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AN EXAMINATION OF INDIVIDUAL BEHAVIORAL RESPONSES TO THE

FEAR OF CRIME

A Thesis

Presented to the

Department of Criminal Justice

and the

Faculty of the Graduate College

University of Nebraska

In Partial Fulfillment

of the Requirements for the Degree

Master of Arts

by

William P. McCarty

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THESIS ACCEPTANCE

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Committee

Robert F Blair

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Chairperson _[signature]_

Date _7-19-04_

AN EXAMINATION OF INDIVIDUAL BEHAVIORAL RESPONSES TO THE

FEAR OF CRIME

William P. McCarty

University of Nebraska at Omaha, 2004

Advisor: Dr. Dennis W. Roncek

This research used data from the 2004 Omaha Conditions
Survey to examine the relationship between the fear of
crime and individual behavioral reactions to that fear.
This research analyzed both protective and collective
responses to the fear of crime. The analyses related both
individual characteristics and neighborhood crime rates to
protective and collective behavioral responses to the fear
of crime. The research evaluated the effects of individual
characteristics and neighborhood crime rates on reactions
to the fear of crime using Hierarchical Linear Modeling
(HLM).

The fear of crime was found to have a statistically
significant effect on individuals owning a dog for
protection, owning a gun for protection, installing special
locks, and keeping residence lights on at night. The fear

of crime did not have a statistically significant effect on individuals participating in collective behaviors.

The violent crime rate did have a statistically significant effect on the influence of the fear of crime on owning a gun, installing special locks, and installing a security system. For other behaviors tested, the violent crime rate had inconsistent effects on the influence of the fear of crime and on the intercepts of the equations. For the most part, the results supported the assertion that the reality of violent crime in an area elevates the intensity of the reactions to the fear of crime.

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Chapter I

Review of Prior Research and Theory

Introduction.

Fear of crime has remained an important topic in both public and academic areas. Research has been concerned primarily with analyzing the influences that have affected the public's fear of crime. Many potential reasons have been proposed for why individuals feared criminal victimization. Vulnerability, as influenced by individual characteristics, has been hypothesized to influence fear. For example, females and the elderly have developed greater anxiety about victimization than males or the non-elderly (Moore and Trojanowicz, 1988). Victimization experiences have also been used to account for variations in the fear of crime (Skogan, 1987). The idea underlying this explanation has been that as individuals experienced criminal victimization, their fears about future victimization will have increased (Skogan, 1987).

In addition to individual-level processes, many discussions on the sources of fear have focused on the neighborhoods in which individuals live (Taylor and Hale, 1986). In many neighborhoods, signs of incivility have been easily perceptible. These signs, which have taken the

form of abandoned buildings, public drunkenness, or broken street lights, could have created a greater apprehension about the possibility of criminal victimization, which could have eventually led to a greater level of fear.

An area of research that has received much less attention has been the tangible effect fear has had on individuals' behaviors. The impact of fear has been analyzed in an ambiguously negative light. For example, Gates and Rohe (1987:426) described the potential impact of fear in the following manner:

> Fear of crime can also lead to withdrawal from the
> community because people react by staying home at night
> or by avoiding certain areas in their neighborhood...
> (This) help(s) to atomize the community and contribute
> to a breakdown in the sense of attachment and
> commitment to an area. Neighborhood deterioration and
> abandonment may be the ultimate result.

Intuitively, it was reasonable that a situation, as described by Gates and Rohe (1987), could have occurred. At the same time, there were other ways in which positive reactions to an increasingly palpable fear of crime could have emerged in a neighborhood or by a person. Individuals may have begun looking out for the safety of other members

of the neighborhood. Individual residents may have banded together in either formal or informal neighborhood watch programs. Additionally, people with a heightened sense of fear may have invested in home security measures or simply become more conscientious about locking or protecting their property. Finally, individuals that feared crime may not have done anything to alter their behaviors. In short, existing research seemed to have stopped after identifying the existence of fear.

Ultimately, this early closure has represented only half of the analysis that should be done to understand the consequences of fear. The other half on which research should have focused concerns what, if any, tangible actions citizens have taken to allay, cope with, or deal with their fears of crime.

Defining and Measuring the Fear of Crime.

Before delving into the specific behavioral responses to the fear of crime, the concept of fear must be put in its proper context. Existing research has used multiple and often times inconsistent definitions of the fear of crime. According to Ferraro and LaGrange (1987: 71), "…the phrase "fear of crime" has acquired so many divergent meanings that its current utility is negligible". Three

conceptual distinctions have appeared to be necessary to integrate the divergent meanings of the fear of crime.

First, fear of crime should be separated from concern about crime. Furstenberg, Jr. (1971: 603) separated the two terms by explaining, "Fear of crime is usually measured by a person's perception of his own chances of victimization, and concern by his estimation of the seriousness of the crime situation in this country". Furstenberg, Jr. (1971:4) illustrated this distinction with the example of a 1969 survey concerning the public's reaction to crime in Baltimore. Although the survey found that 80% of the respondents believed crime had risen in Baltimore over the past year, it could not be inferred that 80% feared crime (Furstenberg, Jr., 1971: 603). On the contrary, estimates of the extent of crime have not corresponded exactly to the perceptions of the risks of victimization. This particular distinction has become necessary in formulating a definition for the fear of crime.

In addition to delineating concern from fear, Ferraro and LaGrange (1987) highlighted the second distinction between an individual's attitudes about crime and an individual's fear of crime. Ferraro and LaGrange (1987:

71) argued that attitudes about crime, "…generally take the form of public opinion regarding…an evaluation of one's intolerance of crime". Examples of attitudes about crime have pervaded American society. A vast majority of the public may believe that drugs represented a deplorable problem in the United States. In addition, the general public may be appalled by prostitution. The previous two hypothetical examples involve attitudes about drugs and prostitution, which would be distinct from fearing drug crimes or prostitution. This distinction is necessary in the quest to pinpoint a definition of the fear of crime.

The final distinction incorporated Garofalo's (1981) dichotomy of the fear of crime into actual fear and anticipated fear. Garofalo (1981: 841) explained this contrast as follows:

> …it is obvious that the person walking alone in a high crime area at night is experiencing something quite different than the subordinate who is telling an interviewer that he or she *would be* fearful in such an area at night.

The implication of this statement has been important for operationalizing the fear of crime question. In trying to pinpoint actual fear of crime, survey questions must try

to assess actual experienced emotions that related to crime. If the question was hypothetical in nature, it could be more likely to have tapped into anticipated fear. For example, asking individuals how safe they would feel walking alone at night in their neighborhood has been used as a measure of fear of crime (Ferraro and LaGrange, 1987: 76). While this particular question tapped into an emotion, it did not relate that emotion back to crime. Individuals may have felt unsafe walking in their neighborhoods at night because of an abundance of stray dogs. For this reason, it has been essential that questions intended to measure fear of crime related both to an actual fear and crime itself. Since the concern of this research was focused on behavioral responses to fear of crime, it was important that actual fear related to crime be assessed.

With the three previous distinctions in mind, Garofalo's (1981) definition of the fear of crime seemed to be appropriate. He defined fear as "…an emotional reaction characterized by a sense of danger and anxiety" (Garofalo, 1981: 840). Garofalo (1981: 840) continued by explaining that "…to constitute fear of crime, the fear must be elicited by perceived cues in the environment that relate

to some aspect of crime for the person". With Garofalo's (1981) argument as the foundation, fear of crime was thus defined as an emotional reaction characterized by a sense of danger and anxiety that was elicited by perceived cues in the environment that related to some aspect of crime for the person. This definition constituted an actual fear, while at the same time separating itself from concerns or values about crime.

From the previous definition, two points about the broader analysis of the response to fear become apparent. First, the fear of crime is defined solely in terms of an emotional response. This makes sense because fear is an emotion, but at the same time emotions can lead to many different behavioral responses. A college student who is extremely frustrated with a particular class can either act on that emotion by quitting the course or by attempting to study harder to attain success. The point is that the presence of a particular emotion does not automatically lead to a uniform response. Just as the student can respond to frustration in a variety of ways, so also can those who fear crime incorporate a variety of different responses.

A second important point about Garofalo's (1981) definition of the fear of crime is that fear is not necessarily a negative emotion, *prima facie*. Stripping the definition down, fear of crime ultimately represents a sense of anxiety or danger about crime felt by perceiving cues in one's environment. Moore and Trojanowicz (1988: 1) noted that, "…it [fear] prompts caution among citizens…it [fear] motivates citizens to shoulder some of the burdens of crime control…and fear kindles enthusiasm for publicly supported crime control measures". The fear of crime can also be negative. Moore and Trojanowicz (1988: 1-2) also noted, "It is only when fear is unreasonable, or generates unproductive responses, that it becomes a social problem". This clarification, as Moore and Trojanowicz argued (1988), parallels the theme of this research project. The fact that someone fears crime is not necessarily detrimental to that individual or society. Instead, the reaction to that emotion determines the utility, or the harm, of fearing crime.

Theories on Reactions to the Fear of Crime.

Two distinct theories have attempted to explain the potential utility or harm of the behavioral responses to the fear of crime. Emile Durkheim (1895, 1893) argued that

the fear of crime can be a unifying force for individuals in society. Durkheim (1895) explained that crime has been present in every society. He argued that, "There is not one [society] in which criminality does not exist, although it changes in form and the actions which are termed criminal are not everywhere the same" (Durkheim, 1895: 98). In addition to being present everywhere, crime has also served a necessary and useful function for society. Durkheim (1895:101) explained:

> It [crime] is linked to the basic conditions of social life, but on this very account is useful, for the conditions to which it is bound are themselves indispensable to the normal evolution of morality and law.

Crime has been useful because it served as a unifying force for society in that it "…offends certain collective feelings which are especially strong and clear-cut" (Durkheim, 1895: 98). In essence, crime has elicited emotional responses from those who share the collective conscious condemning criminal behavior. In terms of the behavioral reaction to this emotion, "It does not occur in each individual in isolation but all together and in unison" (Durkheim, 1893: 57). To conclude, Durkheim (1893:

58) proposed that "Crime therefore draws honest consciousnesses together, concentrating them".

While Durkheim (1895, 1893) argued that the behavioral responses to crime can be unifying and positive, Conklin (1975) theorized that the fear of crime can be a negative force for both the individual and the community. Conklin (1975:50) explained:

> Fear of crime leads them [residents of a community] to change their behavior in an attempt to minimize vulnerability. It enhances their suspicion of strangers, and it undermines the social fabric of community life.

Undermining the social fabric of community life was characterized by distrust and suspicion among residents, "…even in small and homogeneous communities with little history of crime (Conklin, 1975: 68).

Conklin (1975) supplemented his argument that the fear of crime had an atomizing effect on communities by giving specific examples of where this has occurred. The best developed example was a mass murder of four family members in Holcomb, Kansas, in 1959 (Conklin, 1975: 54). Conklin (1975: 54) explained:

[Emile] Durkheim would have suggested that in such a

small town, a crime which violates the deeply-held

values of human life would lead people to…unite as a

group, and come together to talk of the crime.

In reality, the mass murder in Holcomb, Kansas, had a

negative and disintegrating effect on the community

(Conklin, 1975). Residents in Holcomb became suspicious

and distrustful of each other after the crime was committed

(Conklin, 1975: 55-56). Even after the suspects were

arrested, many residents continued to adopt behaviors that

isolated themselves from the rest of the community and the

atomizing impact of fear remained (Conklin, 1975: 57).

While Holcomb, Kansas, was a small and isolated

community, the potential of fear to drive community members

apart may be exacerbated in more urban settings (Conklin,

1975: 65). In urban areas characterized by a heterogeneous

population consisting of various racial and ethnic groups,

the potential for large-scale collective responses to the

fear of crime was minimal (Conklin, 1975: 87). Conklin

(1975: 65) discussed the implicit distrust that existed

between separate racial and ethnic groups within a city or

community. Distrust between individuals was not compatible

with collective action, even if the residents were fearful

of crime. In addition, the transient nature of urban

populations undermined the participation in collective

responses to the fear of crime by not allowing social

cohesion (Conklin, 1975: 66). In sum, the fear of crime

did not act as a unifying force, especially in urban

communities, according to Conklin (1975).

Two theories have been presented in trying to explain

individual reactions to the fear of crime. Emile Durkheim

(1895, 1893) argued that the fear of crime had a positive

impact on society by causing individuals to band together

with those who shared a conscious condemning criminal

behavior. In contrast, Conklin (1975) argued that fear had

an atomizing impact on communities by causing individuals

to distrust each other and to adopt behaviors that isolated

and protected themselves from potential criminal

victimization.

Two points of clarification seem appropriate

concerning the theories of Durkheim (1895, 1893) and

Conklin (1975). First, Conklin (1975) did see the

potential for the fear of crime to cause individuals to

band together in collective ways. Conklin (1975: 68)

explained:

Crime may augment social interaction under certain

circumstances and in limited ways, but this is usually

for mutual self-protection rather than because people

feel closer to others with whom they share the

violated norms.

Simply put, Conklin (1975: 68) disagreed with the idea that

"…people interact more intensively because they have been

made more acutely aware of the norms and values that they

share with each other". Instead, if collective action does

take place, it occurs because "…people…come together to

protect themselves and to make sense of a confusing event"

(Conklin, 1975: 68).

Second, Emile Durkheim's theories were proposed in the

late 19th century. Conklin (1975: 60) argued that the

nature of crime has evolved over time. He proposed

"…Durkheim did not necessarily have such dramatic crimes in

mind when he suggested that crime served positive functions

for the community" (Conklin, 1975: 60). Even since Conklin

proposed his theory on the atomizing effect of the fear of

crime in 1975, the nature of crime has evolved. The point

is that the disagreements between the theories advanced by

Durkheim (1895, 1893) and Conklin (1975) need to be tested

to determine the nature of the impact the fear of crime has on individual behavior.

Research on Individual Reactions to the Fear of Crime.

Durkheim's (1895, 1893) and Conklin's (1975) works were theoretical discussions of the reactions to the fear of crime. In reviewing the prior research, the theories of Durkheim (1895, 1893) and Conklin (1975) have been tested in different ways. Before reviewing prior research, it is important to identify the categories of individual reactions to the fear of crime. The challenge of categorizing responses to fear has been an issue constantly faced by researchers (Lavrakas and Lewis, 1980). The problem, as described by Lavrakas and Lewis (1980), has been that it is difficult to create an internally consistent index of multiple behaviors that form a general category that encompasses the many possible reactions to the fear of crime. For example, intuitively it makes sense that someone who bought a car alarm would also have bought a home alarm. Lavrakas and Lewis (1980), however, made the point that even though those behaviors seemed similar, it was imperative to test for internal consistency before grouping those two behaviors together under a broad category.

Referring back to the theories advanced by Durkheim (1895, 1893) and Conklin (1975), the idea of individuals participating in collective responses to crime was ambiguous. For this research, it will be important to attempt to categorize specific behaviors into broad general categories to test the impact of the fear of crime on individual responses. Lavrakas and Lewis (1980: 270) discussed two reasons why categorizing behaviors was advantageous. First, they argued that multiple-item indices served as a means for reducing data (Lavrakas and Lewis, 1980: 270). Second, multiple-item indices "…provide a more stable measure of a construct than can a single item" (Lavrakas and Lewis, 1980: 270).

Across studies, there appeared to be a degree of consistency in establishing categories of behavioral reactions to the fear of crime. Three categories were often utilized to broadly delineate potential responses: (1) avoidance reactions; (2) protective reactions; (3) and collective reactions (see Gates and Rohe, 1987, Lavrakas and Herz, 1982). By definition, avoidance reactions involve "…avoid[ing] people, places, situations, or activities that expose one to the risk of victimization" (Gates and Rohe, 1987: 427). Protective reactions "…refer

to behaviors that protect one's property such as installing locks or burglar alarms" (Gates and Rohe, 1987: 427). Another dimension of protective reactions has included "…measures to guard oneself outside of the home, including a whistle or a weapon" (Gates and Rohe, 1987: 427). Finally, collective reactions to crime have entailed "…citizens work[ing] together with fellow residents to prevent crime and incivilities in their community" (Lavrakas & Herz, 1982: 481).

The three categories of behavior certainly have roots in the works of Durkheim (1895, 1893) and Conklin (1975). Emile Durkheim's (1893, 1895) theory of crime could be extended to have suggested that those who fear crime would have employed collective responses to that emotion. In contrast, Conklin's (1975) work would lead to arguing that fear of crime would have produced both avoidance and protective reactions.

