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A MULTI-LEVEL MODEL OF PERSONAL VICTIMIZATION AMONG SOUTH KOREAN YOUTHS

A DISSERTATION

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by

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Abstract

Three different perspectives – state dependence perspective, risky heterogeneity perspective, and neighborhood perspective – were adopted to explain personal victimization risk among South Korean youths. Framed within theories of lifestyles/routine activities, low self-control, and collective efficacy, this dissertation examined (1) the direct and mediating effects of micro level factors (i.e., low self-control and lifestyles/routine activities) on the risk of personal victimization, (2) whether the micro level effects from the first stage of the analysis differed by a youth's sex, (3) the main and moderating effects of collective efficacy at the macro level on victimization risk, and (4) whether within-person changes in time varying factors (lifestyles) coincided with changes in victimization risk over time, controlling for time invariant factors (sex and low self-control).

The sample included 2,844 fourth grade students in South Korea followed for five years (through eighth grade). The fourth grade elementary school students were selected from 15 regions (including Seoul and 14 metropolitan cities and provinces) in South Korea. Respondents selected during the first year were assessed annually over a five year period.

Several models were incorporated to estimate both cross-sectional and longitudinal effects on personal victimization: (1) structural equation modeling (involving a measurement model to assess latent variables, and a path model to estimate the direct and indirect effects of interest), (2) multi-level modeling (with youths nested within schools), (3) latent growth curve modeling (to estimate intra- and inter-individual differences in developmental growth trajectories in personal victimization), (4) autoregressive latent trajectory models (integrating latent growth curve modeling with auto-regressive, cross-lagged modeling), and (5) multi-level growth curve modeling (integrating multi-level modeling with latent growth curve modeling). All empirical findings are presented, and implications for both theory and future

research are discussed.

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Table of Contents

List of Tables

List of Figures

CHAPTER I

INTRODUCTION

The personal victimization of youths by their peers (e.g., bullying, fighting, verbal threats) is a fairly common problem among juveniles in the US and other western cultures, although much less is known about the prevalence and etiology of youth victimization in eastern cultures such as South Korea. Yet, western scholars of juvenile victimization have found that personal victimization interferes with school accomplishments, impedes the development of pro-social skills, and contributes to the development of psychological problems among victims (e.g., Finkelhor & Dziuba-Leatherman, 1994; Olweus, 1991, 1993; Crick & Bigbee, 1998). Personal victimization by juvenile peers is defined here as bullying, physical assault, verbal threats, and robbery. According to the National Center for Education Statistics (NCES, 2013), nine percent of students have experienced personal victimization during the school year. Personal victimization is a serious threat to a youth's healthy development, often resulting in physical injury and psychological distress to the victims. In general, youthful victims are at risk of depression and low self-esteem (Kaltiala-Heino, Rimpela, Rantanen, & Rimpela, 2000).

Victimization by bullying, for example, has been found to be positively correlated to a wide variety of emotional and psychological problems, such as anger, frustration, and suicidal ideation (Hinduja & Patchin, 2010; Kowalski & Limber, 2013; Patchin & Hinduja, 2010; Wang, Nansel, & Iannotti, 2011). Over 30 percent of students have been bullied by peers and classmates, and 28.5 percent of middle school students have been threatened by peers and classmates (NCES, 2013). According to studies by Yale University (2013, http://www.bullyingstatistics.org/), victims of bullying were between two to nine times more likely than non-victims to consider suicide.

The serious implications of personal victimization for the mental and physical well-being of youths has led many western scholars to develop and test various theories of youth victimization in western cultures (e.g., Currie et al., 2011; Finkelhor, Shattuck, Turner, & Hamby, in press; Nansel et al., 2003; Olweus, 2003; Pellegrini, Bartini, & Brooks, 1999; Riittakerttu, Sari, & Mauri, 2010). However, much less is known about youth victimization in eastern cultures. This dissertation presents findings from cross-sectional and longitudinal analyses of personal victimization in a 5-year panel of South Korean grade school students framed within theories of lifestyle/routine activities (LRA) (Cohen & Felson, 1979; Hindelang, Gottfredson, & Garofalo, 1978) and low self-control (Gottfredson & Hirschi, 1990). Empirical evidence has been uncovered that favors the applicability of LRA to an understanding of youth victimization in the US (e.g., Finkelhor & Asdigian, 1996), but the applicability of these ideas to youth victimization in South Korea has yet to be examined despite a handful of studies on LRA applied to more specific types of victimization among adults and college students (Jung & Park, 2010; M. Lee, 2003; S. Lee, 1995; Noh, 2007). Research to date on certain forms of youth victimization in the US (such as bullying) suggests that there may be important sex-based differences in the correlates to victimization risk (Popp & Peguero, 2011; Wilcox, Tillyer, & Fisher, 2009; Zaykowski & Gunter, 2013), so these were also examined in order to assess their relevance for understanding personal victimization among South Korean youths. Findings from the analysis provide new insight into possible contributors and inhibitors to victimization risk among South Korean youth and whether these processes operate uniformly across the sexes. Adoption of the LRA and LSC frameworks also provides an opportunity to assess the applicability of these theories to an understanding of youth victimization in a country other than the US.

EPIDEMIOLOGY OF YOUTH VICTIMIZATION

The analysis for this dissertation focuses on five types of juvenile-on-juvenile victimization, including being (1) severely teased, (2) threatened, (3) collectively bullied, (4) severely beaten, and (5) robbed. One might argue that there is an overlap between some of these offenses, particularly between collective bullying and being teased, threatened, or beaten. However, all of these (including robbery) were combined into a single index in order to capture a youth's propensity for peer victimization by personal crimes *in general* (described in Chapter 3). Bullying itself encompasses both direct and indirect forms, where the "direct" mode involves physical bullying (hitting, pushing, kicking, and/or verbal threats and teasing in a hurtful way). The "indirect" mode involves bullying incidents that do not occur in the presence of a targeted victim and, as such, are not examined here (e.g., social exclusion, spreading rumors, and cyberbullying). Relatively speaking, "severe teasing" might be considered much less severe than the other forms of victimization examined. However, it is examined here because, in the context of juvenile victimization, it involves intimidation that can lead to psychological harm and distress for victims.

Scholars have argued that juvenile victims and offenders are overlapping populations because, following the logic of victimization theories (i.e., lifestyle and routine activities), juvenile delinquents put themselves in high risk situations which, in turn, might lead to high rates of victimization due to their risky routine activities (Lauritsen, Laub, & Sampson, 1992; Lauritsen, Sampson, & Laub, 1991). Therefore, aside from victimization theories, explanations of delinquency might also be relevant for understanding youth victimization risk. For example, juveniles who have engaged in bullying are also more likely victims of bullying (Widom, 1989), and Schreck and his colleagues have established empirical links between low self-control and both juvenile offending and victimization (Schreck, Stewart, & Fisher, 2006;

Schreck, Wright, & Miller, 2002).

Over the past half-century, researchers have found that many offenders and victims have similar characteristics (Broidy, Daday, Crandall, Sklar, David, & Jost, 2006; Jennings, Piquero, & Reingle, 2012; Sampson & Lauritsen; 1994). Recently, scholars have provided empirical evidence supporting a relatively strong relationship between offending and victimization (Berg, 2012; Berg & Loeber, 2011; Berg, Stewart, Schreck, & Simons, 2012; Broidy, Daday, Crandall, Sklar, & Jost, 2006; Jennings, Higgins, Tewksbury, Gover, & Piquero, 2010; Jennings, Piquero, & Reingle, 2012; Lauritsen & Laub, 2007; Schreck, Stewart, & Osgood, 2008). Some scholars have found similarities in demographic characteristics and lifestyle patterns between offenders and victims (Broidy, Daday, Crandall, Sklar, & Jost, 2006; Schreck, Stewart, & Osgood, 2008; Sullivan, Ousey, & Wilcox, 2015). Scholars have also examined whether common factors (e.g., risky behaviors and low self-control) predictive of offending were correlated to factors influencing victimization risk (Jennings, Higgins, Tewksbury, Gover, & Piquero, 2010; Jennings, Park, Tomsich, Gover, & Akers, 2011; Pauwels & Svensson, 2011; Stewart, Schreck, & Simons, 2006; Sullivan, Ousey, & Wilcox, 2015; Turanovic & Pratt, 2014).

Recognizing the possibility that an empirical link between offending and victimization might also apply to South Korean youths, the model of juvenile victimization examined here incorporates elements of both lifestyle/routine activities and low self-control theories. Empirical links between delinquent peers, delinquent activities, and risk for personal victimization are also reflected in the model examined. Virtually nothing is known about whether these links also apply to South Korean youths. Even in the US, little is known about the extent to which these correlations vary depending on age and the child's developmental

stage (Smith & Ecob, 2007; Solberg & Olweus, 2003; Schwartz et al., 2001).

The development of lifestyle/routine activities theories over time has involved a focus on the relevance of both micro and macro level influences on victimization risk (e.g., Simons, Simons, Burt, Brody, & Cutrona, 2005). This focus is also potentially important for understanding youth victimization, since community factors such as school location and levels of collective efficacy in a residential population might influence a youth's vulnerability to victimization by shaping exposure to motivated offenders and their opportunities for "successful" victimizations (Garbarino, Bradshaw, & Kostelny, 2005; Maimon & Browning, 2010; Wilcox, Madensen, & Tillyer, 2007). Therefore, aside from examining how the characteristics of juveniles (sex, attachment to parents, delinquent peer associations, delinquent activities, and low self-control) might influence their risk of personal victimization, this dissertation also looks at the importance of school location and levels of collective efficacy in a juvenile's local area (defined as districts within South Korea's provinces as well as in the city of Seoul).

CURRENT RESEARCH

Borrowing from the perspectives mentioned above (discussed in greater detail in Chapter 2), this dissertation focuses on: (1) the main effects of both micro and macro level factors on personal victimization risk, (2) the indirect effects of low self-control on victimization risk via "lifestyle" mediators (parental attachment, delinquent peer associations, and delinquent offending), (3) whether the collective efficacy of local area populations conditions any of the micro level effects on victimization risk, (4) whether these main, mediating, and conditioning effects differ between sex groups, and (5) whether within-person changes in lifestyle factors over time also coincide with changes in victimization risk.

Despite the growing body of research on how offending and victimization are linked, explanations of this relationship remain ambiguous. The most common theoretical explanation for this relationship is a "state dependence perspective". This perspective highlights time varying factors, assuming that prior experiences of offending/victimization affect subsequent risks of offending/victimization. One of the theoretical arguments for a state dependence perspective is Lifestyle and Routine Activities Theories (LRAT). Risky lifestyles that create opportunity structures lead to increased odds of both offending and victimization (Eitle & Turner, 2002; Forde & Kennedy, 1997; Jensen & Brownfield, 1986; Mustaine & Tewksbury, 2000; Sampson & Lauritsen, 1990; Schreck, Stewart, & Osgood, 2008; Smith & Ecob; 2007; Taylor, Freng, Esbensen, & Peterson, 2008). Osgood and his colleagues (1996) argued that greater likelihoods of associating with delinquent peers coincided with higher odds of both offending and victimization (Jensen & Brownfield, 1986; Osgood, Wilson, O'Malley, Bachman, & Johnston, 1996). Thus, from this perspective, prior offending might be a causal factor in explaining later victimization risk.

Some studies, on the other hand, have paid more attention to the "risky (population) heterogeneity perspective" underlying time invariant factors, such as fixed individual traits (Schreck, 1999; Schreck, Stewart, & Fisher, 2006; Schreck, Wright, & Miller, 2002). This perspective highlights a time-stable characteristic in the initial propensity for crime that is developed early in life and remains stable thereafter. Many studies have examined the causal effects of criminal propensity (e.g., low self-control) on both offending and victimization (Baron, Forde, & May, 2007; Higgins, Jennings, Tewksbury, & Gibson, 2009; Holtfreter, Reisig, & Pratt, 2008; Jennings et al., 2010; Piquero, MacDonald, Dobrin, Daigle, & Cullen, 2005; Schreck, Stewart, & Fisher, 2006; Schreck, Wright, & Miller, 2002). Related to the

focus of this dissertation, individuals with low self-control are impulsive and are more likely to engage in higher levels of offending that may also coincide with higher levels of victimization risk (Gottfredson & Hirschi, 1990). However, this "pure" risky heterogeneity perspective would argue that the link between offending and victimization is spurious (Wittebrood & Nieuwbeerta, 1999). That is, the relationship between offending and victimization should be rendered nonsignificant after controlling for a time-invariant factor such as low self-control.

Less is known about neighborhood-level effects on the link between offending and victimization relative to individual-level sources of this link. A "contextual perspective" focuses on the idea that the relationship between offending and victimization might be context-specific (Anderson, 1999; Broidy et al., 2006; Cooney, 1998; Lauritsen, 2001; Lauritsen & Laub, 2007; Sampson et al., 2005; Pitt-Rivers, 1966; Wolfgang & Ferracuti, 1967). The most common theoretical explanations for this link focus on community theories (social disorganization and cultural theories). Recently, multi-level studies have revealed that the relationship between offending and victimization varies by structural deprivation (e.g., poverty levels) (Berg & Loeber, 2011). Some studies have also uncovered contextual effects involving school commitment (Jennings et al., 2010), neighborhood street culture (Berg, Stewart, Schreck, & Simons, 2012), and disadvantaged neighborhoods (Berg & Loeber, 2011). Thus, the relationship between offending and victimization cannot be fully explained without recognizing neighborhood contexts (Lauritsen & Laub, 2007).

Given these three perspectives (state dependence, risky heterogeneity, and contextual), this dissertation explores whether an integration of these perspectives might improve our understanding of the relationship between victimization and offending. To this

end, I examine lifestyle/routine activities (from a "state dependence perspective"), low self-control (from a "risky heterogeneity perspective"), and collective efficacy (from a "contextual perspective").

This dissertation provides a thorough examination of the empirical relationship between juvenile offending and victimization with (1) longitudinal data for young adolescents (between 11 and 15 years old), (2) examination of the direct effects of low self-control on personal victimization, (3) investigation of mediating effects of risky lifestyles (juvenile offending) on the link between low self-control and victimization, (4) analysis of both micro and macro level effects on youth victimization, and (5) analysis of the moderating effects of gender on these direct and mediating effects.

OVERVIEW OF KEY PERSPECTIVES

The first conceptual argument supporting a "state dependence perspective" is reflected in opportunity theories such as lifestyle and routine activities. These theories focus on the idea that crime is more likely to occur when motivated offenders and suitable targets converge in time and space in the absence of capable guardians. It is assumed that involvement in risky lifestyles and routine activities corresponds to an increase in suitable targets without capable guardians, thus facilitating criminal opportunities (Cohen & Felson, 1979). Lifestyle and routine activities theories (LRAT) focus on four direct effects on victimization risk: (1) proximity to crime, (2) exposure to potential offenders, (3) target attractiveness, and (4) capable guardianship (Cohen, Kluegel, & Land 1981; Miethe & Meier, 1994). It is assumed that lifestyles and routine activities mediate the link between social inequality indicators (such as race, income, and age) and direct-contact predatory crime victimization (e.g., assault, robbery, personal larceny).

Research on LRAT has revealed that involvement in risky lifestyles and routine

activities influences criminal victimization by shaping the four key concepts identified above (Cohen, Kluegel, & Land 1981; Miethe & Meier, 1994; Tseloni, Wittebrood, Farrell, & Pease, 2004). Individuals who engage in deviant activities put themselves in risky situations with more criminal opportunities and thus have increased risks of being victimized. LRAT postulates that the effects of demographic characteristics should become nonsignificant when indicators of risky lifestyles and routine activities are controlled if demographic characteristics influence individuals' lifestyles and routine activities (Hindelang, Gottfredson, & Garofalo, 1978). However, several studies have produced findings inconsistent with the logic of LRAT; demographic characteristics have remained significant even after controlling for lifestyles and routine activities (Mustaine & Tewksbury, 1998; Sampson & Lauritsen, 1990; Sampson & Wooldredge, 1987). For this reason, researchers have integrated the opportunity (e.g., lifestyles-routine activities) and individual trait (e.g., age, gender, and low self-control) approaches to further our understanding of victimization for different types of crimes (Holtfreter, Reisig, & Pratt, 2008; Schreck, Stewart, & Fisher, 2006; Stewart, Elifson, & Sterk, 2004).

The opportunity model can also be integrated with social disorganization theory to account for victimization opportunities at both the micro and macro levels (Wilcox, Land, & Hunt, 2003). Criminal opportunity is often studied by using a single theory at a single level of analysis. However, the single-level approach is limited when explaining criminal opportunities. For instance, an individual routine activity approach emphasizes the causal role of individual characteristics for shaping their target attractiveness and exposure to potential offenders. On the other hand, social disorganization variables stress the relevance of social structure, such as low income areas, that is linked to criminal motivations (Cohen & Cantor,

1981; Cohen et al., 1981; Kennedy & Forde, 1990; Sampson, 1985, 1987; Sampson & Wooldredge, 1987), but this approach neglects how individual lifestyles and routine activities shape physical opportunities for victimization risk. Therefore, it is useful to integrate these theories for a better understanding of victimization risk.

A multi-level "opportunity" model identifies victimization risks operating at both the micro and macro levels. Use of multi-level modeling recognizes that social structural conditions may alter individuals' lifestyles and activities independent of their individual (trait) characteristics.

Longitudinal Changes in Victimization Risk and the Moderating Effects of Gender

Structural equation modeling (SEM) is used here to disentangle the temporal effects of juvenile delinquency and delinquent peer associations on victimization risk. Latent Growth Curve Modeling (LGCM) and multi-level modeling are also employed to estimate the random (individual-level) and fixed (local area) factors related to individual differences in developmental growth trajectories of personal victimization over time.

Regarding the role of gender in shaping victimization risk, studies of bullying victimization have found that boys are more likely to be overrepresented among bullies while boys and girls both maintain comparable odds of victimization (Espelage, Mebane, & Adams, 2004; Hanish & Guerra, 2004). Thus, this dissertation examines the moderating effects of gender on the micro and macro level influences on victimization risk in an attempt to identify specific gender differences in personal victimization risk.

ORGANIZATION OF THE DISSERTATION

This dissertation consists of 6 chapters. Chapter I has provided a brief overview of the theoretical and methodological considerations in quantitative research on personal victimization among juveniles, and the relevance of examining the applicability of these ideas

to South Korean youths. Chapter II describes the theoretical framework of the study including the relevance of lifestyle and routine activities, low self-control, and collective efficacy. I also present a multi-level model of youth victimization that integrates key concepts from these theories. Chapter III presents the research questions and the methods employed to test these questions, including the data set examined, research and sampling designs, data collection methods, measurement of key concepts at the micro and macro levels, and analytical strategy.

Chapter IV presents the findings from the SEMs, LGCMs for five waves of data, and the HLMs for the multi-level data. M-plus 7.0 is the statistical software used for all segments of the analysis. The SEM consists of both a measurement model for the construction of latent variables and a path model representing all hypothetical direct and indirect effects on personal victimization. Also, the moderating effects of gender on the micro level relationships are examined. The LGCM describes intra-individual differences in developmental growth trajectories for victimization risk as well as inter-individual differences in intra-individual developmental growth trajectories over time. The model examines direct effects of low self-control, parental attachment, delinquent peer associations, and juvenile offending on the trajectories of personal victimization, and the indirect effects of low self-control on personal victimization through parental attachment, delinquent peer associations, and juvenile offending. Finally, Chapter IV also examines the conditioning effects of collective efficacy at the local area level on individual level effects on victimization risk. That is, whether individual-level effects (e.g., low self-control, parental attachment, delinquent peer associations, and juvenile offending) are conditioned by levels of collective efficacy.

Chapter V provides a discussion of the findings presented in chapter IV and the implications for all of the theories involved and for the applicability of the integrated model

examined, in addition to the applicability of this framework for understanding youth victimization in South Korea and other eastern cultures. Finally, Chapter VI highlights the limitations of the study and the implications of both the findings and limitations for future research.

CHAPTER II

THEORETICAL FRAMEWORK

This chapter provides the theoretical and empirical backgrounds to the research questions examined in this dissertation. The chapter is organized around the four general topics introduced in Chapter I: (1) the direct and mediating effects of micro level factors (low-self-control and lifestyle/routine activities) on victimization risk, (2) whether these direct and mediating effects differ by an individual's sex, (3) the main and moderating effects of collective efficacy on victimization risk, and (4) longitudinal effects of low-self-control and lifestyle factors on victimization risk. Overall, I discuss an integration of lifestyle/routine activities theory (LRAT) and low self-control theory at the micro-level, possible moderating effects of gender, and an integration of LRAT and collective efficacy at both the individual and aggregate levels.

MICRO LEVEL EFFECTS ON VICTIMIZATION RISK

Three different mechanisms including a "state dependence perspective," a "risky heterogeneity perspective," and a "neighborhood perspective" are employed in this dissertation to explain youth victimization risk. The first perspective, also known as a "boost account" (event dependence), proposes that the initial crime boosts the likelihood of committing crime later in life, suggesting that prior experience of being victimized might also directly affect subsequent risks of criminal victimization (Pease, 1998). The second perspective, also known as a " flag account" (risky heterogeneity), suggests that crime flags particular persons and places; thus, individuals have different characteristics or behaviors that lead to higher levels of risk in initial events while also influencing later offending and victimization (Pease, 1998). The last perspective proposes that neighborhood context might be a key factor in predicting the relationship between offending and victimization (Broidy et

al., 2006; Cooney 1998; Lauritsen, 2001; Lauritsen & Laub, 2007; Sampson et al., 2005). The first two perspectives (the state dependence and risky heterogeneity perspectives) are the focus of this section on relevant micro level factors.

During the last three decades, the most important theoretical development in the study of criminal victimization has involved opportunity perspectives, such as lifestyle-exposure theory (Hindelang, Gottfredson, & Garofalo, 1978), routine activities theory (Cohen & Felson, 1979), and lifestyles and routine activities theory (Cohen, Kluegel, & Land, 1981). These theories focus on how contextual or situational factors can create criminal opportunities, which, in turn, affect one's vulnerability to crime. Also, they highlight how lifestyles and routine activities place different individuals and groups in close proximity where they are more likely to have contact with motivated offenders while facing situations with a high risk of victimization (Cohen & Felson, 1979; Fisher, Sloan, Cullen, & Lu, 1998; Hindelang, Gottfredson, & Garofalo, 1978; Miethe & Meier, 1994). However, until recently, these theories traditionally ignored how victimization risks may be shaped by individual traits such as low self-control.

Some scholars have more recently focused on how individuals' traits place persons at increased risk of victimization. Thus, researchers have integrated and expanded both opportunity and individual trait perspectives to further understand different types of victimization. The two most prominent perspectives involve lifestyle/routine activities and self-control theories.

Following the application of low self-control as a source of vulnerability to victimization (Schreck, 1999), researchers have examined whether individuals with low self-control, such as offenders, place themselves in situations where they are more or less likely to

expose themselves to other potential offenders (Jensen & Brownfield, 1986; Schreck, Stewart, & Osgood, 2008; Verweij & Nieuwbeerta, 2002). The application of self-control theory to victimization may not be generalizable to all types of victimization, such as violence against women and child abuse. Nonetheless, some scholars have argued that low self-control independently predicts different types of violent and property victimizations (Holtfreter, Reisig, & Pratt, 2008; Schreck, Stewart, & Fisher, 2006; Stewart, Elifson, & Sterk, 2004).

