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PERSONAL EXPERIENCES WITH VIOLENCE, FEAR OF CRIME, AND MENTAL HEALTH OUTCOMES FOR ADOLESCENTS IN CHICAGO

A DISSERTATION APPROVED FOR THE
DEPARTMENT OF SOCIOLOGY

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Dedicated to my grandmother and mother. Thank you for your guidance, patience, and love.

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Abstract

Over the last several decades, an increasing amount of research has focused on fear of crime. Studies have found that fear of crime is often influenced by actual and perceived risks of victimization. Significant consequences of fear of crime have been found to include behavioral changes, adverse health outcomes, and neighborhood decline. However, fear of crime studies have predominately used cross-sectional data with adult samples. By using longitudinal data and focusing on adolescents, this study attempts to address these gaps in the literature. Data from the Project on Human Development in Chicago Neighborhoods are examined to answer the study's research questions. More explicitly, structural equation modeling is used to evaluate the impact of personal experiences with violence, including violent victimization, witnessing the violent victimization of others, and involvement in violence, on fear of crime among adolescents living in Chicago. Informed by stress theory, the impact of personal experiences with crime and fear of crime on mental health, explicitly internalizing and externalizing problems, is addressed as well. Results suggest that violent victimization increases fear of crime, witnessing violence is unrelated to fear, and crime involvement decreases fear. In addition, the study finds that being violently victimized is positively associated with both internalization and externalization, witnessing violence is associated with lower levels of internalization and not associated with externalization, and involvement in violence is associated with neither internalization nor externalization. Fear of crime is not found to mediate any of the relationships between personal experiences with violence and mental health. Limitations of the study are presented, and ideas for future research are addressed.

Chapter 1: Introduction

Statement of the Problem

Crime can be a riveting topic. A staple in modern American discourse, it is a subject of everyday conversation. The media and entertainment industry have long taken notice. News reports often lead with crime stories while books, television shows, films, and video games frequently treat crime as a central premise. In reality, the allure of crime is relatively easy to understand. As Warr (2000) explains, criminal activity questions human motivations, highlights the misfortunes of others, threatens the social order, and forces us to ponder the existence of justice itself. However, while crime may be a captivating subject matter, the thought of it can also be fear-inducing and, consequently, problematic. From worsening health (e.g., Whitley and Prince 2005; Stafford, Chandola, and Marmot 2007; Jackson and Stafford 2009; Lorenc et al. 2014) to hastening the decline of entire neighborhoods (e.g., Conklin 1975; Skogan 1986; Skogan 1990; Lorenc et al. 2013), research has found fear of crime to be associated with adverse outcomes for both individuals and their communities.

Since the 1967 release of the final report of the President's Commission on Law Enforcement and Administration of Justice, social science researchers have increasingly focused on fear of crime. In the last several decades, a growing amount of scholarly attention has been devoted to understanding its causes and consequences (Lane et al. 2014). Among the topics that have attracted the interest of researchers are the role of personal experiences with crime on fear (e.g., Garofalo 1979; Skogan and Maxfield 1981; Covington and Taylor 1991; Fox, Nobles, and Piquero 2009) and the influence of fear on mental health (e.g., Ross 1993; Green, Gilbertson, and Grimsely 2002; Stafford, Chandola, and Marmot 2007). Still, despite significant growth in the field, several areas require further investigation.

First, the fear of crime literature needs to place a stronger emphasis on understanding causality. A tendency to utilize cross-sectional data has made it difficult to appreciate the

predictors of fear of crime. For instance, while studies generally suggest that experiences with criminal activity are related to fear (e.g., Skogan 1987; Skogan and Maxfield 1981; Jenkins and Bell 1997; Miller 2008; Melde, Taylor, and Esbensen 2009; Lane and Fox 2012), few studies have used longitudinal data to make such an assessment. Cross-sectional data is also problematic in terms of understanding the causal link between fear of crime and long-term outcomes, such as mental health. While extant research suggests that fear of crime may be deleterious to mental health (e.g., Ross 1993; Green, Gilbertson, and Grimsely 2002; Beatty et al. 2005; Russo and Roccato 2010), the direction of causality and linking pathways remain indeterminate (Stafford, Chandola, and Marmot 2007).

Second, research needs to test the ability of fear of crime to influence other relationships. It is mostly understood that personal experiences with criminal activity can be damaging to mental health (e.g., Fantuzzo et al. 1991; Attar and Guerra 1994; Jenkins and Bell 1994; Pelcovitz et al. 1994; Moffitt and Caspi 2003; Lorenc et al. 2014), but less is known regarding how fear of crime may affect this association. In the two studies that have come closest to exploring this question, there are indications that fear may intervene in the relationship between experiences with crime and mental health (Overstreet and Braun 2000; Buckner, Beardslee, and Bassuk 2004). More research is needed, however, to appreciate the role of fear of crime. Finding that fear of crime mediates the relationship between personal experiences with crime and mental health may prove critical to policymakers tasked with developing and providing mental health treatment options for those who have been exposed to criminal activity.

Finally, the literature needs to pay more attention to fear of crime as experienced by adolescents. As explained by May and Dunaway (2000:152), "despite the abundance of research examining fear of crime among adults, there has been scant attention paid to examining fear

among adolescents." The general disregard of this population is concerning considering that young people are especially likely to experience crime (Howard et al. 2002; Sullivan et al. 2006; Truman and Langton 2015) and be impacted by these experiences (Fowler et al. 2009). The lack of scholarly attention paid to youth is also worrisome since research suggests that mental health disorders often appear before adulthood and pre-adult onset is a significant risk factor for adult mental health disorders (Beyers and Loeber 2003; Costello et al. 2003; Ritakallio et al. 2008). In the nearly two decades since May and Dunaway's (2000) assertion, however, relatively limited progress has been made with regards to increasing the field's focus on adolescents.

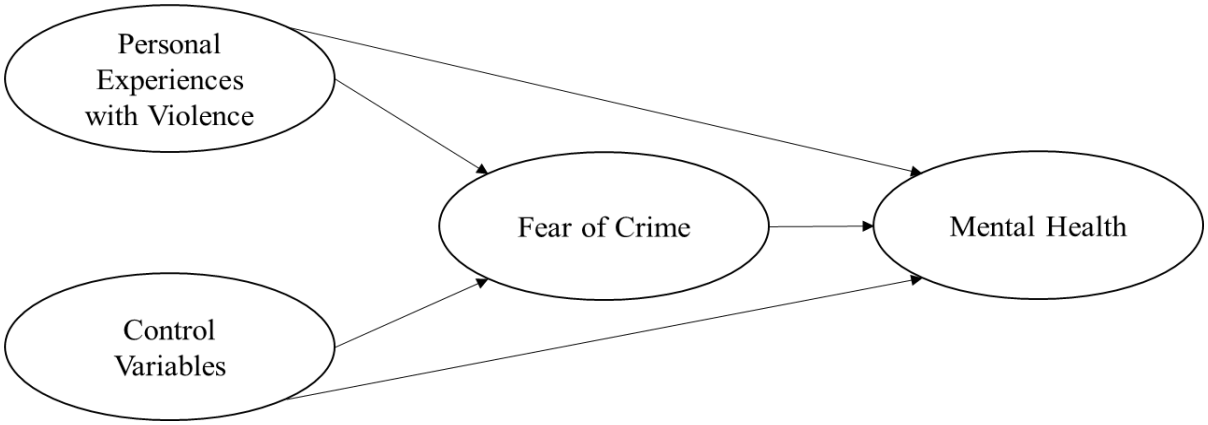
In an attempt to address these gaps in the literature, this dissertation, guided by stress theory (Pearlin et al. 1981; Pearlin 1999; Dohrenwend 2000), uses structural equation modeling (SEM) to assess the impact of personal experiences with violence—including violent victimization, witnessing the violent victimization of others, and involvement in violence—on fear of crime among adolescents. The impact of fear of crime as both a direct and mediating variable on mental health outcomes is addressed as well. This analysis uses data from the Project on Human Development in Chicago Neighborhoods (PHDCN). An interdisciplinary study focused on how families, schools, and neighborhoods affect child and adolescent development, the PHDCN is a longitudinal dataset that follows the development of 6,000 randomly selected children and adolescents living in Chicago, Illinois. The dataset includes information on neighborhood characteristics, demographic factors, and behavioral data on children, adolescents, young adults, and their primary caregivers.

Research Questions and Hypotheses

Based on prior research, this study's conceptualized model, depicted in Figure 1, outlines the proposed relationships among key variables, including a set of control variables previously

found to influence both fear of crime and mental health. More specifically, it is hypothesized that personal experiences with violence affect fear of crime as well as mental health. It is further hypothesized that fear of crime mediates the relationship between personal experiences with violence and mental health. Informed by stress theory, which argues that stressors such as exposure to violence can be deleterious to subjective well-being and mental health, the model outlined in Figure 1 serves as the framework for this study. The specific research questions and hypotheses are more thoroughly discussed below.

Figure 1: Conceptual Model of the Relationship among Personal Experiences with Violence, Fear of Crime, and Mental Health



Personal Experiences with Violence and Fear of Crime

First, this study considers the influence of violent victimization, witnessing the violent victimization of others, and involvement in violence on fear of crime. Although findings have been mixed, past studies have generally found that victimization increases fear of crime (Baker and Mednick 1990; Alvarez and Bachman 1997; May and Dunaway 2000; May 2001a; Russo and Roccato 2010). As for the influence of witnessing victimization, it has received considerably less scholarly attention. Lane et al. (2014:153) note that the fear of crime literature "has basically ignored the direct effects of witnessing crime, especially violence, on perceived risk and personal fear of crime." Still, findings from the field of psychology suggest that witnessing another person

be violently victimized increases fearfulness (e.g., Pynoos and Nader 1988; Shakoor and Chalmers 1991; Jenkins and Bell 1997). The association between criminal involvement and fear of crime is likewise complex and not yet established in the literature. Extant research suggests, however, that criminal involvement may be associated with a decrease in fear of crime (May 2001a; Melde, Taylor, and Esbensen 2009).

1. In terms of personal experiences with violence, what is the influence of violent victimization, witnessing the violent victimization of others, and involvement in violence on fear of crime for adolescents?

   $H_{1.1}$: Adolescents who have experienced violent victimization will be more fearful of crime than those who have not.

   $H_{1.2}$: Adolescents who have witnessed the violent victimization of others will be more fearful of crime than those who have not.

   $H_{1.3}$: Adolescents who have been involved in violence will be less fearful of crime than those who have not.

Table 1: Hypothesized Impacts of Personal Experiences with Violence on Fear of Crime

Personal Experiences with Violence	**Fear of Crime**
Violent Victimization ($H_{1.1}$)	+
Witnessing the Violent Victimization of Others ($H_{1.2}$)	+
Involvement in Violence ($H_{1.3}$)	-

Personal Experiences with Violence and Mental Health

Second, this study examines the impact of personal experiences with violence on mental health. In general, studies suggest that there is an association between victimization, witnessed victimization, and crime involvement on mental health (Fowler et al. 2009). This dissertation measures mental health through two empirically established syndromes: internalization—which is characterized by negative mood states and inhibition, such as anxiety, depression, social withdrawal, and sleeping problems—and externalization—which is characterized by behavioral disinhibition, such as aggressiveness, delinquency, hyperactivity, and other control disorders (Achenbach 1991). In terms of victimization, multiple studies have found a relationship between

violent victimization and problem behaviors (e.g., Fantuzzo et al. 1991; Pelcovitz et al. 1994; McLeer et al. 1998; Wolfe 1999; Wolfe, Scott, Wekerle, and Pittman 2001; Lansford et al. 2002; Salzinger et al. 2002; Mrug and Windle 2010; Renner and Boel-Studt 2017). Several studies have likewise found that witnessing violence is associated with mental health problems (e.g., Jaffe et al. 1986; Hughes 1988; Attar, Guerra, and Tolan 1994; Cooley-Quille, Turner, and Beidel 1995; Schwab-Stone et al. 1999; Moffitt and Caspi 2003; Holt, Buckley, and Whelan 2008; Taylor et al. 2018; Fong, Hawes, and Allen 2019). As for those who engage in violence, research suggests that involvement in violence may contribute to problem behaviors later in life (e.g., Herrmman, McWhirter, and Sipsas-Herrmann 1997; Vermeiren 2003; Reising et al. 2019).

2. In terms of personal experiences with violence, what is the influence of violent victimization, witnessing the violent victimization of others, and involvement in violence on mental health for adolescents?

   $H_{2.1}$: Adolescents who have experienced violent victimization will exhibit more internalizing problems.

   $H_{2.2}$: Adolescents who have witnessed the violent victimization of others will exhibit more internalizing problems.

   $H_{2.3}$: Adolescents who have been involved in violence will exhibit more internalizing problems.

   $H_{2.4}$: Adolescents who have experienced violent victimization will exhibit more externalizing problems.

   $H_{2.5}$: Adolescents who have witnessed the violent victimization of others will exhibit more externalizing problems.

   $H_{2.6}$: Adolescents who have been involved in violence will exhibit more externalizing problems.

Table 2: Hypothesized Impact of Personal Experiences with Crime on Mental Health

Personal Experiences with Violence	**Internalizing**	**Externalizing**
Violent Victimization ($H_{2.1}$, $H_{2.4}$)	+	+
Witnessing the Violent Victimization of Others ($H_{2.2}$, $H_{2.5}$)	+	+
Involvement in Violence ($H_{2.3}$, $H_{2.6}$)	+	+

Personal Experiences with Violence, Fear of Crime, and Mental Health

Finally, this study considers the ability of fear of crime to mediate the relationship between personal experiences with violence and mental health, particularly internalizing and externalizing problems. Although research is limited, there is some support for the prospect that fear of crime may mediate the relationship between personal experiences with violence and mental health. For example, Overstreet and Braun (2000) found in their study of impoverished African American children that perceptions of neighborhood safety mediated the association between exposure to community violence and posttraumatic stress symptoms. Buckner and colleagues (2004) similarly found in their study of poor children that neighborhood safety mediated the association between violence exposure and internalizing and externalizing problems.

3. Does fear of crime mediate the relationship between personal experiences with violence and mental health for adolescents?

   $H_{3.1}$: Fear of crime mediates the relationship between violent victimization and internalizing problems.

   $H_{3.2}$: Fear of crime mediates the relationship between witnessing the violent victimization of others and internalizing problems.

   $H_{3.3}$: Fear of crime mediates the relationship between involvement with violence and internalizing problems.

   $H_{3.4}$: Fear of crime mediates the relationship between violent victimization and externalizing problems.

   $H_{3.5}$: Fear of crime mediates the relationship between witnessing the violent victimization of others and externalizing problems.

   $H_{3.6}$: Fear of crime mediates the relationship between involvement with violence and externalizing problems.

Table 3: Hypothesized Impacts of Personal Experiences with Violence, Fear of Crime, and Mental Health

Personal Experiences with Crime	**Internalizing (Mediated by Fear of Crime)**	**Externalizing (Mediated by Fear of Crime)**
Violent Personal Victimization ($H_{3.1}$, $H_{3.4}$)	Reduced effect /No longer significant	Reduced effect /No longer significant
Witnessing the Violent Victimization of Others ($H_{3.2}$, $H_{3.5}$)	Reduced effect /No longer significant	Reduced effect /No longer significant
Involvement in Violence ($H_{3.3}$, $H_{3.6}$)	Reduced effect /No longer significant	Reduced effect /No longer significant

Contributions to the Literature

This study contributes to the fear of crime literature. The first research question, which asks how personal experiences with violence influence fear of crime, adds to the literature in three distinct but related ways. First, the majority of extant fear of crime research has focused on adult samples. This dissertation is different in that it examines adolescents, a population disproportionately at risk for victimization and crime involvement (Finkelhor et al. 2015; Truman and Langton 2015; Ouderkerk and Morgan 2016). Second, past work has generally focused on either the influence of personal victimization or crime involvement on fear of crime; the impact of witnessing violence on fear has been almost totally ignored. Uniquely, this study considers the influence of all three types of personal experiences with crime on fear of crime. Third, most fear of crime studies have viewed the impact of personal experiences with crime and context separately. This study, however, builds upon the extant literature by exploring the relevance of experiences with crime on fear while controlling for the influence of potentially critical situational factors, including neighborhood context.

The second and third research questions contribute to the literature by, respectively, asking how personal experiences with violence influence mental health and if fear of crime mediates the relationship between these experiences and mental health. These questions are

relevant for three reasons. First, the data used include information gathered from the adolescent subject as well as their primary caregiver. Doing so provides a more comprehensive picture when evaluating the variables of interest. Second, while past studies have examined the role of experiences with crime on fear, relatively few have scrutinized how such experiences influence long-term mental health outcomes. This study will make a considerable contribution to the literature in this regard. Third, and mostly new to the field, will be a consideration of the ability of fear of crime to mediate the relationship between personal experiences with violence and mental health. Such an examination provides a foundation for future research to expand upon this work, which could produce noteworthy policy implications regarding the mental health care treatment options for adolescents who have been exposed to crime.

Critical across the research questions is the ability of this study to use longitudinal data. As the vast majority of prior fear of crime research has used cross-sectional data, the opportunity to utilize panel data across three-time points, when appropriate data are available, allows this dissertation to enhance the understanding of the pathways linking the variables of focus. Moreover, examining the influence of personal experiences with violence on fear of crime and evaluating how both of these concepts influence mental health are the primary methods through which this study will contribute to the literature.

Format

The study appears in the following format. Chapter 2 discusses fear, the history, concept, and prevalence of fear of crime, and the determinants and consequences of fear of crime. Chapter 3 reviews the demographic predictors of mental health problems as well as the impact of personal experiences with crime and fear of crime on mental health. The ability for fear of crime to mediate the relationship between personal experiences with violence and mental health is also

discussed. In addition, stress theory is introduced as a potentially valuable perspective. Chapter 4 describes the data and sample, measures, and analytical strategies used to answer the study's three research questions. Chapter 5 presents preliminary statistics as well as results from structural equation modeling. Lastly, Chapter 6 provides an overview of the study, summarizes its findings, and discusses limitations as well as next steps.

Chapter 2: Review of Relevant Fear of Crime Literature

In the United States, it is not unusual for youth to be exposed to violence. The most recent National Survey of Children's Exposure to Violence, a nationally representative study of youths aged 0 to 17 years, found that—in the prior year—one-quarter (25%) had witnessed an act of violence and over one-third (37%) had experienced a physical assault (Finkelhor et al. 2015). Such rates are higher than for adults (Hashima and Finkelhor 1999; Finkelhor 2008). As may be anticipated, exposure to violence at a young age has been linked to a litany of adverse outcomes (Zimmerman and Posick 2016). Studies have found, for instance, that youths who have been exposed to violence are more likely to be personally victimized (Menard 2000; Menard 2002) and to engage in criminal activity as adults (Esbensen and Huizinga 1990; Sampson and Lauritsen 1990; Lauritsen, Sampson, and Laub 1991; Menard 2002). Exposure to violence has also been linked to less satisfactory school performance (Hurt et al. 2001), higher rates of substance abuse (Resick and Nishith 1997), and psychological and behavioral symptomatology, including anxiety and depression (e.g., Lurigio 1987; Boney-McCoy and Finkelhor 1995; Berton and Stabb 1996; Norris, Kaniasty, and Thompson 1997).

Just as youth are disproportionally at risk for exposure to violence (Finkelhor et al. 2015; Truman and Langton 2015), they are also more likely to commit violent acts (Ouderkerk and Morgan 2016). The association between age and criminal involvement is one of the most well-known and robust relationships in criminology (e.g., Goring 1913; Herrnstein and Wilson 1985; Blumstein et al. 1986). Research has consistently suggested that crime involvement peaks between the ages of 15 and 24 years before steadily declining with age. In 2016, for instance, those under the age of 18 years comprised approximately 10% of those arrested for a violent crime (Federal Bureau of Investigations 2017). As with victimization and witnessing the victimization of others, the literature suggests that there are significant consequences associated

with criminality. Youthful offenders are more likely to experience troubling outcomes, including offending in adulthood, substance abuse, unemployment, economic dependency, divorce, and even early death (e.g., West and Farrington 1973; Sampson and Laub 1990; Coffey 2003).

As a focal point of the dissertation, this chapter considers how fear of crime may be yet another consequence of personal experiences with crime. The following sections summarize research from psychology, sociology, and criminology to provide an overview of the fear of crime literature. More specifically, fear is defined, the history, conceptualization and operationalization, and ubiquity of fear of crime are discussed, determinants of fear are examined, and the effects of fear are considered. When possible, special attention is paid to research on adolescents.

What is Fear?

Fear is a necessity. The physiological and psychological responses that fear inspires allow humans to prepare themselves for potentially life-endangering threats (Kemper 1978; Marks 1978; Lazarus, Kanner, and Folkman 1980; Garofalo 1981; Silberman 1981; Marks and Nesse 1994). More eloquently, as Öhman (2007:15) argues, "fear is an activated, aversive emotional state that serves to motivate attempts to cope with events that provide threats to the survival or well-being of organisms." Common coping responses to fear are immobility, escape, and attack. While the exact posture taken relies on the perceived imminence of the threat (Öhman 2007), fear can play a meaningful and critical role in extending survival. Of course, however, just as fear can be an adaptive and useful response to threats (Marks 1978), it can also be harmful when experienced to such a degree that normal life functions are limited.

Extant research on humans has found that some of the most common sources of fear are natural disasters, animals, and social interaction. Several studies have attempted to identify and

summarize fear sources. In their meta-analysis, Arrindell and colleagues (1991) analyzed 38 studies and identified 194 fear-related factors. Nearly one-third (32%) of the factors were related to interpersonal events or situations, 30% to death, illness, and surgical procedures, 16% to animals, and 16% to agoraphobia. These findings support the idea that while there are several domains of fear, fear of interpersonal events, including criminal activity, represents an essential and vital aspect of fear (Tasto 1977; Granell de Aldaz 1982). The following section describes the history, conceptualization, and ubiquity of fear of crime.

Fear of Crime: Its History, Conceptualization, and Ubiquity

History of Fear of Crime

Although public anxieties about crime have a long and well-documented history, it was not until the 1960s that fear of crime became a scholarly field of study. Amid that decade's rise in crime rates, problems with civil unrest, and growing public concern with criminal activity, fear of crime began to draw increased attention from social science researchers as well as policymakers. In response, President Lyndon B. Johnson authorized the creation of the Commission on Law Enforcement and Administration of Justice in 1965. The Commission was tasked with producing knowledge about criminal activity and law enforcement efforts in the United States as well as with making recommendations for crime prevention and reduction strategies.

In its main report (President's Commission on Law Enforcement and Administration of Justice 1967:3), the Commission was among the first official bodies to discuss the significance of fear of crime, referring to it as "the most damaging of the effects of violent crime." Abridging results from several early fear of crime surveys, the report emphasized the prevalence of fear as well as its ability to alter human behavior. It was noted, for instance, that survey data collected in

two urban cities found that fear of crime was common and positively associated with avoiding going out at night, choosing not to speak to strangers, and eagerness to move to another neighborhood. Citing these surveys, fear of crime was described by the Commission as a social problem across the U.S. with both short- and long-term impacts on individuals as well as their communities. The report inspired future research on the topic and led to the development of new self-report surveys, including the General Social Survey (GSS) and the National Crime Victimization Study (NCVS). The latter survey remains the primary source of national-level victimization statistics in the United States.

Since the Commission's report, the field has dramatically evolved. From the late 1960s to the mid-1980s, fear of crime research was primarily descriptive and exploratory. The studies from this time focused heavily on the demographic correlates of fear and seemingly vulnerable populations such as the elderly. Findings indicated that females, people of color, the impoverished, and senior citizens were more fearful than males, whites, the affluent, and young adults, respectively (e.g., Lebowitz 1975; Clemente and Kleiman 1976; Yin 1980; Warr 1984). Another common trend during this nascent phase was to quantify fear by using a single, simple measure. More specifically, many studies used a question from the GSS that asked, "Is there any place right around here—that is, within a mile—where you would be afraid to walk alone at night?" Another commonly used question came from the NCVS: "How safe do you feel or would you feel being out alone in your neighborhood at night?"

The findings and limitations of early fear of crime studies encouraged the field to evolve from the mid-1980s to 2000, a period referred to by Lane et al. (2014) as its "adolescence era." These years saw scholars use more advanced statistical techniques and place a greater emphasis on evaluating the role of proximate causes of fear (e.g., Ferraro 1995; Smith and Hill 1991;

Wilcox Rountree 1998). A significant trend was again to study vulnerable populations, but—during this period—women received the lion's share of attention. Although less likely to be victimized than men (Craven 1997), researchers consistently found that women were more fearful, even when controlling for other relevant variables (e.g., LaGrange and Ferraro 1989; Young 1992; Ferraro 1996). This finding highlights a second major trend of the era: understanding the relationship between risk of victimization and fear of crime. Interestingly, it was found that risk and fear are often incongruent with one another, suggesting that perception of risk may be more critical than actual risk when it comes to fear (e.g., Ferraro and LaGrange 1987; Wilcox Rountree and Land 1996; Mesch 2000). A third major trend during this era was studying the role of prior victimization on fear, with many studies finding that previous victimization predicted fear of crime (e.g., Skogan 1987; Smith and Hill 1991; Dull and Wint 1997).

One area that did not receive adequate attention during the field's adolescence period was how fear of crime was being measured. The lack of scholarly attention on this issue encouraged Warr (2000:453) to opine, "For reasons that remain elusive…the study of fear seems to have stalled at a rudimentary phase of development, a situation that is in danger of turning into outright stagnation." Since 2000, the field has responded. Intensity of fear measures have mostly replaced the dichotomous answer choices of the past, allowing for scales to more precisely measure fear. A second noteworthy trend has been the increased use of crime-specific measures of fear, a decision inspired by extant research indicating that different crimes appeared to elicit different levels of fearfulness (Farrall et al. 1997; Ferraro and LaGrange 1987; Wilcox Rountree 1998). A third recent trend in the field has been an increased interest in examining the role of victim-offender overlap on fear of crime (e.g., Lane and Meeker 2003; Fisher and Sloan 2003;

Scott 2003). Although recent research suggests that respondents are more fearful of strangers than individuals they know (Wilcox, Jordan, and Pritchard 2006; Lauritsen and Rezey 2013), this relationship is likely to receive more nuanced attention in the coming years.

Conceptualizing and Operationalizing Fear of Crime

Despite the growth in the fear of crime field, scholars continue to struggle with conceptualizing the concept. There is still no universal definition within the existing literature of "fear of crime." In one of the first definitions, Garofalo (1981:840) argued that fear of crime is "an emotional reaction characterized by a sense of danger and anxiety…produced by the threat of physical harm…elicited by perceived cues in the environment that relates to some aspect of crime." In a more recognized definition, Ferraro and LaGrange (1987:73) posited that fear of crime is "the negative emotional reaction generated by crime or symbols associated with crime." In one of the field's most seminal works, Ferraro (1995:4) defined fear of crime as "an emotional response of dread or anxiety to crime or symbols that a person associated with crime." Warr (2000) rejoined that further clarification was needed. He argued that "fear is not itself a belief attitude, or evaluation, but an emotion, a feeling of alarm or dread caused by an awareness or expectation of danger" (Warr 2000:453).

There are fundamental similarities in these definitions. Most notably, fear is regarded as an emotional reaction. That is, fear is not the result of a cognitive assessment, but rather stems from a negative affective response to a potentially dangerous situation. Following years of empirical validation, researchers now generally agree that fear of crime is an emotional response to potential victimization whereas perceived risk is a cognitive assessment of future victimization chances (Wilcox Rountree and Land 1996; Mesch 2000; Rader 2004). Secondly, the emotion of fear is brought on by the threat or potential threat of harm to one's person or property. In this

sense, cognitively informed perceptions of risk help to inspire the emotional response of fear. Finally, the definitions provided above are alike in that they contend that fear is a response to the immediacy, or potentially immediacy, of a dangerous event. In other words, fear is a response to the probability of a person experiencing a victimization threat. As Lane and colleagues (2014) contend when summarizing these similarities, fear of crime is therefore typically understood to be an emotional response to a danger or threat of a potential criminal incident.