At this point, it is important to consider the relationship between the fear of crime and avoidance, protective, and collective behaviors. Before discussing the prior research on those relationships, three points are worth noting. First, most individuals do something in response to crime or the fear of crime (Garofalo, 1981).

Estimates range from between 27 to 56% of people limit or change their activities in some way because of crime or the fear of crime (Garofalo, 1981: 847). Second, there is no simple one-to-one relationship between the fears of crime and behavioral responses (Skogan, 1981: 35). According to Skogan (1981: 35), "We can not assume that beliefs, perceived risk, or fear propel people to action in some mechanical and predictable fashion". The convoluted nature of the relationship between fear and behavioral responses may be due to the third point, which is "Reactions to crime vary greatly by the individuals' personal and demographic attributes" (Miethe, 1995: 27). These three points serve as a foundation for examining the relationship of the fear of crime to avoidance, protective, and collective behaviors.

A great deal of the prior research implied individuals employ avoidance or protective behaviors in response to the fear of crime (e.g. Taylor and Hale, 1986: Lewis and Maxfield, 1980: Gates and Rohe, 1987: Conklin, 1975). A majority of the research described a scenario similar to that found in Conklin (1975: 105):

> People often react to their fear of crime by reducing
> contact with others and by avoiding situations that

might lead to their victimization. They also take various security measures, such as purchasing firearms or installing burglar alarms.

The legitimacy of such conceptions of individual responses to the fear of crime will be explored by looking at the prior research on the links between fear and avoidance, protective, and collective behaviors.

The Relationship between Fear of Crime and Avoidance Behaviors.

Attempts have been made to test the link between the fear of crime and avoidance behaviors. Gates and Rohe (1987) used data from six Atlanta neighborhoods to test how individuals reacted to the threat of victimization. Gates and Rohe (1987: 440) found that "...avoidance reactions are primarily a response to actual crime rates and fear of crime". In essence, "...avoidance reactions are more likely when individuals are fearful..." (Gates and Rohe, 1987: 440). For the purpose of their research, Gates and Rohe (1987: 447) defined avoidance reactions by an index of six questions about places and activities the respondents avoided in their neighborhoods. Respondents were asked about avoiding public transportation, avoiding going out at night, avoiding going out alone in the neighborhood,

avoiding sidewalks in front of their house, avoiding nearby parks or recreational areas, and whether neighborhood street corners, shopping areas, public housing projects, or apartment complexes were avoided (Gates and Rohe, 1987: 450).

Skogan and Maxfield (1981) had similar findings in their analyses of fear among residents in Philadelphia, Chicago, and San Francisco. After surveying residents in these three cities, Skogan and Maxfield (1981: 194) concluded that "Fear is substantially related to limiting exposure to risk and reports of precautionary risk-avoidance tactics". Skogan and Maxfield's (1981: 262) operationalization of limiting exposure to risk and risk-avoidance tactics included self-reports of whether the respondents walked with others, drove rather than walked, avoided dangerous places, and stayed home after dark. The authors concluded that, "When people felt that events and conditions in their communities could affect them, they responded by reducing their exposure to those threats..." (Skogan and Maxfield, 1981: 194).

The Relationship between Fear of Crime and Protective Behaviors.

While the prior research found consistent links between the fear of crime and avoidance behaviors, the relationship between fear and protective behaviors has been murkier. In her study of 1,152 Texas residents, McConnell (1989: 147) found that fear of crime was significantly related to a variety of protective behaviors. A respondent's fear of crime was significantly, yet weakly, related to having installed window locks, door security chains, burglar bars, alarms, and outside lights in or around the household (McConnell 1989: 147). In addition, fear of crime had a significantly stronger relationship with carrying something for protection at night, carrying a weapon or mace, keeping car doors and windows locked at all times, and installing extra or better door locks (McConnell 1989: 147).

While fear of crime was positively related to the long list of protective behaviors just mentioned, McConnell (1989: 149) also found an inverse relationship between the level of fear and installing a fence for security. Put simply, "…as fear of crime increases, installation of a security fence decreases" (McConnell 1989: 149). McConnell

(1989: 149) also found that fear of crime explained 19.3 percent of the variance in installing a security fence. This was the strongest relationship that emerged among the prevention behaviors studied. In sum, although more prevention behaviors were significantly and positively related to the level of fear, the strongest relationship was the inverse association between fear and installing a security fence. McConnell (1989: 150) grouped installing a security fence under economic activity responses correlated to the fear of crime. This group of activities rested on the simple idea that some of the responses to the fear of crime cost a substantial amount of money (McConnell, 1989: 150). Simply put, installing a fence to surround a residence costs substantially more than purchasing window locks for protection. The costs associated with various responses to the fear of crime factor into the decision of whether or not to have used those measures as a means for protecting an individual's family or property.

While McConnell's work most frequently found positive relationships between levels of fear and individual protective behaviors, Gates and Rohe (1987) reached a different conclusion. In the six Atlanta neighborhoods studied, Gates and Rohe (1987: 441) found that fear of

crime was not related to individuals adopting protective behaviors. Protective reactions were primarily a response to "…neighborhood characteristics, social interaction, and the perceptions of social control" (Gates and Rohe (1987: 440). Gates and Rohe (1987: 447-448) operationalized protective reactions through a scale of six questions asking respondents whether they engraved their property, installed alarms, kept a watch dog or a gun, took self-defense courses, or took other security measures.

The inconsistent nature of the research findings on the link between fear of crime and protective reactions may be a by-product of the influences of economic costs mentioned earlier (McConnell, 1989; Skogan and Maxfield, 1981). The inverse relationship found by McConnell (1989: 149) between fear of crime and the protective response of installing a fence for security can be used as an example. Instead of interpreting the inverse effect to mean that fear did not influence protective behaviors, the inverse relationship could have been an economic consequence of the fact that installing a security fence was expensive. Simply put, those who were fearful may not have had the economic means to have reacted in a protective manner. In addition, Skogan and Maxfield (1981: 215) found, "The

strongest correlate of household protection was home ownership". This finding can also be interpreted from an economic standpoint because individuals who were renting residences may not have had the means, ability, or desire to pay for protective measures on residences that they did not own. With this in mind, the inconsistent relationship between the fear of crime and protective behaviors should not be that surprising considering the role economics could have played in influencing these responses to crime.

The Relationship between Fear of Crime and Collective Behaviors.

A great deal of research has been conducted concerning individual participation in collective responses to crime. Like the research concerning protective behaviors, the link between fear of crime and participation in collective responses is unclear. Lavrakas and Herz (1982) attempted to study the association between fear and collective action by studying citizen participation in neighborhood crime prevention initiatives. After interviewing 1,803 residents of both the city of Chicago and its suburbs, the authors found that the nature of the relationship between fear and participation in collective responses to crime depended on the type of neighborhood crime prevention program (Lavrakas

and Herz, 1982: 493). Lavrakas and Herz (1982: 493)
explained that the fear of crime did not differentiate
"...participators in meetings, informal surveillance, or
patrols/escorts from nonparticipators". On the contrary,
participants in the "WhistleSTOP" program, which encouraged
residents to buy whistles and blow them in cases of
suspicious or criminal events, felt significantly less safe
than nonparticipants in their neighborhoods (Lavrakas and
Herz, 1982: 493).

Gates and Rohe (1987) also found mixed results in
studying the associations between fear of crime and
participation in collective responses to crime. In the six
Atlanta neighborhoods studied, collective reactions were
primarily "...dependent on community integration and
perceptions of social control" (Gates and Rohe, 1987: 441).
Fear of crime was still found to be positively associated
with the adoption of collective behaviors (Gates and Rohe,
1987: 441). Although fear of crime was not the primary
impetus for participation, "Those...who feel threatened are
more likely to respond collectively [than those who did not
feel threatened]" (Gates and Rohe, 1987: 441).

While Lavrakas and Herz (1982) and Gates and Rohe
(1987) did find some evidence positively linking fear of

crime and participation in collective behaviors, findings

from research by others did not support such an

association. For example, Shernock (1986) compared a

sample of 48 Neighborhood Watch leaders (activists) with a

sample of 71 individuals who had not participated in the

program (nonactivists). Shernock (1986: 218) found no

relationship "…between crime prevention activism and

feelings of safety at night, feelings of safety during the

day, or overall feelings of safety". Podolefsky and Dubow

(1981) reached a similar conclusion to Shernock (1986) in

their analysis of collective responses to crime in urban

America. Podolefsky and Dubow (1981: 228) found that in

the cities of Chicago, San Francisco, and Philadelphia,

"…collective responses are not a result of fear of crime

nor of judgments about the extent of the crime problem in

the community".

While prior research has shown both a positive

association and no association between fear of crime and

collective behaviors, other research has reported an

inverse relationship between fear and collective reactions.

In their study of middle-class anti-crime patrols in Des

Moines, Iowa, Troyer and Wright (1985: 230) found that

those who participated in the patrols had lower levels of

fear than those who did not participate. Skogan and Maxfield (1981: 232) also found a moderate inverse relationship between the level of fear and participation in collective responses. The authors found that involvement in local crime related groups was "…*lower* among those who felt unsafe in their neighborhoods" (Skogan and Maxfield, 1981: 232).

Two points need be made about the inconsistent relationship between fear of crime and collective behaviors. First, as with protective responses, other influences may have affected the relationship between fear and individual reactions. In terms of collective responses, Skogan and Maxfield (1981: 233) pointed out "…those with firmly entrenched stakes in a community are most likely to be involved in a variety of local group activities, including those concerned with crime". In addition, "Long-term residents and those with strong social ties to others in the vicinity also are more likely to be participators" (Skogan and Maxfield, 1981: 234). In essence, the levels of fear individuals experienced may not have been as relevant to participation in collective activities as their stake in the neighborhood or familiarity with other residents.

Second, the convoluted nature of the relationship between fear and participation in collective behaviors could have been a result of the cross-sectional nature of most of the fear of crime research. For example, McConnell (1989: 179) found that "People who had formed a neighborhood crime watch reported the least amount of fear". McConnell (1989: 179) explained, "This finding supports the literature which suggests that crime watch programs are effective in decreasing the amount of fear in a neighborhood". What was not known was the level of fear experienced by those individuals before becoming involved with the neighborhood watch organization. In cross-sectional research, it is difficult to disentangle the true relationship between fear of crime and participation in collective responses to crime. The question of whether fear catalyzed participation in collective activities or participation placated fear has been difficult to answer.

Hypotheses.

The prior research on the relationship between fear of crime and individual behavioral responses has produced inconsistent results. This study attempts to enhance understanding of how individuals react to fear of crime through testing two hypotheses. The first hypothesis

emerged from the research done on the relationship between fear of crime and protective behaviors. Although the research findings were inconsistent concerning the link between the fear of crime and protective behaviors, a positive relationship still seems to be a reasonable expectation. Even though Skogan and Maxfield (1981) explained that protective behaviors are largely influenced by economic factors, McConnell (1989) still found a positive relationship between individual levels of fear and adoption of certain target hardening responses. This finding in particular leads to the first hypothesis.

Hypothesis 1: The fear of crime is positively associated with individuals adopting protective behaviors.

The second hypothesis was derived from Durkheim's (1895, 1893) theory that the fear of crime resulted in individuals banding together collectively against the threat of criminal victimization. Prior research on Durkheim's (1895, 1893) theory of crime has provided scant evidence for its legitimacy (e.g. Shernock, 1986, Podolefsky and Dubow, 1981). In fact, Skogan and Maxfield (1981) and Troyer and Wright (1985) found that individuals who participated in collective responses to crime actually

had lower levels of fear than those who did not participate in such programs. This more recent research led to proposing the second hypothesis.

Hypothesis 2: The fear of crime is negatively associated with individuals adopting collective behaviors.

The analyses will test the two hypotheses to determine which, if any, of them are supported by the results of a variety of statistical analysis techniques applied to more recent data. This work will extend the prior research by examining if the reactions to fear are affected by the crime rates in individuals' neighborhoods. The data to test the two hypotheses will be explained in the following chapter. The third chapter will present and discuss the statistical techniques which will be employed. The fourth chapter will present the results of those statistical techniques. Finally, the fifth chapter will provide a conclusion as well as a discussion of the results.

Chapter II

Data

Introduction.

Using data from the 2004 Omaha Conditions Survey, two

hypotheses will be tested. The 2004 Omaha Conditions

Survey was conducted by the Center for Public Affairs

Research at the University of Nebraska at Omaha. The

intent was to gauge how people felt about living and

working in the Omaha Area. The survey focused on

governmental services, neighborhoods, and crime.

Sample.

The 2004 Omaha Conditions Survey was conducted through

telephone interviews with adults from a random sample of

area households. Included in the sample were five counties

that formed the Metropolitan Area of Omaha, Nebraska. The

five counties were Douglas, Sarpy, Washington, Cass, and

Saunders. Respondents were interviewed in two phases. The

first phase utilized random digit dialing, which allowed

both listed and unlisted numbers to be included in the

sample. Three attempts were made to call a telephone

number before a residence was considered non-responsive.

The first phase of calls resulted in 806 respondents to the

survey, of which 473 claimed to reside in 30 different zip

codes in the city of Omaha. Eventually, respondents in zip
codes 68116, 68122, 68128, 68138, 68142, and 68157 were
excluded from the analyses due to those zip codes either
being outside of Omaha City limits or outside of Douglas
County. This left 24 zip codes in the analyses.

The second phase used published phone lists that
allowed additional interviews to take place in selected
areas of both North and South Omaha. This was done to
ensure a large enough sample from those two areas for
comparative purposes. The respondents to be used for this
research will be from only the City of Omaha to allow
merging their responses with crime data from Omaha. The
City of Omaha is located in Douglas County.

The 2004 Omaha Conditions Survey eventually produced a
sample of 440 residents who resided in the city of Omaha.
Those 440 residents reported living in 24 separate zip
codes. Table 1 shows the age distribution of those
residents. The initial sample contained a disproportionate
amount of elderly respondents compared to the age
distribution from the 2000 Census for Omaha. Because of
that disparity, the sample was weighted to compensate for
the abundance of elderly respondents in an attempt to
better represent the actual age distribution when

Table 1. Unweighted Sample of Omaha Respondents

			Sex		
			Female	Male	Total
Age	19 to 24	Count	14	19	33
		% within Sex	6.1%	9.0%	7.5%
	25 to 34	Count	31	35	66
		% within Sex	13.5%	16.7%	15.0%
	35 to 49	Count	50	67	117
		% within Sex	21.7%	31.9%	26.6%
	50 to 64	Count	64	45	109
		% within Sex	27.8%	21.4%	24.8%
	65 and over	Count	71	44	115
		% within Sex	30.9%	21.0%	26.1%
Total		Count	230	210	440
		% within Sex	100.0%	100.0%	100.0%

frequencies by age have been computed. The weighting factor utilized by the 2004 Omaha Conditions Survey is indicated in Table 2.

The analyses ultimately proceeded using the unweighted sample of 440 respondents. This decision was made for two reasons. First, and most importantly, Hierarchical Linear Modeling does not support weighted data for dichotomous or ordinal dependent variables. In essence, these data would not be able to be analyzed using the weighting factor. Second, the 2004 Omaha Conditions Survey was weighted using proper age and sex distributions for the city of Omaha, Nebraska, according to the 2000 Census. Using age and sex as control variables corrected for the uneven distribution of the samples in terms of those two characteristics. For those reasons, this project proceeded with an unweighted sample of 440 respondents, living in 24 zip codes. Table 3 shows the breakdown of those 440 respondents by the 24 zip codes included in the analyses.

Table 2. Weighting Factor Used in the 2004 Omaha Conditions Survey

		Sex	
		Male	Female
Age	19 to 24	1.609	2.226
	25 to 34	1.179	1.333
	35 to 49	.920	1.152
	50 to 64	.940	.754
	65 and over	.701	.678

Table 3. Zip Code of Residence for Omaha Respondents

		Frequency	Percent	Cumulative Percent
Zip Code	68102	4	.9	.9
	68104	48	10.9	11.8
	68105	21	4.8	16.6
	68106	27	6.1	22.7
	68107	22	5.0	27.7
	68108	7	1.6	29.3
	68110	4	.9	30.2
	68111	17	3.9	34.1
	68112	15	3.4	37.5
	68114	24	5.5	43.0
	68117	6	1.4	44.3
	68118	8	1.8	46.1
	68124	28	6.4	52.5
	68127	8	1.8	54.3
	68130	13	3.0	57.3
	68131	12	2.7	60.0
	68132	22	5.0	65.0
	68134	33	7.5	72.5
	68135	7	1.6	74.1
	68137	23	5.2	79.3
	68144	29	6.6	85.9
	68152	6	1.4	87.3
	68154	26	5.9	93.2
	68164	30	6.8	100.0
	Total	440	100.0	

The County.

