the variable. Variables such as gender and race cannot be imputed as they are nominal variables. The race and gender variables are important to the current study as they are used to create separate data files for group-based stacked model analyses, and thus cannot be missing. One case was dropped due to having missing value on gender, and 23 were dropped for having missing values on race, bringing the remaining sample to 812 cases.

The next step was to drop cases that were missing too high a percentage of values on the items pertaining to questions to be used in making up the disorder, fear, collective efficacy and crime scales (Questions 3, 4, 9, 10 and 11 in the survey in Appendix A). Not all of these items will be used in the final scale variables, but they were kept in the missing value analyses as they can still be used to aid the EM estimation procedure. It was decided to drop all cases missing more than 20% on the above items. The MVA analysis showed that 39 cases had more than 20% missing values. All were dropped from the sample, dropping the sample size to 773 cases.

After removing the cases that had a high percentage of missing values, the next step was to examine the percentage of missing values on each variable in the final sample of 773 cases. This is shown below in Table B.1 which lists the question number/letter and the number and percentage of missing data for each item. See the survey instrument in Appendix A for the specific questions these items refer to.

Table B.1—Missing Values on Each Item In Final Sample (N=773)

Variable/Item	Missing	
	Count	Percent
Q3A_reco	31	4.0
Q3B_reco	43	5.6
Q3C_reco	56	7.2
Q3D	63	8.2
Q3E	128	16.6
Q4A_reco	48	6.2
Q4B_reco	27	3.5
Q4C_reco	68	8.8
Q4D_reco	27	3.5
Q9A_reco	24	3.1
Q9B_reco	13	1.7
Q9C_reco	8	1.0
Q9D_reco	8	1.0
Q9E_reco	7	.9
Q9F_reco	5	.6
Q9G_reco	19	2.5
Q9H_reco	25	3.2
Q10A_rec	11	1.4
Q10B_rec	5	.6
Q10C_rec	4	.5
Q10D_rec	10	1.3
Q10E_rec	1	.1
Q10F_rec	4	.5
Q10G_rec	45	5.8
Q10H_rec	16	2.1
Q10I_rec	13	1.7
Q10J_rec	41	5.3
Q10K_rec	33	4.3
Q10L_rec	24	3.1
Q10M_rec	33	4.3
Q10N_rec	8	1.0
Q10O_rec	15	1.9
Q10P_rec	22	2.8
Q11A_rec	10	1.3
Q11B_rec	6	.8
Q11C_rec	7	.9
Q11D_rec	15	1.9
Q11E_rec	10	1.3
Q11F_rec	3	.4
Q11G_rec	13	1.7
Q11H_rec	16	2.1

From Table B.1 we see that the only variable that stands out above the others is Q3E, which is one of the collective efficacy indicators. This variable is missing 16.6% of the time, while the next highest missing values are 8.8 and 8.2 for items Q4C_rec and Q3D respectively—both of which are also collective efficacy indicators. Nearly all of these missing values are due to responses of “I don’t know.” In general, the more serious missing data problems seem mostly limited to the collective efficacy indicators. Outside of the Question 3 and 4 items the highest percentage missing on any other item is 5.8%.

Q3E which was missing 16.6% was from the question “People on this block do NOT share the same values.” Q3D which was missing the second highest percentage at 8.8% was another negatively worded item as follows: “People on this block generally do NOT get along with each other.” Both questions were adapted from the instrument used by Sampson and Raudenbush (1999). Perhaps these questions elicited a high number of “I don’t know” responses due to not providing enough context to what was being asked. For instance, Q3E doesn’t explain exactly what is meant by values, while Q3D doesn’t explain what magnitude of disagreement would constitute residents not getting along. Conversely, perhaps the negative wording of the questions threw off respondents.

In any case, Q3E was dropped from the analyses since it was missing on so many cases. The level of missing values on item Q3D is not as alarming as on Q3E, however, inspection of the missing values t-tests in SPSS showed that it was significantly related to missing values on several other items beyond other collective efficacy indicators (particularly to items related to crime and social disorder). Thus it was decided to also drop Q3D in the interest of meeting the missing at random (MAR) requirement for doing EM imputation.

The t-values were also examined in detail for all other variables that were missing more than 5% of the time. This inspection gave little cause for concern as few significant relations were found and, when they were found they were generally only related to one or two other items and usually only to items comprising the same scale (i.e. some of the remaining collective efficacy item's missingness were related to the missingness of one or two other collective efficacy items). As such, with the removal of Q3D and Q3E it can be reasonably assumed that the MAR assumption holds and that any weak patterns are ignorable and thus EM imputation is a viable option.