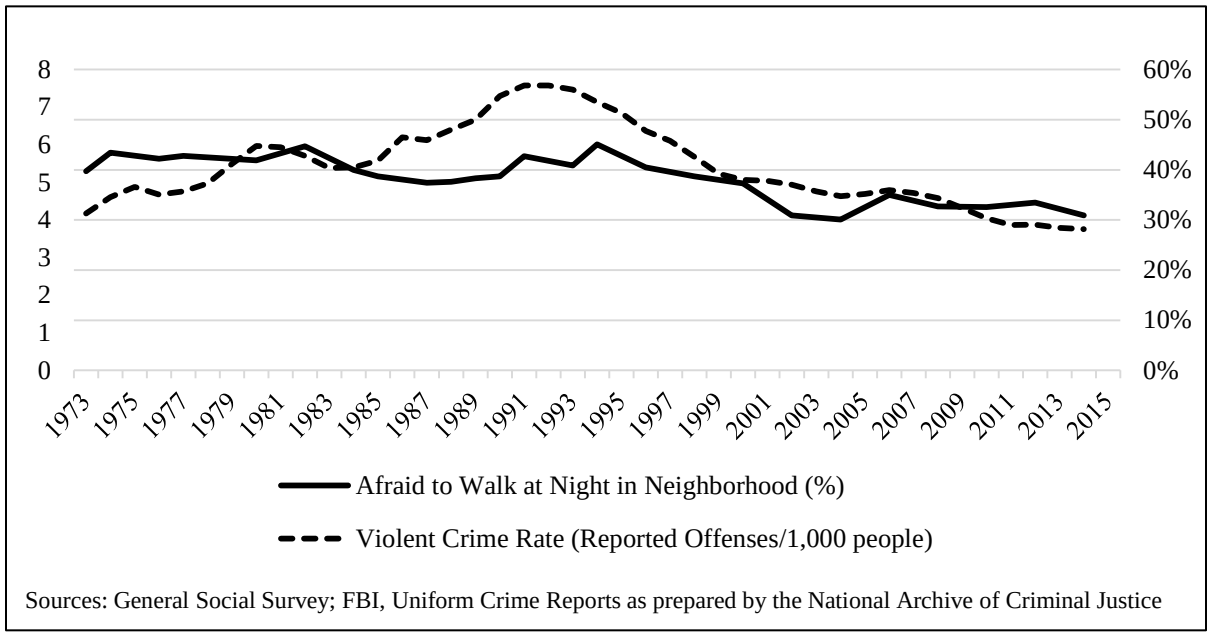
In terms of operationalizing fear of crime, it is generally measured via self-report surveys (e.g., Clemente and Kleiman 1976; Warr 1984; Taylor and Hale 1986; Smith and Hill 1991; Ferraro 1995; Keane 1995; Farrall and Gadd 2004; Vanderveen 2006; Melde 2009; Woolnough 2009). In recent years, there have been improvements in how fear of crime is measured. More specifically, modern research tends to use crime-specific measures of fear, reference temporal factors, and identify a specific location. It is now additionally common for studies to give survey respondents Likert-scale response options as opposed to a dichotomous choice.
Together, these improvements have increased consistency across studies and permitted further refinement of theories on the causes and consequences of fear of crime.

The Ubiquity of Fear of Crime

Fear of crime remains a commonly experienced emotion in the United States. For the past several decades, the General Social Survey (Smith et al. 2019) has asked adult Americans about their degree of fear. More specifically, respondents are asked, “Is there any area around where you live—that is, within a mile—where you would be afraid to walk alone at night?” As shown in Figure 2, the proportion of respondents who answer affirmatively has ranged between 30% and 45%. In 2016, nearly one-in-three respondents (31%) indicated being afraid to walk at night

in an area near their home. Interestingly, reported fear does not appear to vary in exact tandem with the country's violent crime rate (Federal Bureau of Investigations 2019).

Figure 2: Fear of Crime and Violent Crime Rate in the United States (1973-2015)



Other polling organizations, including Gallup and the Pew Research Center, have also inquired about fearfulness of crime. In recent polling, Gallup (2019) found that 33% of Americans reported being afraid to walk near their home alone at night. In addition, it was found that young adults, those with lower incomes, people of color, and urban residents were more likely to report being afraid to walk alone at night than were older adults, the affluent, whites, and rural residents, respectively (Newport 2017). As for adolescents, Gallup has found that younger students typically feel safer at school than older students (Gallup Student Poll 2016). For example, when asked whether they feel safe at school, 62% of fifth-graders strongly agreed versus only 30% of eleventh-graders. Pew annually asks respondents what issues should be most important for the President's agenda. In 2018, 56 percent of respondents indicated that crime

should be a top priority for the President and Congress (Pew Research Center 2018). This rate is higher than in 2010 when fewer than half (49%) said that crime should be a top issue.

Considering the findings of empirical studies as well as public opinion polls, it is apparent that fear of crime remains an issue in the United States. In response, the topic continues to receive scholarly attention as well as be a concern in the lives of everyday Americans. The literature has responded by identifying the micro- and macro-level determinants of fear of crime and developing theories to understand its causes and consequences. The next section discusses these dimensions of fear of crime.

Determinants of Fear of Crime

Since the Commission on Law Enforcement and Administration of Justice's report, scholars have devoted considerable attention to understanding the causes of fear of crime. As noted above, early research generally focused on the influence of individual-level characteristics (e.g., Garofalo 1981; LaGrange and Ferraro 1989; Ollenburger 1981; Ortega and Myles 1987; Warr and Stafford 1983; Warr 1984). More recently, scholars have placed a stronger emphasis on the role of contextual factors, especially neighborhood characteristics (e.g., Skogan 1990; Markowitz, Bellair, Liska, and Liu 2001; Gibson, Morris, and Beaver 2009; Brunton-Smith 2011). Findings from the literature have led to several perspectives, including three that are explored in detail below.

Experiences with Crime

The victimization perspective posits that direct and indirect experiences with victimization cause individuals to become more cautious, wary, and fearful of crime (Garofalo 1979; Taylor and Hale 1986; Box, Hale, and Andrews 1988; Hale 1996). Conversely,

involvement in criminal activity as an offender has been found to be associated with less fear (Lane 2006; Lane 2009: Melde, Taylor, and Esbensen 2009; Lane and Fox 2012).

Victimization

Several studies have examined the influence of victimization on fear of crime. Some have found that victimization, especially violent victimization, increases fear (e.g., Garofalo 1979; Tyler 1980; Skogan and Maxfield 1981; Skogan 1987; Smith and Hill 1991; Wilcox Keane 1995; Rountree 1998; Wilcox Rountree 1998; Kanan and Pruitt 2002; Katz, Webb, and Armstrong 2003; Ferguson and Mindel 2007; Fox, Nobles, and Piquero 2009; Bachman, Randolph, and Brown 2011). Other studies have not, however, come to the same conclusion (e.g., Ferraro 1995; McGarrell, Giacomazzi, and Thurman 1997). Studies with adolescent samples have likewise produced mixed results (e.g., Baker and Mednick 1990; Alvarez and Bachman 1997; Schreck and Miller 2003; Wallace and May 2005; Cops 2010; Swartz et al. 2011; May and Dunaway 2000; May 2001a; May, Vartanian, and Virgo 2002; Melde 2009; Melde and Esbensen 2009; Cops and Pleysier 2011; Yuan, Dong, and Melde 2015). Notably, when victimization has been found to predict fear, it is typically not found to be a particularly strong predictor (Agnew 1985; DuBow, McCabe, and Kaplan 1979; Tyler 1980).

The inconsistent findings regarding the influence of victimization on fear of crime may be explained in three different ways. First, the proportion of respondents who had been directly victimized in these studies was generally low. This fact may make it more challenging to confirm the ability of victimization to influence fear at a significant level. Second, studies typically do not fully specify the social context associated with victimization experiences. As an example, for respondents who were victimized in places other than their neighborhood, evaluating the relationship between victimization and fear in one's neighborhood may be problematic (Warr

1990). Third, the operationalization of fear of crime used is generally not crime-specific, a violation of the recommendations of Ferraro and LaGrange (1987) and Warr (2000) as addressed above.

In response to this third concern, recent research has been more cognizant of the role that type of victimization plays on fear of crime. As Fox, Nobles, and Piquero (2009) argue, failing to analyze types of victimization separately may result in overall non-significant findings, thus obscuring the relationship between victimization and fear. In support of this assertion, Baker and Mednick (1990), as well as Cops (2010), found that person-related crimes significantly increase adolescent fear of crime, but that property crime is unrelated to fear. Fisher (1995) came to a similar conclusion with a sample of adults. It is also possible that both personal and property victimization is related to fear but in different ways. Alvarez and Bachman (1997) as well as Bachman, Randolph, and Brown (2011) found, for example, that personal and property-related victimization both increase fear among adolescents, but that personal victimization had a stronger effect. In their studies with adults, Dull and Wint (1997), as well as Skogan (1987), had similar findings.

Witnessing Criminal Victimization

The influence of witnessing the victimization of others on fear of crime has been mostly neglected in the literature. In the 1970s, DuBow, McCabe, and Kaplan (1979:20) argued, "Anecdotal information is available that would indicate that under some circumstances witnessing a crime can be a powerful experience." At the time of this assertion, appropriate data were not yet available to test this idea. Since then, there has been minimal scholarly work directly focusing on the relationship between witnessing victimization and fear of crime. Studies

that have indirectly considered this relationship suggest that witnessing crime can have a potent effect on fear.

In the psychological literature, several "co-victimization" studies have explored the impact of witnessing violence. While most have not explicitly studied fear as an outcome, some have suggested that fear can be a consequence of co-victimization (Warner and Weist 1996; Jenkins and Bell 1997; Osofsky 1999; Margolin and Gordis 2000). In their study on children and adolescents, for example, Shakoor and Chalmers (1991:236) found that witnessing the victimization of others has multiple adverse effects, including "persistent fear, anxiety, [and] lack of trust." Pynoos and Nader (1988) found that children who had witnessed their mothers be sexually assaulted tended to stay in close physical proximity to their mothers, were afraid to leave home, and were hyper-vigilant about personal safety. A later study by Pynoos and Nader (1990) found that children who had witnessed violence were fearful of the places, things, or behaviors that reminded them of their co-victimization and were generally fearful of being alone.

Other psychological studies have come to similar conclusions. Richters and Martinez 1993a; 1993b) found, for instance, that children who had seen guns and drugs in their home were more fearful both at school and at home. Among their youngest cohort (first and second graders), victimization and witnessing violence were positively correlated with global distress and depressive symptoms. Osofsky et al. (1993) likewise found a connection between witnessing violence and feeling stress, including being fearful of personal safety. Concern about safety was also found to be a consequence of violence exposure in a study by Cooley-Quille and colleagues (2001). In their study with children, Margolin and Gordis (2000) found that exposure to violence increases psychological issues such as feelings of anxiety. Finally, Singer and colleagues (1995)

found that exposure to violence explained 7%-24% of the variance in the distress symptoms experienced by adolescents.

Criminological literature has also indirectly suggested that witnessing violence may increase fear. In Miller's (2008) study of young people in poor St. Louis neighborhoods, she found that most respondents had witnessed the violent victimization of another person. These respondents generally reported that their neighborhoods were not safe. More recently, Nellis (2012) found in her study on juveniles sentenced to life in prison that community violence was a commonly seen event, with about half of the respondents saying that they witnessed such violence on a weekly basis before being incarcerated. Most of these respondents agreed that their neighborhoods were unsafe.

Crime Involvement

In addition to being victimized and witnessing the victimization of others, a third way in which a person can experience crime is by being an offender. Interestingly, research generally indicates that those who are involved in a criminal lifestyle are less afraid of crime than those who are not. When studying juvenile offenders, Lane (2006; 2009) found that they generally do not report being fearful of crime, except when explicitly asked about violent crimes. In their study, Melde, Taylor, and Esbensen (2009) found young gang members to be less fearful of crime than young people who were not affiliated with a gang. Amongst adult gang members, Lane and Fox (2012) found that they felt more vulnerable to victimization, but were less afraid of crime than were non-gang members. It was further found that the number of crimes committed was not correlated with fear.

The lack of a positive relationship between offending and fear may seem counterintuitive, especially since a criminal lifestyle increases the risk of victimization (e.g., Sampson and

Lauritsen 1990; Lauritsen, Sampson, and Laub 1991; Chen 2009). There are possible reasons for this finding, however. Firstly, it is possible that offenders are less fearful because crime is not an unknown for them; instead, they are better able to appreciate its causes and consequences than are non-offenders (Merry 1981; Madriz 1997). Second, an offender's lifestyle may be protective of fear because it often provides access to weapons and peers who provide support against potential threats (Cobbina et al. 2008; Lane and Fox 2012). Importantly, a third possible explanation as to why offenders report being less fearful than non-offenders is that they are simply not telling the truth (Lane 2013). Considering that a common reason for joining a gang is to receive protection (e.g., Decker 1996; Peterson, Taylor, and Esbensen 2004), it is likely that offenders have experienced fear of crime in the past if not also in the present (Jankowski 1991).

Indirect Experiences with Crime

The inconclusiveness of the relationship between experiences with crime and fear has encouraged researchers to branch out and consider the influence of "indirect" experiences on fear (Tyler 1980; Tyler 1984; Skogan 1987). The literature suggests that there are two main ways for a person to be indirectly victimized. First, they may learn about criminal activity through media sources. Second, a person may hear about crime through their social network by talking with people in their local context, including family, friends, and coworkers.

Mass Media

Researchers have evaluated the influence of reading newspapers on fear of crime. Among newspaper readers, Heath (1984) found that fear was higher when crimes were sensationalized or described as being random; readers were further found to be less fearful of non-local crime stories. Similarly, Liska and Baccaglini (1990) found that local crime stories had a positive relationship with fear, whereas geographically distant crime stories were negatively correlated

with fear. It was additionally found that stories about murder were more fear-inducing than stories about other types of crime. In their study, Williams and Dickinson (1993) found that individuals who read newspapers that commonly published more salient crime reports were more fearful than those who did not. Interestingly, Koomen, Visser, and Stapel (2000) found that the influence of crime stories on fear of crime depends on the credibility of the newspaper. Other studies have found, however, no relationship between reading newspapers and fear of crime (e.g., Chiricos, Eschholz, and Gertz 1997).

As for visual media and fear, the results suggest that the influence depends on the viewer and the type of programming (Health and Gilbert 1996; Chiricos, Padgett, and Gertz 2000). When controlling for demographic factors, several studies have found television viewing to affect fear of crime (e.g., Wober 1978; Doob and Macdonald 1979; Hirsch 1981; Hughes 1980; Sacco 1982; Tyler 1984; Potter 1986; Reith 1999; Callanan and Rosenberger 2015). Other studies have found, however, that television viewing is related to fear, but only in certain circumstances (e.g., Gerbner et al. 1980; O'Keefe and Reid-Nash 1987; Schlesinger, Tumber, and Murdock 1991; Chiricos, Eschholz, and Gertz 1997; Chiricos, Padgett, and Gertz 2000). Doob and Macdonald (1979) found, for instance, that those who live in urban areas with high crime rates and watch more television reported having a greater fear of crime. Another study found that watching crime-related programming was related to fear for people who do not learn about crime through their social network or their own experiences (Weaver and Wakshlag 1986). For their part, Chiricos, Eschholz, and Gertz (1997) found that watching television news was related to fear for both white women and former crime victims while Callanan and Rosenberger (2015) found crime-related media messages to influence viewers regardless of race and gender.

Social Networks

Outside of media influence, the second primary way in which individuals may be indirectly victimized by crime is through socialization with family and friends. Skogan (1986) argued that people learn a great deal from their social networks and frequently speak with their neighbors about criminal activity. Tyler (1980; 1984) contended that communication might be even more impactful on perceptions of risk than the media. Other studies have likewise indicated that the effects of social networks on perceived risk are more salient than the effects of mass media (e.g., Lejeune and Alex 1973; Skogan and Maxfield 1981; Yuan and McNeeley 2015). Such a contention suggests that those who are more embedded in their communities, especially those involved in networks where communication about crime is frequent, are more likely to experience fear of crime.

While the literature on this topic is limited in scale, there is some support for this assertion. In Skogan and Maxfield's (1981) study, it was found that concern about serious neighborhood crime encourages people to talk with neighbors about these concerns. It was further found that individuals with strong social ties were particularly likely to talk with neighbors about crime. In another study, Taylor and Hale (1986) found that social networks were not related to fear of crime but did affect respondents' worry about crime. For their part, Covington and Taylor (1991) found that neighborhoods in which burglaries were being commonly discussed had high rates of fear, with those most involved in these discussions being the most fearful. Similarly, Lane (2002) found that one predictor of fear of gang activity is hearing about gangs when talking with friends, neighbors, and local law enforcement. In their study, Yuan and An (2016) found that adolescents with more delinquent school friends had higher perceptions of risk at school and in their local communities.

Perceptions of Vulnerability

The findings and limitations of research on the role of experiences with crime on fear encouraged researchers to identify additional explanations for fear of crime, especially theories that could expound upon why victimization risk and fear are often at odds with one another. In this evolution of thinking, the vulnerability perspective was the next logical step. This perspective posits that demographic characteristics help to explain fear (Bandura 1977; Skogan and Maxfield 1981; Killias 1990). More specifically, it is argued that fear of crime is highest amongst those with physical and social characteristics that enhance perceptions of vulnerability and consequently cause victimization to seem more likely and dangerous (Killias 1990). According to the vulnerability perspective, females, the elderly, people of color, and the impoverished should report higher levels of fear of crime.

Physical Vulnerability

Gender and age are considered indicators of physical vulnerability. The association between gender and fear of crime has been of particular interest in the literature, with females generally being found to report higher levels of fear than males (e.g., Biderman 1967; Hindelang 1973; Skogan and Maxfield 1981; Ferraro 1995; Cobbina, Miller, and Brunson 2008; May, Rader, and Goodrum 2010). Studies of adolescents have likewise found that females are generally more afraid (Baker and Mednick 1990; Alvarez and Bachman 1997; May and Dunaway 2000; May 2001a; May, Vartanian, and Virgo 2002; Schreck and Miller 2003; Brown and Benedict 2004; Wallace and May 2005; Deakin 2006; De Groof 2008; Cops and Pleysier 2011; Grinshteyn et al. 2016). Females are, however, less likely to be victimized than males, illustrating an example of the victimization-fear paradox. The vulnerability perspective resolves this apparent contradiction by arguing that females are more fearful of crime because they feel more physically vulnerable to victimization. The perspective also recognizes that females are

more likely to be the victims of sex crimes and domestic violence, and this may further enhance their perceptions of vulnerability (Warr 1984; Stanko 1987; Sacco 1990).

The influence of age on fear of crime has likewise attracted a great deal of attention. Despite being less likely to be victimized (Hale 1996), research has generally found that the elderly are more afraid of crime than are young people (e.g., Warr 1984; Fattah and Sacco 1989; Ferraro 1995; Hale 1996). Another example of the victimization-fear paradox, the vulnerability perspective explains this finding by arguing that the physical limitations faced by the elderly increase their fear despite them being less likely to experience victimization. Several studies have considered the influence of age and fear among adolescents. Similar to the findings in the Gallup Student Poll (2016), there are indications that older adolescents are more fearful of crime than younger adolescents (Gastic 2011). Other research has found the inverse, however, with age being negatively related to fear for young people (e.g., Alvarez and Bachman 1997; May and Dunaway 2000; Addington et al. 2002; Schreck and Miller 2003; Brown and Benedict 2004; Addington and Yablon 2011; Swartz et al. 2011). Baker and Mednik (1990) did not find age to predict fear of crime. As Yuan (2016) points out, the inconsistent ways in which fear of crime was operationalized in these studies may help to explain their conflicting results.

Social Vulnerability

Race and socioeconomic status (SES) have been argued to represent critical indicators of social vulnerability. It has been reasoned that living in areas where perceptions of vulnerability are high increases fear of crime (Skogan and Maxfield 1981; Parker 1988; Parker and Ray 1990; Ferraro 1995; Hale 1996; Snedker 2015). As racial segregation in the United States disproportionally exposes certain racial and ethnic groups to high crime environments (Skogan and Maxfield 1981; Hale 1996), this could explain why fear of crime has been found to vary by

race/ethnicity. In support of this assessment, Ennis (1967) found that African Americans were more likely to report feeling unsafe walking in their neighborhoods. Biderman (1967) likewise found that African Americans worried more about crime than did white Americans. Other studies, too, have found that people of color, particularly those living in more urban areas, report higher levels of fear (e.g., Hale 1996; LaGrange, Ferraro, and Supancic 1992; Chiricos, Padgett, and Gertz 1997; Scarborough et al. 2010; Newport 2017). Further, there is evidence that youth of color are more fearful than white youth (Wayne and Rubel 1982; Baker and Mednick 1990; Alvarez and Bachman 1997).

The tenets of the vulnerability perspective likewise suggest that SES is tied to fear of crime. That is, the impoverished, especially the urban poor, may have higher levels of fear because they spend more time in high-risk communities. Empirical research on this topic has been somewhat mixed (Wayne and Rubel 1982; May & Dunaway 2000; May 2001b; Miller et al. 2005; Cops and Pleysier 2011), although this may be attributable to differences in how socioeconomic status has been measured. Studies focusing on adolescent samples have likewise found inconsistent results with regards to the relationship between SES and fear of crime (Wayne and Rubel 1982; May and Dunaway 2000; May 2001b; Miller et al. 2005; Cops and Pleysier 2011). These findings, too, however, may be attributable to differences in how socioeconomic status has been measured.

Neighborhood Conditions

As the fear of crime field has increasingly explored the role of social context on fear, neighborhood conditions have garnered more attention from scholars. Studies that focus on the relationship between neighborhood factors and fear of crime are often rooted in the social disorganization framework, a perspective which argues that characteristics of a place can affect

how individuals think, feel, and behave (e.g., Thomas and Znaniecki 1918; Park, Burgess, and McKenzie 1925; Shaw and McKay 1942). More specifically, the framework posits that neighborhoods characterized by concentrated poverty, racial diversity, and residential instability have less ability to maintain the level of social control needed to thwart criminal activity (Bursik 1988). Fear of crime researchers have utilized the social disorganization framework to argue that because disorganized communities emit symbols associated with crime, these communities may cause residents to be more fearful. In particular, scholars have used this framework to examine how neighborhood diversity, disorder, and collective efficacy are associated with fear of crime.

Neighborhood Diversity

Community diversity, a linchpin of social disorganization, has been linked to fear. More specifically, research has found that individuals often report being more fearful of those who are phenotypically or culturally different from themselves (Merry 1981; Covington and Taylor 1991; Bursik and Grasmick 1993; Skogan 1995). In her well-known ethnographic study of a housing project, Merry (1981) found that residents struggled to understand the mannerisms and behaviors of neighbors from different racial or cultural backgrounds. She further found that residents believed people unlike themselves were less likely to share their values and community concerns. As Lewis and Salem (1986) argued, this suggests that "others" may be seen as dangerous. This finding may also explain why Madriz (1997) found that it is common for people to stereotype immigrants and view minorities groups as being dangerous.

In support of this perspective, research has found diversity within neighborhoods to influence fear of crime (Liska, Lawrence, and Sanchirico 1982). Chiricos, Hogan, and Gertz (1997) found diversity to be particularly predictive of fear for whites. Covington and Taylor (1991) further found that living in a mostly black neighborhood or viewing one's self as racially

different from the majority of the neighborhood is associated with greater fear. Extant research also suggests that the link between diversity and fear can be both direct and indirect if such concerns lead to worries about neighborhood disorder or decline (e.g., Lane and Meeker 2000; Lane 2002; Katz, Webb and Armstrong 2003; Lane and Meeker 2003; Lane and Meeker 2005; Hooghe and de Vroome 2016).

Neighborhood Disorder

Neighborhood disorder, a consequence of disorganization, has likewise been found to be associated with fear. Disorder may be characterized by social cues such as the presence of homeless people, prostitutes, gangs, and drug users as well as physical cues such as the existence of graffiti, litter, bars on windows, and derelict buildings (Skogan 1990; LaGrange, Ferraro, and Supancic 1992**)**. It has been argued that perceiving social and physical signs of disorder lead residents to sense that their community is experiencing serious issues that threaten their personal safety (Lewis and Salem 1986; Skogan 1990; Taylor 2001). Wilson and Kelling (1982) were inspired by this line of reasoning to develop the broken windows theory, a perspective that addresses the interrelationships between disorder, social control, and crime. In the explanation of their theory, the scholars explicitly discussed the "fear-inducing" roles played by "disorderly people" within a community.

Researchers have generally found that perceptions of disorder are positively related to fear (e.g., Skogan and Maxfield 1981; LaGrange, Ferraro, and Supancic 1992; Taylor 2001; Ferguson and Mindel 2007; Wyant 2008; Brunton-Smith and Sturgis 2011). Robinson et al. (2003) even found that in addition to perceptions of disorder enhancing fear, the belief that such disorder was worsening was associated with greater fear (Robinson et al. 2003). On the opposite end of the spectrum, however, Carvalho and Lewis (2003) found that, in poor neighborhoods,

signs of disorder decreased fear of crime. They theorized that such problems were viewed as commonplace and not particularly threatening to residents. This same study did find, however, that the most fearful residents indicated that disorder was an essential factor in their fear.

Neighborhood Collective Efficacy

Outside of physical characteristics, fear of crime has also been linked to community processes. One of the most notable of these processes is collective efficacy. Inspired by the social disorganization and social capital literatures (Bourdieu, 1986; Putnam, 1995; Sampson, Raudenbush, and Earls 1997; Sampson, Morenoff, and Earls 1999), neighborhood collective efficacy refers to "social cohesion among neighbors combined with their willingness to intervene on behalf of the common good" (Sampson, Raudenbush, and Earls 1997:918). Sampson and colleagues contend that communities with greater levels of collective efficacy have higher levels of social control and are more successful at thwarting crime. It is argued that collective efficacy empowers members of a community to draw upon the resources of neighborhood agencies, motivate rule-abiding behavior, and achieve collective goals. In support of this idea, Sampson and colleagues (1997) found that collective efficacy is negatively associated with violence in neighborhoods even when individual-level characteristics, measurement error, and prior violence are controlled. Other studies, too, have found a negative relationship between neighborhood collective efficacy and crime rates (e.g., Gibson et al. 2002; Brunton-Smith, Jackson, and Sutherland 2014; Yuan and McNeeley 2015).

Fear of crime studies have increasingly examined the influence of neighborhood collective efficacy on fear. The majority of this research suggests that individuals from neighborhoods with relatively high levels of collective efficacy are less fearful than those who reside in less efficacious communities (Gibson et al. 2002; Swatt et al. 2013; Brunton-Smith,

Jackson, & Sutherland 2014). As an illustration, Brunton-Smith, Jackson, and Sutherland (2014) found that neighborhood collective efficacy had an independent effect on fear even when incivility was included in the model. For adolescents, Yuan, Dong, and Melde (2017) found that neighborhood collective efficacy is negatively related to fear. Unlike in Brunton-Smith and colleagues' (2014) study, however, collective efficacy did not remain a predictor of fear when neighborhood incivility was included. The next section reviews research on the consequences of fear of crime on individuals and communities.

Consequences of Fear of Crime

Reminiscent of the argument made by the President's Commission on Law Enforcement and Administration of Justice, some researchers have asked if fear of crime is one of the most severe consequences of crime (e.g., DuBow, McCabe, and Kaplan 1979; Warr 1987). In support of such an assessment, Lewis and Salem (1986:3) concluded that "the fear of crime has [become] as much of a social problem as the crime itself." This claim is strengthened by the growing amount of research examining the consequences of fear for individuals and their communities. For individuals, it has found that fear of crime can lead to physiological changes, psychological reactions, and behavioral adaptations. For communities, fear of crime has been linked to a litany of problems, including social withdrawal, emptier streets, and higher rates of gun ownership.

Individual-Level Consequences

Physiological

The immediate responses to fear are physiological. Fear has been found, for example, to increase heart rate, cause perspiration, and alter the electrical conductance of the skin (Darwin [1872] 2013). Fearfulness can further cause the skin to appear pale, hair to stand on end, pupils to dilate, muscles to tense and tremble, the mouth to get dry and tight, and the chest to constrict

(Marks 1978). Kemper's (1978) review of the literature found that fear is associated with the increased production of epinephrine, a hormone that causes blood pressure to increase by accelerating the heart rate. When a person is particularly afraid, fear typically causes one of two reactions: they become motionless and mute, or they become startled and defensive (Izard 1977; Marks 1978). Such responses are, however, usually temporary, lasting fewer than five minutes.

A more long-term physiological consequence of fear is stress, which has been linked to several ill effects including a weakened immune system, heart damage, and irritable bowel syndrome as well as fatigue, diabetes mellitus, accelerated aging, and premature death (Hellhammer et al. 2004). Research has further shown that fear may increase the probability of obesity because fearful people tend to be less physically active (Stafford, Chandola, and Marmot 2007). Those living in areas with higher levels of fear have also been found to have higher rates of smoking (Miles 2006). The use of tobacco, often regarded as a method to manage anxiety, is associated with several adverse health outcomes, including increased risk of heart disease, stroke, cancer, chronic obstructive pulmonary disease, and premature death (McBride 1992; Sherman 1992; Newcomb and Carbone 1992; Fagerström 2002).

Psychological

Fear of crime can also have psychological consequences. Fearful individuals may have reduced mental activity, which may affect perceptions, thoughts, and actions. Fear can also lead to emotions ranging from apprehension to terror, causing people who are afraid to sense imminent danger and feel tense as well as impulsive. In particularly severe reactions, fear may cause "tunnel vision" in which a person becomes functionally blind to alternative courses of action. Fear can also implant itself within an individual's psyche and spread to other aspects of their life (Cole 1964), potentially leading to phobias that may discourage working, attending

school, and even participating in leisure activities. Fear of crime has also been linked to mental health issues such as depression and anxiety. As an illustration, one study found that participants in the top third for experiencing fear were 90% more likely to be depressed (Stafford, Chandola, and Marmot 2007). For adolescents, fear of crime is associated with higher rates of depression, anxiety, oppositional defiance disorder, and conduct disorder (Aneshensel and Sucoff 1996).

Behavioral

A third consequence of fear for individuals is related to behavior. Since the 1970s, research has found that fearful people are more likely to change their behaviors than those with less fear (e.g., Hindelang, Gottfredson, and Garofalo 1978; DuBow, McCabe, and Kaplan 1979; Garofalo 1981; Liska, Sanchirico, and Reed 1988; Ferraro 1995). Fearful people, it has been argued, are more likely to exhibit constrained behaviors (Ferraro 1995; Giblin et al. 2012; Rader and Haynes 2012). Such behaviors are utilized to protect a person from experiencing victimization (Rader and Cossman 2011). Constrained behaviors are typically found to be related to fear of crime although debate continues with regards to whether constrained behaviors are the result of fear (Giblin et al. 2012) or precursors to fear (Rader and Haynes 2012).