In 2000, Douglas County, Nebraska, had a population of 465,683 (U.S. Census Bureau, 2000a). Douglas County's racial composition was primarily White, 81.0%, followed by African-Americans, 11.5%, Asians, 1.7%, American Indian/Alaska Native, 0.6% (U.S. Census Bureau, 2000a). The percentage of residents of Hispanic origin was 6.7% (U.S. Census Bureau, 2000a). According to the U.S. Census Bureau, 26.6% of the residents were under 18 years of age, while 11.0% were over the age of 65. In 1999, the median household income was $43,209 (U.S. Census Bureau, 2000a). In 2000, the median value of owner-occupied housing units was $100,800 (U.S. Census Bureau, 2000a).

The City.

In 2000, the city of Omaha, Nebraska, had a population of 390,007 residents (U.S. Census Bureau, 2000b). According to the U.S. Census Bureau (2000b), 26.6% of the population in 2000 was 18 years old or younger while 11.8% was older than the age of 65. The median age of residents in Omaha was 33.5 years (U.S. Census Bureau, 2000b). Omaha's racial composition was 78.4% White, 13.3% African-American, 1.7% Asian, and 0.7% American Indian/Alaska Native (U.S. Census Bureau, 2000b). In 2000, 7.5% of the

residents in Omaha were of Hispanic origin (U.S. Census
Bureau, 2000b). The median income in Omaha, Nebraska, was
$40,006, while the median housing value was $94,200 (U.S.
Census Bureau, 2000b). While this study has focused on
only one middle-sized city, demographics of Omaha closely
resemble those for the entire nation. Furthermore, there
are more middle-sized cities in the nation than there are
large metropolises. Thus, the results of using data for
Omaha may have more generalizability than using data for
very large cities.

Units of Analysis.

Two units of analysis will be used for this study.
The first unit of analysis will be the individual.
Individual reactions to the fear of crime will be the first
concept explored. Second, zip codes will be used as a unit
of analysis to determine whether the crime rate in each zip
code influenced reactions to the fear of crime. Zip
(Zoning Improvement Plan) codes have continued to be
entities of the United States Postal Department used to
help sort and distribute mail (U.S. Census Bureau, 2002).
Although zip codes were not ecologically-defined areas,
they still allowed separating the city of Omaha into
smaller areas for examining the effects of crimes in the

areas in which individuals resided (U.S. Census Bureau, 2002).

Dependent Variables: Individual Reactions to Crime.

This research will attempt to create indices to operationalize individual protective and collective reactions to the fear of crime. Lavrakas and Lewis (1980: 270) suggested, "…it is unnecessary to treat all of citizens' crime prevention measures as separate dependent variables". Instead, "From a measurement standpoint, reliable multiple-item indices or scales are quite desirable as a means for reducing data" (Lavrakas and Lewis 1980: 270). With that in mind, efforts will be made to create an index of five behaviors to define protective reactions. For all of the following survey questions, a "yes or no" response format was used.

1) Do you keep residence lights on at night?

2) Do you keep a dog for protection?

3) Do you keep a gun for protection?

4) Did you have special locks installed?

5) Did you have a security system installed?

For collective behaviors, an attempt will be made to create an index of three questions. Again, the "yes" or

"no" response format was used for all of the following

survey questions.

1) Do you currently belong to the Neighborhood Association?

2) Have you taken part in Neighborhood Association

activities?

3) Do you let neighbors know if gone for an extended period

of time?

An attempt will be made to include two Neighborhood

Association participation variables into a collective

behaviors index, based on the works of Podolefsky and DuBow

(1981) and the U.S. Department of Justice (1981).

Podolefsky and DuBow (1981: 110) argued that participation

in neighborhood groups often led directly into group crime

prevention efforts. In addition, "…most collective anti-

crime activities are carried out in multi-issue groups"

(Podolefsky and DuBow, 1981: 114). Lavrakas et al. (U.S.

Department of Justice, 1981: 9) also found that "…most of

these (neighborhood crime prevention) organizations were

not initially formed for crime prevention reasons".

Organizations, like neighborhood associations, eventually

either led to or incorporated collective anti-crime

efforts. For that reason, even though the questions

pertaining to participation in neighborhood associations

did not specifically mention crime prevention, prior

research (e.g. Podolefsky and DuBow, 1981; U.S. Department

of Justice, 1981) indicated that most neighborhood

associations did incorporate anti-crime measures.

Fear of Crime.

The fear of crime will be the primary independent

variable for this study. There has been considerable

variation in how the fear of crime has been measured (see

Ferraro & LaGrange, 1987). For the purposes of this

research, fear will be operationalized using the following

question:

Are you very worried, a little worried, or not at all

worried about crime[1]?

1= Very worried

2= A little worried

3= Not at all worried

The question now arises as to the legitimacy of this

survey question in measuring the fear of crime. Ferraro

and LaGrange (1987) offered several suggestions for

accurately measuring the fear of crime. They initially

suggested that "…measures of fear should tap the emotional

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[1] Attempts were made to create a scale for the fear of crime independent variable from other similar questions in the 2004 Omaha Conditions Survey. None of the combinations produced a sufficiently large value of alpha to justify such a scale.

state of fear rather than judgments or concerns about crime
(Ferraro and LaGrange, 1987: 81). The use of the term
"worried" in the survey question gauged an emotion as
opposed to a judgment about the severity of crime. Even
though Ferraro and LaGrange (1987) made specific reference
to the advantage of using terminology like "how afraid" in
the survey question, the use of "worried" still will have
elicited an emotional response to crime, as opposed to a
judgment about crime.

In addition, Ferraro and LaGrange (1987: 81)
recommended using "…explicit reference to crime" in trying
to measure the fear of crime. This has been contrasted
with asking how safe individuals feel being out alone in
their neighborhood at night. Asking individuals if they
felt safe being alone at night has not made an explicit
reference to crime; therefore, it has been difficult to
claim such a question truly tapped into fear of crime. The
survey question purporting to measure fear of crime in the
Omaha Conditions Survey followed this suggestion in that
the word "crime" was part of the question being asked.

Finally, Ferraro and LaGrange (1987) argued against
posing questions purported to measure fear in a
hypothetical sense. The use of the phrase "how worried

would you be" measures anticipated fear, as opposed to
actual fear (see Garofalo, 1981). The survey question
being used in this analysis is posed in a clear and direct
fashion. As Ferraro and LaGrange argued (1987: 81), "…it
is better to obtain specific reports about how individuals
feel in everyday situations". The absence of any sort of
speculative clause allowed the question to better measure
actual fear.

While the measure of fear of crime did not involve a
hypothetical clause, it could be argued that it was vague.
This was especially true for the term "crime". Ferraro and
LaGrange (1987) stressed using measures of fear that were
specific to certain crimes. It makes sense that people
would have experienced different levels of fear about
different crimes, based on their characteristics.
Intuitively, women would be expected to have experienced
greater levels of fear concerning rape than men. Nuances
of that nature simply can not be tapped with one general
measure of fear of crime. Thus, the purpose of this
analysis will be simply to determine whether the fear of
crime was related to individuals adopting either protective
or collective behaviors. The inclusion of crime specific

fear as an independent variable would have introduced a

complexity beyond the scope of this research.

In addition, the use of the term "worry" in the survey

question, as opposed to the term "fear" could be construed

as being problematic. Even though the term "fear" was not

included in the question purported to measure the fear of

crime, the term "worry" still has asked about an emotion.

Garofalo (1981) defined fear of crime as an emotional

reaction characterized by a sense of danger and anxiety

that was elicited by perceived cues in the environment that

related to some aspect of crime for the person. Given this

definition, the survey question in the 2004 Omaha

Conditions Survey can be regarded as having tapped into

emotions related to crime because it used the term "worry"

and it related respondents' emotions back to crime. In

sum, although the survey question was not ideal, it still

fit the definition of fear of crime as given by Garofalo

(1981).

Sex.

In addition to the fear of crime independent variable,

other pertinent social and demographic correlates will be

included into the analysis as control variables. Prior

research on individual reactions to crime has indicated

variation in how males and females responded to the fear of crime (e.g. Lavrakas and Herz, 1982: Gates and Rohe, 1987). Lavrakas and Herz (1982: 490) found that the majority of participants in neighborhood crime prevention were males, while the majority of nonparticipants were female. Gates and Rohe (1987: 440) also found variation in how males and females responded to the fear of crime. Gates and Rohe (1987: 440) discovered that women were more likely than men to have adopted avoidance reactions. In addition, men were found to be more likely than females to have used protective measures (Gates and Rohe, 1987: 440). Thus, an individual's sex may have influenced the way that a person reacted to the fear of crime. Sex will be operationalized using a dichotomous variable in which females will be the reference group and males will be the group being tested.

Race.

Like a person's sex, race can also have affected responses to the fear of crime (Shernock, 1986). Research on the fear of crime, in general, has focused on variation in the levels of fear reported by different races (Skogan, 1995). Skogan (1995: 69) suggested that a majority of the research on the relationship between race and the fear of crime has found that blacks, as a group, had the highest

levels of fear of crime. Skogan (1995: 69) argued that the disparity in fear levels was caused by blacks being more likely to be victimized and to live in neighborhoods where serious crime was more frequent. In terms of reactions to crime, Shernock (1986: 218) found that after socioeconomic factors were controlled, rates of participation in Neighborhood Watch increased for blacks and even exceeded rates for whites in some cases. Skogan and Maxfield (1981: 237) also found that black respondents reported higher rates of involvement in collective anti-crime activities than whites.

Race/Ethnicity will be operationalized using two dummy variables. The White/Caucasian group will be used as the reference category. The first dummy variable is comprised of African-American/Black respondents. The second dummy variable is comprised of Hispanic or Latino respondents. Due to the exceedingly small number of Native American and Asian respondents in the sample and the lack of basis for grouping them into another category, the five total individuals in those two categories were excluded from the analyses.

Marital Status.

Shernock (1986: 217) also found an association between marital status and participation in community crime prevention activities. He found that married subjects were more likely than unmarried subjects to have participated in collective crime prevention activities (Shernock, 1986: 217). The greater likelihood of participation by married respondents may have resulted from an increased concern about the protection of a spouse or an entire family (Shernock, 1986: 216). Marital status will be operationalized by using a dichotomous variable. Non-married respondents will be used as the reference group.

Age.

Prior research on reactions to the fear of crime has also found a relationship between age and behavioral reactions (e.g. Gates and Rohe, 1987: Miethe, 1995). Gates and Rohe (1987: 441) found that older individuals were more likely than younger individuals to have adopted protective measures. Also, Shernock (1986: 217) discovered that those 30 years old and younger were least likely to have participated in collective crime prevention activities. The group with the highest rate of participation, according to Shernock (1986: 217), consisted of those between the

ages of 31 and 45. Finally, Miethe (1995: 27) explained that the elderly represented a social group displaying high levels of fear which in turn corresponded to the adoption of more precautionary and avoidance behaviors. For these reasons, age will be included in the analyses. Age will be operationalized using a continuous variable that corresponds to respondents' ages.

Income.

Garofalo (1981: 846) discussed the importance of income in influencing reactions to the fear of crime. He explained, "…the basic point is that responses to fear involve some costs that people are more or less willing and able to endure" (Garofalo, 1981: 846). McConnell's (1989: 149) finding of an inverse relationship between levels of fear and the protective behavior of installing a security fence was an example of the importance economics has for explaining reactions to fear. The inverse relationship was interpreted as being due to the large cost of installing such a fence (McConnell, 1989: 149). Simply put, a respondent's income may have had a large influence on the type of behavioral response that person undertakes in response to the fear of crime.

Income will be operationalized using three dummy variables. Individuals making under $30,000 will constitute the reference category. The first dummy variable will indicate those respondents with a household income between $30,000 and $50,000. The second dummy variable will indicate respondents with a household income between $50,000 and $75,000. The third dummy variable will represent those respondents with a household income over $75,000.

Educational Level.

Educational level, like economic status, has also been found to have influenced individual behavioral responses to crime (e.g. Shernock, 1986: Lavrakas and Herz, 1982). Shernock (1985: 216) found a statistically significant positive relationship between educational level and participation in collective Neighborhood Watch activities. Lavrakas and Herz (1982: 491) discovered that individuals with less than a high school education were less likely than those with at least a high school education to participate in neighborhood crime prevention programs. Thus, educational level will be included into the statistical analyses.

Educational level will be operationalized using a series of three dummy variables. Respondents with less than a high school diploma (or no GED) will be used as the reference category. The first dummy variable will represent those respondents in the post-high school category and will include those with a high school diploma or GED, and those with some college but no degree, and those with an associate's (2-year) degree. The second dummy variable will represent those who have earned a bachelor's (4-year) degree. The third dummy variable will represent those in the post-college category, which will include those with a master's degree or those with a doctorate or professional degree.

Length of Residence.

The amount of time individuals have lived at their current addresses will also be used as an independent variable. This variable will be included because those who have lived in a residence for a greater period of time should be more likely to have a higher stake in their neighborhood. This higher stake may have led to involvement in collective responses to crime (Skogan and Maxfield, 1981: 233). Skogan and Maxfield (1981: 234) found this was the case for participation in neighborhood anti-

crime initiatives. They explained, "Long-term residents and those with strong social ties to others in the vicinity also are more likely to be participators" (Skogan and Maxfield, 1981: 234). The length of residence variable will be operationalized by a continuous variable that was based on a question asking respondents how long they have lived at their current residence.

Home Ownership.

Including home ownership into the analysis was based on the role economics play in influencing reactions to crime (McConnell, 1989; Skogan and Maxfield, 1981). Skogan and Maxfield (1981: 215) found that the strongest variable in predicting protective behaviors was home ownership. As the owners of property, home owners have more of an investment in their residential areas than do renters. Thus, it seemed reasonable to have expected them to have engaged in protective activities to help safeguard their property and possessions. The home ownership variable will be represented by a dichotomous variable. Respondents who do not own their homes will be used as the reference group.

Presence of Children.

The presence of any children under the age of 18 in the household will also be used as an independent variable.

The presence of children will be included because of Warr's

(1992) notion of altruistic fear. Warr (2000: 455)

explained:

> "When individuals face an ostensibly dangerous
>
> environment, they may naturally fear for their own
>
> personal safety. At the same time, they may also fear
>
> for other individuals (e.g. children, spouses,
>
> friends) whose safety they value."

Although Warr (2000: 455) focused more on the role of

altruism in influencing fear, his notion of altruistic fear

could also have influenced reactions to the fear of crime.

For example, although a family may have felt like it was

necessary to have a gun for protection, the presence of

children in the household may have led to not purchasing a

firearm out of safety concerns.

The presence of children independent variable will be

represented by a dichotomous variable. Respondents without

any dependent children in the household will represent the

reference group.

Crime Rate in the Zip Code of Residence.

Finally, the official violent crime rate in each of

the zip codes in Omaha will be used as an independent

variable[2]. Zip codes will be the areas that will be treated
as the neighborhoods of the respondents. The inclusion of
this variable stems from the work of Skogan and Maxfield
(1981). Skogan and Maxfield (1981: 20-21) primarily
focused on how residents of various neighborhoods in
Chicago, Philadelphia, and San Francisco coped with fear.
They also alluded to how city characteristics could have
influenced the fear of crime (Skogan and Maxfield, 1981:
20-21). In addition, there have been numerous studies
which have analyzed the role neighborhood-level variables
have in influencing reactions to fear (see Gates and Rohe,
1987). This project extends that a step further by
incorporating a zip code-level variable. Including the
official violent crime rates for each of the zip codes will
permit identifying if individuals appear to be reacting to
the level of crime in their zip codes regardless of whether
this is deliberate or conscious or not.