Given this, the final step was to use EM imputation in SPSS to impute missing values for all the items in Table B.1 above with the exception of Q3D and Q3E. The EM estimation was run with a maximum of 25 iterations to find the best estimate for each missing value for each person. Table B.2 below shows the means and standard deviations for the data (the 773 cases after removing those missing more than 20%) using listwise deletion and the means for the imputed dataset.

Table B.2-Descriptive Statistics for Data with Listwise Deletion of Missing Values, Compared to Data with EM Imputation

Data with Listwise Deletion					Data with EM Imputation		
	N	Mean	Std. Deviation		N	Mean	Std. Deviation
<i>Q3A_reco</i>	742	2.8585	.65111		773	2.8517	.64384
<i>Q3B_reco</i>	730	2.8973	.60779		773	2.8847	.59932
<i>Q3C_reco</i>	717	2.7448	.69142		773	2.7431	.67546
<i>Q4A_reco</i>	725	2.6276	.91598		773	2.6294	.89260
<i>Q4B_reco</i>	746	3.1702	.82688		773	3.1657	.81541
<i>Q4C_reco</i>	705	2.8213	.88668		773	2.8227	.85504
<i>Q4D_reco</i>	746	3.0724	.85773		773	3.0707	.84631
<i>Q9A_reco</i>	749	2.1215	.68789		773	2.1228	.68275
<i>Q9B_reco</i>	760	2.0921	.65291		773	2.0920	.65091
<i>Q9C_reco</i>	765	2.1399	.66122		773	2.1398	.65999
<i>Q9D_reco</i>	765	2.2340	.71732		773	2.2364	.71470
<i>Q9E_reco</i>	766	2.3211	.74184		773	2.3225	.73927

<i>Q9F_reco</i>	768	2.4297	.74193		773	2.4313	.73995
<i>Q9G_reco</i>	754	1.8859	.60782		773	1.8926	.60600
<i>Q9H_reco</i>	748	1.8730	.63891		773	1.8781	.63362
<i>Q10A_rec</i>	762	.5328	.88622		773	.5314	.88210
<i>Q10B_rec</i>	768	.9375	1.27712		773	.9422	1.27735
<i>Q10C_rec</i>	769	.9558	1.29828		773	.9589	1.29750
<i>Q10D_rec</i>	763	.9554	1.35182		773	.9557	1.34697
<i>Q10E_rec</i>	772	1.0622	1.45980		773	1.0630	1.45904
<i>Q10F_rec</i>	769	.6632	1.03063		773	.6640	1.02868
<i>Q10G_rec</i>	728	.8104	1.17858		773	.8175	1.15549
<i>Q10H_rec</i>	757	.1176	.52772		773	.1222	.52753
<i>Q10I_rec</i>	760	.5053	.81970		773	.5071	.81518
<i>Q10J_rec</i>	732	.5765	1.16182		773	.5963	1.15055
<i>Q10K_rec</i>	740	.2649	.84213		773	.2801	.83918
<i>Q10L_rec</i>	749	.2964	.68813		773	.3116	.69283
<i>Q10M_rec</i>	740	.2635	.68387		773	.2757	.68203
<i>Q10N_rec</i>	765	.1621	.50118		773	.1652	.50050
<i>Q10O_rec</i>	758	.0910	.35744		773	.0979	.36622
<i>Q10P_rec</i>	751	.0799	.33308		773	.0874	.34014
<i>Q11A_rec</i>	763	.1402	.37296		773	.1399	.37091
<i>Q11B_rec</i>	767	.4081	.58625		773	.4080	.58447
<i>Q11C_rec</i>	766	.1919	.43203		773	.1921	.43023
<i>Q11D_rec</i>	758	.3443	.51546		773	.3471	.51172
<i>Q11E_rec</i>	763	.1062	.34823		773	.1064	.34640
<i>Q11F_rec</i>	770	.3377	.59057		773	.3383	.58973
<i>Q11G_rec</i>	760	.4092	.64293		773	.4081	.63866
<i>Q11H_rec</i>	757	.5892	.73213		773	.5896	.72705
<i>Q22_sex</i>	773	.58	.494		773	.58	.494
<i>Valid N (listwise)</i>	410				773		

While missing value imputation always risks introducing some bias into the data, in a case such as the current data where there is a good deal of missing data it is generally considered preferable to using list wise deletion as studies have shown biased estimates from analyses of only complete cases (i.e. see Brame and Paternoster, 2003; Enders, 2006) Additionally, the descriptive statistics in Table B.2 show that the means and standard deviations for the EM imputed data are very similar to the means in the data

with missing values in place, adding confidence in the imputed data. The table also shows the statistical power benefit of using EM imputation vs. listwise deletion for this data and subsequent analyses as the imputed data permits a sample size of 773 while listwise deletion would leave a sample of only 410 cases.

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