Constrained behaviors are divided into two types: avoidance and protective. Avoidance behaviors are passive. That is, they restrict where people go and what they do (May, Rader, and Goodrum 2010). Examples of such behaviors include avoiding certain areas and choosing not to walk alone at night (Skogan and Maxfield 1981; Ferraro and LaGrange 1987; Liska, Sanchirico, and Reed 1988; Gordon and Riger 1989; Fisher and Nasar 1992; Fisher and Nassar 1995; Keane 1998; Nellis 2009). Protective behaviors are active. That is, they require people to take some form of action (Rader and Haynes 2012). Examples include taking self-defense classes, installing locks on doors and windows, and obtaining weapons for protection.

In their seminal work, Hindelang and colleagues (1978) found that it was common for individuals to change their behavior because of crime. In support of such a finding, a recent Gallup crime poll asking about constrained behaviors found that nearly half of respondents (48%) reported avoiding certain areas due to fear about crime (Carroll 2007). Nearly one-third (31%) said that they kept a dog for protection or had installed a burglar alarm in their homes, and just under one-quarter (23%) reported purchasing a gun for protection. More than one-in-ten said that they had carried mace or pepper spray (14%), a knife (12%), or a gun for defense (12%).

Relatively few studies have examined the influence of fear on the behavior of adolescents (e.g., Savitz, Lalli, and Rosen 1977; Williams, Singh, and Singh 1994). Warr (2002) found that fearful adolescents are more likely to socialize with peers and participate in group activities. It is also reasonable, however, to suspect that fearful adolescents may withdraw from social activities to avoid threatening situations and possible victimization. Research on the causal relationship between fear and behavioral outcomes is limited, however, and has yet to be established in the literature.

Neighborhood Consequences

Just as fear can be harmful to individuals, it can have deleterious effects on communities as well. Warr (1994) found, for instance, that the most common response to fear of crime is to avoid areas that are deemed as dangerous. Fearful neighborhood residents are more likely to be isolated and to withdraw from communal activities (Conklin 1975; Skogan and Maxfield 1981; Skogan 1990; Warr 1994). While the impact of such retreat by individuals was discussed above, this can also be damaging to neighborhoods. As residents withdraw physically and socially from community life because of fear, local networks risk fracturing and community supervision weakens (DuBow, McCabe, and Kaplan 1979; Skogan 1986; Skogan 1990; Warr 1994).

Neighborhoods with weak social ties are less likely to respond effectively to threats such as losing access to public services (Skogan 1986; LaGrange, Ferraro, and Supancic 1992).

Neighborhoods characterized by high levels of fear of crime also often experience emptier streets (Brooks 1974). As empty streets may increase criminal activity, a vicious cycle may be born in which higher crime causes greater fear, which then allows for more crime. Empty streets may further lead to economic deterioration that can reduce the number of local employers. Remaining businesses may eventually leave such communities causing impacted neighborhoods to offer fewer job opportunities and services to local residents (McGahey 1986). Over time, such effects can harm commerce, road use, and social interactions in addition to potentially increasing social divisions between groups (Garofalo 1981; Oc and Tiesdell 1997; Warr 2000). It may also hasten neighborhood decline. Adolescents residing in fearful neighborhoods typically have fewer places in which children and adolescents can safely play (Molnar et al. 2004). These restrictions limit their access to activities outside the home as well as opportunities for social engagement and the multitude of benefits that such interactions can produce, such as physical activity, intellectual engagement, and social development (Beaulac, Bouchard, and Kristjansson 2009). These consequences are among what Jackson and Gray (2010) refer to as the "hidden costs" associated with fear of crime.

As discussed above, fearful individuals are more likely to adopt constraining behaviors, including protective behaviors (Rader and Haynes 2012). The need to protect one's self may encourage a person to acquire weapons such as guns (Garofalo 1981). While access to firearms may encourage owners to feel less at risk for victimization, increased gun ownership may encourage the neighborhood and other residents to feel less safe (Miller, Azrael, and Hemenway 2000). The engagement of protective behaviors like gun ownership is not surprising. Yuan and

McNeely (2015) found that adults in neighborhoods characterized by disorder were more likely to perceive the crime rate to be high and to engage in protective behaviors like leaving lights on and installing burglar alarms.

In summary, this chapter discussed the definition of fear, the history, concept and measurement, and prevalence of fear of crime as well as its determinants and consequences. More specifically, the review focused on fear of crime research among adults and adolescents, highlighting the effects of fear of crime on individuals and their communities. The next chapter examines the association among personal experiences with crime, fear of crime, and mental health. In addition, stress theory is introduced as a potentially valuable perspective for understanding why fear and mental health may be influenced by exposure to violence. While the fear of crime literature has a handful of theoretical perspectives, including those referenced above such experiences with victimization, perceptions of vulnerability, and environmental conditions, each has proven to be insufficient to explain the complex social phenomenon this is fear of crime. As a result, this dissertation turns to the mental health literature. In particular, stress theory, with its emphasis on stressors, stress, and distress, provides an organized, holistic approach for answering the study's three research questions.

Chapter 3: Review of Relevant Mental Health Literature

Research suggests that mental health disorders are common among American adolescents (Sarafolean 2000; Perou et al. 2013). As evidenced by the National Comorbidity Survey-Adolescent Supplement (Merikangas et al. 2010), anxiety disorders are the most prevalent (32%) among youths between 13 and 18 years of age followed by behavioral disorders (19%), mood disorders (14%), and substance use disorders (11%). Based on these results, it is estimated that nearly one-quarter (22%) of American youth meet the criteria for having a severe impairment or distress, with the occurrence of co-morbidity being relatively common (Nottelmann and Jensen 1995; Angold, Costello, and Erkanli 1999; Avenevoli et al. 2015). These findings are critical, as research suggests that mental health disorders often appear before adulthood and that pre-adult onset is a significant risk factor for adult disorders (Beyers and Loeber 2003; Costello et al. 2003; Ritakallio et al. 2008). As Merikangas and colleagues (2010) argue, the prevalence of mental health disorders among youths necessitates that increased attention be paid to prevention and early intervention. This is particularly important considering that the 2017 National Survey of Children's Health (Child and Adolescent Health Measurement Initiative 2019) found only 49% of children with a mental and/or behavioral condition received treatment or counseling.

For this study, mental health will be measured via the display of internalizing and externalizing problems. Problem behaviors in adolescents have often been dichotomized into two empirically established syndromes reflecting internalizing problems and externalizing problems (Achenbach 1991). Internalizing problems are characterized by negative mood states and inhibition, such as anxiety, depression, social withdrawal, and sleeping problems. These conditions affect one's internal psychological environment. Externalizing problems are characterized by behavioral disinhibition, such as aggressiveness, delinquency, hyperactivity, and other control disorders. These behaviors involve outward behavior and are associated with

negatively acting on one's environment. Despite seeming distinct from one another, extant research suggests that there is high co-morbidity between internalizing and externalizing symptoms among children and adolescents (Beyers and Loeber 2003; Wiesner 2003; Kessler, Chiu, Demler, and Walters 2005; Vaillancourt et al. 2014).

This chapter provides additional context on mental health, particularly regarding internalization and externalization. First, demographic determinants of internalizing and externalizing problems s are addressed, including age, gender, race/ethnicity, and socioeconomic status. Then, a review of the influence of personal experiences with crime on mental health is provided. Past findings on the relationship between fear of crime and mental health are examined as well. The potential for fear of crime to act as a mediating variable between violence exposure and mental health is discussed as well. Finally, stress theory is explored as a guide to understanding how experiences with violence, directly and indirectly, influence fear of crime and mental health outcomes.

Demographic Determinants of Mental Health

A substantial amount of research has been conducted on the demographic predictors of externalizing and internalizing problems for adolescents. A handful of factors have repeatedly been found to be influential, including age, gender, race/ethnicity, and socioeconomic status (SES). In terms of externalization, research has generally found that these problems s decline in frequency with age, especially from the pre-school to the school-aged period (e.g., Overbeek et al. 2001; Chan, Dennis, and Funk 2007; Miner and Clarke-Stewart 2008). Gender, too, is impactful. In general, boys are more likely to exhibit externalizing problems (e.g., Deater-Deckard et al. 1998; Bongers et al. 2003; Dodge, Coie, and Lynam 2006; Chaplin and Aldao 2013). As for race/ethnicity, the findings are more mixed. While some studies have found group

differences (e.g., Roberts and Chen 1995; Austin and Chorpita 2004; McLaughlin, Hilt, and Nolen-Hoeksema 2007), others have not reported significant variation (e.g., Cole et al. 1998). Lastly, research has consistently suggested that children from families with low socioeconomic status are more likely to exhibit externalizing problems than children from more affluent families (e.g., Jones Harden et al. 2000; Bradley and Corwyn 2002; Ackerman, Brown, and Izard 2003; Doom, Vanzomeren-Dohm, and Simpson 2016).

Demographic predictors of internalization are similar, although the directions of impact are sometimes reversed. Unlike externalizing problems, internalizing problems increase gradually with age from infancy to early childhood (e.g., Achenbach et al. 1991; Gilliom and Shaw 2004; Nivard et al. 2017). Beginning in adolescence, girls are significantly more likely than boys to develop clinical disorders associated with internalization (e.g., Lewinsohn et al. 1993; Hankin and Abramson 2001; Chaplin and Aldao 2013; Nivard et al. 2017). Race/ethnicity is a stronger factor for internalization than externalization. Research generally suggests that youths of color are more likely to experience internalizing disorders than are white youths (Kennard et al. 2006; Brown, Meadows, and Elder 2007; McLaughlin, Hilt, and Nolen-Hoeksema 2007; Anderson and Mayes 2010). Like externalization, however, socioeconomic status is a negative predictor. That is, adolescents from lower SES households have been found to exhibit higher levels of depressive and anxiety symptoms than those from higher SES households (e.g., Conger et al. 1994; Goodman 1999; McLeod and Owens 2004; Comeau and Boyle 2018). The next section considers the influence of exposure to violence on internalization and externalization.

The Impact of Personal Experiences with Violence on Mental Health

Several past studies have found an association between exposure to violence and mental health problems. In line with the focus of this study, children and adolescents have received a great deal of scholarly attention. These studies generally suggest that there is an association between both violent victimization and witnessing violence on mental health, including externalizing problems and internalizing problems (e.g., Hughes 1988; Fantuzzo et al. 1991; Attar, Guerra, and Tolan 1994; Pelcovitz et al. 1994; Taylor et al. 2018). Although the research is limited, involvement in delinquent and criminal activity may also influence mental health (e.g., Hermman, McWhirter, and Sipsas-Herrmann 1997; Li and colleagues 2002; Madan, Mrug, and Windle 2011).

Violent Victimization

Multiple studies have found a positive relationship between violent victimization and externalizing problems (e.g., Pelcovitz et al. 1994; Dodge, Pettit, Bates, and Valente 1995; Lansford et al. 2002; Salzinger et al. 2002; Renner and Boel-Studt 2017). In their study of New York City schoolchildren, for instance, Salzinger et al. (2002) found that abused children had significantly higher externalizing scores as reported by their parents and teachers. In a more recent study, Renner and Boel-Studt (2017) found that children exposed to physical abuse were more likely to engage in externalizing problems, including getting angry quickly and fighting with others. Among children who were abused early in life, Lansford and colleagues (2002) found that they were more likely to exhibit externalizing problems in adolescence. Importantly, as this study included follow-up data that was collected 12 years after the initial assessment, Langford et al.'s findings suggest that the response to violent victimization by youths is not transitory.

Though the relationship may not be as strong, the literature suggests that there is also a relationship between violence exposure and internalizing problems (e.g., Fantuzzo et al. 1991; Fergusson, Horwood, and Lynskey 1996; Wolfe, Scott, Wekerle, and Pittman 2001; Evans, Davies, and DiLillo 2008; Mrug and Windle 2010). Among preschool children, Fantuzzo and colleagues (1991) found that exposure to physical conflict in the home was related to internalizing problems. In their longitudinal study of New Zealand children from birth to the age of 18 years, Fergusson et al. (1996) found that child victims of sexual abuse had higher rates of major depression and anxiety disorders. Wolfe and colleagues (2001) found in their study of high school students in Ontario, Canada, that past maltreatment predicted emotional distress. Finally, in their community sample of boys and girls, Mrug and Windle (2010) found that victimization at school predicted anxiety, whereas being victimized in the home predicted anxiety as well as depression.

Witnessing Violent Victimization

Several studies have found witnessing violence to be associated with externalizing problems. Exposure to community violence has been linked to externalization, particularly as it relates to exhibiting violent, aggressive, and delinquent behaviors (e.g., Attar, Guerra, and Tolan 1994; Jenkins and Bell 1994; Cooley-Quille, Turner, and Beidel; 1995; Buckner, Beardslee, and Bassuk 2004; Taylor et al. 2018; Fong, Hawes, and Allen 2019). In their study of high school students, for instance, Jenkins and Bell (1994) found that those who had been exposed to community violence were more likely to drink alcohol, use drugs, carry weapons, fight, and have trouble in schools. Cooley and colleagues (1995) found in their study of schoolchildren that exposure to high levels of community violence predicts emotional and conduct problems. Exposure to violence in the home is a significant predictor as well (e.g., Sudermann and Jaffee

1997; Litrownik et al. 2003; McCloskey and Lichter 2003; Lichter and McCloskey 2004). In more recent meta-analyses, a moderate-to-strong association was found between exposure to domestic violence in childhood and externalizing problems in adolescence (Evans, Davies, and DiLillo 2008; Fong, Hawes, and Allen 2019)

Internalization may also be a risk factor among those who have witnessed violence (e.g., Hughes 1988; Fantuzzo et al. 1997; Jaffee et al. 2002; Litrownik et al. 2003; Lichter and McCloskey 2004; Holt, Buckley, and Whelan 2008; Taylor et al. 2018). Using twin data to control for genetic effects, Jaffee and colleagues (2002) found that exposure to domestic violence explained some of the variations in internalizing problems. Litrownik et al. (2003) likewise found that exposure to violence in childhood predicted later behavior problems. In their review of extant literature, Holt, Buckley, and Whelan found that children and adolescents who are exposed to violence are at enhanced risk for exhibiting emotional problems. Evans, Davies, and DiLillo (2002), in their meta-analysis, found exposure to violence in childhood to be associated with internalizing problems later in life.

Importantly, not all studies have found that exposure to violence is predictive of mental health problems. In their study of sixth-graders from an urban public school system, Farrell and Bruce (1997) found that exposure to violence did not predict emotional distress. It was speculated that chronic exposure to violence might desensitize children so that such stressors have only limited impact on overall well-being. Studies that are more recent have likewise found support for the desensitization hypothesis, especially for urban youth who have high rates of violence exposure (e.g., McCart et al. 2007). Fitzpatrick and Boldizar (1993) similarly found in his study of low-income, African American youth that witnessing violence did not have a positive effect on depression. Instead, the relationship was found to be negative. To explain these

findings, it was suggested that children exposed to a high level of violence might learn to cope with these experiences through enhanced resiliency.

Violent Crime Involvement

As for the impact of crime involvement on mental health, past research has paid significantly more attention to the inverse: how mental health influences the propensity to offend (e.g., Rosenblatt, Rosenblatt, and Biggs 2000; Levenston 2002; Fazel et al. 2014). In this study, however, there is interest in understanding how involvement in criminal activity may influence mental health. While research is limited, there are indications that involvement in delinquency and crime may be consequential (e.g., Herrmman, McWhirter, and Sipsas-Herrmann 1997; Vermeiren 2003; Heaven, Newbury, and Mak 2004; Lereya et al. 2015). Interestingly, research on bullying and gang members may provide a pathway to appreciate the possible causal linkages between delinquency/crime and mental health.

In terms of bullying, there is evidence that bullying may be predictive of later mental health problems. For example, in their longitudinal study of bullies and victims, Lereya et al. (2015) assessed results from over 4,000 children at 10, 13, and 18 years of age. Results indicated that respondents who were bullies in secondary school often reported having been bullied while in primary school. Additionally, it was found that those who reported being a victim or bully/victim in their younger years were at enhanced risk for reporting mental health problems at 18 years of age. While these findings most clearly suggest that victimization (e.g., being bullied) is a risk factor for later mental health problems, the findings also suggest that involvement in delinquency (e.g., bullying) may be predictive of adult mental health issues. This falls in line with a meta-analysis that investigated the association between involvement in bullying and

psychosomatic complaints among school-aged children. In this meta-analysis, Gini and Pozzoli (2009) found involvement with bullying to be predictive of psychosomatic problems.

Gang research likewise suggests that involvement in criminal activities predicts mental health problems. Herrmman, McWhirter, and Sipsas-Herrmann (1997) assessed youths from areas of high gang activity. Amongst other findings, the researchers found that gang membership increases the risks for internalizing problems, such as low self-esteem. In their study of gang members, Li and colleagues (2002) found being in a gang increased emotional distress, particularly post-traumatic stress disorder. Not all gang research has come to such a conclusion, however. For instance, Madan, Mrug, and Windle (2011) examined whether gang membership in early adolescence predicts internalizing problems. While gang membership was found to be predictive of suicidal behavior, it was not found to predict depression or anxiety, thereby putting the role of causality in doubt. The following section considers the influence of fear of crime on mental health.

The Impact of Fear of Crime on Mental Health

Fear of crime is not a standalone problem. Instead, it can lead to deleterious effects, including health issues (Foster, Hooper, Knuiman, and Giles-Corti 2016). In their review of the literature, Lorenc and colleagues (2014) argue that fear of crime may influence health via three pathways. First, the worry provoked by fear may lead to or exacerbate existing health concerns. Second, fear of crime may lead to behavioral adaptations that negatively affect health behaviors such as physical activity and social interactions. Third, fear of crime may influence the well-being of a neighborhood by decreasing social cohesion, increasing neglect, and introducing communal elements that can damage the health of its residents. These three pathways are more fully discussed below.

Direct Health Consequences

The first pathway contends that the psychological distress generated by fear of crime can lead to adverse mental health outcomes. Several studies support this conclusion (e.g., Ross 1993; Green, Gilbertson, and Grimsely 2002; Beatty et al. 2005; Whitley and Prince 2005; Foster et al. 2016). For instance, when analyzing self-report data from the Whitehall II study, a longitudinal study on middle-aged London-based civil servants, Stafford, Chandola, and Marmot (2007) found that fear of crime was associated with poorer mental health. Respondents who were more fearful of crime were found to be nearly two times more likely to suffer from depression and to have lower mental health scores than less fearful respondents.

In another British study, Green, Gilbertson, and Grimsely (2002) examined the influence of self-reported fear of crime on mental health for adult residents of tower blocks in Liverpool, England. A statistically significant relationship was found. More specifically, it was found that respondents who reported feeling safe when out alone at night scored better on measures of mental health and social well-being. The relationship between fear of crime and mental health was also the focus of Whitley and Prince (2005). Conducting a qualitative case study involving residents in North London, the researchers found that fear was harmful to mental health, including elevated levels of negative mood and low self-esteem. Studies in New Zealand (Pearson and Breetzke 2014), the former Soviet Union (Roberts et al. 2012), Mexico (Villarreal and Yu 2017), and Canada (Beaulieu, Leclerc, and Dube 2003) have likewise found fear of crime to predict poorer mental health among adults.

In their study utilizing the Whitehall II data, Jackson and Stafford (2009) reversed course by asking if fear of crime was a function of prior health. Results indicated that mental health has a strong effect on fear. These results led Jackson and Stafford to contend that a feedback model may exist where worry about crime negatively affects health, which, in turn, increases

perceptions of vulnerability that then acts to exacerbate fear. Similarly, Foster and colleagues (2016) argued that mental health might influence fear of crime and not the other way around. Utilizing panel survey data from residents in Perth, Australia, to evaluate the influence of fear of crime and health, it was found that there was a significant association between psychological distress (at Time 1) and fear of crime (at Time 2), but no relationship between fear of crime (at Time 1) and psychological distress (at Time 2). It was further found that the pathway connecting fear of crime and mental health was direct instead of constrained by social and physical activities, as other studies have found (Liska et al. 1988; Ross and Jang 2000; Stafford, Chandola, and Marmot 2007; Foster and Giles-Corti 2008). Although the direction of causality is difficult to establish from qualitative data, Lorenc et al. (2014) suggest that this reverse pathway from poor health to fear of crime may be substantial.

Relatively few studies have considered the influence of fear on the mental health of youths. Of those that have, findings are generally similar to studies with adult samples. Aneshensel and Sucoff (1996) used a community-based sample of adolescents in Los Angeles County to evaluate the impact of neighborhood context on emotional well-being. It was found that the more threatening an adolescent perceives their neighborhood to be, the more likely they are to experience symptoms associated with depression, anxiety, oppositional defiance disorder, and conduct disorder. Although this study was not explicitly focused on the impact of fear on health, these findings suggest that adolescents experiencing greater fear—as measured by perceptions of risk—are more likely to suffer from mental health disorders. Grinshteyn (2013) came to a similar conclusion in her study. Using panel data, she found a positive relationship between fear of crime and anxiety/depression scores among adolescents in Chicago, IL.

Behavioral Adaptations

The second pathway linking fear of crime to health outcomes is through the adoption of behaviors intended to reduce the risk of victimization. For decades, researchers have found that people who are afraid of crime are more likely to change their behaviors, especially by adopting avoidance behaviors (e.g., Hindelang, Gottfredson, and Garofalo 1978; DuBow, McCabe, and Kaplan 1979; Garofalo 1981; Liska, Sanchirico, and Reed 1988; Ferraro 1995). Avoidance behaviors are generally understood to restrict where people go and what they do, often resulting in changes to daily or routine activities (DuBow, McCabe, and Kaplan 1979; Ross 1993; May, Rader, and Goodrum 2010). Well documented in the literature, examples of these behaviors include avoiding certain areas and choosing not to walk alone at night (Lejeune and Alex 1973; Skogan and Maxfield 1981; Ferraro and LaGrange 1987; Liska, Sanchirico, and Reed 1988; Gordon and Riger 1989; Fisher and Nasar 1992; Fisher and Nasar 1995; Keane 1998; Keane 1998; Nellis 2009).

Avoidance behaviors may be linked to health in two ways. First, these behaviors may limit social interaction opportunities and therefore compromise mental health (Stafford, Chandola, and Marmot 2007). A non-recursive effect of limited social interaction may be an increase in fear (Liska, Sanchirico, and Reed 1988). Second, fear of crime may restrict outdoor physical activity and therefore lead to poorer physical health. A commonly researched association, findings have been mixed (Carver, Timperio, and Crawford 2008; Foster and Giles-Corti 2008). The relationship appears highly dependent on demographic characteristics, with older persons (Roman and Chalfin 2008) and women (Bennett et al. 2007; Roman and Chalfin 2008) being more likely to restrict physical activities because of fear. Duncan and colleagues (2009) found that avoidance behaviors inspired by fear were associated with mental and physical

health status in a sample of older people. In addition, Duncan et al. (2009) found an association between lower perceived safety and obesity, although the effect was barely significant.

Neighborhood Effects

The third pathway argues that fear of crime can lead to community changes that are directly and indirectly damaging to health. The avoidance behaviors adopted by individual residents can cumulatively threaten the health of entire communities. This occurs as withdrawal affects the formation of social ties (Ross and Jang 2000), social participation (Stafford, Chandola, and Marmot 2007), and physical activity levels (Foster and Giles-Corti 2008). As an illustration, Stafford, Chandola, and Marmot (2007) found that residents with greater fear are less likely to have regular contact with friends, be involved in social activities, and participate in vigorous physical activities. For adolescents, fearful neighborhoods typically have fewer places in which children and adolescents can safely play (Reid and Konrad 2004). This restricts their access to activities outside the home and limits opportunities for social engagement and the multitude of benefits that such interactions can produce such as physical activity, intellectual engagement, and social development (Ferraro 1995).

Additionally, as residents withdraw physically and socially from community life because of fear, local networks risk fracturing and community supervision weakens (DuBow, McCabe, and Kaplan 1979; Skogan 1986; Skogan 1990; Warr 1994; Ross and Jang 2000; Stafford, Chandola, and Marmot 2007). Neighborhoods with weak social ties are less likely to access resources and respond to cuts in public services (Walklate 2007). Communities with fearful residents are also more likely to experience a decline in organizational life and are less likely to mobilize residents (Jenkins et al. 2008). Together, these impacts can result in a deterioration of the social and physical environment so that the health of residents is negatively impacted

(Skogan 1986; Lorenc et al. 2012). The following section considers the ability of fear of crime to mediate the relationship between personal experiences with violence and mental health.

Fear of Crime as a Mediator between Personal Experience with Violence and Mental Health

While the literature generally suggests that there is an association between personal experiences with crime and mental health, far less is known about potential mediating variables (Buckner, Beardslee, and Bassuk 2004). That is, it is generally understood that violence exposure can be damaging to mental health, but the causal pathways are not well understood. In order for a variable to mediate the relationship between exposure to violence and mental health, two conditions must be met. First, the variable must be influenced by exposure to violence. Second, the variable must affect mental health, controlling for violence exposure. As noted by Sobel (1990), a mediating variable, Z, does more than statistically "explain" the relation between X and Y. Instead, X must precede Y and Z must precede Y (Cole and Maxwell 2003). In line with a research question from this study, there is some support for the idea that fear of crime (Z) may mediate the association between personal experiences with crime (X) and mental health (Y).

In their study of African American children from low-income families, Overstreet and Braun (2000) found that perceptions of neighborhood safety mediated the association between exposure to community violence and symptoms of posttraumatic stress disorder (PTSD). After neighborhood safety was added to the model, the association between exposure to violence and PTSD symptoms was no longer significant. Buckner, Beardslee, and Bassuk (2004) likewise found in their sample of impoverished children that neighborhood safety mediated the association between violence and internalizing and externalizing problems. It was argued by Buckner et al. that exposure to violence might sensitize youth to real or imagined danger, which may then increase the probability of behavioral health issues. It was reasoned that children who

are regularly exposed to violence tend to perceive their environment as dangerous and consequently experience higher rates of depression, anxiety, and behavioral problems.

Stress Theory

Stress theory posits that life strains or chronic stressors—circumstances or events that involve an individual adapting to changes intrapersonally, interpersonally, or in their environment—can have effects on subjective well-being and mental health (Pearlin et al. 1981; Pearlin 1999; Dohrenwend 2000). The theory suggests that stress, which can be either event-based or chronic and which can originate from different sources, is dynamic and has a causal influence over well-being. It is argued that the stress process involves exposure to stressors that lead to stress, which leads to distress. Stressors are understood to be external challenges to a person's adaptive capacities while distress is understood to be maladaptive responses to stress, including depression, anxiety, anger, or aggression. As for stress, it is described as a biological response of the body to stressors.

At a more detailed level, it is held by stress theory that as a person experiences increasingly more stressors, the ability to cope is overwhelmed and the individual is at increased risk for experiencing psychological problems (Brown and Harris 1978; Lazarus and Folkman 1984; Pearlin 1989). Coping strategies (Lazarus and Folkman 1984), coping resources (Pearlin and Schooler 1978; Wheaton 1982; Rosenfield 1989), and social support (Cohen and Wills 1985; Kessler and McLeod 1985) can help to protect against stress and therefore enhance an individual's ability to handle stressors without increasing stress and distress. Stress theory recognizes, however, that groups have differing levels of exposure to stressors and access to critical stress buffers. As such, the theory suggests that these differences help to explain the higher prevalence of psychological distress found in

disadvantaged groups such as females, racial/ethnic minorities, the elderly, and those of lower socioeconomic status.

Guided by stress theory, this dissertation evaluates the influence of personal experiences with violence on fear of crime and mental health outcomes. Exposure to violence can be understood to be representative of stressors that may overwhelm an individual. As a person becomes increasingly overwhelmed by such stressors, it is speculated that coping strategies and resources will become less available. Importantly, social support may already be lessened for those with chronic experiences with violence. Over time, it is speculated that the combination of these events will lead to an increase in stress in the form of fear of crime as well as an increase in distress in the form of poorer mental health. Findings regarding the applicability of stress theory to this assessment are revisited in the final chapter of this dissertation.

In summary, this chapter reviewed the demographic predictors of internalizing and externalizing problems, the influence of personal experiences with crime and fear of crime on mental health, and the potential for fear of crime to mediate the relationship between violence exposure and mental health. While the literature has recently placed increased focus on the role of fear on mental health, significant gaps remain. For one, many studies that have considered the consequences of fear on mental health outcomes have focused on adults who reside outside the United States (e.g., Green, Gilbertson, and Grimsel 2002; Whitley and Prince 2005; Stafford, Chandola, and Marmot 2007; Jackson and Stafford 2009; Roberts et al. 2012; Pearson and Breetzke 2014). Second, many of these studies have utilized cross-sectional data, which precludes tests of causality (e.g., Stafford, Chandola, and Marmot 2007; Jackson and Stafford 2009). Third, the ability of fear of crime to mediate personal experiences with violence-mental health nexus has not been adequately considered. With the guidance provided by stress theory,

this study addresses each of these concerns. The data, measures, and methods used to do so are discussed in the next chapter.

Chapter 4: Methodology

Methodology is the focus of this chapter. First, the data and sample used are discussed, including the source of the data and the age cohorts explicitly analyzed for this study. Second, the measures included in the models are described. These include personal experiences with violence, fear of crime, mental health, and a series of the individual- and neighborhood-level control variables. Finally, the study's analytic strategy used is reviewed. In particular, the processes behind the confirmatory factor analysis and structural regression are explained.