The official violent crime rate will be defined in
terms of a ratio of violent crimes per mile. The violent
crimes to be used will be homicide, assault, sexual
assault, and robbery. The focus on only the violent crime

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[2] Individual criminal victimization was not used as an independent variable because respondents of the
2004 Omaha Conditions Survey were only asked about property crime victimization.

rate stemmed from the suggestion of Ferraro and LaGrange (1987: 81) that fear should be assessed in terms of specific types of crime since individuals fear different crimes in various degrees. With that in mind, it makes sense that reactions to the fear of crime should also be assessed in terms of a specific type of crime. In this project, violent crime will serve as the specific crime referent suggested by Ferraro and LaGrange (1987: 81).

The inclusion of homicide, assault, sexual assault, and robbery under the category of "violent" crime is based on a desire to provide more, but not too much specificity to the analyses. Simply put, a homicide may simply be an assault gone wrong. A robbery may simply be an afterthought to an assault, or vice versa. The blurred lines between these offenses make it difficult to argue that the specificity of simply including homicide rates or assault rates was necessary. With that in mind, all four offenses will be included to define "violent" crimes. Furthermore, Omaha has not been a high crime city and does not have particularly high rates of violent crime. Thus, using the total of these four violent crimes permitted balancing the importance of having reliable variation in a dependent variable with the need for crime specificity.

Violent crime rates per mile will be used rather than population-based rates. The primary reason is because crimes against persons did not have to occur in the areas in which victims live. Thus, the residential populations of Census tracts, neighborhoods, or zip codes were not the populations at risk of becoming victims. On the other hand, violent crimes could have occurred virtually anywhere within an area- inside or outside of building- or in front or in back of buildings. Thus, virtually every piece of territory within an area was at risk.

Crime rates per square mile will be computed so that the numerical values of the rates will not be small decimal numbers. Rates per acre would have small values because the number of crimes in a 1 square mile area would have to be greater than 640 to have a value of 1 for the crime rate. All of the zip codes are larger than a square mile.

A crime rate is needed to adjust for the varying sizes of the zip codes. As an artifact of size, the number of crimes will tend to be larger in zip codes that are physically large than the number of crimes in physically small areas.

Before introducing the spatial variable into the analyses, the violent crimes had to be geocoded onto the

city streets in Omaha, Nebraska. Violent crimes that took
place during the fourth quarter of 2003 and the first
quarter of 2004 were used to calculate the violent crime
rate. This time frame corresponded to the time period in
which respondents completed the 2004 Omaha Conditions
Survey.

A small fraction of the violent offenses did not
correspond to addresses on the Omaha street map. Those
offenses were dealt with in two ways. First, the violent
offenses that took place at addresses that were listed as
"UNKNOWN" in the file had to be eliminated from the
analyses. There was simply no way to determine the zip
code in which those offenses occurred. Second, the violent
offenses that did not geocode due to an incorrect address
were dealt with by physically driving to those locations in
an attempt to determine the correct address for the
offense.

In the fourth quarter of 2003, there were eleven
offenses that had to be eliminated because of an unknown
address. Those eleven offenses represented ten separate
incidents, including five sexual assaults, three felony
assaults, and two robberies. In addition to the eleven
unknown addresses that were eliminated from the fourth

quarter of 2003, two additional robberies and one homicide had to be eliminated because they occurred at addresses outside of Omaha city limits. After eliminating the unknown addresses and the offenses outside of Omaha city limits, a total of 455 violent offenses remained in the analyses. The 455 violent offenses consisted of 254 robberies, 121 felony assaults, 72 sexual assaults, and 8 homicides.

In the first quarter of 2004, there were two offenses that had to be eliminated because of an unknown address. Those two offenses represented two separate incidents, both of which were sexual assaults. After eliminating the offenses that occurred at unknown addresses, a total of 461 violent offenses took place in the city of Omaha during the first quarter of 2004. The 461 offenses included 271 robberies, 116 felony assaults, 70 sexual assaults, and 4 homicides.

After the violent crimes were geocoded onto a street-level map, they were then aggregated to the zip code level. The violent offenses from both quarters were added together to arrive at a total number of violent offenses, per zip code in the time period from September 1st, 2003, to March 31st, 2004. The number of violent offenses in each zip code

was then divided by the number of square miles in that zip code in order to arrive at the violent crime rate per square mile in each respective zip code. Table 5 shows the breakdown of the violent crime rate for all 24 zip codes used in the analyses. Map 1 identifies the location of the zip codes and presents their violent crime rates per square mile in parentheses.

Table 4. Violent Crime Rates for Omaha Zip Codes for the Fourth Quarter 2003 and the First Quarter 2004

Zip Code	Violent Crimes 4th Quarter 2003	Violent Crimes 1st Quarter 2004	Total	Area (sq mi)	Violent Rate (sq mi)
68102	18	24	42	1.604	26.185
68104	40	38	78	6.869	11.355
68105	38	42	80	3.772	21.209
68106	26	22	48	5.259	9.127
68107	41	49	90	6.664	13.505
68108	14	21	35	3.084	11.349
68110	20	24	44	9.013	4.882
68111	78	65	143	5.275	27.109
68112	15	14	29	10.432	2.780
68114	20	26	46	5.913	7.779
68117	7	2	9	4.356	2.066
68118	0	0	0	4.020	0.000
68124	7	6	13	5.784	2.248
68127	8	7	15	6.602	2.272
68130	1	1	2	5.645	0.354
68131	37	40	77	2.017	38.176
68132	17	12	29	2.557	11.341
68134	22	27	49	7.808	6.276
68135	0	0	0	6.309	0.000
68137	12	9	21	8.314	2.526
68144	14	16	30	7.695	3.899
68152	5	3	8	11.505	0.695
68154	7	9	16	7.453	2.147
68164	8	4	12	8.630	1.390

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Map 1. Zip Codes and Violent Crime Rates per Square Mile

- - - Omaha City Boundaries

——— Zip Code Boundaries

( ) Violent Crime Rate Per Square Mile

68110 (4.9)

(26.2)

68112 (2.8)

68102

68108 (11.3)

68111 (27.1)

68131 (38.2)

68105 (21.2)

68107 (13.5)

68152 (0.7)

68104 (11.4)

68132 (11.3)

68106 (9.1)

68117 (2.1)

68134 (6.3)

68114 (7.8)

68124 (2.2)

68127 (2.3)

68164 (1.4)

68154 (2.1)

68144 (3.9)

68137 (2.5)

68118 (0.0)

68130 (0.4)

68135 (0.0)

0   2   4

miles
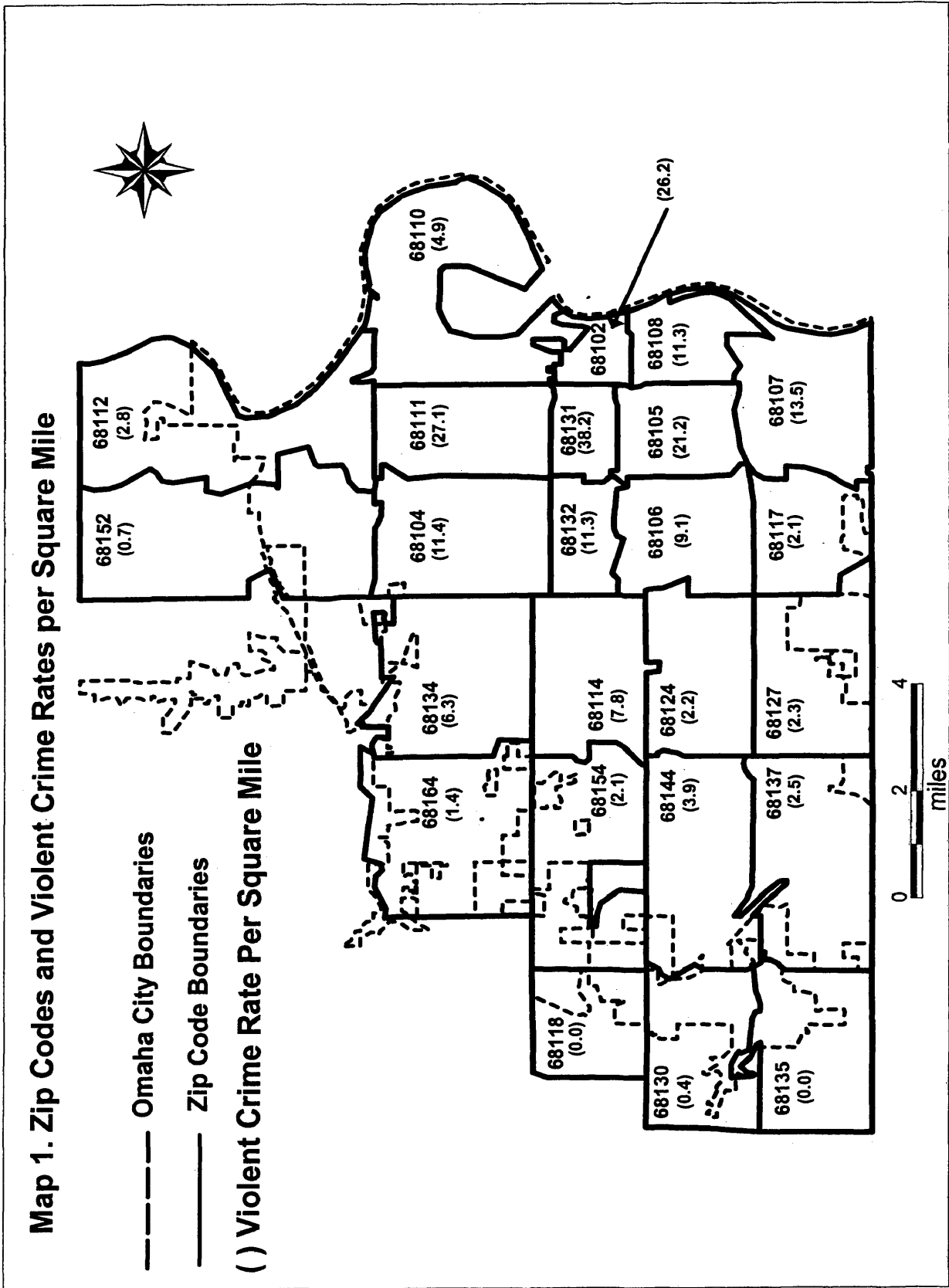
Chapter III

Methodology

Cronbach's Alpha.

Cronbach's Alpha will be used to test the internal consistency of the proposed scales used to represent protective and collective behavioral responses to the fear of crime. In grouping together multiple behaviors into protective and collective categories, it is essential that "...a large proportion of the test variance be attributable to the principal factor running through the test" (Cronbach, 1951: 320). In essence, the questions that composed protective and collective categories must measure the same things in order to be grouped together (Cronbach, 1951: 320). Cronbach's Alpha tests whether the behaviors in each category are similar enough to constitute an internally consistent scale. The minimal standard for reliability will be a Cronbach's Alpha greater than or equal to .70. Cronbach's Alpha is essentially the average inter-item correlation among the variables.

Hierarchical Linear Modeling (HLM).

This project will attempt to analyze reactions to the fear of crime on two levels. First, the influence of individual-level characteristics on reactions to crime will

be analyzed. Second, the effect of the violent crime rates in the zip code of residence, which will be a proxy for the neighborhood or community in which individuals live, will be incorporated to determine how reactions to the fear crime vary by neighborhood among the residents of Omaha represented in the survey. Hierarchical Linear Modeling will be used for these analyses.

A Hierarchical Linear Model uses units of analyses from two different levels. Raudenbush and Bryk (2002: 100) explained, "At level-1, the units are persons and each person's outcome is represented as a function of a set of individual characteristics. At level-2, the units are organizations". In this project, level-1 involves the individual characteristics that influence reactions to the fear of crime. Level-2 uses the violent crime rates of the zip codes in which respondents live. The variations of crime rates across zip codes can influence reactions to crime just as individual characteristics can affect responses to the fear of crime. If the effect of crime rates in zip codes is not significant, the effect of fear will be interpreted from the level-1 results.

Omaha, Nebraska, has had several traditional subdivisions contained within the city. According to Dr.

Dennis W. Roncek (personal communication, May 4, 2004), east of 72nd Street has been considered traditional Omaha while west of 72nd Street has been considered as the add-ons. Within Eastern Omaha, there are major subdivisions separating the African-American, Eastern and Northern European, and Hispanic communities, as well as the upper-middle and upper class areas (Roncek, personal communication, May 4, 2004). Western Omaha has had working class residential areas that have been south of L Street and middle class areas extending west and north of L Street (Roncek, personal communication, May 4, 2004). Northwestern Omaha is increasingly becoming upper-middle class (Roncek, personal communication, May 4, 2004).

Crime in Omaha also varies substantially throughout the city. The heaviest concentrations of the most serious crime tend to be in Eastern Omaha, although there are substantial internal variations, which appear to correspond to the zip codes in the city (Roncek, personal communication, May 4, 2004). It is expected that these substantial differences across neighborhoods (zip codes) will affect how individuals react to the fear of crime.

Hierarchical Linear Modeling (HLM) identifies these effects across neighborhoods. It is expected that

individuals in the same neighborhood (zip code) will react to the fear of crime in a similar manner. For example, it is expected that males, as a group, in the same neighborhood will react to the fear of crime in a similar manner. At the same time, reactions to the fear of crime are expected to vary by the neighborhood (zip code) of residence.

For the analyses, it is expected that the crime rate of the neighborhoods will affect the intercept of the Level-1 equation (Anderson, 2002). Put simply, it is anticipated that individuals will react more to the fear of crime in areas with higher crime rates. In addition to affecting the intercept of the level-1 equation, it is expected that the crime rates of the neighborhood (zip code) will affect the coefficient of the fear of crime variable in the analyses (Anderson, 2002). Put simply, it is expected that as the crime rate in a neighborhood (zip code) increases, so to will the effect of fear in that neighborhood (zip code) increase the likelihood of protective or collective behaviors. If there is no variance in the reaction to the fear of crime across neighborhoods, the effects of the fear of crime, as

mentioned earlier, will be interpreted using the effects found from the level-1 analyses.

Limitations and Implications.

The purpose of this project is to enhance the understanding of how individuals react to the fear of crime. It will attempt to provide a greater understanding of the reactions to fear due to three features of the research design. First, the measure of fear used by the Omaha Conditions Survey circumvents the problem of ambiguity present in past measurements of fear of crime (Ferraro and LaGrange, 1987). Instead of asking respondents about areas in their neighborhoods that they would fear walking in at night, the survey question posed in the Omaha Conditions Survey specifically asked about respondents' levels of worry about crime.

Second, reactions to the fear of crime are attempted to be grouped into categories of protective and collective responses. According to Lavrakas and Lewis (1980: 270), categorizing behaviors is advantageous for two reasons. Grouping responses to fear of crime both reduces data and also serves as a "...more stable measure of a construct than can a single item" (Lavrakas and Lewis, 1980: 270).

Finally, this project will analyze the role that respondents' zip code of residence plays in influencing their reactions to fear. By incorporating the crime rates of each of the zip codes into the analyses, this project will attempt to go beyond simple individual characteristics in trying to discern how people react to the fear of crime.

The incorporation of crime rates of zip codes into the analyses extends research on the fear of crime in an important way. Prior research on the fear of crime has been extensive in analyzing how neighborhood characteristics influence fear of criminal activity. For example, Taylor, Gottfredson, and Brower (1984) focus on how fear of crime varies in Baltimore City neighborhoods. The prior research, however, on how reactions to the fear of crime vary by location is very limited. An individual living in a zip code in west Omaha who reports the same level of fear of crime as someone in a zip code in north Omaha may react in a completely different manner. This project will analyze how the crime rates in the zip codes of Omaha, Nebraska, affect reactions to the fear of crime.

This research does not intend to address two major issues. First, no assessment of the rationality of fear itself, or the responses to fear, will be undertaken

despite the considerable discussion in the fear of crime research about this subject. For example, Taylor and Hale (1986) explain that certain groups of people, such as the elderly, display levels of fear not commensurate to the rate at which they are victimized. Conversely, young males are the least fearful, yet the most often victimized (Taylor & Hale, 1986). This research will not attempt to examine the specifics of this discrepancy about fear, or the rationales involved. In addition, this research will not examine the rationality of certain reactions to the fear of crime. At no point in this research will any category of respondents be criticized for reacting to the fear of crime in a particular way.

Second, no attempt will be made to evaluate the efficacy of specific responses to the fear of crime in either decreasing crime or reducing fear. For example, this analysis will not mirror Rosenbaum's (1987) evaluative look at the soundness of Neighborhood Watch programs as fear and crime reducing strategies. The main thrust of this research is to take the fear of crime a step further, from evaluating what leads to fear to evaluating how people react to their fear.