A State Dependence Perspective

A "state dependence perspective" assumes that individuals who were involved in crime at one point in time are more likely than non- criminal offenders to commit crime at a later point (Nagin & Paternoster, 1991, 2000; Sullivan, Ousey, & Wilcox, 2015). Simply, prior actions and experiences are correlated to future actions and experiences. Stability in offending is attributed to a process of contagion that criminal behavior causes subsequent criminality by weakening social ties and restrictions, and strengthening incentives to criminal offending (Bushway, Brame, & Paternoster, 1999). This perspective implies that involvement in crime alters life circumstances that might accelerate the likelihood that subsequent criminal behaviors occur (i.e., any observed positive link between prior and subsequent criminal behaviors). In other words, any observed correlation between past and future criminal behavior is not explained by criminal propensity alone. Instead, it is assumed that prior criminal behaviors lead to an increased likelihood of subsequent crime by eroding prior inhibitions or strengthening prior incentives to crime.

A state dependence perspective accounts for the continuity in criminal offending by suggesting that the initial starting point of criminal involvement can affect future involvement in crime. Thus, this perspective puts more importance on the continuation of certain behaviors as well as the escalation of such behaviors over time. The state dependence

perspective can also explain shifts in individual behaviors through life, for instance, from prosocial behaviors to antisocial behaviors, and vice versa. For example, conventional juveniles might begin to engage in deviant behaviors through delinquent peer associations (Sullivan, Ousey, & Wilcox, 2015). In short, criminal behavior is influenced by later life events rather than the initial distribution of criminality.

Opportunity theories of crime and victimization fall under this state dependence perspective. Scholars have focused on situational and ecological factors that create or facilitate criminal opportunities, and these opportunities are seen as the proximate effects on crime. Opportunity theories such as LRAT propose that certain risky lifestyles and routine activities create criminal opportunities by enhancing the contact between motivated offenders and possible victims. For instance, the length of time individuals spend away from their household (e.g., visiting clubs and bars, using public transportation) enhances exposure to motivated offenders. Similarly, living in neighborhoods with high rates of crime also enhances one's proximity to crime. Individuals' suitability as targets for victimization and the levels of guardianship over their person and property are assumed to influence motivated offenders' determination to select particular individuals and/or property for victimization (Cohen, Kluegel, & Land, 1981; Hindelang et al., 1978).

Opportunity theories are the most important theoretical evolution to date in the study of victimization, and they can be divided into two groups: (1) theories of "absolute" exposure to victimization, including RAT (Cohen & Felson, 1979), and (2) theories of "variable" exposure to victimization, including (a) lifestyle-exposure theory (Hindelang, Gottfredson, & Garofalo, 1978), and (b) lifestyle and routine activities theory (Cohen, Klugel, & Land, 1981).

Lifestyle-Exposure Theory

The first systematic theory of criminal victimization was lifestyle-exposure theory

(Hindelang, Gottfredson, & Garofalo, 1978). This theory links the concept of "lifestyle" that refers to routine activities, including both vocational activities (e.g., work, school, or keeping house) and leisure activities (e.g., recreation or shopping), with the likelihood that an individual will experience a personal victimization (Hindelang, Gottfredson, & Garofalo, 1978). According to Hindelang et al. (1978), the unequal distribution of risks to violent crime is attributable to various demographic and socio-demographic characteristics (e.g., age, sex, race, income, marital status, education, and occupation).

Hindelang et al. (1978) postulated that demographic characteristics that bring about individual differences in both role expectations and structural constraints shape lifestyle variations through individual and subcultural adaptations. "Role expectations" refer to cultural norms and are related to achieved and ascribed statuses of individuals as well as preferred and anticipated behaviors. "Structural constraints" are limitations on behavioral options stemming from particular arrangements in institutional orders (e.g., economic, familial, educational, and legal). Lifestyle variations across demographic characteristics, in turn, cause individuals to be differentially exposed to risky situations that affect personal victimization risk.

Lifestyle factors vary in their exposure to situations that put individuals at a higher risk of victimization (i.e., by placing individuals in particular places at certain times, thereby increasing or decreasing their exposure to motivated offenders). Lifestyles and exposure are directly linked to victimization. Lifestyles are also indirectly linked to exposure through an individual's personal relationships (Hindelang et al., 1978). Therefore, variation in victimization risk is based on individual-level demographic characteristics that shape everyday lifestyles and routine activities. For instance, young people are more likely to go to

bars, clubs, and other public places away from their home, where proximity to crime and exposure to potential offenders are high and capable guardianship is low (Kennedy & Forde, 1990; Rand, 2009; Rennison, 1999). Thus, younger people have higher likelihoods than older people of personal victimization. Additionally, single people are more likely than married people to have higher victimization rates due to their lifestyles and routine activities that lead to greater exposure to risky situations (Brown & Bulanda, 2008). This is because married people have familial responsibilities so they spend more time with their families at home while single people lack these obligations and expectations. Furthermore, males exhibit less fear of crime than females and are more likely than females to take risks and to tolerate aggressive behavior (Ferraro, 1995, 1996; Warr, 1985, 1994). As another example, poorer people are more likely to experience greater rates of violent victimization whereas wealthier people have higher risks of theft victimization (Catalano, 2006).

Routine Activities Theory

Cohen and Felson (1979) argued that criminal victimization is caused by both spatial factors (e.g., outside the home) and temporal factors (e.g., nighttime activities) that result from an individual's repetitive patterns of routine activities. Routine Activities Theory (RAT), developed by Cohen and Felson (1979), shares much in common with lifestyle-exposure theory, but it places more importance on the immediate circumstances that create criminal opportunities rather than on the demographic characteristics of victims.

During the 1960's, despite improved social and economic conditions in the U.S. (e.g., higher education levels, lower rates of unemployment), crime rates still increased for violent crimes such as robbery (263%), aggravated assault (164%), forcible rape (174%), and homicide (188%) (see USBC, 1975: 654). Traditional criminologists argued that higher rates of unemployment caused crime. However, in the '60s, both employment and crime rates

increased. Due to this positive correlation, criminologists were forced to examine other possible causal mechanisms.

From this investigation emerged the "environmental criminologists" who argued that these socio-economic changes created new opportunity structures for criminals. Cohen and Felson (1979) hypothesized that spending more time away from home by both men and women (e.g., a public lifestyle consisting of daytime work outside the home and/or frequent nighttime activity away from home) provided criminal opportunities and thus generated higher rates of victimization. They first introduced RAT at the macro-level with an empirical analysis of trends in household victimization rates throughout the 1960's in the US as both female labor force participation and time spent away from home generally increased for both women and men. Since the late 1970s, RAT moved from a macro level focus to a focus on victimization at the individual level. At a macro-level, the perspective states that certain characteristics of communities (i.e., social structure) can influence the convergence of motivated offenders and suitable targets. Crime occurs based on the convergence in space and time of (1) motivated offenders, (2) suitable targets, and (3) the absence of capable guardians over one's person or property. The presence of motivated offenders is assumed to be fairly constant; therefore, changes in the structure of routine activities that correspond to an increase in suitable targets and a lack of capable guardians can increase criminal opportunities without requiring any increase in the structural situations that motivate potential offenders to commit crime (Cohen & Felson, 1979).

Lifestyle/Routine Activities Theory

Cohen, Kluegel, and Land (1981) extended RAT to the micro-level with an opportunity model of predatory victimization. The model that integrates RAT (Cohen & Felson, 1979) with lifestyle-exposure theory (Hindelang, Gottfredson & Garofalo, 1978) has

become the most popular theoretical framework for explaining individual-level victimization risk and is referred to as Lifestyle/Routine Activities Theory (LRAT) (Cohen, Kluegel, & Land, 1981; Fisher et al., 1998; Kennedy & Forde, 1990; Miethe, Stafford, & Long, 1987; Mustaine & Tewksbury, 1998). LRAT provides an explanation of how individuals' lifestyles and routine activities create opportunities for individual-level criminal victimization. The theory also proposes that the "effects" of demographic factors on criminal victimization should become nonsignificant once risky lifestyles are held constant, and several studies have demonstrated that the effects of individual demographic characteristics on victimization risk are rendered nonsignificant and/or reduced in strength after the mediating effects of risky lifestyles are controlled (Cohen, Kluegel, & Land 1981; Jensen & Brownfield, 1986; Meier & Miethe, 1993; Miethe & Meier, 1990). However, others have found that the effects of demographic factors are not completely mediated by deviant lifestyles (Mustaine & Tewksbury, 1998; Sampson & Lauritsen, 1990; Wilcox & Land, 1990). Miethe, Stafford, and Long (1987) also demonstrated that individual demographics sometime interact with routine activities to shape victimization risk.

In the context of LRAT, it is assumed that lifestyles and routine activities mediate the correlation between social inequality indicators (e.g., race, income, and age) and direct-contact predatory victimizations (e.g., assault, burglary, personal larceny). The model involves the mediating roles of four risk predictors: (1) proximity to crime, (2) exposure to potential offenders, (3) target attractiveness, and (4) capable guardianship (Cohen et al., 1981; Miethe & Meier, 1994). At the micro-level, patterns of lifestyles and routine activities have been found to predict risk of violent victimization (Pizarro, Corsaro, & Yu, 2007; Tita & Griffiths, 2005) and property victimization (Mustaine & Tewksbury, 1998; Pratt, Holtfreter,

& Reisig, 2010).

A large body of empirical research has adopted LRAT as a theoretical framework for understanding victimization risk (see table 2.1), which demands that researchers examine measures reflecting the major theoretical concepts: proximity to crime, exposure to motivated offenders, target attractiveness, and guardianship (Buhi, Clayton, & Surrency, 2009; Cass, 2007; Fisher, Cullen, & Turner, 2002; Fisher, Daigle, & Cullen, 2010; Fisher, Sloan, Cullen, & Lu, 1998; Gover, 2004; Henson, Wilcox, Reyns, & Cullen, 2010; Holt & Bossler, 2009; Holtfreter, Reisig, & Pratt, 2008; Jordan, Wilcox, & Pritchard, 2007; Maume, 1989; Mustaine & Tewksbury, 1998, 2002; Rotton & Cohn, 2003; Pratt, Holtfreter, & Reisig, 2010; Rotton & Cohn, 2003; Schreck et al., 2008; Spano & Freilich, 2009; Tewksbury & Mustaine, 2003; Tseloni, 2000). However, there are some limitations in the operationalization of these concepts. These limitations can pose problems for generating valid results.

Table 2.1. List of Victimization Studies Framed within LRAT

Type of Victimization	**Studies**
Personal victimization	Kennedy & Forde (1990), Sampson (1987), Sampson & Lauritsen, (1990), Tseloni (2000)
Property victimization	Cohen & Cantor (1980, 1981), Fisher, Sloan, Cullen, & Lu (1998), Lynch & Cantor (1992), Kennedy & Forde (1990), Massey et al. (1989), Miethe, Stafford, & Long (1987), Mustaine & Tewksbury (1998), Moriarty & Williams (1996), Sampson & Wooldredge (1987), Stahura & Sloan (1988), Rountree & Land (1996)
Violent victimization	Stahura & Sloan (1988)
Sexual assault	Cass (2007), Maume (1989), Mustaine & Tewksbury (2002)
Stalking victimization	Fisher, Cullen, & Turner (2002), Mustaine & Tewksbury (1999), Tjaden & Thoennes (1998)
College Student Victimization	
Violent	Fisher et al. (1998)
Property	Mustaine & Tewksbury (1998)
Sexual	Cass (2007), Mustaine & Tewksbury (2002)
Stalking	Fisher et al. (2002), Jordan et al. (2007)
Cyberstalking	Buhi, Clayton, & Surrency (2009), Fisher, Daigle, & Cullen (2010), Fisher et al. (1998), Jordan, Wilcox, & Pritchard (2007)

The reliance on secondary data sources has been the primary cause of measurement problems in studying criminal victimization. Many researchers are prohibited from collecting their own data due to the economic costs of compiling large samples. For this reason, most researchers have used secondary data sources, such as the National Crime Victimization Survey (NCVS) and National Incident-Based Reporting System (NIBRS), to provide empirical indicators of relevant concepts to LRAT, and neither of these data sets offers comprehensive measures of these concepts. Consequently, analyses of secondary data sets typically rely on proxy measures of these concepts, which can lead to problems with validity and reliability.

First, the use of proxy measures leads to theoretical indeterminacy among key concepts because an indicator might correspond to more than one key concept. Another limitation is related to the heterogeneity of crime where the relationship between empirical indicators and victimization may vary across different types of crime. The use of broad indicators might fail to capture crime-specific dynamics. Using proxy measures also makes it difficult to disentangle the importance of concepts from different theories, such as indicators that reflect concepts from opportunity theories of victimization, such as LRAT, as well as concepts from competing theories of criminality, such as social disorganization. Few studies have critically evaluated the quality of LRAT based on the definition and operationalization of the key concepts.

Proximity to Crime. Proximity to crime is defined as "the physical distance between the areas where potential targets of crime reside and where relatively large populations of potential offenders are found" (Cohen et al., 1981, p. 507). To measure this concept, it is necessary to know where potential offenders and victims are located. However, it is not easy

to estimate the presence of potential offenders; most studies have utilized indirect measures.

Physical proximity to crime is at its highest when motivated offenders and victims converge in space and time. It is argued that motivated offenders select their targets in close proximity to their residence, suggesting that living in a high crime area should increase likelihood of contact with motivated offenders and, in turn, the risk of victimization (Hindelang et al., 1978; Miethe & Meier, 1994). Therefore, individuals living in a high crime area who spend most of their time outside their homes have the highest likelihood of encountering motivated offenders and thus have the highest risk of victimization (Hindelang et al., 1978).

Another situation where physical proximity to crime might be higher is when individuals come into frequent contact with unfamiliar persons or when individuals live close to residents they are not familiar with, such as in multi-unit dwellings (Massey, Krohn, & Bonati, 1989; Sampson & Wooldredge, 1987). It is assumed that people with primary group ties (i.e., familiar persons) are more likely to be concerned about each other, while those who come into contact with anonymous neighbors are less likely to be concerned about each other. These conditions might increase the likelihood of victimization (Cohen et al., 1981).

Empirical indicators of this concept include area crime rates, median family incomes, unemployment rates, and the racial composition of residential populations (Cohen & Cantor, 1981; Cohen et al., 1981; Kennedy & Forde, 1990; Miethe & Meier, 1990; Sampson, 1985, 1987; Sampson & Lauritsen, 1990; Sampson & Wooldredge, 1987; Tseloni, Wittebrood, Farrell, & Pease, 2004). However, indicators of socioeconomic status (e.g., family income) can be representative of both proximity to crime and target attractiveness for property crimes (Wilcox & Land, 1996).

Exposure to Motivated Offenders. Exposure to motivated offenders involves the visibility and accessibility of possible targets to potential offenders (Cohen et al., 1981; Miethe et al., 1987). LRAT specifies a positive relationship between exposure to motivated offenders and victimization risk. Individuals who place themselves in risky situations are more likely to be exposed to motivated offenders that, in turn, lead to a higher chance of being victimized (Miethe & Meier, 1994). An empirical indicator of "exposure" used in some studies of juvenile victimization is delinquent peer associations, assuming that youths who associate with delinquent peers are exposed to a wider variety of risky lifestyles (Jensen & Brownfield, 1986; Lauritsen, Laub, & Sampson, 1992; Lauritsen, Sampson, & Laub, 1991; Sampson & Lauritsen, 1990; Schreck, Miller, & Gibson, 2003; Schreck, Stewart, & Fisher, 2006). Additionally, juvenile delinquency (minor forms of illegal behavior) is an indicator of risky lifestyles and is also likely to reflect criminal opportunities, placing juveniles in situations where they can come in contact with other deviant youths and criminal adults (Campbell Augustine et al., 2002; Finkelhor & Asdigian, 1996; Franklin et al., 2012; Henson, Wilcox, Reyns, & Cullen, 2010; Jensen & Brownfield, 1986; Lauritsen, Laub, & Sampson, 1992; Lauritsen, Sampson, & Laub, 1991; Popp & Peguero, 2011; Sampson & Lauritsen, 1990; Schreck & Fisher, 2004; Schreck, Miller, & Gibson, 2003; Schreck, Stewart, & Fisher, 2006; Stewart, Elifson, & Sterk, 2004).

Jensen and Brownfield (1986) argued that individuals who engage in delinquent lifestyles are more likely to be victims because they are highly exposed to likely offenders and are actually involved in delinquent acts. Schreck, Miller, and Gibson (2003) found that delinquent peer associations were positively related to adolescent victimization. In short, studies indicate that delinquent lifestyles (e.g., delinquent peer associations and involvement

in juvenile delinquency) produce additional opportunities for criminal victimization through both an increase in exposure to potential offenders and a decrease in capable guardians (Lauritsen et al., 1992). Involvement in juvenile delinquency might change youths' perceptions of risky situations where they become accustomed to risky situations and accept their exposure to crime as normal (Felson, 1998).

Individuals who engage in non-household activities are also at higher risk of exposure to motivated offenders (Cohen & Cantor, 1980; 1981; Cohen & Felson, 1979; Cohen et al., 1981; Felson & Cohen, 1980; Miethe, Stafford, & Long, 1987). It is assumed that individuals who spend most of their time away from home place themselves in more risky or vulnerable situations, which increase victimization risks. Several studies have provided empirical support for various indicators of exposure to potential offenders. Consistent with the assumption of Miethe and Meier (1994), individuals who engage in night time activities in public places (e.g., bars and theaters) are more likely to be vulnerable to violent victimization (Kennedy & Forde, 1990; Sampson & Lauritsen, 1990; Sampson & Wooldredge, 1987). Socio-demographic variables, such as marital status and occupation, have also been used to capture levels of non-household activities under the assumption that these variables are reliable proxies of lifestyles and routine activities (Cohen & Cantor, 1981; Cohen et al., 1981). However, marital status and occupation could be indicative of both exposure to potential offenders and capable guardianship (Kennedy & Forde, 1990; Lynch & Cantor, 1992; Massey, Krohn, & Bonati, 1989).

Target Attractiveness. Target attractiveness is classified into three dimensions: (1) symbolic or economic values, (2) an individual or item's inertia to being attacked, and (3) the ease of removal of property (Cohen et al., 1981; Meier & Miethe, 1993). It is assumed that

particular targets are selected because they are considered to have symbolic or economic values to motivated offenders (Cohen & Felson, 1979) and because they are not difficult to transport or are unlikely to resist (Miethe & Meier, 1994). Measures of this concept have included individual ownership of expensive consumer goods and the possession of cash and jewelry (Lynch & Cantor, 1992; Miethe et al., 1987; Miethe & McDowall, 1993; Sampson & Wooldredge, 1987). However, those measures are not routinely available in secondary data sets, such as the NCVS. Thus, target attractiveness is often determined by general economic conditions such as family income and family unemployment, both of which might also reflect proximity to crime (Kennedy & Forde, 1990; Miethe & Meier, 1990; Sampson & Wooldredge, 1987; Tseloni, Wittebrood, Farrell, & Pease, 2004) and greater exposure to motivated offenders (Kennedy & Forde, 1990; Lynch & Cantor, 1992; Massey, Krohn, & Bonati, 1989).

Wilcox and Land (1996) used family income as an indicator of target attractiveness while other researchers treated family income as proximity to crime (Cohen & Cantor, 1981; Cohen et al. 1981; Kennedy & Forde, 1990; Miethe & Meier, 1990; Sampson & Wooldredge, 1987; Tseloni, Wittebrood, Farrell, & Pease, 2004). Instead of family income in their study of college students' victimization risk, Fisher et al. (1998) used the possession of cash as an indicator of target attractiveness because they assumed many students may not know their family income, and also there may not be a correlation between family income and the socioeconomic status of a student. In addition, security measures of the physical target itself, such as locking doors and barring windows, are sometimes used as indicators of target attractiveness, but they are more often employed as indicators of capable guardianship (Massey et al., 1989).

In some studies of juvenile victimization, target attractiveness is measured as

participation in extracurricular activities (Astor et al., 1999; Broh, 2002; Crosnoe, 2001; Eccles et al., 2003; Feldman & Matjasko, 2005; Lauritsen et al., 1992; Mahoney & Stattin, 2000; Osgood, Anderson, & Shaffer, 2005; Peguero, 2008; Rees, Howell, & Miracle, 1990). It is assumed that students who are more involved in school activities are less likely to be targeted as victims. However, involvement in before- and after-school activities might be considered an indicator of capable guardianship due to adult supervision (Feldman & Matjasko, 2005; McNeal, 1999).

Capable Guardianship. Guardianship is the supervision of persons or objects which may reduce victimization risk (Cohen & Felson, 1979). This concept has been operationalized in a variety of ways. Social guardianship has been operationalized as family and social networks, such as the number of adults living at home, having neighbors watch property, participating in a neighborhood watch program, the density of peer networks, and parental attachment (Miethe & McDowall, 1993; Schreck, Stewart, & Fisher, 2006; Tseloni et al., 2004). Additionally, Fisher et al. (1998) measured social guardianship among college students (at the individual level) by whether a student lived alone on campus, attended a crime prevention program, and the number of times someone was asked to watch a students' unattended personal items. Fisher et al. (198) also measured social guardianship at the school level as crime prevention education and the number of security personnel.

Physical guardianship has been measured with "target hardening" indicators such as the presence of a burglar alarm and door locks, and participation in self-protection training (Fisher, Sloan, Cullen, & Lu, 1998; Mustaine & Tewksbury, 1998; Outlaw, Ruback, & Britt, 2002; Rountree, Land, & Miethe, 1994). However, Massey and his colleagues (1989) treated target-hardening tactics (e.g., security guards and alarm systems) as indicators of target

attractiveness and not as capable guardianship. On the other hand, Wilcox and Land (1996) used physical guardianship – the presence of physical barriers to a home (such as a fence or hedge) – as an indicator of guardianship and not target attractiveness.

Studies of this concept have provided mixed findings regarding the deterrent effects of social or physical guardianship on victimization risk. Some studies have found that social and physical guardianship decrease victimization risk while others have refuted any significant effects (Miethe & Meier, 1994; Rosenbaum, 1987). Some researchers have also found that the deterrent effects of social and physical guardianship vary by types of crime. For instance, Miethe and Meier (1994) found that social and physical guardianship were significantly related to an individual's risk of burglary victimization, whereas there was no support for deterrent effects on assault and robbery. Inconsistent with other extant findings, they also found a positive relationship between social guardianship and property victimization (Miethe & Meier, 1994).

In studies of school victimization, empirical indicators of guardianship have included formal guardians (e.g., school security, police officers) and informal guardians (e.g., teachers, school staff). These choices assume that school security (i.e., target hardening) should be positively related to capable guardianship. Yet, no research has supported the effectiveness of school security; no significant relationships between school security and school victimization have been found (Schreck et al., 2003; Wilcox et al., 2006). Compared to informal guardians such as teachers, target-hardening may be less likely to provide effective supervision at school (Astor et al., 1999; Schreck et al., 2003). On the other hand, there is also little empirical evidence favoring teachers' influence on school victimization (Rodkin & Hodges, 2003).

