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Examining Three Alternative Explanations for the Race/Ethnicity Disparities in Violent Victimization: Mediation, Moderation, and Contextual Effects

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**Examining Three Alternative Explanations for the Race/Ethnicity Disparities in Violent
Victimization: Mediation, Moderation, and Contextual Effects**

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ABSTRACT

Empirical studies have established that Blacks and Latinos are the most violently victimized of all racial/ethnic groups in the U.S., but the mechanisms that underlie these victimization disparities are not well understood. This dissertation builds an integrated model to draw attention to culturally-driven differences across racial/ethnic groups regarding criminal opportunities. It tests three alternative hypotheses developed from lifestyles and routine activities theory (LRAT)—mediation, moderation, and context—that may explain the disparities. First, it assess whether criminal opportunities mediate the effects of race/ethnicity on violent victimization. Second, it tests whether the strength and direction of the race/ethnicity–violent victimization relationship is contingent upon race/ethnicity. Finally, it investigates contextual effects that could explain away the relationship between race/ethnicity and violent victimization as an artifact of the residential concentration of minorities in high-risk neighborhoods.

Using data from the Project on Human Development in Chicago Neighborhoods (PHDCN), the results revealed that Black and Hispanic adolescents were twice as likely as their White counterparts to be violently victimized, and these disparities remained after controlling for demographic characteristics and prior victimization. As to the hypothesized sources of these disparities, there was mixed evidence regarding the mediation hypothesis, because although criminal opportunity measures were significantly related with violent victimization, they failed to eliminate the victimization disparities. As to the moderation hypothesis, while the relationship between guardianship and violent victimization was contingent upon race/ethnicity, these effects did not equalize youth’s differential risks. Finally, the analysis revealed weak support to the context hypothesis, as none of the neighborhood-level indicators of criminal opportunities significantly affected violent victimization.

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Chapter 1

INTRODUCTION

Decades of criminological research have shown demographic differences in the risk of violent victimization. Since the early 1970s, two national victim surveys, the National Crime Survey (NCS) and the National Crime Victimization Survey (NCVS), have provided detailed accounts of the nature and extent of criminal victimization in the United States (Groves and Cork, 2008; Lauritsen, 2010). These data consistently show that gender, age, race/ethnicity, marital status, and income, are important demographic correlates of the risk of becoming a victim of violence (Hindelang, 1976; Hindelang, Garofalo, and Hindelang, 1978; Gottfredson, 1986; Rand, Lynch, and Cantor, 1997; Truman, 2011). As is illustrated in Chapter 2, the evidence of differences in violent victimization across demographic groups not only emanates from victimization survey data, but from alternative data sources such as the FBI's Supplementary Homicide Report (SHR) and governmental vital statistics (e.g., mortality statistics by the Centers for Disease Control and Prevention).

Among the prominent demographic correlates of victimization, race/ethnicity is of particular relevance for the purposes of this dissertation. In general, non-Hispanic Blacks and Hispanics tend to experience higher rates of violence than non-Hispanic Whites (Bastian, 1990; Catalano, 2005; Lauritsen and Heimer, 2010; Sampson and Lauritsen, 1997; Truman, 2011). For example, NCVS 2010 data show that the overall rate of violent victimization¹ was highest for non-Hispanic Blacks (20.8 per 1,000 persons age 12 and over), followed by Hispanics (15.6 per 1,000), and non-Hispanic Whites (13.6 per 1,000). Without considering ethnicity, SHR data

¹ The overall rate of violent victimization reported in the NCS and NCVS includes: rape/sexual assault, aggravated assault, simple assault, and robbery.

portray Blacks as the racial group most likely to be victim of homicide, in comparison to Whites. Although homicide rates disaggregated by both race/ethnicity are not available from the SHR, national vital statistics from the Centers for Disease Control and Prevention present homicide data by victim's race/ethnicity. These statistics show that in 2009, those most likely to have homicide as cause of death were non-Hispanic Blacks (19.9 per 100,000 population), followed by Hispanics of any race (6.6 per 100,000), and non-Hispanic Whites (2.6 per 100,000) (Kochanek, Xu, Murphy, Minino, and Kung, 2012). As is the case of other demographic indicators, race/ethnicity differences in violent victimization are well documented.

Criminologists have devoted substantial efforts to formulating explanations of the demographic differentials in the risk of victimization noted above. As is discussed in Chapter 3, three frameworks that fall under the umbrella term of criminal opportunity theories² are relevant in this regard. First, Hindelang, Gottfredson, and Garofalo (1978) proposed the lifestyle/exposure theory in an effort to account for the unequal likelihood of victimization among certain age, gender, marital status, income, and race subgroups. The concepts of lifestyle and exposure are core elements of the theory. A lifestyle refers to a set of recurrent activities, either vocational (e.g., work, school), or leisure-oriented (e.g., recreation, shopping) that vary across demographic groups, largely as a function of the person's role expectations and structural constraints. Lifestyles influence the amount and kind of exposure that individuals have to high victimization risk situations, such as spending time in public and without guardians, especially at night. For example, lifestyles affect the duration and pattern of time spent away from the home, thereby increasing or decreasing exposure to victimization. Further, since the theory posits that

² As explained by Birkbeck and LaFree (1993) the criminal opportunity perspective in criminology seeks to explain crime as a situated event. These theories assume that the opportunity to commit a crime may be more or less favorable across different situations, depending on the convergence of motivated offenders, suitable targets, and absence of capable guardians (Wilcox, Land, and Hunt, 2003).

demographic characteristics channel lifestyles, it follows that demographic variation in victimization is confounded with variation in lifestyles, but only the latter construct is presented in the theory as a direct influence on the risk of victimization.

Second, a landmark theory in the opportunity framework is Cohen and Felson's (1979) routine activity theory. This theory is based on the premise that crime events require the convergence of motivated offenders, suitable targets, and the absence of capable guardians that can prevent the offense. The convergence of these three necessary elements in space and time structures a "criminal opportunity", which in turn enhances the likelihood that a crime will occur (Cohen and Felson, 1979). Originally proposed as a macro-level explanation for the increase in crime rates in the U.S during the 1960s, routine activity theory served as the foundation of a third opportunity framework, an individual-level theory of victimization, elegantly formulated by Cohen, Kluegel, and Land (1981). These authors offered specific propositions that relate four risk factors to predatory victimization: exposure to risk, guardianship, proximity to motivated offenders, and target attractiveness. Briefly, their model postulates that individuals are more likely to experience predatory victimization if they: (1) are highly exposed in terms of being accessible and visible to offenders in risky situations, (2) lack guardianship, (3) are in closer proximity to potential offenders, and (4) offer greater intrinsic or extrinsic rewards.

In sum, the opportunity approach represented by the integration of these theories postulates that victimization is a function of everyday activities and lifestyles that place individuals in situations of enhanced criminal opportunities (Cohen and Felson, 1979; Cohen et al., 1981; Hindelang et al., 1978). The theories have received considerable empirical support in studies of property and violent victimization (Coupe and Blake, 2006; Hollis-Peel, Reynald, van Bavel, Elffers, and Welsh, 2011; Messner and Blau, 1987; Miethe, Stafford, and Long, 1987;

Miethe and Meier, 1990; Sampson, 1987; Sampson and Wooldredge, 1987; Spano and Freilich, 2009; Wilcox Rountree, Land, and Miethe, 1994; Wilcox, Madensen, and Tillyer, 2007), and also as applied to college or high school students (Burrow and Apel, 2008; Fisher, Sloan, Cullen, and Lu, 1998; Mustaine and Tewksbury, 1998; Schreck and Fisher, 2004), and in comparative analyses of adults (persons aged 15 or older) across countries (Tseloni, Wittebrood, Farrell, and Pease, 2004).

Implicit in opportunity theories is a *mediation hypothesis* that accounts for the well-established correlation between demographic characteristics and victimization. In a mediation hypothesis, a mediating variable M intervenes in the causal process through which an independent variable X affects a dependent variable Y (Baron and Kenny, 1986; Iacobucci, 2008). That is, M is intermediate in the causal path between X and Y (MacKinnon, 2008). In this case, the effect of demographic characteristics on victimization is presumably indirect, or mediated by differences in activities and lifestyles that are more or less opportunistic. For example, being male, young, single, or minority are characteristics that closely predict how individuals routinely spend their time, including their participation in risky routines and lifestyles that present opportunities for crime. Risky routines and lifestyles are, in turn, the most proximate influence on victimization. It follows that demographic differentials on victimization should either disappear, or be largely attenuated, once differences in routine activities and lifestyles are considered (Hindelang et al., 1978; Gottfredson and Hindelang, 1981; Gottfredson, 1981; Miethe et al., 1987). In the case of the race/ethnicity differences in victimization, it would be presumed that non-Hispanic Blacks and Hispanics are more likely than non-Hispanic Whites to partake in activities and lifestyles that present criminal opportunities. Hence, a full model of

victimization that includes indicators of such opportunities would be expected to show weaker or null race/ethnicity effects, in comparison with a baseline model of race/ethnicity alone.

Whereas empirical studies of the predictive validity of opportunity theories applied to violent victimization are abundant, only a handful of studies have explicitly tested the mediation hypothesis (for an exception see Miethe et al., 1987) or commented on obtained results pertinent to mediation effects. However, studies where such indirect evidence is available generally show that indicators of criminal opportunity are weak mediators of the relationship between demographic characteristics and violent victimization, as is described in Chapter 3. Indeed, these studies show that even after accounting for participation in unstructured activities, delinquent lifestyles, association with delinquent peers, substance use, among other well-known opportunistic lifestyles, the chance of experiencing violence remains unequally spread across racial/ethnic groups (Burrow and Apel, 2008; Henson, Wilcox, Reyns, and Cullen, 2010; Schreck and Fisher, 2004; Wilcox, Tillyer, and Fisher, 2009). As is argued in this dissertation, the evidence of residual race/ethnicity effects is important because it indicates that the way in which a person's race/ethnicity impacts their risk of violent victimization is more complex than what the mediation hypothesis suggests. More importantly, it also highlights the need to refine opportunity theories to better account for the observed correlation between demographic characteristics and violent victimization.

A recent line of inquiry has explored a *moderation hypothesis* as an alternative explanation for demographic differences in victimization. In a moderation hypothesis, the magnitude or direction of the relationship between an independent variable X and a dependent variable Y varies across the levels of one or more moderator variables such as Z (James and Brett, 1984; Baron and Kenny, 1986). This is referred as a two-way interaction effect,

suggesting that *Y* results from the interaction of *X* and *Z* (or of additional moderator variables, in the case of three-way or higher order interactions) (Aiken and West, 1991). Within the criminal opportunity framework, if the effects of indicators of opportunities on victimization differ in terms of magnitude or strength across demographic groups, this indicates the operation of interactions between opportunity and demographic characteristics. In this logic, demographic differences operate not as antecedents of opportunities, but rather work in conjunction with opportunities to affect victimization.

In spite of currently limited theorizing, recent empirical developments offer a substantial basis to build a case for moderation effects on victimization. On the one hand, the work of Wilcox, Land, and Hunt (2003) presented a general multilevel opportunity theory that extended opportunity theory by describing the mechanisms through which individual- and aggregate-level indicators of opportunity (e.g., neighborhood-level guardianship, as measured by levels of informal social control or policing) affect victimization risk, both additively and interactively. To date, victimization research has unearthed a variety of interaction effects, demonstrating that the relationship between individual-level measures of opportunity and victimization depends on the macro-level opportunities presented (Maimon and Browning, 2012; Wilcox Rountree et al., 1994; Wilcox et al., 2007; Wilcox, Gialopsos, and Land, 2013) or on demographic characteristics of the victims, such as gender (Popp and Peguero, 2011; Tillyer, Wilcox, and Gialopsos, 2010; Wilcox et al., 2009). For example, the work of Wilcox and colleagues (2009) proposed and tested a model of victimization that conceived gender as a moderator variable. In particular, the authors argued that gender may interact with routines and lifestyles to create situations where girls are seen as suitable victims more so than boys. Their analyses of a sample of middle and high school students showed that several lifestyles were significantly related to school theft and

assault victimization across gender, but the strength and form of these relationships differed by gender. For example, self-reported offending behavior increased the likelihood of school-based assault victimization for both boys and girls, but these effects were particularly strong for girls. Wilcox and colleagues' results supported a gendered perspective where indicators of exposure, guardianship, proximity, and target attractiveness may affect victimization risk differently for males and females. Thus, the current body of literature shows that moderation effects are more than merely plausible, they also are empirically supported. In comparison to mediation effects, which suggest that gender effects would disappear after considering the effect of opportunistic lifestyles, moderation effects indicate that gender interacts with opportunistic lifestyles to affect victimization.

This dissertation extrapolates the logic underlying Wilcox et al.'s (2009) gendered model of victimization to articulate and test a moderation hypothesis that may help explain the differences in violent victimization by race/ethnicity. The proposed model, which is detailed in Chapter 3, has the potential to explain the residual effects of race/ethnicity that are not fully accounted for by a mediation effect. In brief, the argument is that opportunistic lifestyles are closely related to the risk of violent victimization, as predicted in opportunity theories, but their influence may differ across racial/ethnic groups (i.e., there may be an interaction between opportunistic lifestyles and race/ethnicity). Under this logic, it is expected that the coefficients for key opportunity indicators in multivariate models of violent victimization could differ in size or direction across non-Hispanic Blacks, Hispanics, and non-Hispanic Whites. The posited race/ethnicity-conditioned model is not only logically inferred from Wilcox and colleagues' gendered model, but is compatible with preliminary evidence that the way in which routines and lifestyles affect victimization is variable across racial/ethnic groups (Dugan and Apel, 2003;

Like-Haislip and Warren, 2011; Peguero, Popp, and Koo, 2011). The model also is compatible with scholarly work that has shown that offender's perceptions of target suitability may be informed by the victim's race/ethnicity (Felson, Baumer, and Messner, 2000; Fussell, 2011; Velazquez and Kempf-Leonard, 2010), and that race/ethnicity may structure differences in the exercise of guardianship in the family context (Gil, Wagner, and Vega, 2000; Romero and Ruiz, 2007). Differences in offender's perceptions and in family contexts help specify ways in which minorities, and more specifically Hispanics, might come to be perceived as more or less opportunistic targets, thereby specifying moderation effects.

Although there are theoretical and empirical reasons for race/ethnicity-conditioned effects, few studies have explored the relevance of race/ethnicity to opportunity theory or the role that race/ethnicity may play as a moderator in the relationship between opportunities and victimization. Existing studies of race/ethnicity differences in violent victimization are mostly descriptive (Rennison, 2000), and the few inferential studies that reveal evidence of moderation (See Like-Haislip and Warren, 2011; Peguero, Popp, and Koo, 2011) present a limited theoretical background against which to interpret the findings. To date, few published studies have considered moderation to explain differences in victimization across racial/ethnic groups.

In addition to mediation and moderation effects, a third explanation for the race/ethnicity disparities in violent victimization is presented by a *context hypothesis*. In light of the cumulative evidence that opportunities for victimization work across the individual and neighborhood levels (Miethe and McDowall, 1993; Sampson and Wooldredge, 1987; Wilcox Rountree, Land, and Miethe, 1994; Wilcox et al., 2003; Wilcox et al., 2013), complete explanations of victimization require the consideration of the social context where individuals live. Chapter 3 examines the literature on contextual effects and ponders the argument that

differences in violent victimization are driven by the correlation between risky environments and race/ethnicity; that is, the observation that racial/ethnic minorities are the most likely to reside in communities with high levels of poverty and high crime rates, which exposes them to ample opportunities for violent victimization. Given the nonrandom concentration of racial/ethnic minorities in community contexts, accounting for community characteristics should reduce the racial/ethnic disparities in violence significantly, according to this context model. And while there is some empirical evidence that implicitly supports this model as applied to race/ethnicity disparities in nonlethal violence (Lauritsen and White, 2001), no published studies have simultaneously examined the operation of mediation, moderation, and contextual effects.

The limited research on this issue is problematic for two reasons. First, Hispanics represent the minority group of fastest growth in the United States, with a population increase of 43% over the last decade (U.S. Census Bureau, 2011). Given the rapid increase of this minority group, exploring the causes for their differential victimization risk is a necessary step for the development of victimization prevention programs for the Hispanic community. A second and related issue is that the effectiveness of victimization prevention programs is contingent upon what we know about the influences on victimization. If research unveils null race/ethnicity-conditioned effects on violent victimization, the current model of prevention based on avoidance of risky lifestyles (e.g., binge drinking, walking alone at night, etc.) can be assumed to be targeting the general risk factors of victimization. As such, there should be no need for prevention programs to be tailored to the racial/ethnic populations that they are applied to. In contrast, if race/ethnicity-conditioned effects are at work, this would call into question the generality of opportunity theories, and highlight the need for prevention programs that consider race/ethnicity-related risk factors when devising victimization prevention programs. On the

other hand, evidence of contextual effects would indicate the need to develop prevention programs that target macro-level processes in the community aside from individual-level risk factors, and it also may point out to the types of communities where victimization prevention resources ought to be concentrated. Given these implications, research that seeks to explain racial/ethnic differences in violent victimization is of considerable importance.

THE CURRENT STUDY

The purpose of this dissertation is to examine the interplay of race/ethnicity, criminal opportunities, and violent victimization. Specifically, the dissertation explores three plausible alternative theoretical accounts that can potentially explain the race/ethnicity disparities in violent victimization, as described in depth in Chapter 3: (1) a mediation hypothesis; (2) a moderation hypothesis; and (3) a context hypothesis. In addition to outlining and testing the relative validity of these three models of race/ethnicity effects on violent victimization, this dissertation adds to the existing opportunities and victimization literature in four fundamental ways.

First, this dissertation analyzes a sample of adolescents that was collected as part of the Project on Human Development in Chicago Neighborhoods (PHDCN), which contains a sizable proportion of racial/ethnic minority respondents. One of the reasons that researchers have not fully explored the causal pathways that account for the relationship between race/ethnicity and victimization is that most data sets used by criminologists to study victimization contain a small number of minority respondents. Given that violent victimization is a statistically rare event, analyses that require disaggregation by race/ethnicity require large group subsamples to obtain reliable statistics. The limited occurrence of victimization also means that statistical models that include multiple covariates run the risk of having multivariate joint distributions with few cases,

further complicating the computation of reliable estimates. In this regard, the advantage of using the PHDCN is that the sample includes a large number of minority respondents, which yields more reliable estimates. Specifically, among the adolescents in the sample,³ 34.4% were non-Hispanic Black ($n=840$), 48.2% were Hispanic ($n=1,074$), and 17.3% are non-Hispanic White ($n=333$).

On the other hand, samples typically used by criminologists to examine differences in violent victimization do not compare Hispanics with non-Hispanic Blacks and non-Hispanic Whites, but are based on “Black” versus “White” comparisons. These comparisons neglect the importance of ethnicity and present misleading estimates of risk insofar as such analyses merge Hispanics within the “Black” or “White” categories, disregarding important heterogeneity in risk across the three subgroups (Lauritsen and White, 2001; Lauritsen and Heimer, 2010; Martinez and Lee, 2000; Martinez, 2003). Even in studies that consider ethnicity effects independently of racial effects, the traditional “Hispanics” versus “non-Hispanics” comparison is problematic, as non-Hispanics combines Whites and Blacks, despite relevant variation among the two (Lauritsen and White, 2001). A second advantage of using the PHDCN data set is that it permits disaggregating violent victimization across the three largest racial/ethnic groups in the U.S (i.e., non-Hispanic Blacks, Hispanics, and non-Hispanic Whites).

Second, the dissertation examines multifaceted opportunities for victimization by estimating the independent effect on violent victimization of multiple indicators of criminal opportunities. In particular, this dissertation includes measures that have been linked to victimization in prior research, such as structured activities, unstructured activities, parental control, alcohol and drug use, association with delinquent peers, and delinquent lifestyles. What is more, the coefficients for these indicators of opportunities are estimated in models that

³ Percentages are calculated from the total of cases with valid data on race/ethnicity, which is $N=2,246$.

statistically control for individual differences in prior victimization, which has been shown to be a strong predictor of subsequent victimization (Daigle, Fisher, and Guthrie, 2007; Farrell and Pease, 1995; Sparks, 1981; Wittebrood and Nieuwebeerta, 2000).

Third, another strength of the PHDCN data is that the measures were collected over time with an accelerated longitudinal design. The Longitudinal Cohort Study (LCS) of PHDCN collected individual-level data at three separate waves, following seven cohorts of adolescents for over seven years. The longitudinal nature of the data allows for proper temporal ordering between independent and dependent variables in statistical analyses. Specifically, all of the independent variables of this study are measured at Wave 1 and Wave 2, whereas the dependent variable of violent victimization is measured at Wave 3. This research design can strengthen the internal validity of causal inferences presented.

A fourth and final contribution of this dissertation is that it estimates multilevel models to predict violent victimization. As multilevel opportunity theories assert, the experience of victimization cannot be studied in isolation from the community context where it takes place. A full understanding of the factors influencing victimization requires a multilevel approach (Sampson and Wooldredge, 1987; Wilcox et al., 2003; Wilcox et al, 2013). Yet, most studies to date have not employed a micro- and macro-level integrated approach to study the race/ethnicity differences in violent victimization, partly due to data limitations as described above. Given that Hispanic and non-Hispanic Blacks tend to be residentially concentrated in high-risk neighborhoods (Lauritsen and White, 2001; Sampson and Lauritsen, 1997), but the former are much more likely to live in ethnic enclaves, a multilevel model is well suited to tease out the independent effects on violent victimization of individual factors (e.g., family guardianship) and neighborhood context (e.g., neighborhood-level guardianship).

Research Questions

This dissertation addresses each of the following research questions:

1. Are there significant differences in the rates of violent victimization between non-Hispanic Blacks, Hispanics, and non-Hispanic Whites?
2. Is the relationship between race/ethnicity and violent victimization partially or largely mediated by individual-level indicators of criminal opportunities?
3. Do individual-level indicators of criminal opportunities have the same effect on violent victimization across race/ethnicity groups? That is, does race/ethnicity significantly moderate the relationship between criminal opportunities and violent victimization?
4. In addition to indicators of individual-level criminal opportunities, do neighborhood-level indicators of criminal opportunities account for any differences in violent victimization by race/ethnicity?

Race/Ethnicity: Definitional Considerations

Defining race/ethnicity is challenging as much controversy remains on what this concept represents (Walker, Spohn, and Delone, 2011). Yet, race/ethnicity has been incorporated in criminological theories that explain crime and victimization, making it necessary to adopt a standard that makes it possible to measure differences across individuals. Given that the primary focus of this dissertation is to examine the role of race/ethnicity on violent victimization, it is necessary to define this concept before attempting to outline patterns of victimization and possible explanations for these patterns.

One way to define *race* is on the basis of biological population differences regarding characteristics such as skin color, hair texture and color, facial features, among other markers (National Research Council, 2004). For example, early biological classifications of race separated individuals into five races: Ethiopian (African or black), Mongolian (Asian), American (Native American), Malaysian (Pacific Islander), and Caucasian (Whites) (Gabbidon and Greene, 2012). More recently, geneticists have found evidence of genetic clusters that correspond to the phenotypic traits traditionally associated with certain race labels, but most physical variation lies within racial groups rather than between racial groups, suggesting that genetic differences by race, although existent, are small (Rosenberg, Pritchard, Weber, Cann, Kidd, Zhivotovsky, and Feldman, 2002). In contrast to this anthropological view, scholars tend to conceive race as a socially constructed concept that emerges when members of society routinely classify themselves and others based on the possession of skin color, hair texture, etc., and these labels in turn affect general social perceptions, attitudes, and responses of other members of society (National Research Council, 2004). Thus, there is consensus that race is socially constructed more so than biologically derived.

The conception of *ethnicity* differs from race because it is not as linked to skin color as it is to culture. Yinger (1985) defines ethnicity as “a segment of a larger society whose members are thought, by themselves and/or others, to have a common origin and to share important segments of a common culture and who, in addition, participate in shared activities” (p. 159). Thus, ethnic labels are often drawn from cultural factors, particularly based on country of origin (e.g., Ireland-Irish, Poland-Polish, Italy-Italian). This is the case of Hispanics/Latinos, the largest ethnic group in the U.S.

The U.S government has used the ethnic label of *Hispanic* since the 1970s to refer to individuals of any race who trace their ancestral ties to Spain and their cultural origins to Spanish-speaking countries of the Americas, including Mexico, Cuba, Puerto Rico, or Central and South American countries (Office of Management and Budget, 1997). The Hispanic label has been criticized on various grounds, including the fact that it was imposed by the government rather than chosen by members of the group, the emphasis on Spanish heritage rather than Indigenous culture, and the masking of significant within-group differences by country of origin (Schaefer, 2008). The alternative term of *Latino* has been used as a more “progressive” conceptualization of ethnicity (Martinez, 2002). It applies to individuals who trace their origins to Latin American countries to the south of Rio Grande, regardless of cultural heritage and language (e.g., including Spanish-speaking countries as well as Brazil which is a Portuguese-speaking nation or even non-Spanish-speaking Caribbean islands). But as with Hispanic, the label of Latino has its limitations, particularly two issues: that to properly recognize sex groups, one would have to use the terms of Latino and/or Latina, which is cumbersome, and that Latino excludes Spanish citizens that have a culture common to many Latin American countries. A solution to the former issue has been the use of “Latin@”, but this term is far from becoming a convention.

Regardless of whether the reference is to Hispanic or Latino, an important limitation is that both labels are assumed to reflect a “panethnic” identity that in reality confounds much heterogeneity. For example, Bean and Tienda (1987) note that the Hispanic label combines native born with foreign born individuals, political refugees, and persons with varied cultural backgrounds based on country of origin. Classifications based on country of origin appear to be preferred, so that the labels of Mexican American, Cuban, Puerto Rican, and so on, are chosen

over a panethnic identity (Martinez, 2002). However, this is not applicable to nonimmigrant persons or those of second or higher generation with Hispanic/Latino backgrounds.

Notwithstanding the issue of heterogeneity in the labels, a general practice in scholarly writings is to use the terms Latino and Hispanic interchangeably. Despite much controversy over the proper term to be applied, debates tend to ignore the need for and advantages of using a standardized terminology (Oboler, 1995). This dissertation employs the Hispanic label to be consistent with the federal government standards for the measurement of race/ethnicity in federal statistics dictated by the Office of Management and Budget, since most official sources of victimization data employ the term Hispanic over Latino. Aside from the advantage of consistency with official statistics, U.S Hispanics seem to prefer the term Hispanic if they are asked their choice of panethnic label (Tienda and Mitchell, 2006). The term race/ethnicity is employed throughout this dissertation to reflect the fact that U.S statistics have been based on analyses of the three largest racial/ethnic groups: non-Hispanic Blacks, Hispanics, and non-Hispanic Whites (Brown, 2009).

Finally, the operationalization of these two concepts in the official statistics follows the measurement applied by the U.S Census Bureau, which mirrors the federal guidelines established in the 1997 *Revisions to the Standards for the Classification of Federal Data on Race and Ethnicity* by the Office of Management and Budget (OMB). Race is measured with an item separate from the ethnicity or Hispanic origin item. The racial categories are: White, Black/African American, American Indian/Alaska Native, Asian, and Native Hawaiian/Other Pacific Islander. Ethnicity includes the categories of Hispanic/Latino and Not Hispanic or Latino (Office of Management and Budget, 1997).

Plan of the Dissertation

This dissertation is divided into six chapters. Chapter 2 summarizes the extent and nature of the differences in violent victimization across racial/ethnic groups, including studies that examine adolescent samples. Subsequently, Chapter 3 discusses the three key approaches that account for differences in violent victimization, with emphasis on the theoretical and empirical foundations for the mediation, moderation, and context hypotheses. Chapter 4 describes the methodology, including a description of the PHDCN data used for the analysis, the characteristics of the analytic sample, the measurement of key independent and dependent variables, the analytic strategy, and the techniques employed to deal with missing data. Chapter 5 presents the results of the statistical analyses, both with non-imputed and imputed data. Finally, Chapter 6 offers a discussion of the main findings, the theoretical and practical implications of these findings in light of the research questions of the dissertation, the study limitations, and some directions for future research.

Chapter 2

UNDERSTANDING DIFFERENCES IN VIOLENT VICTIMIZATION BY RACE/ETHNICITY

THE SCOPE AND NATURE OF DIFFERENCES IN VIOLENT VICTIMIZATION

Documenting the extent and nature of the existing racial/ethnic disparities in violent victimization risk is a fundamental descriptive task before beginning to understand the sources of these disparities. This descriptive task also is necessary for formulating public policies to address inequalities in exposure to violence. Contemporary research has documented considerable variation in violent victimization rates across racial/ethnic groups. Despite year-to-year fluctuations, and unique distributions by type of crime or within multiple demographic characteristics, non-Hispanic Blacks are the racial/ethnic group most likely to experience violence, followed by Hispanics, while non-Hispanic Whites are the least violently victimized group.

The following sections describe the extent and nature of violent victimization by race/ethnicity, drawing from victimization survey data, official crime statistics, and vital statistics. Given that this dissertation explores the role of race/ethnicity on the risk of victimization using a sample of adolescents, the discussion that follows addresses race/ethnicity disparities in violent victimization risk not only among adults, but also among adolescents specifically. However, it must be noted that relative to studies of adult populations, the study of youth violent victimization has not been developed as widely (Hashima and Finkelhor, 1999). The paucity of research on youth violent victimization has been attributed to the lack of data (Finkelhor and Wells, 2003; Lauritsen, 2003), but its importance is underscored by the finding that relative to adults, adolescents are at a greater risk of various forms of violent victimization.

For instance, Finkelhor and Dziuba-Leatherman (1994) reported that youth aged 10 to 16 years old were three times more likely to be victims of assault, robbery, and rape, relative to older individuals. In an analysis of 1994 NCVS data, Hashima and Finkelhor (1999) reported that persons aged 12 to 17 were two or three times more likely than persons aged 18 or older to be victims of overall nonfatal violent victimization. Thus, the observation that adolescence represents a high risk stage for violent victimization supports the significance of using an adolescent sample to study this outcome, as is the case in this dissertation.

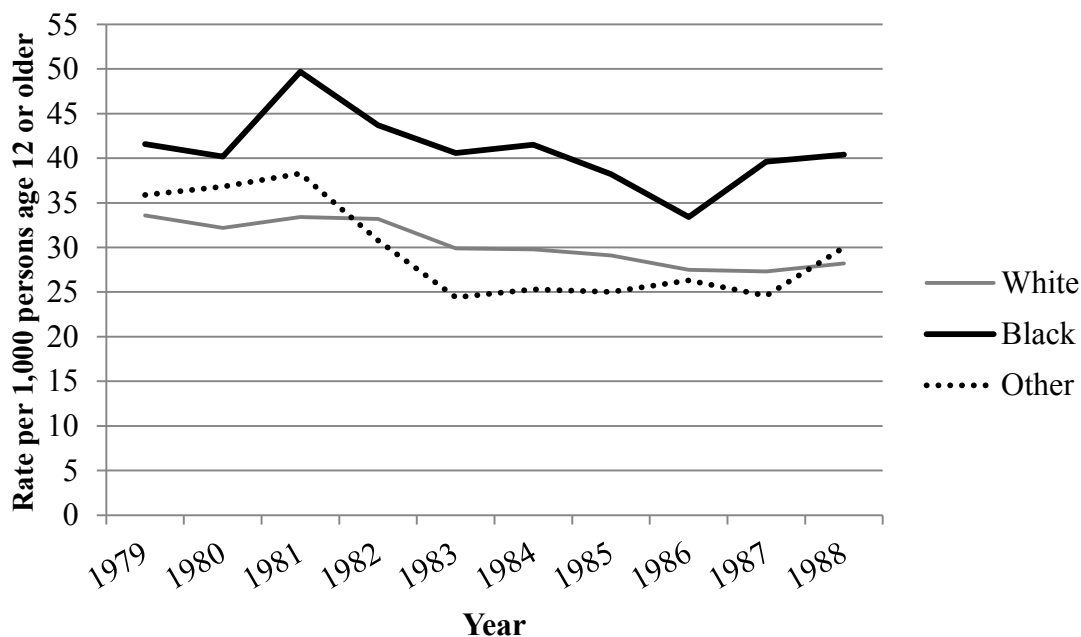
Adult Patterns of Nonfatal Violent Victimization by Race/Ethnicity

NCVS Data. Victimization surveys have historically been a primary data source to assess patterns of violent victimization in the general population. Since 1973, the National Crime Survey (NCS) and the National Crime Victimization Survey (NCVS) have been instrumental in documenting nonfatal victimizations with a nationally representative sample of U.S households. In 2011, the NCVS was administered to approximately 143,120 persons age 12 and older within 79,800 household units (Truman and Planty, 2012). The survey uses a rotating panel design of housing units, where all household members are interviewed about their experiences of victimization every six months, during a three-year period. The first interview is not included in the computation of annual estimates, but is rather used to establish a reference time frame for subsequent interviews in an effort to reduce telescoping. A salient feature of the NCVS is that it employs a two-stage process to measure victimization, starting with a series of screening questions on whether or not a victimization incident occurred. If a respondent reports an incident at this stage, an incident report is administered for each number of times that a responded indicated to have experienced the described behaviors. The incident report gathers data on the circumstances and consequences of the event, and is used to categorize the type of

victimization that occurred, if any. Annual victimization estimates are then generated from incident reports (Cantor and Lynch, 2000).

NCS and NCVS offer annual estimates of violent victimization for specific demographic groups; these estimates are relevant to establish whether racial/ethnic disparities in violent victimization exist, and if so, the stability of observed disparities over time. Before discussing the estimates, it is important to note some measurement aspects that are relevant for interpreting the results presented below. Unless otherwise noted, overall nonfatal violent victimization rates include rape/sexual assault, robbery, aggravated assault, and simple assault. With the exception of simple assault, these crimes also constitute serious violent victimization. Generally, NCS and NCVS rates presented throughout this section are estimated per 1,000 persons age 12 or older.

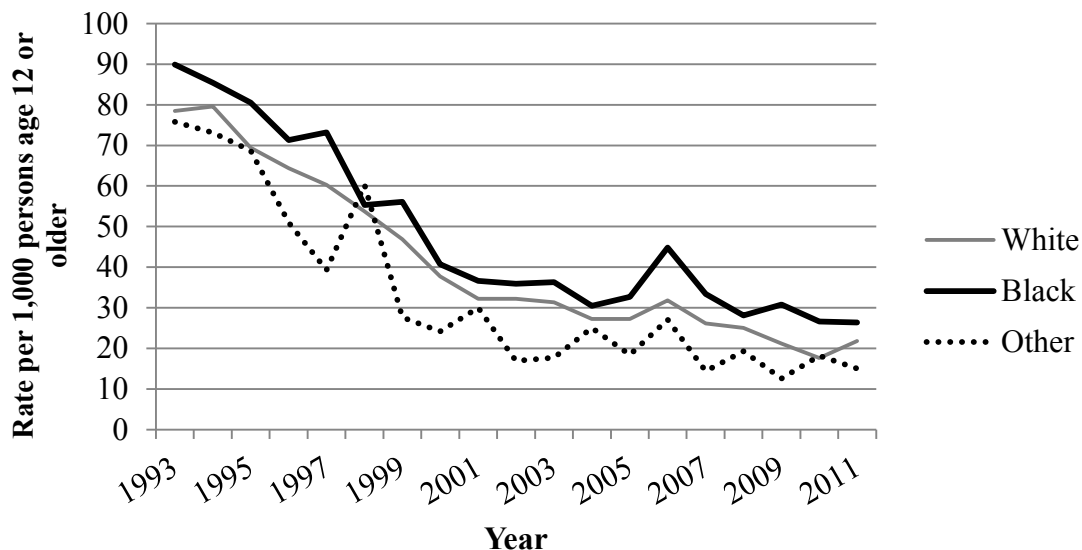
Figure 2.1. Nonfatal Violent Victimization, by Race, 1979-1988



Source: NCS estimates generated using the NCVS Victimization Analysis Tool at www.bjs.gov (February 14, 2013).

With respect to race,⁴ since the late 1970s and early 1980s, reports of the Bureau of Justice Statistics (BJS) showed racial disparities in serious violent victimization risk, disparities that extended into the 1990s, the 2000s, and persist in more recent data. Consider, for example, the period from 1979 to 1986. The average rate of overall violent victimization for Blacks during this period was 44.3 per 1,000, compared to 34.5 per 1,000 for Whites. Blacks also experienced rape, robbery, and aggravated assault at higher rates than Whites during this period (Whitaker, 1990). In 1988, Blacks were twice as likely as Whites to experience robbery and aggravated assault (Bureau of Justice Statistics, 1989). As shown in Figure 2.1, the earliest victimization data available from the NCS shows a racial gap in overall victimization that remained consistent from 1979 to 1988. Moreover, when we examine NCVS estimates for the period of 1993 to 2011, as shown in Figure 2.2, the stability of Black-White differences in overall nonfatal violent victimization is apparent.

Figure 2.2. Nonfatal Violent Victimization by Race, 1993-2011

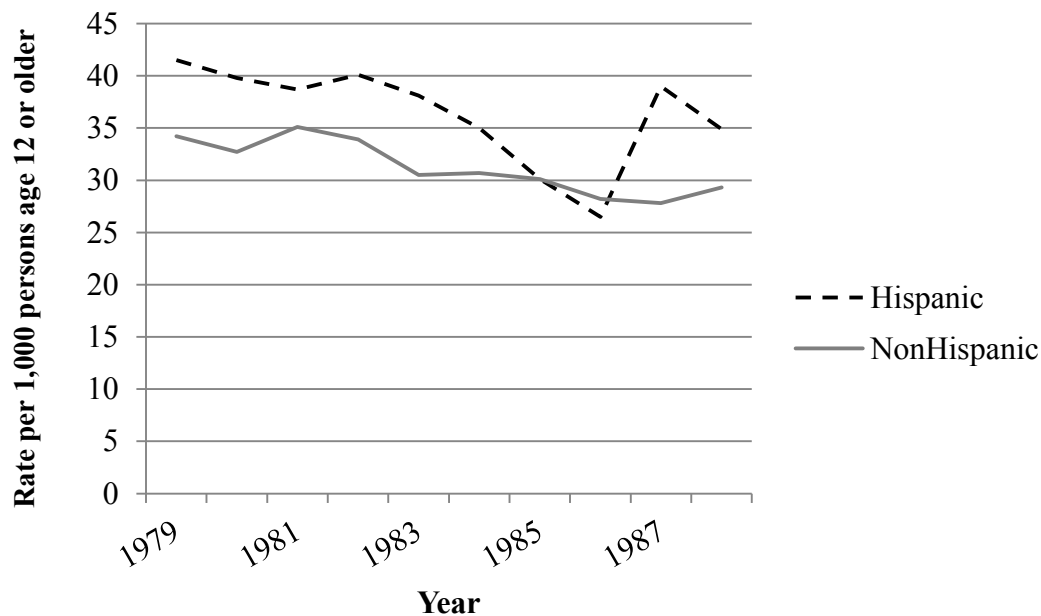


Source: Generated using the NCVS Victimization Analysis Tool at www.bjs.gov (February 20, 2013).

⁴ The operationalization of race in the NCS and NCVS follows the OMB federal guidelines discussed in Chapter 1.

As to ethnicity, analyses of NCS and NCVS data allow for comparisons between Hispanic versus non-Hispanic victims. During the 1970s and 1980s, Hispanics were more likely to experience violent victimization, as shown in Figure 2.3. In fact, for the period between 1973 and 1978, the average total violent victimization rate for Hispanics was 37.1 per 1,000 compared to 32.9 per 1,000 for non-Hispanics. Looking at the crime-disaggregated rates, Hispanics were more susceptible to aggravated assault and robbery than non-Hispanics, but only the latter difference was statistically significant (Bureau of Justice Statistics, 1982). Between 1979 and 1986, Hispanics also were robbed and seriously assaulted more often than non-Hispanics (Bastian, 1990). A parallel trend was reported in 1995 (Bureau of Justice Statistics, 2000), with Hispanics taking the lead in rates of overall violent victimization (53.4 versus 43.4 per 1,000 for non-Hispanics), and experiencing robbery twice as often as non-Hispanics (10.6 and 4.8 per 1,000, respectively).

Figure 2.3. Nonfatal Violent Victimization by Hispanic Origin, 1979-1988



Source: Generated using the NCVS Victimization Analysis Tool at www.bjs.gov (February 14, 2013).

Up to this point, the patterns of violence by race have been discussed separately from ethnicity. In fact, until 2010, the yearly NCVS *Criminal Victimization* report followed the practice of reporting victimization rates by race and Hispanic origin separately. With respect to race, reports showed data for Whites, Blacks, other races, or two or more races,⁵ whereas ethnicity was measured as Hispanic or non-Hispanic origin. This practice revealed an old tendency in the U.S. federal government to treat race and ethnicity as two mutually exclusive identities (Brown, 2009), but was criticized from a measurement perspective due to two limitations. First, Black-White comparisons lead to the overestimation of the risk for Whites, since Hispanics were often categorized as Whites, yet they generally have higher rates of victimization. Second, Hispanic/non-Hispanic comparisons tend to confound group differences, insofar as Whites, Blacks, and other racial groups were combined into the non-Hispanic category, masking considerable within group variation (Lauritsen and White, 2001).

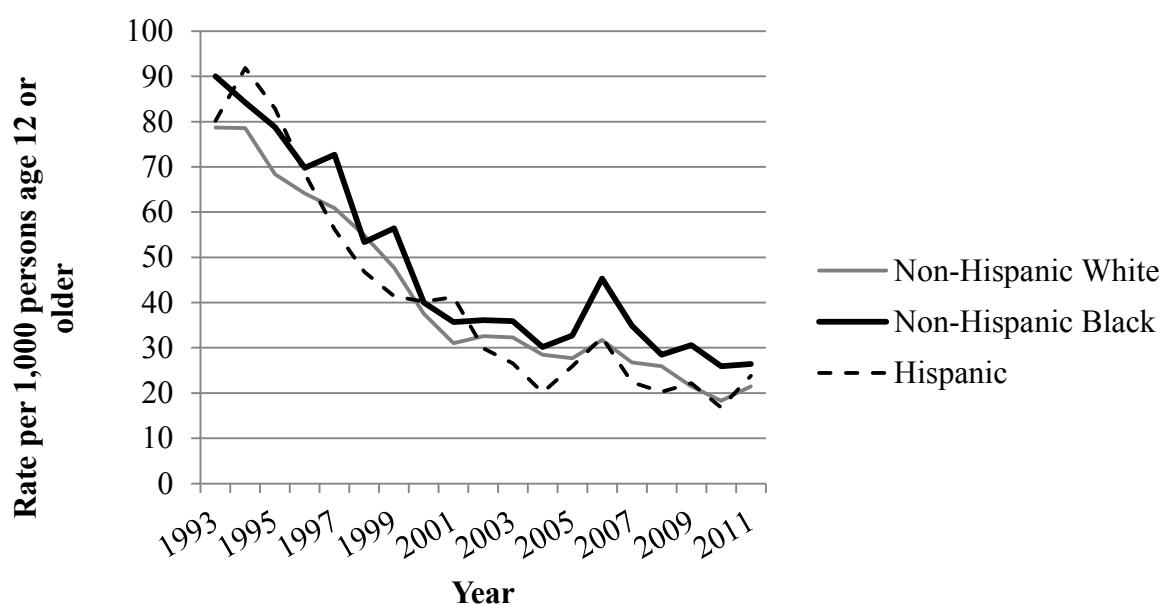
Since 2010, annual NCVS reports have presented victimization rates by race/ethnicity, including the three largest groups: non-Hispanic Blacks, Hispanics, and non-Hispanic Whites.⁶ Despite this change in reporting, the disparities in violent victimization discussed in the preceding paragraphs remain consistent. In fact, as Figure 2.4 demonstrates, nonfatal violent victimization has not been evenly spread across racial/ethnic groups, although it decreased for all

⁵ Up to the year 2002, the racial categories presented in NCVS reports included three groups: whites, blacks, and other (American Indians/Alaska Natives, Asian, or Native Hawaiian/Pacific Islander). Starting in 2003, a fourth race category, “Two or more races”, was added. This includes cases where more than one of the five standard racial groups were marked based on self-reports by respondents. This change followed from the 1997 OMB federal guidelines previously discussed, requiring federal data collection on multiracial identity. The addition of a multiracial category did not appreciably affect the measured racial composition of the population in initial tests conducted by the U.S Census Bureau (Hirschman, Alba, and Reynolds, 2000; U.S Census Bureau, 1997). Thus, it is possible that permitting respondents to choose more than one racial group had similarly minor effects on the estimates of victimization across racial groups. Nonetheless, this change in the race response categories before and after 2003 calls for caution when interpreting the time trends in NCVS victimization estimates by race presented here.

⁶ Although an ideal analysis would focus on Hispanic and non-Hispanics within each racial group, the sparse frequencies within the subgroups pose problems in terms of estimation. Instead, most contemporary analyses of NCVS data examine race/ethnicity as a one-dimensional concept, comparing victimization rates across the largest demographic groups: non-Hispanic Blacks, Hispanics, and non-Hispanic Whites.

groups from 1993 to 2011. However, it is important to highlight that there is some within-group year-to-year variability in nonfatal violent victimization. For example, with the exception of the 1994-1995 and 2000-2001 period, non-Hispanic Blacks were the most violently victimized group of the population in the past two decades. Hispanics, who had a likelihood of violent victimization comparable to Blacks up to the mid-1990s, have benefited from a substantial drop in total nonfatal violent victimization. Whites, on the other hand, reported the lowest rates of violence of the three groups in the early 1990s, but this tendency subsided by the beginning of the 2000s, bringing their overall violence rates to correspondence with the Hispanic rates.

Figure 2.4. Nonfatal Violent Victimization by Race and Hispanic Origin, 1993-2011



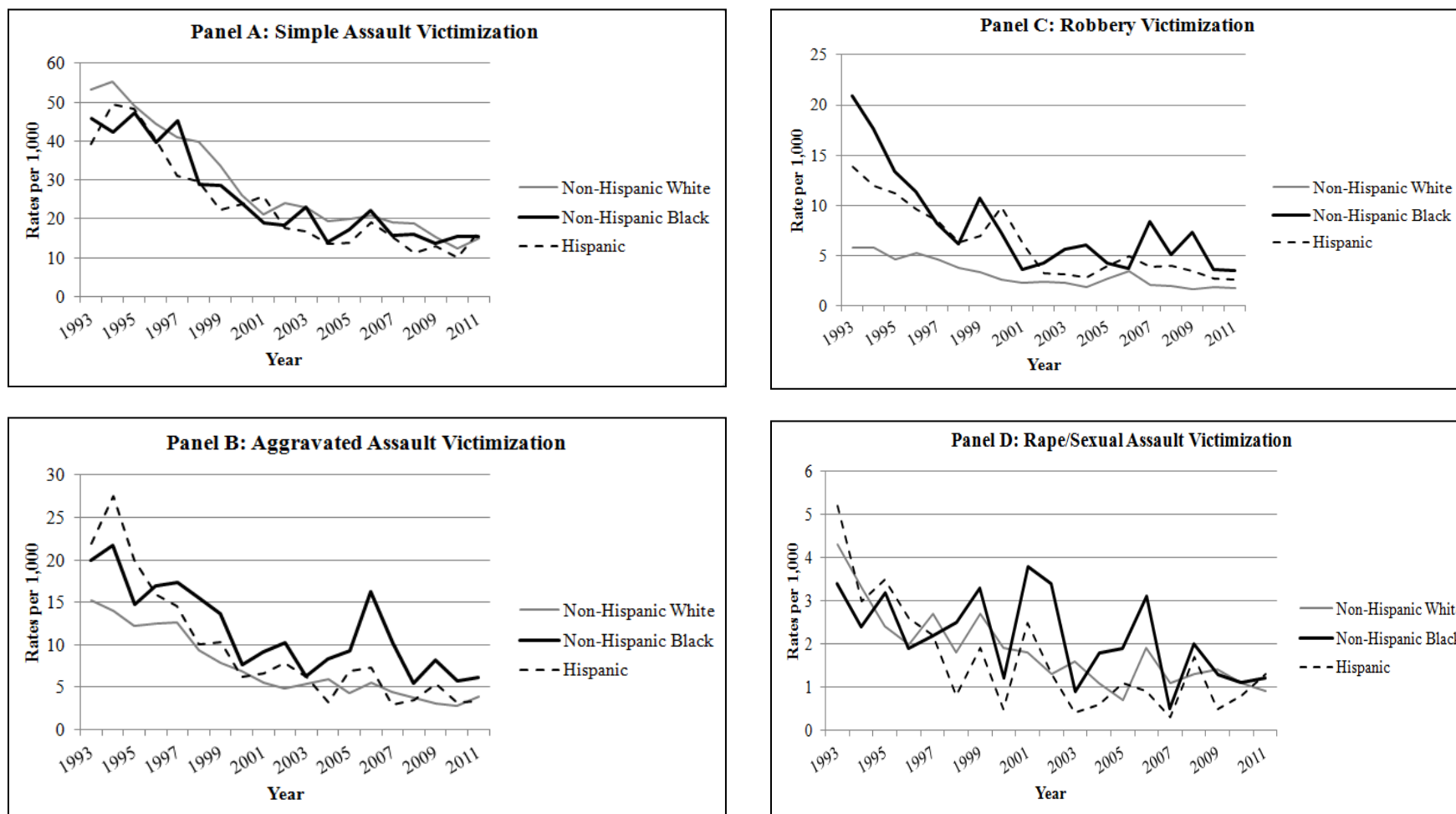
Source: Generated using the NCVS Victimization Analysis Tool at www.bjs.gov (February 14, 2013).