Four limitations in the scope of this project seem apparent. First, as a general overview, emotions are hard to measure. Emotions can be fleeting, evolving, and volatile. With that in mind, a simple survey question asked during one cross-section of time will inherently have a difficult time accurately capturing a person's true level of fear concerning crime. In addition, fear and its subsequent responses are mediated through a variety of other factors. Garofalo (1981) makes the point that responses to the fear of crime are influenced by various costs and options. An impoverished person probably does not have the economic means to purchase an elaborate home security system. Although the analyses includes various demographic variables in trying to predict the responses to crime, it is still difficult to delineate the specific effect fear has on certain behavioral reactions.

A second limitation concerns the lack of specificity concerning fear about certain crimes. Ferraro and LaGrange's (1987: 81) research on measuring the fear of crime suggested that "…general referents of crime are often vague" (81). For that reason, it is recommended that "…specific victimizations or categories of victimizations be used to assess an individual's fear reactions" (Ferraro

and LaGrange, 1987, 81). Unfortunately, the survey

instrument used in this analysis does not allow separating

the levels of fear for certain categories of victimization.

The third limitation is that this is a study using

data for only a single city. As mentioned earlier, the

results from studying Omaha, however, may have greater

generalizability than results from studying one of the

larger cities in the United States.

The fourth limitation is that zip codes are not really

neighborhoods. Zip codes were created by the United States

Postal Service to help the distribution of mail. With that

in mind, violent crime rates can still be computed for each

individual zip code in Omaha. Although zip codes do not

correspond perfectly to neighborhoods, they provide a way

to analyze whether the violent crime rate in an area

affects individual reactions to the fear of crime.

The point of this research is not to argue that

fearing crime is a good thing. On the contrary, the goal

is to examine both negative and positive behaviors that

emerge from fear of crime. In their influential piece on

how neighborhoods can decline, Wilson and Kelling (1982)

argued that an unfixed broken window can signal a general

apathy among residents about changing the quality of

neighborhood in which they live. Fear of criminal invasion can subsequently ensue and residents can ultimately cut off social ties in the neighborhood (Wilson and Kelling, 1982). Through a greater understanding of how people react to the fear of crime comes an increased knowledge of how to convince, assist, or facilitate a collective response to that emotion. If collective action takes place, the stability of the community persists and atomization is not the result.

The prevailing view expressed in the existing research is that fear has a negative impact on individuals and an atomizing effect on neighborhoods (see Gates and Rohe, 1987). This research project attempts to examine that position through analyzing how fear affects a person's behavior. As has been mentioned, a great majority of the research has treated the fear of crime as a negative phenomenon. Instead of using hypothetical situations however, this research attempts to test whether the fear of crime truly leads individuals to adopt certain behaviors. Finally, the extent to which the crime rate in the zip code of residence affects reactions to crime will be explored. By taking fear of crime a step further, from an effect to a

cause, much can be added to the realm of research on the subject.

Chapter IV

Results

Introduction.

Prior research has not adequately examined the relationship between the fear of crime and behavioral reactions to that fear. In addition, the few studies that have analyzed how individuals react to the fear of crime have not included a spatial-level variable like the violent crime rate in the zip code of residence (See McConnell, 1989.). Because of that, there was not a model to follow for these analyses. Thus, several different types of analyses were utilized. The process used can serve as a model for subsequent analyses concerning reactions to the fear of crime using a spatial variable, like the violent crime rate in the zip code of residence.

The analyses began by using Cronbach's Alpha to test the internal consistency of the indices purporting to measure protective and collective behavioral responses to the fear of crime. The analyses then proceeded to Hierarchical Linear Modeling (HLM), which attempted to identify differences in how individuals reacted to the fear of crime across zip codes. The zip code of residence

served as a proxy measure for the neighborhood of residence.

Results of Cronbach's Alpha Test for Protective Behaviors.

Cronbach's Alpha was used to assess the reliability, or internal consistency of indices for protective behaviors. Two separate indices were proposed for protective responses to the fear of crime and collective responses to the fear of crime. The protective index attempted to include five "yes" or "no" questions about individual behaviors. The questions were:

1) Do you keep residence lights on at night?

2) Do you keep a dog for protection?

3) Do you keep a gun for protection?

4) Did you have special locks installed?

5) Did you have a security system installed?

The Cronbach's Alpha for those five behaviors was .4279. The value of .4279 indicated very little consistency between the five behaviors. Nunnally and Bernstein (1994: 265) recommended that an acceptable minimum alpha value be .70, with an alpha value of .80 being even more desirable. In addition to trying to attain an internally consistent scale with all five questions, all possible combinations of four, three, and two behavioral questions were tested for

internal consistency. None of the combinations produced an acceptable alpha value.

Guttman Scaling for Protective Behaviors.

In response to the very weak alpha results for the proposed protective index, alternate techniques were tried. First, the frequency distributions of the five variables appeared to be conducive to Guttman scaling. A Guttman Scale incorporates multiple questions that produce a triangular pattern of responses (Nunnally and Bernstein, 1994: 72). A classic example of a Guttman Scale is a spelling test consisting of three words of varying difficulties, like "chrysanthemum", "triangle", and "cat". If an individual can correctly spell "chrysanthemum, then that person can probably also correctly spell "triangle" and "cat". Conversely, a person who can not correctly spell "cat" probably will not be able to spell either "triangle" or "chrysanthemum".

For this particular research project, the frequency distributions of the five behaviors in the proposed protective index were arranged in an apparent triangular pattern. Very few individuals reported keeping a gun for protection, slightly more kept a dog for protection, slightly more had a security system installed, an even

greater amount had special locks installed, and finally, an even greater amount of individuals kept their residence lights on at night. The idea was that if individuals reported keeping a gun for protection, then those individuals probably also employed the other four behavioral responses. Conversely, if respondents did not report keeping their residence lights on at night, then those respondents probably did not utilize the other four behaviors in the protective index.

Since neither SPSS nor SAS has a function to test for Guttman scaling, it was difficult to determine whether such a technique was justified in this particular instance. Crosstabulations between the five behaviors were computed in an attempt to determine whether the responses were truly in a triangular pattern. The results provided no real support for legitimizing the usage of a Guttman Scale. For example, a crosstabulation between owning a gun and keeping residence lights on at night showed 27.8% of those who owned a gun did not keep their residence lights on at night. Referring back to the spelling test analogy, that would be tantamount to 27.8% of the individuals who spelled "chrysanthemum" correctly not being able to spell "cat". This particular result undermined a possible Guttman Scale.

In addition, test variables were created to see how many individuals fit the exact triangular pattern found in a Guttman Scale. Five test variables were created. The first variable tested how many individuals employed all five behaviors. The second variable was comprised of those individuals who kept a dog for protection, had a security system installed, had special locks installed, and kept their residence lights on at night. The third variable incorporated those who had a security system installed, had special locks installed, and kept their residence lights on at night. The fourth variable was determined by the amount of individuals who had special locks installed and kept their residence lights on at night. The fifth variable was comprised of those who only kept their residence lights on at night.

The results from the five test variables also did not support the use of a Guttman Scale. Only 10 individuals employed all five behaviors, as tested by the first variable. Only 11 additional individuals kept a dog for protection, had a security system installed, had special locks installed, and kept their residence lights on at night. In essence, the initial appearance of a Guttman Scale was undermined by too many anomalies that did not fit

the triangular pattern necessary for grouping the behaviors together in that manner. The idea was that if the behaviors formed a linear progression, from most severe (owning a gun) to least severe (keeping residence lights on at night), then the behaviors could be combined into a Guttman Scale. The breakdown of the five behaviors simply did not support the Guttman technique.

Ordered Logit for Protective Behaviors.

The second technique utilized in response to the low alpha value of the protective scale was a test for ordinality using ordered logistic regression. Ordered logistic regression permitted testing whether the effect of each independent variable was the same across each category of the proposed ordinal variable. For example, ordered logistic regression tested whether the effect of marriage (an independent variable) was the same on an individual utilizing zero, one, two, three, four, or five protective behaviors. If the effects of the independent variables were the same across categories of the dependent variable, then the five behaviors could have been grouped together to have formed an ordinal variable. The ordinality of a variable is justified if the proportional odds assumption has been met. If the proportional odds assumption was met,

then one set of coefficients could be used to fit all

categories of the protective behaviors dependent variable.

The results of the SAS program used to test the

proportional odds assumption produced a chi-square value of

161.1916, with 68 degrees of freedom. The probability

associated with that chi-square was less than .001.

Using an alpha value of .05, the null hypothesis must in

turn be rejected. The null hypothesis was that no more

than one set of coefficients was needed across categories

of the dependent variable. Rejecting the null hypothesis,

in turn, meant that more than one set of coefficients was

needed across categories of the dependent variable. In

sum, the five protective behaviors could not be treated as

an ordinal scale of protective behaviors and any testing of

those five behaviors must be done separately. For the

purpose of this analysis, each behavior will be assessed

separately as a dichotomous dependent variable.

Results of Cronbach's Alpha for Collective Behaviors.

An index of three questions was proposed to measure

collective behavioral responses to the fear of crime. The

three "yes" or "no" questions were:

1) Do you currently belong to the Neighborhood Association?

2) Have you taken part in Neighborhood Association activities?

3) Do you let neighbors know if gone for an extended period of time?

The Cronbach's Alpha for those behaviors was .5889, which was an unacceptable level of internal consistency between the three items. In response, the three items were tested for ordinality, just like the five items utilized in the protective scale.

Ordered Logit for Collective Behaviors.

The results of the SAS program used to test the proportional odds assumption for the collective behaviors showed a chi-square value of 46.5067, with 34 degrees of freedom. The probability associated with that chi-square was .075. Using an alpha value of .05, the null hypothesis in turn must be accepted. The null hypothesis was that no more than one set of coefficients is needed across categories of the dependent variable. The proportional odds assumption has been met by the ordered collective dependent variable. In essence, passing the proportional odds assumption meant that the independent variables had the same effect on whether an individual exhibits zero, one, two, or three collective behaviors. While the

coefficients remained constant across categories, the intercepts did differ across categories. The number of intercepts must be and were equal to the number of categories minus one. In the case of the collective behaviors, there were four categories (zero, one, two, or three behaviors). Four categories meant that the ordinal logistic regression produced three intercepts.

Before using Hierarchical Linear Modeling (HLM) with the ordinal collective scale, two steps were undertaken. First, the independent variables in the model were tested for multicollinearity. This was done using the Variance Inflation Factor scores of the variables. The lowest possible value of a Variance Inflation Factor was 1.0, which indicates that an independent variable was completely uncorrelated with all other independent variables. Variance Inflation Factor scores of more than 4.0 are taken to indicate problems of multicollinearity. For the independent variables used to predict the collective ordinal dependent variable, all Variance Inflation Factor scores were under 4.0. Those scores indicated that no serious multicollinearity was present within the model.

The second step involved testing which independent variables had a statistically significant relationship with

the ordinal collective behaviors index. It was unnecessary to test statistically insignificant independent variables for HLM. If they did not have a statistically significant effect on the dependent variable they could not be used for HLM analyses. A technique called backward elimination was used to determine which independent variables had such statistically significant relationships. Backward elimination has provided a method for eliminating variables that started with all independent variables in the model and then eliminated them one at a time until only the significant variables remained. This was done because an analysis with multiple independent variables will often time lead to interactions among the variables that may distort the true statistical significance of one of the predictors. Backward elimination alleviated the problem by eliminating one variable at a time until only statistically significant independent variables remained.

An alpha level of .10 was used to determine the statistical significance of the independent variables. An alpha level of .10 was utilized for two reasons. First, a sample of 440 respondents usually has been considered small for an ordered logistic regression. According to Dr. Dennis W. Roncek (class lecture, September 25, 2003), if

there are under 500 cases, it is acceptable to increase the alpha standard to .10. In essence, the risk of leaving a potentially significant variable out of the analyses using a rigid alpha value of .05 is greater than including a variable that is statistically significant under an alpha standard of .10.

Second, using an alpha value of .10 also facilitated the eventual inclusion of the second-level variable which measured the violent crime rate in each zip code. While the variance in the violent crime rate in Omaha was sufficient for HLM analyses, the amount of variance does not approach that for larger cities. The standard deviation of the violent crime rate was 10.1 crimes per square mile and the average rate across the 24 zip codes was 8.69. Thus, a less rigid alpha standard of .10 helped offset the moderate variance in violent crime in the zip codes of Omaha, Nebraska.

The results of the backward elimination technique found that seven independent variables had statistically significant effects on the ordinal collective behaviors dependent variable. Table 4 has the results of the backward elimination procedure for the ordinal collective dependent variable. The first number in each cell under

the column labeled "b/B$_R$" is the unstandardized logit

coefficient. The coefficient has been used in calculations

of the probability of being in a particular category of the

dependent variable. This task was, however, not central to

this research and not undertaken. The second number in the

column "b/B$_R$" is Roncek's standardized logit coefficient

(Roncek, class lecture, 2003). Its size has been used for

indicating the relative importance of independent variables

in a logistic regression. Owning a home was the most

important independent variable and being in the highest

income category was the least important of those

independent variables with statistically significant

effects.

The column "p/step" identifies either the exact

probability association with an independent variable for

which the probability was .10 or less or the step at which

an independent variable was removed from the analyses.

Table 5. Ordered Logit Results for Collective Behavioral Responses to the Fear of Crime: Backward Elimination

Independent Variable	b/ B_R	p/step
Fear		Step 8
Sex		Step 1
Married		Step 3
Age	0.021/0.379	<0.001
Income 1		Step 2
Income 2		Step 6
Income 3	0.610/0.250	0.008
Length Reside		Step 7
Own Home	1.500/0.630	<0.001
Children	0.471/0.217	0.039
African-American		Step 5
Hispanic		Step 4
Education 1	1.076/0.538	0.003
Education 2	1.382/0.594	<0.001
Education 3	1.277/0.460	0.002
Intercept 3	-5.216	<0.001
Intercept 2	-4.317	<0.001
Intercept 1	-1.416	0.005
R^2	0.196	

The Nagelkerke R^2 for this logit regression was .196 which meant that almost 20% of the variation in the collective responses was accounted for by the statistically significant independent variables (Nagelkerke, 1991). This was a reasonable proportion of variance explained for ordinal data when using individuals as the units of analyses.

The most glaring omission from the list of statistically significant variables was the fear of crime. Even though the fear of crime was not found to be statistically significant using the backward elimination technique, it will still be analyzed in HLM. Although there was not a universal effect of fear on the collective behaviors ordinal dependent variable, that could be interpreted in two ways. First, it could simply be interpreted as meaning that the fear of crime had no impact on whether individuals adopt collective behaviors. The second interpretation was that although the effect of fear was not universal, it still could be significant if it were mediated by the violent crime rate in the zip code of residence. In essence, fear could still affect individual collective behaviors depending on how prevalent violent crime was in each respective zip code. For that reason,

the fear of crime was still included in the hierarchical analysis.

Results of HLM on Dichotomous Protective Behaviors.

The violent crime rate per square mile in each of the 24 zip codes in Omaha, Nebraska, served as the level-2 independent variable in the Hierarchical Linear Model analyses. It was expected that individuals will have more protective reactions to the fear of crime in zip codes with higher violent crime rates. If this is true, the violent crime rate will have a statistically significant effect on the intercept of the Hierarchical model. In addition, it was expected that the violent crime rate will also affect the coefficient of the fear of crime independent variable. Put simply, a higher violent crime rate in a zip code will correspond with a greater effect of fear in influencing protective behaviors. Again, the protective behaviors had to be evaluated as five separate dichotomous dependent variables while the three collective behaviors were grouped together as an ordinal dependent variable.

Results of HLM for Keeping Residence Lights on at Night.