Finally, social ties in the form of conventional social attachments might be important factors shaping school victimization risk. Wilcox et al. (2006) discussed the inverse relationship between positive attitudes toward school and victimization risk. Pro-social attachments, such as attachment to school, parents, and conventional peers, were inversely related to school victimization risk (Schreck & Fisher, 2004). Related studies have suggested that social controls in the form of conventional social attachments play a more important role in reducing school victimization risk compared to police officers, security staff, and electronic security.

Considering Heterogeneity in Crime Types in Empirical Studies of LRAT

A potential limitation in the measurement of key concepts of LRAT is related to the heterogeneity of crime types. That is, empirical relationships between indicators of these concepts and victimization risk may vary across crime types. Previous studies have uncovered mixed findings about the effects of these concepts, perhaps because different studies focused on different types of criminal victimization (Fisher, Sloan, Cullen, & Lu, 1998; Massey, Krohn, & Bonati, 1989; Miethe, Hughes, & McDowall, 1991; Miethe, Stafford, & Sloane, 1990). For example, the relationships involving target attractiveness and guardianship may vary between property and violent victimizations (Massey et al., 1989). For violent victimizations, there is a potential overlap between the target and the guardian, yet for property victimizations, the target exists independently and separately from the guardian.

Given this potential limitation, measures of related concepts should be examined separately for property victimization versus violent victimization (Kennedy & Forde, 1990; Lynch & Cantor, 1992; Massey et al., 1989; Miethe et al., 1987; Mustaine & Tewksbury, 1998; Sampson, 1987, 1997; Sampson & Lauritsen, 1990; Tseloni & Farrell, 2002; Tseloni,

Wittebrood, Farrell, & Pease, 2004). In other words, it is worthwhile to consider the nature of individual-level variables from LRAT in crime-specific models, and not with more general categories of crime. Hence, more detailed analyses of these effects are needed (Kennedy & Forde, 1990; Massey et al., 1989; Meithe & Meier, 1990; Mustaine & Tewksbury, 1998; Sampson & Wooldredge, 1987). For this reason, this dissertation focuses on victimizations by personal (violent) crimes.

A Risky Heterogeneity (Individual Level Trait) Perspective

The substantive focus of research on victimization has seldom extended beyond situational factors such as risky lifestyles and routine activities. However, scholars have begun to systematically investigate individual antecedents to victimization risk. In the mid-1900s, researchers started to focus on the role victims play in crime, and whether victimization and offending are intimately linked together. Early scholars created victim typologies and developed the terms *victim precipitation, victim facilitation,* and *victim provocation* to examine how victims might contribute to their own victimization. Von Hentig (1948), in his book *The Criminal and His Victim: Studies in the Sociobiology of Crime,* argued that it is important to investigate why certain individuals are more vulnerable to victimization. He recognized the connection between criminal victimization and offending, and he identified "victim provocation" (i.e., when an individual does something to provoke another person to engage in an illegal act) as being shaped by victims' characteristics.

In the mid-1940s, Mendelsohn (1956) was also concerned with the relationships between victims and offenders. Victims and offenders often know each other and have some type of personal relationship. He then classified victims based on their culpability or degree of blameworthiness (see also Schafer, 1968). In 1957, Wolfgang conducted the first empirical investigation of victim precipitation. Wolfgang identified the extent to which the victim was

the direct, positive precipitator of homicide. He also determined that (1) victims and offenders most often knew one another, and (2) the most victim-precipitated homicides were between male offenders and male victims. At this point in victimization research, victim precipitation, victim facilitation, and victim provocation became important foci.

Low Self-Control Theory

Prior to the late 1990s, victimization theories ignored how individual traits, such as low self-control, might contribute to the risk of victimization. Self-control deficits have since emerged as major predictors of victimization (Schreck, 1999), and research has focused more heavily on individual traits such as age, sex, and low self-control that might lead persons to become more vulnerable to victimization (Meier & Miethe, 1993). The notion that individual traits such as low self-control may be relevant to victimization risk was understood with Schreck's (1999) application of the general theory of crime (Gottfredson & Hirschi, 1990). Several studies have examined the role of low self-control in studies of risky lifestyle effects on victimization risk (Baron, Forde, & Kay, 2007; Franklin, 2011; Hochstetler & DeLisi, 2005; Ousey, Wilcox, & Fisher, 2011; Piquero et al., 2005; Schreck, Wright, & Miller, 2002; Stewart, Elifson, & Sterk, 2004; Schreck, Stewart, & Fisher, 2006; Tillyer, Fisher, & Wilcox, 2011; Turanovic & Pratt, 2014; Vazsonyi, Machackova, Sevcikova, Smahel, & Cerna, 2012).

Gottfredson and Hirschi (1990) formulated "low self-control theory," often referred to as the "General Theory of Crime." They argued that individuals vary in their tendencies to avoid criminal behaviors, no matter what their circumstances. Individuals with low self-control tend to be impulsive, self-centered, short-sighted, thrill seeking, physically inclined, risk-taking, and belligerent as opposed to considering the future long-term consequences of their behaviors (Gottfredson & Hirshi, 1990). Also, individuals who possess low self-control are less likely to feel fearful of the potential negative consequences of criminal acts, are less

likely to make changes to their risky lifestyles, and are also more likely to engage in gratifying behaviors that coincide with crime such as smoking, drinking, and drug abuse (Schreck et al., 2006; Higgins, Tewksbury & Mustaine, 2007; Reisig & Pratt, 2011; Turanovic, Rodriguez, & Pratt, 2012).

One of the unique aspects of Gottfredson and Hirschi's (1990) theory is that their definition of anti-social behaviors is not restricted to violations of the law but also includes other deviant behaviors. They suggested that individuals with a high level of criminality will commit not only illicit acts of force and fraud, but also other analogous acts such as smoking, drinking excessively, gambling, or having extra-marital affairs. From this perspective, Gottfredson and Hirschi (1990) posited the root causes of criminality as a lack of self-control. The general theory of crime proposes that individuals with high self-control are restricted from engaging in deviant behaviors while those with low self-control are free from constraint to act in an anti-social manner. More importantly, Gottfredson and Hirschi (1990) considered criminal opportunity as a key mechanism that must exist for acts of force and fraud to occur. That is, individuals with low self-control must be presented with opportunities for acts of force and fraud before they will engage in those acts.

Gottfredson and Hirshi (1990) noted that self-control develops early in life (by mid-childhood), remains stable throughout life, and predicts criminal behaviors through adulthood. The major explanatory mechanism for self-control is the parental management proposition; parents who appropriately supervise their children, recognize their deviant behaviors, and effectively punish the child for those acts are central to the development of self-control. A child raised in an environment where they are subject to this parenting style should develop self-control. In contrast, the failure of effective parenting should lead to low levels of self-

control, and this stable uni-dimensional latent trait may be responsible for juvenile delinquency and continued anti-social behavior into adulthood.

The notion that self-control may be linked to victimization was first solidified by Schreck (1999), who extended and reformulated Gottfredson and Hirschi's (1990) self-control theory. Schreck (1999) hypothesized that self-control helps to account for (1) differences in demographic characteristics related to victimization risk, (2) the mediating role of criminal behaviors (i.e., risky lifestyles) on the correlation between low self-control and victimization, and (3) different types of victimization. His empirical test provided support for a link between low self-control and the probability of being victimized. Furthermore, Schreck (1999) noted that situational factors (i.e., lifestyles and routine activities) should not be viewed in isolation from individual trait factors (i.e., self-control). Lifestyles and routine activities cannot provide a complete explanation of victimization risk.

Schreck (1999) argued that, like offenders, individuals with low self-control are less likely to have long-term foresight of their actions and consequences to avoid being victimized. They are more likely to engage in risky behaviors and place themselves in situations that lead to an increased risk of victimization. Therefore, low self-control influences lifestyles and routine activities which, in turn, may create risky situations that shape target attractiveness and vulnerability to victimization. Schreck's (1999) findings revealed that criminality was attributable to low self-control which, in turn, had a significant direct effect on both personal and property victimization. This implies that self-control indirectly effects victimization risk through lifestyle factors such as criminality and deviant peer associations.

Integrating the State Dependence and Risky Heterogeneity Perspectives

The above discussion demonstrates the compatibility of low self-control and lifestyles/routine activities for shaping victimization risk, both in terms of how each might

directly influence victimization when controlling for the other, and in terms of how low self-control might contribute to riskier lifestyles and, hence, higher victimization risk. In support of integrating these two theories for victimization research, empirical findings of the effects of low self-control on victimization risk have varied depending on whether studies controlled for other predictors that are assumed to isolate people from criminal opportunities (Franklin, 2011; Ousey, Wilcox, & Fisher, 2011; Piquero et al., 2005; Schreck, Wright, & Miller, 2002; Stewart, Elifson, & Sterk, 2004; Schreck, Stewart, & Fisher, 2006; Tillyer, Fisher, & Wilcox, 2011; Turanovic & Pratt, 2014; Vazsonyi et al., 2012). Table 2.2 displays studies of the link between different types of victimization and the integrated effects of LRA and low self-control.

Table 2.2. List of Studies on Victimization Framed within LRAT and Low Self-Control

Type of Victimization	Studies
Personal	Baron, Forde, & Kay (2007), Kerley, Hochstetler, & Copes (2009), Piquero, MacDonald, Dobrin, Daigle, & Cullen (2005), Schreck, Wright, & Miller (2002), Schreck, Stewart, & Fisher (2006), Stewart, Elifson, & Sterk (2004)
Property	Kerley et al. (2009), Schreck, Stewart, & Fisher (2006)
Violent and property	Holtfreter, Reisig, & Pratt (2008), Schreck, Stewart, & Fisher (2006), Stewart, Elifson, & Sterk (2004)
Non-violent	Fox, Gover, & Kaukinen (2009). Schreck (1999), Schreck et al. (2006)
Internet theft and fraud	Holtfreter, Reisig, & Pratt (2008), Holtfreter, Reisig, Piquero, & Piquero (2010), Reisig, Pratt, & Holtfreter (2009), Pratt, Holtfreter, & Reisig (2010)
Sexual assault	Franklin (2011)
Intimate partner violence	Catalano (2006), Kerley, Xu, & Sirisunyaluck (2008), Kerley, Xu, Sirisunyaluck, & Alley (2010)
Stalking	Fox, Gover, & Kaukinen (2009)

Several studies have provided empirical evidence supporting Schreck's application of self-control theory to criminal victimization (Baron et al., 2007; Fox et al., 2009; Franklin et al., 2012; Higgins et al., 2009; Holtfreter et al., 2008, 2010; Kerley et al., 2009; Piquero et al., 2005; Schreck, Wright, & Miller, 2002; Stewart, Elifson, & Sterk, 2004; Schreck, Stewart, & Fisher, 2006; Tillyer, Fisher, & Wilcox, 2011). However, it is worthwhile to consider that some studies have not found that lifestyles and routine activities completely mediate the link between low self-control and victimization risk (Franklin, 2011), whereas other studies have found that lifestyles and routine activities fully mediate this link (Turanovic & Pratt, 2014). In short, prior studies have found *both* direct and indirect effects of low self-control on victimization.

Schreck, Wright, and Miller (2002) found that individuals' low self-control and situational factors (risky lifestyles and delinquent peer associations) directly and indirectly affected their victimization risk for simple assault, robbery, and aggravated assault. In other words, low self-control still remained significant even after controlling for exposure to motivated offenders. Lifestyles and routine activities (e.g., weak social bonds, having close friends with criminal histories, and unstructured leisure activities with peers) did not completely mediate the link between self-control and victimization. Also, low self-control had a stronger effect on personal violence than situational factors. Schreck et al. (2002) concluded that individuals with low self-control put themselves in risky situations conducive to victimization.

Consistent with the above, Schreck and Fisher (2004) investigated how the connection between low self-control and lifestyles/routine activities is related to victimization risk. The study built on the existing body of knowledge by examining the role of self-control at one

point in time as a predictor of victimization at a later point in time. They also tested whether victimization is associated with subsequent changes in delinquent activities and patterns of delinquent peer associations. They found that family-related predictors, such as family climate, parental feelings toward their children, and child's attachment to mothers and fathers, were significantly related to the risk of violent victimization. Also, peer context (delinquent activities with peers and associations with delinquent peers) contributed significantly to an increased risk of violent victimization. Peer delinquency explained violent victimization risk independently of all other factors (age, gender, race, lifestyle, and family-related factors).

Although not examined here, it should be noted that Schreck, Stewart, and Fisher (2006) were the first scholars to examine the effects of low self-control on the risk of *repeat* victimization. They found that individuals with low self-control had higher risk of repeat victimization and were more likely to engage in delinquent activities and to have delinquent peer associations after being victimized.

Franklin, Franklin, Nobles, and Kercher (2012) applied low self-control and routine activities theories to an understanding of victimizations by crimes that predominantly target females in order to assess the application of the general theory of crime while controlling for relevant demographic factors. Franklin et al. (2012) found direct effects of self-control deficits on female victimization risk regardless of the type of crime (e.g. property, personal, and sexual assault), even after controlling for several routine activity indicators. Several routine activity factors remained significant although the patterns of these relationships differed by crime type.

GENDER INVARIANCE IN MICRO EFFECTS ON VICTIMIZATION RISK

Although LRAT proposes that individuals' behavioral patterns influence victimization risk, it does not explain how a person's sex might condition lifestyle effects on

victimization risk (Cohen et al., 1981; Cohen & Felson, 1979; Jensen & Brownfield, 1986; Meier & Miethe, 1993). Also, LRAT implies that direct sex effects on victimization risk should be eliminated or reduced after sex-specific behavioral patterns are incorporated in the model, but some studies have revealed that sex remains significant even after controlling for these behaviors (Augustine et al., 2002; Chen, 2009; Finkelhor & Asdigian, 1996; Jensen & Brownfield, 1986; Mustaine & Tewksbury, 1998; Tewksbury & Mustaine, 2000). Several scholars have also hypothesized that there might be interaction effects between a person's sex and lifestyles/routine activities on victimization risk (Dugan & Apel, 2003; Jensen & Brownfield, 1986; Lauritsen, Heimer, & Lynch, 2009; Mustaine & Tewksbury, 2002; Verweij, & Nieuwbeerta, 2002).

The role of gender is important for understanding why males are often more likely to be targeted as victims (Baker, Mednick & Carothers, 1989; Dugan & Apel, 2003; Jensen & Brownfield, 1986; Lauritsen, Heimer, & Lynch, 2009; Planty & Truman, 2012; Schreck et al., 2003). In terms of different lifestyles, females are less likely to be exposed to potential offenders and more likely to be guarded (Cho, Wooldredge, & Park, 2015; Kim, 2007; Wilcox, Tillyer, & Fisher, 2009). Thus, females are less likely than males to engage in deviant activities (Augustine et al., 2002; Darling, Caldwell, & Smith, 2005; Feldman & Matjasko, 2005; Finkelhor & Asdigian, 1996; Maher, 1997; Steffensmeier, 1983; Zaykowski & Gunter, 2013). For this reason, it is assumed that there may be other factors that contribute to sex differences in victimization risk. For example, direct sex effects on victimization risk remain significant after controlling for lifestyles factors, especially in models explaining weapon-related victimizations and different types of property victimizations (Jensen & Brownfield, 1986).

Some feminists criticized early studies of LRAT for the assumption that female victimization can be explained using the same models as for male victimization (Daly & Chesney-Lind, 1988). For example, an integration of LRAT with feminist theory might better explain the social context of male violence against females. The high rates of sexual assault against females have been attributed to structural inequalities in male "power" and a "rape-supportive" culture in the United Sates that downplays and normalizes male violence (Schwartz & DeKeseredy, 1997). A feminist perspective supports the position that (1) males sexually assault females as a way to assert their presumed superiority over females, and (2) females are the more likely victims whereas males are the more likely offenders.

Wilcox, Tillyer, and Fisher (2009), drawing from feminist research, extended the principle of homogamy to explore the conditioning role of gender for school-based adolescent victimization. Their findings supported gender differences in the effects of some opportunity predictors of victimization, indicating that the effects of risky and protective measures were heightened for female students. Zaykowski and Gunter (2013) also examined the effects of offending and other deviant lifestyles on victimization across gender groups; specifically, how violent and nonviolent actions, substance use, mental health, and prior victimization are predictive of assault victimization and repeat victimization for females and males in both cross-sectional and time-ordered models. In each model, they provided separate findings that the relationship between deviant lifestyles and victimization risk varied by sex.

Research has applied LRAT to analyses of sex-specific effects of extracurricular activities on victimization risk at school. Some studies confirmed gender role expectations that male students are more likely to engage in sport activities while also experiencing higher rates of victimization compared to females. On the other hand, female students are more

likely to participate in club activities, such as the performing arts and student government, which tend to reduce their risk of victimization (Augustine et al., 2002; Darling, Caldwell, & Smith, 2005; Feldman & Matjasko, 2005; Finkelhor & Asdigian, 1996; Popp & Peguero, 2011).

MACRO LEVEL EFFECTS ON VICTIMIZATION RISK

Empirical studies of LRAT have been criticized for including insufficient statistical controls in multivariate models (Garofalo, 1987; Sampson, 1990). Specifically, some studies have failed to consider possible neighborhood level effects on victimization risk, yet others have shown that individual level lifestyles are rendered nonsignificant or weaker once community contextual factors and population demographics are added to the models (Lynch & Cantor, 1992; Tseloni & Farrell, 2002). This suggests that it is important to consider multi-level models for empirical tests of LRAT. Also, related to my goal of theoretical integration, Elliott (1985) observed that researchers once placed more importance on integration at either the micro- or macro-level rather than integration at both levels of analysis. An integrative perspective should not be restricted to single level theories but should reflect both micro-and macro-level perspectives.

Due to the common use of proxy measures of key concepts in individual level victimization studies, it is sometimes difficult to disentangle the effects of empirical indicators derived from opportunity theories of victimization, such as LRAT, from those derived from competing macro level theories of criminality, such as social disorganization. For instance, empirical indicators of proximity to crime have included living in a high crime area, the degree of population concentration, urban versus rural areas, and the socioeconomic characteristics of an area such as median family income, unemployment rates, and racial composition (Cohen & Cantor, 1981; Cohen et al., 1981; Hough, 1987; Kennedy & Forde,

1990; Miethe & Meier, 1990; Sampson & Wooldredge, 1987; Tseloni et al., 2004). It is assumed that motivated offenders select targets in close proximity to their residence; thus, living in a high crime area implies close proximity to crime. However, this indicator of proximity to crime can also be representative of population heterogeneity, low economic status, and other factors that might shape victimization risk separately from proximity to crime (following social disorganization theory). For example, the positive relationship between living in high crime areas characterized by urbanization or lower family incomes and victimization risk cannot separate the role of "opportunity" from these macro level factors.

Non-household activity measures, as indicators of exposure to motivated offenders, might also reflect theoretically relevant macro level factors (e.g., problems with community control and norm transmission, and a breakdown in bonds to conventional society) (Miethe & Meier, 1994). Similar to the limitations of indicators of proximity to crime, the positive relationship between non-household activities and victimization risk might not empirically separate opportunity theories of victimization from certain macro level theories.

Target attractiveness is often measured by general economic conditions such as median family income and unemployment rates, yet these conditions are also relevant to macro theories of criminality such as social disorganization theory. Also, the concept of capable guardianship is sometimes measured as family and social networks, such as having neighbors watch property and/or levels of participation in neighborhood watch programs (Miethe & McDowall, 1993; Schreck, Stewart, & Fisher, 2006; Tseloni et al., 2004), yet these factors might also tap into the macro concept of collective efficacy.

Some scholars have employed multi-level modeling to statistically disentangle

variables intended to reflect opportunity theories versus those reflecting macro theories of criminality.

The first study of a multi-level model of criminal opportunity was Sampson and Wooldredge (1987). Using the British Crime Survey for 1982, they found significant contextual effects on victimization risk, independent of individual level factors. They also found that individual- and household-level factors influenced personal and household victimization simultaneously. There was far too little consistency in their findings to conclude that individual activity patterns and lifestyles mediate the relationship between social inequality and victimization risk. For this reason, they argued that the more general opportunity model incorporating lifestyles and routine activities with a focus on proximity to crime and macro sociological processes provides the most encouraging direction for multilevel victimization studies.

Following on Sampson and Wooldredge's (1987) work, Smith and Jarjoura (1989) found that burglary victimization risk varied significantly with both household and neighborhood characteristics. At the individual-level, single-parent households and the number of household residents were significantly related to the risk of burglary. At the neighborhood-level, area-level social integration was negatively related to household burglary victimization risk, while racial heterogeneity, residential instability, family disruption, and the proportion of residents aged 12 to 20 were positively related to burglary risk. Kennedy and Forde's (1990) study, based on data from the 1982 Canadian Urban Victimization Study, also supported a multi-level opportunity model. They found consistency with the findings of the previous studies of simultaneous and direct effects of individual- and aggregate-level factors on victimization risk.

Lynch and Cantor (1992) refined the opportunity model by including ecological factors at different levels: municipality (whether or not a central city), neighborhood (existence of trash and litter, commercial establishments, and offenders), block (immediate neighbors watching houses), and housing units (single-family structure, visibility from street, internal security, and day time and night time occupancy). Controlling for the "dangerousness" variable of ecological context, they provided a more conservative test of the effects of individual behavioral variables on victimization risk for burglary and household larceny (separately).

In Wilcox and Land's (1996) study using a 3-level hierarchical model, macro-level indicators of social disorganization included community population density, ethnic heterogeneity, low SES, social integration, gender, and age composition. Their findings revealed that higher tract-level burglary rates and incivilities as well as lower levels of neighborhood integration contributed to higher levels of perceived victimization risk by individuals, net of individual-level effects. Also, tract-level burglary rates were positively related to subsequent precautionary measures.

Kennedy and Forde (1990) examined several structural indicators at the macro-level: percentage of one-person households, percentage of single/detached units, percentage of one parent households, percentage of unemployed, divorced, low income families, and population density per square mile. They found that several routine activities significantly predicted personal victimizations. Kennedy and Forde's (1990) findings were consistent with previous studies of context- and multi-level aspects of criminal opportunities (Messner & Blau, 1987, Sampson & Wooldredge, 1987). Tseloni and Farrell's (2002) research used the International Crime Victims Survey (ICVS) and several national-level social indicators such as education

levels, unemployment rates, poverty rates, income distribution, cost of living, cost of leisure activities, and possession of durable goods. Once these national indictors were introduced into the model, this reduced unexplained variation in victimization risk across countries and also reduced unexplained variation in risk at the household level.

These findings from multilevel studies imply that motivated offenders may be affected by the community structure of entire areas, and not merely by individual differences in routine activities. Therefore, studies adopting only one of either perspective have been criticized for failure to include the assumption of the other perspective. In other words, two issues are relevant to the study of criminal opportunity: (1) individual level studies might be misspecified if they do not incorporate how the social context influences individual criminal motivations and behaviors, and (2) aggregate level studies might overestimate community level effects if they are correlated with compositional differences among individuals nested within communities. Also, aggregate level theories fail to account for how individual routine activities and lifestyles might create physical opportunities for victimization. Given these perspectives, neither one considers the other's assumptions. For these reasons, the model of victimization examined for this dissertation also includes a macro level component grounded in Sampson's (1997) concept of "collective efficacy." This concept evolved out of social disorganization theory, as discussed next.