The trends reflected in Figure 2.4 mask considerable variation by type of crime. The total rates of nonfatal violence might be unduly influenced by the inclusion of simple assault, a crime for which Black-White disparities are not as notable. The disaggregated trends are displayed in Figure 2.5, which compares for the same period NCVS data for rape/sexual assault,

aggravated assault, robbery, and simple assault. As panel “A” shows, when it comes to simple assault, non-Hispanic Whites are at as much risk, and sometimes are more at risk than non-Hispanic Blacks. Averaging the annual rates across the entire 1993-2011 period, non-Hispanic Whites were victimized by simple assault (29.0 per 1,000) more often than non-Hispanic Blacks and Hispanics (25.9 and 24.0 per 1,000, respectively). The predominance of simple assault among Whites might reflect cultural differences in the self-reporting of assaults, whereby Blacks tend to report fewer of the less threatening assaults they experience, while Whites do the opposite (Skogan, 1981). While this hypothesis remains speculative, it highlights the idea that aggregate rates of nonfatal violence must be interpreted with caution. If the Black -White difference in rates of assault is positive for aggravated assault, but negative for simple assault, then combining the two in an overall index of nonfatal violence has the effect of cancelling out otherwise apparent disparities in types of nonfatal violence.

Considering serious violent crimes only, race/ethnicity differences exist, as can be seen in panels “B” to “D” of Figure 2.5. To illustrate this, take the most recent estimates. In 2011, non-Hispanic Blacks were the racial group most victimized by aggravated assault and robbery (with rates of 6.1 and 3.5 per 1,000 persons, respectively). Hispanics were the second most vulnerable to robbery (2.6 per 1,000) but had aggravated assault rates similar to the rates for non-Hispanic Whites. For rape/sexual assault, the rates are roughly comparable across the three groups, although slightly larger for non-Hispanic Blacks and Hispanics. In short, the overall picture is that, despite year-to-year and within-crime variation, nonfatal violence is a phenomenon that affects non-Hispanic Black victims primarily, followed by Hispanic and non-Hispanic Whites (Truman and Planty, 2012).

Figure 2.5. Nonfatal Violent Victimization by Type of Crime and Race and Hispanic Origin, 1993-2011



Source: Generated using the NCVS Victimization Analysis Tool at www.bjs.gov (February 14, 2013).

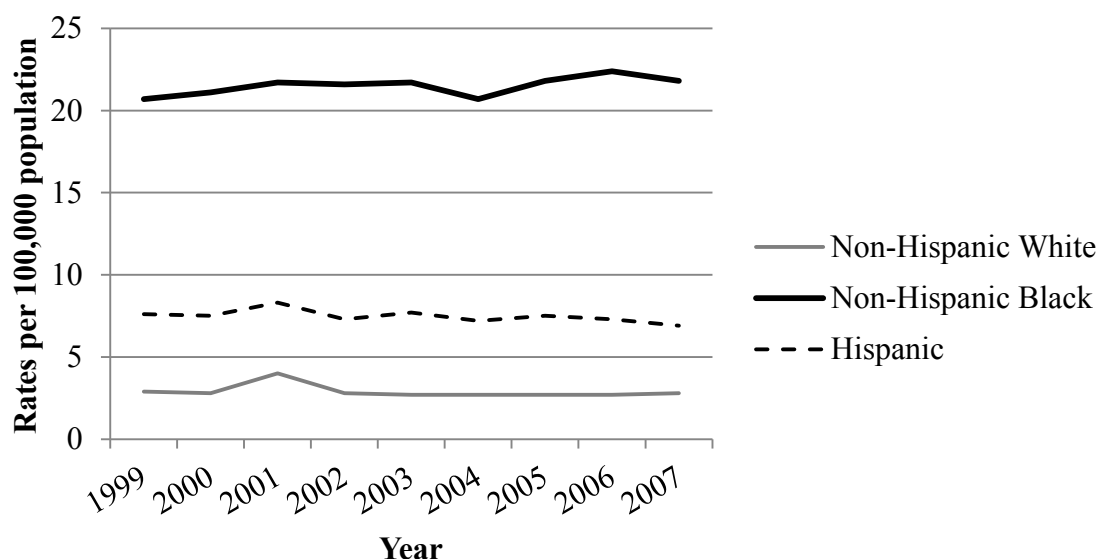
Crime Statistics. The statistics described so far support the observation that the risk of nonfatal violent victimization is not randomly distributed across racial/ethnic groups, but is rather concentrated among minorities. Namely, non-Hispanic Blacks and Hispanics appear to be at an increased risk for nonfatal violence in comparison to non-Hispanic Whites. A key issue that remains is whether race/ethnicity disparities extend beyond nonfatal violence. The Supplementary Homicide Reports (SHR), collected as part of the Uniform Crime Report (UCR) program of the Federal Bureau of Investigation, are an alternative source of data to examine this issue. SHR provide annual counts of homicides in the United States, as well as basic descriptive information about the age, sex, and race of the victim, the relationship to the offender, and the circumstances of the homicide.

As with victim surveys, SHR statistics show Blacks as the racial group most susceptible to homicide victimization. For example, for the period between 1980 and 2008, about half of all homicide victims were Black (Harell, 2007). Homicide victimization rates among Blacks reached the highest point in the early 1990s, at 39.4 homicides per 100,000 U.S residents in 1991, and have decreased since (Cooper and Smith, 2011). Despite the downward trend, Black homicide rates have been historically higher than White rates. Hence, homicide victimization for Blacks in 2008 (19.6 per 100,000 U.S residents) was six times higher than the rate for Whites (3.3. per 100,000) (Cooper and Smith, 2011). Although these data document racial differences in fatal violence, unfortunately, SHR homicides are not disaggregated by victim's ethnicity.

Mortality Statistics. Government vital statistics such as mortality statistics reported by the Centers for Disease Control and Prevention (CDC) offer additional data regarding disparities in fatal victimization. Homicide is the second leading cause of death among persons aged 15 to 24, with minorities being disproportionately affected (Centers for Disease Control and

Prevention, 2010). In fact, during the period from 1999 to 2007, trend analyses revealed that the age-adjusted homicide rates for non-Hispanic Blacks ranged between 20.6 to 22.4 per 100,000 population, the highest of all racial groups, as displayed in Figure 2.6. Homicide rates among non-Hispanic Blacks were five times higher than the rates for non-Hispanic Whites and three times higher than the rates for Hispanics (Logan, Smith, and Stevens, 2011).

Figure 2.6. Age-Adjusted Homicide Death Rates by Race and Hispanic Origin, 1999-2007



Source: CDC/NCHS, National Vital Statistics System, Mortality.

To further illustrate between-group differences in homicide, consider the 2009 CDC statistics, the most recent year for which race/ethnicity disaggregated death rates are available. The pattern of fatal violence by race/ethnicity revealed by mortality statistics is very similar to the pattern of nonfatal violence documented in victim surveys. That is, in 2009, non-Hispanic Blacks registered the highest rates of homicide of all racial/ethnic groups (18.8 per 100,000 U.S population), followed by Hispanics of any race (6.2 per 100,000), and non-Hispanic Whites (2.6 per 100,000) (Kochanek et al., 2012). Given the evidence of a slight underreporting of Hispanic origin on death certificates (Arias, Eschbach, Schauman, Backlund, and Sorlie, 2010; Rosenberg,

Maurer, Sorlie, and Johnson, 1999), it is possible that these numbers underestimate the true count of homicides within the Hispanic population, thereby presenting a conservative picture in terms of race/ethnicity differences in fatal violence.

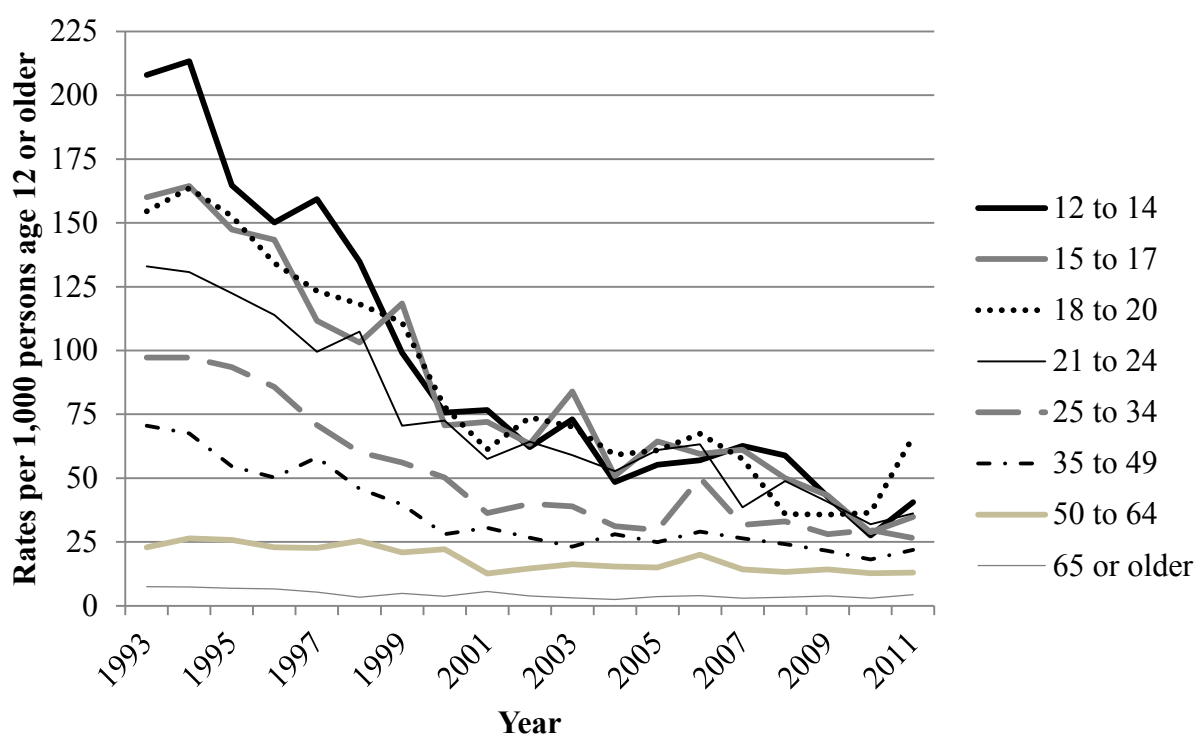
Adolescence Patterns of Nonfatal Violent Victimization by Race/Ethnicity

It is well established that victimization risk varies by age. Considerable evidence suggests that serious violent victimization is not disproportionately experienced by adults, but affects children and adolescents significantly. Adolescents are victims of violence in school settings or in the course of school-related activities (Garofalo, Siegel, and Laub, 1987); but in addition to school-based incidents—which are typically minor with respect to injury and severity—adolescents are often seriously victimized away from school (Robers, Zhang, Truman, and Snyder, 2012). Due to exposure to violence both at school and in community settings, it is intuitive to describe adolescence as a stage of high vulnerability to both fatal and nonfatal violent victimization (Finkelhor and Dziuba-Leatherman, 1994; Finkelhor, Turner, Ormrod, and Hamby, 2009; Finkelhor, Turner, Ormrod, Hambly, and Kracke, 2009; Hashima and Finkelhor, 1999; Robers et al., 2012; Snyder and Sickmund, 2006). Furthermore, as is shown below, when looking at the convergence of age, race/ethnicity, and violent victimization, the picture that emerges is that of a predominantly young and minority victim.

NCVS Statistics. In general, victimization increases during the teenage years, peaking at about 20 years of age and decreasing afterwards (Perkins, 1997). This age-risk pattern holds across various forms of violent crime. With respect to nonfatal violent victimization, estimates from the NCVS show that juveniles and young adults are more prone to victimization than any other age groups. In one of the first reports of victimization trends by age, Moone (1994) noted that the 1992 NCVS rates of simple and aggravated assault for juveniles (i.e., ages 12 to 17) were

twice as large as those of persons aged 25 to 34, and over five times greater than the rates of persons aged 35 or older. Similarly, Hashima and Finkelhor's (1999) analysis of 1994 NCVS data estimated that overall nonfatal violent victimization rates for persons aged 12 to 17, relative to persons aged 18 or older, were dramatically high, generally exceeding them by a factor of two or three. Clearly, juveniles are an at-risk group for violence. The risk of nonfatal violence during the entire 1993-2003 period was more than double for juveniles, relative to individuals aged 18 or older (Snyder and Sickmund, 2006).

Figure 2.7. Nonfatal Violent Victimization Rates by Age, 1993-2011



Source: Generated using the NCVS Victimization Analysis Tool at www.bjs.gov (February 20, 2013).

It is important to note that the overall nonfatal violent victimization against youth has been on a decline since 1994, as the rate for individuals in the age 12-17 age range was reported

to be 61.9 per 1,000 persons age 12 or older in 1994, a substantially higher estimate in relation to the corresponding 2010 rate of 14.0 per 1,000 (White and Lauritsen, 2012). In fact, juvenile violent victimization decreased since the mid-1990s both away from school and at school (Robers et al., 2012). Notwithstanding this year-to-year variation in age-adjusted rates, the stability in the ranking of age differentials in violent victimization is remarkable. Figure 2.7 shows that despite a downward trend and variability in year-to-year estimates for the 1993-2011 period, incidents of nonfatal violence continued to primarily affect young victims.

The confluence of age and race/ethnicity also shows evidence of disparities in nonfatal violence. According to 1992 NCVS data, the three age and racial/ethnic groups most vulnerable to serious violent victimization were non-Hispanic Blacks ages of 18 to 21 (72 per 1,000 persons age 12 or older), followed by non-Hispanic Blacks ages 12 to 14 (58.6 per 1,000), and Hispanics ages 15 to 17 (57.0 per 1,000) (Perkins, 1997). In 1994, the rate of juvenile serious nonfatal violent victimization was 1.3 times higher for non-Hispanic Blacks relative to non-Hispanic Whites, but comparable to the Hispanic rate. This pattern remained unchanged by the most part until 2002. But from 2002 to 2010, serious violence against Hispanic youth decreased largely, so that by 2010, non-Hispanic Black youth continued to report the largest rates, while Hispanic youth reported rates comparable to the rates of non-Hispanic White youth (White and Lauritsen, 2012). These trends are seen in panels “A” and “B” of Figure 2.8, which show the total nonfatal violent victimization rates by race/ethnicity for persons ages 12 to 14 and 15 to 17. As can be seen, non-Hispanic Black youth were largely prone to experience violence during the 1993-2011 period.

Figure 2.8. Victimization by Age, Race, and Hispanic Origin, 1993-2011



Source: Generated using the NCVS Victimization Analysis Tool at www.bjs.gov (February 20, 2013).

Mortality Statistics. Beyond nonfatal victimization, age and race/ethnicity differentials are seen in mortality statistics. For example, during the 1980-1994 period, nearly 10% of all homicide victims were under the age of 18 (Snyder, Sickmund, and Poe-Yamagata, 1996). As reported by the CDC, homicide was the second leading cause of death among individuals ages 15 to 24, and the third leading cause for persons ages 10 to 14 in 2007 (Karch, Dahlberg, and Patel, 2010). Yet, as was the case for nonfatal victimization, youth homicides have been on a decline, dropping more than half since 1993 (White and Lauritsen, 2012). As with adults, violence affects young persons of color significantly. For example, a study of fatal injuries among children and adolescents by race/ethnicity by the CDC reported that among children aged 10 to 19, the highest rates of homicide deaths from 1999 to 2002 corresponded to non-Hispanic Blacks and American Indian/Alaska Natives (Bernard, Paulozzi, and Wallace, 2007).

Estimates from National Studies. The estimates described up to this point are based on victimization surveys and mortality statistics, which are subject to measurement error, especially as it pertains to capturing violence experienced by children and adolescents. First, the NCVS excludes a substantial portion of victimizations experienced by youth, both based on the sampling design, as well as the way in which interviews are administered. On the one hand, by only interviewing household members ages 12 or older, NCVS is not able to record victimization acts experienced by children 11 years of age or younger. Yet, the National Survey of Children's Exposure to Violence (NatSCEV) reported that children in the ages 0 to 13 suffered a substantial number of physical assaults. NatSCEV researchers reported past year prevalence estimates that ranged from 17.9% for subjects up to a year old⁷ to about 56.5% for subjects ages 6-9 (Finkelhor et al., 2009). On the other hand, NCVS has been criticized for failing to require confidential

⁷ In the NatSCEV, an interview with an adult caregiver was used to gather information on subjects younger than 10 years old. Thus, estimates for individuals up to one year of age are based on data provided by caregivers.

interviewing of juveniles, which may reduce the disclosure, especially of family-based violence incidents, among young respondents (Finkelhor and Wells, 2003).

Based on these methodological shortcomings, NCVS estimates of nonfatal violent victimization among youth should be interpreted with caution. A review by Wells and Rankin (1995) showed that NCVS prevalence estimates for nonfatal violent victimization were four times smaller than the estimates produced from two nationally representative, youth-based studies: the National Youth Survey (NYS) and the Monitoring the Future Survey (MTFS).⁸ Despite this discrepancy, the authors noted that the three data sets were in general agreement as to the *relative magnitude* of victimization differences across demographic groups. For example, the percentage of the sample that reported any nonfatal violent victimization in the past year was always higher among Blacks relative to Whites respondents, and this pattern was apparent in the 1978 NCVS data (6.8% of Blacks versus 6.6% of Whites), the NYS (28.0% of Blacks and 27% of Whites), and the MTFS study (29% of Blacks versus 24.5% of Whites). These findings support the robustness of the age and race/ethnicity differentials in nonfatal violence discussed so far, notwithstanding the methodological data issues noted.

Estimates of violent victimization derived from nationally representative samples of youth that are not subject to the methodological issues of victimization surveys offer additional evidence to assess possible race/ethnicity and age differences in violence. Here, the empirical evidence is slightly mixed, with some studies reporting that minorities experience more nonfatal violent victimization, and other studies revealing discordant findings. One of the studies that show racial/ethnicity disparities is Finkelhor and Dziuba-Leatherman's (1994) national survey of 2,000 youth between the ages of 10 and 16. The authors estimated that Black and Hispanic

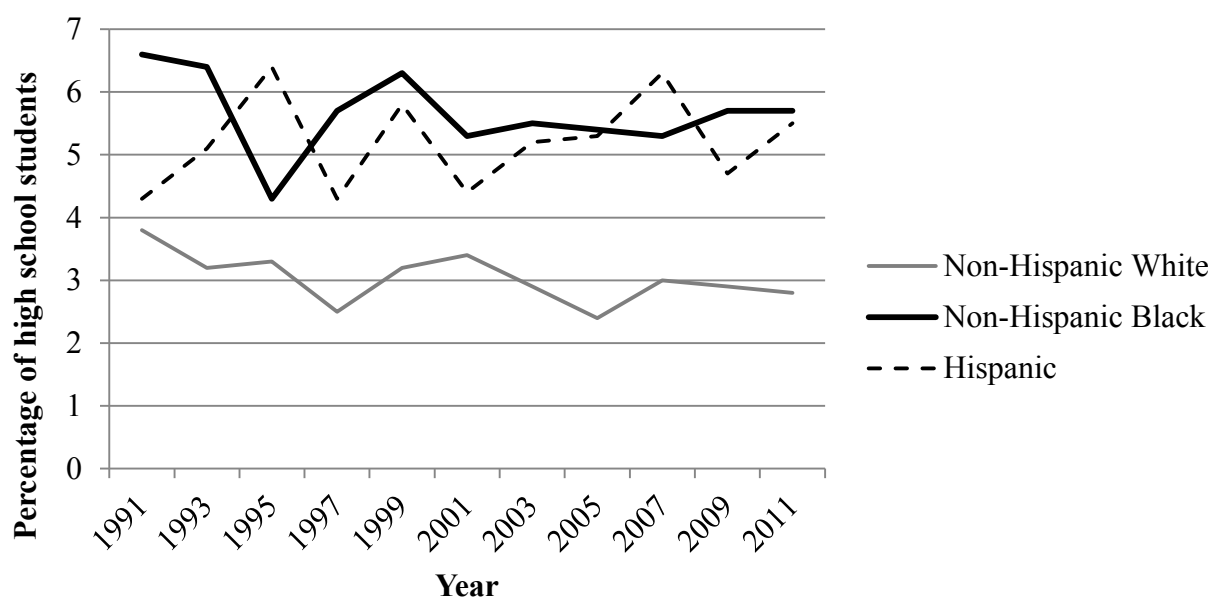
⁸ Wells and Rankin (1995) selected respondents age 13 to 19 and focused on violent victimization measured as assault, robbery, and rape. This ensured the comparability of the estimates reported, as they were generated from distinct data sources.

children were more likely than White children to report lifetime violent victimization. However, their definition of violent victimization, which included assault, corporal punishment, sexual abuse, violence to genitals, and kidnapping, may have been unduly influenced by crime-specific figures. Another national study, the National Survey of Adolescents (NSA), sampled 4,023 youth between the ages of 12 and 17 living in U.S households with residential telephone lines (Kilpatrick and Saunders, 2000). The research team presented lifetime prevalence estimates by type of crime and reported—in line with official statistics—that sexual assault and physical assault were more prevalent among non-Caucasian (i.e., Blacks) than Caucasian youth (i.e., Whites). In a later publication, Kilpatrick, Saunders, and Smith (2003) show that racial/ethnic minority groups reported the largest lifetime prevalence of physical assault. Specifically, out of the estimated 3.9 million adolescent victims, 27.3% were Native American, 24.2% were non-Hispanic Black, 20.9% were Hispanic, 15.6% were non-Hispanic White, and 6.5% were Asian.

Since 1991, the Youth Risk Behavior Surveillance System (YRBSS) from the CDC has provided national biennial estimates of victimization among young adults (Centers for Disease and Control Prevention, 2012). The YRBSS is a nationally representative sample of students in grades 9 through 12 and it monitors six categories of health-risk related behaviors among youth: (1) behaviors that contribute to unintentional injuries and violence; (2) sexual behaviors; (3) tobacco use; (4) alcohol and drug use; (5) unhealthy diet; and (6) physical inactivity. The data are collected from ongoing surveys, one-time national surveys, and special-population surveys. Ongoing surveys are school-based and include representative samples of high school students from national, state, large urban, and tribal school districts. In 2011, the most recent year for which estimates are available, the YRBSS included a sample of 15,425 high school students in the U.S. Estimates regarding violent victimization in general (outside school property) are

derived from a question that asks, in reference to the past 12 months, whether the respondent was injured in a physical fight.⁹ Figure 2.9 presents these estimates disaggregated by race/ethnicity (i.e., non-Hispanic Blacks, Hispanics, and non-Hispanic Whites) for the 1991-2011 period.

Figure 2.9. High School Students Injured in a Physical Fight, by Race and Hispanic Origin



Source: Centers for Disease Control and Prevention. Generated from the Youth Online Interactive Data Tables at <http://apps.nccd.cdc.gov/youthonline/App/Default.aspx> (May, 21, 2013).

As Figure 2.9 shows, violent victimization among high school students, as measured by being injured in a physical fight, differs by race/ethnicity. Specifically, non-Hispanic Black adolescents were the most likely to be injured a physical fight, followed closely by Hispanics. The percentage of non-Hispanic Black adolescents injured in a physical fight was higher than the corresponding percentage of adolescents in other race/ethnicity groups, and this was the case for most years, except for 1995 and 2007, when Hispanic youth were the most likely of all racial/ethnic groups to be injured in a physical fight. Throughout the entire 1993-2011 period,

⁹ Adolescents were asked specifically about physical fights where they had to be treated by a nurse or doctor.

non-Hispanic White adolescents were the least likely to be injured in a physical fight, compared to the other two groups. Thus, the picture of race/ethnicity differences in violent victimization among youth that emerges from examining the YRBSS estimates is comparable to the picture presented by NCVS data and other national surveys; namely, that minorities are the most violently victimized of all racial/ethnic groups.

In contrast, a series of studies have reported that minorities are particularly less vulnerable to experience violence. The divergent findings apply to simple assault, peer victimization, and school-based victimization. First, White and Lauritsen (2012), using NCVS data, reported that during the 1994-2010 period, White youths (i.e., ages 12 to 17) were the most at risk of simple assault of all race/ethnicity groups. For example, in 1994 there were 143.5 simple assaults per 1,000 non-Hispanic White youth, 98.8 per 1,000 Hispanic youth, and 79.0 per 1,000 non-Hispanic Black youth. Second, in a longitudinal study of 1,956 first to sixth graders in 14 public elementary schools in a mid-sized Midwestern city, Hanish and Guerra (2000) estimated that Hispanic children at all grade levels were less likely to experience peer victimization than Black/African American and White children. Thus, contrary to the extant literature on violent victimization among youth, the authors' findings contradict the hypothesis that students of color would experience more victimization. In accordance with Hanish and Guerra's (2000) study, the *2011 Indicators of School Crime and Safety* report by the Bureau of Justice Statistics (Roberts et al., 2012) revealed fewer racial disparities in nonfatal violent victimization at school than what are observed in general contexts. This report noted that in 2009, 2% of non-Hispanic Black students age 12-18 reported violent victimization in school (i.e., rape, sexual assault, robbery, aggravated assault, and simple assault), compared to about 1% of each non-Hispanic White and Hispanic students.

An intriguing question is whether these discordant findings may have resulted from peer victimization being a unique experience, different from the common forms of violent victimization captured by victimization survey statistics. For example, Hanish and Guerra's measure of peer victimization was based on sociometric student ratings where classmates nominated those peers who were most likely to be pushed and hit by other kids. Arguably, such measure taps minor acts of violence and is restricted to the school context. In comparison, the measures of nonfatal violent victimization described thus far reflect more serious acts occurring both at school and away from school. Taken together, anomalous findings of reversed racial disparities might presumably suggest the existence of two compatible yet distinct models for the racial/ethnic disparities in violence. Namely, a first model where serious violence affects youths of color the most, and a second model in which White youths are the most impacted by simple assault and school-based forms of violence. These descriptive patterns of violence imply that the study of racial/ethnic disparities must distinguish between serious and minor violence, as well as school-based or away from school incidents. This dissertation focuses on serious forms of violence that occurred within the respondent's neighborhood and were perpetrated by non-family members, as is discussed in Chapter 4.

Summary

The preceding appraisal of victimization survey data as well as crime and mortality statistics and nationally representative studies underscores the observation that nonfatal violent victimization is not equally distributed across all demographic groups, but is pronounced within certain age and race/ethnicity groups. Of particular importance for the purposes of this dissertation, minorities are the most vulnerable violent victimization. The figures examined

above also point to a number of conclusions with respect to the nature of racial/ethnic disparities in violent victimization.

First, it is evident that a person's race/ethnicity influences the experience of violent victimization. Considering the three largest racial/ethnic groups, the main picture depicted by the data is one that applies both to fatal and nonfatal victimization: a portrayal of non-Hispanic Blacks as the most violently victimized group, followed by Hispanics, and non-Hispanic Whites. Second, the convergence of age and race/ethnicity delineates further disparities in violent victimization. Victimization survey and mortality statistics show some evidence that minority and nonminority youth are not equally exposed to violence. However, the evidence points to race/ethnicity differentials which seem to depend on the definition of violence. On one side, if we concentrate on the more common definitions of violence, particularly serious violence as measured by aggravated assault, rape/sexual assault, and robbery, Black and Hispanic youth are the most prone to violence. On the other side, if violence is measured as peer victimization, simple assault, or school victimization, then all three race/ethnicity groups face about equal risks of becoming a victim, or in some cases Whites appear as more prone to victimization. Lastly, there is robust evidence that the disparities studied here have been stable across time. Indeed, despite a generalized trend of decrease in violent victimization from 1993 to 2011, the pattern of unequal risk across race/ethnicity groups remained unchanged.

CONCLUSION

A long-standing pattern of racial/ethnic disparities in violent victimization has drawn extensive attention from scholars and researchers. The pattern is one where non-Hispanic Blacks are the racial/ethnic group most likely to experience violence, followed by Hispanics, while non-Hispanic Whites are the least violently victimized group. The pattern remains over time, is

revealed in studies of adults and adolescent samples, and has been verified with alternative sources of data, including: self-report victimization surveys, official crime statistics, and mortality statistics. A number of theoretical explanations have been offered to account for these victimization disparities, primarily from the perspective of criminal opportunity theories. The next chapter examines each of these theories in detail, paying attention to three models—mediation, moderation, and context—that are implicitly or explicitly proposed in these theories and may explain the disparities in violent victimization by race/ethnicity documented in this chapter.

Chapter 3

EXPLAINING THE DIFFERENCES IN VIOLENT VICTIMIZATION BY RACE/ETHNICITY

Criminal opportunity has been a prominent perspective for explaining the differences in the risk of victimization across demographic groups discussed in Chapter 2. Theories such as lifestyle/exposure and routine activity, which were integrated into a single paradigm by Cohen et al. (1981), are subsumed under the umbrella term of criminal opportunity theories. As is discussed in this chapter, these theories connect victim's lifestyles and routines with their vulnerability to criminal victimization in a process that results from attractive targets being exposed and in close proximity to motivated offenders, in situations or circumstances of weakened guardianship, as part of their daily course of activities and routine patterns. A vast empirical literature on violent victimization provides support for the predictive validity of opportunity theories (Cohen et al., 1981; Kennedy and Forde, 1990; Lasley, 1989; Miethe et al., 1987; Miethe and Meier, 1990; Miethe and McDowall, 1993; Mustaine and Tewksbury, 2002; Sampson, 1987; Sampson and Lauritsen, 1990; Wilcox Rountree et al., 1994) and their potential for offering general accounts of the etiology of victimization (Hollis-Peel et al., 2011; Madero-Hernandez and Fisher, 2013; Spano and Freilich, 2009).

Empirical support notwithstanding, opportunity theories are not without limitations. The literature finds that opportunities are strongly linked to violent victimization, but there also is evidence of enduring effects of race/ethnicity that remain in fully specified statistical models of this outcome (Burrow and Apel, 2008; Henson et al., 2010; Schreck and Fisher, 2004; Wilcox et al., 2009). In addition, there is mixed evidence regarding the mediation hypothesis implicit in opportunity theories, or the notion that race/ethnicity effects on victimization are merely indirect

and mediated by indicators of criminal opportunity (Henson et al., 2010; Lasley, 1987; Miethe et al. 1987).

The goal of this chapter is to discuss three plausible alternative theoretical accounts and their corresponding empirical evidence regarding the racial/ethnic disparities in violent victimization: (1) a mediation hypothesis; (2) a moderation hypothesis; and (3) a context hypothesis. The first part of this chapter describes the three main opportunity theories, including: Hindelang et al.'s (1978) lifestyle/exposure theory, Cohen and Felson's (1979) routine activity theory, and Cohen et al.'s (1981) opportunity theory of criminal victimization. Next, this chapter describes the mediation hypothesis implicit in these opportunity theories to account for race/ethnicity differentials in victimization, followed by a review of the empirical evidence that examines mediation effects. The second part of this chapter presents the moderation hypothesis, starting with its theoretical foundations, and followed by an assessment of research findings of race/ethnicity-conditioned influences on victimization. The third part of this chapter focuses on the context hypothesis; it assesses the logic and empirical evidence concerning the notion that race/ethnicity differentials in violent victimization may be largely due to race/ethnicity being confounded with high-risk community contexts that increase the likelihood of violent victimization because they provide ample criminal opportunities. The chapter concludes with a broad description of these three alternative hypotheses and their implications for our understanding of violent victimization.

THE LIFESTYLE/EXPOSURE THEORY OF CRIMINAL VICTIMIZATION

Victimization theories study crime incidents from the perspective of the victim, paying substantially less attention to the actions of offenders. However, these theories differ in the specification of the dynamics through which victims' characteristics relate to victimization

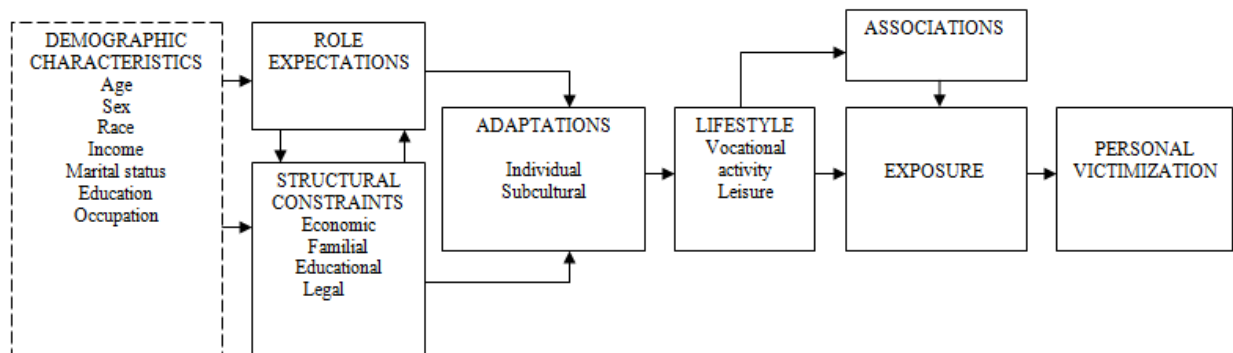
(Gottfredson, 1981). Among the early perspectives, a typological approach highlighted the commonalities between certain groups of victims (e.g., the old victim, the young victim, the mentally defective, etc.) (von Hentig, 1948; Mendelsohn, 1956), and a victim precipitation paradigm focused on the victims' role in triggering the events that lead to their victimization (Amir, 1967; Wolfgang, 1958). In contrast, contemporary opportunity theories conceive victimization incidents as emanating from the victim's lifestyles, routines, and individual demographic characteristics.

Among the prominent opportunity theories of victimization is lifestyle/exposure, developed by Hindelang and colleagues (1978) as an explanation for the differential pattern of personal victimization that exists across demographic groups. Drawing from their analyses of 1972, 1973, and 1974 NCS data, the authors found that the likelihood of personal victimization (i.e., measured as rape, robbery, assault, and personal larceny) differed by age, sex, race, income, and marital status. Despite variation across cities, they found that younger persons, females, singles, and low-income persons were more likely than their counterparts to experience personal victimization. In making sense of these findings, the authors presented a systematic theory that emphasizes individual and situational variables in the etiology of criminal victimization.

The theoretical model outlined by Hindelang and colleagues (1978) has lifestyles as a crucial explanatory concept and has two main conceptual components. First, the model specifies the antecedents of a person's lifestyles. Second, the model describes the mechanisms that link lifestyles with victimization. The argument is that lifestyles influence victimization because they affect a victim's degree of exposure to situations that pose a high risk for criminal victimization, insofar as they affect how often people go out, and when they do, when and where they go, with whom, and for how long. For instance, individuals who take public transportation in high-crime

areas on a daily basis are exposed to strangers in these public settings, including possible offenders. These individuals are more vulnerable to experiencing various types of victimization, especially if they travel alone, than individuals who do not participate in this lifestyle. For ease of discussion, the theoretical model proposed by Hindelang and colleagues (1978) is segmented into two main causal paths: (1) a first path that examines the determinants of lifestyles, and (2) a second path that focuses on the role lifestyles play on victimization through their connection with exposure to risky situations. The full model is presented in Figure 3.1.

Figure 3.1. A Lifestyle/Exposure Model of Personal Victimization



Source: Hindelang, M. J., Gottfredson, M. R., & Garofalo, J. (1978). *Victims of Personal Crime: An Empirical Foundation for a Theory of Personal Victimization*. Cambridge, MA: Ballinger Publishing Company.

The Connection between Demographic Characteristics and Lifestyles

According to lifestyles/exposure theory, lifestyles are a set of daily activities such as “working outside the home, going to school, or keeping house, as well as typical leisure pursuits” (Hindelang et al., 1978, p. 244). The pursuit of these lifestyles is largely determined by the social institutions individuals are part of and their position in the social structure. As Figure 3.1 shows, the cycle that brings about lifestyles is complex. It includes a first connection between demographic characteristics and role expectations and structural constraints. However,

demographic variables are not part of the causal sequence, as denoted by the segmented line enclosing the first box in Figure 3.1. Instead, demographics are proxies of role expectations and structural constraints which bring about lifestyles via individual and subcultural adaptations.

In reference to *role expectations*, Hindelang et al. (1978) explain that a person's social status, whether ascribed or achieved, has certain cultural norms attached to it. These norms are important for they shape the behaviors of those of a given status. For example, the age of a person has certain culturally expected roles associated with it; younger persons are expected to spend most of their time at school, but schooling becomes less salient with age, as older persons are expected to engage in work-based activities instead. Likewise, a person's marital status stipulates certain roles; married individuals are expected to spend more time at home and in family-based activities than singles. In both of these examples, a person's social status, measured by a demographic characteristic, carries with it predefined typical behaviors.

A second antecedent to lifestyles is the concept of *structural constraints*. Strongly linked to a person's position within the social structure, this is the notion that economic, familial, educational, or legal arrangements in society limit our choices of behavior. This aspect of the theory is of fundamental importance. As Lauritsen (2010) comments, the lifestyle/exposure model has been mistakenly criticized as proposing that individuals' lifestyles merely reflect preferences and choices and interpreted to imply that victims are to blame for their own demise. Contrary to this criticism, Hindelang et al. (1978) stressed that structural constraints can effectively restrict the options people have when it comes to fundamental aspects of life. For example, individuals of lower socioeconomic status do not have unlimited choices of neighborhood of residence or transportation modes. That they opt to live in poor neighborhoods is often a no-choice decision, as living in middle-class or upper-class areas is outside their

economic means. Choices that would be within the reach of those of higher socioeconomic status, such as attending college, fall outside the range the behavioral choices available to individuals of lower socioeconomic status.

Hindelang and colleagues (1978) note that role expectations and structural constraints are interrelated but conceptually independent, as depicted in Figure 3.1. Changes in role expectations bring about changes in structural constraints, and vice versa. For instance, societies that embrace nontraditional family structures where women are not solely devoted to housekeeping (a role expectation change) simultaneously extend workforce opportunities to women (a structural constraint change). As depicted in the middle of Figure 3.1, role expectations and structural constraints produce individual and subcultural adaptations. As an example of an individual adaptation, individuals who live in high-crime neighborhoods and cannot afford to move out may develop a tendency to engage in precautionary behaviors to avoid victimization. At the aggregate level, this may result in between-neighborhood differences in attitudes that promote the use of such precautions, which represents an example of subcultural adaptation. According to the theory, these adaptations evolve into fairly regular behavioral patterns, called lifestyles, as seen in Figure 3.1.

The Connection between Lifestyles and Victimization

Lifestyle is a crucial component of the lifestyle/exposure theory that articulates the mechanisms underlying the long-standing correlation between demographics and victimization. In brief, the main tenet of the theory is that variation in lifestyles is related to variation in the probability of victimization, a connection mediated by exposure to risky situations, as shown in Figure 3.1. Hindelang and colleagues (1978) capitalized on the well-documented finding that crimes are not randomly dispersed but are disproportionately clustered in places, times, and

persons (Gottfredson, 1986). It follows that the risk of victimization will be unequal across times and locales. Individuals located in these high-risk places at high-risk times are said to be “exposed” to high-crime risk, which represents the concept of *exposure*. Variation in exposure to risky situations is largely determined by a person’s lifestyles; however, a person’s exposure is seen as the most proximate cause of victimization, and not his/her lifestyles. This is depicted in the direct link between exposure and personal victimization in Figure 3.1. This distinction is important for it highlights the situational emphasis of the theory.

Lifestyles also have an indirect effect on a person’s exposure through its impact on associations. By associations, Hindelang et al. (1978) connote “the more or less sustained personal relationships among individuals that evolve from similar lifestyles and interests shared by these individuals” (p. 245). Most persons tend to associate with others that resemble them and to the extent that persons share the demographic profile of offenders, they are therefore more likely to interact with would-be offenders, increasing their exposure and likelihood of victimization. This idea was later articulated as the “principle of homogamy” by Cohen and colleagues (1981) and is a cornerstone to the way opportunity theories account for race/ethnicity disparities in victimization risk. To the extent that individuals interact with others who resemble them in terms of demographic characteristics, as the principle of homogamy states, this means that persons who have the same demographic profile of offenders have a higher chance of interacting with offenders, and this is particularly the case of racial/ethnic minorities. It follows that the increased likelihood of victimization among racial/ethnic minorities can be explained as a function of an increased interaction with motivated offenders. As Gottfredson (1986) explains, unlike most victimization theories, Hindelang et al.’s (1978) concept of “associations” brought

back the role of criminal motivation factors without deemphasizing the salience of situational factors in the explanation of crime incidents.

Summary of Main Theoretical Points

Succinctly put, lifestyle/exposure theory posits that persons with certain demographic profiles are more prone to victimization because their lifestyles expose them to situations of high risk for victimization. The main theory postulates are summarized as follows. First, the probability of personal victimization increases as a function of engaging in lifestyles that affect the amount of time spent in public spaces, particularly at night, and time spent among strangers. These lifestyles are important because they increase the exposure to would-be offenders without effective restraints that can prevent a crime. Second, the probability of personal victimization is much higher among persons who share the demographic characteristics of offenders (e.g., the young and males¹⁰) due to their interaction and/or inability to isolate themselves from potential offenders. Third, exposure to risky situations is determined by lifestyles. It follows that the prevention of victimization requires changing the lifestyles that bring the most risk exposure.

ROUTINE ACTIVITY THEORY

Routine activity theory was articulated by Lawrence Cohen and Marcus Felson in a 1979 article titled “*Social Change and Crime Rate Trends: A Routine Activity Approach*”. The authors sought to provide a simple explanation for the increase in crime rates that occurred in the U.S during the post-World War II period. Cohen and Felson’s (1979) portrait of the forces that generate crime offered an alternative to the dominant paradigm in sociology at the time. They

¹⁰ It is important to note that the theory does not explicitly list the demographic groups most likely to have lifestyles of increased exposure to victimization. Hindelang et al. (1978) describe generally how age, sex, marital status, family income, and race can affect a person’s lifestyles, thereby influencing victimization. But they do not offer a specific discussion of race/ethnicity.

argued that the period from 1960 on represented a sociological paradox, as crime rates increased despite improvements in the macrosocial and structural conditions attributed as root causes of crime (e.g., economic inequality). Cohen and Felson (1979) framed changes in crime rates as resulting from changes in the normal patterns of routine activities.

Routine activity theory is largely a theory on the ecology of everyday life. The authors made evident the influence of Hawley's (1950) work on human ecology in their own work, in at least two main aspects. First, Cohen and Felson (1979) recognized that predatory behavior, including crime, is a form of symbiosis. Illegal activities must feed from legal activities of daily life, although this is an undesired outcome. Second, the authors called attention to the fact that crime is largely concentrated in space and time. Drawing from Hawley's (1950) concepts of rhythm, tempo, and timing, they posited that the spatio-temporal patterns of crime are structured by their corresponding patterns of legal activities. In brief, Cohen and Felson (1979) postulated two key ideas: that legal activities feed illegal ones, and that such symbiotic link results in a pattern where legal and illegal activities exhibit compatible and predictable spatio-temporal distributions.

As the preceding discussion shows, individuals' routines are a crucial concept of the theory. Routine activities are "any recurrent and prevalent activities which provide for basic population and individual needs" (Cohen and Felson, 1979, p. 593) and include work or other means for the provision of food and shelter, school, childrearing, and leisure activities. Routine activities vary with respect to where they take place. An important distinction is between activities that occur primarily at home and those that occur away from home, as the two vary in terms of situational opportunities for crime. For example, as we will see below, activities that take place at home generally involve the presence of other family members, whereas away-from-

home activities involve separation from family members who serve as guardians, as well as exposure to strangers and potential offenders.

The fundamental tenet of routine activity theory is that the social organization of legal routine activities structures opportunities for crime. To the extent that legal routines modify the situational convergence (or divergence) of the necessary elements for predatory crime, they affect the occurrence (or lack thereof) of crime events. Crime events result from the time and space confluence of three elements: (1) a motivated offender; (2) a suitable target; and (3) the lack or absence of a capable guardian who can prevent the crime. This enumeration of three necessary elements for crime is perhaps the most widely cited component of the theory, yet is not the only contribution.

Cohen and Felson (1979) proposed that one major change in the structure of routines: the increase in the dispersion of activities away from home and family, explained the increase in crime rates that occurred in the U.S since the 1960s. To test this proposition the authors analyzed yearly rates of homicide, forcible rape, aggravated assault, robbery, and burglary from 1947 to 1974. They calculated and examined the effect on crime rates of a household activity ratio, a measure of the aggregate dispersion of activities away from the household and the likelihood of owning attractive durable goods. In support for the theory, the household activity ratio had a significant and positive effect on crime rates, net of age structure and unemployment rates.

The trend to the dispersion of activities away from the home that started in the 1960s was characterized by an increase in the participation of women in the labor force, as well as the increase in single-adult households. This trend presumably led to the increase in crime through several mechanisms. First, as activities shifted away from the home into public settings,

individuals were more exposed to risky and vulnerable situations during the course of their activities. Second, these societal changes meant that more durable goods were produced and sold to fill a larger demand. Due to technological changes, durable goods became more lightweight and portable, which made these items highly suitable targets for theft. Third, away-from-home activities decreased the time people spent among family and friends who could protect against victimization, and these activities also increased the time people left their homes unattended. In short, the dispersion of activities away from the household was coupled with an increase in target suitability and a decrease in guardianship, all of which affected rates of crime.

From the above discussion it can be seen that routine activity theory has both micro-level and macro-level applications (Felson, 2002). The theory was first formulated as a macro-level explanation for the increase of crime rates; yet the causal process advanced by Cohen and Felson (1979) is derived from micro-level concepts (e.g., a capable guardian and suitable target). Thus, most empirical studies of routine activity theory employ individuals as the unit of analysis, for example, to investigate how the time people spend outside of home, where they go, and with whom they interact, affect their likelihood of victimization. This micro-level application of the theory was merged with the lifestyle/exposure theory and resulted in a more comprehensive criminal opportunity framework.

OPPORTUNITY THEORY OF CRIMINAL VICTIMIZATION

Compatibility of Lifestyle/Exposure and Routine Activity Theory

Despite differences in concepts and terminology, there are significant similarities between Hindelang and colleagues' (1978) lifestyle/exposure and Cohen and Felson's (1979) routine activity theories. First, both imply that criminal opportunities require more than a motivated offender. Cohen and Felson (1978) claimed that aggregate-level increases in suitable

targets and absence of guardians can increase crime independently of changes in the root causes of criminal motivation. Hindelang and colleagues (1978) stated that persons have a high risk of victimization insofar they are exposed to motivated offenders, which depended on victim's lifestyles. But the mere existence of a motivated offender, without a vulnerable victim, does not lead to victimization. Second, both theories highlight the role of larger societal forces in creating opportunities for crime, whether they are in the form of aggregate-level patterns of routines, role expectations, or structural constraints. Altogether, these points illustrate three shared assumptions of the theories: that a criminal opportunity is required for a crime to occur, that the availability of criminal opportunities varies across situations, and that opportunities are largely determined by victims' lifestyles and routines.

Clearly, there is a great deal of consistency among the two theories (Maxfield, 1987), with few substantial differences other than in the ways in which they were explained (i.e., micro-versus macro-level emphasis) (Garofalo, 1987). Perhaps in light of this theoretical overlapping it became evident that studies of victimization could no longer neglect the notion of "opportunity". However, it was not until the publication of the influential work of Cohen et al. (1981) that the key concepts that lie beneath a criminal opportunity were clearly articulated in their connection with criminal victimization. Cohen et al.'s (1981) work is credited with the integration of lifestyle/exposure and routine activity theories into a single paradigm that is widely utilized in micro-level studies of victimization and is the theoretical foundation of this dissertation.

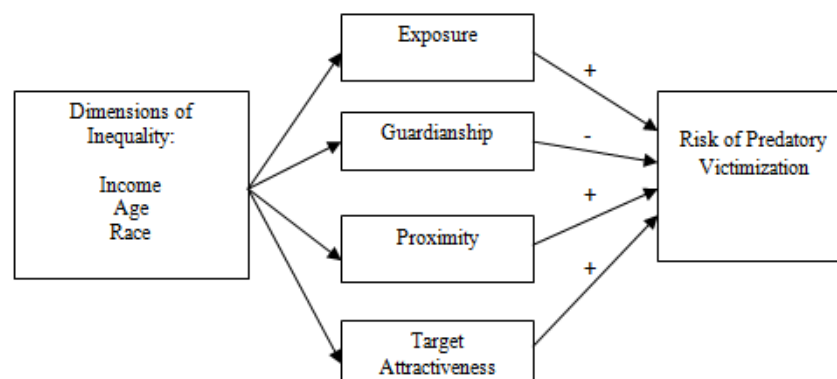
Fundamental Propositions and Concepts

Cohen and colleagues (1981) presented their opportunity model of criminal victimization in a seminal article titled "*Social Inequality and Predatory Criminal Victimization: An Exposition and Test of a Formal Theory*". The authors offered a systematic set of principles and

concepts that linked certain dimensions of social stratification with victimization. Their theory sought to account for the observed correlation between victimization and selected dimensions of the social stratification: income, age, and race.

Cohen et al.'s (1981) theoretical ideas can be summarized in three core arguments, each of which draws from Hindelang et al. (1978) and/or Cohen and Felson (1979). First, the authors argue that the risk of predatory victimization is largely a function of the lifestyles and activities of individuals, which position them (or their property) in opportunistic situations of contact with possible offenders and weak guardianship. Second, Cohen et al. (1981) propose four key factors that affect the likelihood of victimization: exposure to risk, guardianship, proximity to motivated offenders, and target attractiveness. Third, the authors contend that the effects of social inequality indicators (such as income, age, and race) on victimization should be mediated by the four key factors. This last point implies that the mechanism of connection between social inequality and victimization is mainly indirect, through opportunities. Ultimately, criminal opportunities, as configured by exposure, guardianship, proximity, and target attractiveness, are the most direct influence on the risk of victimization. This opportunity model of predatory victimization is graphically depicted in Figure 3.2.