Table 6 has the results for the HLM analysis of keeping lights on at night. The first step in conducting Hierarchical Linear Modeling tested whether the

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Table 6. Keeping Lights On at Night: Hierarchical and Non-Hierarchical Results

Panel A: Coefficients and p-values

Indep Variables	Hierarchical			Non-Hierarchical*		
	b	p	B_R	b	p	B_R
Intercept				-0.860	0.316	
Intercept	-0.858	0.377				
Vio Rate	-0.005	0.913	-0.050			
Fear				0.741	0.002	0.437
Intercept	0.585	0.037				
Vio Rate	0.015	0.483	0.151			
Sex	0.078	0.750	0.039			
Married	0.342	0.132	0.168			
Age	-0.009	0.319	-0.159			
Income 1	-0.096	0.730	-0.040			
Income 2	0.189	0.600	0.079			
Income 3	0.184	0.648	0.075			
Length Reside	0.017	0.032	0.232			
Own Home	-0.064	0.776	-0.027			
Children	0.031	0.914	0.014			
Af American	-0.590	0.000	-0.153			
Hispanic	-0.031	0.953	-0.007			
Education 1	0.017	0.966	0.009			
Education 2	-0.393	0.383	-0.169			
Education 3	0.232	0.665	0.084			

*The magnitudes of the effects of the control variables in the linear model closely resembled their magnitudes in the hierarchical model and are available upon request.

Panel B: Ranges of Parameter Estimates from the Hierarchical Model

	Minimum	Maximum	Mean
Intercept	-1.088	-0.890	-0.935
Fear	0.602	1.158	0.729

relationship between fear and the dependent variable was statistically significant without using the level-2 variable. These results are presented in the column under the heading "Non-Hierarchical", which is in the rightmost part of the table. These are baseline results and the only parts of the results which are important are those for the intercept and the fear variable.

Both the Hierarchical and non-Hierarchical headings present three statistics for these measures. The first is "b", which is the unstandardized coefficient which gives the unstandardized effect of an independent variable on a dependent variable. The second number is "p", which is the exact probability associated with this coefficient. The third is "B_R", which is only presented for fear since intercepts can not be standardized. B_R gives the relative importance of an independent variable relative to other independent variables. It should be noted that B_R represents a standardized coefficient, developed by Dr. Dennis W. Roncek. The standardized coefficient adjusts the unstandardized b-coefficients for the different scales of measurement. The larger the size of the semi-standardized B_R coefficient, in absolute value of course, the more important the independent variable. In essence, Roncek's

standardized B_R allows the independent variables to be ranked in importance. The standardized B_R coefficient is equal to the product of the unstandardized b-coefficient of the variable multiplied by its standard deviation.

The fear of crime, on an individual level, as shown in the rightmost part of the table, did have a positive and statistically significant effect on individuals keeping their lights on at night. The b-coefficient of the fear of crime was .741, with a p-value of .002. Using an alpha level of .10, the most direct interpretation of the statistically significant coefficient means that an increase of .741 in the natural log of the odds of individuals keeping their residence lights on at night can be expected for a unit change in the fear of crime. In essence, as the fear of crime increased so to does the likelihood of individuals keeping their residence lights on at night[3].

For this behavior, the violent crime rate did not have a statistically significant effect on the influence of the fear of crime on individuals keeping their residence lights on at night. A p-value of .483, found under the

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[3] The magnitudes of the effects of the control variables in the non-Hierarchical model closely resembled their magnitudes in the Hierarchical model and are available upon request.

Hierarchical heading in the "p" column and in the violent rate row, indicated the violent crime rate had an insignificant effect on the fear variable. In essence, the results indicated that the violent crime rate in a zip code did not increase or decrease the effect of the fear of crime on individuals keeping their residence lights on at night.

The violent crime rate also did not have a statistically significant effect on the intercept of the Hierarchical equation for residents keeping their lights on at night. A p-value of .913, found in the violent rate row under the intercept, indicated that there was not a direct and significant relationship between the violent crime rate in a zip code and the baseline probability of individuals in that zip code keeping their residence lights on at night. The baseline probability is that probability which would be obtained by solving the logit equation when the values of all independent variables are zero. For these models the baseline probability is a hypothetical one since no respondents could have the value of "0" for age. All other independent variables realistically could have values of zero, e.g., female, not married, lowest income group, etc.

The Hierarchical Linear Model for this behavior indicated that only two variables had statistically significant effects on residents keeping their lights on at night. The length of residence variable had both a positive and statistically significant effect on keeping residence lights on at night. As the length of residence increased, so to did the likelihood that respondents kept their residence lights on at night. Its standardized effect of .232 (B_R) was the largest for any independent variable and indicated that length of residence was the most important variable in this analysis. In addition, the African-American race variable had a negative and statistically significant effect on residents keeping their lights on at night. This meant that African-Americans were less likely to keep their residence lights on at night than individuals who were not African-Americans. The effect of the length of residence variable was followed by the indicator of being an African-American as the second most important independent variable.

Assessing the range of the impact of the violent crime rate across zip codes was accomplished through two steps. First, the non-Hierarchical intercept was compared to the minimum, maximum, and mean intercept values from the

Hierarchical model to determine whether the violent crime
rate elevated the intercept from the level-1 to the level-2
equations. These results are in the lower panel of this
and the other HLM tables. For the keeping lights on at
night variable, the statistically insignificant p-value for
the non-Hierarchical intercept obviated the comparison of
the values with the parameter estimates from the
Hierarchical Model. This did not support the hypothesized
relationship between elevated levels of violent crime and
elevated levels of protective behavior, in this case
keeping residence lights on at night.

The second way the range of the effect of the violent
crime rate in the zip code of residence was assessed was
through looking at the change in the coefficient of the
fear of crime variable, from the level-1 to the level-2
models. Since the level-1 fear coefficient was
statistically significant, the comparison could be made.
The coefficient for the fear of crime from the level-1
equation was .741. After introducing the violent crime
rate in the zip code of residence, the coefficients of fear
in the 24 zip codes ranged from .602 to 1.158, with a mean
coefficient of .729. While there was variation in the
effect of the violent crime rate on fear, the variation was

not substantial as indicated by the statistically insignificant p-value for the violent crime rate in the Hierarchical results. Thus, the best estimate of the effect of fear has continued to be that from the non-Hierarchical model which applied to all respondents regardless of where they lived.

Results of HLM for Keeping a Dog for Protection.

Table 7 has the results for the HLM analysis of keeping a dog for protection. The fear of crime, on an individual level, did have a positive and statistically significant effect on individuals keeping a dog for protection. The b-coefficient of the fear of crime was .457 with an associated p-value of .034. This can be found in the "fear" row under the Non-Hierarchical heading. Using an alpha value of .10, the fear of crime variable was statistically significant. The most direct interpretation of the statistically significant b-coefficient means that an increase of .457 in the natural log of the odds of individuals keeping a dog for protection can be expected for a unit change in the fear of crime. Put simply, as the fear of crime increased so to does the likelihood of individuals keeping a dog for protection.

Table 7. Owning a Dog: Hierarchical and Non-Hierarchical Results

Panel A: Coefficients and p-values

Indep Variables	Hierarchical			Non-Hierarchical*		
	b	p	B_R	b	p	B_R
Intercept				-2.388	0.005	
Intercept	-2.365	0.020				
Vio Rate	-0.006	0.913	-0.061			
Fear				0.457	0.034	0.270
Intercept	0.432	0.182				
Vio Rate	0.004	0.851	0.040			
Sex	-0.139	0.539	-0.070			
Married	0.588	0.006	0.288			
Age	-0.028	0.000	-0.496			
Income 1	-0.176	0.507	-0.074			
Income 2	0.259	0.390	0.109			
Income 3	0.201	0.351	0.086			
Length Reside	-0.006	0.594	-0.082			
Own Home	1.127	0.000	0.473			
Children	0.174	0.000	0.080			
Af American	0.138	0.732	0.036			
Hispanic	0.800	0.068	0.168			
Education 1	0.719	0.169	0.360			
Education 2	0.097	0.870	0.042			
Education 3	0.222	0.692	0.080			

*The magnitudes of the effects of the control variables in the linear model closely resembled their magnitudes in the hierarchical model and are available upon request.

Panel B: Ranges of Parameter Estimates from the Hierarchical Model

	Minimum	Maximum	Mean
Intercept	-2.563	-2.372	-2.416
Fear	0.417	0.567	0.451

For this behavior, the violent crime rate did not have a statistically significant effect on altering the effect of fear on individuals keeping a dog for protection. A p-value of .851, found under the Hierarchical heading in the "p" column and in the violent rate row, indicated the violent crime rate had an insignificant effect on the fear variable. In essence, the results indicated that the violent crime rate in a zip code did not increase or decrease the effect of the fear of crime on individuals keeping a dog for protection. The violent crime rate also did not have a statistically significant effect on the intercept of the Hierarchical equation. A p-value of .913, found in the violent rate row under the intercept, indicated there was not a direct and significant relationship between the violent crime rate in a zip code and the baseline probability of owning a dog for protection.

The results of the Hierarchical Linear Model indicated that several variables had statistically significant effects on whether individuals owned a dog for protection. The age variable was negatively and significantly related to owning a dog for protection. This meant that younger individuals were more likely to own a dog than older

individuals. Its standardized effect of .496 (B_R) was the largest for any independent variable and indicated that age was the most important variable in this analysis. In addition, the home ownership variable had a positive and statistically significant effect on owning a dog for protection. Those who owned their homes were more likely to own a dog for protection than those who did not own their homes. The effect of the age variable was followed by the indicator of home ownership as the second most independent variable. Finally, in order of relative importance, the marriage variable, the Hispanic indicator variable, and the presence of children variable were all positively and statistically significant predictors of owning a dog for protection.

The first step in assessing the range of the effect of the violent crime rate across the zip codes involved comparing the non-Hierarchical intercept to the minimum, maximum, and mean intercept values from the Hierarchical model to determine whether including the violent crime rate elevated the intercept from the level-1 to the level-2 equations. For the protective behavior of owning a dog, the level-1 intercept had a statistically significant value of -2.388. The intercepts for the 24 zip codes included in

the level-2 model ranged from -2.563 to -2.372, with a mean value of -2.416. Comparing the level-1 intercept of -2.388 to the mean level-2 intercept of -2.416 showed the value of the intercept actually decreased from the level-1 equation to the Hierarchical equation. Since there was also little variation in the range of the level-2 intercept, it was difficult to argue that the violent crime shifted the intercept up, as hypothesized. This result did not support the hypothesized relationship between elevated levels of violent crime and elevated levels of protective behavior, in this case keeping a dog for protection.

The second way of examining the range of the effect of the violent crime rate across the zip codes was to examine the change in the coefficient of the fear of crime variable, from the level-1 model to the level-2 model. The statistical significance of the level-1 fear coefficient allowed the comparison to be made. The level-1 b-coefficient for the fear of crime was .457. After introducing the violent crime rate in the zip codes, the coefficients of fear in the 24 zip codes ranged from .417 to .567, with a mean value of .451. While there was variation in the effect of the violent crime rate on fear, the variation was not substantial as indicated by the p-

value for the violent crime rate in the Hierarchical
results. Indeed, the best estimate of the effect of the
fear of crime is from the non-Hierarchical model since the
coefficient of the violent crime rate on fear was not
statistically significant.

Results of HLM for Keeping a Gun for Protection

Table 8 shows the results for the HLM analysis of
keeping a gun for protection. The first step in conducting
Hierarchical Linear Modeling tested whether the
relationship between fear and owning a gun was
statistically significant without using the level-2
variable. These results are presented in the column under
the heading "Non-Hierarchical". The b-coefficient of the
fear of crime variable was .433, with a p value of .047.
This b-coefficient meant that an increase of .433 in the
natural log of the odds for individuals keeping a gun for
protection can be expected for a unit change in the fear of
crime. More simply, as the fear of crime increased, so to
does the likelihood of individuals owning a gun for
protection.

For this particular behavior, the violent crime rate
did have a positive and statistically significant effect on
the influence of the fear of crime on owning a gun. A b-

Table 8. Owning a Gun: Hierarchical and Non-Hierarchical Results

Panel A: Coefficients and p-values

	Hierarchical			Non-Hierarchical*		
Indep Variables	b	p	B_R	b	p	B_R
Intercept				-5.476	0.000	
Intercept	-5.052	0.000				
Vio Rate	-0.084	0.271	-0.848			
Fear				0.433	0.047	0.255
Intercept	0.071	0.767				
Vio Rate	0.049	0.079	0.494			
Sex	1.453	0.000	0.727			
Married	0.362	0.311	0.177			
Age	0.007	0.386	0.124			
Income 1	0.877	0.006	0.368			
Income 2	0.949	0.012	0.399			
Income 3	1.230	0.005	0.504			
Length Reside	0.005	0.566	0.068			
Own Home	1.041	0.002	0.437			
Children	0.255	0.522	0.117			
Af American	1.052	0.000	0.274			
Hispanic	-0.418	0.359	-0.088			
Education 1	-0.025	0.955	-0.013			
Education 2	-0.831	0.142	-0.357			
Education 3	-0.757	0.104	-0.273			

*The magnitudes of the effects of the control variables in the linear model closely resembled their magnitudes in the hierarchical model and are available upon request.

Panel B: Ranges of Parameter Estimates from the Hierarchical Model

	Minimum	Maximum	Mean
Intercept	-8.314	-5.094	-5.828
Fear	0.079	1.941	0.503

coefficient of .049, found in the "b" column under the

Hierarchical heading, with a p-value of .079, indicated a

statistically significant effect of the violent crime rate

on the influence of fear. This result indicated that as

the violent crime rate in the zip code of residence became

larger, so to did the effect of the fear of crime on

individuals owning a gun for protection. For this

protective behavior, the violent crime rate increased the

likelihood that the fear of crime will influence individual

decisions to keep guns for protection.

At the same time, this relationship is not as simple

as the violent crime rate is positively associated with

keeping guns for protection. In fact, the violent crime

rate did not have a statistically significant effect on the

intercept of the Hierarchical equation in the first column

which gives the baseline level of residents keeping a gun

for protection.

The Hierarchical Linear Model for this behavior

indicated that multiple independent variables had

statistically significant effects on owning a gun. The sex

variable positively and significantly affected gun

ownership. A b-coefficient of 1.453, found under the

Hierarchical heading, with a p-value of .000, indicated a statistically significant association with owning a gun. Thus, males were significantly more likely than females to keep a gun for protection. Surprisingly, all three income dummy variables were positively and significantly related to keeping a gun for protection. In essence, individuals in higher income brackets were more likely to report keeping a gun for protection than individuals in the lowest income bracket. Respondents who owned their homes were also significantly more likely than individuals who did not own their home to keep a gun for protection. Finally, African-Americans were significantly more likely than individuals who were not African-Americans to keep a gun for protection.

Using Roncek's standardized coefficient, the sex independent variable was the most important. Its standardized effect of .727 (B_R) was the largest for any independent variable. The next most important variable was the 3rd, and highest, income bracket variable. This was followed by the home ownership variable. The next most important effects in order of importance were for the 2nd highest income bracket variable, then the 1st income bracket variable, and, finally, the African-American variable.

These were the only other statistically significant variables in the analysis.

Comparing the protective behavior of owning a gun, the level-1 non-Hierarchical intercept had a statistically significant value of -5.476. The intercepts for the 24 zip codes included in the level-2 model ranged from -8.314 to -5.094, with a mean value of -5.828. A comparison of the intercept of -5.476 in the non-Hierarchical model to the mean intercept of -5.828 in the Hierarchical model showed a decrease when the model included the level-2 variable. In essence, introducing the violent crime rate in the zip code of residence actually seemed to decrease the intercept of the equation. This ran contrary to the hypothesized relationship in which the violent crime rate actually increased the level of the intercept. Although the hypothesized relationship was not supported, the introduction of the violent crime rate showed how the intercepts of the equation for owning a gun do vary substantially across the 24 zip codes in Omaha, Nebraska.

The second way of examining the range of effect of the violent crime rate in the zip codes involved examining the difference in the coefficient of the fear of crime variable, from the non-Hierarchical model to the

Hierarchical model. The statistical significance of the level-1 fear coefficient allowed a meaningful comparison. The level-1 coefficient of fear was .433, with a p-value of .047. After introducing the effect of the violent crime rate into the Hierarchical model, the coefficients of fear in the 24 zip codes ranged from .079 to 1.94, with a mean value of .503. In comparing the level-1 coefficient to those figures, a clear elevation of the b-coefficient, from the non-Hierarchical model to the Hierarchical model, was apparent. In essence, introducing the violent crime rate of the zip codes increased the coefficient of the fear of crime from .433 to, on average, .503. This supported the hypothesis that the violent crime rate increased the effect that the fear of crime had on owning a gun.