Data and Sample

Data from the Project on Human Development in Chicago Neighborhoods (PHDCN) are used to answer this dissertation's three research questions. An interdisciplinary study aimed at understanding how family, school, and neighborhood context affect the development of children and adolescents, the PHDCN consists of four independent studies, including the Community Survey and the Longitudinal Cohort Study. The Community Survey was an intensive study of the social, economic, organizational, political, and cultural structures of Chicago's neighborhoods. The data collected provide information on communal conditions such as neighborhood disorder and collective efficacy. The Longitudinal Cohort Study, which consists of several surveys on children, adolescents, young adults, and their caregivers, was designed to examine the changing circumstances of youths and their personal characteristics. These data provide crucial information at the individual level, such as personal experiences with crime, fear of crime, and mental health.

Community Survey data were collected between 1994 and 1995. Cross-sectional in nature, this survey collected information from adults. In all, the 847 census tracts of Chicago were collapsed into 343 neighborhood clusters stratified by racial/ethnic composition, socioeconomic status, housing density, and family structure (Sampson et al. 1997). The 1990

U.S. Census was used to approximate the neighborhood clusters' structural characteristics, including their concentrated disadvantage, racial heterogeneity, and residential stability. Survey respondents were randomly selected from the 343 neighborhood clusters. More specifically, a three-stage sampling procedure was used in which city blocks were sampled from each neighborhood cluster, household units were sampled from the city blocks, and one adult respondent was sampled from each household unit. Once selected, subjects were asked questions to measure perceptions of their neighborhood's organizational and political structure, cultural values, formal and informal social control, and social cohesion. Overall, 8,782 adults participated, providing the Community Survey with a response rate of 78 percent.

The Longitudinal Cohort Study consisted of three waves of data. First, 80 neighborhood clusters were selected from the 343 stratified neighborhood clusters. Block groups were then randomly selected with all dwelling units within a block group being enumerated and systematically chosen. Age-eligible subjects (i.e., those within twelve months of the ages of 3, 6, 9, 12, 15, and 18 years or within six months of being born) in each of the selected dwelling units were identified and placed into one of seven age cohorts. The subject and a primary caregiver (for participants under the age of 18 years) were interviewed either in-person or over the phone up to three times from 1994-2002. In all, 6,228 subjects were interviewed in Wave 1 (1994-1997) for a response rate of 75 percent. Wave 2 (1997-1999) had a response rate of about 86 percent, while Wave 3 (1999-2002) had a response rate of about 78 percent. Importantly, each subject can be linked to information collected about his or her Wave 1 neighborhood in the Community Survey.

Study Cohorts

Each study cohort in the Longitudinal Cohort Study was named according to the age of the subject when entering the study in Wave 1. For example, adolescents in Cohort 9 were within 12 months of their ninth birthday when they first entered the study. Based on the availability of data for critical dependent and independent variables as well as the ages of the respondents, this study focuses on Cohorts 9 and 12. These cohorts were the only ones that had all critical measures available, and members who were still predominately adolescents at Wave 3. At Wave 1, there were 828 children in Cohort 9 and 821 children in Cohort 12. The combined response rates for these cohorts were 75% in Wave 1, 86% in Wave 2, and 76% in Wave 3. The subjects in these two cohorts ranged in age from between 8 and 13 years of age at Wave 1, 9 and 17 years at Wave 2, and 12 and 19 years at Wave 3. For this study, both cohorts were pooled into a single sample. The next section discusses the measures used.

Measures

Personal Experiences with Crime

Personal experiences with crime are measured based on self-reported experiences with violent victimization, witnessing the violent victimization of others, and participation in violence.[1] In regards to the influence of victimization, participants were asked about their experiences at Wave 2. More specifically, adolescents were asked, "In the past year, has [the respondent] been:" chased to hurt, hit, attacked with a weapon, shot, shot at, or threatened with harm. For each variable, responses were either "Yes" (1) or "No" (0). To measure experiences

[1] During the first Wave of the Longitudinal Cohort Study, the questions asked regarding the adolescent respondents' personal experiences with violence were not sufficient for the needs of this dissertation. Most notably, the adolescents were not asked about their personal experiences with victimization at this Wave. In addition, questions about witnessing the victimization of others were far less nuanced. Wave 2, in comparison, asked much more detailed questions about the adolescents' exposure to violence, including experiences with victimization. As a result, data from the second Wave of the study were used instead thus precluding an evaluation of how personal experiences with violence are causally related to fear of crime. This limitation is further addressed in Chapter 6.

with *violent victimization*, a score of 1 is assigned to respondents who reported having been violently victimized in the prior 6 months, and a score of 0 is assigned to those who did not.

To measure witnessing the victimization of others, adolescent respondents were asked at Wave 2 if, in the prior year, they had seen someone else be victimized in six different ways, including being chased to hurt, hit, attacked with a weapon, shot, shot at, or threatened with harm. A dichotomous variable was created for each variable so that "Yes" is coded as 1 and "No" is coded as 0. For the variable *witnessed violent victimization*, respondents who experienced one or more of these acts of violence in the past year received a score of 1; otherwise, the respondent received a score of 0.

Involvement in violence was captured by asking respondents, at Wave 2, if they had performed eight acts in the past year. These acts are carried a hidden weapon, hit someone they were not living with, attacked someone with a weapon, thrown objects at people, used force to rob someone, been in a gang fight, shot at someone, or shot someone. Each variable was treated dichotomously so that "Yes" is coded as 1 and "No" is coded as 0. To measure experiences with *involvement in violence*, a score of 1 is assigned to adolescents who reported having participated in one or more of these acts in the prior year and a score of 0 is assigned to those who did not.[2]

[2] At Wave 2, the Longitudinal Cohort Study inquired about frequency of exposure to violence. For experiences with violent victimization as well as witnessing the victimization of others, the results were scored as follows: 1 = one experience, 2 = two to three experiences, 3 = four to ten experiences, and 4 = more than 10 experiences. Using these variables, scales were created to evaluate the influence of frequency of exposure to violence on fear of crime as well as mental health. The results were found to be less informative than when the variables were dichotomized. It is possible that this finding indicates that being exposure to violence is more impactful on adolescents' fear of crime and mental health than is the frequency of this exposure. Still, this is an observation deserving of additional research, especially considering that most studies examining the victimization-fear of crime nexus have measured victimization as a binary variable. Due to the limitations surrounding how the PHDCN recorded frequency of violent victimization and witnessing the violent victimization of others, it may be wise to use a different dataset to further explore the impact of frequency of violence exposure on fear of crime and mental health outcomes.

Fear of Crime

Following recommendations on operationalizing fear (e.g., Garofalo 1981; Ferraro and LaGrange 1987; Warr 2000; Lane et al. 2014), *fear of crime at wave 2* is intended to represent the emotional response to a danger or threat of a potential criminal incident. In this study, the variable is captured by asking adolescents, "How afraid are you that you might be hurt by violence…" in five different contexts. These are, "in your neighborhood," "in your home," "in front of your apartment building or house," "in school or on school grounds," and "on your way to or from school." The five items were assessed with the use of a 3-item scale ("not afraid" = 1, "a little afraid" = 2, and "very afraid" = 3). As discussed in the next chapter, confirmatory factor analysis is conducted to determine whether the dimensions load onto one factor.

Mental Health

Two dimensions are used to measure mental health at Wave 3: *internalizing at wave 3* and *externalizing at wave 3*. Both these measures are assessed with the Child Behavior Checklist (CBCL; Achenbach 1991). This measure was administered to the primary caregiver at baseline and follow-up. The CBCL contains questions pertaining to the child's emotions and behavior in the past 6 months. The caregiver was asked to identify whether each statement was "Not True" (0), "Somewhat True" (1), or "Very True" (2). The internalizing subscale[3] provides a rating for the extent to which the child has exhibited symptoms withdrawal (9 items), somatic complaints

[3] For internalization, the withdrawal questions include "would rather be alone than with others," "refuses to talk," "secretive," "keeps things to self," "shy or timid," "underactive/slow moving/lacks energy," "unhappy, sad, or depressed," "withdrawn/doesn't get involved with others," "stares blankly," and "sulks a lot." Somatic complaint questions include "feels dizzy," "overtired," "aches/pains without medical cause," "headaches without medical cause," "nausea/feels sick without medical cause," "problems with eyes without medical cause," "rashes/skin problems without medical cause," "stomach aches without medical cause," and "vomiting without medical cause." Anxious/depressed questions include "complains of loneliness," "cries a lot," "fears might think or do something bad," "feels he/she has to be perfect," "feels that no one loves him/her," "feels others are out to get him/her," "feels worthless or inferior," "nervous, high-strung, or tense," and "too fearful or anxious." Additional questions for anxious/depressed are "feels too guilty," "self-conscious or easily embarrassed," "suspicious," "unhappy, sad, or depressed," and "worries."

(9 items), and anxious/depressed mood (14 items). The externalizing subscale[4] provides a rating of aggression (12 items) and delinquent behaviors (8 items). Both scales have been found to have satisfactory validity and internal consistency (Achenbach 1991). Similar to Pandolfi, Magyar, and Dill (2012), in this study, the raw scores for each syndrome subscale are converted to norm-referenced T-scores (M = 50, SD = 10). Confirmatory factor analysis is conducted to determine whether the syndrome subscale dimensions load onto the two factors as expected.

Control Variables

Control variables are examined as exogenous variables that may affect fear of crime and mental health. Gender, age, race, and socioeconomic status (SES) are individual-level characteristics. Neighborhood diversity, disorder, and collective efficacy are neighborhood-level characteristics. For the neighborhood factors, it was determined to utilize Wave 1 data as nearly 30 percent of respondents moved out of one of the original neighborhood clusters by Wave 2. In other words, 3 in 10 respondents have missing information on their neighborhood in the second wave of the Longitudinal Cohort Study. The choice to use data from the first wave is supported by the literature as prior research has found that residents tend to move to similar neighborhoods, including neighborhoods with similar ethnic breakdowns (South and Crowder 1998). In other words, there is a high likelihood that the subjects' Wave 2 and Wave 3 neighborhoods are similar to their Wave 1 neighborhood.

[4] For externalization, the aggressive questions include "argues a lot," "cruelty/bullying/meanness to others," "demands a lot of attention," "destroys things belonging to others," "disobedient at school," "gets in many fights," "screams a lot," "stubborn, sullen, or irritable," "sudden changes in mood/feelings," "teases a lot," "temper tantrums or hot temper," and "threatens people." For delinquent behaviors the questions are "doesn't feel guilty after misbehaving," "hangs out with others who get in trouble," "lying or cheating," "prefers being with older kids," "swearing or obscene language," "truancy, skips school," "runs away from home," and "sets fires."

Individual-Level Factors

Gender was measured by two categories: "female" (0) and "male" (1), with *Male* acting as the referent category. Male was selected as the reference group as boys have consistently been found to be less fearful (e.g., Baker and Mednick 1990; May and Dunaway 2000; May, Vartanian, and Virgo 2002; Brown and Benedict 2004; Wallace and May 2005; De Groof 2008; Grinshteyn et al. 2016). *Age* in years is a continuous variable measured at all three Waves of the Longitudinal Cohort Study. As previously discussed, both gender and age tap into physical vulnerability, particularly in regards to size (i.e., gender and age) and life experience (i.e., age).

Conversely, social vulnerability is measured via race/ethnicity and socioeconomic status (SES). In this study, *White* is indicated by a categorical variable. Whites are coded as 1, and all other racial groups are coded as 0. Similar to the *Male* variable, Whites were selected as the reference group because research has generally found White adolescent to be less fearful of crime than adolescents of color (e.g., Wayne and Rubel 1982; Baker and Mednick 1990; Alvarez and Bachman 1997). *SES* is a standardized scale of the primary caregivers' income, education, and occupational status (for more information on the construction of this scale, see Earls et al. 2002). This study uses the SES value recorded for each adolescent at Wave 1.

Fear of crime at wave 1 is also included as a control variable. Notably, the questions measuring fear of crime differed slightly from those used in Wave 2. More specifically, answer options were dichotomous (0 = "No" and 1 = "Yes") and respondents were asked "Are you afraid of violence:" "in your neighborhood," "in front of your house," "in your house or building," and "at school or daycare." Similar to above, confirmatory factor analysis is conducted in the next chapter to ensure the dimensions load as one factor.

Finally, *internalizing at wave 1* and *externalizing at wave 1* are included as control variables. These dimensions are measured precisely the same as they are measured at Wave 3.

Again, this study converts the raw scores for each syndrome subscale to norm-referenced T-scores (M = 50, SD = 10). As with these concepts at Wave 3, a CFA is conducted to determine whether the syndrome subscale dimensions load onto the two factors.

Neighborhood-Level Factors

Neighborhood diversity, measured in the Community Survey, is reflective of Census data (Earls and Buka 1997). In this study, the neighborhood clusters were stratified by race/ethnicity to create two categories of neighborhood composition: "predominately homogenous" (≥ 75% same race/ethnicity), which is coded as 1, and "not predominately heterogeneous" (≤ 75% same race/ethnicity), which is coded as 0. Because prior research suggests residents tend to be more fearful in more racially diverse neighborhoods (e.g., Liska, Lawrence, and Sanchirico 1982**;** Chirico, Hogan, and Gertz 1997; Covington and Taylor 1991), predominately heterogeneous neighborhoods are treated as the reference category

Like diversity, *neighborhood disorder* has been found to be positively associated with fear (e.g., Wilson and Kelling 1982; Skogan 1990; LaGrange, Ferraro, and Supancic 1992). In the Community Survey, adult residents were asked six questions about their perceptions of neighborhood physical disorder (three questions) and social disorder (three questions). Using a response range from "Not a problem" (1) to "A big problem" (3), respondents rated their concern with disorder via questions such as "How much of a problem is litter, broken glass, or trash on sidewalks and streets?" and "How much of a problem is drinking in public?" By summing and then averaging the scores of these scales for every neighborhood cluster in the study, it is possible to have a score for each neighborhood.

As the PHDCN sampling strategy yielded within-neighborhood samples of varying sizes (an average of 25 respondents per neighborhood), variation in the sample size across

neighborhoods resulted in neighborhood-level scale scores with different levels of reliability. As a result, empirical Bayes residuals from multilevel models of the community survey scales are used in this study. Empirical Bayes estimates pull neighborhood-level mean scale scores toward the overall sample grand mean by a factor proportional to the unreliability with which the scale score has been estimated. In this study, this precedent is followed. In doing so, each of the 343 neighborhood clusters has a score for disorder, including the 80 neighborhood clusters represented in the Longitudinal Cohort Study data.

Collective efficacy is understood to be the civic engagement activities performed by community members in an attempt to solve local problems (Sampson, Raudenbush, and Earls 1997). It is generally understood to consist of social cohesion and social control. To measure social cohesion, respondents in the Community Survey were asked how much they agree that "People in the neighborhood": "can be trusted," "are willing to help neighbors," "generally do not get along," and "do not share the same values." The fifth question asked how much respondents agree with the idea that "This is a close-knit neighborhood." Respondents rated these questions from 1 = "strongly disagree" to 5 = "strongly agree." In this study, variables were recoded, when necessary, so that higher scores indicate higher perceptions of social cohesion.

The second dimension of collective efficacy, social control, was captured in the Community Survey by asking respondents how likely it is that people in the neighborhood would act if children skipped school, spray-painted graffiti, disrespected an adult, or broke up a fight, and how likely they would be to organize to keep the nearest fire station from closing. Responses ranged from 1 = "very unlikely" to 5 = "very likely." Again, responses were recoded, when necessary, so that higher scores are indicative of higher levels of social control.

For the same reasons addressed for neighborhood disorder, empirical Bayes estimates are used to measure neighborhood control and cohesion. Additionally, because past research has found the social control scale and the social cohesion scale to be highly correlated (Sampson, Raudenbush, and Earls 1997; Sampson and Raudenbush 1999), the two scales are combined to create the collective efficacy scale. By summing and then averaging these scores, every neighborhood cluster has a score for neighborhood collectively efficacy. The next section discusses the analytic strategy used in this study.

Analytic Strategy for the Research Questions

This study follows three analytical steps. First, descriptive statistics are used to describe the data. Second, an examination is conducted to evaluate the appropriateness of the data for structural equation modeling (SEM). Third, SEM is employed to test the hypotheses. Structural equation modeling is a set of strategies combining path analysis, confirmatory factor analysis (CFA), and structural regression modeling, which allows for sophisticated modeling of closely related predictors (Sanchez et al. 2005). While this study does not employ path analysis, it does use confirmatory factor analysis and structural regression modeling. Confirmatory factor analysis is conducted first as it enables the evaluation of the construct validity of latent variables. Based on the results, structural regression models are employed to examine the relationships among the variables.

CFA allows a researcher to assess the measurement properties of sets of indicators of unobserved constructs. Confirmatory factor analysis is used to test the goodness of fit of the hypothesized latent variables and factors. Several modification indexes are calculated to examine the overall quality of models, including Chi-square (χ^2), adjusted Chi-square (χ^2), root mean

square error of approximation (RMSEA), the Tucker-Lewis Index (TFI), and the comparative fit index (CFI). These fit statistics are more fully discussed below.

Structural regression modeling allows for the evaluation of relationships among variables. All direct and indirect effects of variables in the models are examined, and all paths are tested simultaneously. Fit indexes are used to evaluate the overall fit and quality of the model. By using latent variables, or hypothetical constructs that reflect a concept not directly observable, measurement error is incorporated into the models (Sanchez et al. 2005; Kline 2005; Schumacker and Lomax 2010). As a result of the ability to explicitly take measurement error into account and determine the extent to which a theoretical model is supported by sample data, SEM can advance understanding of complex relationships and model multiple outcomes simultaneously.

Confirmatory Factor Analysis

Analytical Process of Confirmatory Factor Analysis

Although structural equation modeling is a family of techniques that address different kinds of hypotheses, it follows the process of model specification, model identification, model estimation, model testing, and model respecification (Kline 2005; Schumacker and Lomax 2010). Each step in the process is described below.

Specification

Model specification uses available relevant theory to develop a theoretical model (Schumacker and Lomax 2010). Prior to data collection or analysis, a model is specified that should be confirmed with variance-covariance data. That is, available information is used to decide which variables to include in the model as well as how variables should be related to one another. The measurement model can be specified in terms of exogenous notation (i.e., X

variables) or in terms of endogenous notation (i.e., Y variables). Model specification is represented by the formula:

$$x = \Lambda_X \xi + \delta$$
$$y = \Lambda_Y \eta + \varepsilon$$

In this formula, *x* represents the exogenous variables, Λ_x (lambda) is the coefficient of the impact of the latent variable on the observed variables, ξ (xi) is the latent construct, and δ (delta) is the error of measurement. The endogenous variables are represented by *y* and η (eta) is the latent construct of the endogenous variables (Byrne 1998). The measurement error terms are independent of each other and independent of the factors (Kline 2005). A measurement correlation is reflective of the assumption that the two indicators measure something in common that is not represented in the model.

Identification

Model identification depends on whether the parameters are defined as fixed, free, or constrained (Schumacker and Lomax 2010). Once the model is specified, and the parameter specifications are determined, the parameters are combined to form Σ (model-implied variance-covariance matrix). A confirmatory factor analysis model must meet two conditions in order to be identified: the number of free parameters must be equal to or less than the number of observations, and every factor must have a scale (Kline 2005). The number of parameters in a CFA model is the sum total of variance and covariances of the factors and the measurement errors plus direct effect on the indicators from the factors.

There are three levels of model identification. The level is determined by the amount of information in the variance-covariance matrix used to estimate the parameters of the model (Schumacker and Lomax 2010). First, a model is under-identified (or not identified) if one or more parameters are not uniquely determined because there is not enough information. Second, a

model is just identified if all of the parameters are uniquely determined because there is just enough information. Lastly, a model is over-identified when there is more information than necessary.

Additionally, each latent variable must have a scale (Kline 2005). Because latent variables are not directly measured, they require a measurement scale to calculate estimates of effects that involve them. As a result, the latent construct is measured by the estimated effect of the latent construct to the measured variable that is theoretically related to the construct. For instance, the *fear of crime at wave 2* latent construct is measured from questions about fear of crime in the neighborhood, home, in front of the apartment building or house, in school, or on the way to and from school. Each latent construct is also examined to determine whether it is identified.

Estimation

As explained by Kline (2005), unstandardized estimates in confirmatory factor analysis are unanalyzed associations and factor loadings. Unanalyzed associations either between a pair of factors or measurement errors are covariances. Factor loadings are unstandardized regression coefficients that estimate the direct effects of the factors on the indicators. The most commonly used estimation methods in CFA are maximum likelihood, generalized least squares, and unweighted least squares (Kline 2005).

In this study, maximum likelihood (ML) is employed to estimate the measurement models. Unlike multiple regression, which requires a separate analysis for each endogenous variable, ML calculates the estimates of all model parameters simultaneously (Kline 2005). An assumption of maximum likelihood is the multivariate normality of endogenous variables. It is

additionally assumed by ML that exogenous variables are continuous. The skewness and kurtosis of the variables are tested in Chapter 5.

Testing

In SEM, model fit should be tested once the parameter estimates are obtained. The two types of assessment are the component model fit and the entire model fit (Schumacker and Lomax 2010). The component fit denotes the fit of individual elements found within the model (Bollen 1989). In this study, several parameters estimates are used to assess component fit, including the variance of the latent construct and various covariance matrices. When the component fit is acceptable, the fit of the entire model fit is examined.

The entire model fit considers the fit of the model based on a number of indexes. Unlike many statistical procedures that have a single fit index (e.g., F test in ANOVA), SEM has a large number of such indexes. Most of these measures rely on a comparison of the model-implied covariance matrix Σ to the sample covariance matrix S.

When using structural equation modeling, it is generally suggested that researchers report the results of several fit indexes (Hoyle and Panter 1995). In this study, the results of five fit measures were selected to assess model fit. They are the Chi-square (χ^2) statistic, adjusted Chi-square (χ^2) statistic, Root Mean Square Error of Approximation (RMSEA), Tucker-Lewis Index (TLI), and Comparative Fit Index (CFI).

The first index is the Chi-square (χ^2) goodness of fit. When this value is statistically significant, it is indicative of the need to consider rejecting the hypothesis that the covariance pattern of the measurement model specified approximates the observed covariance matrix (Schumacker and Lomax 2010). For a just-identified model, the Chi-square (χ^2) statistic equals zero and has no degrees of freedom. For models that are over-identified, the number of degrees

of freedom is positive, and the value of the Chi-square (χ^2) statistic may be positive (Kline 2005). If the chi-square is not significant, the model is considered acceptable. This indicates that the observed covariance matrix is similar to the predicted covariance matrix.

It is necessary to keep in mind, however, that the Chi-square (χ^2) statistic is sensitive to sample size. With a large sample, even small or insubstantial differences between the covariance matrices of the specified measurement model and the observed variables can result in statistical significance (Kline 2005). As such, Hu and Bentler (1999) argue that the Chi-square (χ^2) statistic can be statistically significant, although the other model fit statistics are acceptable. To reduce the sensitivity of the Chi-square (χ^2) statistics, the adjusted Chi-square (χ^2) statistics, the second fit index used in this study, is suggested. It measures absolute fit while taking into consideration degrees of freedom. More specifically, the Chi-square (χ^2) value is divided by degrees of freedom (Kline 2005):

$$Adjusted\ Chi - square = \chi^2/df$$

An acceptable adjusted Chi-square score ranges from 2.0 to 5.0 (Tabachnick and Fidell 2007).

The third model fit index used in this study is the Root Mean Square Error of Approximation (RMSEA). This index is based on residuals resulting from comparing the model-specified covariance matrix with the observed matrix. A good fit is indicated by an RMSEA value less than .10; a very good fit has a value less than .05 (Muthén and Muthén 2010). Root Mean Square Error of Approximation is calculated as:

$$RMSEA = \sqrt{\frac{(\mathrm{X}^2 - df)}{df(N-1)}}$$

Building on work by Tucker and Lewis (1973), Bentler and Bonett (1980) developed the Tucker-Lewis Index (TLI), also known as the Non-Normed Fit Index. TLI, the fourth index used

here, is appropriate for use with maximum likelihood estimation. A comparative fit index, TLI indicates how much the specified or implied model is an improvement over a zero factor model (Kline 2005). That is, the Tucker-Lewis Index measures relative improvement standardized by degrees of freedom of the implied model over the independence or null baseline model. It is defined as

$$TLI = \frac{\left(\frac{X_i^2}{df_i}\right) - \left(\frac{X_t^2}{df_t}\right)}{\left(\frac{X_i^2}{df_i}\right) - 1}$$

where X_i^2 is the chi-square of the null model and X_t^2 is the chi-square of the target model. Values of the TLI can fall outside the range of 0-1; good fit is generally considered to be >.8 (Hooper, Coughlan, and Mullen 2008).

The fifth index used in this study is the Comparative Fit Index (CFI), a relative noncentrality index (Hu and Bentler 1995). CFI can be interpreted as the reduction of the lack of fit, as indicated by the noncentrality Chi-square (χ^2), between the measurement model and baseline model. It is measured as

$$CFI = \frac{(X_i^2/df_i) - (X_t^2/df_t)}{X_i^2 - df_i}$$

In general, a CFI > .9 is considered a good fit (Kline 2005).

In this study, individual parameters of the models are considered, and the sign of the parameters are examined to see whether the sign agrees with what was expected from the theoretical model. Individual parameters should make sense and be statistically significant (Bollen 1989). Additionally, the parameters should fall within an expected range of values. For instance, variances should have positive values, and correlations should not exceed a value of 1

(Schumacker and Lomax 2010). Table X describes the fit indexes and their acceptable thresholds.

Table 4: Fit Indexes and Acceptable Thresholds

Fit Indexes	Acceptable Thresholds Levels	Description
Chi-Square	P value (p>.05)	Sensitive to sample size
Adjusted Chi-Square	Range from 2.0 to 5.0 (Tabachnick and Fidell 2007)	Adjusts for sample size
Root Mean Square Error of Approximation (RMSEA)	Values less than .10 (Muthén and Muthén 2010)	Values less than .03 represent a good fit
Tucker-Lewis Index (TLI)	Values greater than .80 (Hooper, Coughlan, and Mullen 2008)	Sensitive to sample size; Values can fall outside of 0 – 1 range
Comparative Fit Index (CFI)	Values greater than .90 (Kline 2005)	0 – 1 range

Respecification

In general, respecification is considered a difficult task as the number of constructs, their relation to the indicators, and patterns of unanalyzed associations among measurement error terms can all be modified (Kline 2005). However, while permitting modification indices to drive the process might influence the results, some modifications can be made locally to improve model fit (Hu and Bentler 1999) substantially. This study, therefore, uses model fit indices as guidelines in regards to including or excluding variables.

Moreover, modification in this study is conducted with an eye to theory. When indicators do not load substantially on a factor, it is vital to check whether the indicators are correct. It is also possible that some of the original factors have too many indicators in that different aspect of the factors are actually being considered. If this is the case, indicators should be split into more homogenous sub-factors (Kline 2005). The importance of theory in models was emphasized by Raykov and Macoulides (2006). They suggested that the parameter estimates in the final

analyses should be checked to ensure that they have the right sign and magnitude as predicted by available theory and previous research.

Jigsaw Piecewise Strategy

Guidance on structural equation modeling was provided by Anderson and Gerbing (1988). It was suggested that a two-step modeling approach be used for a series of nested models and sequential chi-square difference tests. This approach, it was argued, would enable the building of a measurement model that has the best fit. Fornell and Yi (1992) claimed, however, that a two-step modeling approach is not possible as the assumptions are illogical. The assumptions are 1) theory and measurement are independent, 2) results of analysis specifications can be generalized to other specifications, 3) the estimators have desirable statistical properties, and 4) the statistical test in each step is independent of all other steps. Fornell and Yi (1992) further contended that the theory should guide measurement.

In response, Bollen (2000) provided the jigsaw piecewise strategy. This strategy somewhat resembles a jigsaw puzzle in that pieces of the model are fit individually and then put together to form a coherent whole. This strategy is similar to the separate factor analysis method in that pieces of the model are evaluated prior to building the full model. This approach fits the strategies employed in this study, considering that the full model is divided into personal experiences with violence, fear of crime, and mental health. Although this process does not empirically test uni-dimensionality among all the constructs together, it can establish uni-dimensionality with the combination of components that are divided by theories or previous research.

CFA estimates all variables together. This study combines findings from theories and prior studies to explore factors that influence adolescents' fear of crime and mental health. When

two or more theories are employed, CFA is conducted separately in order to test the theory accurately (Cabrera et al. 1992). After CFA, structural regression models are used to examine the hypotheses of the study.