Figure 3.2. Theoretical Model of Cohen et al.'s (1981) Opportunity Theory of Predatory Victimization



Given that this dissertation will rely on Cohen et al.'s (1981) formulation of opportunity as comprised by the above mentioned four key factors, it is illustrative to define each. First, the concept of *exposure* is closely aligned with Hindelang et al.'s (1978) work. Exposure is defined as "the physical vulnerability and accessibility of persons or objects to potential offenders at any time or place" (1981, p. 507). Unlike proximity, which refers to the physical closeness to offenders as is explained below, exposure captures vulnerability that results from being accessible and visible to offenders. Meier and Miethe (1993) list some of the most common empirical measures of exposure, which include: nonhousehold activity, number of hours a home is left unoccupied, use of public transportation, primary daily activity, among others.

Second, *guardianship* is defined as "the effectiveness of persons or objects in preventing violations from occurring, either by their presence or by some sort of direct or indirect action" (1981, p. 508). This concept, as elaborated by Cohen and Felson (1979), is broader than police presence. It includes other guardians who can prevent a crime, as well as social and/or physical sources of guardianship. For example, a family member or friend offers social guardianship, whereas the use of burglar alarms, locks, guard dogs, guns, or other target hardening measures provides physical guardianship. The empirical literature has relied on measures of both social and physical guardianship to test the theory.

Third, *proximity* to crime was defined by Cohen and colleagues as "the physical distance between areas where large number of potential targets of crime reside and areas where relatively large populations of potential offenders are found" (1981, p. 507). Although this concept was not explicitly mentioned prior to Cohen and colleagues' work, it is compatible with Hindelang et al.'s (1978) work, particularly their discussion of how individuals who cannot isolate themselves from offenders are more at risk than those who can do so, for instance by means of moving out

of high-crime areas. It also draws heavily from other opportunity theories, especially the literature on target choice, which pinpoints distance decay in the search for targets/victims, whereby offenders mostly search in areas of closest proximity to their residence (Eck and Weisburd, 1995; Repetto, 1974).

Like exposure, proximity has to do with contact with offenders, yet the two concepts are conceptually distinct. Consider the case of two individuals who live in the same neighborhood. It can be argued that they have comparable proximity to offenders, but their participation in different routines distinguishes them in terms of exposure to risky situations. For example, a person who walks in the neighborhood at night and takes public transportation will have more exposure to a stranger-perpetrated crime than a neighbor who spends most of his time at home and uses private transportation. As Meier and Miethe (1993) note, residing in a high-crime area is a strong predictor of crime risk. Other empirical indicators that have been used to measure proximity include: place of residence (i.e., urban, suburban, or rural), neighborhood unemployment rates, self-reported perceptions of fear, and neighborhood-level self-reported measures of delinquency.

Finally, the fourth key concept of opportunity is *target attractiveness*. It is analogous to Cohen and Felson's (1979) concept of target suitability, which includes the visibility, access to, material/intrinsic value, and inertia of likely targets. Cohen et al. (1981) denote target attractiveness as "the material or symbolic desirability of persons or property targets to potential offenders as well as the perceived inertia of a target against illegal treatment" (p. 508). The authors distinguish between attractiveness as applied to instrumental crimes (i.e., acts that are a means to acquire something material) versus expressive crimes (i.e., where the reward associated with the act is intrinsic, not material). Unlike Cohen and Felson's (1979) notion of target

suitability, Cohen et al. (1981) make no reference to visibility or access as elements of attractiveness, as these two were captured under the notion of exposure. Traditional empirical indicators of attractiveness include the possession of portable goods, ownership of expensive items, wearing jewelry or displaying cash in public, income, among others.

Drawing from Cohen et al. (1981), the following propositions illustrate the hypothesized effects that each of these variables is expected to have on victimization¹¹:

- All else equal, the more proximity to potential offenders, the more risk of criminal victimization. Hence, persons who live in high-crime areas or in close residential proximity to offenders experience more victimization than persons who live in low-crime areas or are protected from contact with offenders.
- All else equal, an increase in exposure is followed by an increase in the likelihood of criminal victimization. Thus, persons who spend more time outside the home, or engage in risky activities, are more vulnerable to being victimized, relative to persons who engage in more out-of-household and risky activities.
- All else equal, more attractive targets are more likely to be criminally victimized. Crimes are more likely to be committed against valuable or desirable targets, which have the qualities of being visible, accessible, have material value, and low inertia, and are less likely to be committed against targets that lack these characteristics.
- All else equal, less guardianship increases the odds of criminal victimization. To the extent that targets and victims are unguarded or unprotected, they will be more vulnerable to crime, in comparison to more protected targets and victims.

¹¹ In addition to the “main” effects specified in these hypotheses, Cohen et al. (1981) recognized the possibility of nonadditive effects, but failed to systematically test or articulate the mechanisms of such effects. For example, the authors noted that their analytical approach “may also reveal facts (e.g. higher-order interactions) for which our theory does not fully account, identifying directions in which future theory construction and research may proceed” (1981, p. 516).

General explanations of victimization notwithstanding, a key issue is how the opportunity approach that emerged from the work of Hindelang et al. (1978), Cohen and Felson, (1979), and Cohen et al. (1981), as summarized in the above propositions, accounts for the long-standing race/ethnicity disparities in violent victimization, especially violent victimization, that were documented in Chapter 2. This dissertation proposes three plausible alternative accounts that can potentially explain the race/ethnicity disparities in violent victimization, derived from criminal opportunity theories: (1) a mediation hypothesis; (2) a moderation hypothesis; and (3) a context hypothesis. Although not all of these hypotheses were explicitly articulated by the proponents of criminal opportunity theories, they are logically consistent with and implicit in the principles and concepts of these theories. The sections that follow offer a general view of each hypothesis by describing: (1) the conceptual basis and theoretical model implied by each hypothesis; (2) the theoretical foundations of the hypothesis; and (3) the published empirical studies that have directly tested the hypothesis or present evidence as to inform the predictive validity of the hypothesis.

THREE ACCOUNTS OF THE DISPARITIES IN VIOLENT VICTIMIZATION BY RACE/ETHNICITY

1) A Mediation Hypothesis of Race/Ethnicity Disparities in Violent Victimization

Opportunity theories offer a mediation hypothesis to explain these race/ethnicity disparities. The *mediation hypothesis* implies that the mechanism that connects victimization with race/ethnicity (or any other measure of social stratification) is an indirect one. The crux of this argument is that race/ethnicity is a proxy for situational opportunity. Logically, it follows that the bivariate correlation between race/ethnicity and victimization is either spurious, or at least largely mediated by indicators of opportunity (Miethe et al., 1987; Meier and Miethe,

1993). As Hindelang et al. (1978) state it “In terms of our model, these relationships between demographic variables and these diverse consequences [including victimization], can be attributed to differences in lifestyle” (p. 246). This mediation hypothesis is presented in graphical form in Figure 3.3.

Figure 3.3. Mediation Model of Race/Ethnicity Disparities in Violent Victimization

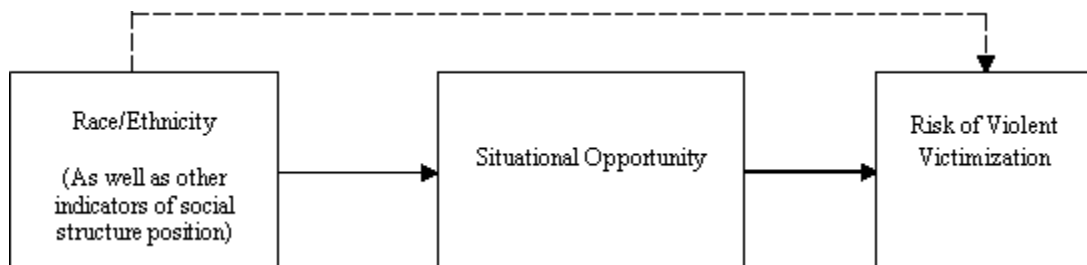


Figure 3.3 implies that victimization is linked to race/ethnicity as well as to situational opportunity, but only the latter is a direct determinant of victimization. Individuals are most prone to victimization when they are enmeshed in opportunistic situations. Given that race/ethnicity structure opportunistic situations, one would expect to see race/ethnicity disparities in victimization, but such disparities should disappear or be largely reduced when indicators of criminal opportunity are simultaneously considered. This is indicated by the segmented arrow connecting race/ethnicity and victimization in Figure 3.3. In other words, that Blacks and Hispanics are more likely to be victims of violent crime is due to their participation in lifestyles and activities that offer opportunities for crime, such as spending more time in public settings, at night, without the company of guardians, or in the company of antisocial associates.

Theoretical Foundations of the Mediation Hypothesis. To better understand the origins and mechanisms of the mediation hypothesis, it is illustrative to examine select portions of the work of Hindelang et al. (1978), as well as Cohen et al. (1981) that speak about mediation effects. First, Hindelang et al. (1978) offered several hints as to the mediation argument posited,

particularly for racial differences.¹² Two of their propositions are relevant in this respect: (a) that social interactions are demographically homogeneous and occur among individuals with similar lifestyles (i.e., Proposition # 3), and (b) that individuals who have the demographic profile of offenders are more likely to be in interaction with or exposed to offenders (i.e., Proposition # 4). Hindelang et al. (1978) claimed that interpersonal relationships occur mostly among individuals who have similar lifestyles. Since lifestyles are patterned by demographic characteristics, it follows that people are more likely to associate with others that are alike with respect to gender, age, income level, and race. In addition, the authors proposed that “An individual’s chances of personal victimization are dependent upon the extent to which the individual shares demographic characteristics of offenders” (1978, p. 257). These arguments suggest that the demographic groups overrepresented in the population of offenders will be the most vulnerable to victimization because of their interaction or association with likely offenders. If we consider the empirical finding that offenders are disproportionately nonwhite, it follows that nonwhites are more likely than any other racial group to be in routine interaction with potential offenders. Ultimately, this exposure places them at higher risk of victimization.

Racial/ethnic differences in social interactions aside, exposure also is a function of structural constraints that affect minorities disproportionately. For example, Hindelang et al. (1978) argue that Blacks face issues of socioeconomic inequality and residential segregation that limit their choices when it comes to taking actions to isolate themselves from potential offenders. Blacks are more likely to live in poor and high-crime areas of close proximity to offenders and have fewer resources to move out or to buy protection measures; this configures a landscape that puts Blacks at a greater risk as a function of being highly exposed. Thus, exposure reflects much

¹² Hindelang et al. (1978) focused on “Black” and “White” comparisons to illustrate the ways in which race, as an indicator of position in the social structure, affected variations in lifestyles and thereby influenced victimization. This line of reasoning can be extrapolated to ethnicity which is another indicator of social stratification.

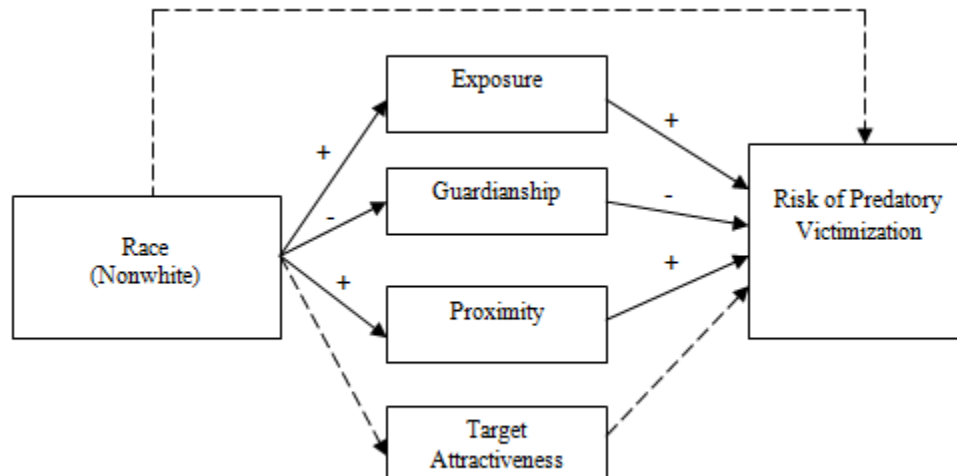
more than a choice of minorities to interact with potential offenders; it represents structural forces that preclude isolation from potential offenders. While Hindelang et al.'s (1978) arguments make reference to race, they can be extrapolated to ethnicity on the basis of two arguments. First, like race, ethnicity shapes a person's position in the social structure and it influences role expectations, thereby structuring lifestyles and routines. Second, the high levels of proximity among Blacks that the authors attribute to residential segregation and economic inequality are shared by other minorities, particularly Hispanics. Like Blacks, Hispanics tend to be concentrated in urban, high-poverty areas (Massey and Denton, 1993; Morenoff and Tienda, 1997; Peterson and Krivo, 2010), thereby in close proximity to motivated offenders.

Second, there are direct references to the mediation hypothesis in the work of Cohen et al. (1981). These authors contend that the effect on victimization of income, race, and age was driven by "the mediating role played by four factors: exposure, guardianship, proximity to potential offenders, attractiveness of potential targets, and definitional properties of specific crimes themselves" (p. 507). In their original article, Cohen et al. (1981) contend that race has no direct effects on victimization and instead, exposure, guardianship, and proximity are the most proximate influences on predatory victimization. Figure 3.4 depicts the mediation hypothesis derived from Cohen et al.'s (1981) work.

As seen in Figure 3.4, Cohen et al. (1981) referred in particular to the role of race as an exogenous influence on predatory victimization, and not of race/ethnicity. At the time of their writing, most scholarly work was based on a dichotomous conception of race (as Black vs. White or White vs. nonwhite), but contemporary work favors a more inclusive view that is better captured by the concept of race/ethnicity (and includes the three largest racial/ethnic groups in the U.S: non-Hispanic Blacks, Hispanics, and non-Hispanic Whites). Thus, although their

original mediation model focuses on race alone, and is so depicted in Figure 3.4, the model can be extrapolated to race/ethnicity.

Figure 3.4. Cohen et al.'s (1981) Mediation Model



Source: Adapted from Cohen, L. E., Kluegel, J. R., & Land, K. C. (1981). Social Inequality and Predatory Criminal Victimization: An Exposition and Test of a Formal Theory. *American Sociological Review*, 46(5), 505-524.

A few comments are relevant regarding the mediation mechanisms described by Cohen et al. (1981), as shown in Figure 3.4. First, based on the “principle of homogamy” and the overrepresentation of nonwhites in offender populations, nonwhites are expected to be more exposed to potential offenders and consequently at higher risk of criminal victimization. Second, guardianship also is hypothesized to mediate race effects on victimization. In particular Cohen et al. (1981) note that “Since nonwhite households more often consist of a currently unmarried adult than white households, their risk of victimization due to lesser guardianship capability will, in general, be higher than for Whites” (1981, p. 511). This statement, as will be discussed later in this chapter, is still true today, especially for non-Hispanic Black households. Third, the

authors contend that nonwhites are in closer proximity to high crime than Whites, which implies a third mediation effect. Fourth, target attractiveness is not posited as a mediator of the race-victimization relationship as there is “no theoretical or factual basis on which to argue that race [and age] have net relationships to target attractiveness” (Cohen et al., 1981, p. 512). This is consistent with the segmented lines connecting race with target attractiveness to victimization in Figure 3.4. Finally, a notable aspect of this model is that race is not hypothesized to have any direct effects, only indirect effects on predatory victimization. Here as well, the line connecting race and victimization is segmented, because this link is not theoretically supported, although it is observed statistically. In fact, Cohen et al.’s (1981) propositions # 7 - 9 specify that “Holding lifestyle [which they argue captures both exposure and guardianship] and proximity constant, income, race, and age will not have direct partial effects on the risk of assault [burglary, or personal larceny] victimization” (p. 513).

In short, criminal opportunity theories put forward a mediation hypothesis where race/ethnicity affects victimization only indirectly, through exposure, guardianship, and proximity. Support for this mediation hypothesis would be evident if multivariate statistical models of victimization that include empirical measures of exposure, guardianship, and proximity, generated a reduction in the size of the coefficient of race/ethnicity or in the significance of this coefficient, as compared to a baseline model that included only race/ethnicity as predictor, and if the reduction observed was statistically significant. In contrast, if these models revealed persistent race/ethnicity effects after partialling out mediator variables, this would be evidence contrary to the mediation hypothesis. Miethe and Meier (1993) summarized this prospect succinctly, in reference not only to race/ethnicity, but to other demographic variables:

“If demographic differences in victimization risks are due to differences in lifestyles and routine activities, the impact of each demographic variable (e.g. age, gender, race, social class) should decrease in importance once separate measures of lifestyles and routines are included as control variables” (p. 469).

Empirical Evidence of Mediation Effects

Direct Tests of Mediation Effects. Notwithstanding the general support to criminal opportunity theories, only a handful of studies have directly tested the mediation hypothesis as applied to violent victimization. Cohen et al. (1981) were pioneers in positing opportunity as the intervening mechanism in the relationship between demographic characteristics and victimization, but the authors did not directly test this mediation hypothesis. On the one hand, their analysis focused on partial or main effects of proxy measures of opportunity, not of direct indicators. More importantly, their analytical approach did not allow for inferring mediation effects.

The evaluation of mediation effects with multivariate regression—the approach most often employed in this literature—requires a two-stage regression analysis, at a minimum (MacKinnon, 2008). The first stage involves fitting a baseline model of victimization as the outcome and only demographic variables as predictors. A saturated model that adds the key intervening variables is estimated in the second stage. Researchers can then assess mediation by comparing the change in size and statistical significance of the coefficients for the demographic variables. Coefficients for each of the demographic variables in this last model adjust for the mediators or intervening variables, so subtracting each first-model coefficient from its corresponding second-model coefficient yields a measure of the mediated effect. The statistical significance of this mediated effect is then assessed by dividing it by its standard deviation, using the formulas provided by Sobel (1982). Given that Cohen and colleagues (1981) only presented

a saturated model, it is not possible to infer from their work whether race effects were mediated by criminal opportunity, as the authors contended.

Subsequent research has tested the mediation hypothesis using an analytic approach that resembles the above described, but the resulting evidence is contradictory. First, Miethe et al. (1987) tested for mediation using two measures of exposure and performed a three-stage analysis with the first two models described above, plus a third model that examined possible moderation effects. Miethe et al.'s (1987) goal was to assess if the effects on violent (and property) victimization of demographic variables were mediated by two indicators of exposure: frequency of nighttime activity and major daily activity. A baseline model showed that gender, income, marital status, and age were significantly linked to violent victimization. However, race (i.e., being Black) was unrelated to this outcome. The addition of the two exposure variables in a second model failed to reduce the size or significance of these demographic variables, refuting the mediation hypothesis. Nor there was evidence that the effect of race/ethnicity on violent victimization was moderated by criminal opportunities, as none of the interaction terms added in the third model were significant. These results were interpreted by Miethe et al. (1987) as indication that opportunity theories are simply less relevant to explain crimes of violence, given that these presumably involve a spontaneous target selection process where exposure is not as applicable as it would be for property crimes. One limitation of Miethe et al.'s (1987) study is that the authors tested for mediation effects using two measures of exposure only and did not consider the intervening role of other indicators of criminal opportunities, such as guardianship or proximity.

On the other hand, Lasley's (1989) work unveiled evidence of at least partial mediation. This author analyzed data from the 1982 British Crime Survey (BCS) to examine the role of

drinking lifestyles (an indicator of exposure) on violent victimization (i.e., assault and robbery victimization) using a two-stage model. In the baseline model, Lasley (1989) reported that being male, young, single, and unemployed were characteristics associated with violent victimization. In the second model, after the addition of drinking lifestyles, the coefficients for sex and age dropped in size and lost statistical significance, providing evidence of mediation effects. Conversely, the coefficients for marital status and work status did not change much and maintained statistical significance, suggesting that non-married persons and those who were unemployed were more likely to experience violent victimization independently of their drinking lifestyles. Like Miethe and colleagues (1987), Lasley (1989) did not discover race effects (as measured by being White) at any stage, although he noted that this may have resulted from low minority representation in the BCS data. Similarly, the study was a partial test of mediation because it only considered a single indicator of exposure as the mediating variable.

A more recent study by Henson et al. (2010) examined mediation effects with emphasis on the gender gap. This study addressed, among other research questions, whether gender related to violent victimization and if so, whether this effect was mediated by routines and lifestyles. Using a sample of high school students from rural northern Kentucky, Henson and colleagues (2010) examined the correlates of minor and serious violent victimization, including a series of unstructured, delinquent, and structured nondelinquent activities and lifestyles that capture exposure. In the case of minor violent victimization, multivariate models showed that being older, male, having low self-control and participating in delinquent lifestyles were risk factors of victimization, while time spent with a boy/girlfriend was a protective factor. As evidence of mediation, the coefficients for gender and self-control were not statistically significant after controlling for lifestyles, especially when controlling for delinquent lifestyles.

However, the coefficient for age remained mostly unchanged. Models of serious victimization revealed that being older, male, nonwhite, having low self-control, and participating in a lifestyle of driving around with friends increased the risk of violence among adolescents. In turn, family activity protected youths from victimization. The addition of lifestyles reduced the size of the coefficient for gender but not its statistical significance, suggesting partial mediation. In turn, race (i.e. being nonwhite) continued to exert statistically significant effects in the full model, and the coefficient size did not change. In general, Henson et al.'s (2010) results provide partial evidence of mediated gender effects, but weak evidence of mediated race effects. Although Henson et al.'s (2010) work overcame the limitations of prior tests of the mediation hypothesis, particularly because it included multiple indicators of criminal opportunity, the study had some limitations. Specifically, while the authors offered some circumstantial evidence to test race/ethnicity mediated effects, their main focus was on gender mediated effects.

Another limitation of Henson et al.'s (2010), as well as Miethe et al.'s (1987) and Lasley's work (1989), is that they measured race/ethnicity using a dichotomous measure (e.g., Black vs. White) that confounds ethnic variation. A more concerning limitation of these studies is that none of them employed an analytic approach that rigorously tested for mediation. Namely, each of these authors based their conclusions regarding mediation effects on a visual inspection of the change in the size and statistical significance of the coefficients representing demographic variables, comparing the coefficients from a baseline with a full model. But they did not quantify the difference in the coefficients nor tested the statistical significance of this difference, so the conclusions regarding mediation effects remain speculative. Modern tests of mediation effects call for a more rigorous approach that involves not only considering the change

in coefficients, but estimating whether the change is statistically significant using the approach proposed by Sobel (1982), as described above (MacKinnon, 2008).

Indirect Tests of Mediation. As the prior discussion illustrates, the empirical evidence regarding a mediation hypothesis where indicators of criminal opportunity are assumed to mediate in the relationship between race/ethnicity and violent victimization, is based on a scarce literature and is characterized by mixed findings. Despite the small number of studies that have been explicitly aimed to test the mediation hypothesis, it is possible to garner some indirect evidence of mediation by focusing on a wide empirical literature that has examined the empirical validity of criminal opportunity theories in general, as applied to violent victimization. Specifically, in studies that include demographic variables as well as indicators of criminal opportunities, the finding that demographic variables continue to have significant “main” effects on violent victimization in these fully specified models can be considered as evidence contradicting the predictions of a mediation model. Several studies have revealed this to be the case, although this discussion focuses primarily on studies that find residual race/ethnicity effects (as opposed to residual effects of other demographic variables) and where violent victimization is the dependent variable.

First, Schreck and Fisher (2004) investigated an integrated model where family and peer contexts are hypothesized to structure routine activities of youth, thereby indirectly affecting violent victimization. Although this model incorporates other influences on lifestyles, particularly the role of self-control, which are beyond the ones proposed by Hindelang et al. (1978), it can be considered a test of opportunity theories as it included variables indicative of exposure and proximity (e.g., lifestyle of driving around with friends, sneaking out of the house, socializing with delinquent peers). Schreck and Fisher (2004) reported that independently of

family or peer context, youth were more likely to be victims of violence if they participated in risky lifestyles. The models also suggested that being male, Black, and young increases the risk of violence, net of all above factors. Overall, these results comport well with the theory and coincide with other studies of youth which show lifestyles of high exposure, such as skipping classes, fighting at school, or hanging out with friends at night, to be risk factors of violence (Bouchard, Wang, and Beauregard, 2012; Burrow and Apel, 2008; Schreck, Wright, and Miller, 2002). However, evidence that race (i.e., being Black) exerts a significant partial effect on violent victimization, controlling for opportunities, suggests weak support for the mediation hypothesis.

Second, Burrow and Apel (2008) examined the predictors of school assault and larceny using a sample of 16,000 youth aged 12 to 18 who were interviewed as part of the 2001 and 2003 School Crime Supplement of the NCVS. The covariates include a series of school-related indicators of criminal opportunity at the individual-level such as participation in extracurricular activities, fighting at school, skipping classes, having a long commute to school, and school-level indicators of security and school monitoring of students. The results of a logistic regression model of assault victimization at school revealed support for opportunity theories. For example, having a long commute to school, fighting at school, and skipping classes were all positively and significantly related to assault victimization. At the school level, rule clarity was negatively associated with assault victimization. More relevant for the present discussion, race (i.e., being nonwhite) exerted a significant negative effect controlling for indicators of criminal opportunities, thus indicating that nonwhites, regardless of school lifestyles, had significantly lower rates of assault in school settings.

Third, Wilcox et al.'s (2009) test of a gender-opportunity approach to school-based assault (and theft victimization) showed significant effects of race/ethnicity that remained after controlling for opportunity. As mentioned previously, the authors analyzed data from 10,522 students in 111 middle and high schools throughout Kentucky, collected as part of the Rural Substance Abuse and Violence Project (RSVP). Fully specified models of school assault victimization included measures of attachment to parents, attachment to school, attachment to peers, GPA, involvement in school activities, involvement in school sports, impulsive personality, delinquent peers, and self-reported delinquency. Controlling for all of these variables, the authors found that race/ethnicity (measured as being White) was a statistically significant predictor of school assault victimization. Specifically, being White significantly increased the log-odds of being a victim of school assault, as evidenced by the positive coefficients for race/ethnicity in fully specified models for both boys and girls.

Fourth, in a recent comprehensive test of opportunity-based correlates of adolescent violent victimization, Tillyer, Tillyer, Ventura Miller, and Pangrac (2011) explored the relative importance of risky activities and exposure, guardianship, and target characteristics, controlling for individual traits of vulnerability and low self-control. In support to opportunity theories, the authors reported that two out of four variables indicative of risky activities were significant predictors of violence (i.e., exercising and sneaking out of the house at night increased the risk of violent victimization) and exposure to delinquent peers and participation in violent and nonviolent criminal behavior were risk factors as well. As to guardianship, parental attachment decreased victimization as hypothesized, but the effect of parental control was positive, contrary to expectation. In terms of target characteristics, psychological vulnerability increased the risk of violent victimization, but physical vulnerability and self-control did not have any significant

effects. Controlling for these indicators of criminal opportunity, non-Hispanic Blacks and Hispanics were more likely to be violently victimized. As was the case of the preceding studies, Tillyer et al.'s findings (2011) provide weak evidence of race/ethnicity mediated effects, even though the main analytic focus was not to test for mediation specifically, but to test opportunity theories generally.

Summary of the Empirical Evidence of Mediation Effects. Taken together, the above described studies show that the mediation hypothesis, which portrays the effects of race/ethnicity on violent victimization as mediated by indicators of criminal opportunities, is not invariably at work. On the one hand, empirical studies that were specifically aimed at testing for mediation show mixed findings, but these tests are limited in two respects. In particular, all three studies of mediation effects described here supported their conclusions about mediation effects on the difference in size and statistical significance of the coefficients representing demographic variables across baseline and full models, but failed to quantify or test the statistical significance of this difference, as would be required in a more rigorous test. In addition, with the exception of Henson et al.'s work (2010), prior tests of mediation effects included very few indicators of criminal opportunities.

Additional evidence of mediation can be garnered from studies that are not specifically presented as tests of mediation, but which can nonetheless inform our understanding of the role of race/ethnicity as a predictor of violent victimization. These studies control for indicators of criminal opportunities, thus offering fully specified models where, if mediation effects are at work, the effects of race/ethnicity should be null. Overall, the results of these general tests suggest that race/ethnicity plays a role on predicting violent victimization that is not totally mediated by indicators of criminal opportunities, as is evidenced by the presence of significant

main effects of race/ethnicity in fully specified models. However, aside to being indirect tests of mediation, these studies are limited because they rely on a dichotomous operationalization of race (i.e., using Black-White comparisons), an approach that has been criticized because it masquerades important between-group heterogeneity between non-Hispanic Blacks, Hispanics, and non-Hispanic Whites (Lauritsen and White, 2001). From this evidence, it is clear that a complete test of race/ethnicity mediated effects on violent victimization requires not only an appropriate analytical and statistical approach, but consideration of various racial/ethnic groups. This dissertation fills this gap in the literature by empirically testing the mediated hypothesis with data disaggregated by race/ethnicity.

2) A Moderation Hypothesis of Race/Ethnicity Disparities in Violent Victimization

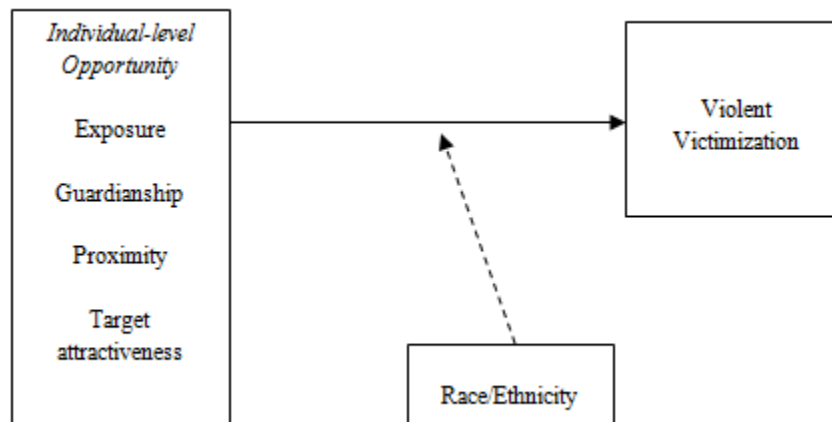
The preceding empirical evidence suggests that race/ethnicity relates to violent victimization in more complex ways than the indirect link proposed by opportunity theories in a mediation hypothesis. Thus, after several decades of study, researchers have established that criminal opportunities matter to explain violent victimization, but it remains unclear why, holding opportunistic lifestyles or routines constant, violent victimization affects some racial/ethnic groups more or less than others. Why is it that race/ethnicity continues to exert significant main effects on violent victimization controlling for the effects of opportunistic routines and lifestyles? What variables have researchers failed to include in statistical models of violent victimization for these race/ethnicity residual effects to remain? Answers to these questions are necessary for better understanding violent victimization.

A moderation hypothesis presents an alternative to the mediation hypothesis, and it is consistent with the criminal opportunity approach. A *moderation hypothesis* presumes that opportunities for violent victimization might simply work differently across racial/ethnic groups.

Moderation effects are synonymous with interaction effects. Thus, the race/ethnicity-conditioned model presented here proposes that the effects of individual-level opportunity indicators of exposure, guardianship, proximity, and target attractiveness on violent victimization may differ across racial/ethnic groups, or that race/ethnicity may interact with criminal opportunities to affect victimization. Given that the sample of adolescents employed for analysis in this dissertation does not contain enough observations to disaggregate across all racial/ethnic groups, the emphasis is on the three largest subgroups: non-Hispanic Blacks, Hispanics, and non-Hispanic Whites. However, future studies could extend the underlying logic of this model to other racial/ethnic groups for which cultural differences exist. Figure 3.5 presents a graphical illustration of the moderation model of race/ethnicity disparities in violent victimization proposed.

Consistent with opportunity theories, the model underscores situational criminal opportunities as the fundamental determinants of violent victimization, opportunities that are a function of victims' exposure, guardianship, proximity, and target attractiveness. This component of the model mirrors Cohen et al.'s work (1981), but it differs in that it postulates a conditioning effect of race/ethnicity. The race/ethnicity-conditioned effect is represented by the segmented arrow pointed to the relationship between individual-level opportunity and violent victimization. Thus, it is hypothesized that a person's race/ethnicity may serve to exacerbate or attenuate (or even reverse) the effects of exposure, guardianship, proximity, and target attractiveness on violent victimization.

Figure 3.5. Moderation Model of Race/Ethnicity Disparities in Victimization



In contrast to the mediation hypothesis presented in Figure 3.4, the moderation hypothesis depicted in Figure 3.5 postulates that race/ethnicity works in conjunction with criminal opportunities, and not through criminal opportunities, to affect violent victimization. Moderation effects of race/ethnicity would be verified if the coefficients of indicators of criminal opportunities on violent victimization differed across racial/ethnic groups, or if interaction terms of race/ethnicity and various indicators of criminal opportunities were statistically significant. This would be the case, for example, if the effect of guardianship on violent victimization for a given race/ethnicity group was accentuated or attenuated in comparison to another race/ethnicity group, or if the interaction term of race/ethnicity x guardianship was statistically significant.

Theoretical Foundations of a Moderation Hypothesis. As with the study of cross-level interactions and individual-level interactions between indicators of opportunity and gender, the study of race/ethnicity interactions or moderation effects lacks a single a priori theoretical foundation (Wilcox et al., 2003). However, drawing from a variety of scholarly work, this section demonstrates that there are central sociocultural differences across racial/ethnic groups that can lay a theoretical basis as to why opportunities for victimization might work differently

across these groups. Two sociocultural differences are of particular importance: (1) offender's assessment of attractive or suitable targets; and (2) family contexts.

On the one hand, prior studies of offender's motivation highlight that the selection of victims is a deliberate process that involves consideration of the perceived threat of victim resistance and mobilization of law enforcement by calling the police (Wright and Decker, 1997). Given that these characteristics vary by race/ethnicity, they can configure differential criminal opportunities to the extent that they make minorities appear as more suitable targets than non-Hispanic Whites. On the other hand, the study of victimization has acknowledged the important role played by the family context (Esbensen, Huizinga, and Menard, 1999; Savolainen, Sipila, Martikainen, and Anderson, 2009; Schreck and Fisher, 2004), while scholarly work has shown that family contexts vary across racial/ethnic groups. For instance, a dense sociological literature has described how the importance, structure, and role of the family differ between non-Hispanic Blacks, Hispanics, and non-Hispanic Whites (Ortiz, 1995; Sabogal et al., 1987; Vega, 1995). As is argued below, these two sociocultural differences relate to victimization and can configure situations where race/ethnicity-conditioning effects might be at work. The aim of this discussion is to provide a broader theoretical basis to explain a moderation hypothesis that can possibly help clarify the race/ethnicity disparities described in Chapter 2 beyond what opportunity models have been able to explain based on a mediation hypothesis alone.

Race/Ethnicity and Offenders' Selection of Targets. Much of what we know about offender's motivation and the process of selecting targets, executing offenses, and avoiding detection, is based on ethnographic studies of offenders. In a seminal work, Wright and Decker (1997) conducted in-depth interviews with a sample of active armed robbers in St. Louis and collected information about their thoughts and actions before, during, and after the commission

of their crimes. With respect to the selection of targets, Wright and Decker (1997) found that robber's decisions were based on an assessment of the risks of apprehension and rewards obtained from potential victims. Most robbers chose two types of victims who minimized the risks and enhanced the rewards: (1) persons engaged in illegal activities, who are typically unlikely to call the police and who also carry cash (specifically drug dealers); and (2) non-criminals targets who posed the least resistance and carried cash (e.g., women and the elderly). Wright and Decker's (1997) work stresses how individual-level victim characteristics play a role in crime events through their impact on offender's perceptions of target suitability. Indeed, prior ethnographic research has shown that a victim's gender plays an important role in structuring criminal opportunities (Miller, 1998; Miller and Decker, 2001; Mullins and Wright, 2003).

Wright and Decker's (1997) findings also speak to the role of race/ethnicity on offender's choice of targets. For example, robbers tended to target White males, including White drug users whose presence in a majority-Black neighborhood, coupled with their participation in an illegal activity, made them unlikely to report the crime to the police. The victim's race/ethnicity also mattered in terms of anticipating the possibility of resistance, and the robbers in the sample considered that White victims were the least likely to resist. But even robbers who preferred White victims often had to rob Blacks if the need for cash was urgent. As a whole, Wright and Decker's (1997) ethnography suggests that race/ethnicity structures criminal opportunities for robbery because it proxies offender's perceptions of a victim's likelihood to resist an attack and to call the police. However, the authors were unable to clarify the role of Hispanic origin in target selection (i.e., whether robbers targeted Hispanic victims and if so, the reasons why).

There are several reasons to maintain that a victim's Hispanic origin may exacerbate vulnerability to victimization as a result of offender's perceptions of Hispanics as being suitable

targets. First, in light of the empirical finding that Hispanics, like non-Hispanic Blacks, tend to hold generally negative attitudes toward the police (Lai and Zhao, 2010) and to not report to the police serious violent crimes (Rennison, 2007; Rennison, 2010), Hispanics may come to be seen by offenders as attractive or suitable targets to the extent that they are aware that the risk of Hispanic victims calling the police is low. For example, both Hispanic native-born and Hispanic immigrants are unwilling to report crimes to the police for reasons that include fear of law enforcement, lack of knowledge of the U.S justice system, language barriers, and fear of retaliation (Bucher, Manasse, and Tarasawa, 2010; Davis, Erez, and Avitabile, 2001; Menjivar and Bejarano, 2004). Among young Blacks, the failure to report crimes to the police has been related to the perception of these groups by offenders as suitable targets for robbery, particularly when the offender is an acquaintance (Felson, Baumer, and Messner, 2000). This observation could apply to Hispanic victims as well, given that they also are unwilling to report crimes to the police.

Second, Hispanic origin may exacerbate vulnerability to victimization especially among Hispanic immigrants (foreign born), which represent over a third of the Hispanic population in the U.S (Pew Hispanic Center, 2013). Immigrants face many challenges upon their entry to a host country, challenges that put them at risk for becoming victims of crime. On the one hand, immigrants are unfamiliar with the U.S landscape, so they may unknowingly find themselves in risky situations and in high exposure to potential offenders, at least during the period following their entry to the country (Velazquez and Kempf-Leonard, 2010). Their “newness” to the country also means that they lack the cultural and everyday knowledge on the precautions to be taken to stay safe from crime. Lack of fluency in the English language is an additional challenge for immigrants, who may be unable to identify the cues that indicate the escalation of a verbal

argument into physical violence, or to negotiate their way out of a heated argument. Shihadeh and Barranco (2010) summarize this argument explaining that “migrants who are linguistically isolated are less able to grasp the important cultural subtleties critical for personal safety, like the cues that differentiate good areas from bad” (p. 341).

Studies have begun to show evidence that race/ethnicity interacts with target attractiveness or suitability to affect victimization. These studies suggest that Hispanic immigrants are particularly perceived as attractive targets for predatory victimization. In a mixed-method study of a nonprobability sample of migrant workers in New Orleans, Fussell (2011) reported that a sizeable proportion of undocumented Hispanics experience robbery and assault. Presumably, undocumented immigrants are attractive targets of robbery because they carry large sums of cash and are under a constant threat of deportation that inhibits them from contacting law enforcement even in cases when they may have been seriously victimized. The author described this opportunistic situation by noting that Hispanics in her sample appeared in the eyes of offenders as “walking ATMs” and that “street criminals, who know that Latino migrant workers often carry their wages in cash, target them as easy marks, and also expect that they will not be reported to the police” (Fussell, 2011, p. 610). This is consistent with anecdotal evidence from police departments’ initiatives to reduce street robberies, which identify Hispanic immigrant populations as largely at risk of being robbed because they tend to carry cash in public, a condition that is known among offenders (Monk, Heinonen, and Eck, 2010). Overall, the main point of this discussion has been to illustrate how Hispanics may come to be seen as more attractive targets in the eyes of offenders than other race/ethnicity groups. Substantively, this implies that race/ethnicity might interact with target attractiveness to affect violent victimization, as would be expected under the moderation model presented in Figure 3.5.

Race/Ethnicity and Guardianship in the Family Context. Prior studies have identified the family context, including not only demographic characteristics, but also parental attachment and control, as important predictors of delinquent behavior (Glueck and Glueck, 1950; LaGrange and White, 1985; Wright and Cullen, 2001). In light of well-documented empirical correlation between delinquent behavior and victimization, family factors that have been shown to relate to delinquent behavior can also be relevant in the etiology of victimization. Indeed, a growing literature has unearthed family-based predictors of violent victimization and exposure to violence (Esbenzen et al., 1999; Lauritsen, Laub, and Sampson, 1992; Reid and Sullivan, 2009; Savolainen et al., 2009; Schreck et al., 2002; Schreck and Fisher, 2004; Spano, Rivera, and Bolland, 2011). Thus, it is clear that research on victimization must consider the family context. This is especially the case in studies of adolescents, as is the focus of this dissertation, because family influences are presumably stronger for younger persons, who are more constrained by the supervision and controls of adults in the family and less subject to the expectation of taking care of themselves.

Although some studies investigate family influences on victimization from the theoretical perspective of social bond theory (Schreck et al., 2002), such influences are compatible with opportunity theories as well. There are at least two main ways in which families can affect opportunities for violent victimization. First, the company and controls of a family member can protect against victimization by *increasing the level of guardianship*, especially in situations of high exposure, proximity, and target attractiveness. As Felson (1986) argues, a handler is necessary for guardianship and the most effective handlers are family members. Indeed, research has shown that families residing in high-poverty areas resort to extreme levels of monitoring of their children as a tool to protect youths from violence (Spano et al., 2011). In

addition, families may increase guardianship indirectly by prescribing the use of precautionary behaviors among family members (e.g. carrying tools or weapons for protection).

Second, family contexts structure a person's routines and lifestyles, thereby *altering the degree of exposure* to risky situations. Consider the role of parents. Aside from serving as capable guardians, parents can prevent the victimization of their children by restricting exposure; for example, by limiting the time they spent socializing with peers or other activities that may involve contact with offenders. Also, as noted by Schreck and colleagues (2002), families may help prevent victimization indirectly through the development of social bonds that serve as emotional pushes for choosing conforming behavior over risky behavior. For example, a person who has strong ties with his family may be more inclined to abstain from participating in risky situations that may lead to family disapproval than a person who has weak ties and little to risk. Thus, stronger family attachment may be conducive to less exposure to risk, consequently reducing the chances of victimization.

A number of studies have supported the notion that family contexts matter for predicting violent victimization. For instance, research has shown that family attachment is negatively and significantly related to assault victimization, controlling for other family characteristics, demographics, and involvement in delinquency (Lauritsen et al., 1992). Family dynamics regarding parental controls have also been examined. Esbensen et al. (1999) analyzed data from the Denver Youth Survey and reported that isolation from family was a risk factor for juvenile serious assault victimization, whereas living with two parents and parental monitoring were protective factors. The risk-enhancing effects of inconsistent parenting, living with one parent, and family conflict on victimization have also been documented with data from Helsinki, Finland (Savolainen et al., 2009). Part of the influence of family on victimization appears to be mediated

by lifestyles. That is, family matters partly because it shapes the schedule of routines and lifestyles that individuals follow, which in turn affects victimization. However, family has been shown to have a direct contribution on this outcome as well. For instance, Schreck and Fisher (2004) found that a set of measures of family context (i.e., welfare receipt, parental drinking, parental feelings toward child, child's attachment to mother and to father, and family climate) significantly affected adolescent violent victimization, independently of peer contexts and lifestyles. They reported that a warm and accepting family context had a protective effect from teenage violent victimization, while emotional alienation from parents had the opposite effect.

Other studies point to the importance of family context in the prediction of typologies of juvenile victims. Reid and Sullivan (2009) used latent class analysis (LCA) to identify taxonomies of victims and revealed that parental supervision and family adversity were relevant influences on youth's placement in one of three victim-type classes. For instance, youths who were subject to weak parental supervision and whose families faced high levels of adversity were more likely to be placed into a universally victimized class than in a minimally victimized class. Additional evidence that parental guardianship can protect youths from violence, not only at one time point, but throughout adolescence, was reported in a longitudinal study of youth from high-poverty neighborhoods in Mobile, Alabama (Spano et al., 2011). Juveniles who were subject to strong parental monitoring during adolescence fell into a "hypervigilant parenting" trajectory, and were more likely to have a steady decline in exposure to violence during this stage.

In short, the family dynamics of parental attachment, parental controls, and family climate, as well as other family characteristics such as family size and family structure, have been identified as significant predictors of violent victimization. These effects are independent of individual-level opportunistic lifestyles and routines, as well as of community-level

opportunities. Given this evidence that family contexts are relevant for violent victimization both in its indirect effects through the shaping of lifestyles as well as directly, the next section illustrates how family contexts are conditioned by race/ethnicity.

The Family Context of Racial/ethnic Minorities: The Role of Familism. While racial/ethnic minority families mirror mainstream families in many aspects, they also differ considerably (Ortiz, 1995). Studies of family dynamics and structural characteristics point out to between-race/ethnicity variations in the demographic makeup, structure, and levels of cohesion and ties of Hispanic and non-Hispanic Black families, particularly in relation to non-Hispanic White families. Much of this literature has concentrated on examining variation in familism, a concept that has been mostly linked to the Hispanic culture (Sabogal et al., 1987; Vega, 1995).

Familism has been described as “a strong identification and attachment of individuals with their families” (Sabogal et al., 1987, p.398), a combination of feelings of loyalty, respect, reciprocity, and solidarity towards members of the family (Triandis, Marin, Betancourt, Lisansky, and Chang, 1982). Although all racial/ethnic groups are family-oriented, familism is a core value of the Hispanic culture. Thus, popular portrayals depict the Hispanic family as composed of nuclear and extended family members that provide emotional and instrumental support to their members, where members come to expect assistance from family rather than from outsiders (Keefe, Padilla, and Carlos, 1979). Familism is collectivistic in that it places the well-being of the family over individual needs; close family ties take precedence over individualism (Falicov, 2006).

A number of studies have reported differences on familism by race/ethnicity. In general, these studies concur that Hispanics tend to be more familistic than non-Hispanic whites, while non-Hispanic Blacks resemble Hispanic’s familism to some extent. First, Hispanics are more

likely to perceive the family unit as a referent and to expect family support than non-Hispanic Whites (Sabogal et al., 1987). Hispanic adolescents (as well as Asians) embrace family obligations and express that they have a responsibility for assisting family members more so than adolescents from European backgrounds (Fuligni, Tseng, and Lam, 1999). Hispanic adults also report higher levels of visitation and exchange with kin, whereas non-Hispanic Whites have fewer face-to-face contacts and are more inclined to maintain contacts in long distance (Keefe, 1984). Indeed, while Hispanics tend to migrate toward kin, non-Hispanic Whites tend to move away from kin networks (Mindel, 1980). Extended familism also is characteristic of non-Hispanic Black families (Vega, 1995), but here too there are differences. Whereas Mexican Americans seek out social and emotional support from kinship networks, non-Hispanic Blacks draw from these networks for instrumental aid more so than emotional support (Mindel, 1980).

On the other hand, there are considerable differences across these three racial/ethnic groups in family composition variables that relate to familism, such as marital status, household structure, and fertility. Specifically, census data show a picture of higher family disruption among non-Hispanic Black families relative to other groups, as captured by the fact that these women are more likely to be single, divorced/separated or widowed than Hispanic and non-Hispanic White women (Ortiz, 1995) and that their families are more likely than other groups to be headed by women (Landale et al., 2006; Ortiz, 1995). However, fertility among minorities, including Hispanics and non-Hispanic Blacks, has been reported across time to be higher than the fertility rates of non-Hispanic White women (Ortiz, 1995). Finally, in comparison to non-Hispanic Whites, Hispanics tend to reside in larger households (Bean and Tienda, 1987).

The strong extended and nuclear kin networks characteristic of familism have been associated with positive outcomes such as fewer preterm births, less psychological stress and

substance abuse (Cardoso and Thompson, 2010). Familism has been identified as a culture-specific source of resilience and as a form of social capital (Valenzuela and Dornbush, 1996) that protects against the deleterious effects of extreme poverty and labor exploitation suffered by ethnic minorities (Parra-Cardona et al., 2006). With respect to deviance, higher familism has been associated with less substance use among youth and less participation in delinquent acts among minority youths (Gil, Wagner, and Vega, 2000). In addition, there is some preliminary empirical evidence that familism influences parental monitoring (Romero and Ruiz, 2007), an intuitive finding considering that familism and parental attachment are closely linked, and that parental attachment facilitates direct parental controls.

Considering the protective effects of familism on a range of outcomes, it may well be that familism has a protective effect against victimization. Substantively, this would suggest an interaction effect between race/ethnicity and guardianship to affect violent victimization. For instance, the presence of strong kinship networks, combined with increased interactions and demonstrations of family support, may configure a milieu in which guardianship exercised within the family context is especially accentuated among Hispanics. In contrast, given the relatively higher rates of family disruption as measured by single families and female-headed households among non-Hispanic Blacks, one would expect weaker guardianship within this group relative to Hispanics. Overall, differences in familism by race/ethnicity can delineate a moderation effect, namely, that the effect of guardianship on victimization, as predicted by opportunity theories, could potentially be stronger among Hispanics than non-Hispanics.

Summary of Theoretical Foundations for a Moderation Hypothesis. The preceding discussion integrated a wide range of literature to provide a theoretical foundation in support for a race/ethnicity-conditioned model that can account for racial/ethnic disparities in violent

victimization. Moderation effects are plausible given differences in target vulnerability and family context suggested by this literature, but there is little indication as to the specific direction of moderation effects. The literature particularly implies race/ethnicity moderated effects operating on the relationship between target attractiveness and guardianship with violent victimization. Whether the same effects apply to the other two key concepts of opportunity (i.e., exposure and proximity), is not as well established theoretically. Based on this discussion, it is theoretically plausible that the effect of individual-level opportunity indicators of opportunity may vary across the three largest racial/ethnic groups in the U.S: non-Hispanic Blacks, Hispanics, and non-Hispanic Whites, as highlighted in Figure 3.5 above.