Results of HLM for Installing Special Locks

Table 9 has the results for the HLM analysis of installing special locks. The fear of crime, on an individual level, did have a positive and statistically significant effect on individuals installing special locks. The b-coefficient of the fear of crime, found under the non-Hierarchical column, was .689, with a p value of .004. Using an alpha value of .10, that significant coefficient means that an increase of .689 in the natural log of the

Table 9. Installing Special Locks: Hierarchical and Non-Hierarchical Results

Panel A: Coefficients and p-values

Indep Variables	Hierarchical			Non-Hierarchical*		
	b	p	B_R	b	p	B_R
Intercept				-1.397	0.133	
Intercept	-0.455	0.662				
Vio Rate	-0.124	0.006	-1.251			
Fear				0.689	0.004	0.407
Intercept	0.321	0.239				
Vio Rate	0.052	0.009	0.525			
Sex	-0.128	0.489	-0.064			
Married	0.323	0.164	0.158			
Age	-0.013	0.131	-0.230			
Income 1	-0.189	0.599	0.079			
Income 2	-0.401	0.175	0.168			
Income 3	-0.598	0.090	0.245			
Length Reside	0.015	0.090	0.204			
Own Home	0.805	0.003	0.338			
Children	-0.586	0.050	0.270			
Af American	0.705	0.007	0.183			
Hispanic	0.628	0.100	0.132			
Education 1	0.047	0.901	0.624			
Education 2	0.202	0.650	0.087			
Education 3	0.053	0.909	0.019			

*The magnitudes of the effects of the control variables in the linear model closely resembled their magnitudes in the hierarchical model and are available upon request.

Panel B: Ranges of Parameter Estimates from the Hierarchical Model

	Minimum	Maximum	Mean
Intercept	-5.230	-0.471	-1.555
Fear	0.331	2.324	0.785

odds of individuals installing special locks can be expected for a unit change in the fear of crime. Simply put, as individual levels of fear about crime increase so to does the likelihood that special locks for protection will be installed.

For this behavior, the violent crime rate did have a positive and statistically significant effect on the fear of crime variable. A b-coefficient of .052, found under the Hierarchical heading, with a p-value of .009 indicated a statistically significant effect of the violent crime rate. This can be interpreted as meaning that as the violent crime rate in the zip codes increased, so to did the effect of the fear of crime on individuals installing special locks for protection. For this protective behavior, the violent crime rate increased the likelihood that the fear of crime will influence individual decisions to install special locks for protection.

For this particular variable, it was interesting to note that the violent crime rate, when not mediated by fear, had both a negative and statistically significant effect on the baseline probability of installing special locks. The b-coefficient was -.124, with a p-value of .006. This result means that hypothetical individuals with

values of zero on all the independent variables but living

in zip codes with higher crime rates would be less likely

to install special locks than those living in areas with

lower violent crime rates. Put simply, the violent crime

rate was negatively associated with installing special

locks for unmarried females, in the lowest income and

educational brackets, who are new residents, who do not own

their homes, do not have children, and are not African-

Americans or Hispanics provided they were age "0". Since

the youngest female respondent was 19 and the coefficient

of age was -.013, the baseline rate would even be lower

than for "age 0" persons.

The Hierarchical Linear Model for this behavior

indicated that several independent variables had

statistically significant effects on residents installing

special locks. The home ownership variable was positively

and significantly related to installing special locks for

protection. Those who owned their homes were more likely to

install special locks. Also, the presence of children in

the household was negatively and significantly associated

with installing special locks for protection. This meant

that households with children present were less likely to

install special locks. Both Hispanics and African-

Americans were significantly more likely than non-Hispanic and non-African-American residents, respectively, to install special locks for protection. Surprisingly, individuals in the highest income category proved to be significantly less likely than individuals in other income categories to install special locks for protection. In addition, the longer individuals lived at their current residence, the higher the likelihood that new locks were installed.

According to the standardized coefficients for those significant variables, the home ownership variable was the most important predictor of installing locks. Its standardized effect of .338 (B_R) was the largest for any independent variable and indicated that home ownership was the most important variable in the analysis. This effect was followed by the presence of children variable, with a standardized effect of .270 (B_R). The next most important variables were the 3rd income bracket variable, the length of residence variable, the African-American variable, and then the Hispanic variable, in that order.

For installing special locks, the statistically insignificant p-value of .133 for the non-Hierarchical intercept combined with the statistically significant

effect of the violent crime rate on the intercept of the

Hierarchical equation means that the baseline probability

of installing locks does depend on the rate of crime in an

area. This effect, however, was negative. The higher the

violent crime rate was, the lower the baseline probability

of installing special locks. This result did not support

the hypothesized relationship between the elevated levels

of violent crime and elevated levels of protective

behavior, in this case installing special locks.

The second way the range of the effect of the violent

crime in the zip codes was assessed was by examining the

difference in the coefficient of fear, from the non-

Hierarchical to the Hierarchical models. The non-

Hierarchical b-coefficient of fear was .689, with a p-value

of .004. This statistically significant coefficient was

compared to a minimum value of .331, a maximum value of

2.324, and a mean value of .785 for the coefficient of the

fear of crime in the Hierarchical model across 24 zip

codes. A comparison of the non-Hierarchical value of .689

to the mean value of .785 in the Hierarchical model

indicated a difference in the effect of fear on installing

special locks after the violent crime rate was introduced.

The finding meant that the violent crime rate increased the

effect of fear on individuals installing special locks. These results, in sum, supported the hypothesized relationship between the violent crime rate and the effect of fear on this protective behavior, installing special locks.

Results of HLM for Installing a Security System

Table 10 has the results for the HLM analysis for installing a security system. The fear of crime, on an individual level, did not have a statistically significant effect on individuals installing a security system for protection. A b-coefficient of .079 with a p-value of .735 was not statistically significant for the overall effect of the fear of crime in the non-Hierarchical model.

For this behavior, the violent crime rate did have a statistically significant effect on how the fear of crime affected individuals installing a security system for protection. The relationship also was positive, with a b-coefficient of .037. In essence, the larger the violent crime rate in a zip code, the more of an effect the fear of crime had on installing a security system. This finding is important because it shows that the effect of fear is not simple and depends on more than the characteristics of individuals.

Table 10. Installing a Security System: Hierarchical and Non-Hierarchical Results

Panel A: Coefficients and p-values

Indep Variables	Hierarchical			Non-Hierarchical*		
	b	p	B_R	b	p	B_R
Intercept				-0.801	0.255	
Intercept	-0.389	0.648				
Vio Rate	-0.060	0.208	-0.605			
Fear				0.079	0.735	0.047
Intercept	-0.248	0.369				
Vio Rate	0.037	0.042	0.373			
Sex	-0.112	0.580	-0.056			
Married	0.117	0.613	0.057			
Age	0.002	0.706	0.035			
Income 1	-0.388	0.218	-0.163			
Income 2	-0.007	0.974	-0.003			
Income 3	0.084	0.789	0.034			
Length Reside	-0.031	0.012	-0.422			
Own Home	0.607	0.097	0.255			
Children	-0.203	0.525	-0.093			
Af American	1.334	0.000	0.347			
Hispanic	1.087	0.050	0.228			
Education 1	-0.465	0.352	-0.233			
Education 2	-0.542	0.334	-0.233			
Education 3	-0.111	0.835	-0.093			

*The magnitudes of the effects of the control variables in the linear model closely resembled their magnitudes in the hierarchical model and are available upon request.

Panel B: Ranges of Parameter Estimates from the Hierarchical Model

	Minimum	Maximum	Mean
Intercept	-2.708	-0.482	-0.989
Fear	-0.218	1.180	0.101

Although the violent crime rate did have a significant effect on the influence of the fear of crime in installing a security system, it did not have a direct effect on the baseline level of residents installing a security system. The b-coefficient of -.060, found in the "b" column under the Hierarchical heading had a p-value of .208 which was not statistically significant. Thus, the relationship between the violent crime rate in a zip code and individuals in that zip code installing a security system for protection comes through its effect on fear.

Variables other than the fear of crime and the violent crime rate had statistically significant effects in influencing the decision to install a security system. The length of residence variable was both negatively and significantly related to installing a security system, which meant that as the length of residence increased the likelihood of installing a security system decreased. Also, African-Americans were significantly more likely than non-African-American individuals to install a security system. In addition, the home ownership variable was significantly and positively related to installing a security system. This meant that individuals who owned their homes were more likely than individuals who did not

own their homes to install a security system. Finally,

Hispanics were significantly more likely than individuals

who were not Hispanic to install a security system.

Examining the standardized coefficients for the

statistically significant independent variables indicated

that the length of residence variable was the most

important predictor of installing a security system. Its

standardized effect of .422 (B_R) was the largest for any

independent variable and indicated that the length of

residence was the most important variable in this analysis.

That was followed in relative importance by the African-

American variable, with a B_R of .347. The final two

variables, in the order of relative importance, were the

home ownership and the Hispanic variables, respectively.

For installing a security system, the statistically

insignificant p-value of .208 for the effect of the violent

crime rate on the Hierarchical intercept did not support

the hypothesized relationship between higher levels of

violent crime and elevated baseline levels of this

protective behavior, installing a security system.

The b-coefficient for the fear of crime from the non-

Hierarchical model also was not statistically significant.

Its numerical value of .079 was associated with a p-value

of .735 which was not statistically significant using an alpha standard of .10. The coefficient of the fear of crime in the Hierarchical model was statistically significant. Its values ranged from -.218 to 1.18, with a mean value of .101. This means that the violent crime rate in some neighborhoods lowers the effect of the fear of crime on installing security systems, but in others it is associated with a larger effect of the fear of crime on installing security systems. Thus, the apparent lack of effect of the fear of crime in the non-Hierarchical model is due to the effect of the violent crime rate on how fear affects reaction to crime.

Results of HLM for Ordinal Collective Behaviors.

The ordinal collective behaviors dependent variable was based on three "yes" or "no" questions. The three questions were:

1) Do you currently belong to the Neighborhood Association?

2) Have you taken part in Neighborhood Association activities?

3) Do you let neighbors know if gone for an extended period of time?

The number of questions to which an individual answered "yes" was the score on the ordinal collective variable for

that respondent. The four possible scores on the ordinal collective variable were 0, 1, 2, or 3.

Table 11 has the results for the HLM analysis for participation in collective responses to the fear of crime. The fear of crime, on an individual level, did not have a statistically significant effect on collective behavioral responses to the fear of crime. The non-Hierarchical b-coefficient was .186, with a p-value of .302. Using an alpha level of .10, the coefficient of fear was not statistically significant when only individual-level characteristics are considered.

In addition, when the violent crime rate for the zip codes was introduced into the Hierarchical model, it also did not have a statistically significant effect on the collective behaviors ordinal dependent variable. The b-coefficient of .010, with a p-value of .590, indicated that the violent crime rate in a zip code did not increase or decrease the effect of the fear of crime on individuals participating in collective behaviors. The violent crime rate also did not have a statistically significant effect on the intercept of the Hierarchical equation for participating in collective behaviors. A p-value of .847, found in the violent crime rate row under the intercept

Table 11. Participation in Collective Behaviors: Hierarchical and Non-Hierarchical Results

Panel A: Coefficients and p-values

Indep Variables	Hierarchical			Non-Hierarchical*		
	b	p	B_R	b	p	B_R
Intercept				-1.815	0.036	
Intercept	-1.752	0.103				
Vio Rate	-0.010	0.847	-0.101			
Fear				0.186	0.302	0.110
Intercept	0.100	0.667				
Vio Rate	0.010	0.590	0.101			
Age	0.022	0.011	0.389			
Income 3	0.590	0.013	0.242			
Own Home	1.602	0.000	0.673			
Children	0.479	0.039	0.220			
Education 1	1.067	0.026	0.534			
Education 2	1.376	0.011	0.592			
Education 3	1.303	0.003	0.469			
Threshold 2	-3.007	0.000		-3.001	0.000	
Threshold 3	-3.955	0.000		-3.949	0.000	

*The magnitudes of the effects of the control variables in the linear model closely resembled their magnitudes in the hierarchical model and are available upon request.

Panel B: Ranges of Parameter Estimates from the Hierarchical Model

	Minimum	Maximum	Mean
Intercept	-2.135	-1.752	-1.839
Fear	0.100	0.464	0.183

heading, showed that there was not a direct and significant relationship between the violent crime rate in a zip code and the baseline probability of participating in collective behaviors.

In the Hierarchical Linear Model several independent variables did have statistically significant effects on individuals adopting collective behavioral responses to the fear of crime. Those variables were discussed in the section concerning the backward elimination technique, but the results are worth discussing again. The home ownership variable had a positive and statistically significant effect on participation in collective behaviors. This meant that individuals who owned their homes were more likely than those who did not own their homes to participate in collective behaviors. Individuals in the 2nd education category who were those with a college education were significantly more likely than individuals without a college education to participate in collective activities. Other statistically significant independent variables with a positive relationship to participation in collective behaviors included the 1st and 3rd educational categories, age, the 3rd income category, and the presence of children.

Using Roncek's standardized coefficient, the relative importance of those significant independent variables can be ascertained. The home ownership variable had the most important association with participation in collective behaviors. Its standardized coefficient of .673 (B_R) was the largest for any independent variable in this analysis. The next most important variable was the 2nd education category variable, which had a B_R of .592. The next most important variables were the 1st education category variable, then the 3rd education category variable. The last three variables, in order of relative importance, were age, the 3rd income variable, and the presence of children variable.

The first step in assessing the potential range of the effect of the violent crime rate was comparing the non-Hierarchical intercept to the minimum, maximum, and mean values of the intercept in the Hierarchical model. The most important comparison will be for the first, of three, intercepts in both the non-Hierarchical model and the Hierarchical model. These intercepts identify the overall level of attaining the highest score on this measure of collective participation. For collective behaviors, the non-Hierarchical intercept had a statistically significant

value of -1.815, with a p-value of .036. The initial

intercepts for the 24 zip codes ranged from -2.135 to

-1.752, with a mean value of -1.839. These values

indicated a drop in the intercepts from the non-

Hierarchical model to the Hierarchical model. In essence,

that meant that the violent crime rate did not increase the

baseline participation in collective behaviors. This

finding runs contrary to the hypothesis that the inclusion

of the violent crime rate in the zip code of residence

would increase the intercept of the Hierarchical equation,

as compared to the non-Hierarchical equation. For the case

of the ordinal collective behaviors dependent variable,

that simply was not the case.

The second step in assessing the potential range of

the effect of the violent crime rate for collective

behaviors involved comparing the b-coefficient for the fear

of crime in the non-Hierarchical model to the minimum,

maximum, and mean values of the b-coefficient for the fear

of crime in the Hierarchical model. For the non-

Hierarchical model, the value of the b-coefficient was

.186, with a p-value of .302. Using an alpha standard of

.10, the fear of crime variable was not statistically

significant. In the Hierarchical model, the value of the

b-coefficient for the fear of crime ranged from .100 to .464, with a mean value of .183. While there was variation in the effect of the violent crime rate on fear, the variation was not substantial as indicated by the p-value of .590 for the violent crime rate in the Hierarchical results. Thus, these results indicate that fear of crime did not affect the participation in collective behaviors.

In sum, the results of the analyses of the five protective behaviors and one ordinal collective behaviors variable indicated three things. First, the fear of crime, in the level-1 equations, had positive and statistically significant effects on keeping lights on at night, owning a dog, owning a gun, and installing special locks. The fear of crime did not have a statistically significant effect on the level-1 models for installing a security system and participating in collective behaviors.

Second, the violent crime rate had statistically significant effects on the influence of the fear of crime on owning a gun, installing special locks, and installing a security system. This relationship meant that as the violent crime rate increased, so to did the effect of the fear of crime on individuals owning a gun, installing special locks, and installing a security system. The

violent crime rate did not have a statistically significant effect on keeping lights on at night, owning a dog, and participating in collective behaviors.

Third, the effect of the violent crime rate on the baseline probabilities of these behaviors was only statistically significant on individuals installing special locks. Furthermore, the relationship was negative. This meant that the violent crime rate decreased the baseline probability of installing special locks. The higher the violent crime rate was, the lower the baseline probability of installing special locks.