Social Disorganization, the Systemic Model, and Collective Efficacy

The most famous argument for understanding macro-level effects on crime is "social disorganization theory" (Shaw & McKay, 1942). Although a macro theory of crime, social disorganization theory implies that levels of both crime *and* victimization should be significantly higher within structurally disadvantaged neighborhoods such as those with low income, residential instability, and weak social controls (Berg & Loeber, 2011; Berg, Stewart,

Schreck, & Simons, 2012; Miethe & McDowall, 1993). There are three parts to the development of Social Disorganization Theory (SDT). The first part is the early work of Shaw and McKay (1942). The second part is a systemic model of SDT as a reformulation and extension of Shaw and McKay's original work (Kasarda & Janowitz, 1974; Kornhauser, 1978; Sampson, 1988; Sampson & Groves, 1989). The third and final part is Sampson's (1997, 2006) theory of collective efficacy as a refined version of the systemic model of SDT. It is the third part related to Sampson's theory that is relevant to this dissertation.

The community-level dynamics of crime were first articulated in the Chicago School. Shaw, Zorbaugh, McKay, and Cottrell (1929) in *Delinquency Areas* found a systematic pattern of the distribution of delinquency in Chicago in the first part of the 20th century. They found that delinquency rates were highly concentrated in certain areas adjacent to the central business district and commercial zones (characterized by the intersection of poverty, heterogeneous population composition, rapid population growth, greater transiency, and family disruption), and then decreased in the more affluent residential areas. They found that delinquency rates remained constant in these areas even though the residential populations in the transition zone were replaced by new immigrant groups. Shaw and McKay (1942) concluded that neighborhood-level characteristics (e.g., low SES, ethnic heterogeneity, and residential mobility) led to "social disorganization" by weakening the community's ability to provide informal social controls and to socialize youths effectively. The ability of residents living in these neighborhoods to realize common values and to solve problems was limited, contributing to "socially disorganized" areas.

Shaw and McKay (1942) did not discuss the causal mechanisms linking social disorganization (i.e., structural characteristics of neighborhoods) to delinquency rates. In

response to this critique, scholars identified the relevance of social ties and social networks as an extension of Shaw and McKay's original work (Bursik & Grasmick, 1993; Kasarda & Janowitz, 1974; Kornhauser, 1978; Lowenkamp, Cullen, & Pratt, 2003; Sampson, 1988; Sampson & Groves, 1989). In a systemic model of SDT, social control is presumed to stem from social ties and social networks such as informal surveillance and direct intervention (Greenberg, Rohe, & Williams, 1982). The systemic model of SDT presumes that residents of communities with strong social ties and social networks are more likely to have a greater ability to supervise social activities and to socialize with their neighbors. Therefore, communities with residential instability, ethnic heterogeneity, and low economic status are less likely to establish social ties and social networks in which common values are transmitted to residents.

Several studies have provided mixed empirical evidence favoring a systemic model of SDT, leading to skepticism about the systemic model (Bellair, 1997; Warner & Wilcox, 1997; Wilcox & Warner, 1999; Wilkinson, 2007). Wilson (1996) argued that poor communities with residents' interconnection through strong social ties and networks do not provide the social control of disorderly behavior. Pattillo-McCoy (1999) argued that even though strong social ties and networks support social integration, they can also develop social ties and networks that might hinder efforts to reduce crime in neighborhoods.

Bellair (1997) found that weak social ties and networks among residents of communities can lead to low rates of crime; getting together at least once a year was strongly predictive of low rates of crime regardless of their frequency of interconnection. Thus, findings suggested it was enough for neighbors to simply know each other (for reducing crime) no matter how frequently they interacted. In addition, Warner and Wilcox (1997)

provided empirical support for the idea that the systemic model is less applicable to all neighborhoods, meaning that social ties do not consistently equate to informal social controls across all neighborhoods. Personal ties had a significant effect on reducing crime rates in predominantly white neighborhoods, yet were nonsignificant in reducing crime in predominantly minority, middle class communities. Finally, Wilkinson (2007) found that informal social controls had more significant effects on reducing less serious crimes, while formal social controls were more effective in controlling more serious crimes. In sum, the studies mentioned above did not provide evidence supporting the systemic model's assumption that monotonic increases in local social ties are significantly related to monotonic decreases in crime.

In light of skepticism about the systemic model's assumptions, the concept of collective efficacy, which is a refined version of the systemic model of SDT, emerged. Collective efficacy refers to the link between social cohesion in a community and changes in urban areas (Sampson, Raudenbush, & Earls, 1997). According to the collective efficacy model, local social ties will not strengthen informal and formal social controls if residents do not mutually trust each other to control deviance in their community. This means that collective efficacy does not focus solely on the impact of community social ties on crime rates. Instead, Sampson, Raudenbush, and Earls (1997) added two major ideas, "mutual trust" and "willingness," to the systemic model. Lower crime rates depend on the level of mutual trust and the willingness (i.e., shared expectations) of residents to intervene in crime in their community. In other words, residents in a given community should trust each other and activate their social capital in order to solve their common problems.

Sampson et al. (1997) tested collective efficacy theory using Project on Human Development survey data gathered from 343 neighborhoods in Chicago. They found that concentrated disadvantage and immigrant concentration contributed significantly to a reduction in collective efficacy, yet the effects of residential mobility (instability) on efficacy significantly decreased after individual-level factors were controlled. Sampson et al. (1997) also investigated how the correlations between violent victimization and three structural factors (concentrated disadvantage, immigrant concentration, and residential mobility) were mediated by collective efficacy. Findings revealed that there is a mediating effect of collective efficacy but that it depends on the type of violent crime.

A focus on the systemic model places emphasis on shared beliefs to achieve an active sense of commitment on the part of neighbors. Thus, distinguishing between personal ties and collective efficacy may help clarify the problematic assumption of the systemic model that a monotonic increase in social ties and networks corresponds with a monotonic decrease in delinquency. Collective efficacy also stresses the role of social networks and public resources, implying that when social action is absent, strong social ties mean little for effective social control. Further, neighbors will be reluctant to get involved in social control if they experience no mutual trust (Sampson, 2008). Thus, collective efficacy might be viewed as an extension of systemically based social disorganization. Given the focus of collective efficacy on the willingness of residents to intervene in crime in their community, the concept is relevant to an understanding of victimization risk by focusing on residents' willingness to watch out for each other.

Conditioning Effects of Macro Level Factors on Micro Level Relationships

Individual level effects on victimization risk might also vary across community contexts that vary in levels of efficacy, if stronger efficacy tends to dampen the relevance of

individual level effects such as parental attachments. More broadly, scholars have argued that victimization theories have typically ignored the role of community context for shaping individual level effects on risk (Lauritsen & Laub, 2007; Sampson & Lauritsen, 1990). This raises the importance of two types of contextual effects to consider in a multi-level model. First, environmental level factors, such as collective efficacy, might independently influence victimization rates at the macro level (i.e., direct effects). Second, the relationships between individual-level factors and victimization risk may vary across certain community contexts (i.e., moderating effects). For instance, the effect of individual level factors (delinquent peer, parental attachment, etc.) on victimization risk might be stronger among youths attending schools in areas with lower levels of collective efficacy, if individual lifestyles matter more for shaping risky situations in these locales. An assumption guiding the integration of micro and macro theories is that environmental conditions determine the effects of individual level opportunities (Miethe & McDowall, 1993).

Some scholars have argued that criminal opportunities can operate simultaneously and independently at different levels (Kennedy & Forde, 1990; Sampson & Wooldredge, 1987; Smith & Jarjoura, 1989; Wilcox, Land, & Hunt, 2003; Wilcox, Gialopsos, & Land, 2013). Sampson and Wooldredge (1987) found that lifestyles and activity patterns at the micro-level were significant predictors of burglary victimization risk, and aggregate community characteristics (e.g., proportion of single-person households, unemployment rate) were also significant determinants of burglary victimization at the macro level. While these findings appear to suggest that opportunity factors at the individual-level maintain similar effects across all community contexts, this ignores the possibility that opportunities at the individual level might be reinforced or canceled by opportunities at the neighborhood level. Scholars

have recognized that opportunities emerge from the interaction between individual- and contextual-level factors (Fisher, Sloan, Cullen, & Lu, 1998; Miethe & McDowall, 1993; Outlaw, Ruback, & Britt, 2002; Rice & Smith, 2002; Schreck, Miller, & Gibson, 2003; Wilcox, Madensen, & Tillyer, 2007; Wilcox Rountree, Land, & Miethe, 1994). This suggests that the effects of individual-level indicators of opportunity might vary depending on the contextual characteristics of communities where individuals reside.

Miethe and his colleagues (1993, 1994) were the first scholars to focus specifically on how micro-level effects may vary across different geographical areas. They found that the effects of risky behaviors on the odds of burglary victimization varied significantly across neighborhoods. Using the same data, Wilcox, Land, and Miethe (1994) provided empirical support for both the main and interaction effects of social disorganization indicators on victimization risk. Additionally, Rice and Smith (2002) found an interaction effect involving criminal opportunities and socially disadvantaged areas (blocks), which produced an even higher risk for auto theft than each factor explained separately.

From their integration of LRAT and social disorganization theories, Wilcox, Land, and Hunt (2003) found that the inverse effect of individual guardianship on victimization became stronger as aggregate guardianship increased. Wilcox, Madensen, and Tillyer (2007) provided an even more comprehensive conceptualization of guardianship through the integration of lifestyle/routine activities, environmental design, and social control theories. Household-level guardianship was measured as multi-dimensional and then aggregated to the community level to provide macro-level measures of each guardianship dimension. They found that the effects of individual-level guardianship on burglary victimization risk were stronger as aggregate guardianship increased. Also, six of the 16 interaction effects were

significant. They concluded that aggregate guardianship conditioned the relationship between individual guardianship and burglary victimization risk, although it was not instrumental in explaining burglary victimization as a main effect.

Outlaw, Ruback, and Britt (2002) found that individual-level factors were significantly related to repeat property victimization, but the negative effect of household-level safety precautions on property victimization risk became weaker as neighborhood-level busy places increased. In areas with fewer busy places, household-level safety precautions led to lower property victimization risk, indicating that safety precautions in areas with more busy places are less effective (perhaps because such areas already have guardianship).

Regarding a focus on youth victimization, some studies on youth victimization at middle and high schools have also stressed the notion of multi-level opportunities (Fisher et al., 1998; Schreck, Miller, & Gibson, 2003). Individual-level indicators of both exposure to motivated offenders and the absence of guardianship have been found to increase the risk of violent and theft victimization (Fisher et al., 1998; Schreck, Miller, & Gibson, 2003). Also, school-related "exposure" to motivated offenders has been found to significantly correlate with victimization risk even after controlling for individual-level factors (Schreck, Miller, & Gibson, 2003).

Regarding the link between offending and victimization risk, several studies have provided empirical evidence favoring the conditional effects of neighborhood context on the relationship between involvement in offending and victimization (Berg & Loeber, 2011; Berg, Stewart, Schreck, & Simons, 2012). Berg et al. (2012) found that the relationship between offending and victimization was most pronounced in neighborhoods in which the street culture was prominent. This means that youths who resided in neighborhoods where the street

culture was less prominent were no more likely to be victimized if they also engaged in crime. Berg and Loeber (2011) found that individual-level deviance (violent offending, deviant peer associations, and alcohol use) was significantly and positively related to violent victimization in disadvantaged neighborhoods, but there was no significant positive relationship between offending and victimization in low-poverty neighborhoods. The results of these studies were consistent with the idea that the relationship between offending and victimization might be context-specific.

Previous theoretical integrations have been discredited because they have not paid attention to the compatibility between constituent theories. The focus of micro level opportunity theories, on the other hand, suggests that they are appropriate for integrating with macro level theories (Wilcox, Land, & Hunt, 2003). The initial presupposition is that individual- and aggregate-level criminal opportunities are not equally distributed across time and place. The ecological foundations of opportunity theories make these theories more compatible with social disorganization theory (i.e., individual routine activities within certain structural contexts influence crime). Further, the mechanisms of informal social controls operating at the macro level correspond with the concept of "capable guardianship" in LRAT.

LONGITUDINAL CHANGES IN VICTIMIZATION RISK

According to the "risky heterogeneity" perspective, there is heterogeneity in the propensity for crime across persons that is developed early in life and remains stable thereafter (Gottfredson & Hirschi, 1990; Nagin & Paternoster, 1991; 2000; Pease, 1998; Sullivan, Ousey, & Wilcox, 2015). In other words, stability in criminal offending over time is

attributed to individual differences in antisocial characteristics developed in childhood (e.g., low self-control, impulsivity, and psychopathic personality) (Gottfredson & Hirschi, 1990; Moffitt, 1993). Stability in individual criminal propensities might help predict developmental growth trajectories of criminal offending and victimization. This means that individual traits, such as low self-control and impulsivity, might be significantly and positively correlated to the onset and rate of change in offending and victimization over time. Moreover, risky heterogeneity might also shape individual lifestyles and routine activities which place people in risky situations that expose them to likely offenders that, in turn, lead to an increased rate of criminal victimization (Franklin, Franklin, Nobles, & Kercher, 2012; Schreck, 1999; Schreck, Wright, & Miller, 2002; Stewart, Elifson, & Sterk, 2004; Schreck, Stewart, & Fisher; 2006; Tillyer, Fisher, & Wilcox, 2011).

Despite a movement to integrate existing theories of crime and victimization, most studies have ignored the relevance of developmental variation in life course events. Recently, greater use of latent growth curve modeling, structural equational modeling, path analysis, and event history analysis reflects growing interest in longitudinal models of crime and victimization (Jennings et al., 2010; Ousey, Wilcox, & Fisher, 2011). These models are better able to examine causal mechanisms rather than correlations between explanatory factors and victimization.

In studying the relationship between changes in offending and victimization *over time*, scholars have provided empirical evidence that individuals with low self-control are more likely to engage in serious crime, and that they learn from prior offending experiences about how to reduce their vulnerability to victimization risk (Baron, Forde, & Kay, 2007; Holtfreter, Reisig, Piquero, & Piquero, 2010; Ousey, Wilcox, & Fisher, 2011; Pauwels &

Svensson, 2011; Turanovic & Pratt, 2013, 2014). However, the trajectory analyses of Jennings and his colleagues (2010) revealed that an adolescent group of delinquents overlapped with another adolescent group of victims. They also found no significant effects of risky lifestyles (delinquent peer associations and gang participation) on either delinquency or victimization trajectories.

Pauwels and Svensson (2011) found a significant positive relationship between offending and subsequent victimization even after controlling for background characteristics, low self-control, and other risky lifestyles. Previous offending had the strongest effect on victimization risk. Ousey, Wilcox, and Fisher (2011) also found that individuals experiencing higher levels of offending also had higher levels of victimization risk, as well as a positive recursive effect of low self-control on victimization risk. They concluded that offending and victimization co-occurred due to the time-stability of low self-control and different lifestyles that put them in risky situations.

Turanovic and Pratt (2013) also found a significant, positive effect of low self-control on substance abuse post-victimization and post-violent offending. They also found a significant conditioning effect of self-control on the relationship between victimization and offending. That is, victims with low self-control were more likely to have an experience of substance abuse post-victimization, and those who engaged in substance abuse post-victimization were more likely to commit a violent offense.

The finding of Turanovic and Pratt's (2014) study revealed that low self-control had a significant, direct effect on victims' risky lifestyles post-victimization. Also, these changes in risky lifestyles (e.g., change in risky socializing, change in substance abuse behaviors, change in violence, and change in violent friends) were significant factors influencing repeat

victimization and fully mediated the correlation between low self-control and repeat victimization.

The four components of this dissertation that have been framed in this chapter should provide a fairly comprehensive picture of personal victimization risk among school-age youths in South Korea. Chapter 3 describes how the analysis of each component will be executed.

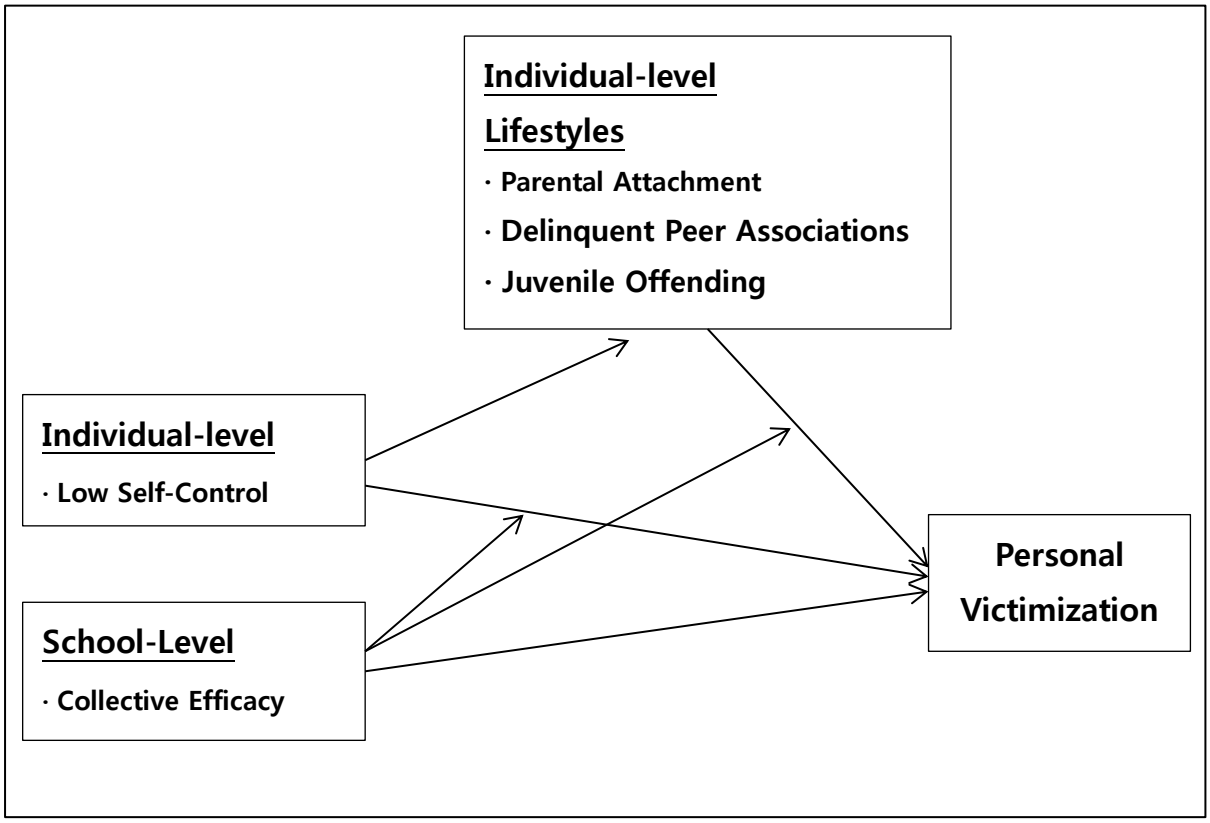
CHAPTER III

RESEARCH METHODS

RESEARCH QUESTIONS

This dissertation focuses on the effects of both micro- and macro-level factors on the risk of personal victimization among South Korean youths, including being (1) severely teased, (2) threatened, (3) collectively bullied, (4) severely beaten, and (5) robbed. I will examine the relative contributions of lifestyle factors and low self-control at the individual level, and of collective efficacy at the macro level in order to understand personal victimization risk, as shown in Figure 3.1.

Figure 3.1. Conceptual Model of Direct, Indirect, and Moderating Effects on Personal victimization



Following the four topics of interest framed in Chapter 2, the research questions for the dissertation are as follows:

Main and Indirect Effects on Victimization Risk at the Individual-Level

Question 1: Is there a direct effect of low self-control on personal victimization?

Question 2: Are there direct effects of lifestyle factors (parental attachment, delinquent peer associations, and juvenile offending) on personal victimization?

Question 3: Is the relationship between low self-control and personal victimization mediated by risky lifestyles (delinquent peer associations and juvenile offending)?

Question 4: Are there indirect effects of low self-control on personal victimization through lifestyle factors (parental attachment, delinquent peer associations, and juvenile offending)?

Moderating Effects of Gender on Victimization Risk at the Individual-Level

Question 5: Do the main and indirect effects on personal victimization risk vary by a youth's sex?

Main and Moderating Effects on Victimization Risk at the School-Level

Question 6: Are there direct effects of collective efficacy on levels of victimization risk?

Question 7: Do individual-level effects on personal victimization vary in strength depending on collective efficacy at the school-level?

Sources of Longitudinal Trends in Personal Victimization

Question 8: How do individual differences in personal victimization change over time?

Question 9: Are inter-individual differences in average risk for the first wave explained by individual-trait variables (male and LSC) as well as lifestyle variables (PA, DPA, and JO)?

Question 10: Are inter-individual differences in the change in risk over time (across all five waves) explained by individual-trait variables (male and LSC) as well as lifestyle variables (PA, DPA, and JO)?

SAMPLE

Data for the analysis came from the Korean Youth Panel Survey (KYPS). These data were compiled by the National Youth Policy Institute (NYPI), a public research institute directed by the Office of the Prime Minister. The KYPS sample was drawn using a stratified, multistage cluster design where the same subjects were surveyed once a year for five years from 2004 (fourth grade) to 2008 (eighth grade in junior high school). The sample of fourth graders included a nationwide cross-section of South Korean youths from 15 metropolitan cities and provinces in the country. This panel design model has two desirable features. First, it allows researchers to more clearly examine causal relationships due to the longitudinal design. Second, it permits examination of developmental growth trajectories over time (in victimization risk and the factors that might influence risk).

Research subjects for the first year were selected by region in proportion to the population of fourth year elementary school students stratified into 15 regions in South Korea (including Seoul metropolitan city and 14 metropolitan cities and provinces). Schools were sampled proportionate to size based on the average number of fourth year students per class.

Any schools refusing to participate or having less than three classes of 50 or more students were replaced with the next school listed in the sampling frame. Lists of all fourth year students, excluding those in accelerated or special needs classes, were compiled from the selected schools. Accelerated and special needs classes were excluded due to the goals of the larger study related to capturing changes over time in the vocational abilities and aspirations

of public middle-school students. These other classes included a mix of students whose chronological ages did not uniformly correspond with specific education classes. The sampling interval for each stratum was determined by dividing the total number of elementary school students by the allocated number of schools in each of the 15 sampled regions. A total of 2,950 fourth grade students were selected and 2,844 responded to the surveys.

DATA

Information compiled from the surveys was divided into two parts related to individual and environmental development. Individual development focused on physical (body transformation and health), intellectual (grades and study habits), social-emotional development (self-control, self-esteem, and goals), juvenile delinquency (delinquent peer associations, experiences of delinquency and victimization), and everyday life circumstances (participation in extra private education, frequency of contact with close friends, and daily average time spent on a computer and talking on a mobile phone). The second part - environmental development - focused on family environments (family composition, child rearing methods, guardian's absence after school), peer associations (peer attachment, attitudes toward parents, and heterosexual relationships), school factors (absences from school, school activities, and leisure activities after school), communities (collective efficacy and community investment), media environments (use of computers and cellphones, and cyber delinquency), and cultural environments (club activities, trips, religious activities, and other miscellaneous activities).

The first wave of the study was conducted from November 11th through December 31st in 2004. These surveys produced information for a sample of 2,844 adolescents aged 11

(96.4 percent response rate). Survey data were obtained from both the sampled youth and their parents or guardians. Table 3.3 displays the survey response rates broken down by region of the country.