The Estimation of Moderation Effects. Before describing the empirical evidence of race/ethnicity-conditioned effects, it is relevant to provide a background regarding the meaning, estimation, and implications of moderation effects. MacKinnon (2008) describes a moderator as “a variable that modified the form or strength of the relation between an independent and a dependent variable” (p. 275). As described in chapter 1, moderation implies that the relationship between an independent variable X and a dependent variable Y varies across the levels of one or more moderator variables such as Z (James and Brett, 1984; Baron and Kenny, 1986). Moderation effects are synonymous of interaction effects, signifying that a third variable Z interacts with X to affect Y . Moderator variables are often described as “effect modifiers” and can be continuous or categorical, with the main difference between these being the interpretation of the effects. Although the moderator variables most often studied are factors manipulated in experimental designs (e.g., a moderator may be the duration of treatment or types of treatment received in a randomized trial), statistical control models can also be used where factors such as gender, age, or race/ethnicity (as is the case here) are the moderator variables.

There are two primary analytic approaches to testing for moderation effects. First, following MacKinnon (2008), the basic model of interaction or moderation effects is defined by the following equation:

$$Y = a_1 + b_1X + b_2Z + b_3XZ + e_1 \quad (\text{Equation 3.1})$$

where Y represents the dependent variable, X is the main independent variable, Z is the moderator variable, and XZ is the interaction term or the product of the independent variable and the moderator. The coefficients b_1 , b_2 , and b_3 represent, respectively, the main effects of the independent variable, the moderator, and the interaction term. Finally, a_1 is the intercept and e_1 is the residual or error term.

From equation 3.1., moderation effects are evidenced when the XZ term is statistically significant. Substantively, a significant interaction effect may indicate that the relationship between an independent variable and a dependent variable is weakened, strengthened, changed in size or direction, or even be removed, depending on the levels of the moderator. Clarification on these dynamics is provided by examining the conditional effects with contrasts and plots, which may reveal how the moderator alters the simple slopes for the X - Y relation. The basic model of moderation depicted in equation 3.1 can be extended to accommodate more than one independent variable and moderator, which is a more realistic depiction of the factors influencing a given outcome, including violent victimization.

A second approach to test for moderation effects is to divide the sample across the different levels of the moderator variable (Z) and to estimate separate statistical models for each subgroup. In the case of race/ethnicity moderated effects, this analytic approach involves the estimation of separate models of violent victimization for each race/ethnicity group. Moderation effects are assessed by comparing the coefficients (i.e., slopes) of measures of opportunity across

the models, and testing whether any changes in these coefficients across models are statistically significant using a test of equality of regression coefficients (Paternoster, Brame, Mazerolle, and Piquero, 1998).

Empirical Evidence of Moderation Effects

The study of moderation effects within the opportunity framework has a recent history. A line of research on moderation or interaction effects has unearthed cross-level interactions whereby the effects on victimization of individual-level indicators of criminal opportunities vary depending on aggregate-level opportunities (Miethe and McDowall, 1993; Wilcox Rountree et al., 1994; Wilcox et al., 2003). Another line of work has discovered the operation of individual-level interactions where the effects of individual-level indicators of criminal opportunities vary depending on demographic characteristics, particularly gender (Henson et al., 2010; Popp and Peguero, 2011; Tillyer, Wilcox, and Gialopsos, 2010; Wilcox et al., 2009).

Beyond the gendered-conditioned effects and more relevant for the purposes of this dissertation, recent studies have begun to show that race/ethnicity-conditioned effects of opportunistic lifestyles on victimization exist (Dugan and Apel, 2003; Like-Haislip and Warren, 2011; Peguero, Popp, and Koo, 2011). Thus, preliminary evidence of moderation effects suggests that the same routines may have different effects across non-Hispanic Blacks, Hispanics, and non-Hispanic Whites, even when gendered effects are considered.

For instance, Dugan and Apel (2003) investigated the risk factors of nonlethal violent victimization (i.e., rape/sexual assault, robbery, aggravated assault, and minor assault) of women of different racial/ethnic origins, including situational and individual-level predictors derived from criminal opportunity theories. The authors analyzed over eight years of data from the NCVS to generate a large sample which permitted disaggregating between non-Hispanic Black,

Hispanic, non-Hispanic White, Asian/Pacific Islander, and Native American women. The authors tested for moderation effects by estimating separate models of violent victimization for each race/ethnicity group. In support for opportunity theories, multivariate analyses revealed significant effects of several routines and lifestyles on violent victimization. For example, residential stability, owning a home, being married, and living in a dormitory were protective factors against violent victimization, whereas living in an urban area, going out every night, being employed, and having lower household income were risk factors of violent victimization, among others. As to moderation effects, the results showed that—with the exception of marital status, going out every night, and residential stability—the effects of opportunity measures on violent victimization differed by race/ethnicity. Specifically, owning a home was a protective factor among non-Hispanic White women only, living in public housing was a risk factor for Hispanic women in particular, and living in an urban area was associated with increased violent victimization more so among non-Hispanic Black and Native American women than for other women. Thus, the study provided initial evidence that race/ethnicity interacts with opportunities to affect violent victimization among women.

A limitation of Dugan and Apel's (2003) work is their use of traditionally criticized proxy measures of opportunities. Like-Haislip and Warren (2011) examined the combined influence of gender and race/ethnicity on nonlethal violent victimization, using a sample of women aged 16 and older collected as part of the NCVS 12 cities study. These scholars asserted that the intersection of gender and race/ethnicity may be indicative of structural and cultural differences between non-Hispanic Black, Hispanic, and non-Hispanic White women, which in turn may explain their disparities in violent victimization risk. The authors tested for moderation effects by estimating logistic regression models of nonfatal violent victimization separately for

each race/ethnicity group. As evidence of moderation effects, some of the coefficients of routine activity measures varied in size as well as in direction across race/ethnicity groups. For example, time spent shopping was significantly and positively related with violent victimization among non-Hispanic White women, but it was negatively related to violent victimization among non-Hispanic Black females. Public transportation use was significantly and positively related with violent victimization among non-Hispanic Black and Hispanic women, but it was significantly and negatively associated with this outcome among non-Hispanic White women. Evenings spent away from home was significantly and positively related to violent victimization among non-Hispanic Black women, but had null effects for non-Hispanic White and Hispanic women. The only indicator of criminal opportunity that had a consistent size and positive sign across racial/ethnic groups was work status (i.e. being employed), but it had null effects on violent victimization. Taken together, Like-Haislip and Warren's (2011) findings suggest that indicators of opportunity affect violent victimization differently, depending on women's race/ethnicity. The authors concluded that these race/ethnicity-conditioned effects may be explained by the different contexts experienced by women of color. However, aside from perceived neighborhood disorder, the authors did not control for community characteristics, so the possibility that contextual effects are at work remains speculative. In addition, the study was limited by the use of cross-sectional data, which may confound the results obtained if reciprocal effects are at work so that victimization leads to restricting one's routines, which has been shown to be the case in recent analyses of NCVS panel data (Averdijk, 2011).

Peguero, Popp, and Koo (2011) further extended the literature on race/ethnicity moderated effects as applied to school-based victimization. The authors discussed how race/ethnicity influences youth's experiences at school and how some of the risk factors

examined in opportunity research in school settings, such as participation in extracurricular activities, are patterned by race/ethnicity. For instance, Black students are more likely to partake in athletic activities than White students. Asian students stand out for their preference for academic activities, while Hispanic students seem to prefer activities that involve peer interactions (e.g., spending time with friends), including but not restricted to sports. The preference for academic versus athletic activities may lead to perceptions of some racial groups as “weaker” and more suitable targets (e.g. Asian students are portrayed as “quiet”).¹³ Considering that school misbehavior, another well-known correlate of victimization at school, also varies by race/ethnicity, there are reasons to expect that moderation effects may be at work. In short, Peguero and colleagues (2011) hypothesized moderation effects where race/ethnicity interacts with measures of school-based exposure and target suitability to affect school-based victimization.

The authors analyzed data from Wave 1 of the Educational Longitudinal Study (ELS), a longitudinal survey of a national sample of ten graders in U.S public schools. Their emphasis was on two types of incidents occurring at school: violent (i.e., being threatened, hit, or robbed), as well as property victimization. The analysis proceeded by estimating hierarchical generalized linear models of school-based violent victimization that included three interaction terms of race/ethnicity and individual-level indicators of criminal opportunity: race/ethnicity*academic extracurricular activities, race/ethnicity*athletic activities, and race/ethnicity *school-based misbehavior. As evidence of moderation effects, the models revealed that these three interaction

¹³ It is also presumable that participation in academic activities serves to protect youth from victimization by reducing their exposure to risky situations, insofar as such activities are supervised by teachers and other adults (e.g., science clubs, tutoring sessions, etc.). In that case, more participation in academic activities would be expected to reduce victimization. However, in Peguero et al.’s (2011) study, participation in academic activities is explicitly treated as an empirical measure of target suitability, not of exposure, and thus is expected that it increases victimization.

terms were statistically significant. First, participation in academic extracurricular activities (an indicator of target suitability), was not associated with school-based violent victimization among non-Hispanic White students, but it was positively and significantly linked to this outcome for Asian, Hispanic, and non-Hispanic Black students. Second, participation in athletic activities (another indicator of target suitability) was significantly and negatively related to school-based violent victimization among non-Hispanic White and Black students, but it was positively related to this outcome among Asian and Hispanic students. Third, school-based misbehavior (an indicator of exposure), had a weaker impact on school violent victimization among non-Hispanic Black, Hispanic, and Asian students, relative to non-Hispanic White students, although the effect was significant and positive for all groups. Overall, Peguero and colleagues' work (2011) provides support for the notion that the effect of criminal opportunities on violent victimization is not race/ethnicity-invariant, as applied to the school context.

Drawing from prior studies of gendered effects and in light of preliminary support for a race/ethnicity-conditioned model, Peguero and Popp (2012) explored the intersectionality of gender, race/ethnicity, and violent victimization at school. In this empirical assessment, the relationship between student's school activities and their victimization was expected to be moderated by race/ethnicity as well as gender. Peguero and Popp (2012) utilized the same national sample as Peguero et al.'s (2011) study above. To test for moderation effects, the authors examined hierarchical generalized linear models of violent victimization at school which included two interaction terms between race/ethnicity and opportunity indicators: race/ethnicity* participation in academic activities, and race/ethnicity*participation in sport activities. These models were estimated separately for females and males. The results offer evidence of moderated effects of race/ethnicity within gender groups. First, participation in academic

activities was positively and significantly linked to school-based violent victimization among female students, but only those of Asian background, not for female non-Hispanic Black, Hispanic, or non-Hispanic White students. Contrary to moderation effects, the coefficient of participation in academic activities on violent victimization was significant and positive for male students of all racial/ethnic groups. Second, participation in school sports was significantly and negatively related to violent victimization for female students of all racial/ethnic groups. As to male students, participation in school sports was negatively and significantly related to violent victimization among male non-Hispanic Whites, but it was positively related to this outcome among male non-Hispanic Black, Hispanic, and Asian students. As with Peguero et al.'s (2011) findings, this evidence shows that opportunistic school activities are related to violent victimization at school, but this relationship is complex, and it is largely moderated by race/ethnicity and gender.

Taken together, these few preliminary studies provide an empirical foundation for examining the generalizability of criminal opportunity theories as applied to violent victimization of various race/ethnicity groups. However, there are several limitations in these studies. First, all of the preceding studies test for moderation effects using analytic approaches that are not ideal. For instance, none of the studies that tested moderation effects by estimating separate statistical models for each racial/ethnic group tested the equality of regression coefficients across the groups, as would be required to draw stronger conclusions regarding moderation effects. Second, these studies included some measures that capture criminal opportunity, but failed to include measures of all four key concepts (i.e., exposure, guardianship, proximity, and target attractiveness). Third, with the exception of Dugan and Apel (2003) and Like-Haislip and Warren (2011), the conclusions are generalizable to the school context. This

dissertation overcomes these limitations in the prior literature and it tests a race/ethnicity-conditioned model of violent victimization that is an alternative to the mediation hypothesis, but which unlike mediation, is not explicitly posited by opportunity theories.

3) A Contextual Model of Race/Ethnicity Disparities in Victimization

A third theoretical account for the differences in violent victimization by race/ethnicity is compatible with opportunity theories, but it assumes the operation of contextual effects, or effects beyond the individual level. According to this *context hypothesis*, contextual effects on violent victimization may be confounded with individual-level effects of opportunities. Variation in victimization risk across racial/ethnic groups may be due to variation in the neighborhood contexts where these groups are concentrated (Lauritsen and White, 2001; Sampson and Lauritsen, 1997). Presumably, if non-Hispanic Blacks and Hispanics are more likely than non-Hispanic Whites to reside in areas of social disorganization and high crime, their proneness to violent victimization may be explained away by considering their ecological proximity to offenders, and not simply by differences in opportunistic lifestyles and routines. To the extent that environmental opportunities vary with race/ethnicity, merely controlling for individual-level risk and protective factors of victimization yields an incomplete and mispecified model. Thus, in addition to the mediation effects implicit in opportunity theories and the moderation effects posited above, an alternative way to understand racial/ethnicity disparities in violent victimization is to consider them as a byproduct of the social ecology where minorities reside. This alternative model is presented graphically in Figure 3.6.

Figure 3.6. A Contextual Model of Race/Ethnicity Disparities in Violent Victimization

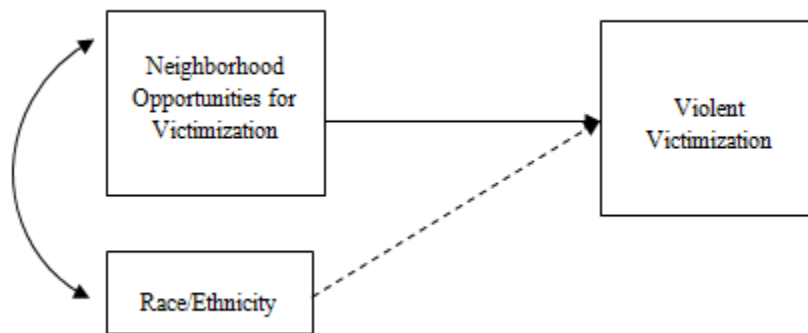


Figure 3.6 shows that in a context hypothesis, the effect of race/ethnicity on violent victimization is assumed to be spurious, that is, it is presumed to disappear statistically once measures of criminal opportunities at the neighborhood level are taken into account. This is depicted in the segmented arrow between race/ethnicity and violent victimization. Similarly, the model specifies that a person's race/ethnicity will be largely confounded with their place of residence, and this situation is captured by the curved arrow that correlates criminal opportunities at the neighborhood level with race/ethnicity. Finally, although the context hypothesis does not deny the operation of individual-level effects of criminal opportunities on violent victimization, it is not the main focus of attention, and for this reason the individual-level effects are not part of the theoretical model in Figure 3.6. However, as the discussion of the theoretical basis for this model below will demonstrate, the model assumes that individual-level indicators of opportunities and of demographic variables will be controlled in the estimation of this model.

Theoretical Foundations of the Context Hypothesis. Criminal opportunity theories have been criticized for the failure to incorporate contextual effects, that is, to specify how community characteristics affect individual-level victimization beyond compositional effects (Miethe and Meier, 1994; McDowall et al, 1993; Sampson and Wooldredge, 1989; Wilcox et al,

1994). In a response to this criticism, contemporary revisions of criminal opportunity theories argue that opportunities for criminal victimization exist across multiple levels of analysis (e.g., at the individual and neighborhood levels). For example, studies that integrate the opportunity framework with social disorganization theory argue that communities characterized by concentrated disadvantage, ethnic heterogeneity, and residential mobility are less likely to develop adequate informal social controls, thereby increasing the rates of crime and victimization (Maimon and Browning, 2012; Sampson, 1987; Sampson and Wooldredge, 1987). On the other hand, the position of the original theories, particularly of Cohen et al.'s work (1981), seems to be more in line with the idea that individuals living in communities that have these characteristics will be in more residential proximity to motivated offenders (e.g. these authors measured proximity as living in an urban and low income neighborhood). Therefore, features of the community context affect victimization simply as a result of "sheer proximity" to motivated offenders.

In "*Criminal Circumstance: A Dynamic Multicontextual Criminal Opportunity Theory*", Wilcox and colleagues (2003) put forth a revision of opportunity theories that clarifies the role of contextual forces on victimization and specifies their connection with individual-level opportunities. The authors explained that despite considerable extant research unveiling both direct effects of individual- and neighborhood-level indicators of criminal opportunity and social control, as well as cross-level interactions, there is a dearth of theorizing on the causal processes underlying multilevel effects. Wilcox et al. (2003) outline an alternative criminal opportunity theory derived from the integration of opportunity and social control theories, particularly the social control interpretation of social disorganization theory.

According to Wilcox et al.'s framework, criminal acts (and reactions to crime) are not only influenced by individual-level factors. Environmental-level factors (e.g., aggregated target vulnerability, aggregated target antagonism, aggregated target gratifiability, aggregated social control, or aggregated social ties) also play a role above and beyond individual characteristics, both in the form of main effects, as well as cross-level interaction effects that moderate the relationship between individual-level indicators and criminal victimization. The postulates of Wilcox et al.'s (2003) theory can be summarized as follows. First, criminal behavior is accomplished in a *criminal opportunity* context characterized by the time/space convergence of motivated offenders, suitable targets, and capable guardians. Second, criminal opportunities vary across the individual and environmental levels. At the individual level, criminal opportunity is a function of: exposure to motivated offenders, target vulnerability, target antagonism, target gratifiability, social control, and social ties. At the environmental level, opportunities result from: motivated offender exposure within a unit of space, aggregated target vulnerability, aggregated target antagonism, aggregated target gratifiability, aggregated social control, and aggregated social ties. Finally, the probability of a criminal act occurring is shaped by the direct effects of individual-level and environmental-level opportunity variables, as well as cross-level interactions. In line with prior research, Wilcox et al.'s model (2003) makes it clear that a better understanding of victimization requires taking into account the characteristics of the larger ecological contexts where individuals reside, aside from their individual-level characteristics. For example, in this type of multilevel model researchers need to consider both the individual-level characteristics that facilitate opportunities for victimization, as well as the characteristics of the neighborhood that facilitate environmental-level opportunities for victimization, insofar as the victimization incident occurs within the neighborhood context.

Empirical Evidence of Contextual Effects

Multilevel Studies of Violent Victimization. The extant evidence confirms that in addition to individual-level indicators of opportunity (exposure, guardianship, proximity, and target attractiveness), violent victimization is a function of aggregate-level opportunities. In one of the first multilevel studies of violent victimization, Sampson (1987) tested the simultaneous effects on violent victimization of individual-level demographic variables, exposure, and community characteristics, based on data from the 1982 British Crime Survey (BCS). In this research, exposure was measured with one item that asked respondents the number of nights per week they went out for recreation to places such as bars, restaurants, or the movies. Multivariate models that took community characteristics into account showed that young persons, single/divorced persons, and particularly males were the most at risk of personal violence, but exposure was not significantly linked to this outcome. Further, Sampson (1987) found that persons were especially likely to experience violence at the hands of strangers if they resided in areas characterized by family disruption, prevalence of primary or single/adult households, and high residential mobility.

Additional evidence that community characteristics affect violent victimization was reported by Kennedy and Forde (1990), in this case as applied to the Canadian context. Like Sampson (1987), Kennedy and Forde's work assessed the relative impact of community context and individual factors on victimization. Drawing from data collected as part of the 1982 Urban Victimization Study, the authors found that indicators of exposure, including a person's participation on certain daytime and nighttime activities (e.g., going out to bars/pubs, theater, restaurant, bingo, visiting with friends or attending class or work), increased the likelihood of assault and robbery victimization. Age, family income, and sex also were significant predictors

of assault and robbery. As to contextual effects, Kennedy and Forde (1990) showed that living in an area characterized by high unemployment, high percentage single households, and low income can affect a person's likelihood of being robbed or assaulted, independently of lifestyles.

Miethe and McDowall (1993) tested a multilevel opportunity perspective where the neighborhood composition variables of ethnic heterogeneity, population mobility, and socioeconomic conditions were hypothesized to impact victimization beyond individual-level opportunities because they arguably reflect proximity to motivated offenders. These community-level variables also indicate the existence of disorganized communities that exercise less informal social control, facilitating predatory victimization. In order to test these propositions, Miethe and McDowall (1993) used data from a larger project in Seattle, WA, focusing on the predictors of violent (i.e., being physically attacked, threatened, or mugged), as well as burglary victimization. The results of logistic regression models of violent victimization demonstrated that criminal opportunities exist across multiple levels; for instance, younger persons, those who lived alone, had lower income, and participated in dangerous activities such as going out to bars were more likely to experience violent crime. Beyond these compositional effects, residents of areas with high public activity (or busy places) and high socioeconomic decay were especially at risk. In addition to these "main" effects, the authors estimated a set of context-specific models to test for interaction effects. As to violent crime, the results revealed little evidence of interactions, suggesting that the risk factors of violent victimization are uniform across contexts.

One of the limitations of Kennedy and Forde's (1990) as well as Miethe and McDowall's (1993) work is that they applied logistic regression with clustered data that may violate the independence of error assumption. Using logistic regression in this circumstance produces inflated standard errors and affects the validity of statistical tests because residuals are

presumably correlated when individuals nested in neighborhoods are more similar than a fully random set of individuals. To address the independence violation issue, Wilcox Rountree, Land and Miethe (1994) revisited Miethe and McDowall's analysis using the same sample and a comparable design, but employed a statistical estimation technique that takes into account the nested nature of the data: Hierarchical Equation Modeling (HLM). Wilcox Rountree et al.'s (1994) results replicated some of Miethe and McDowall's (1993) results; for example, they reported that participation in dangerous activities increased individual's risk of violent victimization, but none of the variables indicating guardianship (i.e., safety precautions and living alone), or attractiveness (i.e., carrying valuables and family income), were significant at the individual level. Net of compositional effects, neighborhood incivilities and busy places were associated with increased risk of violent victimization. In addition, unlike Miethe and McDowall (1993), Wilcox Rountree et al.'s analysis (1994) revealed an interaction effect indicative of multilevel opportunity: that being nonwhite increased violent victimization more so in ethnically homogenous neighborhoods than in heterogeneous ones.

Considered as a whole, these results highlight the importance of contextual variables on violence, both in terms of main and interaction effects. The accumulated evidence has revealed important community correlates of violent victimization, including: unemployment, building density, concentration of female-headed households, ethnic heterogeneity, population mobility, neighborhood disadvantage, and collective efficacy (Lauritsen and White, 2001; Maimon and Browning, 2012; Miethe and McDowall, 1993; Sampson and Wooldredge, 1987; Sampson, Raudenbush, and Earls, 1997; Wilcox et al., 1994). Thus, it is well established that community contexts influence individual-level violent victimization.

Studies of the Community Contexts of Racial/Ethnic Minorities. In line with the notion that community characteristics influence violent victimization above and beyond individual-level characteristics, it is informative to examine whether community contexts differ by race/ethnicity. A vast sociological literature has demonstrated that the neighborhood context differs markedly across racial/ethnic groups; minorities tend to reside in areas that have common socioeconomic features but which are distinct to the features of non-Hispanic white communities. This literature highlights two common factors in the community context of racial/ethnic minorities in the U.S: residential segregation and extreme poverty.

First, the majority of the non-Hispanic Black population resides in largely segregated urban areas, in separation of non-Hispanic White neighborhoods (Massey and Denton, 1993; Peterson and Krivo, 2010). Trends of segregation among Hispanics, although not as extreme, closely follow the trends of non-Hispanic Blacks, as Hispanics have become increasingly isolated from non-Hispanic Whites since the 1970s and 1980s (Bean and Tienda, 1987; Gould Ellen, 2000; Massey and Denton, 1993). Second, minorities are unfavorably similar in terms of poverty concentration. For example, U.S Census estimates show that close to a quarter of the non-Hispanic Black and Hispanic population was below poverty for the period between 2007 and 2011 (25.8% and 23.2%, respectively), in comparison with 9.9% of non-Hispanic Whites (American Community Survey Briefs, 2013). Within the five largest Hispanic-populated cities in the U.S: El Paso, San Diego, Houston, Chicago, and Miami, Hispanic poverty surpassed or equaled the Black poverty rate, especially in the three southwestern cities (Martinez, 2002). Even among minorities and non-Hispanic Whites of equivalent socioeconomic status, disparities exist so that the former are the most likely to reside in areas of extreme or concentrated poverty (Peterson and Krivo, 2010; Sampson and Bean, 2006).

Since racial/ethnic minorities are more likely to reside in contexts characterized by social disorganization and disadvantage, it is plausible that part of their disproportionately higher likelihood of violent victimization relative to non-Hispanic Whites is attributable to differences in neighborhood contexts. A number of studies have connected segregation and concentrated poverty with violence in neighborhoods (Krivo, Peterson, and Kuhl, 2009; Pratt and Cullen, 2005; Sampson et al., 1997) and it has been shown that ecological proximity to disorganized and high-crime areas affects individual-level violent victimization beyond their routines and lifestyles (Lauritsen and White, 2001; Like, 2011; Sampson and Lauritsen, 1990). Moreover, there is empirical evidence that racial/ethnic disparities in violent victimization are confounded with community context.

For example, Lauritsen and White (2001) analyzed data from the 1995 NCVS to disentangle the effect of race/ethnicity, gender, and community characteristics on violent victimization. Their results showed that subgroup differences on violent victimization among non-Hispanic Blacks, Hispanics, and non-Hispanic Whites disappeared or were significantly reduced after taking into account community characteristics such as central-city residence, residential stability, and immigrant concentration. Clearly, part of the race/ethnicity gap in victimization reflects ecological dissimilarities in the contexts of residence of various racial/ethnic groups. If non-Hispanic Whites resided in the areas of concentrated disadvantaged that minorities occupy, they would not enjoy the protection against violence we observe in victimization data. Hispanics and non-Hispanic Blacks are similarly situated in neighborhoods with comparable socioeconomic conditions, and this may explain their proneness to experience more violence than non-Hispanic Whites.

The Unique Neighborhood Context of Minorities. Similarities in the neighborhood context of non-Hispanic Blacks and Hispanics notwithstanding, there are unique characteristics that distinguish them. One is that Hispanic neighborhoods tend to have family and work composition profiles that are different from non-Hispanic Black neighborhoods. Despite living in comparable levels of poverty, Hispanic communities tend to have lower rates of female-headed households and unemployment. A second difference is that Hispanic neighborhoods are more often characterized as “immigrant enclaves” due to their high concentration of immigrants (Portes and Manning, 1986). Immigrant enclaves have been described by sociologists as having high social capital and strong networks and ties that may shield against the deleterious effects of poverty (Portes and Rumbaut, 1996). These aspects of dissimilarity in the neighborhood contexts of minorities could potentially have significance for understanding the race/ethnicity gap in violent victimization. These ecological characteristics may have a protective effect against violent victimization in predominantly Hispanic communities and explain why Hispanics experience violent victimization at a lower rate than Blacks, even though both groups are likely to reside in disadvantaged areas. That Hispanics/Latinos have unusually positive outcomes (e.g., less criminal involvement and better health outcomes) given their low socioeconomic status has been well documented and referenced as the “Latino paradox” (Sampson, 2008), and this paradox might be extended to violent victimization.

Consider first the differences in the family and work composition of the neighborhoods where racial/ethnic minorities reside. As Lauritsen and White (2001) reported, non-Hispanic Blacks are more likely to live in areas with higher rates of female-headed households relative to Hispanics or non-Hispanic Whites. Sampson (1985) reported a correlation coefficient of 0.57 for the relationship between percentage Black population and percentage female-headed households

in the U.S population, indicative that areas with high concentration of Black residents also are likely have high female-headed households. This is consistent with family-level patterns which depict Hispanics (except Puerto Ricans) as falling between the extremes rates of female headship of non-Hispanic Blacks and Whites. For instance, in 2000, about 14% of non-Hispanic White families had a female householder, compared to 20% of Mexican and Cuban families, versus 45% of non-Hispanic Black families (Landale et al., 2006). The pattern is described succinctly by Lauritsen and White (2001) as “Latinos tend to live in areas that are ethnically segregated, but although their poverty levels are similar to those of blacks, the family composition of their communities is more similar to those of whites” (p. 45). On the other hand, Hispanic communities stand out as having lower levels of unemployment relative to Black communities. Martinez (2002) reports that Hispanic communities have higher rates of labor force participation than Black communities although mostly in low-skill and informal economy positions (e.g., landscaping, housekeeping). He described Hispanics as “poor but working” and noted that “the situation for Latinos, devastating as it is in many barrios, is not as bad in terms of concentrated unemployment and joblessness as is for African Americans” (Martinez, 2002, p. 137).

Family composition and employment differences in the ecological context of racial/ethnic minorities are important for they can influence neighborhood opportunity structures for violent victimization. The mechanism that connects neighborhood family composition with opportunities for victimization seems to be one of decreased guardianship in areas of family disruption. For instance, Sampson (1985) argued that family disorganization (e.g. higher rate of female-headed households), is conducive to weaker social controls in the community. Areas with high levels of female-headed households are less able to exercise supervision and control over youth than areas of predominantly two-parent families. In this logic, neighborhood family

composition can influence opportunities for victimization independently of the family composition of individuals, because it is a proxy for guardianship at the neighborhood level (Sampson and Wooldredge, 1987). Neighborhood patterns of female-headed households may thus imply stronger social controls in Hispanics than non-Hispanic Black communities, corresponding with a relatively higher risk of violent victimization in the latter. Less clear is the mechanism connecting unemployment rates with violent victimization, but the evidence has found that neighborhood unemployment is positively related to individual-level violent victimization (Kennedy and Forde, 1990; Sampson, 1985; Sampson and Wooldredge, 1987). If the unemployment rate is taken as indicative of the residential proximity to motivated offenders in an area, as prior research has (Meier and Miethe, 1993), then the connection is one where neighborhood unemployment increases individual-level risk of victimization through increasing proximity. Given that Hispanic communities tend to have lower unemployment rates, this would suggest that Hispanics would be at lower risk of victimization relative to Blacks.

Another major source of ecological dissimilarity between minorities is the concentration of Hispanics in high-density immigrant communities or ethnic enclaves. This applies particularly to Hispanic immigrants, which represent a third of the Hispanic population in the U.S. As Massey, Zambrana, and Alonzo Bell (1995) explain “Immigration lies at the heart of the Hispanic population dynamics”. In 2000, Hispanic immigrants typically resided in neighborhoods where more than one third of their neighbors were also foreign-born, and spoke a language other than English at home (Tienda and Mitchell, 2006). To better understand the neighborhood context of Hispanics requires taking a closer look at the characteristics of immigrant enclaves and the ways in which these contexts might affect individual outcomes.

Contrary to the common notion that immigrant concentration leads to more violence, the literature has demonstrated that it is negatively linked to violence (Martinez and Lee, 2000; Martinez, 2002; Stowell et al., 2009) and possibly reduces the risk of experiencing violence by revitalizing communities' economic and cultural institutions (Lee, Martinez, and Rosenfeld, 2001). For example, research has shown that areas of Hispanic immigrant concentration are characterized by strong kinship networks that open up labor opportunities for incoming immigrants that would not be available to this minority group outside the ethnic enclave (Portes and Manning, 1986; Portes and Zhou, 1993). Given that ethnic enclaves have lower rates of violent crime than would be expected based on their socioeconomic status, the implication for individual residents is that they are in less proximity to motivated offenders, thus are at a reduced risk of violent victimization.

But ethnic enclaves also may enhance social control to the extent that social networks formed to reinforce coethnics' identity, language, and cultural memory, are used to exercise social controls and transmit shared expectations of behavior. Consider the work of the sociologist Alejandro Portes (1995) regarding the factors that affect assimilation among children of immigrants. Portes (1995) proposes the concept of "immigrant social capital" and argues that the immigrant community provides two types of social capital: to the parents and to the children themselves. For parents, immigrant social capital means an extended control of their children because immigrant parents can "call on co-ethnics to reinforce normative expectations vis-à-vis their offspring and to supervise their behavior" (Portes, 1995, p. 257). Although Portes's (1995) thesis is developed to explain differences in assimilation, the author illustrates well the notion that Hispanic immigrant communities have a kind of social capital that is unique given their conditions of economic disadvantage. This social capital in neighborhoods of immigrant

concentration might work to reduce individual-level violent victimization by offering stronger informal social controls in the ethnic enclave, which may explain, alongside the other differences in ecological contexts noted thus far, why Hispanics experience less violent victimization than other racial/ethnic minorities.

Summary. The prior discussion highlights important similarities and differences in the community context of different racial/ethnic groups and offers a theoretical foundation for the context hypothesis presented in Figure 3.6. Given the significance of the neighborhood context in structuring criminal opportunities, an alternative explanation of the disparities in violent victimization by race/ethnicity is that they may be fully due to differences in the ecological areas where racial/ethnic minorities reside. Drawing from McNulty and Bellair's (2006) discussion of the origins of racial/ethnic differentials in serious adolescent violence, it might be that individual risk factors of victimization are correlated with community, which is confounded with race/ethnicity as a result of segregation. If this is the case, the differences in violent victimization across race/ethnicity that are observed when individuals are examined in isolation from their neighborhood context should disappear or be largely diminished when both individual and community characteristics that affect risk are considered simultaneously. In other words, in fully specified multilevel models of violent victimization that include neighborhood-level indicators of criminal opportunities along with individual-level indicators of criminal opportunities and demographic variables, race/ethnicity effects would no longer be statistically significant.

CONCLUSION

This chapter has presented three plausible alternative theoretical accounts of the racial/ethnic gap in violent victimization: (1) a mediation hypothesis; (2) a moderation

hypothesis; and (3) a context hypothesis. Each of these hypotheses involves race/ethnicity as a theoretical concept of interest, but they differ in the causal mechanisms that connect it with violent victimization. The mediation hypothesis conceives race/ethnicity as a proxy for opportunistic situations that place individuals at higher risk of violent victimization; thus, controlling for indicators of criminal opportunities should largely reduce any race/ethnicity differences in violent victimization. The moderation hypothesis proposes that race/ethnicity has more than indirect effects through opportunistic situations; it works in conjunction with opportunities to affect victimization, so that the effects of opportunity indicators are expected to vary across racial/ethnic groups. Third, the context hypothesis makes the argument that race/ethnicity differentials in violent victimization are driven by the correlation between race/ethnicity and residence in high-risk community contexts that increase the likelihood of violent victimization by providing ample criminal opportunities. Therefore, controlling for community characteristics should lead to race/ethnicity effects that are largely attenuated or eliminated. Figure 3.7 shows a summary of these three alternative hypotheses.

Although each of these hypotheses has a foundation in theory and/or empirical evidence, no published studies have assessed their relative validity and strength to explain violent victimization differentials. Considering that these hypotheses imply quite different prevention strategies to address disparities in violence, the lack of research is problematic. This dissertation will address this issue by testing these hypotheses in a single study to further clarify the dynamics that underlie race/ethnicity disparities in violent victimization. The next chapter describes the methodological and analytical approach of the study.

Figure 3.7. Three Alternative Accounts of Race/Ethnicity Differences in Violent Victimization

Explanation of Race/Ethnicity Differences in Violent Victimization	Theoretical Model	The data would fail to falsify the theoretical model if
Mediation Hypothesis	<pre> graph LR A["Race/Ethnicity (As well as other indicators of social structure position)"] --> B[Situational Opportunity] B --> C[Risk of Violent Victimization] A -.-> C </pre>	The effects of race/ethnicity are no longer significant after controlling for indicators of criminal opportunity at the individual level
Moderation Hypothesis	<pre> graph LR A["Individual-level Opportunity Exposure Guardianship Proximity Target attractiveness"] --> C[Violent Victimization] B[Race/Ethnicity] -.-> AC[" "] </pre>	Race/ethnicity affects violent victimization in interaction with indicators of criminal opportunity (i.e., interaction terms between race/ethnicity and opportunity indicators are statistically significant)
Context Hypothesis	<pre> graph LR A[Neighborhood Opportunities for Victimization] --> C[Violent Victimization] B[Race/Ethnicity] -.-> AC[" "] A <--> B </pre>	The effects of race/ethnicity are no longer significant after controlling for indicators of criminal opportunity at the neighborhood level

Chapter 4

METHODS

The preceding discussion of the racial/ethnic differences in violent victimization shows that although a considerable body of scholarly work has studied this topic, the evidence is mixed and limited. Three alternative explanations for the racial/ethnic differences in violent victimization have emerged from the criminal opportunities perspective: (1) a mediation hypothesis; (2) a moderation hypothesis; and (3) a context hypothesis. According to a mediation hypothesis, the race/ethnicity gap in violent victimization is largely confounded by the concentration of opportunistic situations among racial/ethnic minorities. A moderation hypothesis suggests that sociocultural characteristics of racial/ethnic minorities may interact with opportunistic situations, resulting in more or less risk for these groups. In contrast, a context hypothesis conceives these differences in violent victimization as the byproduct of the concentration of racial/ethnic minorities in ecological contexts that offer abundant opportunities for victimization. Despite some empirical support in the literature for each of these explanations, no published studies to date have simultaneously examined their predictive validity; thus, after several decades of research, our understanding of the racial/ethnic differences in violent victimization is segmented.

To address this issue, this dissertation examines the interplay of race/ethnicity, criminal opportunities, and violent victimization by specifying and testing these three hypotheses with various statistical models: (1) a two-stage probit regression and a mediation test for mediation effects; (2) a two-stage probit regression with the inclusion of interaction effects to test for moderation effects; and (3) a multilevel probit regression to examine contextual effects. The dissertation draws on secondary data from the Project of Human Development in Chicago

Neighborhoods (PHDCN) to answer the research questions presented in Chapter 1. The PHDCN data are appropriate to address these questions because they include a sizable number of subjects within each of the three largest racial/ethnic groups in the U.S (i.e., Non-Hispanic Blacks, Hispanics, and Non-Hispanic Whites) and also include measures of criminal opportunities and violent victimization. In addition, the longitudinal design of the study allows for proper temporal ordering between independent and dependent variables, thereby strengthening the internal validity of the inferences made. This chapter offers a detailed description of the sample, measurement, and analytical approach employed in this dissertation.

PROJECT ON HUMAN DEVELOPMENT IN CHICAGO NEIGHBORHOODS (PHDCN)

Study Overview and Sampling Strategy

The PHDCN is a multilevel study of how community, family, and individual factors influence children and adolescent's development over the life course. Based on the themes of "development" and "community" (Sampson, 2012), the study collected data on individual's health-related, cognitive, emotional, and social factors and their ecological contexts (Marz and Stamatel, 2005). Although the original plans for the study date to 1982, a final design plan was consolidated in 1993, followed by data collection starting in 1994. The city of Chicago was chosen as the study site after consideration of other large cities (i.e., Los Angeles, Baltimore, New York City, and New Orleans) due to its prominent racial/ethnic heterogeneity, which had the potential to yield a sufficient representation of the three largest racial/ethnic groups in American society (non-Hispanic Blacks, Hispanics, and non-Hispanic Whites), and also sufficient variation in population socioeconomic status (Sampson, 2012). The PHDCN study consists of three main components: a longitudinal cohort study (LCS), a community survey (CS), and systematic social observations. This dissertation employs data from the first two

components, in addition to Census data that was made available by the research directors of the PHDCN. Access to the restricted version of the PHDCN data from the Inter-University Consortium for Political and Social Research (ICPSR) was obtained in December of 2011, preceded by approval from the Institutional Review Board of the University of Cincinnati in August of 2011.

The sampling strategy of the PHDCN involved the combination of Chicago's 847 census tracts into 343 larger but internally homogenous ecological units, called neighborhood clusters (NCs). These clusters were derived through analysis of geographical boundaries (i.e., freeways, railroads), knowledge of local neighborhoods, and a cluster analysis (Earls, Brooks-Gunn, Raudenbush, and Sampson, 2002). Chicago's Census tracts were stratified by seven categories of racial/ethnic population composition (i.e., 75% Black, 75% White, 75% Latino, $\geq 20\%$ Latino and $\geq 20\%$ White, $\geq 20\%$ Latino and $\geq 20\%$ Black, $\geq 20\%$ Black and $\geq 20\%$ White, and other) and equal thirds of socioeconomic status (i.e., low, medium, and high), yielding a total of 21 strata. A systematic sample of 80 NCs was selected from these strata, after sorting by housing density and family structure. While the original plan was to draw an equal number of NCs per stratum, this was not possible because three strata had empty cells and another three had fewer than five NCs, which resulted in the selection of all NCs in these low-count strata. The sample of 80 NCs in Chicago was the basis for data collection in the LCS, as is detailed below.

Longitudinal Cohort Study (LCS). This component of PHDCN employed a cohort-sequential design, also called "accelerated longitudinal" design (Sampson, 2012), whereby a sample of children and adolescents in seven age cohorts (0, 3, 6, 9, 12, 15, and 18) and their caregivers were followed up for a period of eight years. The sampling procedure consisted of a simple random sample of city blocks from each of the 80 NCs originally selected for the study,

and a systematic random sample of dwelling units within each selected block. All households in a dwelling were listed and screened in person; participants were selected from households if they were within six months of the study age cohorts. A total of 8,347 children and adolescents were identified as eligible and the final sample was 6,228 participants, corresponding to a 75% overall response rate (Earls, Brooks-Gunn, Raudenbush, and Sampson, 2002).

Data for the LCS were collected through intensive home interviews and assessments of subject participants and their caregivers. Survey instruments included a broad collection of measures on individual characteristics, family environment, social relations, health, school-related measures, exposure to violence, fear of crime, and experiences of victimization. Data were collected on a rolling basis across three waves separated by roughly 2.5 years: Wave 1 (1994-1997), Wave 2 (1997-1999), and Wave 3 (2000-2002). Being a longitudinal study, PHDCN was affected by attrition. Of the 6,228 participants interviewed at Wave 1, 5,338 participated in the Wave 2 (an overall response rate of 85%), and 4,850 subjects remained in the study at Wave 3 (an overall response rate of 78%). Relative to similar longitudinal studies, the overall response rates of the LCS of the PHDCN are comparably high (Sampson, 2012).

Community Survey (CS). A second component of PHDCN was the collection of data through a survey of Chicago residents in 1995. The CS was treated as an independent measurement of neighborhoods rather than as a supplement to the study of cohort participants (Sampson, 2012), and it evaluated the structural and cultural characteristics of neighborhoods as perceived by their residents. The CS involved the sampling of all NCs in the city of Chicago, and not the original subset of 80 NCs used for the LCS. Data were collected using a three-stage sampling design: in a first stage, city blocks were sampled from each NC; at stage two dwelling units were selected from sampled blocks; finally, at stage three one adult (i.e., a person age 18 or

older) from each selected dwelling unit was sampled. This procedure yielded a final probability sample of 8,782 Chicago residents, for a 75% overall response rate. This sample is representative of Chicago residents and has a sufficient number of cases per NC as to estimate reliable neighborhood measures (i.e., within-cluster samples range from 20 to 50 residents) (Sampson et al., 1997). Home interviews were conducted with selected respondents to collect information regarding the characteristics of respondent's neighborhoods, such as social networks and ties, social cohesion, informal social control, policing, local organizations, and perceptions of neighborhood disorder.

Census Data. In addition to the LCS and the CS, the PHDCN research team made available a set of variables that capture structural characteristics of Chicago neighborhoods, constructed by Sampson and colleagues (1997) from the 1990 decennial Census of the population and local police statistics. The variables include concentrated poverty, immigrant concentration, residential stability, total population, and 1990 homicide rates, all of which have been used in previous PHDCN-based studies of victimization and delinquent behavior (Gibson and Ventura Miller, 2010; Gibson, Sullivan, Jones, and Piquero, 2010; Maimon and Browning, 2012; Sampson et al., 1997; Sampson, Morenoff, and Raudenbush, 2005).

Analytic Sample

Level-One Sample. The analyses in this dissertation are based on a sample of adolescents from the 9-year-old, 12-year-old, and 15-year-old cohorts who were interviewed as part of the LCS component of the PHDCN. The emphasis on the adolescence age cohorts is due to adolescence being a high risk developmental stage for violent victimization, thus offering the most variability in this outcome. At Wave 3, the time at which the dependent variable of violent victimization was measured, subjects in these three age cohorts were 14, 16, and 20 years old on

average, thus falling into a high-risk age span. Although the 18-year-old cohort also would have this profile, it was excluded due to the lack of key measures for analysis. In particular, the “Exposure to Violence” instrument was not administered to this cohort at Wave 2, and as a result measures of prior violent victimization, a crucial statistical control, were not available for the 18-year-old cohort.

A total of 2,345¹⁴ adolescents participated in the LCS at Wave 1 (i.e., 828, 821, and 696 participants per cohort, respectively). Among these, 2,028 adolescents participated in follow-up interviews at Wave 2 (i.e., 717, 715, and 596 participants per cohort, respectively) and 1,789 adolescents participated also at Wave 3 (i.e., 652, 646, and 491 participants per cohort, respectively), for an overall retention rate of 76%. Owing to a combination of missing data for individual questions and attrition over time, the analytic sample for the present analysis was reduced to 1,169 adolescents, a sample size reduction similar to the reported in prior studies of PHDCN data (Maimon and Browning, 2010; Zimmerman and Vazquez, 2011). Although prior studies using the PHDCN data set have found that the relationship between race/ethnicity and violence is unaffected by attrition (Sampson et al., 2005), concerns of possible selection bias as a result of missing data are addressed through the use of Multiple Imputation (Little and Rubin, 2002; Rubin, 1987; Schafer, 1997), a state-of-the-art technique to handle missing data. Descriptive analyses of missing data and information on the imputation procedures are discussed in a section below.

Level-Two Sample. Consistent with a multilevel approach, the sample of adolescents were embedded in their neighborhood contexts. In addition to individual-level data, neighborhood-level data were obtained by merging separate measures from the CS component of

¹⁴ One respondent was deleted from the overall sample because it had missing values for all neighborhood-level variables. This reduced the original sample to 2,344.

PHDCN. The original number of Chicago neighborhoods sampled as part of the CS was 343, but only 80 of these were sampled for the LCS, resulting in a neighborhood-level sample size of 80. At least one respondent resided in 79 of those 80 neighborhoods. Among the 79 neighborhoods, eight had a low within-cluster count of adolescents (i.e. less than five respondents). To ensure a sufficient number of respondents within each cluster, low-count NCs were collapsed into similar NCs based on their race/ethnicity profiles and socioeconomic status, thus reducing the size of the level-two sample to 71 neighborhoods. Overall, analyses reported in this dissertation are based on a sample of 1,169 adolescents interviewed across three waves and nested within 71 Chicago neighborhoods (with an average within-cluster sample size of 17).

Dependent Variable

The main outcome of interest in this dissertation is the prevalence of violent victimization in the past year.¹⁵ The measure of *violent victimization* was generated from adolescent's responses to four questions from the Exposure to Violence (ETV) instrument (Selner-O'Hagan, Buka, Kindlon, Raudenbush, and Earls, 1998) administered at Wave 3. Respondents were asked how many times in the last 12 months they had been: (1) Hit, slapped, punched, or beaten up; (2) Attacked with a weapon, like a knife or bat; (3) Shot at; or (4) Seriously threatened with violence, including threats with a weapon. Original survey responses (1=Once to 4=More than 10 times) were added to create an overall count of violent victimization (Cronbach's alpha=0.54). As in prior studies, this measure of victimization is highly skewed, with 85.5% of adolescents in the sample not experiencing any of the five types of violence (1,414 out of 2,345)

¹⁵ This measure excludes victimization incidents that were perpetrated by family members, because the hypotheses articulated in Chapter 3 apply mainly to violence perpetrated by strangers or acquaintances. Also excluded are victimization incidents that occurred outside the neighborhood of residence, as the study cannot account for the characteristics of those areas.

and few of those victimized reporting more than one incident.¹⁶ The analysis focuses on the prevalence of violent victimization using a dichotomous variable that indicates whether or not the adolescent experienced at least one of the above types of violence in the past year (0=Non-victim; 1=Victim). Table 4.1 presents the descriptive statistics for the study variables (for descriptive statistics by race/ethnicity, see Appendix C). As the table shows, 13% of the adolescents in the analysis sample experienced violent victimization in the past year.

It is important to note that combining these four types of violence may confound differences in the covariates of less serious forms of victimization (e.g., hit/slapped/beaten up) and more serious ones (e.g., shot at). Theoretically, it is expected that opportunities to commit a crime differ based on crime-specific properties (Cohen et al., 1981), so disaggregating among types of violent crime is ideal. However, due to the low counts per violent victimization type¹⁷ it was not possible to perform disaggregated analyses, as it could produce unreliable estimates. The decision to analyze a composite measure of violent victimization is consistent with prior studies of criminal opportunity which have also employed overall scales of violent victimization (Maimon and Browning, 2012; Miethe et al., 1987; Miethe and McDowall, 1993; Sampson, 1987; Schreck and Fisher, 2004; Tillyer et al., 2011; Wilcox et al. 1994). More important, the use of a composite scale is supported by a Principal Components Analysis (PCA), which yielded a one-factor solution that explained 45% of the variation among the four items, with factor loadings ranging between 0.58 (hit/slapped/beaten up) and 0.73 (threatened). Thus, there is evidence of a single underlying component reflected in these four types of violence.

¹⁶ In particular, of 1,653 cases with valid victimization data, 1,414 reported no victimization, 106 reported two or more occurrences of violent victimization in the past year, and 133 reported a single victimization.

¹⁷ Only 33 of adolescents in the final sample reported having been shot at, 35 reported having been attacked with a weapon, and 97 reported having been threatened seriously.