Structural Regression Model

Known also as the hybrid model, a structural regression model is the amalgamation of the path and measurement models (Kline 2005). The specification of this model allows for the testing of hypotheses about the direct and indirect causal effect. While similar to a path model, it additionally involves latent variables because it incorporates a measurement model (Kline 2005). It resembles confirmatory factor analysis with the ability to test the plausibility of hypotheses among latent factors (Raykov and Marcoulides 2006). The structural regression model can be understood to have two matrices and three vectors (Byrne 1998). These include one matrix of coefficients relating exogenous latent variables to endogenous latent variables (Γ), one matrix of coefficients relating endogenous latent variables to other endogenous latent variables (B), one vector of latent exogenous variables (ξ), one vector of latent endogenous variables (η), and one vector of residual errors associated with the endogenous latent variables (ζ). The structural regression model is defined as

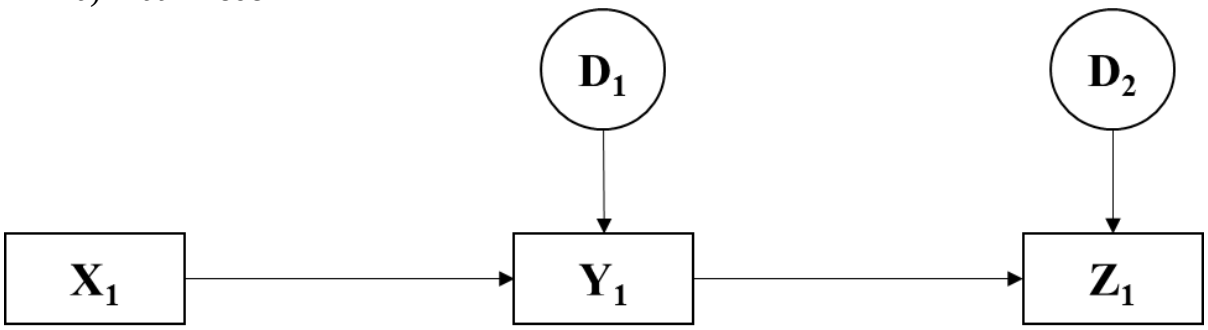
$$\eta = B\eta + \Gamma\xi + \zeta$$

where η (eta) is an *m* x 1 vector latent endogenous variables, B (beta) is an *m* x *n* matrix of coefficients that relates the *m* endogenous factors to one another. Γ (gamma) is an *m* x *n* matrix of coefficients that relates the *n* exogenous factors to the *m* endogenous factors, and ξ (xi) is an *n* x 1 vector of latent exogenous variables. ζ (zeta) is an *m* x 1 vector of residuals representing errors in the equation modeling relating η and ξ (Byrne 1998).

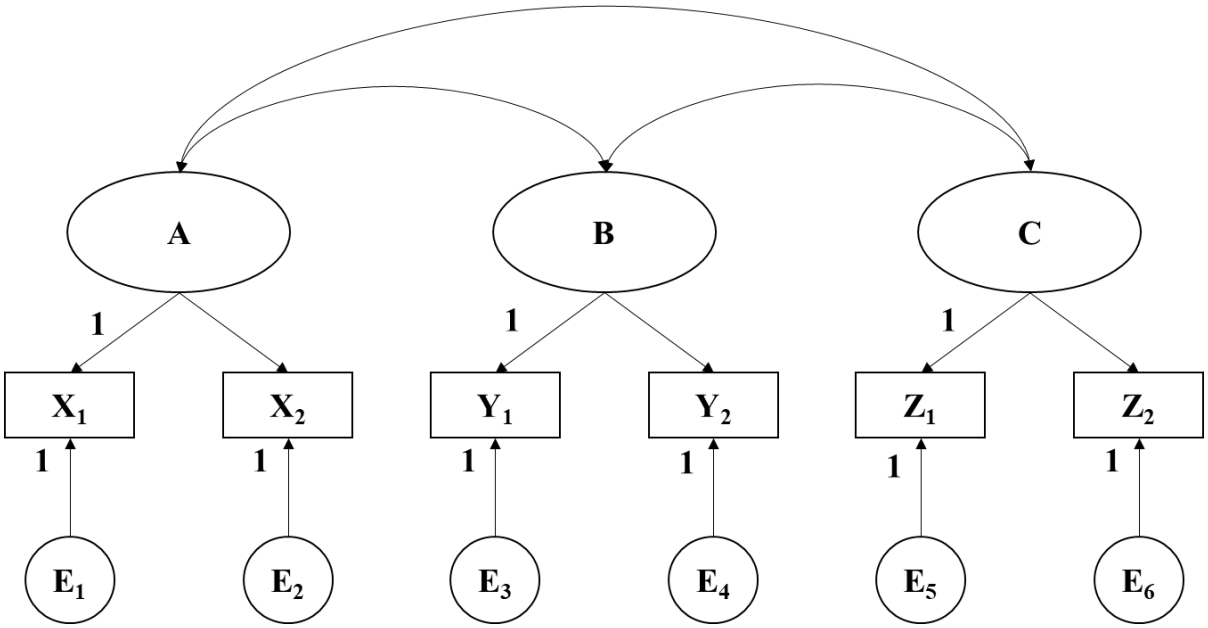
Figure 3 illustrates the basic path model, confirmatory model, and structural regression model. The path model (a) uses a single measure of each construct, meaning the observed exogenous variables X_1 in the path model is assumed free of measurement error. This assumption, however, is often violated in practice (Kline 2005). The confirmatory factor analysis model (b) is desirable because it allows for multi-indicator measurement. However, it assumes that all associations among the factors are unanalyzed (Kline 2005). In the structural regression model (c), the observed variables have measurement error terms. This model additionally has a structural component (Raykov and Marcoulides 2006). The structural regression model can, therefore, be defined as a path model with latent variables instead of observed variables (Kline 2005).

Figure 3: Examples of a Path Model, a Confirmatory Factor Analysis Model, and a Structural Regression Model

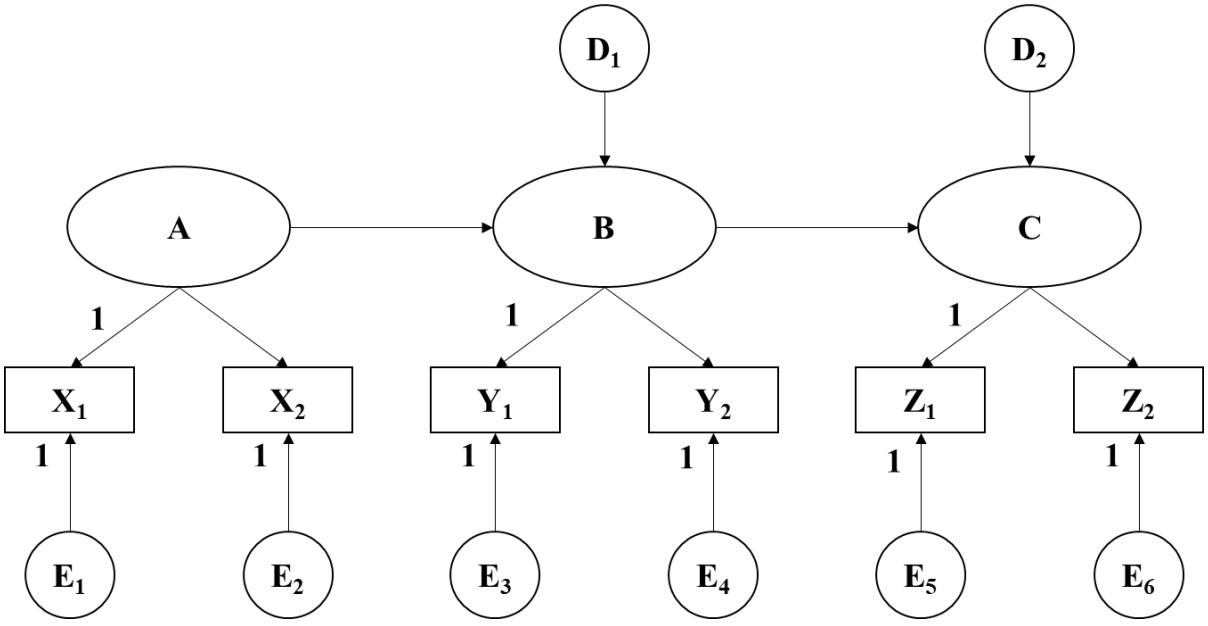
a) Path Model



b) Confirmatory Factor Analysis Model



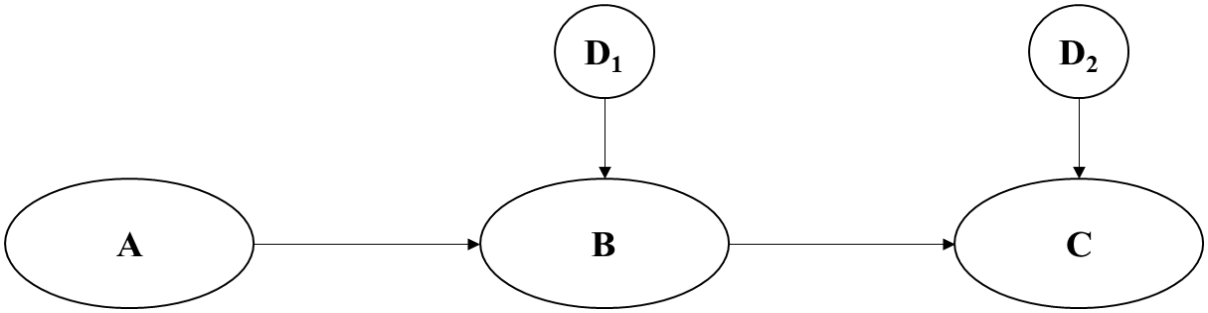
c) Structural Regression Model



It was argued by Kline (2005) that Anderson and Gerbing's (1988) two-step modeling approach could be useful for structural regression modeling. In a one-step modeling approach,

the measurement and the structural components are analyzed simultaneously. When the overall model fit is weak, it is difficult to identify the cause. In two-step modeling, however, the CFA model is analyzed first. If the fit is weak, the analysis will not go further. Once theory-based modifications are implemented to make the measurement model acceptable, it is then possible to analyze the relationships among latent variables. The final step is to compare the fits of the original structural regression model and those with different structural models. Figure 4 displays the structural regression model in the two-step modeling approach.

Figure 4: Structural Regression Model in Two-Step Modeling Approach



In summary, this chapter discussed the methodology used in this study. The data and sample were presented, measures were described, and the analytic strategy was explained. The next chapter presents major findings on the relationships among personal experiences with violence, fear of crime, and mental health, including preliminary statistics and results of the structural regression modeling.

Chapter 5: Analyses and Findings

This chapter presents major findings on the relationships among personal experiences with violence, fear of crime, and mental health. First, preliminary statistics are shared. More specifically, missing data are discussed, descriptive statistics are described, tests for multivariate normality and multicollinearity are conducted, and findings from bivariate analyses are examined. Second, the results of the confirmatory factors analyses and the structural regression models are presented.

Preliminary Statistics

Missing Data

Missing data can cause bias or lead to inefficient analyses (Horton and Kleinman 2007). Such data can be missing at random, missing completely at random, or neither (Rubin 1976). In this study, there is less concern with respondents not answering specific questions as there is with respondents not participating in all three Waves of the PHDCN's study. The combined response rate at Wave 1 for the 9- and 12-year-old cohorts is 75%. In other words, about three-quarters of respondents screened as eligible to participate in the Longitudinal Cohort Study completed the first Wave. Of those respondents, 86% participated in Wave 2, and 76% participated in Wave 3.

There are several options for dealing with missing data. First, a variable with missing data can be dropped from the analysis. This would not be a significant loss if the variable had only a small effect on a dependent variable (Schafer and Graham 2002). However, this option is not viable in this study as predictor variables were specifically chosen because they are hypothesized to affect the outcome variables. Second, dropping subjects (i.e., listwise deletion) is an alternative to dropping variables. The remaining cases, however, may not be representative of the population. In addition, listwise deletion can result in a considerable reduction in total sample

size (Schafer and Graham 2002). Lastly, imputation, especially multiple imputations, can be used to assign substitute values for missing data. This approach has been found to be a better strategy for dealing with datasets with missing values than entering in a single value for each missing value (Schafer 1999).

For many years, listwise deletion was the most common way of dealing with missing data in structural equation models (SEM) (Enders and Bandalos 2001). However, researchers have increasingly begun to use data estimation techniques. Multiple imputations and full information maximum likelihood are now the two most common approaches to handle missing data in SEM. In this study, missing data is modeled through full information maximum likelihood with missing values (MLMV). The general idea of MLMV is that observations belonging to the same missing patterns are treated as independent groups, mean vectors and covariance matrices are formed for each independent group, and groups are analyzed together to calculate the sample covariance matrices (Lee 2007). Using this approach, the final number of subjects in this study's models remains 1,649 (with MLMV, only observations that are missing all variables are excluded). Scholars have tested this approach and concluded that it has a high performance in comparison to other methods with missing data (Enders and Bandalos 2001).

Descriptive Statistics

As previously discussed, one of the goals of this study is to examine the direct effects of personal experiences with violence on fear of crime and mental health for adolescents. In addition, this study explores the ability of fear of crime to mediate the relationship between personal experiences with violence and mental health. The descriptive statistics found below provide information on the sample included in the study, including demographics, household,

and neighborhood characteristics as well as information regarding the adolescents' personal experiences with violence, fear of crime, and mental health.

Adolescent Demographic Characteristics

Tables 5 and 6 include the general characteristics of the adolescents in the study. In terms of gender, the sample was almost evenly split with 841 (51.0%) males and 808 (49.0%) females. More diversity is found in terms of race/ethnicity. As can be seen, the plurality of the respondents are Hispanic (46.4%), followed by Black (35.7%), White (13.9%), and Other (4.0%). As for age, the respondents ranged in age from a minimum of 7.8 years at Wave 1 to a maximum of 18.6 years at Wave 3. This means, of course, that the majority of the adolescents were under the age of 18 years when responding to questions for each Wave of the study. Finally, the adolescents' socioeconomic status (SES), calculated as the standardized scale of the primary caregivers' income, education, and occupational status, is shown. Compared to respondents across all cohorts who participated in the Longitudinal Cohort Study, the 9- and 12-year cohorts have, on average, slightly lower SES scores.

Table 5: Adolescent Demographic Characteristics, Discrete Variables

Survey items	**N**	**%**	**Operational Definition**
Gender			gender of adolescent
Female	808	49.0%	
Male[a]	841	51.0%	
Race/Ethnicity			race/ethnicity of adolescent
Hispanic	763	46.4%	
Black	587	35.7%	
White[a]	228	13.9%	
Other	66	4.0%	

[a] Referent category

Table 6: Adolescent Demographic Characteristics, Continuous Variables

Survey items	N	Mean	SD	Min	Max	Operational Definition
Age						
Age at Wave 1	1,649	10.6	1.5	7.8	13.2	age of adolescent at Wave 1
Age at Wave 2	1,437	12.7	1.6	9.1	17.1	age of adolescent at Wave 2
Age at Wave 3	1,306	15.2	1.6	11.7	18.6	age of adolescent at Wave 3
SES						
SES at Wave 1	1,636	-0.1	1.4	-3.2	3.5	socioeconomic status of adolescent at Wave 1
SES at Wave 2	1,429	-0.3	1.4	-3.2	4.0	socioeconomic status of adolescent at Wave 2

Household Characteristics

Tables 7 and 8 provides information on the households of the adolescents at Wave 1, particularly as it relates to primary caregivers and, if applicable, their partners. As shown, over one-third (37.3%) of households were led my caregivers with less than a high school degree, including 17.7% who had not attended high school. In the remainder of the households, the highest education reported was a high school diploma (13.7%), some education beyond high school (37.4%), and a Bachelor's degree or higher (11.7%). In terms of earnings, well over half of the households (61.1%) were headed by caregivers who made less than $30,000 per year. Conversely, slightly over 1 in 10 (15.9%) of households had a caregiver who earned at least $50,000 annually. Just under one-third (30.9%) of households reported using public assistance in the prior year, at Wave 1. Social status is measured by Duncan's Socio-Economic Index (SEI; Duncan 1961) which ranges from 0 to 100, with 100 being the excellent or the highest social stratification level. For the youth in this study's cohorts, SEI ranges from 17 to 97, with an average score of 43.2.

Table 7: Household Characteristics at Wave 1, Discrete Variables

Survey items	n	%	Operational Definition
Maximum Caregiver Education			highest level of education, primary caregiver and partner (if applicable), at Wave 1
Less than high school	285	17.7%	
Some high school	316	19.6%	
Finish high school	221	13.7%	
Some more than high school	604	37.4%	
Bachelor's degree or	189	11.7%	
Maximum Caregiver Salary			highest salary, primary caregiver and partner (if applicable), at Wave 1
<$5,000	181	11.6%	
$5,000 - $9,999	167	10.7%	
$10,000 – $19,999	315	20.1%	
$20,000 – $29,999	293	18.7%	
$30,000 – $39,999	225	14.4%	
$40,000 – $49,999	135	8.6%	
>$50,000	249	15.9%	
Public Assistance			household used public assistance in the past year, at Wave 1
1 = No	1,122	69.1%	
2 = Yes	503	30.9%	

Table 8: Household Characteristics at Wave 1, Continuous Variables

Survey items	n	Mean	SD	Min	Max	Operational Definition
Maximum Socioeconomic Index	1,399	43.2	17.4	17	97	highest occupational status, primary caregiver and partner (if applicable), at Wave 1

Neighborhood Characteristics

Information on Wave 1 neighborhoods is shown in Table 9. In particular, two census-derived stratification variables—socioeconomic status and racial-ethnic mix—are displayed. As can be seen, neighborhood socioeconomic status is nearly evenly split between low, medium, and high SES neighborhoods. Similarly, there is mostly consistent representation in terms of

ethnic composition, with predominately African American neighborhoods being the most typical neighborhood type. Another way to think about this information is that about half the neighborhoods are predominately homogenous (≥ 70% same race/ethnicity) while the remaining neighborhoods are predominately heterogeneous (≤ 70% same race/ethnicity).

Table 9: Neighborhood Characteristics at Wave 1

Survey items	**n**	**%**	**Operational Definition**
Neighborhood Socioeconomic Status			socioeconomic status of neighborhood cluster
Low	27	33.8%	
Medium	30	37.5%	
High	23	28.8%	
Neighborhood Ethnic Composition			ethnic composition of neighborhood cluster
70%+ African American	17	21.3%	
70%+ Caucasian	12	15.0%	
70%+ Hispanic	8	10.0%	
20% Hispanic + 20% Caucasian	13	16.3%	
20% Hispanic + 20% African American	8	10.0%	
20% African American + 20% Caucasian	10	12.5%	
Other	12	15.0%	
Neighborhood Diversity			ethnic diversity of neighborhood cluster
Homogenous Neighborhood	37	46.3%	
Heterogeneous Neighborhood[a]	43	53.7%	

[a] Referent category

Of course, perceptions of a neighborhood can be just as meaningful as their structural characteristics. As was previously mentioned, such data come from the PHDCN's Community Survey, which involved interviewing residents in 343 neighborhood clusters at Wave 1. Information on perceptions of disorder and collective efficacy in the 80 neighborhood clusters with respondents interviewed for the Longitudinal Cohort Study is found in Tables 10 and 11.

For *neighborhood disorder*, higher scores are indicative of greater perceptions of neighborhood disorder. The six disorder characteristics were reported at similar rates, with average scores ranging from 1.5 to 1.9, suggesting moderate concerns with perceptions of neighborhood physical and social disorder (see Table 10). Reflective of this finding, the average combined score for neighborhood disorder is 1.8, with a range from 1.1 to 2.4.

Table 10: Neighborhood Disorder at Wave 1

Survey items[a]	**n**	**Mea**	**SD**	**Min**	**Max**	**Operational Definition**
Neighborhood Disorder	80	1.8	.3	1.1	2.4	combined score for neighborhood physical and social disorder
Physical Disorder						
Debris	80	1.9	.4	1.2	2.6	litter, broken glass, or trash on sidewalks and streets
Graffiti	80	1.7	.3	1.1	2.5	graffiti on buildings and walls
Vacancies	80	1.5	.3	1.0	2.4	vacant and deserted houses or storefronts
Social Disorder						
Public Drinking	80	1.8	.4	1.1	2.7	drinking in public
Drug Sells/Use	80	1.9	.5	1.0	2.7	people selling or using drugs
Disorderly People	80	1.9	.4	1.1	2.6	groups of teenagers or adults hanging out in neighborhoods and causing trouble

[a] 1 = Not a problem, 2 = Somewhat of problem, and 3 = A big problem

For *collective efficacy*, higher scores represent greater perceptions of neighborhood efficacy. As shown in Table 11, the scores are, in general, indicative of communities that are, on average, moderately efficacious. The average scores related to social cohesion and social control are relatively similar to one another, ranging from 3.1 to 4.0. The combined average score for collective efficacy, by neighborhood, is 3.4, with a range of 2.9 to 4.2.

Table 11: Neighborhood Collective Efficacy at Wave 1

Survey items	n	Mea	SD	Min	Max	Operational Definition
Neighborhood Collective Efficacy	80	3.4	.3	2.9	4.2	combined score for neighborhood social cohesion
Social Cohesion[a]						
Trust	80	3.4	.4	2.4	4.2	people in neighborhood can be trusted
Willing to Help	80	3.7	.0	3.0	4.4	people are here are willing to help their neighbors
Do Not Get Along	80	3.6	.3	2.8	4.3	people in neighborhood generally do not get along
Do Not Share Values	80	3.1	.3	2.5	3.8	people in neighborhood do not share the same values (reverse coded)
Close-Knit	80	3.2	.3	2.3	4.6	this is a close-knit
Social Control[b]						
React to Truancy	80	3.2	.4	2.0	4.1	do something if a group of children skip school and hang out on the street corner
React to Graffiti	80	3.8	.5	2.5	4.8	do something if some children spray-paint graffiti on a local building
React to Fights	80	3.4	.4	2.4	4.3	break up a fight in front of your house where someone was being beaten or threatened
Organize for Fire Station	80	4.0	.3	3.3	4.8	organize to keep the closest fire station open it if were to be closed due to budget cuts
Scold Disrespect	80	3.1	.4	1.9	3.8	scold child if child shows disrespect to an adult

[a] 1 = Strongly disagree, 2 = Disagree, 3 = Neither agree nor disagree, 4 = Agree, and 5 = Strongly agree
[b] 1 = Very unlikely, 2 = Unlikely, 3 = Neither likely nor unlikely, 4 = Likely, and 5 = Very likely

Personal Experiences with Violence Characteristics

Information on personal experiences with violence is presented in Tables 12 - 14. Table 12 displays information on the adolescent respondents' experiences with *violent victimization*. As can be seen, the most common form of victimization was being hit. Approximately 16 percent (15.7%) of respondents reported having been hit within the year prior to their Wave 2 interview. This was followed by being chased by someone trying to hurt them (9.6%), being

threatened to be seriously hurt (6.3%), and being attacked with a weapon (2.5%). The least common reported types of victimization were being shot at (1.5%), being sexually assaulted (0.6%), and being shot (0.1%). Overall, about one-quarter (25.2%) of respondents reported having been violently victimized in the prior year.

Table 12: Violent Victimization in Previous Year at Wave 2

Survey items	n	Yes	No	Operational Definition
Violent Victimization	1,360	25.2%	74.8%	Was respondent violently victimized in the past year?
Threatened / Hurt	1,357	6.3%	93.7%	respondent was threatened/seriously hurt
Chased to Hurt	1,357	9.6%	90.4%	respondent was chased to hurt
Hit	1,360	15.7%	84.3%	respondent was hit
Attacked with Weapon	1,358	2.5%	97.5%	respondent was attacked with a weapon
Sexually Assaulted	1,348	0.6%	99.4%	respondent was sexually assaulted
Shot at	1,356	1.5%	98.5%	respondent was shot at
Shot	1,357	0.1%	99.9%	respondent was shot

Similar to above, adolescent respondents were asked at Wave 2 if, in the prior year, they had seen someone else be victimized by being chased to hurt, hit, attacked with a weapon, shot, shot at, or threatened with harm. Table 13 shows the descriptive statistics for *witnessed violent victimization*. As shown, the respondents were much more likely to report witnessing the violent victimization of others than to report having been violently victimized themselves. Nearly half (49.1%) reported having seen someone hit, and nearly one-third (32.7%) reported having seen someone chased by a person trying to hurt them. More than one-in-ten respondents said that they had witnessed someone being threatened with harm (18.8%) and attacked with a weapon (14.9%). Less commonly reported was seeing someone shot at (8.4%) or shot (7.2%). In all, a majority of the respondents (61.2%) reported having witnessed someone be violently victimized in the prior year.

Table 13: Witnessed Violent Victimization in Previous Year at Wave 2

Survey items	n	Yes	No	Operational Definition
Witnessed Violent Victimization	1,360	61.2%	38.8%	Did respondent witness the violent victimization of another person in the past year?
Saw Threatened / Hurt	1,355	18.8%	81.2%	respondent saw someone threatened/seriously hurt
Saw Chased to	1,355	32.7%	67.3%	respondent saw someone chased to
Saw Hit	1,359	49.1%	50.9%	respondent saw someone hit
Saw Attacked with Weapon	1,359	14.9%	85.1%	respondent saw someone attacked with a weapon
Saw Shot at	1,357	8.4%	91.6%	respondent saw someone shot at
Saw Shot	1,358	7.2%	92.8%	respondent saw someone shot

Involvement in violence was captured by asking respondents, at Wave 2, if they had performed eight violent acts in the past year, including carried a hidden weapon, hit someone who does not live in the home, attacked someone with a weapon, thrown objects at people, used force to rob someone, been in gang fight, shot at someone, or shot someone. The frequency with which the respondents had engaged in these acts can be found in Table 14. As shown, respondents generally did not report having been involved in violence in the previous year. The two most commonly reported acts are hitting someone that was not a household resident (15.1%) and throwing objects at people (9.0%). The only other acts that were committed by at least one percent of the respondents are carrying a hidden weapon (3.2%), being in a gang fight (2.0%), and attacking someone with a weapon (1.5%). Overall, about one-in-five respondents (20.8%) reported having been involved in violence in the previous year.

Table 14: Violent Crime Involvement in Previous Year at Wave 2

Survey items	n	Yes	No	Operational Definition
Involvement in Violence	1,357	20.8%	79.2%	Did respondent engage in a violent act in the past year?
Carried Hidden Weapon	1,357	3.2%	96.8%	respondent carried a hidden weapon
Hit Non-Resident	1,355	15.1%	84.9%	respondent hit someone not
Attacked with Weapon	1,355	1.5%	98.5%	respondent attacked someone with a weapon
Threw Objects	1,355	9.0%	91.0%	respondent threw objects at people
Used Force to Rob	1,355	0.3%	99.7%	respondent used force to rob
Shot at Someone	1,344	0.2%	99.8%	respondent shot at someone
Shot Someone	1,347	0.0%	100.0%	respondent shot someone
Gang Fight	1,352	2.0%	98.8%	respondent was in a gang fight

Fear of Crime Characteristics

Fear of crime at wave 1 at is captured by asking adolescents, "How afraid are you that you might be hurt by violence…" in four different contexts: "in your neighborhood," "in your home," "in front of your apartment building or house," and "at school or daycare." As can be seen in Table 15, fear is relatively prominent. Nearly two-thirds of respondents (61.5%) reported being fearful of violence in their neighborhoods, and almost half (46.2%) reported being fearful of violence at school or daycare. Smaller, but still meaningful, proportions of respondents indicated being afraid of violence in front of their homes (39.9%) and in their homes (19.3%). A CFA of fear of crime at Wave 1 is provided in the next section.

Table 15: Fear of Crime at Wave 1

Survey items	n	Yes	No	Operational Definition
Fear in Neighborhood	1,594	61.5%	38.5%	respondent afraid of violence in neighborhood
Fear in Home	1,594	19.3%	80.7%	respondent afraid of violence in front of home
Fear in Front of Apartment or House	1,596	39.9%	60.1%	respondent afraid of violence in house or building
Fear at School or Daycare	1,569	46.2%	53.8%	respondent afraid of violence at school or daycare

Fear of crime was similarly measured at Wave 2. One noticeable difference from Wave 1 is that respondents were provided with a 3-point scale. Additionally, respondents were asked, "How afraid are you that you might be hurt by violence" in the four contexts addressed above as well as "on your way to or from school." Table 16 provides information on *fear of crime at wave 2*. Again, sizeable proportions indicate being fearful of violence in various contexts. The most common environments to report being afraid is in one's neighborhood, in which 62.7% of respondents reported being at least a little afraid. This was followed by fearfulness on the way to and from school (53.9%) and at school (51.0%). Similar to Wave 1, the majority of respondents did not report feeling afraid of being hurt by violence in their homes or in front of their homes. The next section shows a CFA of fear of crime at Wave 2.

Table 16: Fear of Crime at Wave 2

Survey items[a]	n	Not afraid	A little	Very afraid	Operational Definition
Fear in Neighborhood	1,308	37.4%	44.3%	18.4%	respondent afraid of violence in neighborhood
Fear in Home	1,307	58.8%	25.2%	16.0%	respondent afraid of violence in home
Fear in Front of Apartment or House	1,309	72.5%	12.5%	15.1%	respondent afraid of violence in front of apartment building or house
Fear at School	1,301	49.0%	37.3%	13.7%	respondent afraid of violence at school
Fear on the Way to or from School	1,297	46.1%	34.5%	19.4%	respondent afraid of violence on the way to or from school

[a] 1 = Not afraid, 2 = A little afraid, and 3 = Very afraid

Mental Health Characteristics

Characteristics of *internalization at wave 1* and *externalization at wave 1* can be found in Tables 17 and 18. In both instances, primary caregivers were asked how true a number of statements were regarding their children demonstrating symptoms of withdrawal, somatic complaints, anxiety/depression, aggression, and delinquency, in the prior six months. In terms of internalization, about a quarter of caregivers reported that it was somewhat or very true that their children demonstrated one or more symptoms of withdrawal (22.3%) and one or more symptoms of anxiety/depression (22.4%). More than one-in-ten caregivers said the same about their somatic complaints (15.1%). As for externalization, approximately one-third of caregivers (32.3%) indicated that it was somewhat or very true that their children show signs of one or more symptoms of aggression while nearly one-in-five (17.0%) agreed regarding one or more symptoms of delinquency. A confirmatory factor analysis of internalization and externalization at Wave 1 is presented in the next section.