Table 3.3. Survey Numbers (Response Rates) and Number of Schools, by Region

Classification (cities and provinces)	**Number of Students (Response Rate %)**	**Number of Schools**	**Classification (cities and provinces)**	**Number of Students (Response Rate %)**	**Number of School**
Seoul Metropolitan	515 (96.3)	16	Jeollanam-do	93 (96.9)	3
Inchon Metropolitan	160 (96.4)	5	Jeollabuk-do	113 (97.4)	4
Gyeonggi-do	670 (95.4)	18	Busan Metropolitan	198 (99.5)	6
Gangwon-do	75 (93.8)	2	Ulsan Metropolitan	96 (89.7)	3
Daejeon Metropolitan	99 (97.1)	3	Daegu Metropolitan	178 (100.0)	5
Chungcheongnam-do	98 (98.0)	3	Gyeongsangnam-do	205 (97.2)	6
Chungcheongbuk-do	102 (95.3)	3	Gyeongsangbuk-do	136 (95.8)	4
Kwangju Metropolitan	106 (98.2)	3			
			Total	2,844 (96.4)	84

Group interviews of youths were conducted at their schools. For the youths' parents and guardians, telephone interview surveys were conducted, including an assessment of their socio-economic status. Data were collected following pre-specified procedures: (1) survey preparation, (2) school contact, (3) first school visit (to explain the goals of the survey, request cooperation, and provide an official letter for youths and their parents), (4) second school visit (for conducting the survey and collecting contact information for the youth's parents or guardians), (5) telephone interviews of the parents or guardians, and (6) feedback call (thanking the youths for their participation and requesting continued cooperation).

The second wave was conducted from October 20th through December 20th in 2005. Face-to-face interviews were conducted after locating each youth who participated during the first survey period in 2004. Telephone interviews were conducted for the parents or guardians. Data collection followed five procedures: (1) survey preparation, (2) interview notification and appointment set-up, (3) individual interviews with the youths, (4) telephone interviews with the parents or guardians, and (5) a feedback phone call. The third wave occurred between October 23rd and December 22nd in 2006, the fourth wave from October 23rd through December 22nd in 2007, and the last wave from October 23rd through December 22nd in 2008. The procedures of data collection from the third wave to the fifth wave were the same as those for the second wave.

One of the common methodological issues in longitudinal studies is attrition of subjects over time, where not all of the data can be collected for all sampled subjects. If one of the repeated measures has missing data in a particular wave, all data for the same measure from other waves are excluded from the data analysis. Table 3.4 shows the attrition rates for the five waves of data. Approximately 14 percent of the original sample dropped out of the

study at some point during the five-year period.

Table 3.4. Attrition of Repeated Observed Data

	Wave1	Wave2	Wave3	Wave4	Wave5
Total N	2844	2707	2671	2511	2448
Missing N	0	137	173	333	396
Attrition Rate (%)	0	4.82	6.10	11.7	13.9

However, a continuous outcome with missing completely at random (MCAR), missing at random (MAR), and missing not at random (MNAR) is addressed in M-plus by specifying full information maximum likelihood (FIML), indicating all data contribution. I used the estimator option of analysis command "maximum likelihood estimation with robust standard errors (MLR)." Although I used "MLR" techniques, for some models, cases with missing values on predictors and all variables except any predictors were not included. In this case, I used a numerical iteration algorithm option (e.g., INTEGRATION = MONTECARLO), thus all cases with missing values were included in the analysis.

MEASURES

All variables examined for the analyses are described in Table 3.5. The outcome variable is a continuous variable composed of five summed measures tapping the number of times juveniles were victimized by each of the following during the previous year: severe teasing or bantering, threats, collective bullying, severe beatings, and robberies. The independent variables were measured at two different levels of analysis including individuals and schools. Individual measures at the first level of analysis were classified into "individual trait" and "lifestyle" factors. For "individual traits," the latent variable tapping "low self-control" consists of the 21 survey items described in table 3.5. For "lifestyles," the latent variable tapping "juvenile delinquency" reflects six survey items, and the latent variable

“delinquent peer associations” includes 16 survey items. The latent variable “parental attachment” was measured with 10 survey items.

The school level latent variable of “collective efficacy” reflects six survey items aggregated to the school-level. School areas (“gu”s) were selected instead of the local areas (communities) as the macro units of analysis because schools are located in administrative districts (“gu”s) nested within each city (e.g., there are 25 “gu”s in Seoul). The residential youth populations in most of the “gu”s in the sample attended only one school, but school areas were further subdivided into multiple administrative districts (“gu”s) encompassing smaller regional populations compared to a city. The ratio of schools to “gu”s is only slightly over 1.0, so schools were treated as the level-2 units for the study.

Table 3.5. Description of the South Korean Youth Sample (N = 2,844)

			Wave 1	Wave 2	Wave 3	Wave 4	Wave 5
Variable	**Label**	**Scale**	**Mean (s.d.)**	**Mean (s.d.)**	**Mean (s.d.)**	**Mean (s.d.)**	**Mean (s.d.)**
Personal Victimization							
Total Number of Victimizations (sum of…)	VIC	continuous	1.0 (2.8)	0.5 (2.0)	0.4 (1.8)	0.3 (1.3)	0.3 (1.3)
Being severely teased or bantered (# times during the last year)	VTES		1.1 (7.1)	0.8 (10.5)	0.7 (10.0)	0.3 (7.0)	0.2 (2.9)
Being threatened (# times during the last year)	VTHR		0.2 (1.6)	0.2 (2.4)	0.1 (2.0)	0.1 (2.3)	0.1 (0.8)
Being collectively bullied (# times during the last year)	VBUL		0.3 (2.8)	0.2 (2.5)	0.2 (6.9)	0.03 (0.3)	0.1 (1.6)
Being severely beaten (# times during the last year)	VBET		0.2 (1.5)	0.2 (7.2)	0.1 (2.2)	0.01 (0.2)	0.03 (0.3)
Being robbed (# times during the last year)	VROB		0.2 (1.7)	0.1 (0.8)	0.1 (0.7)	0.1 (0.8)	0.1 (0.8)
Individual level Independent Variables							
Male youth	Male	0 – no 1 – yes	0.5 (0.5)	0.5 (0.5)	0.5 (0.5)	0.5 (0.5)	0.5 (0.5)
Juvenile Offending							
Total Number of Offenses Committed (sum of…)	JO	continuous	0.8 (2.2)	0.7 (2.1)	0.5 (1.9)	0.5 (1.8)	0.4 (1.8)
Collectively bullying others (# times during the last year)	OTES		0.4 (2.1)	0.4 (4.3)	0.4 (3.3)	0.3 (6.0)	0.2 (2.5)
Severely teasing or bantering others (# times during the last year)	OTHR		0.7 (3.7)	0.8 (10.7)	0.5 (6.9)	1.0 (14.1)	1.1 (21.5)

Table 3.5. (continued)

Variable	Label	Scale	Wave 1 Mean (s.d.)	Wave 2 Mean (s.d.)	Wave 3 Mean (s.d.)	Wave 4 Mean (s.d.)	Wave 5 Mean (s.d.)
Juvenile Offending (cont.)							
Threatening others (# times during the last year)	OBUL		0.1 (1.2)	0.04 (0.4)	0.1 (0.9)	0.1 (4.9)	0.1 (2.0)
Severely beating others (# times during the last year)	OBET		0.1 (0.8)	0.2 (3.8)	0.1 (0.7)	0.1 (0.7)	0.1 (0.7)
Robbing someone (# times during the last year)	OROB		0.02 (0.2)	0.04 (0.7)	0.1 (1.1)	0.1 (0.8)	0.1 (1.3)
Stealing something (# times during the last year)	OSTEL		0.02 (0.2)	0.03 (0.5)	0.1 (0.7)	0.1 (1.0)	0.1 (1.1)
Delinquent Peer Associations (latent variable of…) Among your close friends, how many of the following acts did they engage in during the last year?							
Illegal or reckless walking across of a roadway (jaywalking)	DPA1	continuous	1.7 (3.1)	2.7 (4.3)	3.0 (4.2)	3.5 (4.8)	3.9 (4.9)
Intentional free riding on a bus or on a subway	DPA2		0.02 (0.3)	0.2 (1.4)	0.2 (1.2)	0.5 (1.9)	0.5 (1.8)
Defying a teacher with shouting	DPA3		0.3 (1.0)	0.6 (2.2)	0.5 (1.6)	0.6 (1.7)	0.7 (2.3)
Cheating on an examination	DPA4		0.4 (1.1)	0.4 (1.4)	0.5 (1.4)	0.3 (1.1)	0.3 (1.2)
Having unexcused absence	DPA5		0.5 (1.2)	0.5 (1.4)	0.3 (1.2)	0.3 (1.0)	0.3 (1.3)
Misappropriating the expenses for stationery and school necessity	DPA6		0.5 (1.5)	0.6 (1.7)	0.5 (1.7)	0.5 (1.7)	0.6 (2.2)

Table 3.5. (continued)

Variable	Label	Scale	Wave 1 Mean (s.d.)	Wave 2 Mean (s.d.)	Wave 3 Mean (s.d.)	Wave 4 Mean (s.d.)	Wave 5 Mean (s.d.)
Delinquent Peer Associations (cont.)							
Collectively bullying	DPA7		0.7 (2.1)	1.0 (3.9)	0.8 (2.3)	0.7 (2.5)	0.5 (1.9)
Severely teasing or bantering others	DPA8		0.7 (2.1)	1.0 (3.4)	0.7 (2.1)	0.6 (2.2)	0.5 (1.8)
Threatening others	DPA9		0.3 (1.4)	0.4 (1.6)	0.2 (1.1)	0.3 (1.4)	0.2 (1.6)
Watching obscene materials (adult cartoon, picture, video clip, film)	DPA10		0.1 (0.8)	0.3 (1.9)	0.4 (1.8)	1.1 (2.8	1.2 (3.3)
Drinking	DPA11		0.1 (0.6)	0.1 (1.2)	0.1 (0.9)	0.3 (1.4)_	0.6 (2.3)
Smoking	DPA12		0.1 (.5)	0.1 (1.1)	0.2 (.8)	0.4 (1.5)	0.6 (2.1)
Severely beating others	DPA13		0.2 (1.0)	0.2 (1.3)	0.1 (0.6)	0.1 (0.8)	0.1 (1.0)
Robbing	DPA14		0.1 (0.7)	0.2 (1.6)	0.2 (0.8)	0.3 (1.3)	0.3 (1.6)
Stealing	DPA15		0.1 (0.6)	0.2 (1.2)	0.2 (.8)	0.2 (1.3)	0.2 (1.1)
Running away	DPA16		0.1 (0.4)	0.1 (1.1)	0.1 (0.5)	0.2 (1.0)	0.2 (1.1)

Table 3.5. (continued)

Variable	Label	Scale	Wave 1 Mean (s.d.)	Wave 2 Mean (s.d.)	Wave 3 Mean (s.d.)	Wave 4 Mean (s.d.)	Wave 5 Mean (s.d.)
Delinquent Peer Associations (cont.)							
Cronbach's alpha reliability	DPA		0.73	0.87	0.77	0.83	0.88
Parental Attachment (latent variable of…)							
My parents and I try to spend much time together	PA1	1 – very untrue 2 – somewhat untrue 3 – neither true nor untrue 4 – somewhat true 5 – very true	3.7 (1.1)	3.7 (1.0)	3.6 (1.0)	3.5 (1.0)	3.5 (0.9)
My parents always treat me with love and affection	PA2		4.2 (0.9)	4.0 (0.9)	4.0 (0.9)	3.8 (0.9)	3.8 (0.9)
My parents and I understand each other well	PA3		3.9 (1.0)	3.8 (1.0)	3.7 (1.0)	3.6 (1.0)	3.5 (1.0)
My parents and I candidly talk about everything	PA4		3.2 (1.2)	3.3 (1.2)	3.4 (1.1)	3.3 (1.1)	3.3 (1.1)
I frequently talk about my thoughts and what I experience away from home with my parents	PA5		3.6 (1.2)	3.6 (1.2)	3.6 (1.1)	3.5 (1.1)	3.4 (1.1)
My parents and I have frequent conversations	PA6		3.8 (1.1)	3.8 (1.1)	3.8 (1.0)	3.7 (1.0)	3.6 (1.0)
When I go out, parents usually know where I am	PA7		3.7 (1.2)	3.7 (1.1)	3.7 (1.0)	3.7 (1.0)	3.6 (1.0)
When I go out, parents usually know whom I am with	PA8		3.4 (1.2)	3.5 (1.2)	3.7 (1.0)	3.6 (1.0)	3.6 (1.0)
When I go out, parents usually know what I am doing	PA9		3.3 (1.2)	3.4 (1.2)	3.5 (1.1)	3.4 (1.1)	3.5 (1.0)

Table 3.5. (continued)

Variable	Label	Scale	Wave 1 Mean (s.d.)	Wave 2 Mean (s.d.)	Wave 3 Mean (s.d.)	Wave 4 Mean (s.d.)	Wave 5 Mean (s.d.)
Parental Attachment (cont.)							
When I go out, parents usually know when I return	PA10		3.4 (1.2)	3.5 (1.2)	3.5 (1.1)	3.4 (1.1)	3.4 (1.0)
Cronbach's alpha reliability	PA		0.83	0.86	0.88	0.90	0.91
Low Self-Control (latent variable of…)							
I jump into exciting things even if I have to take an examination tomorrow (impulsivity)	LSC1	1 – strongly disagree 2 – disagree 3 – neither 4 – agree 5 – strongly agree	2.6 (1.3)	2.8 (1.3)	2.9 (1.2)	2.7 (1.2)	2.9 (1.2)
I abandon a task once it becomes hard and laborious to do (temper)	LSC2		2.2 (1.1)	2.4 (1.0)	2.4 (1.0)	2.5 (1.0)	2.6 (1.0)
I am apt to enjoy risky activities (risk seeking)	LSC3		2.0 (1.2)	2.2 (1.2)	2.3 (1.1)	2.3 (1.1)	2.4 (1.1)
I enjoy teasing and harassing other people (temper)	LSC4		1.8 (0.9)	2.0 (1.0)	2.1 (1.0)	2.1 (1.0)	2.2 (1.0)
I lose my temper whenever I get angry (temper)	LSC5		2.4 (1.3)	2.5 (1.2)	2.6 (1.2)	2.6 (1.2)	2.6 (1.2)
I don't do my homework habitually (temper)	LSC6		2.3 (1.2)	2.3 (1.2)	2.3 (1.1)	2.5 (1.5)	2.5 (1.1)
I am under great anxiety due to study (temper)	LSC7		2.7 (1.2)	2.7 (1.2)	3.0 (1.1)	3.4 (1.1)	3.4 (1.0)
I am not interested in school work, and find it difficult to catch up (simple tasks)	LSC8		1.9 (1.0)	2.0 (1.0)	2.2 (0.9)	2.5 (1.0)	2.6 (1.0)

Table 3.5. (continued)

Variable	Label	Scale	Wave 1 Mean (s.d.)	Wave 2 Mean (s.d.)	Wave 3 Mean (s.d.)	Wave 4 Mean (s.d.)	Wave 5 Mean (s.d.)
Low Self-Control (cont.)							
I often feel lonely even if there are many students at school (temper)	LSC9		2.0 (1.1)	1.9 (1.1)	2.0 (1.0)	2.0 (1.0)	2.1 (1.0)
I may hit other people when I feel Annoyed (impulsivity)	LSC10		2.9 (1.2)	3.0 (1.2)	3.1 (1.1)	3.2 (1.1)	3.2 (1.1)
I will hit back at a person who hits me (impulsivity)	LSC11		3.4 (1.1)	3.4 (1.1)	3.4 (1.1)	3.6 (1.0)	3.5 (1.0)
I fight more frequently than others do (impulsivity)	LSC12		1.8 (0.9)	1.8 (0.9)	1.9 (.9)	1.9 (.9)	1.9 (1.0)
I am often seized by an impulse to throw an object whenever I get angry (impulsivity)	LSC13		2.1 (1.3)	2.2 (1.3)	2.5 (1.3)	2.7 (1.3)	2.7 (1.3)
Sometimes I can't suppress an impulse to hit other people (impulsivity)	LSC14		2.1 (1.2)	2.1 (1.1)	2.2 (1.1)	2.2 (1.1)	2.1 (1.1)
I consider myself as an explosive soon to be blown off (impulsivity)	LSC15		1.9 (1.1)	2.0 (1.1)	2.0 (1.1)	2.0 (1.0)	2.0 (1.1)
I am not interested in anything (temper)	LSC16		2.0 (1.0)	2.0 (1.0)	2.1 (1.0)	2.1 (1.0)	2.1 (0.9)
I worry about everything (temper)	LSC17		2.5 (1.2)	2.5 (1.2)	2.6 (1.1)	2.7 (1.1)	2.7 (1.1)
Sometimes I feel extremely anxious with no apparent reason (temper)	LSC18		2.3 (1.3)	2.3 (1.2)	2.4 (1.2)	2.4 (1.2)	2.4 (1.2)
Sometimes I feel extremely lonely with no apparent reason (temper)	LSC19		2.1 (1.2)	2.1 (1.2)	2.2 (1.2)	2.3 (1.1)	2.4 (1.2)

Table 3.5. (continued)

Variable	Label	Scale	Wave 1 Mean (s.d.)	Wave 2 Mean (s.d.)	Wave 3 Mean (s.d.)	Wave 4 Mean (s.d.)	Wave 5 Mean (s.d.)
Low Self-Control (cont.)							
Sometimes I feel extremely sad and gloomy with no apparent reason (temper)	LSC20		2.1 (1.2)	2.1 (1.2)	2.2 (1.2)	2.3 (1.2)	2.3 (1.2)
Sometimes I feel suicidal with no apparent reason (temper)	LSC21		1.7 (1.1)	1.7 (1.1)	1.8 (1.1)	1.9 (1.1)	1.9 (1.0)
Cronbach's alpha reliability	LSC		0.85	0.86	0.86	0.86	0.87
Collective Efficacy (latent variable of…)							
My neighbors have close relationships with each other	CE1	1 – very untrue 2 – somewhat untrue 3 – neither true nor untrue 4 – somewhat true 5 – very true	3.5 (1.1)	3.3 (1.2)	3.1 (1.1)	2.8 (1.1)	2.7 (1.1)
My neighbors trust each other	CE2		3.3 (1.1)	3.2 (1.1)	3.0 (1.1)	2.8 (1.1)	2.7 (1.1)
Elderly neighbors will scold me if I smoke or drink in the neighborhood	CE3		3.6 (1.5)	3.7 (1.4)	3.6 (1.3)	3.5 (1.3)	3.4 (1.3)
My neighbors will intervene or report to the police if I am assaulted by other kids in the neighborhood	CE4		3.8 (1.3)	3.9 (1.1)	3.7 (1.1)	3.5 (1.1)	3.4 (1.1)
I will let elderly neighbors and teachers know if my friends smoke or drink in the neighborhood	CE5		4.0 (1.1)	3.9 (1.1)	3.6 (1.1)	3.2 (1.2)	2.9 (1.2)
I will intervene or report to the police and teachers if my friends are assaulted in the neighborhood	CE6		4.3 (1.0)	4.1 (1.0)	3.9 (1.1)	3.6 (1.1)	3.4 (1.1)
Cronbach's alpha reliability	CE		0.68	0.73	0.79	0.83	0.85

Personal Victimization

The focal outcome is "personal victimization," which is the sum of five survey items asking the number of times a youth had been victimized by each of the following during the previous year: severely teased or bantered, threatened, collectively bullied, severely beaten, and robbed. The distribution of the summed scales was skewed to the right. Thus, to remove the skew, the scale was transformed by taking the cube root of the original values.

South Korea's specific interest in "collective bullying" was reflected in I. Park's (2000) observation of how group bullying emerged throughout the 1990s as one of the most serious school problems in South Korea. Although more narrow than bullying in general, bullying incidents among youths in the US usually involve groups of offenders (Espelage, Holt, & Henkel, 2003).

Level-1 Independent Variables

Juvenile Offending. The first of three predictors reflecting "lifestyles" is "juvenile offending." Research on the correlations between delinquent behaviors and victimization risk has included measures of drug use, alcohol use, absence from school, running away from home, and various types of violent acts (Fisher et al., 1998; Jensen & Brownfield, 1986; Lauritsen et al., 1991; Lauritsen et al., 1992; Mustaine & Tewksbury, 1998). For this analysis, juvenile offending is the sum of six survey items reflecting the same personal offenses used for "personal victimization" in addition to "stealing." The self-report survey questions asked about the number of times a youth engaged in each of these offenses during the past year. The distribution of the summed scales was skewed to the right. Thus, as for the measure of personal victimization, the cube root of the summed scale was taken to remove the skew.

Delinquent Peer Associations. The second "lifestyles" variable is "delinquent peer associations." A latent variable was created from 16 survey items asking respondents about

how many times their friends engaged in various forms of deviance during the previous year (see table 3.5; Cronbach's alpha ≈ 0.81 for each wave).

Parental Attachment. The last "lifestyles" variable at the individual level is the quality of relationships between youths and their parents. This is a latent variable created from 10 survey items asking about time spent with parents, attitudes of parents toward youth, extent of communication, quality of communication, and parental supervision (see table 3.5; Cronbach's alpha ≈ 0.88 for each wave). Each survey item is a 5-point Likert scale, ranging from 1 (very untrue) to 5 (very true).

Low Self-Control. The individual trait variable tapping "low self-control" is a latent variable consisting of the 21 survey items described in table 3.5 (Cronbach's alpha ≈ 0.86 for each wave). Grasmick et al. (1993) measured self-control with a 24-item scale with four questions for each of the six domains of self-control described by Gottfredson and Hirschi (1990). These six domains include "temper," "simple tasks," "risk seeking," "physical activities," "self-centeredness," and "impulsivity." Each of these domains is captured with at least 4 of the 21 items (see table 3.5; Cronbach's alpha ≈ 0.86 for each wave). Higher values on the latent variable reflect less (lower levels of) self-control. Each survey item is a 5-point Likert scale, ranging from 1 (strongly disagree) through 5 (strongly agree).

Level-2 Independent Variable

Collective Efficacy. According to the refined version of the systemic model of social disorganization theory (Sampson, Raudenbush, & Earls, 1997), "collective efficacy" consists of neighborhood social control, social cohesion, and mutual trust among residents. In this dissertation, a latent variable tapping "collective efficacy" was created from the six survey items described in table 3.5, each of which reflects either neighborhood social control, social

cohesion, or mutual trust among residents. Each survey item is a 5-point Likert scale ranging from 1 (very untrue) to 5 (very true). Each of these items was aggregated to the school level (and not the province level, for the reason described earlier), and the level-2 latent variable was created with the aggregated measures (see table 3.5; Cronbach's alpha ≈ 0.75 for each wave). Higher values on the latent variable scale reflect greater degrees of collective efficacy.

Statistical Control Variables

Other possible covariates to a youth's risk of victimization were considered for the analysis. Many studies of South Korean students have revealed consistent findings of significant effects of gender (Kim, 2007; Han et al., 2008; Youn, 2012), family income (Han et al., 2008), and grade level (Youn, 2012) on victimization risk. For this dissertation, I controlled for a youth's sex in all of the pooled models (i.e., the models that were not sex-specific). However, I did not control for grade level given the longitudinal (panel) research design and the fact that all youths were in the same grade at each wave. Average monthly household income and the total number of a student's siblings living in the same household were provided in the panel data but were not correlated with the outcome variables in either the cross-sectional or longitudinal analysis.