Independent Variables

Individual-level variables. Individual-level measures of the concepts of criminal opportunity (i.e., exposure, guardianship, and target attractiveness¹⁸), of the key concept of race/ethnicity, and control variables were measured at Waves 1 and 2 as part of the LCS, thereby ensuring proper temporal ordering with the dependent variable. Generally, survey items available in the PHDCN data set allowed for adequately measuring the constructs. For example, these data contain measures of all four key concepts of criminal opportunity, and with the exception of target attractiveness—which is measured with a single item— all other concepts are measured with multiple items, thus reducing the threat of mono-operationalization bias that may undermine construct validity (Shadish, Cook, and Campbell, 2002).

The constructs are operationalized with empirical measures that exhibit strong construct validity, as indicated by their close correspondence to the definitions of exposure, guardianship, proximity, and target attractiveness. Finally, the measures resemble those used in prior studies; for instance, the data include measures of guardianship such as family-based monitoring, family size, and family structure, all of which have been employed in prior studies of guardianship effects on victimization (Meier and Miethe, 1993).

¹⁸ The concept of proximity is measured at the neighborhood-level (consistent with the treatment of this concept as a “structural” indicator by Miethe and Meier, 1990) because it refers to the proximity of victims to areas where relatively large populations of offenders are found, thus being not a characteristic of individual victims, but their social context, and particularly their context of residence.

Table 4.1. Variables, Scales, and Descriptive Statistics
(*N* = 1,169)

Variables	Scale/Coding	Mean	(SD)	Min	Max
<u>Dependent Variable</u>					
Violent victimization	0 = No; 1 = Yes	0.13	0.33	0	1
<u>Individual-Level Independent Variables</u>					
<i>Exposure to Risk</i>					
Alcohol use	0 = No; 1 = Yes	0.22	0.41	0	1
Marijuana use	0 = No; 1 = Yes	0.11	0.31	0	1
Deviant peers	6-item composite measure	7.51	2.80	3	20
Going to movies	0 = Never to 4 = Almost every day	1.77	0.86	0	4
Driving around	0 = Never to 4 = Almost every day	1.63	1.47	0	4
Hanging out with friends	0 = Never to 4 = Almost every day	2.93	1.20	0	4
Going to parties	0 = Never to 4 = Almost every day	1.78	0.96	0	4
Volunteering	0 = No; 1 = Yes	0.34	0.47	0	1
Organized sport teams	0 = No; 1 = Yes	0.35	0.47	0	1
Self-reported violent offending	0 = No offending acts; 1 = ≥ 1 offending acts	0.25	0.43	0	1
<i>Target Attractiveness</i>					
Low self-control	17-item composite scale	46.25	11.08	17	85
<i>Guardianship</i>					
Family size	# of persons living in the household	5.24	1.91	2	14
Single parent	0 = two parents; 1 = single parent	0.29	0.45	0	1
Family warmth	9-item composite scale	6.55	2.01	0	9
Family monitoring	13-item composite scale	11.73	1.42	4	13
Family support	6-item composite scale	16.26	1.96	5	18
<i>Statistical Controls</i>					
Age at Wave 1		11.95	2.43	7.77	16.38
Gender	0 = Female; 1 = Male	0.48	0.49	0	1

Variables	Scale/Coding	Mean	(SD)	Min	Max
<i>Statistical Controls(Continued)</i>					
Immigrant status	0 = Native-born; 1 = Foreign-born	0.10	0.30	0	1
Family income	1 = < \$5,000 to 11= > \$90,000	4.90	2.55	1	11
Prior violent victimization	0 = No; 1 = Yes	0.17	0.37	0	1
Race/Ethnicity					
Non-Hispanic White	(Reference category)	-	-	-	-
Non-Hispanic Black	0 = No; 1 = Yes	0.34	0.47	0	1
Hispanic	0 = No; 1 = Yes	0.48	0.49	0	1
<u>Neighborhood-Level Independent Variables</u>					
<i>Proximity to Motivated Offenders</i>					
Perceived neighborhood disorder	6-item composite scale	1.83	0.34	1.18	2.43
Perceived neighborhood violence	5-item composite scale	1.95	0.36	1.32	2.90
<i>Aggregate-Level Guardianship</i>					
Neighborhood informal social control	5-item composite scale	3.88	0.35	3.02	4.68
<i>Statistical Controls</i>					
Concentrated disadvantage	Oblique rotation factor score	-0.69	3.36	-5.25	11.91
Immigrant concentration	Oblique rotation factor score	1.26	3.02	-3.38	7.36
Residential stability	Oblique rotation factor score	-0.15	1.77	-3.70	3.67

Exposure. This concept represents the degree to which respondents are accessible and visible in high-crime-risk environments and was measured with multiple variables. The first two variables were drawn from the Substance Use instrument, a modified version of the National Household Survey on Drug Abuse administered at Wave 2. *Alcohol use* is derived from the question “Not including sips and tastes, how many days in the last 12 months have you had alcohol to drink (includes beer, wine, wine coolers, and liquor)?” Original survey (0=Never to 8=200 times or more) were recoded into a dichotomous variable representing the prevalence of alcohol use in the past year (0=No; 1=Yes), as the distribution of the original ordinal scale was skewed (Mean= 0.57; SD=1.33; Skewness=2.88). *Marijuana use* is based on the question “How many days have you used marijuana or hash in the last 12 months?” As with alcohol use, original responses (0=Never to 8=200 times or more) were dichotomized due to the skewed distribution of the original ordinal variable (Mean= 0.37; SD=1.29; Skewness=4.13).

Deviant peers is a composite measure of the number of respondent’s friends that have engaged in six delinquent behaviors, measured at Wave 2 from the Deviance of Peers instrument, an adapted version of Huizinga, Esbensen, and Weiher’s Denver Youth Survey (1991). Respondents were asked how many of their friends did any of the following acts in the last 12 months: (1) Purposefully damaged or destroyed property that did not belong to them; (2) Stole something worth more than \$5 but less than \$500; (3) Attacked someone with a weapon with the idea of seriously hurting them; (4) Used marijuana or pot; and (5) Used any form of alcohol, including wine, liquor, or beer. Original survey responses (0=None to 4=All) were summed (Cronbach’s alpha=0.80), with higher scores indicating more deviant peers. The five items represent an underlying concept, as evidenced by a PCA that extracted a one-factor solution that

accounts for 57% of the variance, with factor loadings between 0.69 (damaging property) and 0.82 (using marijuana).

A set of four individual items were used to capture respondent's participation in leisure activities that may place them in contact to risky environments. These measures were collected at Wave 2 from the Routine Activities instrument (Osgood, Wilson, O'Malley, Bachman, and Johnston, 1996). Respondents were asked how often they engaged in four activities during their free time (0=Never to 4=Almost every day). *Going to movies* reflects how often adolescents go to the movies. *Driving around* measures how often adolescents ride around in a car or motorcycle just for fun. *Hanging out with friends* measures how often adolescents get together with friends and just hang out. *Going to parties* captures the frequency with which adolescents go to parties or other social affairs. In addition, two variables were employed to measure adolescent's participation in conventional and structured activities that represent low exposure to risky environments, as they typically involve adult guardianship. These measures were extracted from the School Interview at Wave 2 (adapted from the Philadelphia Family Management Study, 1990). Respondents were asked whether they participated in *volunteering* and *organized sports teams* (0=No; 1=Yes).

Self-reported violent offending is a composite measure that reflects respondent's participation in at least one of seven violent offenses in the past 12 months: (1) Hitting someone who lived outside their household with the purpose of hurting them; (2) Attacking someone with a weapon; (3) Throwing objects such as rocks at people; (4) Carrying a hidden weapon; (5) Using a weapon or force to get things/money from people; (6) Being in a gang fight; or (7) Threatening to seriously hurt someone. Consistent with prior PHDCN studies (Gibson, 2011; Fagan and Wright, 2011) and owing to the skewed distribution of a continuous scale of the

number of acts of self-reported offending (Mean= 0.44; SD= 0.92; Range=0-6; Skewness= 2.64), the original survey responses (0=No; 1=Yes) were used to create a dichotomous variable that reflects adolescent's offending behavior in the preceding year (0=No offending acts; 1=One or more offending acts).

Target attractiveness. This concept refers to the intrinsic and extrinsic value of likely victims and is measured with one variable. Drawing from the work of Finkelhor and Asdigian (1996), this dissertation conceptualizes attractiveness in terms of target antagonism, which these authors define as the possession of characteristics that provoke anger, jealousy, or destructive impulses from offenders. One indicator of victim's antagonism is *low self-control*, measured with the Emotionality, Activity, Sociability, and Impulsivity Temperament Survey (EASI) Instrument (Buss and Plomin, 1984), administered at Wave 1. Consistent with prior PHDCN studies (Gibson et al., 2010), low self-control is a 17-item composite measure of inhibitory control, decision time, sensation seeking, and persistence that reflects the likelihood that the respondent engages in antagonistic acts. Items responses were summed, with higher scores reflecting lower levels of self-control.¹⁹

Guardianship. This concept captures the degree of supervision of potential targets that may prevent crimes from occurring. As was argued in Chapter 3, a large component of guardianship among adolescents is exercised within the family unit, so all of the individual-level measures of this concept are family-related. A first indicator, *family size*, is a count of the number persons who live in the adolescent's household. *Single parent* is a dummy variable indicating whether the adolescent comes from a: (1) Two-parent family or (2) Single-parent family (reference category).

¹⁹ A specific list of these survey items and the dimensions of self-control they correspond to is presented in Appendix A.

Three additional family-related indicators are family warmth, monitoring, and support.²⁰ The first two measures were extracted from the Home Observation for Measurement of the Environment (HOME) Instrument (Caldwell and Bradley, 1984) administered at Wave 1. Following prior studies (Gibson and Ventura Miller, 2010; Shekarkhar and Gibson, 2011; Sullivan, 2012), *family warmth* is a 9-item composite scale measuring whether parents or caregivers manifested signs of closeness and affection towards the adolescent during the home interviews (e.g., caregiver answers adolescent's questions or requests verbally, encourages adolescent to contribute to the conversation, mentions a particular skills or accomplishment of the adolescent, among others²¹). Original responses (0=No; 1=Yes) were summed (Cronbach's alpha=0.76), with higher scores indicating more family warmth. *Family monitoring* is a 13-item composite scale that measures home rules and parental supervision practices imposed on the adolescents, including having a curfew on school nights, having rules about peer relations, being subject to adult supervision after school, among others.²² Original survey responses (0=No; 1=Yes) were summed, with higher scores reflecting more parental monitoring. Reliability analysis yielded a Cronbach's alpha of 0.51 and a PCA with Varimax rotation extracted four factors, where a first factor explained 12% of the variation between the items. Thus, as with prior PHDCN studies using this measure (Fagan and Wright, 2011; Maimon and Browning, 2010; Sullivan, 2012), internal consistency is modest and individual factor loadings are low, ranging between 0.25 (caregiver knows/monitors for signs of drug use) and 0.51 (adolescent must check with parents while away). *Family support* is a 6-item composite scale constructed

²⁰ Although family warmth and support may not be readily considered as manifestations of guardianship, they can be conceived as necessary for the proper exercise of monitoring. Parents who are more weakly attached to their children are less likely to care about their daily peer socializing or other out-of-household activities. Following control theories, parental attachment and support are indirect forms of control while monitoring is a form of direct control. Thus, identification and affection with parents helps facilitate both acceptance and submission to parental monitoring practices (Nye, 1958). Thus, a capable parental guardian must also be an attached and close guardian.

²¹ A specific list of these items is presented in Appendix A.

²² A complete list of the 13 items employed to construct this scale is presented in the Appendix.

from adolescents' assessment of the following statements at Wave 1, as part of the Provision of Social Relations instrument (Turner, Frankel and Levin, 1983): (1) No matter what happens, I know family will always be there should I need them; (2) Sometimes I am not sure if I can completely rely on my family (reverse coded); (3) My family lets me know I am a worthwhile person; (4) People in my family have confidence in me; (5) People in my family help me find solutions to my problems; and (6) I know my family will always stand by me. Responses to these questions (1=Not true to 3=True) were summed (Cronbach's alpha= 0.61), with higher scores indicating more family support. The internal consistency of this scale was demonstrated by a PCA that extracted a one-factor solution, indicating that the underlying factor explained 39% of the variance, with individual factor loadings between 0.37 (item 2) and 0.72 (item 6).

The key construct of race/ethnicity is measured with two dummy variables: *Non-Hispanic Black* and *Hispanic* ('Non-Hispanic White' is reference category). In addition, the analyses control for demographic characteristics, including *immigrant status*, a dummy measure based on the caregiver's report of the youth's country of origin (0=Native-born; 1=Foreign-born), *age*, *gender* (0=Female, 1=Male), and *family income*. A control measure of *prior violent victimization* (0=Nonvictim; 1=Victim), constructed in the same manner as the dependent variable but measured at Wave 2, also is included.

Neighborhood-level variables. Proper temporal ordering applies to neighborhood-level measures, as these were obtained from the CS of PHDCN collected in 1995 or from the 1990 Census, both preceding the measurement of the dependent variable at Wave 3. These neighborhood-level variables include indicators of proximity, aggregate-level guardianship, and statistical controls. Although the measures used here have been validated as reliable indicators of neighborhood characteristics (Sampson et al., 1997), they were created from a separate sample

than the LCS (i.e., from the CS of 8,782 Chicago residents). All measures were created by the PHDCN research team, aggregating individual-level responses to the neighborhood level (for a review of the techniques to create these measures, see Raudenbush and Sampson, 1999).

Proximity. The concept of proximity to motivated offenders refers to the distance between areas where potential victims reside and areas where large populations of potential offenders are found and is measured with two variables drawn from the CS. The first indicator, *perceived neighborhood disorder*, is a composite measure of the level of disorder in the neighborhood. As described by Sampson and Raudenbush (2004), this measure is based on respondents' assessment of "how much of a problem" in the neighborhood was: (1) Litter, broken glass or trash on the sidewalks and streets; (2) Graffiti on buildings and walls; (3) Vacant houses or storefronts; (4) Drinking in public; (5) People using or selling drugs; and (6) Unsupervised groups of teenagers causing trouble (1=Not a problem; 2=Somewhat of a problem; 3=A big problem). The scale was constructed by the PHDCN team and has a reported overall reliability at the block-group level of 0.70 (Sampson and Raudenbush, 2004). Higher scores represent higher levels of disorder in the neighborhood as perceived by their residents. A second indicator is *perceived neighborhood violence*. This variable, also created by the PHDCN team and described by Sampson et al. (1997), is based on resident's assessment of the frequency of occurrence of five types of violent crimes in their neighborhoods in the past six months, including: (1) a fight in which a weapon was used; (2) a violent argument between neighbors; (3) a gang fight; (4) a sexual assault or rape; and (5) a robbery or mugging (1=Never; 2=Rarely; 3=Sometimes; 4=Often). Higher scores on this scale indicate more frequent occurrence of violence in neighborhoods as perceived by their residents.

As an indicator of aggregate-level guardianship, this dissertation employs a measure of social control derived from the CS. According to Sampson et al. (1997), *neighborhood informal social control* is a five-item Likert scale that measures the likelihood that neighbors could be counted on to intervene if: (1) Children were skipping school and hanging out on a street corner; (2) Children were spray painting graffiti on a local building; (3) Children were showing disrespect to an adult; (4) A fight broke out in front of their house; and (5) The fire station closest to their home was threatened with budget cuts (1=Very unlikely to 5=Very likely). Higher scores on this measure correspond to more neighborhood informal social control.

As neighborhood-level statistical controls, this dissertation includes measures of concentrated disadvantage, immigrant concentration, and residential stability. These measures were created by the PHDCN research team with a factor analysis and oblique rotation, using 1990 Census data.²³ The first factor, *concentrated disadvantage*, includes: (1) Percentage of residents below the poverty line; (2) Percentage of residents receiving public assistance; (3) Percentage female-headed households; (4) Percentage of residents unemployed; (5) Percentage of residents younger than age 18; and (6) Percentage of African American residents. The second factor, *immigrant concentration*, is based on: (1) Percentage of Latino residents; and (2) Percentage of foreign-born residents. Finally, the factor of *residential stability* includes: (1) Percentage of residents living in the same house as five years earlier; and (2) Percentage of owner-occupied homes.

Analytic Strategy

Various analytical models are employed to answer the research questions proposed in this dissertation. The first research question asks whether there are significant differences in violent

²³ Specific factor loadings were reported by Sampson et al. (1997) and are included in Appendix B.

victimization across race/ethnicity groups. To answer this question, this dissertation draws from bivariate analyses that first examine a contingency table of the dependent variable of violent victimization with race/ethnicity, and are supplemented by the results of the corresponding Chi-square test (χ^2) for independence. For these bivariate analysis and multivariate analyses that follow, the alpha level is set at the conventional value of 0.05.

Having established race/ethnicity differences in violent victimization, the second research question asks whether the relationship between race/ethnicity and violent victimization is fully or partially mediated by individual-level indicators of criminal opportunities. Thus, this question involves testing a mediation model, such as the one presented in Chapter 3's Figure 3.4, or testing the mediation hypothesis. MacKinnon, Fairchild, and Fritz (2007) describe three major tests of mediation: (1) causal-step tests; (2) difference-in-coefficient tests; and (3) product-of-coefficient tests. These tests assess mediation effects using three regression equations:

$$Y = i_1 + cX + e_1 \quad (\text{Equation 4.1})$$

$$Y = i_2 + c'X + bM + e_2 \quad (\text{Equation 4.2})$$

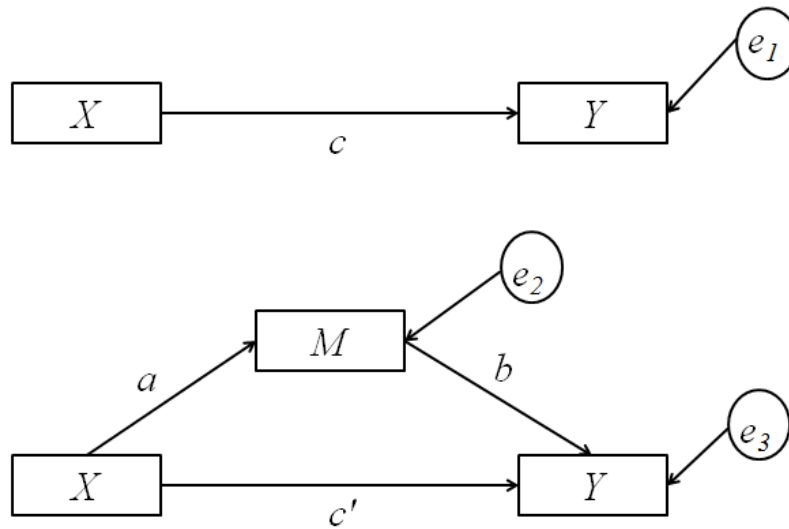
$$M = i_3 + aX + e_3 \quad (\text{Equation 4.3})^{24}$$

where c is the total direct effect of X on Y , a is the effect of X on M , b is the effect of M on Y , c' is the direct effect of X on Y (after controlling for M), i_1 , i_2 , and i_3 are the intercepts and e_1 , e_2 , and e_3 are the residual error terms, respectively. Although Equations 4.1 to 4.3 reflect a single mediator model, they can be generalized to include multiple mediators (M_1 , M_2 , M_3 , and so on). These equations correspond to the models graphically displayed in Figure 4.1 below.

²⁴ Equation 4.3 is used in two of the three tests of mediation described by MacKinnon et al. (2007): causal-steps-tests and product-of-coefficient tests. However, it is not employed in the difference-in-coefficients tests.

The parameters in these equations can be obtained from regression models as follows: (1) a regression of the dependent variable on the independent variable only (Equation 4.1); (2) a regression of the dependent variable on the independent variable and the mediator variable (Equation 4.2); and (3) a regression of the mediator variable on the independent variable (Equation 4.3).

Figure 4.1. Illustration of Direct and Indirect Effects in Mediation Models



The difference-in-coefficients test ($c-c'$) has been employed in previous studies of mediation effects of LRAT (Miethe et al., 1987). This test entails estimating equations 4.1 and 4.2 and taking the difference in the coefficients c and c' ; the resulting value captures the reduction in the effect of the independent variable on the dependent variable, after adjusting for the mediator variables (MacKinnon, 2008). This mediated effect ($c-c'$) should then be tested for statistical significance by dividing it by its standard error and comparing the resulting value with the Z value, using Sobel's (1982) formula. However, statistical tests of the mediated effects have been rarely employed by researchers, and instead most studies simply assess mediation by reporting the change in c and c' across models.

The difference-in-coefficients test poses some challenges when the mediator and dependent variables involved in the analysis are categorical. Specifically, there is a scaling problem that emerges because the error variance in logistic regression equations is fixed at $\pi^2/3$, so the regression coefficients across different equations (i.e., c and c') cannot be directly compared, as they are not in the same metric. A solution to this scaling problem is to standardize the regression coefficients prior to estimating mediation effects (MacKinnon, 2008), but this approach is computationally intensive, especially with multiple mediators. In light of these constraints, the difference-in-coefficients test can be employed as a simple but only preliminary exploration of mediation effects when categorical variables are involved in the analysis.

In this dissertation, because the analysis includes categorical mediator and dependent variables, the difference-in-coefficient test ($c-c'$) will be performed, but only as an initial assessment of mediation. Specifically, the c and c' coefficients will be estimated from a two-stage regression of violent victimization. In the first stage (Model 1), only race/ethnicity and demographic control variables are included; the coefficient c represents the effect of race/ethnicity on victimization not yet controlling for mediator variables. In the second stage (Model 2), the indicators of criminal opportunities, which are the mediator variables, are added; the coefficient c' represents the effect of race/ethnicity on violent victimization, after controlling for those mediator variables. Mediation effects are initially assessed by calculating the difference in the coefficient for race/ethnicity across these two models ($c-c'$). However, this approach is preliminary and will be supplemented by a more formal mediation test, in this case using the product-of-coefficients test, described below.

In addition to the issues discussed above regarding the presence of categorical mediator and dependent variables, tests of mediation require some adjustment when the independent

variable X is multicategorical. Specifically, with a multicategorical X , there is no single a coefficient that represents the effect of X on M , or a single c' coefficient for the effect of X on Y , because X can take more than two values. One simple approach to handle this issue is to include $k - 1$ mutually exclusive categories to represent the effect of X in Equations 4.1 to 4.3 (Hayes and Preacher, 2013). In this dissertation, the key independent variable of race/ethnicity is multicategorical (i.e., measured as Black, Hispanic, and White, or $k=3$); therefore, estimating the mediated effects of race/ethnicity on violent victimization requires adding two dummy variables, Black and Hispanic, to the statistical models.

The product-of-coefficients test ($a*b$) entails estimating Equation 4.2 and 4.3 and taking the product of the a and b coefficients; the resulting value represents the mediated or indirect effect (MacKinnon, 2008). Unless all the variables involved in the analyses are continuous, estimating the $a*b$ product may be challenging, as different measurement scales for the variables require different estimation models (e.g., OLS, logistic), and also due of the scaling problem discussed above. This dissertation employs the currently recommended method to test mediation in the presence of categorical mediator and dependent variables: the use of structural equation modeling in Mplus (see MacKinnon, 2008, p. 315). This method assumes that while the measured variables may be discrete, their underlying constructs are continuous, and the sample measures of the categorical variables are modeled through a threshold step function (Muthén and Muthén, 2010). The method overcomes the scaling problems with categorical variables that arise in mediation analyses. Following MacKinnon's (2008) advice, Mplus 6.0 is used to estimate mediation models in this dissertation, as the models include categorical variables.

Mplus allows the decomposition of total, direct, and indirect effects, and generates a test of statistical significance for these effects using the delta method, through the "MODEL

INDIRECT” command (Muthén, L. K., and Muthén, 2010). The total effect, denoted as c , captures how much two cases that differ on the independent variable X are estimated to differ on the outcome variable Y , without adjusting for the effect of the mediating variable M . The direct effect, denoted as c' , reflects how much two cases that differ on the independent variable X are estimated to differ on the outcome variable Y , holding constant the mediating variable M . The indirect effect, ab , shows how much two cases that differ on the independent variable X are estimated to differ on Y , as a result of the mediating variable M . Thus, the total effect can be easily decomposed between direct and indirect effects²⁵ ($c=c'+ab$) (Hayes, 2013, p. 93). Note that when X is multicategorical—as is the case in this dissertation and discussed above—the total effect of X on Y is not represented with a single parameter c , but instead is the sum of $k - 1$ direct and indirect effects. For example, having Black and Hispanic as dummy variables, the total effect of race/ethnicity can be quantified as $(c'_1 + a_1b) + (c'_2 + a_2b)$.

The “MODEL INDIRECT” command employs a probit regression with a Weighted Least Squares Mean Variance (WLSMV) estimator when categorical outcome variables are included in the analysis—as is the case in this dissertation. For consistency, all regression models presented in the results chapter (Chapter 5) will apply probit regression with WLSMV. Neighborhood-level variables are not included in the mediation analyses, because they are not theoretically compatible with the mediation model. However, as will be the case of moderation analyses, Huber standard errors are estimated to correct for the clustering of individuals within neighborhoods. This is because cluster-correlated data such as the PHDCN cannot assume independence of observations, and not taking the intraclass correlation into account may lead to

²⁵ The word “indirect effect” is used as synonymous of “mediated effect” throughout this dissertation.

underestimation of the true variance and tests statistics with inflated Type I errors (Rogers, 1993; Williams, 2000; Wooldridge, 2003).

The third research question asks whether criminal opportunity indicators have the same effect on violent victimization across race/ethnicity groups, that is, whether moderation effects are at work. The answer to this question has implications for the validity of the moderation hypothesis, consistent with the model presented in Chapter 3's Figure 3.5. The main approach to test for moderation effects involves the estimation of interaction terms that are then added, along with the main terms represented in them, to the regression equation. MacKinnon (2008) presented the basic equation for interaction or moderation effects as follows:

$$Y = i_1 + c_1X + c_2Z + c_3XZ + e_1 \quad (\text{Equation 4.4})$$

where Y represents the dependent variable, X is the main independent variable, Z is the moderator, and XZ is the interaction term or the product of the independent variable and the moderator. The coefficients c_1 , c_2 , and c_3 represent, respectively, the main effects of the independent variable, the moderator, and the interaction effects. Finally, i_1 is the intercept and e_1 is the residual. This model can be generalized to include more than one moderator variable.

Interaction terms between race/ethnicity and each of the individual-level indicators of criminal opportunities will be created following the guidelines presented by Aiken and West (1991). Then, the analysis proceeds by performing another two-stage regression of violent victimization. The first stage includes race/ethnicity, demographic control variables, as well as indicators of criminal opportunity at the individual level. Interaction terms are added in a second stage. Evidence of moderation is assessed by statistically significant interaction terms ($p < 0.05$), and model fit statistics.

The fourth and final research question is whether neighborhood-level indicators of criminal opportunities can help explain differences in violent victimization across race/ethnicity groups above and beyond individual-level indicators, or whether there are any context effects on violent victimization, as per the context hypothesis depicted in Chapter's 3 Figure 3.6. To test this type of model, studies often employ hierarchical linear modeling (HLM) (Raudenbush and Bryk 2002), an approach that allows for the analysis of nested data, as represented in this case by individuals nested within neighborhoods, and to account for the violation of independence assumption that exists with clustering. Given the measurement scale of the dependent variable, an HLM model would not be appropriate as it assumes a normally distributed dependent variable. An alternative is to employ a generalized linear model that is appropriate for binary or dichotomous dependent variables and assumes a Bernoulli distribution (Rabe-Hesketh and Skrondal, 2012).

Following this approach, this study will estimate a hierarchical model of violent victimization using Mplus 6.0. The analysis proceeds in several stages. First, a fully unconditional model is estimated with an intercept only to test the null hypothesis that there is no variability between neighborhoods in the dependent variable. Second, if the variability across neighborhoods in violent victimization is not statistically significant ($p > 0.05$), this indicates that it is not necessary to estimate a multilevel model. In this case, the analysis will proceed by estimating a two-stage regression including individual-level variables in a first stage and neighborhood-level variables in the second stage, using Huber standard errors (i.e., robust standard errors).²⁶

²⁶ A possible criticism of this approach is that it is not logical to estimate a model with neighborhood-level predictors when having limited variability in the outcome variable. There are few references that speak directly to this issue, but a few authors consider this a logical and statistically correct approach. A comparison of the equations employed for single-level OLS and multilevel models shows that their main distinction is in the presence of variance in the

In contrast, if there is statistically significant variability in violent victimization across neighborhoods ($p < 0.05$), the analysis will proceed by modeling the log-odds of violent victimization as a function of level-one predictors only. Neighborhood-level predictors are added in a third stage. In the fourth stage a random coefficients model allows for the slopes of individual-level predictors to vary randomly across neighborhoods, and the results of this analysis inform the specification of fixed effects in the final analyses. The final stage is an intercepts-and-slopes-as-outcomes model that includes predictors at the individual and neighborhood level and adds cross-level interactions for slopes that varied significantly across neighborhoods. Evidence of contextual effects would be provided by statistically significant neighborhood-level effects and cross-level interaction effects²⁷ ($p < 0.05$), as well as by comparing model fit between the models.

The analytic approach described above seeks to clarify whether any of the three competing hypotheses described in this dissertation (mediation, moderation, and context) can explain the race/ethnicity differences in violent victimization. However, considering that the three hypotheses are not being examined in a single statistical model, but instead in three separate models, it is difficult to make inferences as to their relative predictive validity. In particular, if statistical analyses revealed that the data failed to falsify all three hypotheses, a key

outcome across level 2 units. For example, the OLS equation is $y = \alpha + \beta X_1 + \beta X_2 + e$, where α is the intercept, β is the slope, and e is the residual. In contrast, the multilevel equation is $y = \gamma_{00} + \gamma_{01}(X_{2j}) + \beta_{ij}(X_{1j}) + \mu_{0j} + e_{ij}$, where γ_{00} is the average of the outcome across all level 2 units, and μ_{0j} is the deviation of each unit from the grand mean. When the level 2 units have similar means for the outcome, the terms γ_{00} and μ_{0j} will not make a substantive difference. Substantively, this means that the intercept and error terms associated with level 2 are generally nonvarying and can be fixed, an observation supported by the lack of significant variability. In this scenario, there should be a reasonably good correspondence between the multilevel estimates and the OLS estimates (Goldstein, 1999).

²⁷ Based on the theoretical models presented in Chapter 3, cross-level interactions are hypothesized to occur between race/ethnicity and neighborhood-level measures of opportunity. For example, a significant interaction between race/ethnicity and proximity (as measured by neighborhood disorder or neighborhood perceived crime), would be expected as to indicate that the positive effect of proximity on violent victimization would be more accentuated for non-Hispanic Blacks and Hispanics relative to non-Hispanic Whites.

question will be which of the three hypotheses has the strongest predictive validity. Given that the three hypotheses call for mutually distinctive specification models (e.g., contextual effects are not specified in the mediation and moderation hypotheses), a single statistical model that integrates all three model specifications is not compatible with theory.

Instead, the approach taken in this dissertation to evaluate the relative importance of each hypothesis involves assessing the three models in terms of: (1) the size and statistical significance of the key estimates specified by each model; and (2) model fit statistics. The idea is to assess the most viable of the hypotheses, if any, by considering not only how well the model that captures the hypothesis fits the data, but from a theoretical and substantive viewpoint, whether the observed effects are in line with the expectations of criminal opportunity theories and how strong are these effects are. This approach to assess the relative validity of alternative hypotheses is consistent with the logic proposed by Shadish et al. (2002) in reference to what they call “pattern matching”. The authors describe pattern matching as “The general concept of matching a pattern of evidence to the pattern predicted by theory or past research” (p. 510). As the authors explain, pattern matching seeks to enhance the internal validity of the conclusions made by reducing the plausibility of alternative causal explanations by demonstrating how closely the evidence matches the predictions of the model. In the case of this dissertation, given that the hypotheses of mediation, moderation, and contextual effects make specific causal predictions that can match with only specific outcomes, each hypothesis can be evaluated based on how well the observed results match the predicted outcomes.

Missing Data

The problem of missing data is common in criminological research, including cross-sectional and longitudinal studies (Brame, Turner, and Paternoster, 2010), and it has important

implications for the reliability and validity of a research study (McKnight, Sidani, and Figueredo, 2007). For instance, missing data may generate selection bias if the study results are confounded with systematic differences between the subset of cases with missing observations and those with observed data (Allison, 2002). Also problematic is the reduction in the sample size that results from missing data, which leads to a loss of statistical power, as well as the potential for increased likelihood of Type II errors, underestimation of the correlations, and underestimation of beta weights (Acock, 2005). Unless the mechanism producing the missing data is fully random (an assumption that is not realistic in many research scenarios), it is possible that the results based on incomplete data differ from those that would have been obtained in the absence of missing data (Allison, 2002). In research scenarios where the causes of missingness²⁸ are known, the threat of bias may be ruled out by incorporating them into the statistical models, but the factors behind missingness are not always fully identified. Given the possibility of biased results, addressing issues of missing data is clearly a fundamental step before data analysis. This section provides a general overview of the missing data issues encountered in PHDCN and the techniques used in this dissertation to handle them.

Conceptual Issues and Terminology. Descriptions of missing data make a fundamental distinction between patterns and mechanisms (Little and Rubin, 2002). *Patterns of missing data* refer to the structure of observed versus incomplete values in a data set, whereas the *mechanisms of missing data* capture the process by which some values are observed and others are not. Thus, while a pattern describes the location of the gaps in the data, a mechanism refers to the likely “causes” of these gaps (Enders, 2010). Two common patterns of missing data are unit

²⁸ Consistent with the missing data literature, the word “missingness” is employed here to denote missing data. Early scholarly work on missing data referred to missingness as a condition existing in the data set, but failed to provide a definition (Little and Rubin, 2002; Rubin, 1976). More recently, Graham (2012) defined missingness as “the state of being missing” (p. 7).

nonresponse and item nonresponse (Graham, 2012). *Unit nonresponse* occurs when information for a subset of individuals is available for some assessments but not others. For example, when subjects participate in a first wave of data collection but are absent in subsequent waves (i.e., subjects drop out of the study), or when data are available for some subjects in one assessment or data source but missing in another. *Item nonresponse* occurs when observations are missing for particular questions or items; for example, when someone leaves blank some questions or entire sections of a survey. Longitudinal research, as in the case of the PHDCN, may be subject to unit nonresponse, item nonresponse, or a combination of both.

Also relevant is the mechanism or cause of missing data. Little and Rubin (2002) described three main mechanisms: (1) Missing completely at random (MCAR), when the probability of missing values in *Y* is unrelated to other measured variables in the data set or to the values of *Y* itself; (2) Missing at random (MAR), when the probability of missing values in *Y* is related to other measured variables in the data set, but unrelated to the values of *Y*; and (3) Missing not at random (MNAR), when the probability of missing values in *Y* depends on the values of *Y* itself, even after controlling for other variables (Enders, 2010). MCAR is equivalent to drawing a simple random sample of cases from a data set; the selection process is fully random, so aside from loss of statistical power, the results obtained would mirror those obtained from fully observed data (Allison, 2002).

In criminological research, data are rarely MCAR, and it is most realistic to assume the data are either MAR or MNAR. Consider a situation where the variable self-reported offending has missing values. If the probability of missing data in self-reported offending was dependent on some of the observed variables in the data set (e.g., on self-control or gender), but not on participant's levels of self-reported offending, MAR holds. In contrast, MNAR applies if after

controlling for other predictors, the probability of missing data was dependent on respondents' level of self-reported offending (e.g., if the most criminally involved subjects are also the most prone to skip or leave blank the questions on offending). Thus, testing the MAR assumption in this context would require follow-up data to fill in the missing values of self-reported offending.

From a practical standpoint, the missing data literature refers to MCAR, MAR, and MNAR as assumptions that must be met to apply statistical methods to handle missing data problems. When data are MCAR or MAR, the mechanism of missingness is considered “ignorable” (Little and Rubin, 2002; Rubin, 1987), which means that point estimates and standard errors can be generated without having to explicitly model the process that produced missing values (Allison, 2002). State-of-the-art approaches to missing data such as Multiple Imputation or Full Information Maximum Likelihood are based on the assumption that the data are MAR. In contrast, “nonignorable” or MNAR data require explicitly modeling the causes of missingness and involve more specialized models (Allison, 2002). Analyses of missing data must pay special attention to the mechanisms of missingness and establish whether the MCAR or MAR assumptions hold, thus allowing for the use of standard missing data techniques.

Missing Data Patterns in PHDCN. Table 4.2 presents the distribution of missing data in the PHDCN sample used in this dissertation, in ascending order based on the percentage of missing cases. As Table 4.2 shows, several variables have missing values, and in the case of the dependent variable, nearly 30% of the cases have missing values. Missing data include a combination of unit missing and item missing. Unit missing occurred when an adolescent who was interviewed at Wave 1 dropped out at subsequent waves (i.e., attrition), whereas item

missing occurred when participants who were interviewed in two or more waves had missing values for certain questions within an instrument.²⁹

Table 4.2 illustrates a monotone pattern of missing data that is consistent with a problem of attrition (Enders, 2010), as indicated by the linear increase in the percentage of missing cases with time. In addition, it can be seen that the percentage of missing cases in Wave 2 varies, from much less than 5% for the family-related measures of warmth, monitoring, and support, to over 20% of missing cases in the variable of deviant peers. This illustrates the combination of attrition with item nonresponse and might presumably indicate that data collection instruments from which high-percentage-missing measures were extracted were not administered to a subset of adolescents, even though they seemed to have remained in the study at Wave 2. However, information that confirms whether or not this was the case was not publicly available in the PHDCN documentation or in corresponding codebooks, and therefore remains speculative.

Beyond a description of the amount and location of missing values in the PHDCN data, the key issue is whether there are important differences between individuals with complete and incomplete data that could cause bias. A common method to evaluate these differences is the use of *t*-tests to compare missing-values and complete-values subgroups on all variables of substantive interest (Enders, 2010). This method entails creating missing dummy indicators (0=Observed; 1=Missing) for each variable that has a moderate proportion of missing values. Some experts use a 5% missing data benchmark for the application of techniques other than case deletion and for performing in-depth analysis of missingness (Graham, 2012). Independence of samples *t*-tests or Chi-Square tests are then used to compare cases with missing and observed

²⁹ It is not possible to distinguish item-missing cases due to respondent's refusal from those due to lack of administration of the questions, as the specific cause of missingness was not explicitly recorded. For those questions with skip patterns that resulted in missing values for subsequent responses, the corresponding variables were recoded accordingly, thus eliminating the possibility that item-missing cases were simply due to the failure to account for skip-question patterns built into the survey.

Table 4.2. Distribution of Missing Data in Study Sample
(N=2,345)

Variable	Missing Cases	
	N	%
<i>Wave 1</i>		
Family structure	23	1.0
Family size	64	2.7
Race/Ethnicity	98	4.2
Low self-control	108	4.6
<i>Wave 2</i>		
Family monitoring	38	1.6
Family support	47	2.0
Family warmth	80	3.4
Violence victim Wave 2	430	18.3
Self-reported offending	435	18.6
Going to movies	439	18.7
Driving around	441	18.8
Community activities	440	18.8
Organized sports teams	440	18.8
Artistic activities	442	18.8
Hanging out with friends	443	18.9
Going to parties	445	19.0
Religious activities	446	19.0
Alcohol use	451	19.2
Volunteering	451	19.2
Marijuana use	457	19.5
Family income	477	20.3
Deviant peers	502	21.4
<i>Wave 3</i>		
Violence Victim	692	29.5

data in all variables. If cases with observed data resemble cases with missing data, this method should yield non-significant tests. Contrarily, significant tests would be indication that missing cases differ from observed cases, or the data are not MCAR (Enders, 2010).

This method was applied to the PHDCN data by creating a dummy missing indicator for each of the 13 variables that had over 5% missing values (as depicted in Table 4.2) and performing independent sample *t*-tests for all other independent variables, both at the individual and neighborhood levels. Given the large number of tests conducted, there is a probability that one in 20 of these tests would yield a spurious significant result. Thus, to reduce the risk of committing a Type I error for the null hypothesis, the critical significance level ($\alpha=0.05$) was adjusted with a Bonferroni correction (Bland and Altman, 1995), dividing it by the number of comparisons made for each variable ($k=28$). The resulting adjusted alpha value of 0.0017 is employed as a benchmark to establish statistically significant differences. The results of this analysis are presented in Table 4.3.

As Table 4.3 shows, there are a number of significant differences between cases with observed and missing values. First, missing data do not appear to be MCAR, because there are significant group differences for each one of the 13 variables analyzed, indicating that observed cases differ from missing cases in one or more dimensions. Second, evidence that MCAR does not hold is particularly strong for self-reported violent offending, for which six out of 28 comparisons were statistically significant. Cases with observed values for self-reported offending were different from complete cases with respect to: alcohol use, going to parties, participation in organized sports teams, family structure, family income, and race/ethnicity. Third, most of the group differences are concentrated around the variables of family income, family structure, and race/ethnicity. Close examination of the raw mean differences of

family income generally revealed that individuals with missing data tended to come from lower-income families. The distribution of missing data by race/ethnicity and family structure (tables not shown here) revealed that the proportion of missing cases was slightly larger among non-Hispanic Black adolescents, and adolescents from two-parents families. Considering that a person's race/ethnicity is possibly linked with his/her family structure and family income, and that data are not randomly missing for these variables, this implies that analyzing complete cases only may present a different picture than would be obtained if cases were fully observed for these variables. Fourth, with the exception of family income, cases with missing data seem to be comparable to observed cases with respect to neighborhood-level characteristics.

Based on this evidence, it is clear that the data are generally not MCAR. This conclusion corresponds with the results of Little's MCAR test, an omnibus test of the null hypothesis that the data are MCAR (Little, 1988). Little's test was significant ($\chi^2 = 1925.06$; $df = 1454$; $p < 0.01$), rejecting the null hypothesis that the data are MCAR. This evidence points in the direction of not employing case deletion methods alone to deal with missing data, as the set of missing cases is not a simple random subset of all cases (Allison, 2002).

Once the MCAR assumption has been ruled out for a particular variable or set of variables, it opens up the possibility that the data are either MAR and MNAR. However, ruling out either one of these two is more difficult. Aside from obtaining follow-up data directly from respondents to replace missing values, it is not possible to explicitly test the MAR assumption (Enders, 2010; Fox, 2008; Graham, 2012; Schafer and Graham, 2002), but some researchers argue that the MAR assumption is plausible in many situations (Schafer and Graham, 2002). The plausibility of the MAR assumption is buttressed when known correlates of missingness are explicitly incorporated within statistical models that address the issue of missing data—either in

Table 4.3. Comparison of Missing and Complete Cases in the PHDCN Data Set

Comparison Variable	Missingness Dummy Indicator (0 = Observed; 1 = Missing)												
	Y	X1	X2	X3	X4	X5	X6	X7	X8	X9	X10	X20	X21
(Y) Violent victim Wave 3	-												
(X1) Alcohol use		-									SIG		
(X2) Marijuana use			-		SIG			SIG					
(X3) Deviant peers				-									
(X4) Going to movies			SIG		-								
(X5) Driving around						-							
(X6) Hanging out with friends	SIG				SIG		-						
(X7) Going to parties								-			SIG		
(X8) Volunteering									-				
(X9) Organized sports teams										-	SIG		
(X10) Self-report violent offending											-		
(X11) Low self-control													
(X12) Family size												SIG	
(X13) Family structure			SIG			SIG	SIG		SIG	SIG	SIG		SIG
(X14) Family warmth				SIG									
(X15) Family monitoring				SIG									
(X16) Family support													
(X17) Age at Wave 1													
(X18) Male													
(X19) Immigrant													
(X20) Family income	SIG	SIG	SIG	SIG	SIG	SIG	SIG	SIG	SIG	SIG	SIG	-	SIG
(X21) Prior violent victim													-
(X22) Race/Ethnicity				SIG	SIG		SIG	SIG	SIG	SIG	SIG		
(X23) Perceived neighborhood disorder													
(X24) Perceived neighborhood violence												SIG	
(X25) Neigh. informal social control												SIG	
(X26) Concentrated disadvantage													
(X27) Immigrant concentration													
(X28) Residential stability												SIG	

an imputation model or through use of Full Information Maximum Likelihood estimation. In this case, the preceding analysis identified some of the correlates of missingness, and they are observed variables that can be accounted for. In this respect, Schafer notes “A nonresponse mechanism may not be exactly known to the analyst, but covariates are available that could plausibly explain or predict the missingness to a great extent...MAR would then depend on whether these covariates are included in the analysis” (1997, p.23). Thus, although the PHDCN data are not MCAR, given that the correlates of missingness are known and can be included in the analyses, it is plausible the MAR assumption holds. In addition, prior research studies using the PHDCN data have reported that individuals did not leave the study systematically (Zimmerman and Vazquez, 2011). However, to address possible bias, this dissertation employs Multiple Imputation (Little and Rubin, 2002; Rubin, 1987; Schafer, 1997), which overcomes most of the limitations of popular techniques to handle missing data, such as case deletion, mean imputation, and single imputation.

In case deletion, a common practice in criminological research (Brame and Paternoster, 2003), cases with missing values in one or more variables are discarded and standard statistical techniques are applied as if the data were complete. While complete case analysis is simple and easy to perform, it leads to loss of efficiency in the form of high standard errors, which increases the likelihood of Type II errors (McKnight et al., 2007), and it may cause bias when the complete cases are not a random subset of the entire sample (Allison, 2002; Little and Rubin, 2002). This might not be an issue when the fraction of missing cases is small; for example, some experts argue that listwise deletion (a form of complete case analysis) is inconsequential for bias when less than 5% of the cases are missing (Graham, 2009). But as the proportion of missingness increases, so does the possibility of obtaining biased results. In the present study, the large

proportion of missing values for some variables coupled with the evidence that the data are not MCAR caution against relying on case deletion alone.

Other alternatives to handle missing cases such as mean substitution and single imputation have also been criticized in the literature. Mean substitution has been used in prior studies using the PHDCN data set (Jain, Buka, Subramanian, and Molnar, 2012; Wareham and Paquette Boots, 2012), but it has been widely rejected in the missing data literature because it distorts the variance and the correlations (Acock, 2005; Graham, 2012; Rubin, 1996; Schafer and Graham, 2002). Another commonly used technique in criminological research is single imputation (or regression imputation), whereby the missing values are filled in with predicted values generated from a regression on all other variables in the data set. Prior studies using the PHDCN data have employed this technique (Gibson and Ventura Miller, 2010; Ventura Miller, 2012). Its main advantage is that it makes use of the partial data available to provide an estimate of the missing values, but a major limitation is that it treats the imputed values as “known”, thereby ignoring the variability due to uncertainty in the estimation of regression coefficients used to generate those values (Rubin, 1987). Whereas imputed values lie right on the regression line, real values would have deviated from this line to some extent (Fox, 2008), thus leading to an underestimation of the variance in data sets treated with single imputation.

Multiple imputation overcomes these limitations and is recommended by experts in missing data (Acock, 2005; Allison, 2002; Enders, 2010; Rubin, 1996; Schafer and Graham, 2002). It involves three stages: imputation, analysis, and pooling (Enders, 2010). In the imputation stage, each missing value is replaced with two or more estimates, resulting in m number of copies of the original data set, each of which contains different filled-in values. Conceptually, this is like performing single imputation m times. In the analysis stage, the

imputed data sets are subject to the standard statistical procedures used in the absence of missing data to generate the estimates of interest (slopes and standard errors). Finally, these estimates are combined in the pooling stage following Rubin's (1987) rules, yielding overall estimates of the parameters and standard errors. These estimates are preferable when testing inferences, as they reflect sampling variability more accurately than single imputation. For example, multiple imputation corrects for underestimated variance through the addition of a randomly sampled residual term to each imputed value during the imputation stage. It also captures the uncertainty in the estimation of regression coefficients used to generate fill-in values through the use of random draws for each imputed data set (Fox, 2008). By producing multiple rather than single estimates for each parameter, multiple imputation adjusts standard errors upwards, which reduces the likelihood of Type II errors (McKnight et al. 2007).

Multiple imputation is particularly appropriate for the present analysis because it permits the inclusion of auxiliary variables that are significantly linked to the probability of missing data, but are not otherwise relevant from a substantive standpoint. Preliminary analyses revealed that a measure of *vocabulary and reading skills* from the Wechsler Intelligence Scale for Children-Revised (WISC-R), administered to adolescents at Wave 1, was significantly related to the probability of missing values in the dependent variable (t -value=-3.157, $p<0.01$). Cases with missing data had significantly lower WISC-R scores than cases with no missing data. However, a measure of vocabulary and reading skills is not theoretically relevant for the study of victimization from the criminal opportunity perspective. The use of multiple imputation permits the addition of the WISC-R score as an auxiliary variable that can better specify the imputation model, without requiring this variable to be part of the final analytic models, as would be the case if another standard approach, such as FIML (Full Information Maximum Likelihood) was

employed. In addition, considering that the research questions of this dissertation require the fitting of different statistical models, multiple imputation can be conveniently used to generate an m number of imputed data sets, which can then be used for all analyses thereafter. Multiple imputation has been successfully used in prior studies of the PHDCN data set (Zimmerman and Messner, 2010; Zimmerman and Vazquez, 2011).

Specification of the Imputation Model. The missing data literature stresses that the imputation model must be at least as complete as the analysis model (Acock, 2005; Graham, 2012). Leaving variables that are part of the analysis model out of the imputation model assumes that these variables are uncorrelated with the variables included ($r=0.00$), therefore, such omission may lead to underestimation of the covariances (Johnson and Young, 2011). For this reason, the imputation model retained all of the variables of substantive interest for the analysis model, as listed in Table 4.1, including the dependent variable and any interaction terms, as has been recommended in the literature (Allison, 2002; Graham, 2012; Schafer and Graham, 2002; Young and Johnson, 2011). Neighborhood-level measures, despite not having missing data, were also included to account for the multilevel nature of the data, as their omission would lead to imputing the data under the assumption that the means, variances, and covariances, are equal across neighborhood clusters (Graham, 2012). Last, the computed multi-item scales were included to simplify the complexity and variable size of the imputation model, rather than the individual items used to form these scales.