Table 17: Internalizing Problems at Wave 1

Survey items	n	Not true	Somew hat true	Very true	Operational Definition
Withdrawn					
Prefers to be Alone	1,620	76.3%	16.7%	7.0%	would rather be alone than with others
Refuses to Talk	1,621	82.7%	13.9%	3.4%	refuses to talk
Secretive	1,619	60.2%	25.4%	14.4%	secretive, keeps things to self
Shy	1,621	54.2%	35.2%	10.6%	shy or timid
Underactive	1,621	84.5%	11.7%	3.8%	underactive/slow moving/lacks energy
Unhappy	1,621	86.7%	12.0%	1.3%	unhappy, sad, or depressed
Withdrawn	1,620	92.4%	6.6%	1.0%	withdrawn/doesn't get involved with others
Stares Blankly	1,621	90.8%	7.5%	1.7%	stares blankly
Sulks	1,619	71.5%	20.9%	7.6%	sulks a lot
Somatic Complaints					
Dizzy	1,621	79.9%	14.2%	5.9%	feels dizzy
Overtired	1,622	79.9%	14.2%	5.9%	overtired
Aches/Pains	1,615	88.1%	10.2%	1.7%	aches/pains without medical cause
Headaches	1,620	75.5%	21.0%	3.5%	headaches without medical cause
Nausea	1,620	91.8%	7.2%	1.0%	nausea/feels sick without medical cause
Eye Problems	1,620	85.0%	9.8%	5.2%	problems with eyes without medical cause
Rashes	1,620	89.2%	8.1%	2.7%	rashes/skin problems without medical cause
Stomach Aches	1,620	80.4%	16.9%	2.7%	stomach aches without medical cause
Vomiting	1,620	94.1%	5.4%	0.5%	vomiting without medical cause
Anxious / Depressed					
Lonely	1,622	75.5%	17.3%	7.2%	complains of loneliness
Cries a Lot	1,622	79.4%	14.4%	6.2%	cries a lot
Fearful	1,614	84.9%	11.5%	3.6%	fears might think or do something bad

Survey items	n	Not true	Somew hat true	Very true	Operational Definition
Perfectionist	1,610	62.0%	24.1%	13.9%	feels he/she has to be perfect
Feels Unloved	1,621	75.3%	19.4%	5.3%	feels that no one loves him/her
Paranoid	1,618	86.8%	10.1%	3.1%	feels others are out to get him/her
Feels Worthless	1,618	90.7%	7.8%	1.5%	feels worthless or inferior
Nervous	1,619	70.4%	22.9%	6.7%	nervous, high-strung, or tense
Too Fearful	1,620	82.0%	14.6%	3.4%	too fearful or anxious
Feels Guilty	1,621	91.1%	7.7%	1.2%	feels too guilty
Self-Conscious	1,621	49.6%	36.3%	14.1%	self-conscious or easily embarrassed
Suspicious	1,621	76.7%	15.9%	7.4%	suspicious
Unhappy	1,621	86.7%	12.0%	1.3%	unhappy, sad, or depressed
Worries	1,620	74.9%	21.8%	3.3%	worries

Table 18: Externalization Problems at Wave 1

Survey items	n	Not true	Somew hat true	Very true	Operational Definition
Aggressive					
Argues	1,623	35.3%	38.0%	26.7%	argues a lot
Cruel to Others	1,622	82.5%	15.6%	1.9%	cruelty/bullying/meanness to others
Demands Attention	1,622	48.2%	32.3%	19.5%	demands a lot of attention
Destroys Things	1,622	85.2%	11.0%	3.8%	destroys things belonging to others
Disobedient at School	1,617	73.6%	20.8%	5.6%	disobedient at school
Fights	1,621	86.1%	10.2%	3.7%	gets in many fights
Screams	1,623	71.9%	18.8%	9.3%	screams a lot
Stubborn	1,621	46.6%	39.4%	14.0%	stubborn, sullen, or irritable
Moody	1,620	66.2%	26.0%	7.8%	sudden changes in mood/feelings
Teases Others	1,620	61.2%	26.4%	12.4%	teases a lot
Tantrums	1,621	61.6%	27.3%	11.1%	temper tantrums or hot temper
Threatens Others	1,619	94.4%	4.2%	1.4%	threatens people
Delinquent Behavior					
No Gilt	1,614	68.7%	22.9%	8.4%	doesn't feel guilty after misbehaving
Bad Crowd	1,618	84.8%	11.4%	3.8%	hangs out with others who get in trouble
Lies	1,619	68.5%	25.8%	5.7%	lying or cheating
Prefers Older Kids	1,620	64.6%	22.4%	13.0%	prefers being with older kids
Swears	1,618	83.4%	13.7%	2.9%	swearing or obscene language
Truant	1,620	98.4%	1.2%	0.4%	truancy, skips school
Runs Away	1,622	97.7%	1.8%	0.5%	runs away from home
Sets Fires	1,623	97.7%	1.5%	0.8%	sets fires

In Wave 3, primary caregivers were asked the same questions regarding internalization and externalization. Table 19 displays the results for *internalization at wave 3*. Nearly one-third of caregivers (30.2%) report that their child exhibit symptoms of withdrawn. Smaller, but still

meaningful, proportions of caregivers reported that their children exhibit one or more symptoms of anxiety/depression (27.1%) and somatic complaints (19.4%). Compared to Wave 1, this represents an increase for each subscale. As for *externalization at wave 3* (see Table 20), over one-in-three primary caregivers (35.7%) indicate that their child exhibits one or more symptoms of aggression. Just over 20 percent (21.9%) reported the same for signs of delinquency. Again, both of these subscales are reported at a higher frequency than at Wave 1. Similar to Wave 1, a CFA of internalization and externalization at Wave 3 are presented in the next section.

Table 19: Internalizing Problems at Wave 3

Survey items	**n**	**Not true**	**Somew hat**	**Very true**	**Operational Definition**
Withdrawn					
Prefers to be Alone	1,170	62.9%	29.2%	7.9%	would rather be alone than with others
Refuses to Talk	1,170	72.1%	23.3%	4.6%	refuses to talk
Secretive	1,170	48.0%	38.7%	13.3%	secretive, keeps things to self
Shy	1,171	60.5%	32.1%	7.4%	shy or timid
Underactive	1,148	75.9%	20.3%	3.8%	underactive/slow moving/lacks energy
Unhappy	1,169	73.0%	24.0%	3.0%	unhappy, sad, or depressed
Withdrawn	1,166	82.9%	15.2%	1.9%	withdrawn/doesn't get involved with others
Stares Blankly	1,169	86.2%	11.9%	1.9%	stares blankly
Sulks	1,162	66.8%	26.3%	6.9%	sulks a lot
Somatic Complaints					
Dizzy	1,168	90.2%	8.7%	1.1%	feels dizzy
Overtired	1,163	65.3%	27.9%	6.8%	overtired
Aches/Pains	1,170	82.1%	15.4%	2.5%	aches/pains without medical cause
Headaches	1,170	69.0%	26.8%	4.2%	headaches without medical cause
Nausea	1,171	85.8%	12.6%	1.6%	nausea/feels sick without medical cause
Eye Problems	1,171	82.9%	12.6%	4.5%	problems with eyes without medical cause

Survey items	n	Not true	Somew hat	Very true	Operational Definition
Rashes	1,171	85.1%	11.6%	3.3%	rashes/skin problems without medical cause
Stomach Aches	1,171	72.1%	24.4%	3.5%	stomach aches without medical cause
Vomiting	1,170	93.1%	6.2%	0.7%	vomiting without medical cause
Anxious / Depressed					
Lonely	1,170	73.8%	21.2%	5.0%	complains of loneliness
Cries a Lot	1,172	86.1%	10.7%	3.2%	cries a lot
Fearful	1,161	80.7%	16.4%	2.9%	fears might think or do something bad
Perfectionist	1,165	57.9%	29.9%	12.2%	feels he/she has to be perfect
Feels Unloved	1,169	74.2%	20.6%	5.2%	feels that no one loves him/her
Paranoid	1,166	80.5%	15.9%	3.6%	feels others are out to get him/her
Feels Worthless	1,170	86.7%	11.4%	1.9%	feels worthless or inferior
Nervous	1,166	69.0%	25.1%	5.9%	nervous, high-strung, or tense
Too Fearful	1,170	77.9%	18.4%	3.7%	too fearful or anxious
Feels Guilty	1,169	87.3%	11.6%	1.1%	feels too guilty
Self-Conscious	1,170	44.8%	43.3%	11.9%	self-conscious or easily embarrassed
Suspicious	1,169	72.5%	22.0%	5.5%	suspicious
Unhappy	1,169	73.0%	24.0%	3.0%	unhappy, sad, or depressed
Worries	1,168	56.5%	37.2%	6.3%	worries

Table 20: Externalization Problems at Wave 3

Survey items	n	Not true	Somew hat true	Very true	Operational Definition
Aggressive					
Argues	1,172	25.5%	46.3%	28.2%	argues a lot
Cruel to Others	1,172	77.7%	19.5%	2.8%	cruelty/bullying/meanness to others
Demands Attention	1,171	58.9%	29.6%	11.5%	demands a lot of attention
Destroys Things	1,172	88.3%	9.1%	2.6%	destroys things belonging to others
Disobedient at School	1,170	58.5%	35.8%	5.7%	disobedient at school
Fights	1,170	80.2%	15.4%	4.4%	gets in many fights
Screams	1,171	66.7%	26.1%	7.2%	screams a lot
Stubborn	1,169	47.8%	40.6%	11.6%	stubborn, sullen, or irritable
Moody	1,171	57.8%	34.2%	8.0%	sudden changes in mood/feelings
Teases Others	1,169	62.7%	29.2%	8.1%	teases a lot
Tantrums	1,171	60.0%	31.7%	8.3%	temper tantrums or hot temper
Threatens Others	1,171	87.8%	9.8%	2.4%	threatens people
Delinquent Behavior					
No Guilt	1,164	65.5%	28.1%	6.4%	doesn't feel guilty after misbehaving
Bad Crowd	1,166	80.3%	15.5%	4.2%	hangs out with others who get in trouble
Lies	1,169	66.8%	27.6%	5.6%	lying or cheating
Prefers Older Kids	1,165	62.7%	26.4%	10.9%	prefers being with older kids
Swears	1,169	69.0%	25.4%	5.6%	swearing or obscene language
Truant	1,159	87.8%	8.8%	3.4%	truancy, skips school
Runs Away	1,171	94.8%	4.3%	0.9%	runs away from home
Sets Fires	1,171	97.7%	2.2%	0.1%	sets fires

Multivariate Normality

The distribution of each variable used in the study is examined in order to check multivariate normality. Many estimation procedures used in SEM assume normal distributions

for continuous variables (Kline 2005; Raykov and Marcoulides 2006). Skewness and kurtosis are two ways to examine the distributions of these variables (Walker and Maddan 2008). Univariate skewness and kurtosis coefficients are zero when they are normally distributed. If a distribution has one side that is different from the other, it is skewed. Kurtosis is the extent to which cases are clustered around the measure of central tendency or in the tails of distributions (Walker and Maddan 2008). While there are few guidelines about how much non-normality is problematic, Kline (2005) argues that absolute values of a skew index greater than 3.0 could be described as extremely skewed and absolute values of the kurtosis over 10.0 might be extreme kurtosis.

In this study, skewness and kurtosis were determined using Stata 14.0. The results confirmed that the absolute value of the majority of the variables fell within the acceptable range for both skewness and kurtosis. Those items that had more than an acceptable range of skewness and kurtosis were related to internalization and externalization, including questions such as the child "feels others are out to get him/her" and the child engages in "swearing and obscene language." The reason that these and the other handful of mental health variables were out of the acceptable range is that the majority of primary caregivers reported their children do not engage in these particular behaviors. This means that the tail on the right side of the distribution for these variables was longer than the left side as the majority of the values lay to the left of the mean.

Bivariate Analysis

Before conducting a multivariate analysis, a bivariate analysis was conducted to examine the bivariate relationships between the independent and dependent variables. The current study employed Spearman's Rho (ρ), which estimates the existence of a relationship through statistical significance (Walker and Maddan 2008). To conduct a bivariate analysis, the mean scores for each concept were calculated based on prior research. For example, based on prior research, fear

of crime at Wave 1 was measured by four questions in the survey (i.e., fear of violence in the neighborhood, in home, in front of their apartment building or house, and at school or daycare). Table 21 displays the results of Spearman's Rho (ρ). In this study, race, gender, neighborhood diversity, and personal experiences with crime are treated as dichotomized variables. As such, white, male, neighborhood racial heterogeneity, as well as, having been the victim of a violent crime, having witnessed the violent victimization of another person, and having participated in a violent act, serve as reference groups. As demonstrated in the table, one or more hypotheses under each research question receive at least partial support.

First, the impact of personal experiences with violence (violent victimization, witnessing the violent victimization of others, and involvement in violence) on fearfulness of crime is mixed. The bivariate analysis findings indicate that violent victimization is positively and significantly related to fear of crime (Spearman's $\rho = .05$, $p<.10$) (supportive of $H_{1.1}$). This finding is generally supported by the literature (e.g., Baker and Mednick 1990; Alvarez and Bachman 1997; Wallace and May 2005; Swartz et al. 2011; May and Dunaway 2000; May 2001a; May et al. 2002; Melde 2009).

Witnessing violence, however, is not significantly associated with fear of crime (not supportive of $H_{1.2}$). While there is limited research on the impact of witnessing violence on fear of crime, there is evidence that co-victimization, or the experience of witnessing violence in the home or the neighborhood, can have psychological and behavioral impacts. Shakoor and Chalmers (1991) found, for instance, that children who had experienced the victimization of others tended to struggle with fear. Other research came to similar conclusions regarding the impact of witnessed victimization on fear or anxiety (e.g., Pynoos and Nader 1990; Richters and Martinez 1993a; Richters and Martinez 1993b; Osofsky et al. 1993; Cooley-Quille et al. 2001;

Margolin and Gordis 2000**;** Singer et al. 1995; Miller 2008; Nellis 2012). The results from the bivariate analysis of this study are not, however, supportive of such a finding.

Spearman's Rho (ρ) does indicate that involvement in violent crime is significantly associated with fear (Spearman's $\rho = -.10$, $p<.001$) (supportive of $H_{1.3}$). In other words, crime involvement may decrease fear of crime. This finding harkens back to studies with gangs, which found gang members to be less fearful of crime than non-gang members (e.g., Melde, Taylor, and Esbensen 2009; Lane and Fox 2012). However, while active gang members do not report high fear of crime levels, their proactive responses to potential victimization by rivals do suggest that they experienced fear at one time (Jankowski 1991). Qualitative studies have found that gang members do feel fear. This fear may be dampened, however, because an offender's lifestyle provides criminal knowledge, access to weapons, and peers who provide support against potential threats (Cobbina, Miller, and Brunson 2008; Lane and Fox 2012).

Second, the results suggest that personal experiences with violence are generally associated with mental health outcomes. Spearman's Rho (ρ) indicates that violent victimization at Wave 2 is positively associated with internalization at Wave 3 (Spearman's $\rho = .08$, $p<.01$) (supportive of $H_{2.1}$) as well as externalization at Wave 3 (Spearman's $\rho = .15$, $p<.001$) (supportive of $H_{2.4}$). That is, victims of violence may be more likely to experience internalization and externalization. These findings are generally consistent with previous literature which has found a positive association between personal victimization and internalization (e.g., Fantuzzo et al. 1991; Fergusson, Horwood, and Lynskey 1996; Wolfe et al. 2001; Mrug and Windle 2010) as well as externalization (e.g., Lansford et al. 2002; Salzinger et al. 2002; Renner and Boel-Studt 2017).

As for the impact of having witnessed the violent victimization of another person, the results were more mixed. While witnessing someone be violently victimized at Wave 2 was positively associated with externalization at Wave 3 (Spearman's $\rho = .12$, $p<.001$) (supportive of $H_{2.5}$), the relationship with internalization was not significant (not supportive of $H_{2.2}$). The former finding is in congruence with past literature which has found exposure to violence in the community and the home to be predictive of externalizing problems, including aggression and delinquency (e.g., Jenkins and Bell 1994; Cooley et al. 1995; Evans, Davis, and DiLillo 2008). The latter finding is, however, less consistent with past findings. For instance, in their review of the literature, Holt and colleagues (2008) found that children and adolescents who are exposed to violence are at enhanced risk for exhibiting emotional problems. The finding from this study's bivariate analysis is instead reminiscent Farrell and Bruce's (1997) finding that exposure to violence does not predict emotional distress, potentially because of desensitization.

The impact of involvement in violent acts on mental health was consistent with past research. Involvement in violence was found to significantly predict internalization (Spearman's $\rho = .05$, $p<.10$) (supportive of $H_{2.3}$) and externalization (Spearman's $\rho = .16$, $p<.001$) (supportive of $H_{2.6}$). Although research on this topic is relatively limited, there are indications that involvement in delinquency and crime may influence mental health. Research on bullying has found, for instance, that children reported to be both bullies and victims have a higher likelihood of experiencing mental health problems (e.g., Gini and Pozzoli 2009; Lereya et al. 2015). Gang research has likewise found that gang members have an increased risk for problems with internalizing (e.g., Li et al. 2002; Herrmann, McWhirter, and Sipsas-Herrmann 1997).

Third, in addition to the findings addressed above, there is some evidence that fear of crime is related to mental health. While this does not address the link between personal

experiences with crime, fear of crime, and mental health, it suggests that one of the requirements for mediation is in place. More specifically, fear of crime at Wave 2 is significantly associated with internalization at Wave 3 (Spearman's $\rho = .06$, $p<.05$) (supportive of $H_{3.1}$ - $H_{3.3}$). In other words, adolescents who are more fearful of crime may be more likely to experience internalization at a later point in life. However, fear of crime is not significantly related to externalization (not supportive of $H_{3.4}$ - $H_{3.6}$). Structural regression modeling will be required to evaluate the ability of fear of crime to mediate the relationship between personal experiences with crime and internalization.

Of course, the bivariate relationships reported here should be carefully examined via multivariate analysis to see the relative relationships and directions after controlling for effects of other predictions and measuring for latent variables.

Table 21: Bivariate Analysis: Spearman's Rho (ρ) (n = 1,023)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
1. VV2	1																
2. WV2	.34***	1															
3. VCI2	.32***	.32***	1														
4. FV1	.04	.06*	.00	1													
5. FV2	.05†	.04	-.10***	.37***	1												
6. Int1	.08**	.07*	.04	.09***	.09**	1											
7. Ext1	.17***	.18***	.16***	.08***	.03	.55***	1										
8. Int3	.08**	-.00	.05†	.12***	.06*	.47***	.39***	1									
9. Ext3	.15***	.12***	.16***	.09**	.04	.32***	.55***	.65***	1								
10. N_SES1	-.01	-.07**	-.05†	-.22***	-.21***	-.10***	-.12***	-.10**	-.11**	1							
11. N_Het1	-.00	-.03	-.06*	.02	.04	.02	-.02	.07*	.02	-.04†	1						
12. White	-.02	-.12***	-.06*	-.20***	-.24***	-.06*	-.04	-.06†	-.02	.33***	-.06*	1					
13. Male	.11***	.11***	.13***	-.03	-.07**	-.02**	.08**	-.10***	-.03	.01	.01	.01	1				
14. Age1	.08**	.19***	.18***	-.16***	-.18***	.01	-.02	.10***	.06*	.00	.00	.01	-.01	1			
15. SES1	-.00	-.05†	-.00	-.25***	-.28***	-.16***	-.08**	-.14***	-.08**	.38***	-.07**	.30***	.01	-.04†	1		
16. N_Dis1	.00	.09***	.02	.23***	.23***	.10***	.10***	.07***	.07*	.08**	-.82***	.02	-.35***	-.02	-.41***	1	
17. N_CE1	-.01	-.04	.01	-.24***	-.21***	-.11***	-.07**	-.10***	-.08**	.72***	-.14***	.30***	-.02	.02	.37***	-.84***	1

*** p<.001, ** p<.01, *p<.05, † p<.10

Note: VV2 = Violently Victimized at Wave 2, WV2 = Witnessed Victimization at Wave 2; VCI = Violent Crime Involvement at Wave2, FV1 = Fear of Violence at Wave 1, FV2 = Fear of Violence at Wave 2, Int1 = Internalization at Wave 1, Ext1 = Externalization at Wave 1, Int3 = Internalization at Wave 3, Ext3 = Externalization at Wave 3, N_SES1 = Neighborhood SES at Wave 1, N_Het1 = Neighborhood Racial Heterogeneity at Wave 1, N_Dis1 = Neighborhood Disorder at Wave 1, N_CE1 = Neighborhood Collective Efficacy at Wave 1

Multicollinearity Diagnosis

Multicollinearity occurs when two or more predictor variables in regression analysis are highly correlated (Walker and Maddan 2008). Simple bivariate correlation between explanatory variables is not sufficient for determining the extent of collinearity (Bollen 1989). Multicollinearity is present when exogenous variables are correlated with each other. A high degree of multicollinearity can be problematic because it can influence significance tests, standardized coefficients, and unstandardized coefficients (Walker and Madden 2008). As Kline (2005) noted, multicollinearity can sometimes occur because two seemingly separate variables are actually measuring the same concept (Kline 2005). Variance inflation factor (VIF) and tolerance are useful tools to detect multicollinearity problems (Mansfield and Helms 1981). O'brien (2007) argued that multicollinearity might be a problem if the tolerance is less than .02 and/or the VIF is greater than five (5). The formula for tolerance and VIF is

$$Tolerance\ (i) = 1 - R_i^2, VIF\ (i) = 1/tolerance$$

All exogenous variables in this study were checked for multicollinearity problems. Stata 14.0 was used for multicollinearity diagnosis. The results indicate that one exogenous variable is possibly indicative of multicollinearity: neighborhood disorder (VIF = 5.45, Tolerance = .18). When this variable is removed, there are no longer indications of multicollinearity among the exogenous variables. As a result, neighborhood disorder is removed as a predictor in the below models.

Structural Equation Modeling

Structural equation modeling (SEM) is a statistical methodology commonly used in the social sciences (Raykov and Marcoulides 2006). SEM takes into account measurement errors and usually includes latent variables. Techniques used in SEM techniques include path analysis,

confirmatory factor analysis, and structural regression modeling. In this study, confirmatory factor analysis and structural regression models are used because these techniques allow for the measurement and analysis of critical latent variables (Kline 2005).

Outcome of Confirmatory Factor Analysis

In the next section, measurement models are tested to evaluate the construct validity of each latent variable using confirmatory factor analysis (CFA).

Fear of Crime at Wave 1

A model of fear of crime at Wave 1 is tested to estimate fear in four different contexts. Figure 5 provides a graphical representation of the model (E in the variable indicates measurement error). The indicators are fear of being hurt by violence "in your neighborhood," "in your home," "in front of your apartment building or house," and "at school or daycare."

Figure 5: Final Measurement Model of Fear of Crime at Wave 1

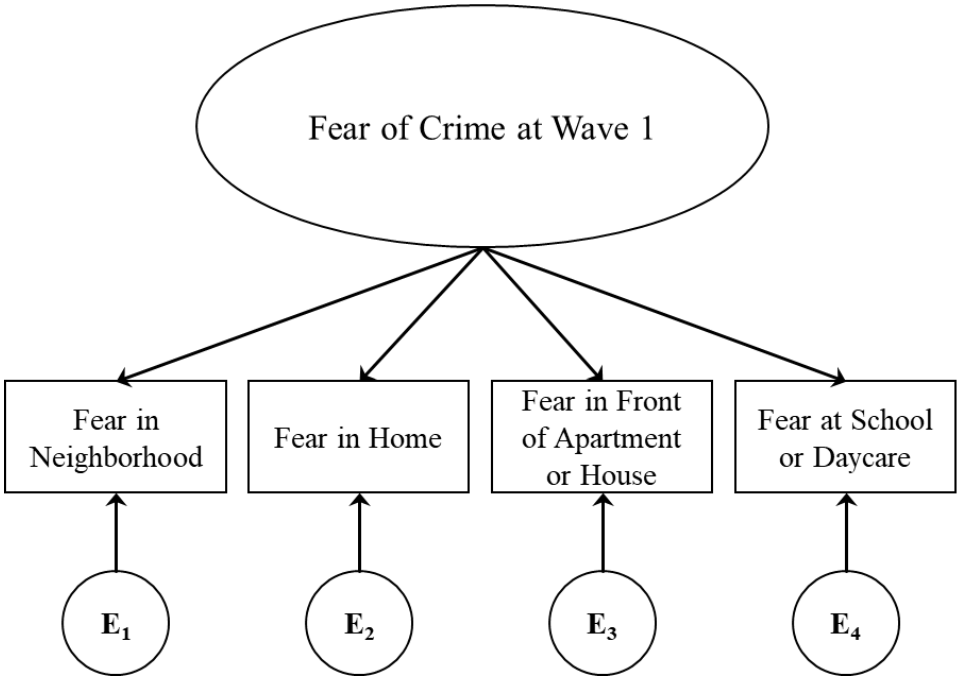


Table 22 shows the results of the confirmatory factor analysis of fear of crime at Wave 1. As shown, the four observed variables for this latent variable load relatively well. Standardized factor loadings are .65 (Fear in Neighborhood), .73 (Fear in Home), .50 (Fear in Front of Apartment or House), and .43 (Fear at School or Daycare). The R-square output indicates that Fear in Home (.54) explained more variance of fear of crime than the other three indicators: Fear in Neighborhood (.42), Fear in Front of Apartment or House (.25), and Fear at School or Daycare (.19).

Table 22: Estimates of Fear of Crime at Wave 1 Measurement Model

Component Fit	**Unstandardized Value**	**Standardized Value**	**R-square**
Loadings			
Fear in Neighborhood	1.00 (fixed)	.65***	.42
Fear in Home	1.14***	.73***	.54
Fear in Front of Apartment or House	.63***	.50***	.25
Fear at School or Daycare	.69***	.43***	.19
Variances			
error.Fear in Neighborhood	.14	.58	-
error.Fear in Home	.11	.46	-
error.Fear in Front of Apartment or House	.12	.75	-
error.Fear at School or Daycare	.20	.81	-
Fear of Crime at Wave 1	.10***	1.00 (fixed)	-
Model Fit			
Chi-Square	8.77*	TLI	.98
Adjusted Chi-Square	4.39	CFI	.99
RMSEA	.05		

***p<.001, **p<.01, *p<.05

Note: RMSEA = Root Mean Square Error of Approximation, TLI = Tucker-Lewis Index, CFI = Comparative Fit Index

Chi-square is statistically significant ($\chi^2 = 8.77$, $p<.05$), but the other component fit statistics of this model are acceptable. Adjusted Chi-square (4.39), RMSEA (.05), TLI (.98), and CFI (.99) are good. Overall, the results from the CFA confirm that the measurement model of fear of crime at Wave 1 has an acceptable level of construct validity among observed variables and the latent structure.

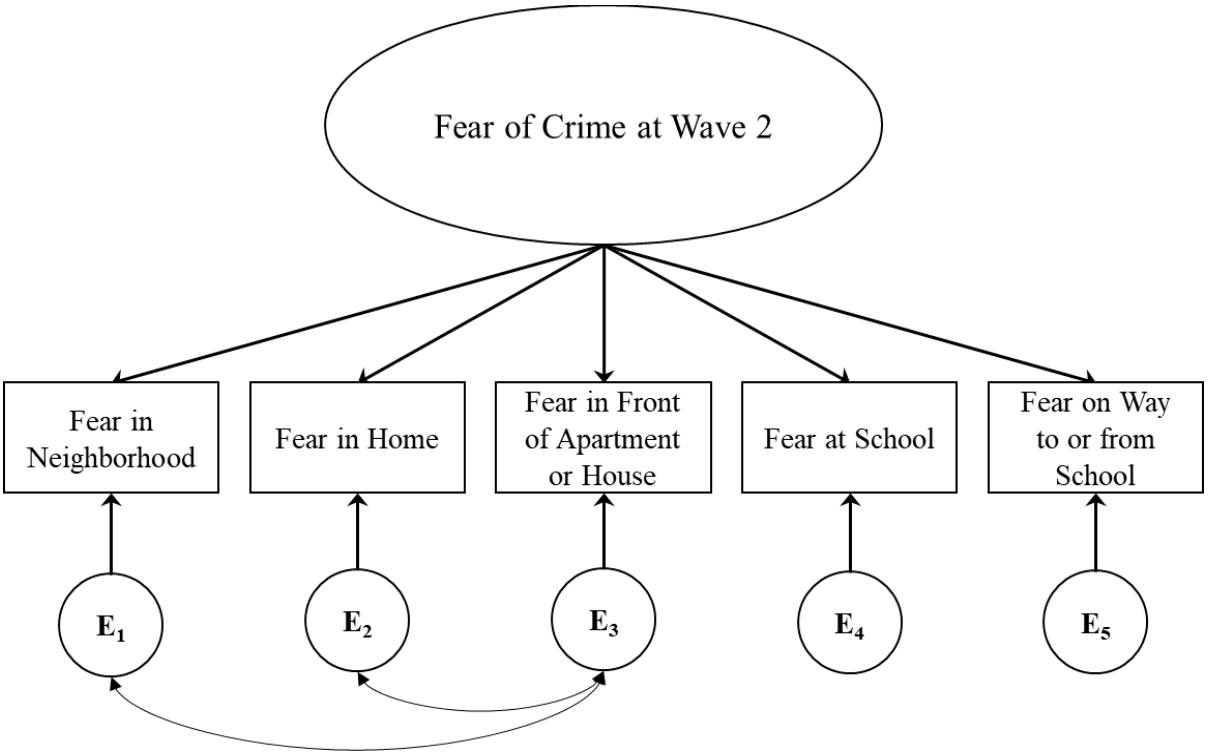
Fear of Crime at Wave 2

A model of fear of crime at Wave 2 is tested to estimate fear in the second Wave. The five indicators are fear of being hurt by violence "in your neighborhood," "in your home," "in front of your apartment building or house," "at school," and "on your way to or from school."