ANALYTICAL STRATEGY

This section describes the statistical methods of estimation used at each stage of the analysis, following the four stages of the analysis outlined in Chapter II. The statistical software used for all of the statistical analyses was M-*plus* 6.12 (Muthen & Muthen, 2011). SPSS 22.0 (Arbuckle, 2013) was used for data management (i.e., for accessing the original data and for checking reliabilities, variable distributions, and univariate descriptive statistics).

Step 1: Level-1 Cross-sectional Models

The first step in the analysis focused on estimating the micro level direct and indirect

effects on personal victimization for each wave separately. Cross-sectional models for waves 1, 3 and 5 were estimated instead of for all five waves because these three waves of data should be representative of cross-sectional effects for all five waves, and examining fewer waves is helpful for data reduction. Structural equation models (SEMs) were estimated for each of the three waves. There were two parts to each SEM including the test of the measurement model followed by the test of the path model with the direct and indirect effects hypothesized above.

Estimation of each wave's measurement model involved conducting a Confirmatory Factor Analysis (CFA) in order to test the validity of the factorial structures at each wave. Findings from the CFAs determined whether low self-control (LSC = 21 items), parental attachment (PA = 10 items), and delinquent peer associations (DPA = 16 items) each could be reflected as one latent variable at each wave. Statistical tests of factor loadings for all items and whether they were significantly different from zero determined the appropriateness of each item for each latent construct, and the model CFI and RMSEA statistics determined overall model fit at each wave. The first item for each set of items was fixed to a mean of 0.0 and a standard deviation of 1.0 for purposes of model identification.

The second part to each SEM involved estimating path models depicting all hypothesized direct and indirect effects at the individual level. These models encompass (1) the direct effects of LSC and lifestyle factors (PA, DPA, and JO), and (2) the indirect effects of LSC through lifestyle factors (as mediating effects). Two models were estimated for each wave, where the first model included only the time invariant factors (gender and low self-control) and the second model included both time invariant factors and time varying factors (PA, DPA, and JO). Estimating each pair of models in a step-wise fashion helped to

determine whether lifestyle factors completely mediated any significant effects of low self-control on personal victimization.

Step 2: Sex Group Differences in Individual Level Effects

After estimating the micro level direct and indirect effects for the "pooled" sample at each wave (with male and female youths pooled together for the analysis), I then examined whether the model estimated for the first stage was "invariant" between males and females. This analysis addressed whether the micro level effects examined at step 1 might be conditioned by a youth's sex (i.e., whether sex has a moderating effect on these relationships).

Testing for sex differences in these effects first required the establishment of a baseline model for males, called the "configural model," which involved testing each of the SEMs at step 1 for males only and refining each model (if necessary) until a good "fit" was established. Next, the configural model for each wave was applied to females, and differences between males and females in the following parameters were examined: (1) factor loadings, (2) factor covariances, (3) regression path estimates, and (4) latent factor means (Byrne, 2012). Inconsistencies between males and females in these estimates and corresponding hypothesis tests should have resulted in poorer model fit for females. In this scenario, the model for females can then be modified until good fit is achieved (e.g., dropping a nonsignificant path that was significant for males). Any modifications to the female-only models represent sex-specific differences in the micro level effects. On the other hand, if the same model provides a good fit for males and females separately, then I can say that the model at step 1 is "invariant" between the sexes and a youth's sex does not condition any of the level-1 effects.

Step 3: Multi Level Models

Step 3 of the study focused on adding an aggregate level of analysis to the SEMs

from the first step in order to examine the effects of collective efficacy on personal victimization at waves 1, 3, and 5 separately. Therefore, multi-level models were estimated with youths at level-1 (the individual level) and schools at level-2 (the aggregate level). For this step of the analysis, collective efficacy was measured at the school level instead of the local area level. Although the residential youth populations in most of the local areas in the study attended only one school, a few of these local areas were further subdivided into separate schools (i.e., a few of the schools draw from smaller regional populations compared to the local area). Therefore, the measure of collective efficacy was aggregated to the school level instead of the local area level.

Using multi-level modeling with all of the micro level direct effects examined at step 1, I examined (1) the direct effect of collective efficacy (CE) at level-2 on rates of personal victimization, and (2) whether the individual-level effects (gender, LSC, PA, DPA, and JO) on personal victimization risk varied in strength depending on CE. As in step 1 of the analysis, two models were estimated for each wave examined: Model 1 included time-invariant factors entered at level 1 and CE entered at level 2, and Model 2 included both time-invariant and time varying factors entered at level 1 with CE entered at level 2. As before, this step-wise procedure helped to determine whether lifestyle factors completely mediated any significant effects of low self-control on personal victimization, but this time with youths nested in their respective schools.

Before estimating the main effects of collective efficacy on victimization rates at each wave, it was first necessary to establish that there was significant variation in the dependent variable at the school level at each wave. Therefore, I first estimated an unconditional multi-level model (with no predictors) to determine the proportion of within-

school variation in personal victimization versus the proportion of between-school variation, and to test whether the latter was significantly different from zero at each wave examined. Significant variation at the school level (level-2) means that it is worthwhile to see whether the school level factor of collective efficacy can explain any of the significant between-school variation in personal victimization (the "intercepts-as-outcome" model) , controlling for compositional differences in the level-1 predictors across the school samples by grand mean-centering the level-1 variables (Raudenbush, 2004).

Before estimating the moderating effects of collective efficacy at each wave (i.e., whether differences in efficacy across schools corresponded with significant differences in the magnitude of the level-1 effects on victimization), it was first necessary to see whether there were significant differences in the level-1 effects across schools (the "random slopes" model). If so, then the "slopes-as-outcomes" models can be estimated to determine whether collective efficacy significantly moderates any of the level-1 effects.

For the full models (with both level-1 and level-2 predictors included), I used penalized-likelihood information criteria, including Akaike's Information Criterion (AIC) and the Bayesian Information Criterion (BIC), as methods for assessing model fit. Better model fit is reflected in smaller values of AIC and BIC. The AIC or BIC is expressed in the form (-2l + AnP), where "l" is the log-likelihood function, "An" is a function of the sample size (n), and "P" is the number of parameters in the model. The simple criterion for the model selection involves selection with the best penalized log-likelihood (i.e., the highest value of l + AnP) that makes l maximize. Finding the lowest value of -2l is preferable to finding the highest value of l. In other words, AIC is an estimate of the log-likelihood function plus a penalty (i.e., the relative distance between the unknown observed likelihood function of the

data and the fitted likelihood function of the statistical model). BIC is an estimate of a function of the posterior probability (the product of the prior probability and likelihood) of a model. Thus, the smaller AIC or BIC, the better the model fit. This means that a model is more likely to be close to the true model (Dziak, Coffman, Lanza, & Li, 2012).

Step 4: Longitudinal Models

The final step in the study involved a longitudinal analysis of whether changes in personal victimization over time corresponded with changes in lifestyles and/or self-control. Latent Growth Curve Modeling (LGCM) was used to examine whether inter-individual differences in average victimization for the first wave ("intercepts") and inter-individual changes in risk across all five waves ("slopes") could be explained by individual-trait variables (male and LSC) as time-invariant covariates as well as lifestyle variables (PA, DPA, and JO) as time-varying covariates. The first LGCM was an unconditional model for testing significant between-person differences in average risk of personal victimization for the first wave and for testing significant between-person differences in risk trajectories across all five waves.

The unconditional latent growth curve model was used to determine the direction and extent to which scores for personal victimization changed across five time points. If the change in victimization is assumed to be linear, the model will have two latent factors: an "intercept" representing an initial level of personal victimization at Time 1, and a "slope" representing the rate of change over the time period. The five observed repeated measures were used to create both the latent intercept and slope factors. The paths from the intercept of victimization to the observed measures are constrained to a value of "1" as the initial starting point of the growth trajectory of victimization, and those from the slope factor are specified to values of "0," "1," "2," "3," and "4" to capture the functional form of the developmental

growth trajectory over five time points. Attrition of youths across waves was addressed by using the robust maximum likelihood (MLR) estimator in M*plus* (Byrne, 2012; Muthen, & Muthen, 2011).

The means of the latent factors represent average values of the intercept and slope factors whereas the variances of the latent factors represent individual differences in the intercepts and slopes. I estimated five parameters to determine between-person differences in change (inter-individual differences): two means of the latent intercept and slope factors, two variances of these latent factors, and one covariance between the two latent factors. The continuous outcome measures are used, thus I obtained statistics such as CFI, TLI, and RMSEA as information criteria for model selection.

The conventional statistical model, the Auto–Regressive, Cross-Lagged (ARCL) model, does not optimally test the developmental research questions for my dissertation (developmental growth changes across time) (Curran, 2000). This is because the ARCL model indicated that victimization at the first time point was correlated to victimization at the second time point, and victimization at the second time point was predictive of victimization at the third time point, and so on. Each parameter estimate (i.e., coefficient) represents the stability (correlation) of time-adjacent relations of observed repeated measures between Time 1 vs. Time 2, between Time 2 vs. Time 3, etc. This indicates that the findings of the ARCL model reveal "change relative to the group average over time" (Curran, 2000, p.11) For this reason, the traditional statistical model, such as the ARCL model, is not well suited to address my research questions (Curran, 2000). Thus, the autoregressive model is blended into LGCM, referred to as Autoregressive Latent Trajectory Modeling (ALTM).

LGCM estimates a single regression line that best fits observed repeated measures

over time. The best fit line can be viewed as an ordinary regression line for a bivariate relationship. Thus, in LGCM, the independent variable represents each single time point, and the dependent variable is victimization for each subject. The best fit line is considered an estimate of each individual's developmental growth trajectory of victimization over time, characterized by two pieces of information: a latent intercept factor viewed as an initial average starting point, and a latent slope factor seen as a rate of change in bullying victimization over time. This line can be expressed as:

$$\mathbf{Y(victimization)}_{ti} = \boldsymbol{\eta}_{0i} + \boldsymbol{\eta}_{1i}\mathbf{T}_t + \mathbf{e}_{ti}, \qquad (1)$$

where Y_{ti} represents the observed measure of victimization at time point *t* for individual *i,* viewed as a systemic growth trajectory (i.e., growth curve) with random error. η_{0i} represents the latent intercept factor for individual *i* (i.e., the systematic part of the variation in victimization of individual i where the time point is zero [at $T_t = 0$]), and η_{1i} represents the latent slope factor for individual *i* (i.e., the growth rate for individual *i*), meaning the expected change in victimization risk during a fixed unit of time. T_t represents the value of time point (for a time score increase of one unit). Finally, e_{ti} represents the time specific residual variance at time *t* for individual *i,* which is assumed to be independently and normally distributed with a mean of 0 and constant variance of σ^2. Equation (1) is referred to as the within-person model, the repeated-observations model, or the Level-1 model. It is assumed that the growth parameters may vary across individuals (Curran, 2000; Raudenbush & Bryk, 2002).

The estimates η_{0i} and η_{1i} from equation (1) are latent random intercept and slope factors, and the variation in these random factors can be expressed as:

$$\boldsymbol{\eta}_{0i} = \boldsymbol{\alpha}_0 + \boldsymbol{\gamma}_{0i} \qquad (2)$$

$$\boldsymbol{\eta_{1i} = \alpha_1 + \gamma_{1i}} \quad (3)$$

where α_0 represents the mean of $\eta_{0i,}$ α_1 represents the mean of $\eta_{1i,}$ γ_{0i} represents the variance of $\eta_{0i,}$ and γ_{1i} represents the variance of $\eta_{1i.}$ Equations (2) and (3) reflect an unconditional model in which no level-2 predictors are introduced, referred to as the between-person model or the Level-2 model. The between-person model can be substituted into the within-person model (Level-1 model) by combining equations (2) and (3):

$$\mathbf{Y(victimization)}_{ti} = (\alpha_0 + \gamma_{0i}) + (\alpha_1 + \gamma_{1i})\, T_t + e_{ti} \quad (4)$$

$$\mathbf{Y(victimization)}_{ti} = (\alpha_0 + \alpha_1 T_t) + (\gamma_{0i} + \gamma_{1i} T_t + e_{ti}) \quad (5)$$

Equation (5) demonstrates that the observed repeated variable Y_{ti} at time point *t* for individual *i* can be expressed as an additive function by combining two components of developmental growth, a fixed effect (i.e., $\alpha_0 + \alpha_1 T_t$) and a random effect (i.e., $\gamma_{0i} + \gamma_{1i} T_t + e_{ti}$). The fixed effect of the growth trajectory consist of α_0 (the mean intercept of the developmental growth trajectory) and $\alpha_1 T_t$ (the mean rate of change in the developmental growth trajectory). The random effect of growth trajectory is comprised of var (γ_{0i}) (the variance around the mean intercept), var ($\boldsymbol{\gamma_{1i}}$) (the variance around the mean slope), cov($\boldsymbol{\gamma_{0i}, \gamma_{1i}}$) (the covariance between the mean intercept and the mean slopes), and var ($\mathbf{e}_{ti}$) (the time specific-error variance for individual *i* at time point *t*. Equation (5) is also an unconditional growth model (Bryk & Raudenbush, 1987). This model involves (1) the initial average starting point (i.e., the latent intercept factor) and rate of change in an outcome variable (i.e., the latent slope factor) as the fixed effects and (2) the individual variability in both the latent intercept and slope factors as the random effects (Curran, 2000; Raudenbush & Bryk, 2002).

Under an unconditional linear individual growth model, the correlation between η_{0i} and η_{1i} can be expressed as:

$$\hat{\rho}\ (\eta_{0i}, \eta_{1i}) = \hat{\tau}_{01} / (\hat{\tau}_{00} + \hat{\tau}_{11})^{1/2} \qquad (6)$$

If a true positive relationship between η_{0i} and η_{1i} can be inferred, it is assumed that students who report higher initial average levels of victimization are more likely to report greater rates of increase or decrease in victimization over time (a somewhat faster rate of change in being victimized). It is worthwhile to emphasize that the correlation between initial average starting point and rate of change in an outcome variable will vary by the specific time point that is selected for the initial status (Raudenbush & Bryk, 2002).

The conditional growth model is reflected in equations (7) and (8) below. These equations identify factors that might be predictive of the initial starting point of victimization risk as well as factors that might influence a change in victimization risk over time. These types of estimation are inter-individual (i.e., between-person) differences in intra-individual changes in victimization over time. The conditional growth model is expressed as:

$$\eta_{0i} = \alpha_0 + ß_{1i}\,(gender)_{1i} + ß_{2i}\,(LSC)_{2i} + ß_{3i}\,(PA)_{3i} + ß_{4i}\,(DPA)_{4i} + ß_{5i}\,(JO)_{5i} + \gamma_{0i} \qquad (7)$$

$$\eta_{1i} = \alpha_1 + ß_{6i}\,(gender)_{1i} + ß_{7i}\,(LSC)_{2i} + ß_{8i}\,(PA)_{3i} + ß_{9i}\,(DPA)_{4i} + ß_{10i}\,(JO)_{5i} + \gamma_{1i} \qquad (8)$$

where there are five predictors (e.g., gender, low self-control, parental attachment, delinquent peer associations, and juvenile delinquency), and $ß_{1i}$, $ß_{2i}$, $ß_{3i}$, to $ß_{10i}$ are the fixed effects of the five predictors in each equation. The "fixed effects" on growth are assumed to not vary across individuals (Curran, 2000).

Under LGCM, I first estimate a mean and variance of the growth curve (the latent intercept and slope factors) in order to check variability in individual differences in the developmental growth trajectories of victimization. Next, the predictability of individual differences in the change in victimization risk is examined with the explanatory factors. Finally, the latent intercept and slope factors tapping victimization are regressed on the latent

intercept and slope factors tapping juvenile delinquency (a multivariate latent growth curve model), controlling for all other factors (gender, low self-control, parental attachment, and delinquent peer associations).

In addition to the individual-level model, a contextual model is estimated in which school-level predictors of victimization are added to the model to explain the variability in the adjusted mean of victimization across schools as well as the between-school variability in the effects of the individual-level predictors of victimization. Thus, the two-level growth model (a three-level model) incorporates the school level by integrating the longitudinal with multi-level analysis. Both group-mean centering for the within-person variables at level-1 and the person-specific mean for the between-person variables at level-2 are employed. At level-3, variability in victimization is estimated as a function of collective efficacy at the school level.

The next chapter presents the findings from each of the four steps in the statistical analysis described above. Chapter 4 is organized by these four sections ("steps").

CHAPTER IV

RESULTS

This chapter is organized by the stages of the analysis described in Chapter III, including (1) the direct and mediating effects of micro level factors on a South Korean youth's risk of personal victimization, (2) whether the micro effects from the first stage of the analysis differ between sex groups, (3) the main and moderating effects of collective efficacy at the macro (school) level on victimization risk, and (4) whether within-person changes in low-self-control and lifestyle factors over time also coincide with changes in victimization risk. Within each of these sections, each of the relevant research questions listed in Chapter III will be addressed.

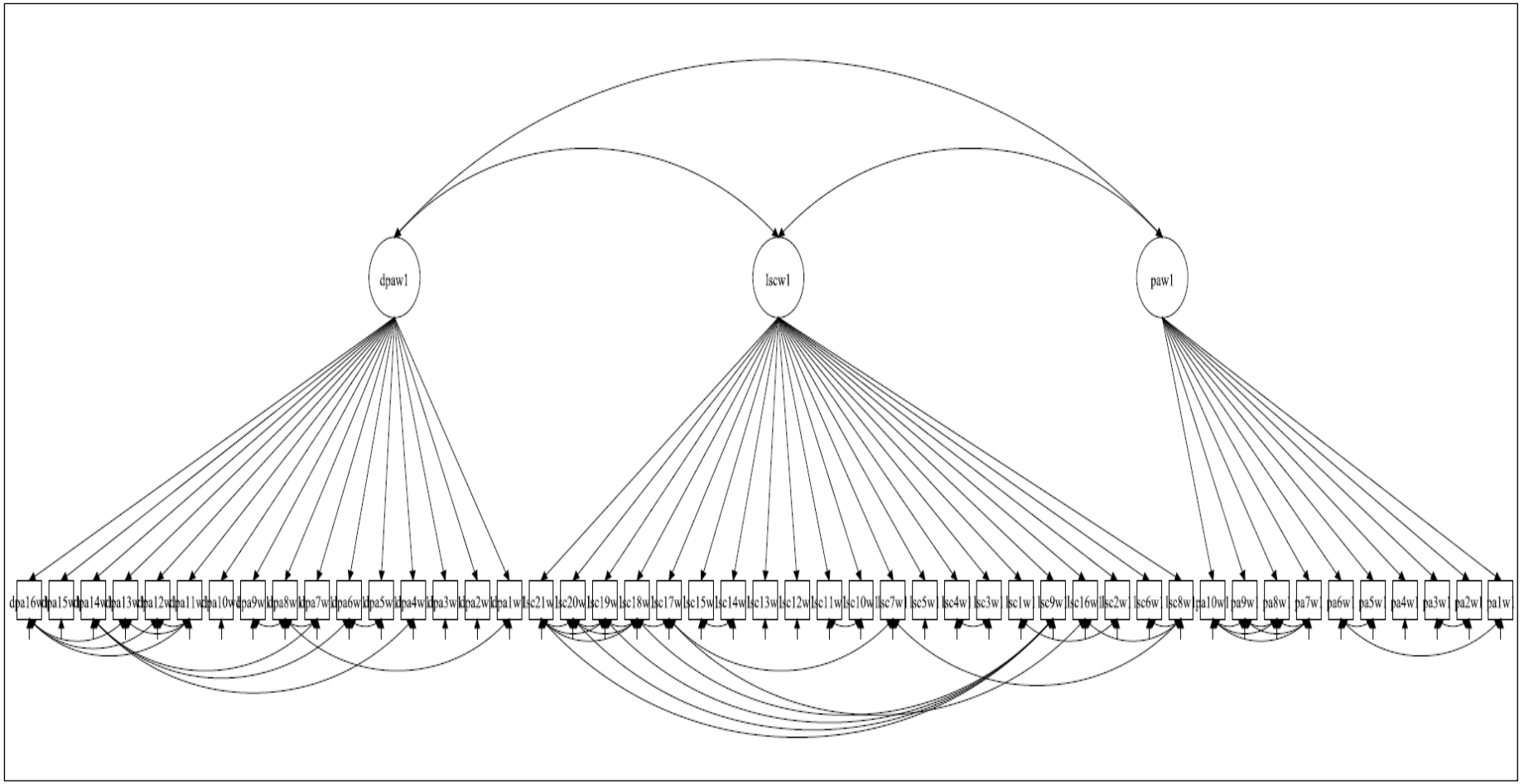
DIRECT AND INDIRECT MICRO EFFECTS ON PERSONAL VICTIMIZATION

This stage of the analysis involved estimating cross-sectional SEMs for waves 1, 3, and 5 separately. The first step in this process involved an evaluation of measurement models (Confirmatory Factor Analyses, or CFA) in order to test the validity of the factorial structures at each wave. Findings from the CFAs determined whether low self-control (LSC = 21 items), parental attachment (PA = 10 items), and delinquent peer associations (DPA = 16 items) each could be reflected as one latent variable at each wave. Statistical tests of factor loadings for all items and whether they were significantly different from zero determined the appropriateness of each item for each latent construct, and the model CFI and RMSEA statistics determined overall model fit at each wave. The first item for each set of items was fixed to a mean of 0.0 and a standard deviation of 1.0 for purposes of model identification.

Only the measurement model for wave 1 is shown here, excluding all factor loadings (see Figure 4.2), but Table 4.6 displays the factor loadings ("estimates") and significance tests for all items across waves 1, 3 and 5. All freely estimated parameters were statistically

significant at $p < .05$ (with the vast majority significant at $p < .001$) and thus can be considered important to the measurement models at each wave. The model's fit indices revealed good model fit at each wave (displayed in the last four rows of table 4.6). In particular, all values of the Comparative Fit Index (CFI) exceeded 0.90, and all values of the Root Mean Square Error of Approximation (RMSEA) fell well below 0.50. As depicted in Figure 4.2, the residual covariances for several items within each set were treated as non-zero in order to improve model fit. Although Figure 4.2 depicts the non-zero covariances for only wave 1, similar sets of non-zero covariances were recognized for waves 3 and 5.

Figure 4.2. Wave 1 Measurement Model Testing the Factorial Validity of PA, LSC, and DPA



PAw1= parental attachment at wave1; LSCw1= low self-control at wave 1; DPAw1=delinquent peer associations at wave.