The imputation process proceeds by using linear regression for imputing metric variables, logistic regression for categorical binary variables, and multinomial logistic regression for categorical variables with more than two groups. Although linear regression could be used for imputing all variables, this method yields imputed values that are outside the expected bounds

for categorical variables (e.g., imputed values other than 0 or 1 in a binary variable). This issue can be fixed by the use of rounding (Schafer and Graham, 2002), but studies suggest that rounding may introduce bias, so that imputation with logistic or multinomial logistic regression is preferable (Allison, 2005). The multiple imputation procedure is performed using the data set that contains all cases ($n=2,345$), thus utilizing all available information to fill in missing values.

Another consideration for the imputation model is the number of imputed data sets (m) that are required to yield good estimates. While some sources recommend as few as $m=5$ imputed data sets (Rubin, 1987; Schafer, 1997), the current consensus seems to be that more imputations are needed when there is a large proportion of missing data (Enders, 2010; Graham, 2009; Johnson and Young, 2011). Enders (2010) asserts that a good rule of thumb is $m=20$ imputations, but recommends more if possible, when the sample size is large. In this dissertation, $m=25$ are estimated. Multiple imputation is performed with Mplus 6.0 (Muthén and Muthén, 2010). Sensitivity analyses presented in Chapter 5 address the potential bias by comparing the results from imputed-data models and models based on listwise deletion (non-imputed).

CONCLUSION

This chapter presented the methodology employed in this dissertation to examine three alternative hypotheses explaining the race/ethnicity disparities in violent victimization: mediation, moderation, and context. The approach employed in this dissertation to test the mediation hypothesis is twofold. First, a preliminary difference-in-coefficients test is performed using a two-stage regression of violent victimization. Second, a formal test of mediation effects appropriate for categorical outcomes is performed with the product-of-coefficients test. The moderation hypothesis is explored with a two-stage regression that includes interaction terms in

the second stage. Finally, the context hypothesis is tested in a multilevel regression model of violent victimization that includes individual level and neighborhood level indicators of criminal opportunities, race/ethnicity, and control variables. The next chapter presents the results of the statistical analyses proposed here to examine each of these three hypotheses. By assessing the relative predictive validity of these three explanations, this dissertation seeks to enhance the understanding of the racial/ethnic disparities in violent victimization.

Chapter 5

RESULTS

This chapter presents the results of analyses performed to address the research questions described in Chapter 1, with the primary goal of clarifying the interplay of race/ethnicity, criminal opportunities, and violent victimization. First, the chapter presents bivariate analyses to address the research question of whether there are significant differences in violent victimization across race/ethnicity groups. This part describes the differences across racial/ethnic groups in the PHDCN sample in terms of the prevalence of violent victimization. Second, the chapter presents the results of a mediation analysis that explores whether individual-level measures of criminal opportunities fully or partially mediate the effects of race/ethnicity on violent victimization, consistent with the second research question. The third part of the chapter presents the results of two-stage probit regression models to test for moderation effects, as related to the research question of whether criminal opportunities have the same effect on violent victimization across race/ethnicity groups. Next, the chapter presents the results of probit regression models of violent victimization that address the final research question of whether, beyond individual-level criminal opportunities, neighborhood-level criminal opportunities account for any differences in violent victimization across race/ethnicity groups. Last, the chapter presents sensitivity analyses to assess the robustness of the results obtained with and without imputed data.

BIVARIATE ANALYSES

The first set of analyses examines the prevalence of violent victimization across racial/ethnic groups. Studies based on nationally representative samples described in Chapter 2

generally find that violent victimization disproportionately affects racial/ethnic minorities, with Blacks being the most prone to experience serious violent victimization, Whites being the least likely to experience this outcome, and Hispanics falling between these two groups (Finkelhor and Dziuba-Leatherman, 1994; Logan et al., 2011; Truman and Planty, 2012). Thus, before proceeding to explore the possible mechanisms that may explain these racial/ethnic differences in experiencing violent victimization, it is necessary to first establish that such differences exist in the PHDCN study sample.

Table 5.1 presents the distribution of violent victimization in the PHDCN sample across racial/ethnic groups. This table shows that 12.9% of all adolescents experienced at least one form of violent victimization in the past year (i.e., being hit/slapped, attacked, shot at, or seriously threatened). Thus, across the three racial/ethnic groups, the majority of adolescents in the sample were not violently victimized. An examination of the within-group cells reveals a higher likelihood of violent victimization among racial/ethnic minorities. For example, while nearly 15.6% of Black adolescents and 13.3% of Hispanic adolescents experienced victimization, only about 6.7% of Whites did so. A chi-square test of independence revealed that this distribution of violent victimization differs significantly from what would be expected under the null hypothesis of no differences across racial/ethnic groups. The experience of violent victimization differs significantly by race/ethnicity ($\chi^2=9.71$, $df=2$, $p \leq 0.01$).

Although Table 5.1 indicates the existence of violent victimization disparities, it is not clear which cells of the overall table contributed the most to the results of the chi-square test. A supplementary analysis was performed that partitioned Table 5.1 into smaller tables (i.e. Two 2 x 2 tables), to find the location of the observed differences, as suggested by Agresti (2002). This partitioning approach indicated that the chi-square results of Table 5.1 were largely driven by a

difference in violent victimization between Blacks and Hispanics³⁰ as compared to Whites ($\chi^2=8.60$, $df=1$, $p \leq 0.01$), rather than Blacks compared to Hispanics, for whom the difference was not statistically significant ($\chi^2=1.02$, $df=1$, $p \geq 0.05$).

Overall, the results of Table 5.1 offer preliminary evidence that racial/ethnic minority youth differ from White youth in the prevalence of violent victimization. The percentage of Black and Hispanic adolescents violently victimized was two times the percentage among White adolescents, a finding that corresponds with previous studies. Given this finding, a key question is whether these differences in violent victimization may be due to differences in demographic characteristics—such as age, gender, or family income— as these characteristics relate to the risk of violent victimization. To better clarify the race/ethnicity disparities observed thus far, the next section presents the results of multivariate analyses that examine whether violent victimization risk differs by race/ethnicity, even when demographic characteristics are statistically controlled.

Table 5.1. Adolescent Violent Victimization and Race/Ethnicity
($N=1,169$)

Violent victimization status	Black		Hispanic		White		Total		χ^2
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>N</i>	%	
Non-victim	341	84.4	483	86.7	194	93.3	1018	87.1	9.71**
Victim	63	15.6	74	13.3	14	6.7	151	12.9	
Total	404	100.0	557	100.0	208	100.0	1169	100.0	

*** $p \leq 0.001$, ** $p \leq 0.01$, * $p \leq 0.05$

³⁰ Consistent results were obtained when Black and Hispanic adolescents were separately compared to White adolescents. Specifically, the risk of violent victimization was significantly higher for Blacks, as compared to Whites ($\chi^2=8.49$, $df=1$, $p \leq 0.01$), as well as for Hispanics as compared to Whites ($\chi^2=6.72$, $df=1$, $p \leq 0.01$).

MULTIVARIATE ANALYSES

Establishing Race/Ethnicity Disparities in Violent Victimization

Notwithstanding the apparent disparities in violent victimization by race/ethnicity previously reported, it is necessary to investigate whether these disparities persist after statistically controlling for demographic variables that the research has found to be related to violent victimization. Table 5.2 presents the results of a logistic regression of violent victimization on race/ethnicity, controlling for known correlates (i.e., age, gender, family income, immigrant status, and prior violent victimization). Consistent with the bivariate results above, Table 5.2 shows that Black and Hispanic adolescents are significantly more likely than White adolescents to experience violent victimization, even after controlling for well-established predictors.

As Table 5.2 shows, violent victimization is 2.06 times more likely to occur among Black adolescents and 2.10 times more likely to occur among Hispanic adolescents, relative to White adolescents. To illustrate these racial/ethnic differences, predicted probabilities for the outcome variable at a specified value for each of the independent variables were computed.³¹ As seen in the fourth column of Table 5.2, the probability of experiencing violent victimization for White adolescents was half the probability for their Black and Hispanic counterparts. Taken together with the bivariate results, there is consistent evidence that violent victimization primarily affects adolescents who belong to racial/ethnic minorities, and that these disparities are not simply due to sociodemographic differences between White youth and youth of color. Having established these disparities, the next sections test three hypotheses derived from LRAT—mediation,

³¹ Predicted probabilities were calculated for the demographic profile of a 10 year-old, female, native-born adolescent, whose family income is between \$20,000 and \$29,999, and who was not violently victimized at wave 2, as these characteristics corresponded to the modal categories for the sample.

moderation, and context— that may account for these racial/ethnic differences in violent victimization risk.

Table 5.2. Race/Ethnicity Effects on Violent Victimization
(*N*= 1,169)

Variables	Coefficient (<i>RSE</i>)	Odds Ratio [95% CI]	Predicted probability of violent victimization
Black	0.72 (0.31)	2.06* [1.10 – 3.86]	0.10
Hispanic	0.74 (0.31)	2.10* [1.12 – 3.91]	0.10
White	-	-	0.05

*** $p \leq 0.001$, ** $p \leq 0.01$, * $p \leq 0.05$; Coefficients shown control for age, gender, immigrant status, family income, and prior violent victimization. White respondents are the reference group. *RSE*= Robust standard errors.

Testing Alternative Hypotheses for the Race/Ethnicity -Violent Victimization Relationship

1) The Mediating Effects of Criminal Opportunities

The next set of analyses examines whether individual-level indicators of criminal opportunities partially or fully mediate the relationship between race/ethnicity and violent victimization. According to the mediation hypothesis, race/ethnicity is simply a proxy for opportunistic situations that place individuals at high risk of violent victimization. Thus, statistically controlling for indicators of criminal opportunities should largely reduce or even eliminate any race/ethnicity disparities in violent victimization.

The mediation analyses presented here have two separate components, as previously described in Chapter 4. The first component involves estimating a two-stage probit regression of violent victimization. Model 1 includes the dummy variables measuring race/ethnicity (i.e., Black and Hispanic) and statistical control variables (e.g., gender, age). Model 2 incorporates the measures of criminal opportunities (i.e., variables representing exposure, target

attractiveness, and guardianship). An examination of changes in the size and statistical significance for the coefficients representing race/ethnicity across the two models offers a preliminary assessment of mediation effects. Evidence of mediation effects would be indicated by a reduction in size and/or statistical significance of the coefficients representing race/ethnicity across models. Given that neighborhood-level variables (e.g., measures of proximity) are theoretically compatible with the context hypothesis—and not with the mediation hypothesis—these variables are not included in the mediation analysis.

Table 5.3 presents the results of probit regression models of violent victimization. As described in Chapter 4, the coefficients displayed are based on a Weighted Least Squares Mean Variance (WLSMV) estimator.³² In Model 1, race/ethnicity, gender, immigrant status, and prior violent victimization are all significantly related to violent victimization risk. The coefficients for the two measures of race/ethnicity are positive, thus indicating that Black and Hispanic youth are significantly more likely to experience violence than White youth ($b=0.39$ and $b=0.40$, respectively). Similarly, the positive coefficients for gender and prior violent victimization ($b=0.17$ and $b=0.64$, respectively) suggest that the risk of violent victimization is higher among males and among adolescents who were violently victimized previously. In turn, as indicated by the negative effect of immigrant status ($b=-0.58$), foreign-born adolescents are significantly less likely than native-born adolescents to experience violence. Other well-established correlates of violent victimization, such as age or family income, are not significantly linked to this outcome.

³² Chapter 4 discussed the reasons why probit regression with WLSMV is the preferred estimation approach to perform mediation tests with categorical variables (MacKinnon, 2008). This is because assessing indirect effects with the product of coefficient test ($a*b$) requires taking the product two different coefficients, and when employing logistic regression, these coefficients are not directly comparable as they are generated from different regression models. The alternative of using probit regression with WLSMV overcomes this issue, and is the approach used to parcel out mediation effects in Mplus 6.0, through its “MODEL INDIRECT” command. It assumes that although the outcome is discrete, the underlying construct is continuous. It is preferred to OLS because the key assumptions of linearity and homoskedasticity are not met with categorical outcomes. For consistency, all models presented in this chapter (including tests of moderation effects and contextual effects in following subsections) will be performed using probit regression with WLSMV.

Table 5.3. Mediating Effects of Criminal Opportunities on Violent Victimization
(Non-Imputed Data; $N = 1,169$)

	Model 1		Model 2	
	b	SE	b	SE
<i>Race/Ethnicity</i>				
Black	0.39*	0.18	0.35*	0.19
Hispanic	0.40**	0.17	0.46**	0.19
<i>Exposure to Risk</i>				
Alcohol use			-0.12	0.14
Marijuana use			0.11	0.16
Deviant peers			0.03	0.02
Going to movies			-0.01	0.05
Driving around			0.03	0.03
Hanging out with friends			0.10*	0.05
Going to parties			-0.01	0.06
Volunteering			-0.19*	0.10
Organized sport teams			0.09	0.11
Self-reported violent offending			0.30**	0.13
<i>Target Attractiveness</i>				
Low self-control			0.00	0.00
<i>Guardianship</i>				
Family size			-0.00	0.02
Single parent			-0.02	0.13
Family warmth			0.01	0.02
Family monitoring			-0.04	0.03
Family support			-0.04	0.03
<i>Demographic Characteristics</i>				
Age at Wave 1	0.01	0.02	-0.04	0.03
Gender (Male)	0.17*	0.09	0.07	0.11
Immigrant status (Foreign-born)	-0.58**	0.20	-0.53**	0.23
Family income	-0.02	0.02	-0.01	0.02
Prior violent victimization	0.64***	0.12	0.48***	0.14
Intercept (Threshold)		1.65		0.87
Pseudo R^2		0.11		0.18

*** $p \leq 0.001$, ** $p \leq 0.01$, * $p \leq 0.05$ (One-tailed); Probit coefficients based on a WLSMV estimator are reported. *SE*=Standard errors corrected for clustering of respondents within the same neighborhood. Parameter estimates for race/ethnicity effects are reported with non-Hispanic Whites as the reference category. Chi-square difference test $\chi^2 = 9.12$, $df = 3$, $p \leq 0.05$.

Model 2 incorporates the measures of criminal opportunities to examine their relative contribution to the risk of violent victimization and their role as mediators of the race/ethnicity effects. This model shows that the coefficient for Black is reduced in size by 10.3% (from 0.39 to 0.35), whereas the coefficient for Hispanic has increased in size by 15% (from 0.40 to 0.46). Despite these small changes in size, both measures of race/ethnicity continue to be statistically significant, so the addition of criminal opportunity indicators in Model 2 failed to eliminate the race/ethnicity effects on violent victimization.

Turning attention to the effects of criminal opportunities, only three of the measures of exposure were significantly associated with the risk of violent victimization; each was consistent with theoretical expectations. Specifically, hanging out with friends and self-reported violent offending show significant positive coefficients ($b=0.10$ and $b=0.30$, respectively), indicating that adolescents who hang out with friends more often and who engaged in violent offending acts in the past year are at a higher risk of becoming victims of violence. In addition, volunteering appears to be a protective factor against victimization ($b=-0.19$), as adolescents who participated in volunteering activities were statistically less likely to experience victimization than those who did not partake in these activities. None of the other measures representing exposure, target attractiveness, and guardianship were significantly associated with violent victimization risk. Net of criminal opportunities, foreign-born adolescents continued to be protected from victimization relative to their native-born counterparts, whereas prior violent victimization remained positively and significantly related to violent victimization ($b=-0.58$ and $b=0.48$, respectively). Finally, the addition of criminal opportunity measures in Model 2 improved the percentage of variance explained in violent victimization (i.e., pseudo R^2 changed from 0.11 in

Model 1 to 0.18 in Model 2), and the Chi-square difference test value was statistically significant,³³ thus suggesting that Model 2 fits the data better than Model 1.

Overall, the results presented in Table 5.3 indicate that although the criminal opportunity measures help explain some of the variation in violent victimization in the study sample, overall, these measures fail to mediate the effects of race/ethnicity. However, Table 5.3 only offers a preliminary assessment of mediation effects. Traditionally, this type of two-stage regression model has been the approach employed in the criminological literature to assess mediation. Yet, as discussed in Chapter 4, it cannot establish whether the mediation effects observed are significantly different from zero, and for this reason the results of this first analysis must be supplemented with a formal test of mediation.

As a corollary to this discussion of the results of Table 5.3, it is important to note that mediation analyses are often subject to problems of multicollinearity, especially in multiple rather than single mediator models—as is the case of the analyses presented here. Multiple mediator models are advantageous because they can disentangle specific indirect effects connecting *X* and *Y*. However, multiple mediators may be highly correlated, so they come at the possible cost of multicollinearity, which in turn increases sampling variance and generates increased *p*-values (Hayes, 2013). In the case of the mediation analysis in Table 5.3 above, high correlations between the criminal opportunities measures could cause multicollinearity, especially given that these measures were all entered in Model 2 at once. However, an inspection of multicollinearity diagnostics did not reveal high Variance Inflation Factor (VIF)

³³The Chi-square difference test was used to compare the model fit of these two nested models (Model 1 and Model 2). Traditionally, this test involves taking the difference between the Chi-square values for two nested models, one more restricted than the other, and the difference in their degrees of freedom. Given that the difference in Chi-square values is not distributed as Chi-square with the WLSMV estimator, the DIFFTEST option provided in Mplus 6.0 was used instead. A significant Chi-square difference value indicates that the less restrictive model (in this case Model 2) fits the data better than the smaller model in which some parameters are fixed.

and/or tolerance values for any of the variables included in Model 2 of Table 5.3 (see Appendix D for collinearity diagnostics). For example, the mean VIF was 1.41, and none of the variables had a VIF above 4.0. This finding applies to the results of Table 5.4, discussed next, as the same variables are included in both analyses. The finding provides some confidence that the statistical tests, particularly the tests of specific indirect effects, are not affected by multicollinearity issues.

The second component of the mediation analysis involves a formal test of mediation effects, based on the product-of-coefficients test (i.e., $a*b$), described in Chapter 4. The purpose of this analysis is twofold: (1) to estimate how much of the effect of race/ethnicity on violent victimization is mediated by each measure of criminal opportunities, and (2) to test whether any mediated effects are statistically different than zero. The mediation test results are presented in Table 5.4. The first three rows of the table show the effects of race/ethnicity on violent victimization, decomposing total effects between direct and total indirect effects. Rows four and below display the specific indirect effects, or the effects on violent victimization that are mediated by criminal opportunity measures. The table displays both unstandardized and standardized coefficients (b and β), based on a probit regression with a WLSMV estimator.³⁴

There are several notable results in Table 5.4. First, in line with the bivariate analysis above, the *total* effect of race/ethnicity on violent victimization is statistically significant for both Blacks ($b=0.39$; $p \leq 0.05$) and Hispanics ($b=0.40$; $p \leq 0.01$). Both coefficients are positive, indicating that without yet considering the possible impact of mediating variables, Black and Hispanic adolescents are more likely to experience violent victimization than White adolescents.

³⁴ As discussed in Chapter 4, Mplus 6.0 employs a Weighted Least Squares estimator and a probit link to decompose between total, direct, and indirect effects. Although some authors in the mediation literature recommend reporting unstandardized coefficients (Hayes, 2013), others suggest reporting standardized coefficients as well, which allows readers to compare path coefficients (Jose, 2013). Standardized coefficients are drawn from the StdXY output from Mplus.

Table 5.4. Mediation Analysis of Race/Ethnicity Differences in Violent Victimization
(*N*=1,169)

Decomposition of Race/Ethnicity Effects on Violent Victimization	Black			Hispanic		
	<i>b</i>	β	<i>SE</i>	<i>b</i>	β	<i>SE</i>
Total Effects (<i>c</i>)	0.39*	0.17	0.18	0.40**	0.18**	0.17
Direct Effects (<i>c'</i>)	0.33*	0.15	0.20	0.56***	0.26	0.18
Total Indirect Effects (<i>ab</i>)	0.06	0.02	0.12	-0.16	-0.08	0.11
Specific Indirect Effects (Transmitted Through)						
<i>Exposure to Risk</i>						
Alcohol use	NS	NS	-	NS	NS	-
Marijuana use	NS	NS	-	NS	NS	-
Deviant peers	0.02*	0.01	0.01	NS	NS	-
Going to movies	NS	NS	-	NS	NS	-
Driving around	0.02*	0.01	0.01	NS	NS	-
Hanging out with friends	-0.03*	-0.01	0.01	-0.05*	-0.02	0.02
Going to parties	NS	NS	-	NS	NS	-
Volunteering	NS	NS	-	NS	NS	-
Organized sport teams	NS	NS	-	NS	NS	-
Self-reported violent offending	0.15***	0.07	0.05	NS	NS	-
<i>Target Attractiveness</i>						
Low self-control	NS	NS	-	-0.04*	-0.02	0.02
<i>Guardianship</i>						
Family size	NS	NS	-	NS	NS	-
Single parent	NS	NS	-	NS	NS	-
Family warmth	NS	NS	-	NS	NS	-
Family monitoring	NS	NS	-	NS	NS	-
Family support	NS	NS	-	NS	NS	-

*** $p \leq 0.001$, ** $p \leq 0.01$, * $p \leq 0.05$ (One-tailed); Probit coefficients based on a WLSMV estimator are reported. *SE*=Standard errors corrected for clustering of respondents within the same neighborhood. Parameter estimates for race/ethnicity effects are reported with non-Hispanic Whites as the reference category. The model adjusts for age, gender, immigrant status, family income, and prior violent victimization. NS=Not statistically significant.

Second, after adding the mediating variables that capture criminal opportunities, minority adolescents continue to be more likely than Whites to experience violent victimization, as indicated by the significant *direct* effects of being Black ($b=0.33$; $p \leq 0.05$) and being Hispanic ($b=0.56$; $p \leq 0.001$). Third, the two coefficients representing the *total indirect effects* of being

Black and Hispanic through criminal opportunities measures were not statistically significant. These results reveal that incorporating criminal opportunity measures failed to eliminate the effects of race/ethnicity on violent victimization, or that criminal opportunities have weak mediating effects. An important caveat to this conclusion, however, is that the results show: (1) suppression for the effect of being Hispanic on violent victimization; and (2) some small, yet significant, specific indirect effects for both Blacks and Hispanics.

On the one hand, the coefficient for Hispanic increased after the criminal opportunity measures were added, suggesting suppression effects. Mathematically, suppression occurs when the addition of one or more predictors enhances the coefficient for a given variable (Conger, 1974; Jose, 2013). Substantively, these suppression effects occurred because Hispanic adolescents are less likely to partake in some of the risky activities captured in the model, and yet, they are more likely to experience violent victimization. For example, the coefficients for hanging out with friends and low self-control are negative, which suggests that Hispanic adolescents have lower values on these variables than White adolescents. The *total indirect* effect for Hispanics is negative ($b = -0.16, p \geq 0.05$), and this works mathematically to attenuate the *total* effect ($0.40 = 0.56 - 0.16$), suppressing the effect that being Hispanic has when criminal opportunity measures are accounted for. Although this suppression effect can be considered as evidence of mediation, it is not in the direction hypothesized by LRAT, an issue discussed in more detail below.

On the other hand, some of the *specific indirect* effects, although small in size, were statistically significant. For instance, deviant peers ($b = 0.02; p \leq 0.05$), driving around ($b = 0.02; p \leq 0.05$), hanging out with friends ($b = -0.03; p \leq 0.05$) and self-reported violent offending ($b = 0.15; p \leq 0.001$) had significant indirect effects on violent victimization among Black

adolescents. Recall that each indirect effect ($a*b$) represents the combined effect of race/ethnicity on criminal opportunities measures (a) and of criminal opportunities on violent victimization (b). Thus, it is helpful to examine the a and b coefficients separately to clarify the indirect effects. For simplicity, these coefficients are not shown in Table 5.4 but are described here. First, compared to White adolescents, Black adolescents reported having a significantly larger number of deviant peers ($b=0.38$; $p \leq 0.05$); in turn, as the number of deviant peers increased, the risk of violent victimization was greater ($b=0.06$; $p \leq 0.001$). This implies that part of the effect of being Black on violent victimization is transmitted by a tendency of Black youth to have more deviant peers. Second, Black adolescents reported driving around with friends more frequently than Whites ($b=0.43$; $p \leq 0.01$), and in turn, this lifestyle was a risk factor for violent victimization ($b=0.06$; $p \leq 0.05$). As such, being Black is associated with more violent victimization partly because Black youth are more inclined to engage in this risky lifestyle. Third, Black adolescents were more likely than Whites to engage in violent offending ($b=0.60$; $p \leq 0.001$), and such participation in violent offending was associated with a higher risk of violent victimization ($b=0.26$; $p \leq 0.001$). Therefore, violent offending served to increase Black youth's likelihood of violent victimization. Finally, Black youth reported hanging out with friends less frequently than Whites ($b=-0.25$; $p \leq 0.05$), and this lifestyle was a risk factor for violent victimization ($b=0.11$; $p \leq 0.01$). Consequently, the specific indirect effect of hanging around with friends is negative, suggesting that Black adolescents are somewhat protected from violent victimization as a result of partaking in this lifestyle less often than White adolescents. Interestingly, this might work to ameliorate Black youth's risk to the extent that they are spending less time hanging out with peers—especially considering that they report having more deviant peers than White youth. On the other hand, it may be that regardless of frequency of

hanging out with friends overall, simply having more delinquent peers places Black youth at greater risk of violent victimization.

In short, these results show that part of the disparities in violent victimization observed for Black adolescents seem to be related to their greater exposure to risky situations, particularly more self-reported violent offending, compared to their White counterparts. However, these specific indirect effects are very small, and although statistically significant when examined individually, their total was not statistically significant. Although this provides weak support for mediation effects among Black adolescents in general, it is important to note that having indirect effects that are small in magnitude does not negate the value of uncovering key pathways to an outcome. As will be discussed below, the finding that the pathway that connects being Black with violent victimization involves deviant peers and self-report violent offending—two key measures in the criminological literature—is important in itself, regardless of the relative magnitude of those indirect effects.

The case of Hispanic adolescents, as compared to Whites, is more unique. Only two criminal opportunity indicators, hanging out with friends ($b=-0.05$; $p \leq 0.05$) and low self-control ($b=-0.04$; $p \leq 0.05$), had significant indirect effects on violent victimization among Hispanics. Both coefficients were negative, indicating protective effects among these youth. Again, decomposing the indirect effects ($a*b$) between their components (a and b), it was found that Hispanic adolescents in the sample reported hanging out with friends less frequently than Whites ($b=-0.49$; $p \leq 0.001$), and as discussed above, this lifestyle was a risk factor for violent victimization. Thus, Hispanic youth are presumably protected from victimization, due to their less frequent involvement in this lifestyle, compared to Whites. Similarly, Hispanic adolescents had lower scores than their White counterparts on the low self-control scale—or reported greater

self-control—($b=-4.60, p \leq 0.001$), and given that low self-control was associated with greater likelihood of violent victimization in the sample ($b=0.01; p \leq 0.01$), this served to protect Hispanic adolescents from experiencing victimization. Yet, as was the case for Black youth, these indirect effects are very small in size, and their sum also failed to reach statistical significance. Thus, even after accounting for any mediating effects, Hispanic adolescents are still more likely than White counterparts to experience violent victimization, as indicated by the significant positive coefficient for the direct effect of being Hispanic ($b=0.56; p \leq 0.01$).

Taken together, the results of the mediation analysis in Table 5.4 corroborate the initial results from Table 5.3 that measures of criminal opportunities are weak mediators of the effects of race/ethnicity on violent victimization in the study sample. Although a few measures of criminal opportunities—particularly indicators of exposure—had significant indirect effects on violent victimization, the size of these effects was small, and they collectively failed to minimize the victimization risk disparities across racial/ethnic groups. The next section presents the results of analyses that test an alternative explanation for these disparities, that is, the possibility that the effects of criminal opportunities on violent victimization are moderated by race/ethnicity.

2) The Moderating Effects of Race/Ethnicity

This section examines the question of whether criminal opportunities have the same effect on violent victimization across all race/ethnicity groups, or whether their effects are contingent on—or moderated by—race/ethnicity. According to the moderation hypothesis outlined in Chapter 3, the effects of criminal opportunity indicators are expected to vary across racial/ethnic groups. Specifically, evidence of moderation effects is indicated if the direction and/or strength of coefficients representing measures of exposure, target attractiveness, guardianship, and proximity on violent victimization, differ between members of various

racial/ethnic groups. As described in Chapter 4, the approach employed in this dissertation to test for moderation effects involves estimating a two-stage probit regression of violent victimization. Similar to the mediation analysis presented in Table 5.3, Model 1 includes race/ethnicity, criminal opportunity measures for the key concepts of exposure, target attractiveness, and guardianship, and control variables. Model 2 incorporates interaction terms between the criminal opportunities measures and race/ethnicity. Moderation effects are assessed by examining the size and statistical significance of these interaction terms, as well as by general assessment of the models.

A series of interaction terms was created by multiplying each of the 16 individual-level indicators of criminal opportunities and the two dummy variables for race/ethnicity (i.e., 32 interaction terms). For example, the contingent effect of deviant peers on victimization was assessed with two interaction products: (1) Deviant peers*Black; and (2) Deviant peers*Hispanic. Following the recommendation of Aiken and West (1991), continuous variables that captured criminal opportunities were grand mean centered prior to creating the interaction terms, to aid the interpretation of results and to help reduce multicollinearity. First, grand-mean centering provides a more substantive interpretation of the regression coefficients for the two predictor variables that form the interaction term, as these coefficients yield the difference in the outcome between two cases that differ by one-unit in one predictor, at average levels of the other predictors. Second, grand-mean centering decreases the correlations between the predictor variables and their products (i.e., the interaction terms), thereby reducing problems of multicollinearity that lead to inflated standard errors and affect statistical tests of the interaction (Aiken and West, 1991). Nonetheless, given the large number of interaction terms to be tested, a

preliminary model that included all 32 terms simultaneously exhibited issues of multicollinearity, resulting in very large standard errors for the estimated coefficients.

Thus, the analysis proceeded by testing one pair of interaction terms at a time.³⁵ For example, to test for the moderating effects of race/ethnicity on the relationship between deviant peers and violent victimization, Model 2 included the product of deviant peers and Black and of deviant peers and Hispanic, but not any other interaction terms at that point. The model also included the variables measuring exposure, target attractiveness, and guardianship, and control variables. This approach was repeated with each of the 16 pairs of interaction terms and to identify those that were statistically significant. The results guided the final specification of Model 2, as presented in Table 5.5 below.³⁶

Before describing the results of Table 5.5, it is important to note that an examination of VIF and tolerance values (see Appendix D) did not indicate problems of multicollinearity in general. One exception is that the interaction terms and their two component variables were highly correlated (e.g., Single parent*Black with single parent). However, multicollinearity between interaction terms and their main terms is “artificial” and generally regarded as not problematic for the estimation of coefficients and standard errors (Fox, 2008).

Table 5.5 presents evidence in support for the moderating effects of race/ethnicity. The current discussion refers primarily to Model 2, as the coefficients listed in Model 1 are identical to those presented in Model 2 of Table 5.3, discussed above. Among all 32 interaction terms tested, only two were statistically significant ($p \leq 0.05$): (1) Single parent*Hispanic ($b=0.96$) and

³⁵ Identical results were obtained when interaction terms were entered in the regression models as a block (e.g., adding all interaction terms involving measures of exposure at once, rather than separately, and so forth).

³⁶ Although the two other interaction terms that involved race/ethnicity were not statistically significant (Single parent*Black and Family monitoring*Black), they were still included in Model 2, because it is generally recommended to keep all of the interaction terms for a group of dummy variables representing one categorical variable (i.e., race/ethnicity), rather than only some of them (Rabe-Hesketh and Skrondal, 2012).

Table 5.5. Moderating Effects of Race/Ethnicity on Violent Victimization
(Non-Imputed Data; $N=1,169$)

	Model 1		Model 2	
	b	SE	b	SE
<i>Race/Ethnicity</i>				
Black	0.35*	0.19	0.31	0.24
Hispanic	0.46**	0.19	0.27	0.20
<i>Exposure to Risk</i>				
Alcohol use	-0.12	0.14	-0.11	0.14
Marijuana use	0.11	0.16	0.11	0.16
Deviant peers	0.03	0.02	0.03*	0.02
Going to movies	-0.01	0.05	-0.02	0.06
Driving around	0.03	0.03	0.03	0.03
Hanging out with friends	0.10*	0.05	0.09*	0.05
Going to parties	-0.01	0.06	-0.01	0.06
Volunteering	-0.19*	0.10	-0.18*	0.11
Organized sport teams	0.09	0.11	0.08	0.11
Self-reported violent offending	0.30**	0.13	0.32**	0.13
<i>Target Attractiveness</i>				
Low self-control	0.00	0.00	0.00*	0.00
<i>Guardianship</i>				
Family size	-0.00	0.02	-0.00	0.02
Single parent	-0.02	0.13	-0.68*	0.42
Family warmth	0.01	0.02	0.02	0.02
Family monitoring	-0.04	0.03	0.11	0.11
Family support	-0.04	0.03	-0.03	0.03
<i>Demographic Characteristics</i>				
Age at Wave 1	-0.04	0.03	-0.03	0.02
Gender (Male)	0.07	0.11	0.08	0.11
Immigrant status (Foreign-born)	-0.53**	0.23	-0.55**	0.24
Family income	-0.01	0.02	-0.01	0.02
Prior violent victimization	0.48***	0.14	0.48***	.014
<i>Interaction Terms</i>				
Single parent*Black	-	-	0.51	0.46
Single parent*Hispanic	-	-	0.96*	0.44
Family monitoring* Black	-	-	-0.14	0.12
Family monitoring*Hispanic	-	-	-0.20*	0.11
Intercept (Threshold)		1.11		1.02
Pseudo R^2		0.18		0.21

*** $p \leq 0.001$, ** $p \leq 0.01$, * $p \leq 0.05$; Probit coefficients based on a WLSMV estimator are reported. *SE*=Standard errors corrected for clustering of respondents within the same neighborhood. Parameter estimates for race/ethnicity effects with Whites as the reference group. Chi-square difference test value $\chi^2 = 7.71$, $df = 2$, $p \leq 0.05$.

(2) Family monitoring*Hispanic ($b = -0.20$). To interpret these interaction effects, it is necessary to also consider the main effects of single parent and family monitoring in Model 2 of Table 5.5, which represent conditional effects on violent victimization among White adolescents (conditioned upon Black=0 and Hispanic=0).

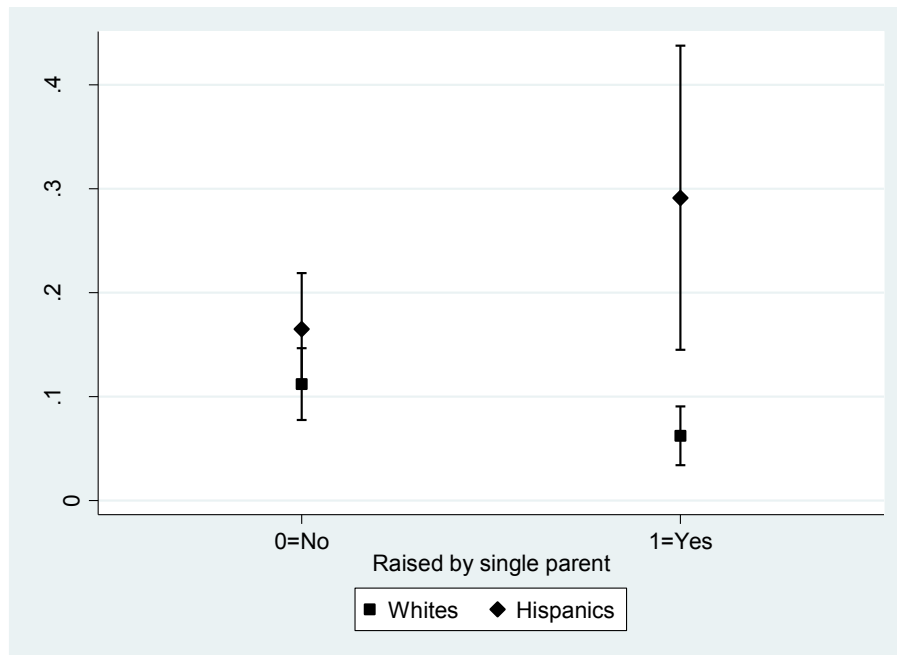
As shown in Model 2 of Table 5.5, the coefficient for single parent is negative and statistically significant ($b = -0.68$, $p \leq 0.05$), revealing that among White adolescents, being raised by a single parent is associated with a reduced risk of violent victimization relative to being raised by both parents. In turn, the interaction of single parent*Hispanic is positive and significant ($b = 0.96$, $p \leq 0.05$), indicating that among Hispanic adolescents, the relationship between single parent and violent victimization is reversed. Therefore, although being raised by a single parent is associated with a lower risk of violent victimization among White adolescents, it is associated with a higher risk of violent victimization among Hispanic adolescents. Clearly, the effect being raised by a single parent on violent victimization varies by race/ethnicity.

On the other hand, although not statistically significant, the coefficient for family monitoring on violent victimization ($b = 0.11$) suggests that greater levels of monitoring are associated to greater risks of violent victimization among White adolescents. In turn, the negative sign of the interaction term family monitoring*Hispanic ($b = -0.20$) indicates that family monitoring has the opposite effect on violent victimization among Hispanic adolescents; that is, greater levels of monitoring are associated with a lower risk of victimization for this group.

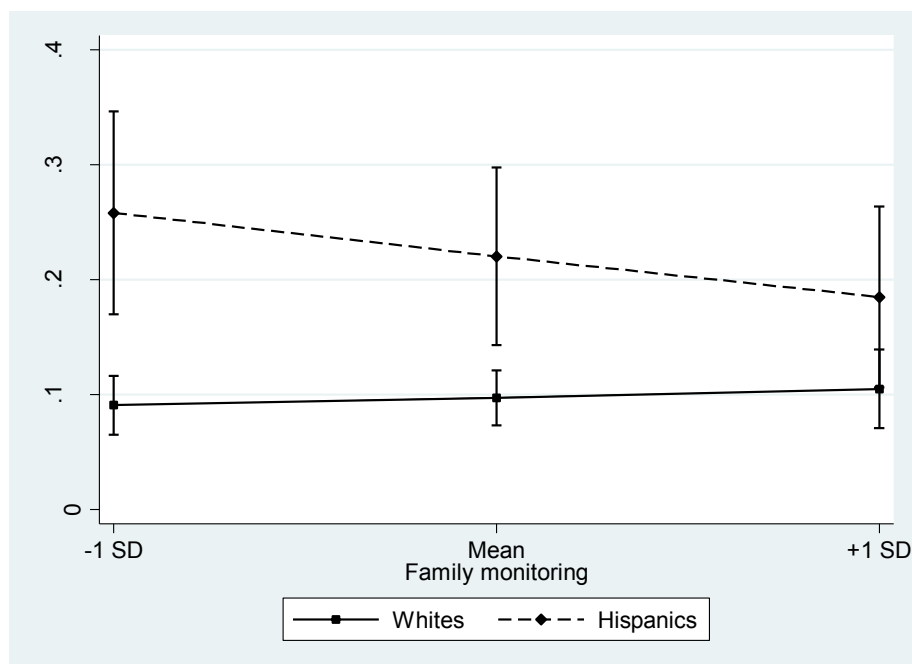
To illustrate how race/ethnicity moderates the effects of guardianship on violent victimization, Figure 5.1 depicts the marginal effects on violent victimization at specified categories/values of single parent and family monitoring. Panels A and B in Figure 5.1 plot the predicted probabilities of violent victimization, including 95% confidence intervals and

Figure 5.1. Illustration of the Moderating Effects of Race/Ethnicity on Violent Victimization

Panel A. Conditional Effects of Single Parent and Race/Ethnicity (Hispanic) on Violent Victimization



Panel B. Conditional Effects of Family Monitoring and Race/Ethnicity (Hispanic) on Violent Victimization



holding all other variables at their means.³⁷ As seen in Figure 5.1, not only are the effects of single parent and family monitoring on violent victimization conditioned by race/ethnicity, but in both cases, the direction of the relationship is reversed among Hispanics, as compared to Whites. Overall, these results indicate that the effects of guardianship on violent victimization are clearly contingent on adolescents' race/ethnicity.

Interestingly, the addition of the interaction terms to Model 2 in Table 5.5 reduced the size of the coefficients capturing race/ethnicity. For instance, the coefficient for Black was reduced by 11.4% (from 0.35 to 0.31), while the Hispanic coefficient dropped by 41.3% (from 0.46 to 0.27), reducing both coefficients to statistical non-significance. Thus, not only is there evidence that race/ethnicity conditions the effects of criminal opportunities (i.e., guardianship) on violent victimization, but in addition, this conditioning or moderating effect accounts for some of the disparities in this outcome among adolescents of various racial/ethnic groups.

Last, Model 2 shows that hanging out with friends, volunteering, and self-reported violent offending continue to be significant predictors of violent victimization (in theoretically expected directions), but in addition, deviant peers and low self-control have become significant predictors of this outcome in this model ($b=0.03$ and $b=0.00$, respectively). In particular, the likelihood of being violently victimized is higher among youth who have a greater number of deviant peers and have lower levels of self-control (i.e., score higher on the low self-control scale). As in Model 1, immigrant status and prior violent victimization continue to be significant predictors of violent victimization in the study sample ($b=-0.55$ and $b=0.48$, correspondingly). Finally, the addition of the interaction terms increased the percentage of variance explained in

³⁷ These plots were generated using the *margins* command of Stata 12.0, which calculates conditional probabilities (i.e., holding all predictors at modal categories). The plots are based on a maximum-likelihood probit model, because Stata does not provide WLSMV estimates. Alternative plots were created in Microsoft Excel using the predicted probabilities calculated from the WLSMV probit for each group separately, and the results were identical.

violent victimization from 0.18 in Model 1 to 0.21 in Model 2, and the Chi-square difference test indicated that Model 2 fits the data better than Model 1 ($\chi^2=7.71$, $df=2$, $p \leq 0.05$).

Taken together, the results of the analyses presented in this section indicate modest support for the moderation hypothesis. In particular, the effects of criminal opportunity measures of guardianship on violent victimization were in fact conditioned by race/ethnicity. Among White adolescents, more guardianship was associated, somewhat weakly, with greater risks of violent victimization. For example, among White adolescents, the probability of violent victimization was significantly greater for those raised by both parents, and higher levels of family monitoring were associated with greater victimization risk, although not significantly. Conversely, among Hispanics, more guardianship was associated with lower risks of violent victimization. Specifically, among Hispanic adolescents, the probability of violent victimization was significantly lower for those raised by both parents and for those who were subject to more family monitoring.

These results suggest that guardianship affects victimization in the theoretically expected direction among Hispanic youth, but not among White youth. Moreover, when these interaction effects were added to the statistical model, they reduced the racial/ethnic disparities in violent victimization (as shown by the non-significant coefficients for Black and Hispanic in Model 2 in Table 5.5), furthering the support to the moderation hypothesis. The next section presents additional analyses that evaluate a third account of the racial/ethnic disparities in violent victimization: a context hypothesis.

3) The Contextual Effects of Criminal Opportunities

A third hypothesis that may clarify the disparities in violent victimization observed among adolescents of various racial/ethnic backgrounds is the contextual hypothesis. According

to this hypothesis, racial/ethnic minorities typically reside in communities that provide ample criminal opportunities, so that by statistically controlling for variables that capture these neighborhood-level opportunities in multivariate models, the bivariate relationship between race/ethnicity and violent victimization should be largely diminished or eliminated.

As discussed in the analytic strategy in Chapter 4, this dissertation employs a multilevel modeling approach to test this hypothesis. An initial step in the estimation of multilevel models is to specify an unconditional model (i.e., without any covariates) to test the null hypothesis that there is no variability across level-two units in the outcome of interest. In this case, an unconditional model was estimated to establish whether there is statistically significant variability in adolescent violent victimization across neighborhoods in Chicago. The results from the unconditional model informed the decision *not* to employ a multilevel modeling strategy, because violent victimization did not significantly vary across Chicago neighborhoods (Variance component = 0.03; S.E. = 0.04; $p \geq 0.05$). To further illustrate the degree of variability in the outcome, an additional analysis was performed to calculate the 95% plausible index values for neighborhood-specific predicted probabilities of violent victimization, following the guidelines provided by Raudenbush and Bryk (2002, p. 297). Essentially, this method provides an estimate of the level-two variation for models with categorical outcomes, which serves as a substitute for the more commonly used intraclass correlation measure reported in linear models. In this case, the results indicated that 95% of the neighborhoods had a predicted probability of violent victimization between 0.06 and 0.21,³⁸ a narrow range for the probability of violent victimization across neighborhoods.

³⁸ Following Raudenbush and Bryk (2002), 95% of the level-2 units have values of β_{0j} between $\hat{\gamma}_{00} \pm 1.96 * (\sqrt{\hat{\tau}_{00}})$ (In this case, 95% interval = $-1.155 \pm 1.96 * (\sqrt{0.034})$). Unlike the example provided by these authors for probit models, the resulting interval was transformed to probabilities using the z table. Note also that the intraclass correlation reported in Mplus was 0.03, further confirming the limited variability in the outcome.

Taken together, these results imply that there is little deviation in the probability of violent victimization within each neighborhood as compared to the overall probability of violent victimization across all neighborhoods. As such, it is not necessary to estimate multilevel models that allow for decomposing the variance in the outcome within and between neighborhoods, and a multivariate model that accounts for the violation of the independence assumption (i.e., with robust standard errors) is sufficient in this scenario.

As described in Chapter 4, the use of robust standard errors, also called Huber standard errors, is necessary because the PHDCN respondents are nested within neighborhood clusters; therefore, it is likely that there will be intracluster correlation. In general, using a standard regression model rather than a multilevel model when there is intracluster correlation can lead to the underestimation of the true variance and tests statistics with inflated Type I errors (i.e., p -values smaller than should be). Using adjusted or robust standard errors can be beneficial in this case, as this method adjusts for the violation of independence that occurs with clustering of observations (Wooldridge, 2003). Although this method provides consistent variances in light of intracluster correlation, it comes at the cost of increased bias if the model is misspecified (Freedman, 2006). In this case, analyses were performed with both adjusted and unadjusted standard errors to check for possible bias; the results revealed consistency in the coefficient estimates across both sets of analyses. The main difference, as expected, is that adjusted standard errors were larger than the unadjusted standard errors, although their differences were small (i.e., in decimals).

As noted in Chapter 4, a two-stage probit regression was estimated to explore the effects of neighborhood-level criminal opportunity measures on violent victimization, adjusting the standard errors to account for neighborhood clustering, but not employing multilevel models.

Due to problems with multicollinearity that emerged when all the measures of neighborhood-level criminal opportunities were included simultaneously into one model,³⁹ the analyses proceeded by estimating the effects of these measures on violent victimization separately. The results of this analysis are presented in Table 5.6.

Model 1 in Table 5.6 provides a baseline model that is similar to Model 1 in Table 5.5, but it incorporates the neighborhood-level statistical control variables of concentrated disadvantage, immigrant concentration, and residential stability. With the exception of concentrated disadvantage, these neighborhood characteristics did not significantly influence the risk of adolescent violent victimization. Contrary to theoretical expectations, adolescents who reside in neighborhoods with higher levels of concentrated disadvantage are less likely to experience violent victimization ($b=-0.05, p \leq 0.01$).⁴⁰ However, this model shows that Black and Hispanic adolescents are significantly more likely than White adolescents to experience violent victimization ($b=0.59$ and $b=0.57, p \leq 0.01$, respectively), and more interestingly, these coefficients are larger in this model than in Model 1 in Table 5.5, when neighborhood-level statistical control variables were not included ($b=0.35$ and $b=0.46$, respectively). This change in the magnitude of the relationship between race/ethnicity and violent victimization indicates that one or more of the neighborhood-level statistical controls are operating as suppressor variables, because they increase the size of the regression coefficients for Black and Hispanic. Further

³⁹ Specifically, preliminary analyses showed high Variance Inflation Factor (VIF) values for the measures of perceived disorder and perceived violence ($VIF = 8.53$ and 5.67 , respectively), which is not surprising because these variables are both assumed to capture the theoretical concept of “proximity” to motivated offenders. The remaining variables listed in Table 5.6 did not present issues of multicollinearity, as evidenced by VIF values below 4.00 (see Appendix D).

⁴⁰ To probe this result, a model that controlled for neighborhood-level violent victimization—the number of adolescents violently victimized in the neighborhood— was estimated, which produced consistent results, with no change in the sign of the coefficient for concentrated disadvantage, and only a slight change in size (from -0.05 to -0.04).

analyses were conducted to unpack these relationships and better understand why the race/ethnicity effects increased in magnitude.

The results revealed that the effect of being Black on violent victimization is being suppressed by living in a neighborhood characterized by concentrated disadvantage, whereas the effect of being Hispanic on violent victimization is being suppressed by living in a neighborhood with high immigrant concentration. This is because Black adolescents tend to reside in neighborhoods of high concentrated disadvantage and Hispanics, on the other hand, are more likely to reside in neighborhoods with high levels of immigrant concentration.⁴¹ When the levels of concentrated disadvantage and immigrant concentration are held constant, the effects of race/ethnicity become stronger, suggesting that regardless of their neighborhood's levels of concentrated disadvantage or immigrant concentration, Black and Hispanic youths are at higher risk of violent victimization than Whites.