It is interesting to note the pattern in reactions to the fear of crime before and after the violent crime rate variable was introduced. Before introducing the violent crime rate, the fear of crime had statistically significant effects on keeping lights on at night, owning a dog, owning a gun, and installing special locks. The violent crime rate, in turn, had statistically significant effects on the influence of the fear of crime on owning a gun, installing special locks, and installing a security system. This seems to indicate the difference between perception and reality concerning the fear of crime. When individuals respond to solely a perception of fear, many responses are

utilized. When individuals also respond to the reality of crime in their areas, more intense and insulating behaviors are adopted. For example, keeping lights on at night may alleviate a simple perception of fear. In an area with a high violent crime rate, however, keeping lights on at night may not seem like a sufficient reaction to the tangible amount of violent crime in the area. With that in mind, more strenuous efforts, like owning a gun[4], installing special locks, and installing a security system, may be viewed as the most effective ways to alleviate both fear and the reality that violent crime permeates the immediate areas in which some people live. This line of reasoning may be partially responsible for the pattern in reactions to the fear of crime, before and after the violent crime rate is introduced.

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[4] While there is an income effect on owning a gun, the effect of the violent crime rate on the influence of fear on owning a gun persists after controlling for these effects.

Chapter V

Conclusions and Discussion

Conclusions.

There has been very little prior research that has examined the relationship between the fear of crime and the behavioral responses to that fear. There also has been no prior research that has introduced a spatial-level variable like the violent crime rate in the zip code of residence into analyses of the behavioral reactions to the fear of crime. The effect of the fear of crime and the violent crime rate in the zip code of residence were assessed in four stages.

The first stage involved examining whether the fear of crime had a significant effect on a series of five dichotomous protective behaviors and one ordinal variable which reflected three collective reaction behaviors. The fear of crime appeared to have positive and statistically significant relationships with four out of the five protective behaviors that were examined. Those four behaviors were: owning a dog, installing special locks, keeping lights on at night, and owning a gun. The fifth protective behavior, installing a security system, was not significantly associated with the fear of crime variable.

It also appeared that the fear of crime did not have a statistically significant relationship with participation in collective behaviors. The ordinal collective behaviors variable included three behaviors: belonging to a neighborhood association, participating in neighborhood association activities, and letting neighbors know if gone for an extended period of time.

The second stage of the evaluation involved examining the effect and the statistical significance of the relationship of the violent crime rate in the zip code of residence with the fear of crime variable. In essence, an attempt was made to determine whether the violent crime rate in the 24 zip codes of Omaha, Nebraska, increased the effect of fear on the protective behaviors and the ordinal collective behaviors variable. For three of the five protective behaviors, the effect of the violent crime rate did have a statistically significant effect on the impact of fear on each respective behavior. For owning a gun and installing special locks, the violent crime rate had a statistically significant and positive effect on the influence of the fear of crime on those behaviors. Put simply, the larger the violent crime rate, the larger was the effect of fear, measured by the unstandardized logit

coefficient and the standardized logit coefficient, on owning a gun and installing special locks. For the installing a security system variable, the effect of the violent crime rate was statistically significant and negative. More specifically, the larger the violent crime rate, the smaller was the effect of the fear of crime on individuals installing a security system. For the owning a dog and keeping lights on at night variables, the violent crime rate did not have a statistically significant influence on the effect of the fear of crime on those behaviors.

For the collective ordinal dependent variable, the violent crime rate did not have a statistically significant effect on the fear of crime variable. Thus, the violent crime rate did not significantly affect the relationship between fear and participation in collective behaviors. Participation in collective behaviors was not found to be influenced by either the fear of crime or the violent crime rate in the zip code of residence.

The third stage of assessment compared the results from the non-Hierarchical models to the Hierarchical models in an attempt to determine two things. First, the intercept from each respective non-Hierarchical equation was compared

to its corresponding Hierarchical intercept to determine whether the introduction of the violent crime rate variable increased the intercept from one level to the next. An increase in the intercept from the non-Hierarchical model to the Hierarchical model would indicate that the violent crime rate increased the likelihood of the dependent variable, either one of the protective behaviors or the three collective behaviors together. For the protective behaviors, the results simply did not show a clear pattern of change in the intercepts. In fact, the intercepts were only statistically significant for two protective behaviors: owning a dog and owning a gun. For those two behaviors, the intercept actually seemed to decrease somewhat from the non-Hierarchical model to the Hierarchical model. Thus, there was not a clear or direct interpretation in the comparison of intercepts from the non-Hierarchical model to the Hierarchical model.

For the collective dependent variable, the intercept of the non-Hierarchical model was statistically significant. The value of the non-Hierarchical intercept was compared to the minimum, maximum, and mean value of the Hierarchical intercept. Paralleling the findings for the two protective behaviors, the intercept actually decreased

from the non-Hierarchical model to the Hierarchical model. In sum, the introduction of the violent crime rate variable actually decreased the intercept from the non-Hierarchical model to the Hierarchical model. This meant that baseline levels of the reactions to crime were lower among those individuals who had values of zero on the dichotomous variables, e.g., those with the lowest levels of education, lowest levels of income, etc.

The fourth stage of the analyses involved comparing the coefficients of the fear of crime between the non-Hierarchical model and the Hierarchical model. The purpose of this task was to determine whether the introduction of the violent crime rate in the zip code of residence led to a larger effect of the fear of crime on both protective and collective behavioral responses. For protective behaviors, the results were again mixed. For the installing a security system variable, the b-coefficient of fear was not statistically significant. This indicated the violent crime rate was not associated with different effects of fear on installing a security system. For the owning a dog and keeping lights on at night variables, the non-Hierarchical coefficient was actually slightly lower than the mean coefficient for the 24 zip codes in the

Hierarchical model. For the owning a gun and installing special locks variables, the coefficients for the fear of crime actually increased from the non-Hierarchical models to the mean values in the Hierarchical level. This increase indicated that larger violent crime rates were associated with larger effects of fear on influencing those two behaviors.

For the collective behaviors variable, comparison of the b-coefficients from the non-Hierarchical model to the Hierarchical model could not be done because the fear of crime variable was not statistically significant. Examining the direction of the change showed that the mean b-coefficient of fear from the Hierarchical model was larger than the one from the non-Hierarchical model. This would seem to indicate that the large violent crime rate was associated with a larger overall effect that fear has on participation in collective behaviors. Again, this result is not conclusive because of the lack of statistical significance of the fear of crime variable.

Discussion.

Initially, two hypotheses were proposed for this research. The first hypothesis was that the fear of crime would be positively associated with individuals adopting

protective behaviors. This hypothesis was largely based on Conklin's (1975) theory that the fear of crime caused individuals to change their behaviors in attempts to minimize vulnerability. The relationships between the fear of crime and behaviors that minimize vulnerability, such as owning a gun, owning a dog, keeping lights on at night, installing special locks, and installing a security system, were analyzed in an attempt to test Conklin's (1975) theory. For the most part, the first hypothesis and Conklin's (1975) theory was supported. The fear of crime had a positive and statistically significant effect on the likelihood of individuals owning a gun, owning a dog, keeping lights on at night, and installing special locks. The fear of crime, however, did not have a statistically significant effect on individuals installing a security system.

The second hypothesis was that the fear of crime would be negatively associated with individuals adopting collective behaviors. This hypothesis was based on Durkheim's (1895, 1893) theory that the fear of crime resulted in individuals coming together collectively against the threat of criminal victimization. An ordinal variable comprised of three collective behaviors was used

to test this hypothesis. The three collective behaviors were belonging to a neighborhood association, participating in neighborhood association activities, and letting neighbors know if gone for an extended period of time. The results of the analysis did not support Durkheim's theory that the fear of crime encouraged individuals banding together. The fear of crime variable did not have a statistically significant effect on individuals adopting collective behaviors. Thus, the hypothesis predicting a negative relationship between the fear of crime and collective behaviors also was not supported.

Two corollary assertions were made concerning the effect of the violent crime rate in the zip code of residence. The first assertion was that the introduction of the violent crime rate into the analyses would increase the intercept of the equation, from the non-Hierarchical model to the Hierarchical model. This assertion implied that the overall reactions to fear would be strong among individuals who lived in zip codes with larger violent crime rates than among individuals living in areas with lower violent crime rates. For the protective behaviors and the collective behaviors, that assertion was not supported. A comparison of the non-Hierarchical intercepts

with their corresponding minimum values, maximum values, and mean values in the Hierarchical models actually showed a slight decrease in values from the non-Hierarchical to the Hierarchical model.

The second corollary assertion was that the introduction of the violent crime rate variable would increase the b-coefficient of the fear of crime variable, from the non-Hierarchical model to the Hierarchical model. This assertion implied that the larger the violent crime rate in an area, the larger the controlled association of the fear of crime with the dependent measures of reactions to crime would be. This assertion was partly supported by the analyses. For the protective behaviors owning a gun and installing special locks, the introduction of the violent crime rate did increase the mean of the Hierarchical coefficient of fear, as compared to the coefficient in the non-Hierarchical model. This finding can be interpreted as meaning that the higher violent crime rates resulted in larger effects of fear on individuals owning a gun and installing special locks across the 24 zip codes in Omaha, Nebraska. The other three protective behaviors did not show that same pattern, from the non-Hierarchical model to the Hierarchical model.

For collective behaviors, the expected effect of fear was not found by the analyses. The statistical insignificance of the fear of crime variable prevented meaningful comparisons of the b-coefficients from being undertaken. For that reason, the assertion concerning the increase of the effect of fear from the non-Hierarchical model to the Hierarchical model was not supported.

Although it may seem that including the violent crime rate variable did not add very substantially to the effects of the characteristics of individuals, the inclusion of the violent crime rate in the zip code of residence did produce some interesting results. For example, the range of coefficients for the fear of crime variable in predicting ownership of a gun for the 24 zip codes in Omaha, Nebraska, was from .079 to 1.94. For the non-Hierarchical model, the b-coefficient was .433. A range of that size indicates that the fear of crime has a vastly different effect on people owning a gun across the 24 zip codes in Omaha, Nebraska. For future research, it would be interesting to analyze which other characteristics of those zip codes with a high coefficient of fear influence individuals to respond to the fear of crime by owning a gun. Conversely, it would also be interesting to determine why individuals in zip

codes with a lower coefficient of fear are not as inclined to respond to fear by owning a gun.

With regards to the shift in the intercepts from the non-Hierarchical model to the Hierarchical model, there were also some interesting results after including the violent crime rate. For example, the owning a dog protective behavior had a non-Hierarchical intercept of -2.388. The range of intercepts in the Hierarchical model was from -2.563 to -2.372. Two things were important about these values. First, the non-Hierarchical intercept was very similar to the range of Hierarchical intercepts. Second, the range of the Hierarchical intercepts across the 24 zip codes was very small. These two observations can be interpreted to mean that owning a dog is a relatively consistent protective behavior across the 24 zip codes. Owning a dog does not vary across the 24 zip codes in Omaha as much as owning a gun. The range in intercepts for owning a gun was from -8.314 to -5.094 across the 24 zip codes in Omaha, Nebraska. Owning a gun, in turn, would be labeled as a protective behavior that varies substantially across the 24 zip codes in Omaha.

In summary, although the inclusion of the violent crime variable did not produce the expected consistent

results in both the coefficient of fear and the intercepts, it still allowed insight into how behavioral reactions to the fear of crime varied across the zip codes in Omaha, Nebraska. Future research should assess additional reactions to the fear of crime based on characteristics of neighborhoods in order to gain a better insight into why individuals in certain contexts adopt different types of behavior.

Three more observations about the results of the broader analyses seem appropriate. First, the results do not indicate a clear relationship between economics and protective behaviors. An implication from the works of McConnell (1989) and Skogan and Maxfield (1981) was that reactions to the fear of crime were mediated by economic factors. For example, the price of a home security system could have dissuaded some individuals more than others from installing such a protective device. The results of the analysis on installing a security system did not show such a strong relationship with income. All three income variables were not statistically significant. Since the reference group was the lowest income category, the three income variables represented larger household incomes.

This finding, however, seemed unusual and did not seem consistent with either intuition or prior research.

Second, the results appeared to be consistent with a different part of the prior research of Skogan and Maxfield (1981: 215). They found that the strongest predictor of household protection was home ownership. For installing special locks, owning a gun, owning a dog, and installing a security system, the home ownership variable was both positively and significantly related to each protective behavior. In addition, after comparing the standardized coefficients for each behavior, home ownership was the most important variable in predicting installing special locks. Also, home ownership had the second most important controlled association with owning a dog, and it had the third most important association with owning a gun. In sum, home ownership had the most consistent association throughout the analyses with protective behaviors.

The third observation concerns the results of the analysis on collective behaviors. Skogan and Maxfield (1981: 233-234) painted a picture of those involved in collective activities as being long-term residents with firmly entrenched ties in the community. Although that was written in 1981, the results of this analysis seemed to

support that assertion. The home ownership variable was significantly and positively related to participation in collective activities, as was the presence of children. All three education variables were significantly and positively related to participation in collective activities. The three education categories indicated increasingly higher levels of education. The age variable was also significantly and positively related to participation in collective activities. Finally, the highest income variable was significantly and positively related to participation in collective activities.

Four avenues of future research seem to need to be pursued. First, on a broad level, continued research is needed on how reactions to crime should be grouped together in a real world setting. Although it seemed reasonable that the protective behaviors category should include multiple behaviors, this project demonstrated how difficult those behaviors were to group together into an index. It seemed like individuals reacted to the fear of crime in distinct ways. Just because individuals may have installed special locks did not necessarily mean they would own a dog as well. Although some behaviors grouped together theoretically, testing the relationship between fear and

reactions to fear may be better served by analyzing the behaviors separately.

Second, future attempts to analyze the contextual effects of crime rates on reactions to the fear of crime may want to explore the effects of different types of crime other than the aggregate of violent crime. Although it was reasonable to expect that violent crime might have had the greatest effect on how individuals living in a community, neighborhood, or zip code, reacted to the fear of crime, their reactions could also have depended on levels of property crimes, such as theft or burglary. Intuitively, it would make sense for individuals to respond to a rash of burglaries in the area by installing special locks or installing a security system. Since those behaviors are primarily intended to protect property, a plausible argument could be made that protective behavior might be more a by-product of property crimes than violent crimes.

Third, future research that takes contextual effects into consideration may want to explore a broader period of time than six months. Although the time period of the violent crime data matched up with the period of time examined in the questions of the 2004 Omaha Conditions Survey, reactions to the fear of crime might take longer to

occur.   There could be a period of perceiving the crime in
the area, then a period of elevated fear, then a confusion
stage, then an action stage.   Although that was just
conjecture, there has not been sufficient prior research on
how immediate reactions to the fear of crime take place in
comparison to the emotion itself.

Fourth, future research should attempt to identify the
effects of "socially defined" neighborhoods, as opposed to
zip codes.   Although zip codes were used as a proxy measure
of neighborhoods, some zip codes were over ten square miles
in size.   In all likelihood, perception of crime in an
individual's immediate vicinity will have a greater effect
on reactions to crime than perception of crime in an area
farther away, but still in the same zip code.   Indeed, it
may be necessary to examine reactions to crime for areas as
small as block groups or city blocks or even the sides of
the street facing each other.   Although this study was not
perfect, it at least introduced the idea that reactions to
the fear of crime may be just as much of a response to
crime in the area of residence as they are a response to
fear itself.   With that in mind, this study has provided a
starting point for future research on the reactions to the

fear of crime using the characteristics of the environments in which people live.

This study has also provided additional insight, both theoretical and practical, into how individuals reacted to the fear of crime. Theoretically, analyses of reactions to fear must at least consider the effects that a particular environment may have on individual behaviors. Although the effect of one aspect of the environment, in this case the violent crime rate, did not seem to be uniform or consistent, there was still considerable variance in the reactions to fear across areas. Individuals living in areas with high violent crime rates did not react in the same way as individuals living in areas with low violent crime rates. In addition, future analyses of reactions to fear must exercise caution about combining behaviors together into indices of supposed similar behaviors. As this research has shown, combining supposedly consistent behaviors together was undermined by the lack of internal consistency across the different variables.

On a practical level, there has been a dearth of research into this subject over the last twenty years. This research has shown that there was not a uniform reaction to fear. The potential power of fear deriving

from crime levels in the neighborhoods was illustrated most dramatically by the results of the analyses of owning a gun. Higher violent crime rates exacerbated the effect of fear on owning a gun for protection. A neighborhood in which individuals react to the fear of crime by owning guns can undermine any sense of community present in that neighborhood. Public policy should be oriented to facilitate reactions to the fear of crime that do not undermine a neighborhood or community.

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