The original fear of crime at Wave 2 measurement model is not acceptable ($\chi^2 = 140.32$, $p<.001$; adjusted Chi-square = 28.06; RMSEA = .15; TLI = .86; CFI = .93). Modification indices suggest a possible change: allowing fear inside one's home (Fear in Home) to be correlated with fear in front of one's apartment or house (Fear in Front of Apartment or House). This pairing makes intuitive sense, as fear of violence is likely similar inside and immediately outside a person's home. Again, however, model fit is not acceptable ($\chi^2 = 66.91$, $p<.001$; adjusted Chi-square = 16.73; RMSEA = .11; TLI = .92; CFI = .97). The modification indices recommend allowing fear in one's neighborhood (Fear in Neighborhood) and fear in front of one's apartment or house (Fear in Front of Apartment or House) to be paired. Again, considering the geographic proximity, this pairing makes intuitive sense.

The resulting model is represented in Figure 6, and its findings are shown in Table 23. While Chi-square ($\chi^2 = 10.31$, $p<.05$) is still significant, the adjusted Chi-square (3.44) falls within an acceptable range as do RMSEA (.04), TLI (.99), and CFI (1.0). The factors loadings for Fear in Neighborhood, Fear in Home, Fear in Front of Apartment or House, Fear at School,

Figure 6: Final Measurement Model of Fear of Crime at Wave 2



and Fear on the Way to or from School, are .66, .59, .57, .67, and .77, respectively. The R-square output indicates that Fear on the Way to or from School (.59) explained more variance of fear of crime than Fear in Neighborhood (.44), Fear in Home (.35), Fear in Front of Apartment or House (.33), and Fear at School (.45). In sum, the results of the measurement model indicate that the fear of crime at Wave 2 model is acceptable with high levels of construct validity among observed variables and the latent construct.

Table 23: Estimates of Fear of Crime at Wave 2 Measurement Model

Component Fit	**Unstandardized Value**	**Standardized Value**	**R-square**
Loadings			
Fear in Neighborhood	1.00 (fixed)	.66	.44
Fear in Home	.93***	.59	.35
Fear in Front of Apartment or House	.88***	.57	.33
Fear at School	.99***	.67	.45
Fear on Way to or From School	1.23***	.77	.59
Variances			
error.Fear in Neighborhood	.29	.56	-
error.Fear in Home	.36	.65	-
error.Fear in Front of Apartment or House	.37	.67	-
error.Fear at School	.28	.55	-
error.Fear on the way to or from School	.24	.41	-
Fear of Crime at Wave 2	.23***	1.00 (fixed)	-
Covariances			
error.Fear in Home with error.Fear in Front of Apartment or House	.08***	.24***	-
error.Fear in Neighborhood with error.Fear in Front of Apartment or House	.12***	.34***	-
Model Fit			
Chi-Square	10.31*	TLI	.99
Adjusted Chi-Square	3.44	CFI	1.00
RMSEA	.04		

***p<.001, **p<.01, *p<.05

Internalizing and Externalizing Problems at Wave 1

A CFA model is tested on internalization and externalization at Wave 1. As noted previously, the raw scores for each of the five syndrome subscales are converted to norm-referenced T-scores. Figure 7 provides a graphical representation of the model. The indicators for internalization are withdrawal, somatic complaints, and anxiety/depression, while the indicators of externalization are aggression and delinquent behavior.

Figure 7: Final Measurement Model of Internalization and Externalization at Wave 1

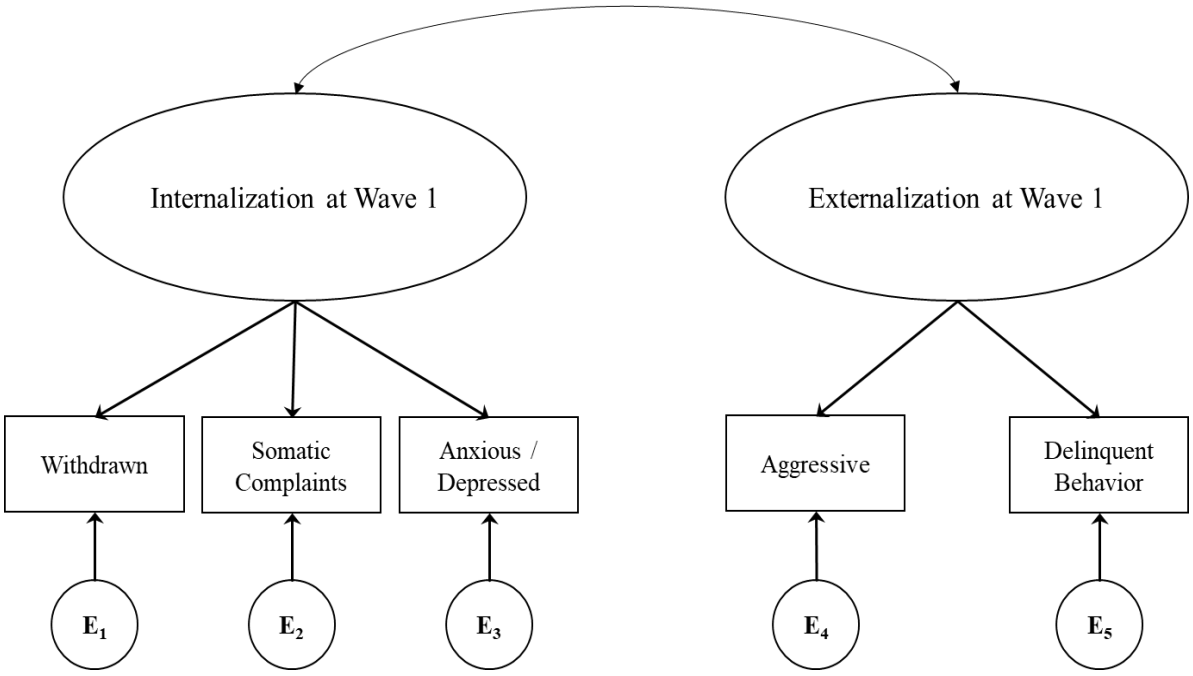


Table 24 shows the results of the confirmatory factor analysis. As indicated, the three observed variables for internalization load well. The standardized factor loadings are .73 (Withdrawn), .50 (Somatic Complaints), and .88 (Anxious/Depressed). The R-square output indicates that Anxious/Depressed (.79) explains more variance of internalization than Withdrawn (.54) or Somatic Complaints (.25). The findings for the observed variables for externalization are also shown. Both observed variables have high standardized loading values: Aggressive (.90)

and Delinquent Behavior (.76). The former explains more variance (.81) than does the latter (.58).

Table 24: Estimates of Internalization and Externalization at Wave 1 Measurement Model

Component Fit	**Unstandardized Value**	**Standardized Value**	**R-square**
Loadings			
Withdrawn	1.00 (fixed)	.73***	.54
Somatic Complaints	.69***	.50***	.25
Anxious/Depressed	1.20***	.88***	.79
Aggressive	1.00 (fixed)	.90***	.81
Delinquent Behavior	.85***	.76***	.58
Variances			
error.Withdrawn	46.25	.46	-
error.Somatic Complaints	74.47	.75	-
error.Anxious Depressed	22.13	.22	-
error.Aggressive	19.30	.19	-
error.Deliquent Behavior	42.11	.42	-
Internalization at Wave 1	53.67***	1.00 (fixed)	-
Externalization at Wave1	80.64***	1.00 (fixed)	-
Covariance			
Internalization with Externalization	47.31***	.72***	-
Model Fit			
Chi-Square	13.63**	TLI	.99
Adjusted Chi-Square	3.41	CFI	1.00
RMSEA	.04		

***p<.001, **p<.01, *p<.05

The Chi-square is statistically significant ($\chi^2 = 13.63$, $p<.01$). However, the other fit statistics suggest that the model fit is good. Adjusted Chi-square is 3.41 while RMSEA is .04, TLI is .99, and CFI is 1.00. In all, the results from the CFA confirm that the measurement model of internalization and externalization at Wave 1 has an acceptable higher level of construct validity among observed variables and the latent structure.

Internalizing and Externalizing Problems at Wave 3

A model for internalization and externalization at Wave 3 is tested to estimate mental health. Again, the raw scores for each of the five syndrome subscales are converted to norm-referenced T-scores. As with these latent variables at Wave 1, the indicators for internalization are withdrawal, somatic complaints, and anxiety/depression, while the indicators of externalization are aggression and delinquent behavior.

Figure 8 provides a graphical representation of the model. Table 25 shows the results of the confirmatory factor analysis. For internalization, the three observed variables have strong standardized loadings. The loadings are .82 (Withdrawn), .56 (Somatic Complaints), and .88 (Anxious/Depressed). Harkening back to findings from Wave 1, the R-square output indicates that Anxious/Depressed (.78) explains more variance of internalization than Withdrawn (.68) or Somatic Complaints (.32). For externalization, the observed variables also load well. The standardized loading for Aggressive is .93, and the standardized loading for Delinquent Behavior is .74. Again, Aggressive explains more variance of externalization (.86) than Delinquent Behavior (.55).

Figure 8: Final Measurement Model of Internalization and Externalization at Wave 3

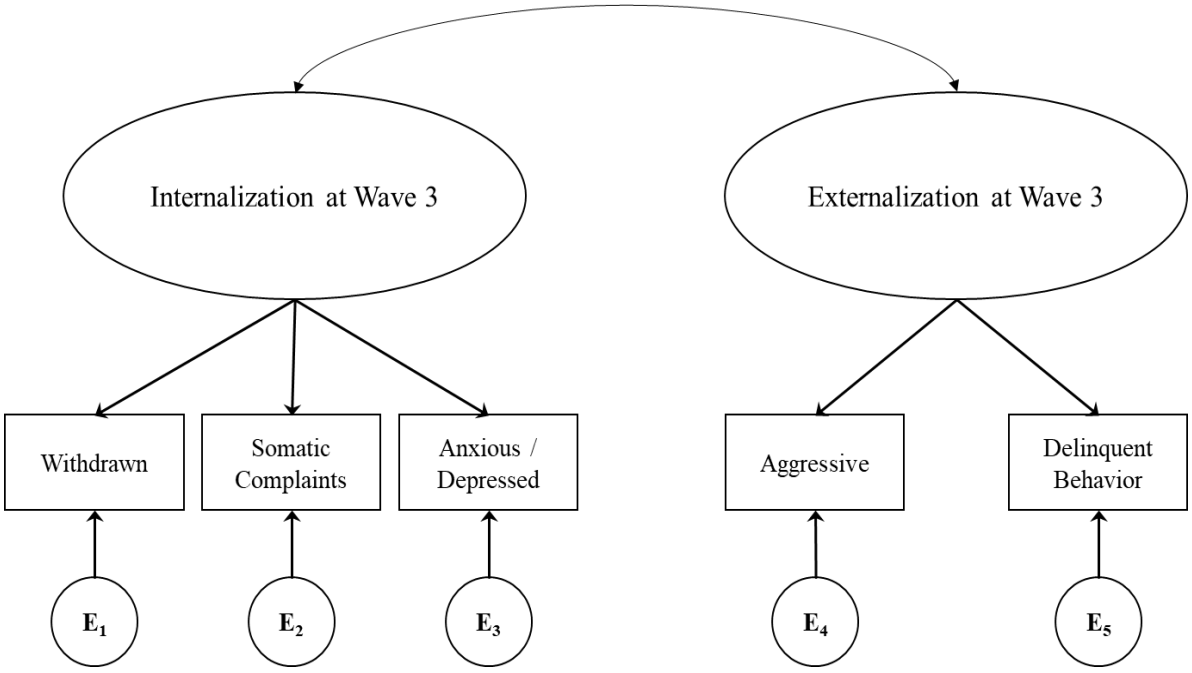


Table 25: Estimates of Internalization and Externalization at Wave 3 Measurement Model

Component Fit	**Unstandardized Value**	**Standardized Value**	**R-square**
Loadings			
Withdrawn	1.00 (fixed)	.82***	.68
Somatic Complaints	.68***	.56***	.32
Anxious/Depressed	1.07***	.88***	.78
Aggressive	1.00 (fixed)	.93***	.86
Delinquent Behavior	.80***	.74***	.55
Variances			
error.Withdrawn	32.22	.32	–
error.Somatic Complaints	68.22	.68	–
error.Anxious/Depressed	21.98	.22	–
error.Aggressive	13.79	.14	–
error.Delinquent Behavior	44.86	.45	–
Internalization at Wave 3	67.68***	1.00 (fixed)	–
Externalization at Wave3	86.12***	1.00 (fixed)	–
Covariance			
Internalization with Externalization	57.64***	.75***	–
Model Fit			
Chi-Square	5.87	TLI	1.0
Adjusted Chi-Square	1.47	CFI	1.0
RMSEA	.02		

***p<.001, **p<.01, *p<.05, †<.10

The Chi-square is not statistically significant ($\chi^2 = 5.87$, p>.10). Additionally, the other component fit statistics of this model are good, including the adjusted Chi-square (1.47), RMSEA (.02), TLI (1.0), and CFI (1.0). In all, the results from the CFA confirm that the measurement model of internalization and externalization at Wave 3 has an acceptable level of construct validity.

Results of Structural Regression Model

In the next section, structural regression models are conducted to test the hypotheses of this study. More specifically, the first model examines the influence of personal experiences with crime on fear of crime; the second model explores the influence of personal experiences with

violent crime on mental health; and, the third model tests the ability of fear of crime to mediate the relationship between personal experiences with violence and mental health.[5]

Personal Experiences with Violent Crime and Fear of Crime

This study's first structural regression model evaluates the influence of personal experiences with violence at Wave 2 on fear of crime at Wave 2, controlling for individual- and neighborhood-level factors as well as fear of crime at Wave 1. The resulting model fit is acceptable (see Table 26). While Chi-square is significant (χ^2 = 256.9, p<.001), the other variables fall within the acceptable threshold levels: adjusted Chi-square (2.64), RMSEA (.03), TLI (.94), and CFI (.96).

Table 26: Model Fit Indices for Structural Regression Model of Personal Experiences with Violence on Fear of Crime

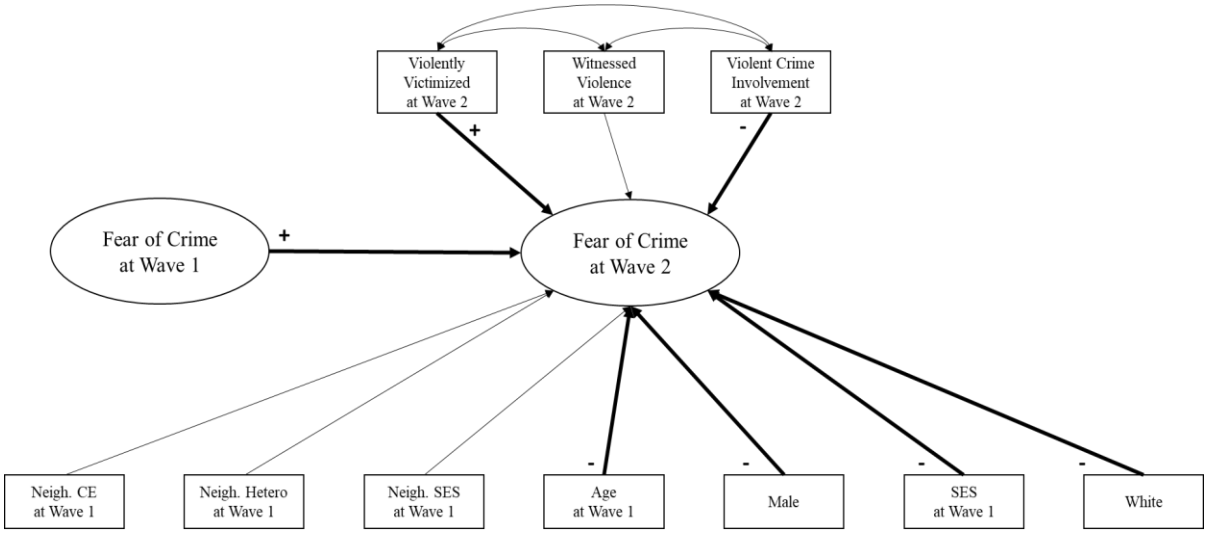
	Structural Regression Model	**Acceptable Threshold Level**
Chi-Square (p-value)	256.91 (.000)	P value (p>.05)
Adjusted Chi-Square	2.64	2.0 to 5.0
RMSEA	.03	Values less than .10
TLI	.94	Values greater than .80
CFI	.96	Values greater than .90

Note: RMSEA = Root Mean Square Error of Approximation, TLI = Tucker-Lewis Index, CFI = Comparative Fit Index

Figure 9 shows the model, and Table 27 reports the results. Fear of crime at Waves 1 and 2 are the latent variables, whereas the other variables are observed. The predictors explained 76.2 percent of the variance in fear of crime at Wave 2.

[5] Due to the nature of the Longitudinal Cohort Study (i.e., all adolescent respondents lived in 1 of 80 neighborhoods at Wave 1), it is possible that this clustering of respondents could impact the models' findings. To take this into account, all models were run with and without the cluster correction option. As results were nearly identical and the clustering option does not allow for the evaluation of most model fit statistics, the results presented below are those run without the clustering option.

Figure 9: Personal Experiences with Violence on Fear of Crime



Note: Significant paths shown in bold

Table 27: Standardized Regression Coefficients for Personal Experiences with Violence on Mental Health (n = 1,649)

	Fear of Crime at Wave 2
Violent Victimization at Wave 2	.08**
Witnessed Violence at Wave 2	.04
Violent Crime Involvement at Wave 2	-.12***
Fear of Crime at Wave 1	.37***
Age at Wave 1	-.17***
Male	-.08**
SES at Wave 1	-.16***
White	-.10**
Neighborhood Collective Efficacy at Wave 1	-.01
Neighborhood Heterogeneity at Wave 1	.04
Neighborhood Socioeconomic Status at Wave 1	.02

***p<.001, **p<.01, *p<.05, †<.10

Influence of Personal Experiences with Crime on Fear of Crime

Of the three variables measuring personal experiences with violence at Wave 2, two are found to influence fear of crime at Wave 2 in a statistically significant manner. Experiencing violent victimization is associated with a significant increase in fear ($\beta = .08$, $p<.01$) (supportive of $H_{1.1}$). While the literature has been mixed, this finding falls in line with past research which

has found that being personally victimized is associated with higher levels of fear of crime (e.g., Baker and Mednick 1990; Alvarez and Bachman 1997; Schreck and Miller 2003; Wallace and May 2005; Swartz et al. 2011; Melde 2009).

With regards to witnessing the victimization of others, it is not associated with a significant corresponding change in fear of crime (not supportive of $H_{1.2}$). As previously discussed, the literature has relatively limited findings on the relationship between witnessing the victimization of others and fear of crime. The research that has been conducted suggests that co-victimization can have an impact on the fear experienced by children and adolescents (e.g., Shakoor and Chalmers 1991; Pynoos and Nader 1990; Richters and Martinez 1993a; Richters and Martinez 1993b; Osofsky et al. 1993; Cooley-Quille et al. 2001; Margolin and Gordis 2000; Singer et al. 1995; Miller 2008; Nellis 2012). The results from this study are not, however, supportive of this finding.

Finally, involvement in crime is found to have a significant, negative impact on fear (β = -.12, $p<.001$) (supportive of $H_{1.3}$). In general, this finding is consistent with past literature. Melde, Esbensen, and Taylor (2009) found, for instance, that gang members who were self-reported offenders reported low levels of fear. Similarly, Lane and Fox (2012) found in their study of jail inmates that gang members reported being less fearful of crime than those not affiliated with criminal gangs. It is possible that involvement in crime actually decreases fear because it is better understood by this segment of the population. In sum, then, the first model is supportive of $H_{1.1}$ and $H_{1.3}$, but not $H_{1.2}$.

Influence of Control Variables on Fear of Crime

All of the individual-level control variables are found to influence fear at Wave 2. Age is negatively related to fear (β = -.17, $p<.001$), suggesting that older adolescents are less fearful

than are younger adolescents. Compared to females, males are less likely to exhibit fear (β = -.08, $p<.01$). Socioeconomic is negatively associated with fear of crime (β = -.16, $p<.001$). Compared to adolescents of color, white adolescents report being less fearful (β = -.10, $p<.01$). As may be anticipated, fear of crime at Wave 1 is positively related to fear of crime at Wave 2 (β = .37, $p<.001$).

Conversely, none of the neighborhood-level control variables is found to influence fear. More specifically, neighborhood heterogeneity, socioeconomic status, and collective efficacy are not predictive of fear of crime at Wave 2. These findings suggest that individual-level factors are more meaningful in terms of fear than are neighborhood-level factors.

Personal Experiences with Violent Crime and Mental Health

The study's second structural regression model, which tests the influence of personal experiences with violence on mental health, is found to have a statistically significant latent construct for each latent variable. However, two model fit indices are out of the acceptable range: Chi-square is statistically significant and Adjusted Chi-square is 6.2. The modification indices recommend allowing somatic complaints at Wave 1 and Wave 3 to be correlated as well as allowing withdrawal at Wave 1 and Wave 3 to be correlated. Beyond the modification indices recommending the changes, these pairings make intuitive sense. That is, it is likely that symptoms of sleep problems and withdrawal at Wave 1 are correlated with these same symptoms at Wave 3.

After the modification, model fit—except for Chi-square—is now acceptable. Table 28 provides the model fit indices and acceptable threshold levels. Chi-square remains statistically significant, but the adjusted Chi-square is now 4.70. Other fit indices fell within the acceptable range (RMSEA = .05, TLI = .94, CFI = .96).

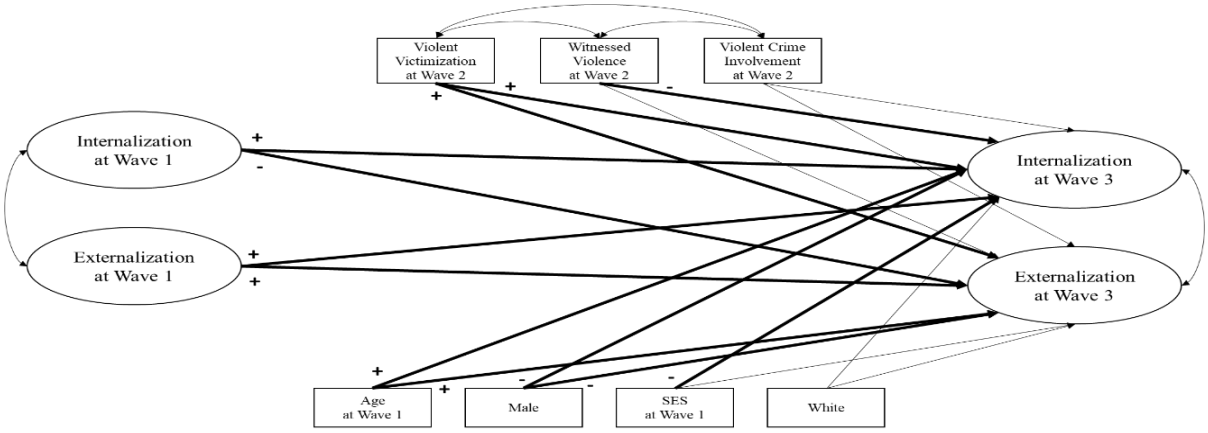
Table 28: Model Fit Indices for Structural Regression Model for Personal Experiences with Violence on Mental Health

	Structural Regression Model	**Acceptable Threshold Level**
Chi-Square (p-value)	324.4 (.000)	P value (p>.05)
Adjusted Chi-Square	4.70	2.0 to 5.0
RMSEA	.05	Values less than .10
TLI	.94	Values greater than .80
CFI	.96	Values greater than .90

Note: RMSEA = Root Mean Square Error of Approximation, TLI = Tucker-Lewis Index, CFI = Comparative Fit Index

Figure 10 shows the model for evaluating the influence of personal experiences with crime at Wave 2 on mental health at Wave 3, controlling for mental health at Wave 1 as well as age, gender, socioeconomic status, and race. Table 29 reports the results of the model. Internalization and externalization at Waves 1 and 3 are the latent variables, whereas the others are observed variables. The predictors explained 35.3 percent of the variance in internalization at Wave 3 and 53.9 percent of the variance in externalization at Wave 3.

Figure 10: Personal Experiences with Violence on Mental Health



Note: Significant paths shown in bold

Table 29: Standardized Regression Coefficients for Personal Experiences with Violence on Mental Health (n = 1,649)

	Internalization at Wave 3	Externalization at Wave 3
Violent Victimization at Wave 2	.08*	.06*
Witnessed Violence at Wave 2	-.10**	-.04
Violent Crime Involvement at Wave 2	-.00	.04
Internalization at Wave 1	.32***	-.30***
Externalization at Wave 1	.28***	.90***
Age at Wave 1	.13***	.07**
Male	-.10***	-.10***
SES at Wave 1	-.06*	-.04
White	.00	.01

***p<.001, **p<.01, *p<.05, †<.10

Influence of Personal Experiences with Crime on Mental Health

Internalization

Of the three variables measuring personal experiences with violence at Wave 2, only two significantly affect internalization at Wave 3. Experiencing violent victimization is found to positively influence internalization ($\beta = .08$, $p<.05$) (supportive of $H_{2.1}$) while witnessing the violent victimization of another person is associated with lower internalization scores ($\beta = -.10$, $p<.01$) (not supportive of $H_{2.2}$). Past research has found a positive association between personal victimization and internalization (e.g., Fantuzzo et al. 1991; Fergusson, Horwood, and Lynskey 1996; Wolfe, Scott, Wekerle, and Pittman 2001; Mrug and Windle 2010). Finding witnessing victimization to influence internalization in a negative direction is less expected, as the literature has generally found that children and adolescents who are exposed to violence are at enhanced risk for exhibiting emotional problems (Holt and colleagues 2008).

The influence of crime involvement is not significantly related to internalization (not supportive of $H_{2.3}$). As previously noted, the literature has mostly ignored the impact of involvement in violence on mental health. There are studies focusing on bullies and gang

members which have found that involvement in violence is linked to later mental health problems (e.g., Hermman, McWhirter, and Sipsas-Herrmann 1997; Li et al. 2002; Gini and Pozzoli 2009; Lereya et al. 2015). Results of this study are, however, more in line with gang research by Madan, Mrug, and Windle (2011), who found that gang membership is not predictive of internalizing problems. In sum, then, the first model is supportive of $H_{2.1}$ and not supportive of $H_{2.2}$ or $H_{2.3}$.

Externalization

The findings were similarly mixed in terms of externalization. Violent victimization is a positive, significant predictor ($\beta = .06$, $p<.05$) (supportive of $H_{2.4}$). That is, those who have been violently victimized generally exhibit more externalization problems. This is consistent with the literature, which has found a positive association between personal victimization and externalization (e.g., Lansford et al. 2002; Salzinger et al. 2002; Renner and Boel-Studt 2017). Neither witnessed victimization (not supportive of $H_{2.5}$) nor crime involvement (not supportive of $H_{2.6}$) is found, however, to influence externalization. The former finding conflicts with past literature which has found exposure to violence in the community and the home to be predictive of externalizing problems, including aggression and delinquency (e.g., Jenkins and Bell 1994; Cooley et al. 1995; Evans, Davis, and DiLillo 2008). The latter finding is in disagreement with research that has found an association between bullies and gang members and mental health problems (e.g., Hermman, McWhirter, and Sipsas-Herrmann 1997; Li et al. 2002; Gini and Pozzoli 2009; Lereya et al. 2015). Overall, the model is supportive of $H_{2.4}$ and not supportive of $H_{2.5}$ or $H_{2.6}$.

Influence of Control Variables on Mental Health

Internalization

Nearly all of the control variables are found to influence internalization. Age is positively related to internalization ($\beta = .13$, $p<.001$), suggesting that older adolescents are more apt to experience internalizing problems. Compared to females, males are less likely to exhibit these problems ($\beta = -.10$, $p<.001$). Socioeconomic is negatively associated with internalization ($\beta = -.06$, $p<.05$). Compared to adolescents of color, white adolescents do not exhibit significantly different levels of internalization. Lastly, as may be expected, there appear to be strong relationships between internalization and externalization across the two Waves. Both internalization ($\beta = .32$, $p<.001$) and externalization ($\beta = .28$, $p<.001$) at Wave 1 significantly and positively influence internalization at Wave 3.

Externalization

Similarly, most of the control variables significantly influence externalization at Wave 3. Aging predicts higher levels of externalization ($\beta = .07$, $p<.01$). Males are found to generally have lower externalization scores than females ($\beta = -.10$, $p<.001$). Unlike internalization, SES is not a predictor. However, like internalization, race is not found to influence externalization significantly. Again, mental health at Wave 1 seems to influence mental health at Wave 3. That is, externalization at Wave 1 is very strongly and positively related to externalization at Wave 3 ($\beta = .90$, $p<.001$); internalization at Wave 1 is, however, a significantly negative predictor ($\beta = -.30$, $p<.001$) of internalization at Wave 3.

Personal Experiences with Violent Crime, Fear of Crime, and Mental Health

The final structural regression model evaluates the influence of personal experiences with crime at Wave 2 on mental health at Wave 3, with fear of crime at Wave 2 acting as a potential mediator. As with the previous models, a number of control variables are entered into the model,

including mental health and fear of crime at Wave 1 as well as individual- and neighborhood-level factors. The resulting model fit is acceptable (see Table 30). While Chi-square is significant (χ^2 = 711.37, p<.001), the other variables are good: adjusted Chi-square (2.61), RMSEA (.03), TLI (.95), and CFI (.96).