Turning attention to the effects of individual-level criminal opportunity measures, Model 1 in Table 5.6 shows that the risk of violent victimization is significantly larger among youth who hang out with friends more often ($b=0.10, p \leq 0.05$), and especially among those engaged in violent offending ($b=0.29, p \leq 0.01$). Conversely, youth who participated in volunteering activities were somewhat protected from violent victimization ($b=-0.21, p \leq 0.05$). As to the effects of demographic characteristics, previous violent victimization was positively and significantly associated with the risk of violent victimization, and being an immigrant was negatively associated with this outcome ($b=0.49, p \leq 0.001$ and $b=-0.57, p \leq 0.01$, respectively).

⁴¹ For example, the mean scores of concentrated disadvantage for each subgroup are: 1.96 for Blacks, -1.55 for Hispanics, and -3.58 for Whites. Mean scores of immigrant concentration are: 3.17 for Hispanics, -0.50 for Whites, and -0.44 for Blacks. The zero-order correlation between Black and concentrated disadvantage is 0.58 ($p \leq 0.05$), and the zero-order correlation between Hispanic and immigrant concentration is 0.60 ($p \leq 0.05$).

Table 5.6. Contextual Effects of Criminal Opportunities on Violent Victimization
(Non-Imputed Data; $N=1,169$)

Variables	Model 1		Model 2		Model 3		Model 4	
	b	SE	b	SE	b	SE	b	SE
Individual-Level								
<i>Race/Ethnicity</i>								
Black	0.59**	0.21	0.59**	0.21	0.57**	0.21	0.60**	0.21
Hispanic	0.57**	0.20	0.57**	0.20	0.56**	0.20	0.57**	0.20
<i>Exposure to Risk</i>								
Alcohol use	-0.12	0.15	-0.12	0.15	-0.12	0.15	-0.12	0.15
Marijuana use	0.12	0.16	0.12	0.16	0.11	0.16	0.12	0.16
Deviant peers	0.03	0.02	0.03	0.02	0.03	0.02	0.06	0.02
Going to movies	-0.03	0.05	-0.03	0.06	-0.03	0.05	-0.03	0.05
Driving around	0.04	0.03	0.04	0.03	0.04	0.03	0.04	0.03
Hanging out with friends	0.10*	0.05	0.10*	0.05	0.11*	0.05	0.10*	0.05
Going to parties	-0.00	0.06	-0.00	0.06	-0.00	0.06	-0.00	0.06
Volunteering	-0.21*	0.11	-0.21*	0.11	-0.21*	0.11	-0.21*	0.11
Organized sport teams	0.09	0.11	0.09	0.11	0.09	0.11	0.09	0.11
Self-reported viol. offending	0.29**	0.13	0.29**	0.13	0.29**	0.13	0.29**	0.13
<i>Target Attractiveness</i>								
Low self-control	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<i>Guardianship</i>								
Family size	0.00	0.02	0.00	0.02	0.00	0.02	0.00	0.02
Single parent	-0.04	0.14	-0.04	0.14	-0.04	0.14	-0.04	0.14
Family warmth	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Family monitoring	-0.04	0.03	-0.04	0.03	-0.03	0.03	-0.04	0.03
Family support	-0.04	0.03	-0.04	0.03	-0.04	0.03	-0.04	0.03
<i>Demographics</i>								
Age at Wave 1	-0.04	0.03	-0.04	0.03	-0.04	0.03	-0.04	0.03
Gender (Male)	0.08	0.11	0.08	0.11	0.07	0.11	0.08	0.11
Immigrant status	-0.57**	0.25	-0.56**	0.25	-0.55**	0.25	-0.56**	0.24
Family income	-0.03	0.02	-0.03	0.02	-0.03	0.02	-0.03	0.02
Prior violent victimization	0.49***	0.14	0.49***	0.14	0.50***	0.14	0.49***	0.14
Neighborhood-Level								
<i>Statistical Controls</i>								
Concentrated disadvantage	-0.05**	0.02	-0.05	0.03	-0.04	0.02	-0.05**	0.02
Immigrant concentration	-0.03	0.02	-0.02	0.02	-0.02	0.02	-0.03	0.02
Residential stability	-0.04	0.03	-0.04	0.04	-0.06	0.04	-0.04	0.04
<i>Proximity</i>								
Perceived disorder	-	-	-0.05	0.32	-	-	-	-
Perceived violence	-	-	-	-	-0.24	0.25	-	-
<i>Aggregated Guardianship</i>								
Informal social control	-	-	-	-	-	-	0.01	0.20
Intercept (Threshold)	1.13		1.03		0.61		1.14	
Pseudo R^2	0.20		0.20		0.20		0.20	

*** $p \leq 0.001$, ** $p \leq 0.01$, * $p \leq 0.05$; Probit coefficients based on a WLSMV estimator are reported. **SE**= Standard errors corrected for clustering of respondents within the same neighborhood. Parameter estimates for race/ethnicity effects with Whites as the reference group. Chi-square difference tests: Model 2 vs. Model 1 ($\chi^2=0.02$, $df=1$, $p \geq 0.05$); Model 3 vs. Model 1 ($\chi^2=0.92$, $df=1$, $p \geq 0.05$); and Model 4 vs. Model 1 ($\chi^2=0.00$, $df=1$, $p \geq 0.05$).

Model 2 in Table 5.6 incorporates neighborhood-level perceptions of disorder, a concept representing proximity to motivated offenders. As shown, this variable is not significantly related to the risk of violent victimization ($b=-0.05, p \geq 0.05$). In addition, being Black and being Hispanic continue to be significantly associated with violent victimization after the addition of perceived disorder in Model 2 ($b=0.59$ and $b=0.57$, respectively), and the size of the coefficients remained unchanged, demonstrating that this neighborhood characteristic failed to reduce the estimate of racial/ethnic disparities in violent victimization. The inclusion of perceived disorder did not generally change the size or significance of the effects of individual-level criminal opportunity measures or of demographic characteristics on violent victimization; that is, hanging out with friends, volunteering, self-reported violent offending, prior violent victimization, and immigrant status continued to be significant predictors of the outcome of interest, as discussed above for Model 1. Finally, none of the statistical control measures at the neighborhood level were significant, including concentrated disadvantage, immigrant concentration, and residential stability. Compared to Model 1, there was no change in the percentage of the variance in violent victimization accounted for in Model 2 (i.e., Pseudo $R^2=0.20$), and the chi-square difference test was not significant, further indicating that the addition of perceived neighborhood disorder did not improve the model fit overall.

Model 3 considers the role of a second measure of neighborhood-level proximity to motivated offenders: perceived violence. Two main findings emerge in this model. First, as in the previous model, perceived neighborhood violence is not significantly related to violent victimization risk ($b=-0.24, p \geq 0.05$). Second, race/ethnicity differentials in violent victimization persisted after the addition of perceived violence, as shown by the significant coefficients for Black and Hispanic ($b=0.57$ and $b=0.56, p \leq 0.01$, respectively). As to the

effects of individual-level criminal opportunity measures, the coefficients listed in Model 3 are consistent with those observed in previous models, and the same applies to the effects of demographic characteristics. Considering also that none of the neighborhood-level control variables were statistically significant in this model, that the percentage of variance explained did not increase (Pseudo $R^2=0.20$), and that the chi-square test of differences was not significant, the overall picture that emerges is that perceived neighborhood violence has very weak effects on violent victimization.

Next, Model 4 examines the effects of aggregated-level guardianship, as measured by neighborhood informal social control. This model shows that neighborhood informal social control does not significantly affect adolescents' risks of violent victimization ($b=0.01, p \geq 0.05$), and that the addition of this variable failed to eliminate the disparities in violent victimization across adolescents of various racial/ethnic groups, as evidenced by the significant coefficients for Black and Hispanic ($b=0.60$ and $b=0.57$, respectively). Once again, there is consistency in the individual-level predictors of violent victimization reported in Model 4 relative to previous models, both for the criminal opportunity measures and the demographic characteristics. As to the effects of neighborhood-level control variables, while concentrated disadvantage is negatively and significantly associated with violent victimization risk ($b=-0.05, p \leq 0.05$), immigrant concentration and residential stability are not significant predictors of this outcome. The sign of the coefficient for concentrated disadvantage is contrary to theoretical expectations, and it suggests that holding neighborhood informal social control constant, adolescents who reside in neighborhoods with higher levels of concentrated disadvantage have a reduced risk of violent victimization. However, the percentage of variance in the dependent variable explained in this model remained the same as in all three previous models (Pseudo $R^2=0.20$) and the chi-

square test of differences was not significant, thereby suggesting that neighborhood informal control has little influence on violent victimization.

In summary, the above discussed results show that neighborhood-level criminal opportunities have very weak effects on youths' probability of experiencing violent victimization, so there is limited support to the context hypothesis. Contrary to this hypothesis, being immersed in a neighborhood context with greater proximity to motivated offenders, as measured by perceived disorder and perceived violence, and residing in a neighborhood with greater levels of aggregate-level guardianship, captured by informal social control, did not significantly affect the likelihood of violent victimization in the study sample. Given the weak effects of neighborhood-level criminal opportunities on violent victimization, it is not surprising that these measures failed to eliminate or reduce the race/ethnicity disparities observed, and that the same pattern of individual-level predictors revealed in models that did not control for neighborhood-level variables was revealed in models that included these variables. However, an interesting result was that two neighborhood-level characteristics—concentrated disadvantage and immigrant concentration—seemed to suppress the effects of race/ethnicity on violent victimization, although only concentrated disadvantage was statistically associated with the outcome. This highlights the importance of controlling for these neighborhood characteristics to obtain more accurate estimates of the racial/ethnic disparities in victimization.

ADDITIONAL ANALYSES

As with any study that has missing data, a key issue in this dissertation is whether the results obtained with missing data differ from results that would have been obtained with fully observed data. The analyses presented in the previous sections are based on a on a sample of 1,169 adolescents, excluding cases with missing values on any of the variables of interest (1,175

excluded cases). As shown in Chapter 4, cases with missing data are statistically different from cases with observed data, and these differences might generate different results with respect to the statistical models presented above. It is therefore necessary to assess the robustness of the results presented in previous sections, by replicating the analyses with multiply imputed data ($N=2,344$). This section presents such replication, with the main goal of establishing whether the same pattern of results emerges. The analyses begin by establishing the existence of race/ethnicity disparities in the risk of violent victimization, then proceeding to assess the mediation, moderation, and contextual hypotheses to account for any disparities found.

Establishing the Race/Ethnicity Disparities in Violent Victimization

Table 5.7 examines the relationship between violent victimization and race/ethnicity using the full PHDCN sample with imputed data ($N=2,344$). As shown, multiple imputation estimates reveal that 14.8% of all adolescents experienced at least one form of violent victimization in the past year, which is slightly higher than the 12.8% estimated using non-imputed data. A test of difference between proportions failed to reject the null hypothesis that there is no difference between the two proportions ($z=1.47$; $p \leq 0.05$), pointing to the robustness of previously reported results. In addition, Table 5.7 reveals a higher likelihood of violent victimization among racial/ethnic minorities; that is, while 16.6% of Black adolescents and 14.9% of Hispanic adolescents experienced violent victimization, only about 9.6% of Whites did so. The result of the chi-square test of independence rejected the null hypothesis of no differences across racial/ethnic groups, showing that violent victimization differs significantly by race/ethnicity ($\chi^2=9.51$, $df=2$, $p \leq 0.01$). Further analyses revealed that the significant differences in violent victimization risk exist for Blacks and Hispanics compared to Whites ($\chi^2=8.42$, $df=1$, $p \leq 0.01$), but not for Blacks compared to Hispanics ($\chi^2=1.02$, $df=1$, $p \geq 0.05$).

Next, multivariate analyses were performed to determine whether these differences in victimization risk remained after statistically controlling for demographic characteristics that relate to the risk of violent victimization (i.e., age, gender, immigrant status, income, and prior violent victimization). On the basis of these results, predicted probabilities of violent victimization at the mean/modal value of each independent variable were calculated⁴², which yielded the values of 0.10, 0.11, and 0.05 for Black, Hispanic, and White adolescents, respectively, indicating that violent victimization is more likely among minority adolescents. Hence, after holding demographic characteristics constant, violent victimization is 2.0 times more likely among Black adolescents and 2.2 times more likely among Hispanic adolescents, as compared to White adolescents. Overall, both with imputed and non-imputed data, there were significant disparities in the risk of violent victimization across adolescents of various racial/ethnic groups in the PHDCN sample. Additional analyses were performed to examine the robustness of the results presented above regarding the role that mediation, moderation, or contextual effects play in the explanation of these disparities.

Table 5.7. Adolescent Violent Victimization and Race/Ethnicity
(Imputed Data; $N = 2,344$)

Violent victimization status	Black		Hispanic		White		Total		χ^2
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>N</i>	%	
Non-victim	725	83.4	970	85.1	303	90.4	1998	85.2	9.51**
Victim	144	16.6	170	14.9	32	9.6	346	14.8	
Total	869	100.0	1140	100.0	335	100.0	2344	100.0	

*** $p \leq 0.001$, ** $p \leq 0.01$, * $p \leq 0.05$

⁴² The same values for the independent variables employed with non-imputed data were employed when calculating these probabilities, which represent a modal respondent in the sample (a 10 year-old, female, native-born adolescent, whose family income is between \$20,000 and \$29,999, and who was not violently victimized at wave 2).

Testing Alternative Hypotheses for the Race/Ethnicity Disparities in Violent Victimization

1) The Mediating Effects of Criminal Opportunities

Table 5.8 presents the results of a two-stage probit regression of violent victimization that examines the mediating effects of criminal opportunities measures with multiply imputed data. Model 1 provides a baseline that includes only the dummy variables capturing race/ethnicity and demographic variables. As shown, being Black and being Hispanic is significantly and positively associated with the risk of violent victimization ($b=0.32$ and $b=0.33$, $p \leq 0.01$, respectively). Other significant predictors of this outcome include gender, family income, and prior violent victimization ($b=0.20$, $b=-0.03$, and $b=0.68$, respectively). In particular, the risk of violent victimization is significantly greater among male adolescents, among adolescents with lower family income, and those who were violently victimized previously.

Model 2 introduces the measures of criminal opportunities to provide a preliminary analysis of their mediation effects. As noted above, changes in the size and statistical significance of the coefficients representing race/ethnicity in Model 2 relative to Model 1 provide an initial assessment of mediation effects. In this case, the addition of these measures did not eliminate or reduce the significance of the coefficients for Black or Hispanic; instead both coefficients increased in size, especially the latter ($b=0.34$, $p \leq 0.01$ and $b=0.48$, $p \leq 0.001$, respectively). This suggests that criminal opportunity measures suppressed some of the effects of race/ethnicity on violent victimization, a result also obtained with non-imputed data (see Table 5.3).

Turning attention to the effects of criminal opportunities, the results in Table 5.8 are somewhat similar to the results of non-imputed data (see Table 5.3), but the main difference is that the imputed-data model reveals more independent variables that have significant effects on

Table 5.8. Mediating Effects of Criminal Opportunities on Violent Victimization
(Imputed Data; $N = 2,344$)

	Model 1		Model 2	
	b	SE	b	SE
<i>Race/Ethnicity</i>				
Black	0.32**	0.12	0.34**	0.12
Hispanic	0.33**	0.12	0.48***	0.12
<i>Exposure to Risk</i>				
Alcohol use			-0.17*	0.09
Marijuana use			0.18*	0.08
Deviant peers			0.03**	0.01
Going to movies			-0.02	0.03
Driving around			0.06**	0.02
Hanging out with friends			0.09**	0.03
Going to parties			-0.03	0.04
Volunteering			-0.26***	0.07
Organized sport teams			0.17*	0.08
Self-reported violent offending			0.35***	0.08
<i>Target Attractiveness</i>				
Low self-control			0.01***	0.00
<i>Guardianship</i>				
Family size			-0.02	0.01
Single parent			-0.06	0.08
Family warmth			-0.00	0.01
Family monitoring			-0.04**	0.02
Family support			-0.00	0.01
<i>Demographic Characteristics</i>				
Age at Wave 1	0.01	0.01	-0.04**	0.01
Gender (Male)	0.20***	0.05	0.05	0.06
Immigrant status (Foreign-born)	-0.09	0.12	0.00	0.13
Family income	-0.03**	0.01	-0.02*	0.01
Prior violent victimization	0.68***	0.08	0.50***	0.08
Intercept (Threshold)		1.51		0.97
Pseudo R^2		0.10		0.20

*** $p \leq 0.001$, ** $p \leq 0.01$, * $p \leq 0.05$ (One-tailed); Probit coefficients based on a WLSMV estimator and pooled across imputed datasets are reported. *SE*=Standard errors corrected for clustering of respondents within the same neighborhood. Parameter estimates for race/ethnicity effects are reported with non-Hispanic Whites as the reference category. Chi-square difference tests to compare across models are not available from Mplus 6.0 with imputed data and for that reason are not included.

violent victimization, and most of these effects are in line with LRAT. Contrary to theoretical expectations, alcohol use in the past year is associated with a reduced risk of violent victimization ($b=-0.17, p \leq 0.05$). But consistent with previous studies, adolescents who used marijuana in the past year ($b=0.18, p \leq 0.05$) and those who have a greater number of deviant peers ($b=0.03, p \leq 0.01$) were at a significantly increased risk of violence, as were adolescents who drive around with friends and hang out with friends more often ($b=0.06, p \leq 0.01$, and $b=0.09, p \leq 0.01$, respectively), adolescents who participated in organized sports teams ($b=0.17, p \leq 0.05$), and those who engaged in violent offending ($b=0.35, p \leq 0.001$). Conversely, adolescents who participated in volunteering activities had lower violent victimization risk ($b=-0.26, p \leq 0.001$). Taken together, these results indicate that for the most part, greater exposure to risk is associated with more violent victimization, as predicted by LRAT.

Considering the measures of target attractiveness and guardianship, low self-control is significantly and positively associated with violent victimization ($b=0.01, p \leq 0.001$), while family monitoring is significantly and negatively related to this outcome ($b=-0.04, p \leq 0.01$). This means that adolescents who have lower levels of self-control and those subject to less family monitoring have a greater likelihood of being violently victimized. Note that the effect of low self-control on violent victimization is significant but small in size. Though unusual, this is consistent with the finding from a recent meta-analysis of the effects of self-control on victimization, that controlling for predictors such as prior victimization, self-reported offending, and deviant peers, generally attenuates the coefficient for self-control (Pratt, Turanovic, Fox, and Wright, 2014).

The addition of criminal opportunity measures in Model 2 eliminated the gender effects revealed in Model 1, and attenuated the effects of family income (from -0.03 to -0.02).

Interestingly, the coefficient for age is significant in Model 2 ($b=-0.04, p \leq 0.01$), suggesting suppression effects whereby younger adolescents are at an increased risk of violent victimization despite generally partaking less in the risky activities captured in this model. Finally, prior violent victimization continues to be a significant predictor of subsequent violent victimization even after controlling for criminal opportunities ($b=0.50, p \leq 0.001$).

Overall, a comparison of the coefficients reported in Table 5.8 based on imputed data with those reported in Table 5.3 using non-imputed data indicate that although there are differences in the size of coefficients, there is general consistency in their direction or sign. However, several variables reached statistical significance in the imputed data model that were not significant in the non-imputed data model, presumably due to the increase in statistical power that resulted from an increased sample size, and the reduced standard errors in imputed-data models (Graham, 2012).

Perhaps the most important similarity between analyses with and without imputed data, which is also a key finding, is that the addition of the criminal opportunity measures did not eliminate the race/ethnicity disparities in violent victimization, providing little statistical evidence of mediating effects. To better clarify this issue, this preliminary analysis was supplemented by a formal mediation test with the imputed data.

The results of the mediation test are presented in Table 5.9, which shows both unstandardized and standardized coefficients (b and β). First, the *total* effects of race/ethnicity on violent victimization are statistically significant and consistent with the results reported thus far, where being Black and being Hispanic is significantly related to an increased risk of violent victimization ($b=0.28$ and $b=0.29, p \leq 0.05$, respectively). Second, accounting for the mediating

Table 5.9. Mediation Analysis of Race/Ethnicity Differences in Violent Victimization
(Imputed Data $N = 2,344$)

Decomposition of Race/Ethnicity Effects on Violent Victimization	Black			Hispanic		
	b	β	SE	b	β	SE
Total Effects (c)	0.28*	0.11	0.13	0.29*	0.12	0.12
Direct Effects (c')	0.30*	0.11	0.15	0.54***	0.23	0.14
Total Indirect Effects (ab)	-0.02	-0.00	0.11	-0.25**	-0.11	0.09
Specific Indirect Effects (Transmitted Through)						
<i>Exposure to Risk</i>						
Alcohol use	NS	NS	-	NS	NS	-
Marijuana use	NS	NS	-	NS	NS	-
Deviant peers	NS	NS	-	NS	NS	-
Going to movies	NS	NS	-	NS	NS	-
Driving around	0.02*	0.01	0.01	NS	NS	-
Hanging out with friends	-0.02*	-0.01	0.01	-0.05**	-0.02	0.01
Going to parties	NS	NS	-	NS	NS	-
Volunteering	NS	NS	-	NS	NS	-
Organized sport teams	NS	NS	-	NS	NS	-
Self-reported violent offending	0.11**	0.05	0.03	NS	NS	-
<i>Target Attractiveness</i>						
Low self-control	NS	NS	-	-0.06*	-0.02	0.02
<i>Guardianship</i>						
Family size	NS	NS	-	NS	NS	-
Single parent	NS	NS	-	NS	NS	-
Family warmth	NS	NS	-	NS	NS	-
Family monitoring	NS	NS	-	NS	NS	-
Family support	NS	NS	-	NS	NS	-

*** $p \leq 0.001$, ** $p \leq 0.01$, * $p \leq 0.05$ (One-tailed); Probit coefficients based on a WLSMV estimator and pooled across imputed datasets are reported. Standard errors corrected for clustering of respondents within the same neighborhood. The model adjusts for age, gender, immigrant status, family income, and prior violent victimization. NS=Not statistically significant.

influences of criminal opportunity measures, the *direct* effects of race/ethnicity on violent victimization continue to be positive and statistically significant ($b=0.30$, $p \leq 0.05$ and $b=0.54$, p

≤ 0.001 , respectively), and in the case of Hispanics, the coefficient increased in size, revealing suppression effects as those found with the non-imputed data (see Table 5.4).

Third, considering the *specific indirect* effects, the results reported in Table 5.9 with imputed data do not differ from the results obtained with non-imputed data. For instance, among Black adolescents, three indirect effects on violent victimization are significant: driving around with friends ($b=0.02, p \leq 0.05$), hanging out with friends ($b=-0.02, p \leq 0.05$), and self-reported violent offending ($b=0.11, p \leq 0.01$). The sign of these coefficients is consistent with the results obtained with non-imputed data in Table 5.4. Both with imputed and non-imputed data, the results show that although Black adolescents appear to be generally more at risk of victimization—partly because they engage more in activities that increase exposure to risk—the size of these indirect effects is so small that they collectively fail to eliminate the race/ethnicity effects. This is seen in the nonsignificant coefficient for the *total indirect* effects ($b=-0.02, p \geq 0.05$).

On the other hand, Table 5.9 shows that unlike the results with the non-imputed data, the coefficient for the *total indirect* effects on violent victimization among Hispanics is statistically significant and negative ($b=-0.25, p \leq 0.01$). Consistent with the results with non-imputed data, the two *specific indirect* effects that are statistically significant are hanging out with friends ($b=-0.05, p \leq 0.01$) and low self-control ($b=-0.06, p \leq 0.05$). Again, this suggests that Hispanic adolescents should be protected from violent victimization because they partake less in activities that expose them to risk and possess less target attractiveness; however, these effects do not eliminate the disparities in violent victimization among this racial/ethnic group.

Overall, the results show that although criminal opportunity measures mediate part of the effect of being Hispanic on violent victimization, the direction of the indirect effects is contrary

to the mediation hypothesis. Hispanic youth are not at an increased risk of violence simply because they partake more in risky activities, in fact, considering their involvement in these types of activities, Hispanic youths should be at a lower risk. Yet, their risk of violent victimization continues to be higher than White adolescents, which suggests weak support to the mediation hypothesis among Hispanic adolescents. However, this is not to say that mediation is nonexistent, because the significance of the *total indirect* effects suggests that criminal opportunities transmitted some of the effects of being Hispanic on violent victimization; the point is that the direction of these indirect effects is contrary to the logic implicit in LRAT.

2) The Moderating Effects of Race/Ethnicity

Table 5.10 displays the results of a two-stage probit regression of violent victimization that investigates the moderating effects of race/ethnicity on the relationship between criminal opportunities and violent victimization, using multiply imputed data. Model 1, which presents a baseline model, is identical to Model 2 in Table 5.8, and was already discussed, so this section focuses on the results of Model 2. As noted above, an issue when evaluating moderation effects is that due to multicollinearity, it was not possible to test all the interaction terms between race/ethnicity and criminal opportunity variables in a single model. The analysis proceeded by testing each pair of interaction terms⁴³ (e.g., Alcohol use*Black and Alcohol use*Hispanic) separately, with the goal of identifying those terms that were statistically significant, thereby simplifying Model 2. Using this approach, the same interaction terms that were found to be statistically significant with non-imputed data were found as significant with imputed data (i.e., Single parent*Hispanic and family monitoring*Hispanic). Model 2 in Table 5.10 incorporates

⁴³As was the case in the analysis with non-imputed data, the continuous variables that captured criminal opportunities were grand-mean centered prior to creating each interaction term to enhance the interpretability of results and to reduce multicollinearity.

these interaction terms to assess the robustness of the moderating effects reported on the basis of the non-imputed data.

First, there is a significant interaction between being Hispanic and being raised by a single parent ($b=0.38, p \leq 0.05$), and also between being Hispanic and family monitoring ($b=-0.11, p \leq 0.05$). Similar to the analysis with non-imputed data, the other two interaction terms (i.e., Single parent*Black and family monitoring*Black) were not statistically significant. Interpreting these interaction terms requires an examination of the sign of the coefficients of the main effects of single parent and family monitoring, which represent conditional effects on violent victimization for White adolescents (Black=0 and Hispanic=0).

On the one hand, the sign of the coefficient for single parent ($b=-0.21$) suggests that being raised by a single parent is associated with a diminished risk of violent victimization among White adolescents. In turn, the interaction between single parent*Hispanic is positive and significant ($b=0.38, p \leq 0.05$), indicating that among Hispanic adolescents, the relationship between single parent and violent victimization is reversed. On the other hand, the positive coefficient of family monitoring ($b=0.04$) means that higher monitoring is associated with higher risk of violent victimization among White adolescents. But the negative sign of the interaction term family monitoring*Hispanic ($b=-0.11$) indicates an opposite effect on violent victimization among Hispanic adolescents, whereby more monitoring is associated with less violent victimization for this group. Overall, single parent and family monitoring have opposite effects for Whites compared to Hispanics. Hence, the results obtained with imputed data reiterate the

Table 5.10. Moderating Effects of Race/Ethnicity on Violent Victimization
(Imputed Data; $N = 2,344$)

	Model 1		Model 2	
	b	SE	b	SE
<i>Race/Ethnicity</i>				
Black	0.34**	0.12	0.37*	0.15
Hispanic	0.48***	0.12	0.36**	0.13
<i>Exposure to Risk</i>				
Alcohol use	-0.17*	0.09	-0.17*	0.09
Marijuana use	0.18*	0.08	0.16*	0.08
Deviant peers	0.03**	0.01	0.03**	0.01
Going to movies	-0.02	0.03	-0.03	0.03
Driving around	0.06**	0.02	0.06**	0.02
Hanging out with friends	0.09**	0.03	0.09**	0.03
Going to parties	-0.03	0.04	-0.04	0.04
Volunteering	-0.26***	0.07	-0.24***	0.07
Organized sport teams	0.17*	0.08	0.17*	0.08
Self-reported violent offending	0.35***	0.08	0.35***	0.08
<i>Target Attractiveness</i>				
Low self-control	0.01***	0.00	0.01***	0.00
<i>Guardianship</i>				
Family size	-0.02	0.01	-0.02	0.01
Single parent	-0.06	0.08	-0.21	0.21
Family warmth	-0.00	0.01	-0.00	0.01
Family monitoring	-0.04**	0.02	0.04	0.06
Family support	-0.00	0.01	-0.00	0.01
<i>Demographic Characteristics</i>				
Age at Wave 1	-0.04**	0.01	-0.04**	0.01
Gender (Male)	0.05	0.06	0.06	0.07
Immigrant status (Foreign-born)	0.00	0.13	0.01	0.14
Family income	-0.02*	0.01	-0.02*	0.01
Prior violent victimization	0.50***	0.08	0.50***	0.08
<i>Interaction Terms</i>				
Single parent*Black	-	-	-0.02	0.23
Single parent*Hispanic	-	-	0.38*	0.21
Family monitoring*Black	-	-	-0.08	0.07
Family monitoring*Hispanic	-	-	-0.11*	0.07
Intercept (Threshold)		0.97		0.94
Pseudo R^2		0.20		0.20

*** $p \leq 0.001$, ** $p \leq 0.01$, * $p \leq 0.05$; Probit coefficients based on a WLSMV estimator and pooled across imputed datasets are reported. *SE*=Standard errors corrected for clustering of respondents within the same neighborhood. Parameter estimates for race/ethnicity effects with Whites as the reference group. Chi-square difference tests to compare across models are not available from Mplus 6.0 with imputed data and for that reason are not included.

results from the imputed data as to the evidence of race/ethnicity-contingent effects of guardianship on violent victimization in the PHDCN sample.

Nevertheless, the addition of the interaction terms in Model 2 did not reduce the statistical significance of the race/ethnicity effects on violent victimization, as was the case with the non-imputed data. Being Black and being Hispanic continue to be significantly related to violent victimization risk ($b=0.37$ and $b=0.36$, respectively) in Model 2. The coefficient for Hispanic was reduced in size by 25% (from $b=0.48$ in Model 1), while the coefficient for Black increased its size by 8.8% (from $b=0.34$ in Model 1). Thus, a fundamental difference between the results obtained with non-imputed data and the results with imputed data presented in Table 5.10 is that the interactive effects of race/ethnicity (i.e., as measured by Single parent*Hispanic and family monitoring*Hispanic) did not eliminate the race/ethnicity effects observed, as was the case with the non-imputed data (see Table 5.5).

Model 2 in Table 5.10 also shows that the coefficients for the variables that represent criminal opportunity measures (i.e., exposure, target attractiveness, and guardianship) generally remained unchanged after the addition of the interaction terms. Also, this addition did not enhance the model fit, as judged by the lack of change in the pseudo R^2 in Model 2. Overall, it is appropriate to conclude that the multiply imputed results lend more limited support to the moderation hypothesis than the results obtained from using non-imputed data.

3) The Contextual Effects of Criminal Opportunities

This section replicates the analyses that were performed in a previous section to examine the validity of the context hypothesis (see Table 5.6), but using imputed data. The first step in this analysis was to estimate an unconditional model or empty model (i.e., without any

covariates), to establish whether there is statistically significant variability in adolescent violent victimization across neighborhoods in Chicago. Similar to the results of the non-imputed data, the imputed data unconditional model informed the decision *not* to estimate a multilevel model, given that: (1) violent victimization did not significantly vary across Chicago neighborhoods (Variance component = 0.01; S.E.=0.01; $p \geq 0.05$); and (2) based on the 95% plausible index values (Raudenbush and Bryk, 2002), 95% of the neighborhoods had a predicted probability of violent victimization between 0.09 and 0.18, a narrow range for this outcome across level-two units. Instead, the analysis proceeded by estimating a probit regression of violent victimization, on the neighborhood-level criminal opportunity measures, and controlling for individual-level variables. To account for neighborhood clustering, adjusted standard errors were employed (see Chapter 4 for a description of adjusted standard errors and their pros/cons).

The results of this analysis are presented in Table 5.11, which shows a baseline model that combines individual-level variables and the neighborhood-level statistical control variables of concentrated disadvantage, immigrant concentration, and residential stability. Unlike the results with non-imputed data (see Table 5.6), Model 1 in Table 5.11 shows that these three neighborhood-level variables significantly influenced the risk of adolescent violent victimization. Counter to theoretical expectations, adolescents who reside in neighborhoods with higher levels of concentrated disadvantage are less likely to experience violent victimization ($b=-0.03$, $p \leq 0.01$). Conversely, in line with previous studies, the risk of violent victimization is lower for adolescents who reside in neighborhoods with greater levels of immigrant concentration ($b=-0.02$, $p \leq 0.01$) and in neighborhoods with greater levels of residential stability ($b=-0.04$, $p \leq 0.01$).

Table 5.11. Contextual Effects of Criminal Opportunities on Violent Victimization
(Imputed Data; $N=2,344$)

Variables	Model 1		Model 2		Model 3		Model 4	
	b	SE	b	SE	b	SE	b	SE
Individual-Level								
Race/Ethnicity								
Black	0.47***	0.12	0.49***	0.13	0.47***	0.12	0.47***	0.12
Hispanic	0.56***	0.12	0.56***	0.12	0.55***	0.12	0.55***	0.12
Exposure to Risk								
Alcohol use	-0.19*	0.09	-0.19*	0.09	-0.19*	0.09	-0.19*	0.09
Marijuana use	0.18*	0.08	0.18*	0.08	0.18*	0.08	0.19*	0.08
Deviant peers	0.03**	0.01	0.03**	0.01	0.03**	0.01	0.03**	0.01
Going to movies	-0.03	0.03	-0.03	0.03	-0.03	0.03	-0.03	0.03
Driving around	0.07**	0.02	0.06**	0.02	0.07**	0.02	0.07**	0.02
Hanging out with friends	0.09**	0.03	0.09**	0.03	0.09**	0.03	0.09**	0.03
Going to parties	-0.03	0.04	-0.03	0.04	-0.03	0.04	-0.03	0.04
Volunteering	-0.25***	0.07	-0.26***	0.07	-0.25***	0.07	-0.25***	0.07
Organized sport teams	0.16*	0.08	0.15*	0.08	0.16*	0.08	0.16*	0.08
Self-reported viol. offending	0.37***	0.08	0.38***	0.08	0.37***	0.08	0.37***	0.08
Target Attractiveness								
Low self-control	0.01***	0.00	0.01***	0.00	0.01***	0.00	0.01***	0.00
Guardianship								
Family size	-0.02	0.01	-0.02	0.01	-0.02	0.01	-0.02	0.01
Single parent	-0.06	0.08	-0.06	0.08	-0.06	0.08	-0.06	0.08
Family warmth	-0.00	0.01	-0.00	0.01	-0.00	0.01	-0.00	0.01
Family monitoring	-0.04**	0.02	-0.05**	0.02	-0.04**	0.02	-0.04**	0.02
Family support	-0.00	0.01	-0.00	0.01	-0.00	0.01	-0.00	0.01
Demographics								
Age at Wave 1	-0.04**	0.01	-0.04**	0.01	-0.04**	0.01	-0.04**	0.01
Gender (Male)	0.05	0.07	0.05	0.07	0.05	0.07	0.05	0.07
Immigrant status	-0.01	0.13	-0.02	0.13	-0.01	0.13	-0.03	0.13
Family income	-0.03**	0.01	-0.03**	0.01	-0.03**	0.01	-0.03**	0.01
Prior violent victimization	0.50***	0.08	0.50***	0.08	0.50***	0.08	0.50***	0.08
Neighborhood-Level								
Statistical Controls								
Concentrated disadvantage	-0.03**	0.01	-0.05**	0.02	-0.03*	0.01	-0.04**	0.01
Immigrant concentration	-0.02*	0.01	-0.04*	0.01	-0.02*	0.01	-0.03*	0.01
Residential stability	-0.04*	0.02	-0.02	0.02	-0.04*	0.02	-0.02	0.02
Proximity								
Perceived disorder	-	-	0.33	0.21	-	-	-	-
Perceived violence	-	-	-	-	-0.05	0.16	-	-
Aggregated Guardianship								
Informal social control	-	-	-	-	-	-	-0.19	0.13
Intercept (Threshold)	1.00		1.65		0.88		0.27	
Pseudo R^2	0.21		0.21		0.21		0.21	

*** $p \leq 0.001$, ** $p \leq 0.01$, * $p \leq 0.05$; Probit coefficients based on a WLSMV estimator are reported. **SE**= Standard errors corrected for clustering of respondents within the same neighborhood. Parameter estimates for race/ethnicity effects with Whites as the reference group. Chi-square difference tests to compare across models are not available from Mplus 6.0 with imputed data and for that reason are not included.

On the other hand, Model 1 of Table 5.11 shows that Black and Hispanic adolescents are significantly more likely than White adolescents to experience violent victimization ($b=0.47$ and $b=0.56$, $p \leq 0.001$, respectively). The most interesting aspect is that these two coefficients are larger in this model than they were in Model 1 in Table 5.10 ($b=0.34$ for Black and $b=0.48$ for Hispanic), a model that did not include concentrated disadvantage, immigrant concentration, or residential stability. Therefore, this reiterates the results with non-imputed data described in Table 5.6, in that the neighborhood-level statistical controls are operating as suppressors: the effect of being Black on violent victimization is being suppressed by concentrated disadvantage, and the corresponding effect of being Hispanic is suppressed by immigrant concentration.

Given the robustness of these suppressor effects, which were observed both with non-imputed and imputed data, additional analyses were conducted to illustrate these effects. Suppression is one of several ways in which independent variables may work together to affect an outcome in a multivariate model; one way to determine whether suppression occurs is by comparing the semi-partial correlations with the zero-order correlations among the variables examined. To illustrate one of the suppression effects in Table 5.11, it is helpful to compare the correlations between X_1 (Black), X_2 (Concentrated disadvantage), and Y (violent victimization). In this case, the zero-order correlations are as follows: $r_{Y1} = 0.058$, $r_{Y2} = 0.007$, and $r_{12} = 0.575$. The semi-partial correlation between X_1 and Y , controlling for X_2 is $\beta_{Y1.2} = 0.08$. Thus, controlling for concentrated disadvantage has increased the association between being Black and violent victimization from 0.05 to 0.08, rather than the traditional scenario where controlling for a third variable decreases the zero-order correlation between X and Y . Substantively, the inclusion of concentrated disadvantage removed some of the overlapping variance between concentrated disadvantage and being Black, which enhanced the relationship between being

Black and violent victimization. When concentrated disadvantage is not included or controlled for, the effects of being Black are suppressed.⁴⁴

As to the effects of individual-level criminal opportunity measures in Model 1, the most notable finding is that the same variables that were statistically significant in previous models based on imputed data (i.e., mediation and moderation analyses above) are significant in this case, as was already discussed. Overall, the major difference in the results with imputed data in Table 5.11, as compared to non-imputed data results (see Table 5.6), is that the variables of immigrant concentration and residential stability are statistically significant with imputed data, perhaps because of the increased statistical power.

Models 2 to 4 incorporate the measures of perceived neighborhood disorder, perceived neighborhood violence, and informal social control (respectively), to clarify the influence of neighborhood-level criminal opportunity measures on violent victimization and their role in reducing the race/ethnicity effects on this outcome. As seen in Model 2, neighborhood perceptions of disorder are not significantly related to the risk of violent victimization ($b=0.33$, $p \geq 0.05$). Model 3 shows that perceived neighborhood violence has no statistically significant effects on violent victimization ($b=-0.05$, $p \geq 0.05$). Thus, neither one of the measures of neighborhood-level proximity to offenders are relevant to explain adolescent's experiences of violent victimization. The same applies to neighborhood-level guardianship, as the level of informal social control in the neighborhood is not a significant predictor in Model 4 ($b=-0.19$, $p \geq 0.05$). These results with imputed data are similar to those obtained with non-imputed data.

On the other hand, Table 5.11 shows that across all models, the coefficients for Black and Hispanic are statistically significant and there is little change in their size across model

⁴⁴ The other suppressor effect in Table 5.11, corresponding to immigrant concentration, can be illustrated with the correlations between X_1 (Hispanic), X_2 (Immigrant concentration), and Y (violent victimization), as follows: $r_{Y1}=0.010$, $r_{Y2}= -0.015$, and $r_{12}= 0.601$, and $\beta_{Y1.2}=0.02$.

specifications, all of which shows that the observed racial/ethnic disparities in violent victimization persist after considering the role of neighborhood-level criminal opportunities. Given that there is little change in the size or significance of the coefficients for individual-level criminal opportunity measures, demographic characteristics, or neighborhood-level statistical controls when neighborhood-level criminal opportunity measures are accounted for, and also considering that there is no change in the Pseudo R^2 across these models, the overall conclusion is that there is limited support to the context hypothesis, as was the case with non-imputed data. These findings will be discussed in more detail in Chapter 6 below.

SUMMARY

This chapter presented bivariate and multivariate analyses that examined the extent and nature of racial/ethnic differences in violent victimization risk. The results presented above are summarized in Table 5.12 below. Bivariate results showed that the risk of violent victimization differs significantly by race/ethnicity, and specifically, Black and Hispanic youth were twice as likely as their White counterparts to be violently victimized. Multivariate results indicated that these disparities in violent victimization risk still existed even after controlling for demographic variables (i.e., age, gender, family income, immigrant status, and prior violent victimization).

To better understand the mechanisms that underlie these disparities, this chapter presented multivariate analyses that tested three alternative hypotheses developed from LRAT: mediation, moderation, and context. The analyses revealed weak support to the mediation hypothesis, showing that although criminal opportunity measures are generally associated with violent victimization, they failed to eliminate the observed victimization disparities. There was mixed support to the moderation hypothesis. Although the relationship between two measures of guardianship (i.e., single parent and family monitoring) and violent victimization was contingent

upon an individual's race/ethnicity, accounting for these effects did not equalize youth's differential risks of violent victimization. Finally, the analysis revealed no support to the context hypothesis, because none of the neighborhood-level indicators of criminal opportunity significantly affected victimization risk. Therefore, the analyses provided mixed evidence as to the research questions described in Chapter 1. The next chapter will synthesize these results and will discuss them in more depth, including: (1) how they relate to the research questions; (2) their theoretical and practical implications; and (3) how they can inform future research.

Table 5.12. Summary of Results on the Extent and Nature of Racial/Ethnic Differences in Violent Victimization

Research Question	Non-Imputed Data	Imputed Data
Extent of racial/ethnic differences on violent victimization		
1) Are there significant differences in the rates of violent victimization between non-Hispanic Blacks, Hispanics, and non-Hispanic Whites?	Yes	Yes
Nature of racial/ethnic differences on violent victimization		
<i>Mediation Hypothesis</i>		
2) Is the relationship between race/ethnicity and violent victimization partially or largely mediated by individual-level indicators of criminal opportunities?	No	No (Generally)
<i>Moderation Hypothesis</i>		
3) Does race/ethnicity significantly moderate the relationship between criminal opportunities and violent victimization?	Yes	Yes
<i>Context Hypothesis</i>		
4) In addition to indicators of individual-level criminal opportunities, do neighborhood-level indicators of criminal opportunities account for any differences in violent victimization by race/ethnicity?	No	No

Chapter 6

DISCUSSION

This chapter discusses the results of analyses performed in this dissertation to clarify the mechanisms that underlie racial/ethnic disparities in adolescent violent victimization. First, the chapter summarizes the results presented in Chapter 5 and discusses how they inform the research questions proposed in Chapter 1 regarding hypothesized mediation, moderation, and contextual effects on adolescent violent victimization. Second, the chapter describes the theoretical and practical implications of the results, with emphasis on ways in which the underlying theoretical approach, LRAT, may be revised to better capture differences among individuals of various racial/ethnic groups that influence victimization risk. Third, the chapter reviews the limitations of the study, and finally, it concludes by offering some directions for future research.

SUMMARY OF RESULTS

Extent of Race/Ethnicity Disparities in Violent Victimization

The first research question proposed in this dissertation, as described in Chapter 1, was whether there are significant differences in the prevalence of violent victimization between youth of different racial/ethnic backgrounds. While decades of criminological research have shown that racial minorities, especially non-Whites, are more likely to experience violence than Whites (Bastian, 1990; Catalano, 2005; Lauritsen and Heimer, 2010; Sampson and Lauritsen, 1997; Truman, 2011), few studies have examined the role of ethnicity, due to the lack of data to disaggregate between non-Hispanic and Hispanic respondents. In this respect, the PHDCN data offered a unique opportunity to answer this research question because it permitted disaggregating

the prevalence of adolescent violent victimization across the three largest racial/ethnic groups in the U.S: non-Hispanic Blacks, Hispanics, and non-Hispanic Whites.

The bivariate and multivariate analyses presented in Chapter 5 indicated that there are significant differences in violent victimization between youth of various racial/ethnic backgrounds, with minority youth being twice as likely to be violently victimized. Specifically, whereas 15.6% of Black adolescents and 13.3% of Hispanic adolescents in the PHDCN sample ($N=1,169$) reported having experienced a violent victimization in the past year, only 6.7% of their Whites counterparts did so. Multivariate analyses showed that these disparities in violent victimization risk persisted even after statistically controlling for other well-known demographic correlates of this outcome. In fact, the predicted probability of violent victimization was twice as high for Black and Hispanic adolescents as compared to White adolescents, holding age, gender, immigration status, family income, and prior violent victimization at mean/modal values for the sample.

These results are consistent with the previous literature that portrayed Black and Hispanic youth as the most violently victimized racial/ethnic groups. The results are similar to those of nationally representative surveys, including the NCVS (Truman, 2011), which showed that in 2010, the rate of violent victimization (number of incidents per 1,000 persons age 12 and older) was highest for non-Hispanic Blacks, followed by Hispanics, and non-Hispanic Whites (20.8, 15.6, and 13.6, respectively). Other estimates on the extent of violent victimization of young adults provided by the Youth Risk Behavior Surveillance System (YRBSS) from the CDC (Centers for Disease and Control Prevention, 2012) revealed that in 2011, the percentage of high school students injured in a physical fight in the past year was 5.7% of Black students, 5.5% of Hispanic students, and 2.8% of White students. The estimates of violent victimization reported

in this dissertation reflect a broader measure of violent victimization—and therefore are higher in magnitude—but generally correspond in relative terms to the YRBSS estimates. Overall, the results of this dissertation provide further evidence that adolescents of different racial/ethnic backgrounds are unequally exposed to violent victimization.

Beyond simply documenting the existence of racial/ethnic disparities in violent victimization, a key contribution of this dissertation is that it investigates possible mechanisms whereby these disparities occur. The dissertation theoretically articulated and empirically tested three plausible alternative hypotheses that may explain the race/ethnicity violent victimization disparities: a mediation hypothesis, a moderation hypothesis, and a context hypothesis. While the concept of race/ethnicity is central to these hypotheses, each hypothesis postulates a different mechanism to connect race/ethnicity with violent victimization. The results, as they pertain to each of these three hypotheses, are summarized in the following sections.

Mediation Hypothesis

The second research question posited in this dissertation was whether the relationship between race/ethnicity and violent victimization was partially or largely mediated by individual-level indicators of criminal opportunities. Chapter 3 outlined a mediation hypothesis, drawing from LRAT (Cohen and Felson; 1979; Cohen et al., 1981; Hindelang et al., 1978), which offers one of several explanations for the race/ethnicity disparities in violent victimization documented in Chapter 2. This hypothesis proposes that the effects of individual demographic characteristics, in this case, race/ethnicity, on violent victimization are mediated by criminal opportunities. Essentially, this is to say that the causal mechanism that connects race/ethnicity with violent victimization is an indirect one. Race/ethnicity is closely intertwined with criminal opportunities, and criminal opportunities are seen as the most proximate influence on violent

victimization. This is clearly articulated by Cohen et al. (1981), who contend that holding constant four key indicators of criminal opportunities (i.e., exposure, guardianship, proximity, and target attractiveness) race will not have any direct effects on victimization, or in other words, that disparities in victimization risk across racial/ethnic groups will be attenuated or eliminated after statistically controlling for criminal opportunities. Although race/ethnicity is closely linked to these risky routines and lifestyles, it is the criminal opportunities facilitated by risky routines and lifestyles—not race/ethnicity itself—that ultimately affects individuals’ risk of violent victimization.

Previous studies that have directly or indirectly tested the mediation hypothesis indicate that there are residual effects of race/ethnicity on criminal victimization that remain after including measures of risky routines and lifestyles in statistical models (Burrow and Apel, 2008; Henson et al., 2010; Miethe et al., 1987; Schreck and Fisher, 2004; Wilcox et al., 2009). A limitation of these studies, however, is that they do not provide formal tests of mediation (for an exception, see Bunch, Clay-Warner, and Man-Kit, 2012). This dissertation overcame this limitation by conducting a formal test of the mediation hypothesis using the product-of-coefficients test (MacKinnon, 2008).

Results from the mediation analyses presented in Chapter 5 offer mixed support to the mediation hypothesis. For both imputed and non-imputed data results, criminal opportunity measures were significantly related to violent victimization, but failed to fully mediate the effects of race/ethnicity on violent victimization. Specifically, initial analyses based on two-stage regression models of violent victimization showed that the coefficients for Black and Hispanic were statistically significant in Model 1, which included race/ethnicity and control variables but excluded criminal opportunity measures. In Model 2, after the addition of criminal opportunity

measures, several variables, particularly those measuring exposure to motivated offenders—such as having more deviant peers, driving around with friends, and hanging out with friends more often—were significantly related to violent victimization. These results support LRAT in the general sense that youth who partake in risky lifestyles experience more violent victimization. But the results are contrary to the mediational component of LRAT, as the coefficients for Black and Hispanic remained statistically significant after adding the criminal opportunity measures. Further, a formal mediation test that decomposed the total effects of race/ethnicity between direct and total indirect effects showed that race/ethnicity had direct and significant effects on violent victimization, whereas the total indirect effects (through criminal opportunities) were not statistically significant, with the exception of the significant total indirect effects among Hispanic adolescents found with imputed data.

In sum, supporting prior studies, this dissertation's findings showed persistent race/ethnicity effects on violent victimization that are unaccounted for by criminal opportunities. These findings suggest that criminal opportunities, as measured, are at best weak mediators of the race/ethnicity-violent victimization relationship. However, as will be discussed under the theoretical implications below, mediation analyses uncovered interesting pathways that connect race/ethnicity with violent victimization.