Table 4.6. Unstandardized Parameter Estimates (Factor Loadings) for PA, LSC, and DPA in the Measurement Model

		Wave 1		Wave 3		Wave 5	
FACTOR	ITEMS	Estimate	(S.E.)	Estimate	(S.E.)	Estimate	(S.E.)
PA	PA1	1.000	(0.000)	1.000	(0.000)	1.000	(0.000)
	PA2	0.832***	(0.039)	0.924***	(0.030)	0.954***	(0.026)
	PA3	0.911***	(0.040)	1.044***	(0.031)	1.080***	(0.031)
	PA4	0.913***	(0.046)	1.025***	(0.035)	1.296***	(0.039)
	PA5	1.104***	(0.049)	0.953***	(0.036)	1.364***	(0.041)
	PA6	1.140***	(0.043)	1.058***	(0.029)	1.286***	(0.037)
	PA7	0.922***	(0.048)	0.655***	(0.034)	0.944***	(0.036)
	PA8	0.959***	(0.049)	0.614***	(0.034)	0.898***	(0.037)
	PA9	0.944***	(0.050)	0.645***	(0.034)	0.935***	(0.037)
	PA10	0.834***	(0.047)	0.601***	(0.034)	0.842***	(0.036)
LSC	LSC1	1.000	(0.000)	1.000	(0.000)	1.000	(0.000)
	LSC2	0.616***	(0.067)	0.898***	(0.064)	0.988***	(0.065)
	LSC3	1.051***	(0.083)	1.076***	(0.075)	1.198***	(0.083)
	LSC4	0.953***	(0.075)	1.126***	(0.078)	1.261***	(0.091)
	LSC5	1.701***	(0.120)	1.645***	(0.108)	1.720***	(0.112)

Table 4.6. (continued)

		Wave 1		Wave 3		Wave 5	
FACTOR	ITEMS	Estimate	(S.E.)	Estimate	(S.E.)	Estimate	(S.E.)
	LSC6	0.843***	(0.075)	1.181***	(0.083)	1.276***	(0.085)
	LSC7	0.919***	(0.085)	0.535***	(0.068)	0.278***	(0.062)
	LSC8	0.656***	(0.067)	0.877***	(0.070)	0.886***	(0.073)
	LSC9	0.648***	(0.074)	0.668***	(0.066)	0.853***	(0.078)
	LSC10	1.604***	(0.116)	1.337***	(0.093)	1.412***	(0.100)
	LSC11	1.081***	(0.0870	0.931***	(0.076)	0.972***	(0.079)
	LSC12	1.239***	(0.093)	1.178***	(0.085)	1.227***	(0.089)
	LSC13	1.777***	(0.129)	1.891***	(0.126)	1.970***	(0.133)
	LSC14	1.462***	(0.111)	1.629***	(0.111)	1.753***	(0.118)
	LSC15	1.589***	(0.118)	1.654***	(0.114)	1.739***	(0.116)
	LSC16	0.678***	(0.076)	0.997***	(0.079)	0.956***	(0.073)
	LSC17	1.019****	(0.092)	0.946***	(0.080)	0.806***	(0.081)
	LSC18	1.226***	(0.103)	1.261***	(0.094)	1.213***	(0.099)
	LSC19	1.211***	(0.102)	1.187***	(0.090)	1.291***	(0.099)
	LSC20	1.111***	(0.096)	1.167***	(0.090)	1.255***	(0.098)
	LSC21	1.001***	(0.091)	1.148***	(0.087)	1.288***	(0.096)

Table 4.6. (continued)

		Wave 1		Wave 3		Wave 5	
FACTOR	ITEMS	Estimate	(S.E.)	Estimate	(S.E.)	Estimate	(S.E.)
DPA	DPA1	1.000	(0.000)	1.000	(0.000)	1.000	(0.000)
	DPA2	0.068**	(0.022)	0.332***	(0.069)	0.462 ***	(0.066)
	DPA3	0.320***	(0.074)	0.508***	(0.081)	0.566***	(0.067)
	DPA4	0.568***	(0.121)	0.465***	(0.060)	0.233***	(0.066)
	DPA5	0.387***	(0.063)	0.307***	(0.046)	0.402***	(0.081)
	DPA6	0.505***	(0.087)	0.568***	(0.074)	0.658***	(0.108)
	DPA7	0.756***	(0.147)	0.741***	(0.094)	0.491***	(0.070)
	DPA8	0.933***	(0.137)	0.759***	(0.115)	0.458***	(0.071)
	DPA9	0.598***	(0.151)	0.385***	(0.058)	0.492***	(0.143)
	DPA10	0.348***	(0.061)	0.455***	(0.081)	0.651***	(0.074)
	DPA11	0.141*	(0.064)	0.193***	(0.046)	0.647***	(0.119)
	DPA12	0.127***	(0.033)	0.216***	(0.039)	0.589***	(0.085)
	DPA13	0.483**	(0.169)	0.178***	(0.039)	0.275***	(0.063)
	DPA14	0.445***	(0.074)	0.248***	(0.047)	0.516***	(0.132)
	DPA15	0.253***	(0.066)	0.231***	(0.062)	0.159***	(0.050)
	DPA16	0.134*	(0.057)	0.128***	(0.038)	0.318***	(0.087)

Table 4.6. (continued)

	Wave 1	Wave 3	Wave 5
Model Fit			
CFI	0.908	0.905	0.907
TLI	0.899	0.897	0.899
RMSEA	0.019	0.027	0.028
SRMR	0.037	0.048	0.053

$^{***}p \leq .001$; $^{**}p \leq .01$; $^{*}p \leq .05$.

The next step in this stage of the analysis involved estimating path models depicting all hypothesized direct and indirect micro level effects on victimization risk for waves 1, 3, and 5. These models are presented in Table 4.7 and encompass (1) the direct effects of LSC and lifestyle factors (PA, DPA, and JO), and (2) the indirect effects of LSC through lifestyle factors (as mediating effects). A pair of models is displayed for each wave of data, where model 1 includes only the time invariant factors (gender and low self-control) whereas model 2 includes both time invariant factors as well as time varying factors (parental attachment, delinquent peer associations, and juvenile offending). The first model for wave 1 reveals that both time invariant factors (*male* and *low self-control*) had significant positive effects on victimization risk ($p < .01$). Fourth grade male students were more likely to be victimized than females, and students with less self-control were generally at higher risk for personal victimization. This finding is consistent with the "risky heterogeneity perspective" and the prediction that less self-control would correspond with higher risk of personal victimization.

The second model for wave 1 included the lifestyle factors (PA, DPA, and JO) and reveals that the risky lifestyle factors reflected by DPA and JO were significantly and positively related to personal victimization risk ($p < .01$). Youths who associated with delinquent peers and who engaged in offending were more likely to be victimized than youths who did not. These two findings are consistent with the notion derived from "state dependence perspective" that individuals with riskier lifestyles may place themselves in situations conductive to victimization, thereby increasing victimization risk.

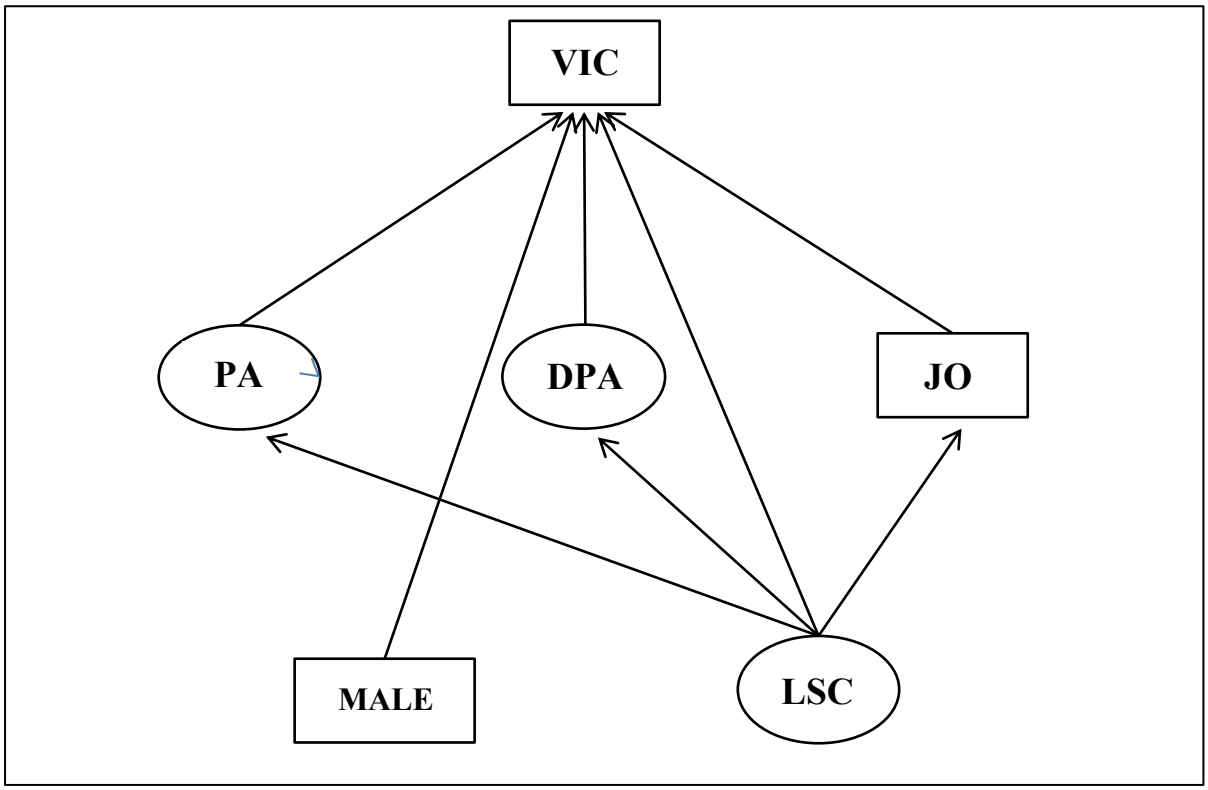
Also important to note is that controlling for lifestyle factors in model 2 generated a nonsignificant effect of *male* on victimization risk, yet LSC remained a significant predictor of personal victimization ($p < .001$). Also, LSC maintained significant indirect effects on

personal victimization through DPA and JO (as predicted), where less self-control coincided with higher odds of both delinquent peer associations and juvenile offending, which, in turn, were both positively related to personal victimization risk ($p < .01$). However, the mediating effect of PA was not significant in wave 1. All of these significant and nonsignificant direct and mediating effects held for wave 3 as well, suggesting that the same processes apply to fourth and sixth grade students in South Korea.

The significant direct effects of the time invariant factors also held for wave 5 (eighth grade students), where males and youths with less self-control tended to have higher risks of personal victimization ($p < .001$). Both gender and LSC remained significant even after controlling for lifestyle variables. In contrast to the results for waves 1 and 3, however, DPA at wave 5 was *not* significant for predicting personal victimization risk. On the other hand, PA had a significant and inverse effect on personal victimization ($p < .01$), in contrast to waves 1 and 3, indicating that students who had stronger ties to their parents were less likely to be victimized by personal crimes.

Both of these differences in direct effects translated into differences in significant indirect effects between wave 5 versus waves 1 and 3 as shown in Figure 4.3. Whereas the indirect effect of LSC via JO was significant across all three waves ($p < .01$), the indirect effect of LSC via DPA was significant at waves 1 and 3 but not significant at wave 5 whereas the indirect effect of LSC via PA was not significant at waves 1 and 3 but was significant at wave 5. Overall, LSC maintained significant direct effects and significant indirect effects via lifestyle factors on personal victimization risk across all three waves.

Figure 4.3. Conceptual Model of Direct and Indirect Effects of LSC on Personal Victimization through Lifestyle Factors (PA, DPA, and JO)



LSC=low self-control; PA=parental attachment; DPA=delinquent peer associations; JO=juvenile offending; VIC=personal victimization.

Considering the different findings between wave 5 (junior high school) and waves 1 and 3 (elementary school), it appears that students in higher grades (junior high school students) were less likely to be affected by their delinquent peer associations; whereas, students in lower grades (elementary school students) were more likely to be influenced by their delinquent peer associations. In other words, students' peer relationships had a stronger effect on personal victimization risk at the elementary school level whereas their relationships with their parents had a stronger effect on the junior high school students. On the other hand, engaging in offending had the strongest effect on personal victimization at all three grade levels. Further, the importance of LSC for shaping victimization risk at all three grade levels provides empirical evidence in support of Schreck's (1999) application of LSC to an understanding of victimization risk. Model fit statistics also revealed good model fit across all three waves, with values of CFI and TLI close to 0.90, and values of RMSEA and SRMR less than or close to 0.05.

Table 4.7. Direct and Indirect Effects of LSC, and Direct Effects of Lifestyle Factors on Personal Victimization Risk (MLR Coefficients Reported with Standard Errors in Parentheses

		Wave 1		Wave 3		Wave 5	
		Model 1[a]	Model 2[b]	Model 1[a]	Model 2[b]	Model 1[a]	Model 2[b]
Individual Traits	MALE	0.046** (0.017)	0.006 (0.017)	0.024* (0.012)	0.006 (0.012)	0.058*** (0.010)	0.049 *** (0.010)
	LSC	0.262*** (0.032)	0.133*** (0.029)	0.151*** (0.022)	0.094*** (0.022)	0.109*** (0.020)	0.068*** (0.019)
Lifestyles	PA		-0.032 (0.018)		-0.014 (0.013)		-0.030** (0.011)
	DPA		0.038** (0.013)		0.016 * (0.007)		0.001 (0.004)
	JO		0.252*** (0.03)		0.141*** (0.028)		0.072** (0.026)
Indirect Effects of LSC through …							
PA			0.011 (0.006)		0.008 (0.007)		0.014** (0.005)
DPA			0.020**(0.008)		0.013*(0.006)		0.002 (0.004)
JO			0.272***(0.054)		0.033***(0.007)		0.017**(0.006)

Table 4.7. (continued)

	Wave 1		Wave 3		Wave 5	
	Model 1[a]	Model 2[b]	Model 1[a]	Model 2[b]	Model 1[a]	Model 2[b]
Model Fit						
CFI	0.895	0.885	0.891	0.894	0.892	0.899
TLI	0.884	0.873	0.882	0.885	0.883	0.889
RMSEA	0.021	0.022	0.028	0.028	0.029	0.028
SRMR	0.037	0.037	0.050	0.048	0.055	0.052

$^{***}p \leq .001$; $^{**}p \leq .01$; $^{*}p \leq .05$.

a. Regression Model with male and low self-control (LSC) as time-invariant covariates.

b. Regression Model with gender and low self-control (LSC) as time-invariant covariates; parental attachment (PA), delinquent peer associations (DPA), and juvenile offending (JO) as time-varying covariates.

GENDER DIFFERENCES IN MICRO EFFECTS ON PERSONAL VICTIMIZATION

The second stage of the analysis examined whether a youth's sex conditioned any of the micro level effects examined in the first stage of the analysis. Table 4.8 shows the gender-specific estimates for the direct and indirect effects examined above. This stage of the analysis tested for the gender invariance of these estimates.[1] Consistent with the findings for both groups combined, LSC had significant effects on personal victimization risk for both males and females across waves 1, 3, and 5, and it remained significant even when controlling for the lifestyle factors. Note that DPA had a significant effect on personal victimization for female elementary students at waves 1 and 3 ($p < .05$), but not for male elementary school students. DPA was nonsignificant for both male and female junior high school students at wave 5. This finding qualifies the significant pooled effect of DPA in waves 1 and 3 (from table 8) by suggesting that DPA significantly increases the risk of personal victimization for female youths and not male youths. However, the magnitude of the DPA effects are weak for both sexes, especially when compared to the magnitude of juvenile offending (JO) effects at waves 1 and 3 (also comparable in magnitude for both sexes).

JO was significantly and positively related to personal victimization for both males and females at waves 1 and 3 ($p < .001$). Engaging in offending was significantly related to personal victimization for males only at wave 5 ($p < .01$), although the magnitude of this effect is relatively weak and comparable for both sexes. These findings indicate that

[1] To investigate gender differences in the micro level direct and indirect effects, I established the baseline model, termed the "configural model," and then tested for multi-group invariance between the sexes. Differences in the following parameters were tested: (1) factor loadings, (2) factor variances, (3) regression path estimates, and (4) latent factor means (Byrne, 2012). In this study, factor loadings, factor variances, and latent factor means for the male group were the same as those for the female group, but regression path estimates were different between both groups.

victimization risk in elementary school was influenced by juvenile offending to roughly the same extent for both males and females, whereas juvenile offending among youths in junior high school was relevant for males only.

These gender specific differences in direct effects of DPA and JO between waves 1and 3 versus wave 5 translated into gender differences in the indirect effects of LSC on personal victimization. The indirect effect of LSC via DPA was significant for females only at waves 1 and 3 ($p < .05$), and it was not significant for both groups at wave 5. This indicates that the fourth and sixth grade females with less self-control were more likely to be victimized because of their higher odds of associating with delinquent peers. Whereas the indirect effect of LSC via JO was significant for both males and females at waves 1 and 3 ($p < .01$), it was significant for males only ($p < .05$) at wave 5. This indicates that engaging in offending was significant for both groups at the elementary school level, but it was significant for male junior high school students but not for female junior high school students. Eighth grade males with less low self-control were more likely to engage in offending, thereby increasing their risk of personal victimization. Overall model fit to the sampled data was fairly good and comparable for both sexes across all three waves (based on the values of CFI and RMSEA).

Table 4.8. Tests for Gender Invariance in Micro Effects on Personal Victimization at Waves 1, 3, and 5 (MLR Coefficients Reported with Standard Errors in Parentheses)

	Wave 1				Wave 3				Wave 5			
	Model 1[a]		Model 2[b]		Model 1[a]		Model 2[b]		Model 1[a]		Model 2[b]	
	Males	Females	Males	Females	Males	Females	Males	Females	Males	Females	Males	Females
LSC	0.30*** (0.042)	0.272*** (0.037)	0.187*** (0.045)	0.189*** (0.036)	0.158*** (0.027)	0.147*** (0.023)	0.133*** (0.034)	0.092*** (0.026)	0.113*** (0.024)	0.112*** (0.022)	0.071*** (0.024)	0.083*** (0.021)
PA			0.003 (0.029)	0.000 (0.022)			0.009 (0.021)	-0.019 (0.020)			-0.027 (0.015)	-0.022 (0.012)
DPA			0.069 (0.041)	0.066* (0.034)			0.013 (0.017)	0.036* (0.017)			0.005 (0.007)	-0.002 (0.003)
JO			0.251*** (0.029)	0.296*** (0.049)			0.124*** (0.034)	0.166*** (0.045)			0.081** (0.031)	0.050 (0.029)

Table 4.8. (continued)

	Wave 1				Wave 3				Wave 5			
	Model 1[a]		Model 2[b]		Model 1[a]		Model 2[b]		Model 1[a]		Model 2[b]	
	Males	Females	Males	Females	Males	Females	Males	Females	Males	Females	Males	Females
Indirect Effects of LSC through …												
PA			0.011 (0.008)	0.010 (0.009)			-0.002 (0.010)	0.018 (0.009)			0.013 (0.007)	0.013 (0.008)
DPA			0.023 (0.012)	0.018*** (0.011)			0.011 (0.008)	0.017** (0.006)			0.006 (0.010)	-0.001 (0.001)
JO			0.195*** (0.056)	0.076** (0.028)			0.037*** (0.011)	0.029*** (0.007)			0.024* (0.011)	0.009 (0.006)

Table 4.8. (continued)

	Wave 1		Wave 3		Wave 5	
	Model 1[a]	Model 2[b]	Model 1[a]	Model 2[b]	Model 1[a]	Model 2[b]
Model Fit						
CFI	0.881	0.861	0.883	0.883	0.907	0.897
TLI	0.874	0.853	0.876	0.876	0.902	0.892
RMSEA	0.025	0.027	0.031	0.030	0.032	0.033
SRMR	0.051	0.056	0.069	0.068	0.064	0.072

$^{***}p \leq .001$; $^{**}p \leq .01$; $^{*}p \leq .05$.

a. Regression Model with gender and Low self-control (LSC) as time-invariant covariates.

b. Regression Model with gender and Low self-control (LSC) as time-invariant covariates; parental attachment (PA), delinquent peer associations (DPA), and juvenile offending (JO) as time-varying covariates.

COLLECTIVE EFFICACY AND RISK FOR PERSONAL VICTIMIZATION

The next stage in the analysis focused on the main and moderating effects of collective efficacy at the macro (local area) level on victimization risk. Using multi-level modeling with all of the micro level direct effects examined above included at level-1, I examined (1) the direct effect of collective efficacy (CE) at level-2 on rates of personal victimization, and (2) whether the individual-level effects (gender, LSC, PA, DPA, and JO) on personal victimization risk varied in strength depending on CE. For the analysis, collective efficacy was measured at the school level even though the ratio of schools to local areas in the sample is only slightly over 1.0. However, whereas most of these schools draw from local area populations, a few of them draw from somewhat smaller regional populations compared to the local area (defined in Chapter 1). Therefore, the measure of collective efficacy was aggregated to the school level instead of the local area level.

Table 4.9 presents the results of two hierarchical models for wave 1: Model 1 includes individual trait factors entered at level 1 and CE entered at level 2, and Model 2 includes both individual trait and lifestyle factors entered at level 1 with CE entered at level 2. These two models are similar to those examined in the first two stages of the analysis except with the addition of CE at the second level of analysis. Both models revealed no statistically significant effects of CE on victimization risk, controlling for compositional differences in the individual level factors (individual traits and lifestyles) through grand mean-centering. The models for waves 3 and 5 are not presented because they also produced non-significant effects of CE on average levels of personal victimization across schools.

In terms of "model selection," I used penalized-likelihood information criteria, such

as Akaike's Information Criterion (AIC)[2], the Bayesian Information Criterion (BIC), and the Adjusted BIC as methods of assessing model fit, as shown in the last three rows of Table 4.9. According to penalized-likelihood information criteria (the smaller the values of AIC and BIC, the better), the second model provided a better fit to the data compared to the first model.

[2] The AIC or BIC is expressed in the form ($-2\,l + A_nP$), where l is the log-likelihood function, A_n is a function of the sample size n, and P is the number of parameters in the model. The simple criteria for the model selection involve selection with the best penalized log-likelihood (i.e., the highest value of $l + A_nP$) that makes l maximize. Rather, finding the lowest value of $-2\,l$ is preferable to finding the highest value of l. In other words, AIC is an estimate of the log-likelihood function plus a penalty (i.e., the relative distance between the unknown observed likelihood function of the data and the fitted likelihood function of the statistical model). BIC is an estimate of a function of the posterior probability (the product of the prior probability and likelihood) of a model. Thus, the smaller AIC or BIC, the better the model fit. This means that a model is more likely to be close to the true model (Dziak, Coffman, Lanza, & Li, 2012).

Table 4.9. General Linear Hierarchical Model Predicting Personal Victimization at Wave 1 (MLR Coefficients Reported with Standard Errors in Parentheses)

		Model 1[a]	Model 2[b]
Individual-level			
Individual Trait	Male	0.053** (0.019)	0.014 (0.019)
	LSC	0.272*** (0.035)	0.145*** (0.031)
Lifestyles	PA		-0.031 (0.019)
	DPA		0.030** (0.011)
	JO		0.271*** (0.033)
School-level			
CE		-0.017 (0.101)	0.005 (0.096)
Model Fit			
Akaike (AIC)		220,762.916	204,832.933
Bayesian (BIC)		221,396.131	206,114.813
Adjusted BIC		221,056.157	205,425.335

$^{***}p \leq .001$; $^{**}p \leq .01$; $^{*}p \leq .05$.