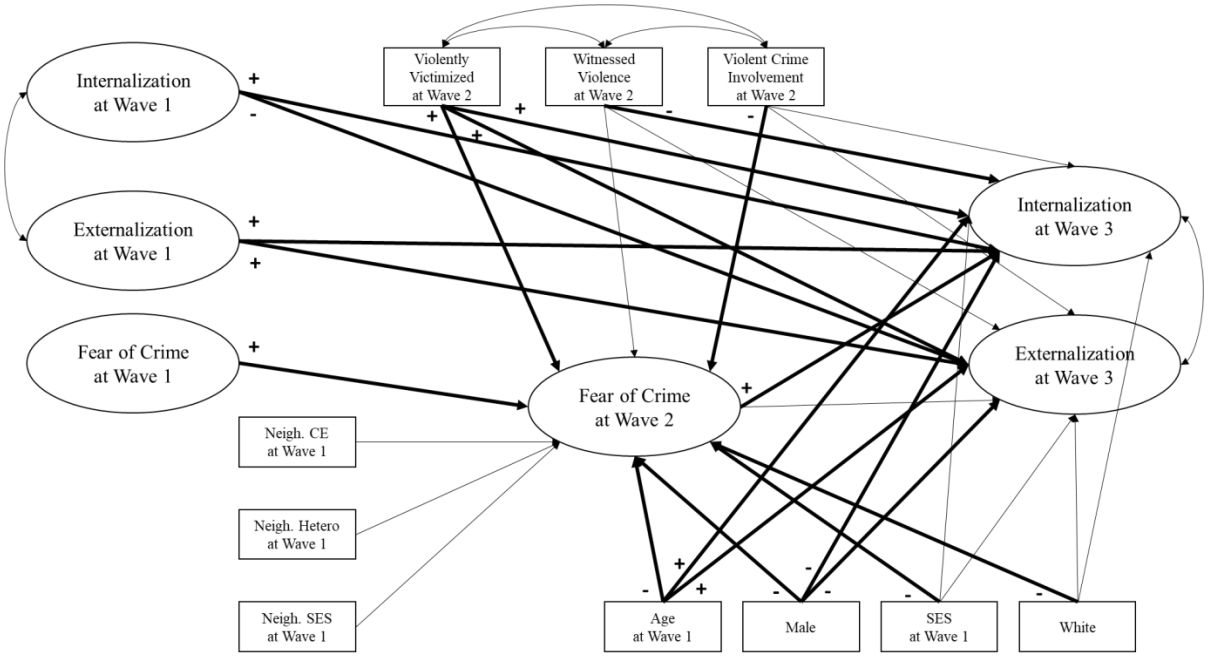
Table 30: Model Fit Indices for Structural Regression Model of Personal Experiences with Violence, Fear of Crime, and Mental Health

	Structural Regression Model	**Acceptable Threshold Level**
Chi-Square (p-value)	711.37 (.000)	P value (p>.05)
Adjusted Chi-Square	2.61	2.0 to 5.0
RMSEA	.03	Values less than .10
TLI	.95	Values greater than .80
CFI	.96	Values greater than .90

Note: RMSEA = Root Mean Square Error of Approximation, TLI = Tucker-Lewis Index, CFI = Comparative Fit Index

Figure 11 shows the model, and Table 31 reports the results. While most variables are observed, mental health at Waves 1 and 3 as well as fear of crime at Waves 1 and 2 are the latent variables. In all, 34.2 percent of the variance in fear of crime at Wave 2 was explained. Over half (54.3%) of the variance in externalization at Wave 3 was explained as was 35.8 percent of the variance in internalization at Wave 3.

Figure 11: Personal Experiences with Violence, Fear of Crime, and Mental Health



Note: Significant paths shown in bold

Table 31: Standardized Regression Coefficients for Personal Experiences with Violence, Fear of Crime, and Mental Health (n = 1,649)

	Fear of Crime at Wave 2	Internalization at Wave 3	Externalization at Wave 3
Violent Victimization at Wave 2	.08**	.07*	.05†
Witnessed Violence at Wave 2	.04	-.10**	-.04
Violent Crime Involvement at Wave 2	-.13***	.01	.05
Fear of Crime at Wave 1	.37***	-	-
Fear of Crime at Wave 2	-	.08*	.05
Age at Wave 1	-.17***	.15***	.09**
Male	-.08**	-.10***	-.10***
SES at Wave 1	-.17***	-.04	-.03
White	-.10**	.01	.02
Internalization at Wave 1	-	.32***	-.31***
Externalization at Wave 1	-	.28***	.90***
Neighborhood Collective Efficacy at Wave 1	-.01	-	-
Neighborhood Heterogeneity at Wave 1	.04	-	-
Neighborhood Socioeconomic Status at Wave 1	.02	-	-

***p<.001, **p<.01, *p<.05, †<.10

Baron and Kenny (1986) proposed that for a variable to serve as a mediator, the relationship between the predictor variable and dependent variable must be substantially reduced when the possible mediator is included. If the initially significant relationship between the predictor variable and the dependent variable becomes non-significant when the mediator is introduced, a complete mediation of the relationship is evidenced. Table 32 provides the standardized effects for the critical variables in the model. A common method for testing the significance of a mediated (or indirect) effect is Sobel's test of mediation (Sobel 1982). Results of Sobel's t-test are discussed below.

Table 32: Standardized Direct, Indirect, and Total Effects from Personal Experiences with Crime at Wave 2 to Mental Health at Wave 3 (n = 1,649)

	Direct Effect	Indirect Effect	Total Effect
Internalization at Wave 3			
Violent Victimization at Wave 2 -> Internalization at Wave 3	.07*	.01	.08*
Witnessed Violence at Wave 2 -> Internalization at Wave 3	-.10**	.00†	-.10**
Violent Crime Involvement at Wave 2 -> Internalization at Wave 3	.01	-.01†	-.00
Externalization at Wave 3			
Violent Victimization at Wave 2 -> Externalization at Wave 3	.05†	.01	.06†
Witnessed Violence at Wave 2 -> Externalization at Wave 3	-.04	.00	-.04
Violent Crime Involvement at Wave 2 -> Externalization at Wave 3	.05	-.01	.04

***p<.001, **p<.01, *p<.05, †<.10
[A] The significance levels shown here are for the unstandardized solution

Influence of Fear of Crime on Relationship between Personal Experiences with Crime and Mental Health

Internalization

The non-additive effects of the personal experiences with violence variables remain mostly consistent when comparing Table 29 to Table 32. That is, violent victimization (β = .07, p<.05) and witnessed victimization (β = -.10, p<.01) still significantly influence internalization: the former in a positive direction and the latter in a negative direction. Again, violent crime involvement is not found to have a direct effect on internalization. There does not appear to be an indication that fear of crime at Wave 2 mediates the relationships between personal experiences with violence and mental health. More specifically, the direct relationship between the predictors and mental health remain significant with no substantial change while the indirect effects are found to be not significant (p>.05). Results from Sobel's t-test likewise suggest that mediation is not present.

It is further possible to understand this finding by considering the proportion of the effect that is accounted for directly and indirectly. For the standardized results, the total effect of violent victimization on internalization at Wave 3 is .08. The direct component of this total effect is .07, so it can be said that .07/.08 = .875 or 87.5% of the effect of violent victimization on internalization at Wave 3 is direct, after controlling for witnessed violence, criminal involvement, and fear of crime at Wave 2 as well as the individual-level control variables. Thus, even after controlling for other critical variables, the majority of the effect of violent victimization on internalization is a direct effect. This is likewise true for the influence of witnessing victimization in which virtually all of the effect is direct. Such findings suggest that the third model is not supportive of $H_{3.1}$, $H_{3.2}$, or $H_{3.3}$.

Externalization

The findings are similar for externalization as, again, the influence of personal experiences with violence remains similar when comparing Tables 29 and 32. As with the first model, only violent victimization was found to predict externalization significantly ($\beta = .05$, $p<.10$). Neither witnessing the violent victimization of others and involvement in violent crime is not found to be significant predictors. While the p-value is lower with fear of crime at Wave 2 included in the model, the indirect effect of violent victimization on externalization is not significant. This suggests that fear of crime at Wave 2 does not mediate the relationship between violent victimization and externalizing problems. As with internalization, Sobel's t-test agrees that fear of crime is not mediating the association between personal experiences with violence and externalization.

In terms of the proportional effect, we again find that the direct effect is far more potent. That is, the total effect of violent victimization on externalization at Wave 3 is .06. The direct

component of this total effect is .05, so we can say that .05/.06 = .833 or 83.3% of the effect of violent victimization on externalization at Wave 3 is direct, net control variables. Thus, even after controlling for other critical variables, the majority of the effect of violent victimization on externalization direct. The same is true for the influence of witnessing victimization and crime involvement. In terms of the study's hypotheses, the third model does not support $H_{3.4}$, $H_{3.5}$, or $H_{3.6}$.

Summary

Table 33 compares hypotheses in this study and the results on the relationships between personal experiences with violence, fear of crime, and mental health. Bivariate analysis and structural regression models were conducted.

Table 33: Comparison between Hypotheses and Results of Analyses

Hypotheses	Results	
	Bivariate Analysis	Structural Regression
Personal Experiences with Violent Crime and Fear of Crime		
$H_{1.1}$: Adolescents who have experienced violent victimization will be more fearful of crime than those who have not.	+	+
$H_{1.2}$: Adolescents who have witnessed the violent victimization of others will be more fearful of crime than those who have not.		
$H_{1.3}$: Adolescents who have been involved in violence will be less fearful of crime than those who have not.	-	-
Personal Experiences with Violent Crime and Mental Health		
$H_{2.1}$: Adolescents who have experienced violent victimization will exhibit more internalizing problems.	+	+
$H_{2.2}$: Adolescents who have witnessed the violent victimization of others will exhibit more internalizing problems.		-
$H_{2.3}$: Adolescents who have been involved in violence will exhibit more internalizing problems.	+	
$H_{2.4}$: Adolescents who have experienced violent victimization will exhibit more externalizing problems.	+	+
$H_{2.5}$: Adolescents who have witnessed the violent victimization of others will exhibit more externalizing problems.	+	
$H_{2.6}$: Adolescents who have been involved in violence will exhibit more externalizing problems.	+	
Personal Experiences with Violent Crime, Fear of Crime, and Mental Health		
$H_{3.1}$: Fear of crime mediates the relationship between violent victimization and internalizing problems.	+	
$H_{3.2}$: Fear of crime mediates the relationship between witnessed violent victimization and internalizing problems.	+	
$H_{3.3}$: Fear of crime mediates the relationship between involvement with crime and internalizing problems.	+	
$H_{3.4}$: Fear of crime mediates the relationship between violent victimization and externalizing problems.		
$H_{3.5}$: Fear of crime mediates the relationship between witnessed violent victimization and externalizing problems.		
$H_{3.6}$: Fear of crime mediates the relationship between involvement with crime and externalizing problems.		

The results reveal that personal experiences with crime generally influence fear. Aside from witnessing violence not being found to influence fear of crime, being violently victimized and being involved in violent acts did affect fear of crime in the anticipated directions. Additionally, all three types of personal experiences with violence influenced internalization and externalization. However, witnessing the violent victimization of others contradicted the hypothesized direction of influence in regards to internalization in the structural regression models. Moreover, only violent victimization was found to influence mental health in both bivariate analysis and structural regression. Finally, there is no evidence that fear of crime mediates the relationship between personal experiences with violence and mental health.

In summary, this chapter presented preliminary statistics and results from structural equation modeling. The next chapter discusses the results of this study, offers a conclusion to its findings, and addresses limitations as well as ideas for future research.

Chapter 6: Discussion and Conclusions

This final chapter provides an overview of the study, summarizes its findings, and proposes next steps. To be more precise, the purpose and contributions of the study are discussed, and limitations, as well as future research potentials, are addressed.

Discussion and Conclusion

The purpose of this study was to evaluate the relationships between personal experiences with violence, fear of crime, and mental health outcomes for adolescents living in Chicago, Illinois. More specifically, this study was driven by three research questions informed by stress theory:

1. In terms of personal experiences with violence, what is the influence of violent victimization, witnessing the violent victimization of others, and involvement in violence on fear of crime for adolescents?

2. In terms of personal experiences with violence, what is the influence of violent victimization, witnessing the violent victimization of others, and involvement in violence on mental health for adolescents?

3. Does fear of crime mediate the relationship between personal experiences with violence and mental health for adolescents?

To answer the above research questions, the literature on personal experiences with violence, fear of crime, and mental health was reviewed. As depicted in Figure 1, the resulting model accounted for the primary variables of interest. Using longitudinal data from the Project on Human Development in Chicago Neighborhoods (PHDCN), confirmatory factor analysis, and structural regression models were employed to measure the concepts and disentangle the relationships among them.

This study contributes to literature both structurally and in terms of the specific research questions asked. In terms of structure, the study 1) focused on adolescents, an under-analyzed population in fear of crime research, and 2) used robust, longitudinal data with information

provided by the adolescent subjects, their primary caregivers, and residents in their neighborhoods. In terms of questions asked, the study 3) simultaneously considered the influence of multiple types of personal experiences with violence, a technique that has only sparingly been utilized in the past, and 4) explored the association between personal experiences with violence and fear of crime while controlling for both individual-level and contextual-level factors. The research questions of this study additionally involved 5) scrutinizing how experiences with violence influence long-term mental health outcomes and 6) testing for the ability of fear of crime to mediate the relationship between personal experiences with violence and mental health. These research questions were informed by stress theory, which posits that external events that are taxing to individuals can exceed their capacity to endure and consequently have the potential to be harmful to subjective well-being and mental health (Pearlin et al. 1991; Dohrenwend 2000). In this section, the findings regarding the relationships among these variables, as well as their measurement and analyses, are discussed.

Personal Experiences with Violence and Fear of Crime

The results from the bivariate analysis and the structural equation modeling (i.e., confirmatory factor analyses and structural regression model) offer support for two hypotheses while contradicting another. More specifically, as expected, the bivariate analysis suggests that violent victimization is associated with being more fearful of crime while being involved in violent acts is associated with being less fearful. Unexpectedly, witnessing the violent victimization of others was not found to influence fear of crime. Results of the structural regression model provided the same results: violent victimization is related to greater fear, violent crime involvement is related to less fear, and witnessing the violent victimization of others is unrelated to fear of crime.

The victimization perspective suggests that direct experiences with victimization cause individuals to become more cautious, wary, and fearful of crime (Garofalo 1979; Tyler 1980; Skogan and Maxfield 1981; Skogan 1987; Ferguson and Mindel 2007; Fox, Nobles, and Piquero 2009; Bachman, Randolph, and Brown 2011). Stress theory would likewise predict that the stress of violent victimization would lead to more stress in the form of fear. The findings of this research lend credence to this perspective as violent victimization is found to predict fear. Although the literature is mixed, this finding is supported by several adolescent-focused studies (e.g., Wayne and Rubel 1982; Baker and Mednick 1990; Alvarez and Bachman 1997; Schreck and Miller 2003; Wallace and May 2005). As Lane and colleagues (2014) suggest, other studies may have been unable to tease out this effect because they had a low proportion of respondents who had been victimized, did not fully specify the social context associated with victimization experiences, and/or failed to operationalize fear of crime in a crime-specific manner. This study, not affected by these potential limitations, may have been better positioned to find a positive relationship between victimization and fear of crime.

Theoretically, the victimization perspective can be extended to the impact of witnessing the violent victimization of others on fear. There is, however, limited research on this specific topic. Studies that have been conducted at least indirectly suggest that witnessing victimization increases fearfulness (e.g., Pynoos and Nader 1988; Shakoor and Chalmers 1991; Richters and Martinez 1993a; Singer et al. 1995; Miller 2008; Nellis 2012). This study did not, however, find that seeing someone else be violently victimized is associated with fear. Although unexpected and contrary to a stated hypothesis as well as the tenets of stress theory, this finding is important as it suggests that adolescents may be less impacted by witnessing violence than by being a victim of it.

Finally, this study considered the influence of involvement in violence on fear of crime. Paradoxically, past research has found that—despite crime involvement increasing the risk of victimization (e.g., Sampson and Lauritsen 1990; Lauritsen, Sampson, and Laub 1991; Chen 2009)—participation in crime is associated with lower levels of fear (Lane 2006; Lane 2009; Melde, Taylor, and Esbensen 2009; Lane and Fox 2012). Among possible explanations for this finding is that crime is less of an unknown for offenders than non-offenders (Merry 1981; Madriz 1997) and the criminal lifestyle may offer protection in the form of access to weapons and like-minded peers (Cobbina et al. 2008; Lane and Fox 2012). Additionally, posturing by offenders may simply make them less likely to admit being afraid (Lane 2013). While this study is not able to offer a specific suggestion as to which, if any, of these propositions may be most meaningful, it does suggest that involvement in violence is associated with reporting less fear. From a stress theory perspective, this finding hints at the idea that crime involvement is not a significant stressor for criminally-involved youth.

Personal Experiences with Violence and Mental Health

The results of the bivariate analysis generally suggest that adolescents who have personal experiences with violence are more likely to experience poorer mental health outcomes. The effect of witnessing the victimization of others on internalization was the only relationship in the bivariate analysis not found to be both significant and positive. Results of the structural regression models are, however, less convincing. In these models, two of the six hypotheses were supported: violent victimization is positively associated with both internalizing and externalizing problems. The only other finding to reach significance was counter to a hypothesis. That is, witnessing the victimization of others was found to be associated with fewer internalizing problems.

In terms of victimization, multiple studies have found a positive relationship between violent victimization and externalizing problems (e.g., Pelcovitz et al. 1994; Dodge, Pettit, Bates, and Valente 1995; Lansford et al. 2002; Salzinger et al. 2002; Renner and Boel-Studt 2017). Though the relationship may not be as strong, the literature also generally suggests that there is also a relationship between victimization and internalizing problems (e.g., Fantuzzo et al. 1991; Fergusson, Horwood, and Lynskey 1996; McLeer et al. 1998; Wolfe 1999; Wolfe et al. 2001; Evans, Davies, and DiLillo 2008; Mrug and Windle 2010; Taylor et al. 2018). In support of these findings, as well as two hypotheses in this dissertation, this study found that violent victimization is associated with higher levels of both internalization and externalization. In other words, this study found support for the idea that being a victim of violence leads to poorer mental health outcomes. Again, stress theory would likewise predict that the stress of violent victimization would lead to distress, such as a decline in overall well-being.

As for witnessing the victimization of others, the general consensus in the literature is that witnessing victimization, including in the home and community, is associated with more externalizing and internalizing problems (e.g., Jenkins and Bell 1994; Cooley-Quille, Turner, and Beidel 1995; Evans, Davies, and DiLillo 2008; Jaffee and colleagues 2002; Taylor et al. 2018; Fong, Hawes, and Allen 2019). Notably, however, this is not a wholly settled conclusion. Some studies, including those by Farrell and Bruce (1997), Fitzpatrick and Boldizar (1993), and McCart and colleagues (2007), have not found exposure to violence to predict poorer mental health outcomes. Fitzpatrick and Boldizar (1993) even found a negative relationship between witnessing violence and depression. In line with such a finding, this study found that witnessing the victimization of another person is associated with less internalizing problems and is not associated with externalizing problems. While additional research is necessary, this suggests that

adolescents may become desensitized to witnessing violence and/or may learn to cope with these experiences. This finding runs counter to stress theory and is deserving of additional investigation.

Lastly, although research on the topic is relatively limited, there are indications that involvement in delinquency and crime may influence mental health. Research on bullying has found, for instance, that children reported to be both bullies and victims have a higher likelihood of experiencing mental health problems in later adolescence (e.g., Gini and Pozzoli 2009; Lereya et al. 2015). Gang research has likewise found that being involved in a gang may be deleterious to mental health (e.g., Li et al. 2002; Herrmann, McWhirter, and Sipsas-Herrmann 1997). Stress theory may likewise predict crime involvement to represent a stressor that may negatively impact well-being. Still, not all such research has come to this conclusion. Madan, Mrug, and Windle (2011) did not find gang membership to be predictive of depression or anxiety. In support of this finding, this study did not find involvement in violence to be predictive of poorer mental health outcomes. Instead, involvement in violence was found to have no significant effect on mental health.

Personal Experiences with Violence, Fear of Crime, and Mental Health

It is generally understood that violence exposure can be damaging to mental health, but the causal pathways are not well understood (Stafford, Chandola, and Marmot 2007). Past research has suggested that fear of crime could be mediating this relationship (e.g., Overstreet and Braun 2000; Buckner, Beardslee, and Bassuk 2004). In order for a variable to mediate the relationship between exposure to violence and mental health, two conditions must be met. First, the variable must be influenced by exposure to violence. Second, the variable must affect mental health, controlling for violence exposure. In this study, fear of crime does not appear to mediate

the relationship between personal experiences with violence and mental health outcomes. While three of the six results from the bivariate analysis suggested that mediation was at least a possibility with the finding that fear of crime is significantly associated with internalizing problems, structural equation modeling invalidated these hypotheses. This suggests that additional pathways need to be tested to understand how personal experiences with violence influence mental health.

Still, it is worth noting that controlling for internalizing and externalizing problems at an earlier Wave could potentially help to explain why fear of crime did not act as a mediator. That is, by controlling for stable "propensity" differences in problem behaviors, fear of crime may not make much of a difference to those traits at a later Wave in the study. In other words, the influence of fear of crime on the relationship between personal experiences with violence and mental health is obscured because past mental health is such a resolute predictor of future mental health. Future studies would be wise to evaluate the strength of this relationship with and without prior reports of internalization and externalization.

Control Variables

Demographic factors were not a significant focus of this study. However, findings associated with these variables should be considered. Consistent with the vulnerability perspective, age, gender, socioeconomic status, and race/ethnicity were all found to be associated with fear. That is, fear of crime was reported to be lower among older adolescents, males, those from higher SES backgrounds, and white youth. Age and gender were found to be influential for mental health outcomes, too. While age was positively associated with internalization and externalization, being male was negatively associated with both of these indicators of mental health. As for neighborhood-level factors, these variables were not found to influence fear of

crime. This suggests that community context may be less critical to understanding fear experienced by adolescents than individual-level factors. Interestingly, all of these findings fall in line with the stress theory tenet that certain groups have less access to stress buffers and are more at risk for psychological distress.

The other control variables, fear of crime at Wave 1 as well as internalization and externalization at Wave 1, were found to be highly influential. That is, fear of crime was found to beget fear of crime. Similarly, internalization at Wave 1 was found to be positively associated with the exhibition of internalizing behaviors years later. The same is true for externalization. Notably, while externalization at Wave 1 was positively associated with internalizing later in life, internalization at Wave 1 was found to be negatively associated with externalizing at Wave 3. This latter finding was unexpected and deserving of additional research.

Measurement and Analyses

This study provides several statistically valid measurement models. First, fear of crime at Waves 1 and 2 was successfully measured. The questions used to assess fear of crime were found to be appropriate. In addition, this study was able to measure mental health in terms of internalizing and externalizing problems. The results of the confirmatory factor analysis indicate that there were, in fact, three syndrome subscales within internalization and two syndrome subscales within externalization.

The analysis also improved prior research by employing several statistical techniques. More specifically, the structural regression models revealed complicated associations among observed and latent variables. It allowed testing hypotheses about both direct and indirect effects. Moreover, related variables were correlated based on theory and prior research. This procedure enhanced model fit as well as standardized coefficients.

Limitations and Future Research

This study has explored the relationships among personal experiences with violence, fear of crime, and mental health. The findings should, however, be interpreted with some caution when considering the study's limitations. More specifically, the most critical limitations of this study include data availability, measurement, and research method.

First, like all studies that use secondary data, this study has imperfect data availability. As all respondents resided in Chicago, findings are only applicable to adolescents living in that large, urban American city. While selected by PHDCN researchers because of its rich racial/ethnic and socioeconomic diversity, the geographic specificity of the data limits its generalizability. Findings may be different for young people living in other cities as well as those residing in smaller, non-urban areas. Still, while the data cannot be generalized outside of Chicago, the results do provide insight into the interrelationships among crucial variables and highlight areas of interest for future research with nationally representative data.

Relatedly, some variables that were not included may have been valuable if proxy measures had been available. In some instances, this is not necessarily a serious issue. For instance, it may have been advisable to control for exposure to media reports of crime when measuring fear of crime as prior literature suggests that indirect exposure to crime can be an important predictor of fear. Nevertheless, this variable is unlikely to confound the effects of fear on subsequent mental health outcomes. Conversely, a potentially more critical missing variable that may act as a confounding factor is social network/social support. This concept may very well serve as both a predictor for fear of crime and mental health. The inability to measure social network/support suggests that it could be representative of omitted variable bias. This is particularly important for mediation analyses, which require confounders and the mediator to be

controlled in order to infer the presence of causal mediation (VanderWeele and Vansteelandt 2009).

Concessions had to be made for some variables available in the dataset, too. For instance, personal experiences with violence would ideally have been measured at Wave 1 in order to test their effect on fear of crime at Wave 2. However, questions about violence exposure were asked in a substantially different way at Wave 1 than at later waves. Adolescent respondents, for instance, were not asked during this Wave about their experiences with victimization. As a result, this study examined the influence of experiences with violence at Wave 2 by using responses about experiences in the year prior. While imperfect as it relates to testing causality, this approach was determined to be the most efficient way to measure the influence of violence exposure on fear of crime with the data that were available. Future research would be wise to ensure that experiences with violence are temporally measured prior to measuring fear of crime. It is also advisable that future research consider the influence of frequency of exposure to violence on fear of crime and mental health. As addressed above, this dissertation explored the option of using scales to measure experiences with violent victimization, witnessing the violent victimization of others, and involvement in violence. The results were found to be less informative than when the personal experiences with violence variables were each measured as binary. It is possible that this indicates that being exposed to violence is more impactful on adolescents' fear of crime and mental health than is the frequency of such exposure. Considering the limitations surrounding how the PHDCN recorded the frequency of violent victimization and witnessing the violent victimization of others, however, it may be wise to use a different dataset to continue exploring this possibility.

Another concern in the study has to do with timing. In particular, the amount of time that passed between Waves as well as the age of the data. In regards to the former, it is possible that too much time passed between interviews to measure the impact of violence exposure. Due to their resilience, it is possible that the adolescent respondents exposed to violence were able to cope with their experiences in the years between answering the study's questions. If this is true, then it is at least a possibility that the impact of violence exposure may have been more statistically evident had the children been interviewed in closer time intervals. The age of the data may likewise be obscuring key observations. As an example, the frequency of school shootings, along with a tremendous amount of media coverage of such shootings, has increased in the years since these data were collected and could potentially be more relevant for today's adolescents than when the PHDCN's data were collected between 1994 and 2002. With data collected decades ago, it is critical to consider its applicability to today's world.

Second, the data evaluated in this study is mostly self-reported. Among the key variables of interest, personal experiences with violence and fear of crime were self-reported by adolescents. As for mental health, internalization and externalization were reported by primary caregivers who completed the Child Behavior Checklist (Achenbach 1991). As with all self-reported information, there is a concern with accuracy, particularly as it relates to the social desirability bias (Krumpal 2013). While self-reported data will likely always be a necessity for this kind of research, future studies could take advantage of potentially more objective approaches, such as brains scans, to evaluate the influence of violence exposure on fear and mental health.

Third, this study considered higher rates of internalizing problems to be unfavorable. The more frequently these states were noted by primary caregivers, it was argued, was indicative of

issues in need of address. However, engaging in internalization may actually be beneficial. In particular, internalizing problems such as anxiety and withdrawal could help change behaviors/routines in ways that actually reduce the possibility of future experiences with violence. Considering that females are more likely to experience internalization, it may be argued that this could help additionally explain gender differences in experiences with violence and fear of crime. Future studies would be wise to consider the potential benefits of internalizing problems in regards to shielding youths from violence and evaluate how gender may moderate these relationships.

Finally, there are some issues related to research methods deserving of additional consideration. While the use of full information maximum likelihood with missing values helped to safeguard against selection bias associated with the attrition from Wave 1 to Wave 3, it is possible that participants dropped out for important reasons that were unrelated to the observed data, and therefore could have biased the results of the study. Additionally, a limitation to the analysis is that while the sample was large (n=1,648), the clustered sampling design of the PHDCN and the inclusion of many covariates reduce the effective sample size. Moreover, the power to detect interaction effects is lower than the power to detect main effects. Lastly, this study only had one potential mediator for the association between personal experiences with violence and mental health outcomes. Other possible mechanisms that could help to explain this causal pathway were not examined.

While not a primary focus of this study, the neighborhood-level variables may have measurement issues as well. Some of these variables, including neighborhood collective efficacy, were actually collected at the individual level and then aggregated at the neighborhood level. This, of course, results in the atomistic fallacy, which increases the risk of inference errors.

While none of the neighborhood-level factors was found to influence fear of crime, the measurement of these variables may be contributing to the null findings.

Despite these limitations, this study contributes to the extant literature on personal experiences with violence, fear of crime, and mental health. While not all hypotheses found support, several did. The study additionally identified new areas of interest deserving of future research. In particular, there is still much to be learned in regards to the causal pathways through which the key variables are related, particularly among adolescents. Gender differences should be more fully explored as well. Additionally, it is likely that there are other outcomes associated with exposure to violence and fear of crime deserving of scholarly attention. The expansion of this field of study is critical to appreciate the interlocking relationships among these critical concepts.

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