Moderation Hypothesis

The third research question presented in this dissertation was: Do individual-level indicators of criminal opportunities have the same effect on violent victimization across race/ethnicity groups? That is, does race/ethnicity significantly moderate the relationship between criminal opportunities and violent victimization? These questions concern possible moderation effects that may explain why Black and Hispanic adolescents are at greater risk of

violent victimization than White adolescents. As described in Chapter 3, the moderation hypothesis posits that opportunistic lifestyles are closely related to the risk of violent victimization, as predicted in LRAT, but their influence may differ across racial/ethnic groups. Moderation implies that the mechanism that connects race/ethnicity with violent victimization is an interactive one: the effects of individual-level opportunity indicators of exposure, target attractiveness, and guardianship, on violent victimization may differ across racial/ethnic groups. According to this logic, adding measures that capture the interaction(s) between race/ethnicity and criminal opportunities to statistical models should attenuate or eliminate the disparities in victimization risk across various racial/ethnic groups.

Previous studies have found some support for moderation or interaction effects on personal victimization (Henson et al., 2010; Miethe and McDowall, 1993; Popp and Peguero, 2011; Tillyer et al., 2010; Wilcox Rountree et al., 1994; Wilcox et al., 2003; Wilcox et al., 2009), although fewer studies have examined race/ethnicity-conditioned effects in particular (for exceptions, see Like-Haislip and Warren, 2011; Peguero, Popp, and Koo, 2011). A limitation of this body of work is the limited theorizing as to why moderation effects may occur. This dissertation extended previous work by articulating the sociocultural differences across racial/ethnic groups that provide a theoretical foundation as to why opportunities for victimization might have differential effects across racial/ethnic groups, and by providing a formal test of the proposed interaction effects.

The results of this dissertation provide modest evidence of moderation effects in the relationship between race/ethnicity and violent victimization, both with imputed and non-imputed datasets. In particular, two measures of guardianship—being raised by a single parent and family monitoring—influenced violent victimization differently for Hispanic and White

adolescents. Being raised by a single parent was positively and significantly related to violent victimization risk among Hispanic adolescents, suggesting that adolescents raised by a single parent have a greater risk of violent victimization than those raised by both parents. This is consistent with the expectation of LRAT that adolescents being raised by a single parent are presumably subject to less guardianship, an expectation that has received some empirical support (Lauritsen, 2003).

In contrast, being raised by a single parent was negatively and significantly related to violent victimization among White adolescents, indicating that adolescents raised by a single parent experienced less violent victimization than those raised by both parents. This finding, which goes counter to the tenets of LRAT, may have possibly resulted from a greater engagement of adolescents in home-related obligations (e.g., care of younger siblings, chores) in single-parent families, compared to two-parent families, which affords them some protection from violence outside the home. Another possibility is that two-parent families have more resources that facilitate a more frequent participation of their children in after-school programs, especially have more time to take their children to such places, as compared to single-parent families. To the extent that opportunities for violent victimization arise in these after-school and away-from-home activities, the victimization risk may be greater for youth from two-parent families. Given the implications of these findings for the role that families play to reduce violent victimization of youth, future studies should revisit this issue.

On the other hand, this dissertation found that more family monitoring was associated with less violent victimization among Hispanics adolescents. Again, this is consistent with the expectation of LRAT that greater monitoring indicates more capable guardianship, which in turn, reduces the likelihood of victimization. In contrast, family monitoring was not significantly

related to violent victimization among White adolescents, a finding not supportive of LRAT. Previous studies have reported mixed evidence for the effect of family monitoring on violent victimization, with some evidence that it operates as a protective factor (Esbenzen et al., 1999; Reid and Sullivan, 2009; Spano et al., 2011), and other evidence that it is either unrelated or positively related to victimization (Gibson and Miller, 2010; Tillyer et al., 2011; Zimmerman and Messner, 2013). Thus, it is possible that the incongruent results in prior studies are partly due to differences in their sample composition, as family monitoring appears to have different effects on victimization depending on the racial/ethnic group being examined.

The findings on the importance of family monitoring on violent victimization among Hispanics not only support the moderation hypothesis, but are consistent with a well-established literature on the concept of familism. As discussed in Chapter 3, familism is “a strong identification and attachment of individuals with their families” (Sabogal et al., 1987, p.398). Familism reflects a combination of loyalty, respect, reciprocity, solidarity, and contact within the family, both with immediate as well as with extended family members (i.e., uncles, aunts, cousins, etc). Hispanic families are portrayed as highly familistic, in that nuclear and extended family members engage in a continuous exchange of emotional and instrumental support to one another (Keefe et al., 1979). Previous studies have generally shown that Hispanics are more “familistic” than Blacks and Whites (Keefe, 1984; Mindel, 1980; Sabogal et al., 1987).

Besides simply being a characteristic of Hispanic families, familism has implications for the exercise of family monitoring—greater familism may lead to enhanced monitoring of children. Essentially, the idea is that Hispanics engage a greater network of family and kin and participate in frequent contacts within this network on a regular basis, which in turn will facilitate the exercise of control over children, both parental and non-parental. For example,

parents can rely on this extended familistic network to watch their children, and even extended family members can exercise effective controls on children, because of their stronger connection with the children. To date, there is some evidence that familism influences parental monitoring (Romero and Ruiz, 2007), although less is known about non-parental monitoring. Thus, it is very plausible that the greater familistic orientation of Hispanic families enhances parental controls on children, which in turn influences victimization. This dissertation showed that the link between family monitoring and violent victimization exists and is particularly strong among Hispanic youth, but it remains to be investigated what, if any, is the role of familism as an exogenous influence on family monitoring.

Despite the evidence of some significant race/ethnicity-moderated effects as shown above, it was also found that these moderating effects are limited in scope and in their potential to explain violent victimization disparities. First, only two out of 32 potential interaction terms were statistically significant, which represents only a small portion of all the possible moderating influences hypothesized in line with prior studies. Second, the addition of these interaction effects to statistical models did not consistently reduce the race/ethnicity disparities in violent victimization across imputed and non-imputed datasets. For non-imputed data, the addition of the single parent*Hispanic and family monitoring*Hispanic interaction terms to the regression model eliminated the racial/ethnic disparities in violent victimization. But this was not the case in the model with imputed data, where the coefficients for Black and Hispanic remained statistically significant after including those interaction terms.

Taken together, these findings support the notion that the effects of guardianship on violent victimization are contingent on race/ethnicity, although modestly. Specifically, being raised by a single parent is a risk factor for Hispanic adolescents, but it is a protective factor for

White adolescents. In turn, family monitoring is a protective factor for Hispanic adolescents, but plays little role on the violent victimization of White adolescents. Yet, the notion that the racial/ethnic disparities in violent victimization are totally eliminated after including moderation effects is not supported. In other words, although the pathways that connect opportunities and violent victimization are race/ethnicity-specific, differential pathways are not the sole explanation to the existence of disparities in victimization risk.

Context Hypothesis

The fourth research question raised in Chapter 1 was whether measures of neighborhood-level criminal opportunities account for the disparities in violent victimization across racial/ethnic groups. This question is related to the context hypothesis, which essentially argues that the finding that racial/ethnic minorities experience greater risks of violent victimization is simply a reflection of the greater residential concentration of these groups in neighborhoods that offer ample criminal opportunities. Because Black and Hispanic adolescents are more likely than White adolescents to live in neighborhoods characterized by social disorganization and high crime rates, it follows that they will be in closer proximity to offenders, and therefore more prone to be victimized. This alternative way to understand race/ethnicity disparities in violent victimization considers the disparities as a byproduct of the social ecology where minorities reside. Unlike the mediation and moderation hypotheses described above, the context hypothesis is more in line with the notion that the race/ethnicity-violent victimization relationship is spurious, as individual-level race/ethnicity is confounded with neighborhood-level criminal opportunities. Hence, it is expected that once neighborhood-level measures of criminal opportunities are included in multivariate regression models, the race/ethnicity disparities in violent victimization will be attenuated or eliminated.

Despite a growing literature demonstrating the role of neighborhood-level criminal opportunities on the etiology of criminal victimization in general (Lauritsen and White, 2001; Maimon and Browning, 2012; Miethe and McDowall, 1993; Sampson and Wooldredge, 1987; Sampson et al., 1997; Wilcox et al., 1994) few studies to date have examined the extent to which neighborhood characteristics such as concentrated disadvantage, social disorganization, and crime rates, account for the race/ethnicity disparities in violent victimization (for an exception, see Lauritsen and White, 2001). The current dissertation added to this growing literature by proposing a context hypothesis as an explanation for the race/ethnicity disparities in violent victimization risk—clearly pointing out how neighborhood contexts differ by race/ethnicity and how these differences can alter victimization risk—and empirically testing this hypothesis.

The results presented in Chapter 5 offered weak support to the context hypothesis. First, across imputed and non-imputed data analyses, race/ethnicity was significantly related to the risk of violent victimization, even after including measures of neighborhood-level criminal opportunities and neighborhood-level control variables. Specifically, the coefficients for Black and Hispanic were statistically significant and positive, indicating that compared to White adolescents, minority adolescents were significantly more likely to experience violent victimization. Thus, the addition of measures of the neighborhood context failed to eliminate or attenuate the racial/ethnic disparities in violent victimization, as documented in Chapter 5.

Second, one of the three neighborhood-level statistical controls, concentrated disadvantage, was significantly and negatively associated with the risk of violent victimization, a result that was obtained with both imputed and non-imputed data. Thus, contrary to theoretical expectations, adolescents who resided in neighborhoods with greater concentrated disadvantage were less likely to be victims of violence.

A possible explanation for this seemingly disparate finding is that adolescents who reside in disadvantaged neighborhoods perhaps have adapted to the neighborhood conditions by relying on protective behaviors more. For example, these youth may presumably be more “streetwise” than youth residing in less disadvantaged areas; they may be more alert to cues that indicate the possibility for a violent encounter, and may react to those cues accordingly, as to minimize their victimization risk. Recent work by Gibson, Fagan, and Antle (2014) examined the role of “street efficacy” (i.e., the perceived ability to avoid violent confrontations and be safe in one’s neighborhood) in preventing violent victimization across Chicago neighborhoods of various levels of concentrated disadvantage, using the PHDCN data. The authors found that in neighborhoods of high concentrated disadvantage, youth who had more street efficacy experienced less violent victimization.

Gibson et al.’s (2014) findings offer a way to make sense of the paradoxical effects of concentrated disadvantage on violent victimization reported in Chapter 5. Specifically, the finding that residing in a neighborhood with higher concentrated disadvantage was associated with a lower risk of violent victimization could have emerged because in disadvantaged contexts, youth may have adapted by developing greater levels of street efficacy. Street efficacy, measured as the ability to avoid fights, avoid encounters with gangs, and a general ability to be safe in the neighborhood, is a valuable attribute to have when residing in areas of high violence (Gibson et al., 2014). The idea is that more neighborhood disadvantage is associated with more street efficacy, which in turn is linked with lower violent victimization risk. Although this street efficacy argument is a post-hoc explanation to the paradoxical results obtained here and is untested in this dissertation,⁴⁵ it is a plausible one, especially because Gibson et al. obtained this

⁴⁵ Gibson et al.’s (2013) argument could not be replicated in this dissertation, due to the lack of the particular measures of street efficacy from the PHDCN dataset (Self Perceptions Instrument, administered at Wave 3).

finding with the same dataset employed here. It remains to be seen whether this argued connection between concentrated disadvantage, street efficacy, and victimization risk, is replicated with samples beyond the PHDCN.

Third, it was found that the effects of being Black and of being Hispanic on violent victimization were suppressed by two neighborhood-level statistical control variables: concentrated disadvantage and immigrant concentration. These suppression effects were illustrated in Chapter 5. In short, they originated because of the zero-order correlations between being Black and residing in an area of high concentrated disadvantage ($r = 0.58$), and between being Hispanic and living in a neighborhood with high immigrant concentration ($r = 0.60$). When concentrated disadvantage and immigrant concentration were held constant, the effects of race/ethnicity on violent victimization became stronger. Substantively, this indicates that Black and Hispanic youths are at higher risk of violent victimization than Whites, but they are especially so when considering the social context of their neighborhoods—characterized by higher levels of concentrated disadvantage and immigrant concentration. Thus, these results highlight the need to control for neighborhood-level characteristics when estimating violent victimization models, as doing so provides a more accurate estimate of true the effect of race/ethnicity. The remaining neighborhood-level statistical control variables, residential stability and immigrant concentration, were not consistently related to violent victimization risk across imputed and non-imputed data models.

Fourth, and directly linked to the context hypothesis, the two neighborhood-level measures of proximity to motivated offenders (i.e., perceived neighborhood disorder and perceived neighborhood violence) were unrelated to the risk of violent victimization, and not surprisingly, failed to alter the race/ethnicity disparities observed for this outcome. This was also

the case for the neighborhood-level measure of guardianship (i.e., neighborhood informal social control). Given that these results were generally consistent between analyses with imputed and non-imputed data, the overall conclusion is that violent victimization is not as influenced by neighborhood-level criminal opportunities as the context hypothesis posits.

The poor role that neighborhood-level criminal opportunity measures played as predictors of violent victimization in this dissertation is an unusual finding, given the accumulated empirical literature that has shown much evidence that the risk of victimization is influenced by community characteristics (Kennedy and Forde, 1990; Maimon and Browning, 2012; Miethe and McDowall, 1993; Sampson et al., 1997; Wilcox et al., 1994). Among the reasons that could explain the limited neighborhood effects found here, a key issue may be the definition of community employed in the PHDCN, as compared to previous studies of victimization. The majority of previous multilevel studies of victimization have employed a smaller geographical unit for “neighborhood” or “community”, with the most commonly used unit being census tracts.

In the PHDCN, as described in Chapter 4, two or more census tracts were combined to form larger geographical units or “neighborhood clusters”, and adolescents were sampled from these units. One of the reasons for the null neighborhood criminal opportunity effects reported here may be the use a larger geographical unit, such as neighborhood cluster. The environmental conditions that facilitate victimization may change not only from block to block within a neighborhood, but more so from one census tract to another. Measuring criminal opportunities at the neighborhood cluster level may be too far removed from the micro-places and situations that enable victimization. For example, the risk of victimization may be affected by the presence of disorderly conditions in the blocks in closer proximity to areas of daily routine activities, but that effect would be expected to decline with distance from those areas. Unfortunately, the PHDCN

dataset did not allow for disaggregating the neighborhood measures at a lower geographical unit such as census tract. This issue remains a challenge for researchers using the PHDCN dataset to examine processes that benefit from a more narrow definition of neighborhood.

Finally, it is important to note that the nonsignificant neighborhood criminal opportunity effects on victimization reported in this dissertation are not unusual when compared to the results obtained by other PHDCN studies. A few studies using the PHDCN dataset have found weak or no neighborhood effects when modeling violence as an outcome (Fagan and Wright, 2012; Gibson and Ventura-Miller, 2010). This issue is further discussed in the limitations section below, which describes how the sampling design of the PHDCN study could have played a role on the limited variability observed across neighborhoods for the outcome variable. The next section discusses the theoretical and practical meaning of these findings, along with the findings on mediation and moderation described above.

IMPLICATIONS

Theoretical Implications

Overall, the findings of this dissertation demonstrate that the significance of race/ethnicity for violence victimization is more nuanced than what was originally proposed by LRAT. Most notably, two departures from the theory warrant discussion: (1) the marginal or subsidiary role of race/ethnicity; and (2) the racial/ethnic invariance thesis of victimization.

First, LRAT maintains that the observed correlation between race/ethnicity (and other demographic characteristics such as age, gender) and victimization is simply due to a greater involvement of certain race/ethnicity groups in routines and lifestyles that create ample criminal opportunities. LRAT underplays the significance that race/ethnicity as a concept separate from opportunities. In other words, race/ethnicity has a limited influence on victimization: it operates

only as a preceding influence on opportunistic routines and lifestyles. Second, LRAT implies that the most proximate causes of criminal victimization are criminal opportunities (i.e., exposure, proximity, guardianship, and target attractiveness), and that these causes are essentially the same for all racial/ethnic groups; thus LRAT proposes a race/ethnicity invariance thesis of victimization.

Contrary to these two theoretical expectations, the analyses presented in this dissertation showed that race/ethnicity matters beyond criminal opportunities, and revealed multiple ways whereby criminal opportunities operated differently on violent victimization, depending upon race/ethnicity. These two departures from theory indicate possible caveats to the hypothesized role of race/ethnicity as originally formulated in LRAT, but also suggest ways in which the theory can be revised to better reflect the current significance of race/ethnicity on victimization.

Consider, for example, the case of the mediation effects examined in this dissertation. According to the arguments presented by opportunity theorists, discussed in Chapter 3, the effect of demographic characteristics—such as income, race, and age—on victimization was driven by “the mediating role played by four factors: exposure, guardianship, proximity to potential offenders, attractiveness of potential targets, and definitional properties of specific crimes themselves” (Cohen et al., 1981, p. 507). As Hindelang et al. (1978, p.246) state: “In terms of our model, these relationships between demographic variables and these diverse consequences [including victimization], can be attributed to differences in lifestyle.”

In addition to postulating that the effects of demographic characteristics on victimization are mediated by criminal opportunities, Cohen et al. (1981) and Hindelang et al. (1978) have similar positions as to whether criminal opportunities mediate all of the race/ethnicity effects (total mediation), or only part of those effects (partial mediation). Cohen et al.’s argument is in

line with the notion of total mediation, as summarized in the statement that “holding lifestyle and proximity constant, income, race, and age *will not have direct partial effects* on the risk of assault victimization” (Cohen et al., 1981, p. 513; emphasis added). Hindelang et al.’s arguments similarly suggest total mediation, as they write: “If such refined measures of exposure were found unrelated to personal victimization, or if demographic characteristics were still found to be substantially related to personal victimization after such refined measures of exposure were controlled, then the model would be untenable as currently postulated” (Hindelang et al., 1978, p. 270). Thus, to have race/ethnicity-mediated effects, according to early LRAT theorists, is to have total mediation—the effects of race/ethnicity on victimization are eliminated when criminal opportunity measures are included in statistical models. However, this assumption is challenged by the results of this dissertation, and by multiple previous studies that have empirically demonstrated race/ethnicity residual effects on violent victimization that remain unaccounted for criminal opportunities (Burrow and Apel, 2008; Henson et al., 2010; Schreck and Fisher, 2004; Tillyer et al.; 2011; Wilcox et al., 2009).

One way to account for these persistent race/ethnicity effects is to conceptualize the mediating effects of criminal opportunities as partial mediation rather than total mediation. According to this view, LRAT should perhaps be revised to allow for the possibility that demographic characteristics may have some independent effect on victimization. For example, recently emerging empirical studies that have examined the role of criminal opportunities as mediators of gender effects of on victimization have begun to show that mediation effects portrayed by LRAT are rarely 100%, that is, complete (Henson et al., 2010). In a recent study that formally tested the mediating effects of routines and lifestyles using a structural equation modeling approach, Bunch, Clay-Warner, and Man-Kit (2012, p.15) reported: “contrary to

theoretical predictions, in only one instance did routine activities entirely mediate the relationship between demographics and victimization.” Another reason for considering mediation as partial is that statistically, mediation effects involve a complex series of paths, and traveling these paths may alter outcomes in ways that the theory may not capture at first. Finally, because empirical measures of the key concepts of LRAT are often hindered by measurement problems (Madero-Hernandez and Fisher, 2013), perhaps it is more realistic to conceptualize mediation effects in LRAT as partial rather than total, because to have total mediation would require to have little measurement error to fully capture the theoretical concepts of interest.

Another issue is that the racial/ethnic-invariance thesis implicit in LRAT may need revision in light of the current findings. The mediation analyses above showed that the pathway that connects being Black with violent victimization is not the same as the one that connects being Hispanic with violent victimization. Among Black adolescents, their greater involvement in three risky routines and lifestyles (driving around with friends, hanging out with friends, and self-reported violent offending) was a partial component as to why they experienced greater violent victimization risk than White adolescents. Conversely, compared to White counterparts, Hispanic adolescents’ characteristics and lifestyles were more protective than risky (having higher self-control and hanging out with friends less often), and yet, these youth were still more likely than White youth to be violently victimized. The moderation analyses similarly showed that the effect of guardianship on violent victimization among Hispanic youth was more accentuated and more closely aligned with LRAT’s expectations than the effect of guardianship on violent victimization among White youth.

Substantively, these results show that the impact that opportunistic routines and lifestyles have on victimization is different between Black, Hispanic, and White adolescents. Although

these findings are in need of replication, this initial evidence suggests that LRAT could possibly be revised to better reflect the role of race/ethnicity, including both (1) different pathways in the transmission of mediated effects by race/ethnicity, as well as (2) race/ethnicity-moderated effects. This revision would not only bring the theory more in line with this dissertation's findings, but would correspond with the recently accumulated evidence of moderation effects on criminal victimization, especially gender-moderated effects (Lauritsen and Carbone-Lopez, 2011; Popp and Peguero, 2011; Tillyer et al., 2010; Zaykowski and Gunter, 2013), as well as race/ethnicity-moderated effects (Like-Haislip and Warren, 2011; Peguero et al., 2011; Peguero and Popp, 2012).

These revisions to LRAT have the potential to strengthen the theory by making it a more comprehensive and integrated approach to explain criminal victimization. Integrated theories are desirable because they assume that the outcome of interest—in this case violent victimization—is a complex phenomenon that is best explained by different theories that have common assumptions. While integrated approaches rooted in LRAT have been previously developed, most notably in Miethe and Meier's (1994) *Integrated Theory of Offenders, Victims, and Situations*, and in Wilcox and colleagues' (2002) *Dynamic and Multicontextual Criminal Opportunity Theory*, this dissertation highlights the need to consider additional variables in such integrated models. The challenge for researchers will be to identify unmeasured influences that explain why race/ethnicity continues to influence violent victimization, even after accounting for criminal opportunities.

One perspective that can be integrated within the LRAT to enrich our understanding of violent victimization disparities is the cultural perspective. Cultural differences between various racial/ethnic groups may possibly affect victimization outcomes, independently of their influence

on routines and lifestyles. Cultural differences between these groups may affect victimization risk through their connection with unmeasured aspects of the criminal opportunity, one of them being target attractiveness. There are multiple reasons why race/ethnicity may alter offenders' perceptions of target attractiveness. These include, for example, the greater reluctance of Blacks and Hispanics to report crimes to the police (Lai and Zhao, 2010; Menjivar and Bejarano, 2004; Rennison, 2007; Rennison, 2010), and the large number of undocumented immigrants among the Hispanic population, immigrants who may be unable to appropriately interpret cues that may indicate possible escalation of a situation into violence (Shihadeh and Barranco, 2010).

These cultural differences may shape the perceptions of motivated offenders, who may come to see Blacks and Hispanics as more suitable targets as compared to Whites, and which in turn may lead to a greater violent victimization risk among racial/ethnic minorities. However, these cultural differences are difficult to measure and incorporate in statistical models; indeed the measurement of target attractiveness in LRAT has posed challenges for researchers (Madero-Hernandez and Fisher, 2013).

A more controversial possibility is that there are cultural differences between race/ethnicity groups with respect to their attitudes towards violence and their responses to violent confrontations. In this case, cultural differences may bring about a complex set of pathways, some of which may increase victimization risk, but some of which may decrease it.

On the one hand, cultural differences may make racial/ethnic minorities more likely than Whites to respond violently to personal affronts. As Elijah Anderson (1999) explains in *The Code of the Street*, individuals who reside in areas of concentrated disadvantage—areas that primarily concentrate racial/ethnic minorities—uphold a street code that contains attitudes promoting and justifying the situational use of violence. At the crux of the street code is the

need to be willing and capable of responding violently when challenged, because being respected in the streets is a form of social capital in these poor communities. In areas where the street code is prevalent, individuals may see violence as a legitimate way to handle social interactions, and may resort to it at a higher rate. There is evidence that adolescents who uphold street code values experience more victimization, even after controlling for demographic correlates, prior victimization, and neighborhood characteristics (McNeeley, 2013; Stewart, Schreck, and Simons, 2006). Given the preliminary evidence that racial/ethnic minorities are more likely to adopt attitudes and values supportive of violence (Piquero et al., 2012), this may explain the persistent finding that racial/ethnic minorities experience violence at a higher rate than Whites.

On the other hand, the argument posited by Anderson (1999) suggests that adopting the street code is a way to promote one's safety from violence. Thus, to the extent that racial/ethnic groups are more likely to uphold street code attitudes, this would reduce their victimization risk. Although, there is limited empirical support to this idea that street code values protect from victimization, this is compatible with the finding in this dissertation that concentrated disadvantage reduces violent victimization, although the mechanism proposed by Anderson is not the same as the one of street efficacy proposed above.

All in all, this discussion illustrates that although it is possible that cultural differences can play a role on the etiology of violent victimization, it is unclear whether culture matters as a risky or as a protective factor against violent victimization. The integration of cultural perspectives in this area seems to have some potential to clarify the sources of persistent race/ethnicity disparities in violent victimization; however, these arguments are not tested in this dissertation and require further scrutiny.

Practical Implications

As noted in Chapter 1, clarifying the mechanisms underlying violent victimization disparities across racial/ethnic groups is an important contribution for criminal justice practitioners, because knowledge of those mechanisms can guide their decisions as to which types of policy programs and interventions may work best to reduce these disparities. The findings of this dissertation, which demonstrate that the pathway that connects race/ethnicity with violent victimization through criminal opportunities is different for adolescents of various racial/ethnic backgrounds, underscores the need to include race/ethnicity-informed practices within programs that seek to reduce violent victimization, especially among youth.

Consider, for example, programs that seek to educate potential victims on how to reduce opportunities for crime. One such program is the Celebrate Safe Communities (CSC) (National Crime Prevention Council, 2014), a national initiative that facilitates partnerships between local law enforcement and local organization, to educate the public on situational crime prevention measures through media campaigns. General programs such as CSC, while promising for reducing victimization risk generally, do not differentially target the risk factors of each racial/ethnic group, and therefore may have more limited effectiveness. For instance, the findings in Chapter 5 suggest that the general strategy of encouraging adolescents to partake less in activities that increase their exposure to offenders may be less effective for Hispanic adolescents, who generally engage less in these activities to begin with.

In contrast, because guardianship matters more for Hispanic adolescents, as seen in Chapter 5, programming components that educate adolescents and their families on measures to increase guardianship may be more promising for Hispanic adolescents than for their White counterparts. An example of this type of program is *Bringing the Bystander*, an intervention

curriculum that seeks to increase awareness of risky behaviors and precursors of victimization among bystanders (Banyard, Eckstein, and Moynihan, 2010). Although this program is targeted to sexual victimization in college campus and high school settings, its principles with respect to the exercise of active intervention in risky situations can be extended to violent victimization. Other programs that teach adolescents to be vigilant and intervene in situations where a peer is being victimized, such as bullying prevention programs (Polanin, Espelage, and Pigott, 2012), can be used as a foundation to develop victimization prevention practices that are responsive to the risk of various racial/ethnic groups. These are simple examples of ways in which guardianship may be enhanced among adolescents and extended beyond the family context. However, it is important to note that the findings of this dissertation primarily underscore the role of parental monitoring over peer monitoring in the case of Hispanic youth.

Another example of a race/ethnicity-informed prevention strategy, in this case applied by law enforcement, was implemented by the Charlotte-Mecklenburg Police Department. This police department developed a problem-oriented policing response to address a surge in street robberies of Hispanics, many of which were facilitated by victims' routine of carrying cash (Monk et al., 2010). The strategy, which contained a variety of situational crime prevention measures, educated Hispanic residents in affected areas about the importance of using a bank account to avoid carrying cash. Clearly, this type of strategy was race/ethnicity-informed, and would not have had the same positive effects in a different population other than Hispanics.

In short, the largest practical implication for violent victimization prevention, as informed by the results of this dissertation, is that prevention programs need to be responsive to subjects' race/ethnicity. This is similar to already established practices that offer gender-responsive programming in the context of correctional rehabilitation. By targeting race/ethnicity-specific

ways in which victims are at risk, these programs can be more promising at reducing victimization because they address key issues faced by minorities. The *Underserved Teen Victims Initiative*, recently launched by the National Crime Prevention Council, recognizes this and provides support for local organizations to develop outreach programs to “raise awareness of teen victimization and identify promising strategies for reaching and supporting underserved populations of teen victims” (National Crime Prevention Council, 2014). However, this is not to say that awareness campaigns that advertise individual crime prevention measures may be ineffective generally, but the idea is that possible effects may be accentuated if the race/ethnicity-specific risk factors are targeted accordingly.

In conclusion, more research is needed to fully uncover the reasons behind the persistent disparities in violent victimization among adolescents of different racial/ethnic groups. The findings of this dissertation highlight the salience of moderation effects, therefore suggesting that race/ethnicity-informed programs and policies have the most potential to help reduce violent victimization among minorities. The findings also underscored that some criminal opportunities are significantly related to violent victimization, so that programs targeting risky routines and lifestyles hold promise in making adolescents safer from violence. The caveat to this is that because criminal opportunities are generally weak mediators of the race/ethnicity effects, encouraging youth to engage less in risky routines and lifestyles will not be the answer if the goal is to make adolescents of Black and Hispanic as safe as White youth, or to equalize their risk.

STUDY LIMITATIONS

The current investigation has some limitations that must be acknowledged. First, there are a number of possible measurement limitations, beginning with the use of a composite

measure of violent victimization. Violent victimization was measured by combining four survey items, including: having been hit/slapped/punched, attacked with a weapon, shot at, or seriously threatened with violence (including weapon threats) during the previous 12 months. Given the low frequency with which adolescents reported these events, a decision was made to combine them into an overall count of violent victimization, and to employ a dichotomous measure (0=Non-victim; 1=Victim) instead of the continuous measure that was highly skewed. Although this was a sensible approach given the data limitations, it did not allow to examine the extent to which race/ethnicity and criminal opportunities affect the prevalence of disaggregated violent victimization types. Considering that the opportunity to commit a crime may differ based on the properties of specific crimes (Cohen et al., 1981), the use of a multi-item composite measure of violent victimization is less than ideal to unravel crime-specific risk factors of victimization. Further, due to the lack of a measure of property victimization in the PHDCN data set, the scope of this dissertation was limited to violent victimization.

Another measurement issue could be that the empirical indicators employed to measures the key concepts of LRAT were not comprehensive enough. As noted in Chapter 4, the empirical measures employed in this dissertation had close correspondence to the definitions of exposure, guardianship, proximity, and target attractiveness, and resembled those used in prior studies in this area (Meier and Miethe, 1993). However, the study included several dichotomous measures, particularly of exposure, which captured whether or not adolescents were exposed to a risky and/or protective lifestyle or routine, but did not distinguish their degree of exposure. In addition, although exposure, guardianship, and proximity were measured with multiple items, target attractiveness was measured with one item only—low self-control. Poor measurement of concepts is one of the chief reasons why mediation tests provide weak indirect effects generally

(Hayes, 2013), and in this case, could be one reason why the hypothesized effects of race/ethnicity on violent victimization were poorly mediated by criminal opportunities.

Measurement limitations are also important to the extent that they leave substantive questions that emerge during the course of a study unresolved. In this case, although the findings of the study clearly pointed to the salience of guardianship in the form of family monitoring, the empirical measure of monitoring was limited. This measure captured the levels of monitoring that adolescents were subject to by caregivers, rather than the reasons or nature of that monitoring. Yet, to the extent that there are differences in parenting styles by race/ethnicity, these differences will impinge upon the nature of monitoring that adolescents of various racial/ethnic groups receive. Knowing more about the nature of monitoring and its role on victimization across racial/ethnic groups can certainly help inform the curriculum of programs that seek to enhance family monitoring, but this issue could not be examined with the measures available.

One last measurement issue has to do with the conceptualization of race/ethnicity employed in this dissertation. Specifically, the measures available from the PHDCN data set permitted disaggregating between respondents in three of the largest racial/ethnic groups in the U.S: non-Hispanic Blacks, Hispanics, and non-Hispanic Whites. Although this disaggregated approach is preferable to the commonly used “Black-White” or “White-Nonwhite” comparisons in most of the extant research, it is somewhat simplistic. This conceptualization of race/ethnicity excludes other important groups, such as American Indians, who have been shown to be at high risk of violent victimization, and it also excludes Asians, who on the contrary, are the least at-risk among all race/ethnicity groups (Truman, 2001). Also, this conceptualization of race/ethnicity assumes a “panethnic identity” among members of various ethnic groups that may

disguise important differences. For example, there is much within-group variability among Hispanics, as persons of different nationalities bring with them different historical legacies (DiPietro and Bursik, 2012). In light of data limitations, such intricacies were left unexplored in this dissertation.

A second limitation of this dissertation was the large number of cases that had missing values for one or more of the study variables, which reduced the original sample by nearly 30%. This dissertation employed multiple imputation (Little and Rubin, 2002) to estimate the missing values using all information available in the data set, as to provide the most reliable parameter estimates and standard errors in statistical models. The robustness of the results and the fact that the same general patterns were observed both with imputed and non-imputed data lends support to the notion that the results presented were not affected by bias due to missing data. However, the underlying assumption on which multiple imputation and other missing data techniques rely—that the missing data are MAR or MNAR— cannot be fully tested and remains as a possible criticism of this study, as well as all studies with missing data.

Third, one of the most challenging aspects of the statistical analysis was the lack of statistically significant variation in the outcome variable, which did not allow for employing multilevel models. These models are increasingly utilized in victimization studies because is well-established that victims do not live in social vacuums, and the role of the neighborhood context on the etiology of victimization has been shown to extend beyond compositional effects. The use of a multilevel model would have permitted decomposing the variance in violent victimization between and within neighborhoods, but this was not a feasible approach in light of limited variability in the outcome.

Previous studies that have employed the PHDCN dataset to study victimization have also faced this issue (see Gibson and Ventura-Miller, 2010), but the reasons why there were similar levels of violent victimization across Chicago neighborhoods are not well known. The sampling design of the PHDCN could have something to do with this issue, as the sampled neighborhoods were not just a random sample of all Chicago neighborhoods, but instead were selected for study based on levels of SES and race/ethnicity mix, as described in Chapter 4. This sampling approach was employed to ensure that neighborhoods of all SES levels and race/ethnicity profiles were represented in the study. However, sampling neighborhoods in this way may not reflect the diversity in violent victimization across all Chicago neighborhoods, as adolescents in the sampled neighborhoods share similar characteristics. This issue may be even more relevant when studying violent victimization, which is a rare outcome to begin with. In any case, having limited variability in the outcome made it necessary to employ traditional regression models—rather than multilevel models—to estimate the effects of neighborhood characteristics. The use of this approach was statistically adequate given the circumstances (as discussed in Chapter 5), but fell short to test the truly contextual model posited by multicontextual opportunity theories.

Finally, it is essential to caution readers about the issue of external validity. The findings presented in this dissertation are based on a multistage sample of adolescents living in Chicago neighborhoods—primarily poor urban areas. As such, it is not possible to generalize these findings to adolescents residing in other cities, especially to suburban and rural areas. Indeed, the issue of external validity has been recently raised as a caveat to the growing neighborhood-level literature based on Chicago studies—including the PHDCN (Small, 2014).

A brief examination of the literature can provide some ideas as to whether the findings presented here could have been different if the study was conducted in other cities than Chicago.

On the one hand, the finding of a disparity in violent victimization between Blacks, Hispanics, and Whites has been reported in studies using nationally representative samples, as described in Chapter 2, and it is unlikely to be unique to Chicago. However, the *relative size* of the disparities could differ depending on the city studied. There is evidence that violence against Hispanics is greater in newly established immigrant-destination cities, as compared to traditionally high-immigrant cities such as San Diego, Los Angeles, or New York City (Shihadeh and Barranco, 2010), so that the disparities may be greater in these cities. On the other hand, the findings regarding the mediation and moderation hypotheses may hold similarly across cities, as these processes are not largely influenced by city-level differences. However, the findings regarding the contextual hypothesis could possibly differ, as Chicago has unique neighborhoods characteristics that may be reflected in the results—most notably a greater than average level of organizational isolation (Small, 2014), which can affect opportunities for victimization. In sum, more research is needed to establish whether the findings of this dissertation can be extrapolated to other urban cities in the U.S.

DIRECTIONS FOR FUTURE RESEARCH

There are multiple ways in which future research may expand upon the scope and findings of this dissertation. First, given the persistence of residual effects of race/ethnicity on violent victimization reported in Chapter 5, more research is needed to unravel possible unmeasured influences on violent victimization, and to determine the extent to which these unmeasured influences can account for enduring race/ethnicity effects. Cultural differences in street code values and in offenders' perceptions of target attractiveness, as outlined in the previous sections, are two possible avenues of exploration that future studies may consider.

In addition, given that family monitoring played a significant role to protect Hispanic adolescents from violent victimization, but not among Black or White adolescents, future studies can benefit from incorporating the concept of familism to better understand what makes family monitoring so important for Hispanics. This line of research will require collecting measures of familism, in addition to refined measures of family monitoring that capture both the levels and nature of monitoring. Of particular importance will be assessing the extent to which familism affects the type and degree of monitoring that adolescents receive, and how this potential familism-monitoring relationship is connected with victimization outcomes.

Second, more research needs to explore the extent to which the findings of this dissertation regarding suppression effects operating in the race/ethnicity-victimization relationship are unique to this sample or extend to other adolescent samples. Most notable are the suppression effects of protective routines and lifestyles on the effects of being Hispanic on violent victimization, and the suppression effects of neighborhood concentrated disadvantage and immigrant concentration on the effects of being Black and being Hispanic on violent victimization, respectively. To fully disentangle these effects, future studies must engage in mediation or path analyses that decompose total, direct, and indirect effects, using appropriate statistical techniques (Jose, 2013; MacKinnon, 2008). Such analyses can clarify the specific nature of the relationship between an independent variable, an intervening variable, and a dependent variable. Mediation is only one of three models in which these three variables may be connected; as MacKinnon et al. (2000) note, confounding and suppression are two alternative models in which these three variables may be connected. Investigation of mediation effects, which is a developing subject in the criminological literature, has tremendous potential to identify the causal process that brings about a particular outcome, and to offer an explanation of

that process. Variables playing the role of suppressors, despite being rarely mentioned in this body of research, are nevertheless important for forming explanations of the process that underlies violent victimization.

Third, and as a corollary to the limitations noted above, future studies need to further examine the intersection of race/ethnicity, criminal opportunities, and victimization with disaggregated forms of violence (e.g., robbery, assault, stalking, bullying), and also as applied to property victimization. Fourth, future studies must continue to expand a currently growing research that disaggregates ethnicity based on respondent's national origin, distinguishing immigrants and non-immigrants, as well as research that disaggregates immigrants by generational status (see Gibson and Ventura Miller, 2010; Peguero, 2009).

CONCLUSION

This dissertation took a closer look at the well-documented empirical finding that nonfatal violent victimization is more often experienced by minority adolescents, most notably Blacks and Hispanics. It articulated and tested three different hypotheses through which this occurs: a mediation hypothesis, a moderation hypothesis, and a context hypothesis. First, the mediation hypothesis, drawn from LRAT, indicates that criminal opportunities mediate the relationship between race/ethnicity and violent victimization, so that when these opportunities are accounted for, cross-racial/ethnic disparities should not be observed. Second, the moderation hypothesis posits that race/ethnicity affects victimization in conjunction with criminal opportunities, so that there are interaction effects between race/ethnicity and opportunities. Third, the context hypothesis specifies that the relationship between race/ethnicity and violent victimization is largely an artifact of the residential concentration of minorities in neighborhoods that offer abundant criminal opportunities. In all three accounts, race/ethnicity and criminal

opportunities are central explanatory concepts, but their role on facilitating victimization differs. In short, the results of this dissertation showed mixed support for the mediation hypothesis, strong support for the moderation hypothesis, and weak support for the context hypothesis.

Although with limitations, this dissertation is a first step to unraveling the causal mechanisms underlying victimization risk disparities across racial/ethnic groups. It provides a unique contribution in that it built an integrated model to draw attention to important variation that exists across racial/ethnic groups previously ignored or otherwise captured as being “White” or “Non-White”. In addition, it discussed ways to expand the core of LRAT, highlighting the need to treat race/ethnicity as a significant concept rather than as a simple proxy for criminal opportunities, and offering future avenues of research that can better account for persistent race/ethnicity effects on violent victimization.

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APPENDIX A

Measures

Low Self-Control

Following Gibson et al. (2010), the low self-control measure was created from primary caregiver's assessment of adolescent study participants with respect to the following 17 statements (Coded as 1=uncharacteristic to 5=Characteristic):

Inhibitory control

1. Has trouble resisting temptation
2. Finds self-control easy to learn (reverse coded)
3. Can tolerate frustration better than most (reverse coded)
4. Usually cannot stand waiting
5. Has trouble controlling his/her impulses

Decision time

6. Often acts on the spur of the moment
7. Often says the first thing that comes to his/her head
8. Always likes to make detailed plans before he/she does something (reverse coded)
9. Likes to plan things way ahead of time (reverse coded)

Sensation seeking

10. Sometimes does "crazy" things just to be different
11. Generally seeks new and exciting experiences and sensations
12. Tends to get bored easily
13. Will try anything once

Persistence

14. Unfinished tasks really bother him/her (reverse coded)
15. Generally likes to see things through to the end (reverse coded)
16. Tends to give up easily
17. Once gets going on something she/he hates to stop (reverse coded)

Family Monitoring

This scale is constructed from caregiver's responses to the following 13 questions regarding home rules and parental supervision applied to the adolescents (0=No; 1=Yes):

1. Subject has a set time (curfew) to be home on school nights

2. Subject has a set time (curfew) to be home on weekend nights
3. Caregiver has established rules about homework and checks to see if homework is done
4. Caregiver requires subject to sleep at home on school nights
5. When caregiver is not at home, subject must check with caregiver or other adult
6. After school subject goes somewhere where there is adult supervision
7. Caregiver establishes rules for subject's behavior with peers and asks subject questions to determine whether these rules are followed
8. Subject is not allowed to wander in public places without adult supervision for more than 1-3 hours (one hour for 9 year-old cohort, two hours for the 12 year-old cohort, and three hours for the 15 year-old cohort)
9. Caregiver has had contact with two of the subject's friends in the last two weeks
10. Caregiver has talked to the subject's teacher/counselor within the last three months
11. Caregiver has discussed the hazards of alcohol/drug use with subject in the last year
12. Caregiver denies subject access to alcohol in the home
13. Caregiver knows signs of drug use and remains alert to subject's possible use

APPENDIX B

Factor Analysis Results of Sampson et al. (1997)

The measures of concentrated disadvantage, immigrant concentration, and residential stability employed in this dissertation were originally created by Sampson and colleagues (1997). The authors performed a factor analysis using alpha-scoring with an oblique rotation to determine whether the following census measures of community characteristics were loaded on identifiable and unique factors. The factor loadings, as presented by the authors, are as follows:

Variable	Factor loading
<i>Concentrated disadvantage</i>	
Below poverty line	0.93
On public assistance	0.94
Female-headed families	0.93
Unemployed	0.86
Less than age 18	0.94
Black	0.60
<i>Immigrant concentration</i>	
Latino	0.88
Foreign-born	0.70
<i>Residential stability</i>	
Same house as in 1985	0.77
Owner-occupied house	0.86

APPENDIX C

Descriptive Statistics for Study Variables, by Race/Ethnicity

(N = 1,169)

	Non-Hispanic Blacks (n = 404)		Hispanics (n = 557)		Non-Hispanic White (n = 208)	
Variables	Mean	(SD)	Mean	(SD)	Mean	(SD)
<u>Dependent Variable</u>						
Violent victimization (Wave 3)	0.15	0.36	0.13	0.33	0.06	0.25
<u>Individual-Level Independent Variables</u>						
<i>Exposure to Risk</i>						
Alcohol use	0.17	0.38	0.24	0.42	0.28	0.45
Marijuana use	0.11	0.32	0.09	0.29	0.14	0.35
Deviant peers	7.81	3.08	7.33	2.63	7.38	2.65
Going to movies	1.81	0.92	1.71	0.89	1.85	0.63
Driving around	1.85	1.54	1.55	1.46	1.46	1.34
Hanging out with friends	3.01	1.19	2.75	1.26	3.25	0.93
Going to parties	1.72	1.04	1.77	0.95	1.94	0.82
Volunteering	0.38	0.48	0.29	0.45	0.39	0.48
Organized sport teams	0.37	0.48	0.29	0.45	0.44	0.49
Self-reported violent offending	0.38	0.48	0.18	0.38	0.17	0.37
<i>Target Attractiveness</i>						
Low self-control	48.81	10.40	43.76	11.33	47.97	10.26
<i>Guardianship</i>						
Family size	5.16	2.25	5.52	1.75	4.65	1.37
Single parent	0.50	0.50	0.18	0.38	0.19	0.39
Family warmth	6.25	2.04	6.69	2.03	6.77	1.76
Family monitoring	11.96	1.28	11.63	1.47	11.58	1.49
Family support	16.21	2.07	16.21	1.94	16.51	1.78
<i>Statistical Controls</i>						
Age at Wave 1	11.96	2.41	11.92	2.45	12.04	2.40
Gender	0.46	0.49	0.48	0.50	0.51	0.50
Immigrant	0.00	0.09	0.18	0.39	0.06	0.25
Family income	4.40	2.42	4.38	2.04	7.23	2.75
Prior victim of violence	0.20	0.40	0.15	0.36	0.13	0.34

Descriptive Statistics for Study Variables, by Race/Ethnicity (Cont')
(*N* = 1,169)

	Non-Hispanic Blacks (<i>n</i> = 404)		Hispanics (<i>n</i> = 557)		Non-Hispanic White (<i>n</i> = 208)	
Variables	Mean	(SD)	Mean	(SD)	Mean	(SD)
<u>Neighborhood-Level</u>						
<u>Independent Variables</u>						
<i>Proximity to Motivated Offenders</i>						
Perceived neighborhood disorder	1.87	0.32	1.91	0.30	1.53	0.31
Perceived neighborhood violence	2.00	0.35	2.01	0.33	1.70	0.36
<i>Aggregate-Level Guardianship</i>						
Neighborhood informal social control	3.86	0.30	3.80	0.33	4.14	0.36
<i>Statistical Controls</i>						
Concentrated disadvantage	1.96	3.48	-1.55	2.14	-3.58	1.93
Immigrant concentration	-0.44	2.33	3.17	2.61	-0.50	2.02
Residential stability	0.26	2.10	-0.69	1.19	0.48	1.93

APPENDIX D

Collinearity Diagnostics for Variables in Mediation Analysis

Variable	Variance Inflation Factor (VIF)	Tolerance
Black	2.49	0.60
Hispanic	2.51	0.60
Alcohol use	1.76	0.43
Marijuana use	1.56	0.36
Deviant peers	1.97	0.49
Going to movies	1.18	0.15
Driving around	1.23	0.19
Hanging out with friends	1.28	0.22
Going to parties	1.25	0.20
Volunteering	1.08	0.07
Organized sport teams	1.20	0.16
Self-reported violent offending	1.47	0.32
Low self-control	1.14	0.12
Family size	1.14	0.12
Single parent	1.35	0.26
Family warmth	1.11	0.10
Family monitoring	1.10	0.09
Family support	1.11	0.10
Age at Wave 1	1.66	0.40
Gender (Male)	1.15	0.13
Immigrant status (Foreign-born)	1.13	0.12
Family income	1.45	0.31
Prior violent victimization	1.10	0.09

Note: Mean VIF=1.41

Collinearity Diagnostics for Variables in Moderation Analysis

Variable	Variance Inflation Factor (VIF)	Tolerance
Black	3.47	0.71
Hispanic	3.09	0.68
Alcohol use	1.77	0.43
Marijuana use	1.56	0.36
Deviant peers	1.98	0.50
Going to movies	1.18	0.16
Driving around	1.23	0.19
Hanging out with friends	1.29	0.22
Going to parties	1.25	0.20
Volunteering	1.08	0.07
Organized sport teams	1.20	0.17
Self-reported violent offending	1.47	0.32
Low self-control	1.14	0.13
Family size	1.14	0.12
Single parent	8.15	0.88
Family warmth	1.11	0.10
Family monitoring	5.35	0.81
Family support	1.11	0.10
Age at Wave 1	1.66	0.40
Gender (Male)	1.16	0.13
Immigrant status (Foreign-born)	1.14	0.12
Family income	1.47	0.32
Prior violent victimization	1.10	0.09
Single parent*Black	7.04	0.86
Single parent*Hispanic	4.12	0.76
Family monitoring* Black	2.53	0.61
Family monitoring*Hispanic	3.69	0.73

Note: Mean VIF=2.31

Collinearity Diagnostics for Variables in Context Analysis

Variable	Variance Inflation Factor (VIF)	Tolerance
Black	3.43	0.71
Hispanic	2.92	0.66
Alcohol use	1.78	0.44
Marijuana use	1.57	0.36
Deviant peers	1.99	0.50
Going to movies	1.19	0.16
Driving around	1.24	0.19
Hanging out with friends	1.29	0.22
Going to parties	1.25	0.20
Volunteering	1.08	0.08
Organized sport teams	1.20	0.17
Self-reported violent offending	1.47	0.32
Low self-control	1.15	0.13
Family size	1.16	0.14
Single parent	1.36	0.27
Family warmth	1.11	0.10
Family monitoring	1.11	0.10
Family support	1.12	0.10
Age at Wave 1	1.67	0.40
Gender (Male)	1.16	0.14
Immigrant status (Foreign-born)	1.15	0.13
Family income	1.63	0.38
Prior violent victimization	1.10	0.09
Concentrated disadvantage	3.36	0.70
Immigrant concentration	2.62	0.62
Residential stability	2.08	0.52
Perceived disorder	8.53	0.88
Perceived violence	5.67	0.82
Informal social control	2.36	0.58

Note: Mean VIF=2.03