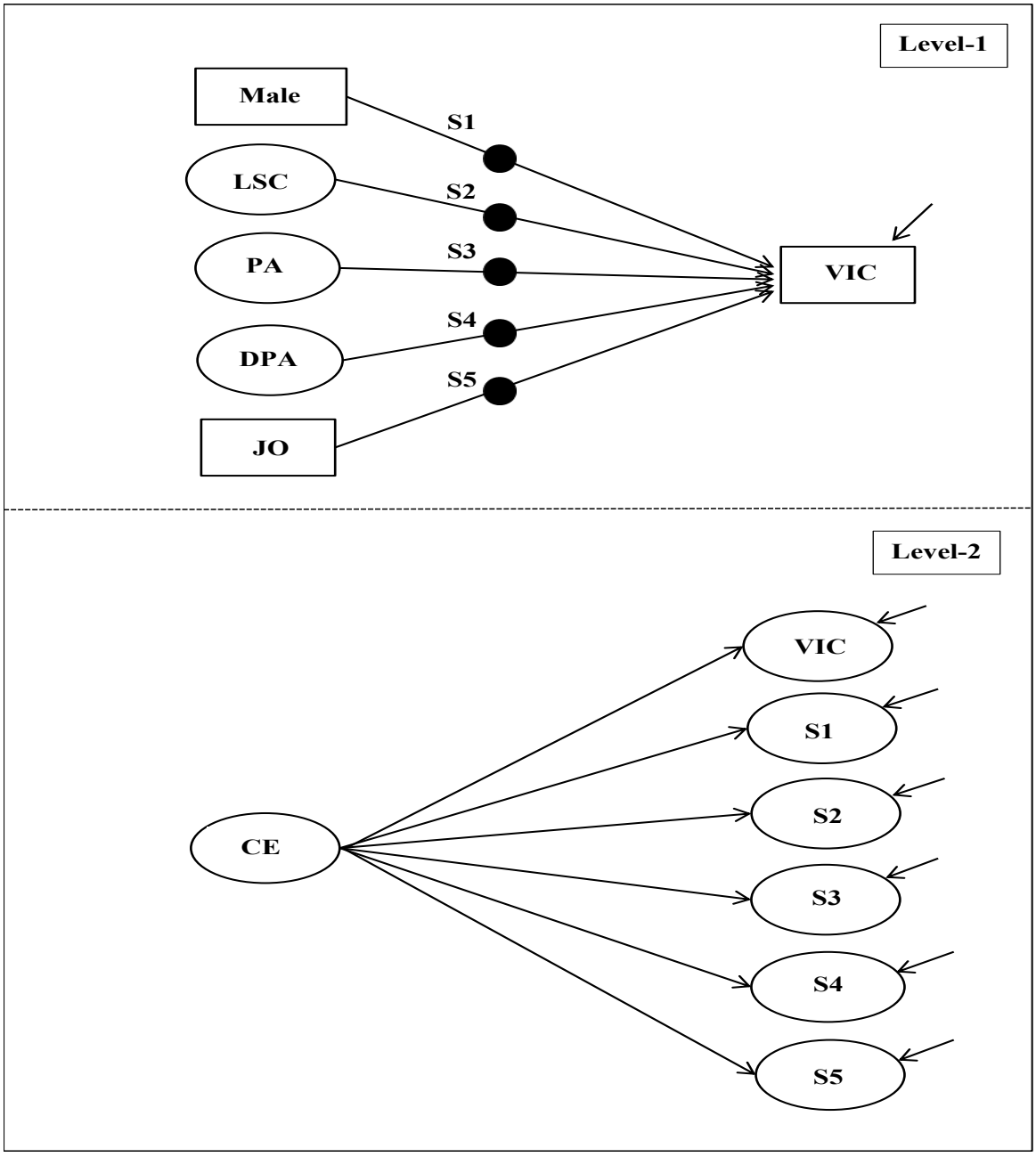
a. Regression Model with gender and Low self-control (LSC) as time-invariant covariates.

b. Regression Model with gender and Low self-control (LSC) as time-invariant covariates; parental attachment (PA), delinquent peer associations (DPA), and juvenile offending (JO) as time-varying covariates.

The second part to this stage of the analysis focused on whether the individual level effects on personal victimization varied across schools and whether CE conditioned the magnitude of these individual level effects. Thus, I examined a bi-level model with random slopes in which the level-1 slopes (the relationships between victimization and the individual-level variables) were regressed on CE at level-2 (as shown in Figure 4.4).

The finding presented in Table 4.10 are inconsistent with the expectation that the magnitude of the relationships between the individual-level variables (male, LSC, PA, DPA, and JO) and personal victimization risk might depend on collective efficacy at the school level. Based on the literature, I predicted that the effects of the individual-level risky lifestyle variables on personal victimization would be weaker in areas with higher levels of collective efficacy. The results in Table 10, however, indicate that the links between the individual-level variables and personal victimization did not vary significantly in magnitude depending on CE. In other words, school-level collective efficacy did not influence the effects of individual-level variables on personal victimization risk.

Figure 4.4. Bi-level Structural Equation Model with Random Level-1 Slopes



CE=collective efficacy at the school-level.

VIC = Personal victimization.

S1 = Random slope of male on victimization at the individual-level.
S2 = Random slope of low self-control on victimization at the individual-level.
S3 = Random slope of parental attachment on victimization at the individual-level.
S4 = Random slope of delinquent peer associations on victimization at the individual-level.
S5 = Random slope of juvenile offending on victimization at the individual-level.

Table 4.10. General Linear Hierarchical Model with Random Level-1 Slopes at Wave 1 (MLR Coefficients Reported with Standard Errors in Parentheses)

	VIC[a]	VIC on Male[b]	VIC on LSC[c]	VIC on PA[d]	VIC on DPA[e]	VIC on JO[f]
CE[g]	0.306 (1.652)	-0.171 (0.575)	-0.169 (0.195)	0.018 (0.232)	0.138 (0.265)	0.060 (0.280)
Model Fit						
Akaike (AIC)	29,000.120					
Bayesian (BIC)	29,252.048					
Adjusted BIC	29,099.570					

$^{***}p \leq .001$; $^{**}p \leq .01$; $^{*}p \leq .05$.

a. Personal victimization.
b. Random slope for the regression of victimization on male at the individual-level.
c. Random slope for the regression of victimization on low self-control at the individual-level.
d. Random slope for the regression of victimization on parental attachment at the individual-level.
e. Random slope for the regression of victimization on delinquent peer associations at the individual-level.
f. Random slope for the regression of victimization on juvenile offending at the individual-level.
g. Collective efficacy at the school level.

SOURCES OF CHANGE OVER TIME IN VICTIMIZATION RISK

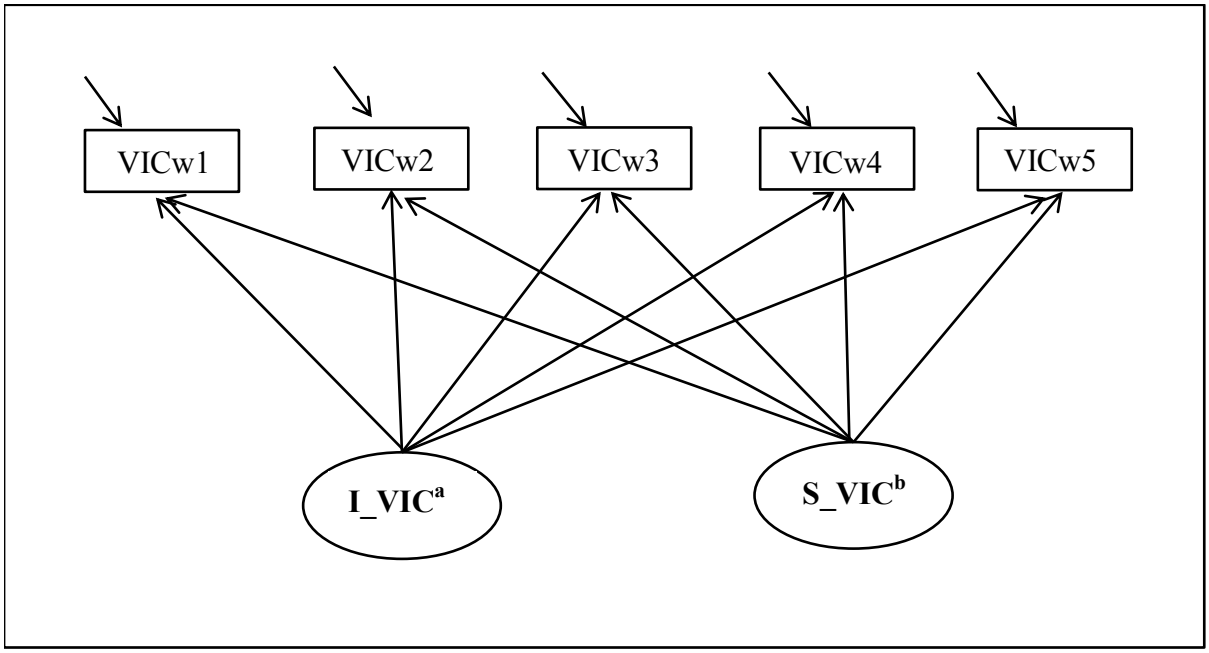
Latent Growth Curve Model

The last stage of the analysis focused on within-person changes in the risk of personal victimization over time. Using Latent Growth Curve Modeling (LGCM), I examined (1) how individual differences in personal victimization changed over time (intra-individual changes, also called a "within-person" model), and (2) whether inter-individual differences in average risk for the first wave ("intercepts") and changes in risk across all five waves ("slopes") could be explained by individual-trait variables (male and LSC) as time-invariant covariates as well as lifestyle variables (PA, DPA, and JO) as time-varying covariates (also called a "between-person" model). The first LGCM was an unconditional model[3] for testing significant between-person differences in average risk of personal victimization for the first wave as well as significant between-person differences in risk trajectories across all five waves. This model is shown in Figure 4.5. Average within-person risk for wave 1 (fourth graders) and average within-person *change* in risk across all five waves from the

[3] An unconditional latent growth curve model was used to estimate the characteristics of intra-individual differences in developmental growth trajectories of being victimized by personal crimes over time (the within-person growth trajectory). I determined the direction and extent to which scores for personal victimization changed across five time points. If the change in victimization is assumed to be "linear," the model will have two latent growth factors: an "intercept" representing an initial level of bullying victimization at Time 1, and a "slope" representing the rate of change over the time period. The Latent Growth Curve Model (LGCM) parameterizes time through the factor loading. To examine an individual difference of the growth rate in victimization, the five observed repeated measures were employed to create both the latent intercept and slope factors by fixing the factor loading as shown in Figure 3. The initial starting point of the growth trajectory of victimization is defined through fixed loadings with "1," and the slope factor is defined through free loadings with "0," "1," "2," "3," and "4" to capture the functional form of the developmental growth trajectory over five time points. Consistent with longitudinal analyses, attrition and missingness issues were addressed by using the robust maximum likelihood (MLR) estimator (Byrne, 2012; Muthen, & Muthen, 2011). I focused on the structural model in the LGCM limiting the means and variances of the latent intercept and slope factors. Each mean of the latent factors represents average values of intercept and slope factors whereas each variance of the latent factors represents individual differences in the intercept and slope. With continuous variables, means, variances, and covariance are not sufficient statistics for parameter estimation. Therefore, I obtained chi-square and other related test statistics such as CFI, TLI, and RMSEA as information criteria for model selection. I estimated five parameters to determine between-person differences in change (inter-individual differences) as shown in Table 11: Two means of the latent intercept and slope factors, two variances of these latent factors, and one covariance between the two latent factors.

unconditional model are displayed in table 4.11 (VIC Intercept mean and VIC Slope mean, respectively). Youths at wave 1 averaged 0.65 personal victimizations, whereas the average reduction in personal victimizations over the five-year period was 0.03 per year.

Figure 4.5. Unconditional Latent Growth Curve Model of Personal Victimization



a. I_VIC (Intercept of Personal Victimization) = initial starting point of victimization
b. S_VIC (Slope of Personal Victimization) = rate of change in victimization

The between-person mean of personal victimization declined over the five time points, from 0.70 at wave 1 to 0.57 at wave 5 (the estimated wave-specific means from the unconditional model dropped from .64 to .56 during this period). However, the largest decline occurred between waves 1 and 2 (fourth to fifth grade), from 0.70 to 0.60. The variances of the latent intercept and slope factors were statistically significant ($p < .001$; see table 4.11), suggesting that there were significant between-person differences in both the risk of personal victimization at wave 1 ($\gamma_{0i} = 0.061$, $p < 0.001$) as well as significant between-person differences in the growth trajectories across all five waves ($\gamma_{1i} = 0.003$, $p < 0.001$). In other words, this reflects inter-individual differences in the initial status and rate of change in personal victimization. The correlation between the initial time point and rate of change in personal victimization was negative, indicating that students who started with higher levels of personal victimization showed less dramatic declines in personal victimization over time ($r = -0.86$; $p < 0.001$).

Table 4.11. Univariate Growth Curve of Personal Victimization

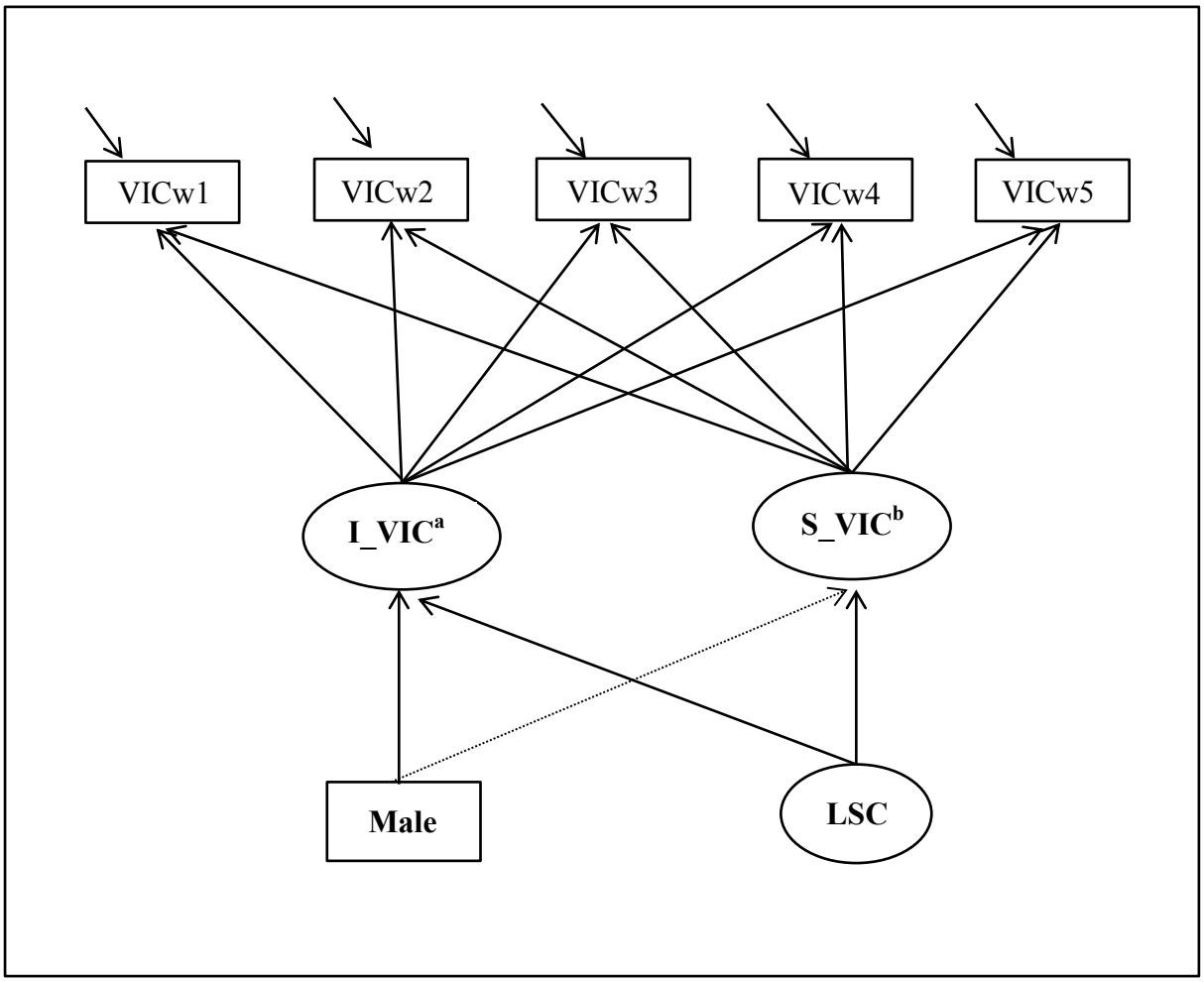
	Intercept (Initial Level)		Linear Slope		r (Intercept & Slope)	Model Fit			
	Mean	Variance	Mean	Variance		CFI	TLI	RMSEA	SRMR
Personal Victimization	0.645*** (0.007)	0.061*** (0.007)	-0.030*** (0.002)	0.003*** (0.001)	-0.857*** (0.034)	0.855	0.855	0.044	0.042

$^{***}p \leq .001$; $^{**}p \leq .01$; $^{*}p \leq .05$.

Model 1 in table 4.12 presents the findings of the LGCM with time-invariant factors only (male and LSC) as predictors of the victimization intercepts and slopes. Figure 4.6 is a diagram of model 1. The findings indicate that boys were more likely than girls to be victimized by personal offenses in the fourth grade ($p < 0.05$). Students with lower levels of self-control also experienced higher levels of personal victimization during the fourth grade ($p < 0.001$). However, the gradual decline of personal victimizations over time was also significantly related to LSC, indicating that victimization risk for students with less self-control gradually decreased over time ($p < 0.001$).

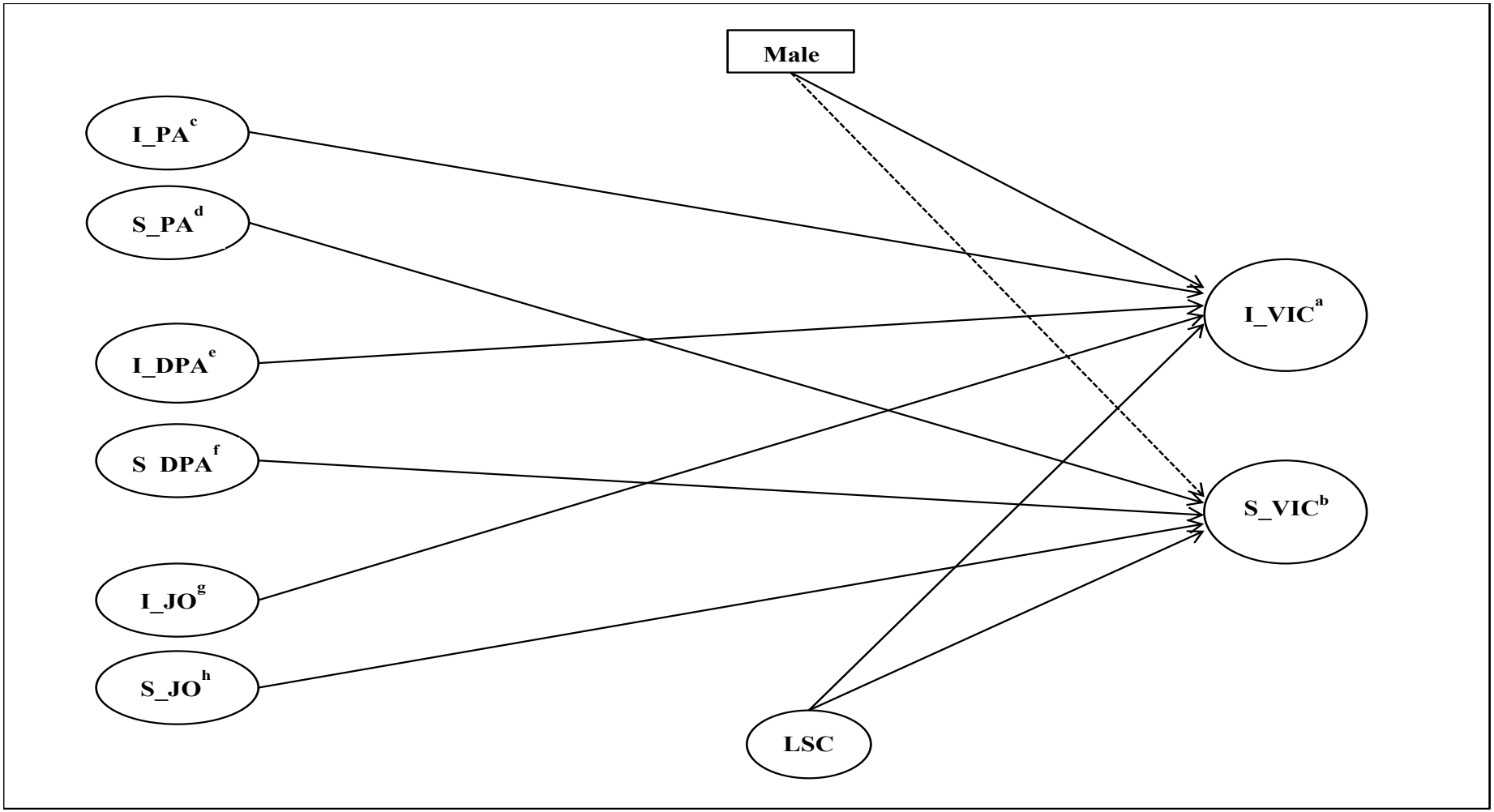
Model 2 in Table 4.12 is a four-part latent growth model including the effects of both the time-invariant covariates (male and LSC) and the time-varying covariates (PA, DPA, and JO) on personal victimization. Figure 4.7 is a diagram of model 2. The latent intercept and slope factors of the time-varying covariates (PA, DPA, and JO) were created for each linear growth model. For instance, the intercept and slope factors of PA for the second linear growth model, those of DPA for the third linear growth model, and those of JO for the fourth linear growth model. For a four-part latent growth model, the first linear growth model of personal victimization was regressed on each intercept and slope factor of the three time-varying covariates: (1) the intercept of the outcome variable regressed on the intercept of each time varying covariate ("intercepts-on-intercepts"), and (2) the slope of the outcome variable regressed on the slope of each time varying covariate ("slopes-on-slopes"). Thus, it is able to examine the effects of both the initial starting point and rate of change in those covariates on the initial status and rate of change in personal victimization.

Figure 4.6. Latent Growth Curve Model of Personal Victimization with Time-invariant



a. I_VIC (Intercept of Personal Victimization) = initial starting point of victimization.
b. S_VIC (Slope of Personal Victimization) = rate of change in victimization.

Figure 4.7. Four-Part Latent Growth Curve Model with Time-Invariant and Time-Varying Factors



a. I_VIC (Intercept of Personal Victimization) = initial starting point of victimization.
b. S_VIC (Slope of Personal Victimization) = rate of change in victimization.
c. I_PA (Intercept of Parental Attachment) = initial starting point of parental attachment.
d. S_PA (Slope of Parental Attachment) = rate of change in parental attachment.
e. I_DPA (Intercept of Delinquent Peer Associations) = initial starting point of delinquent peer associations.
f. S_DPA (Slope of Delinquent Peer Associations) = rate of change in delinquent peer associations.
g. I_JO (Intercept of Juvenile Offending) = initial starting point of juvenile offending.
h. S_JO (Slope of Juvenile Offending) = rate of change in juvenile offending.

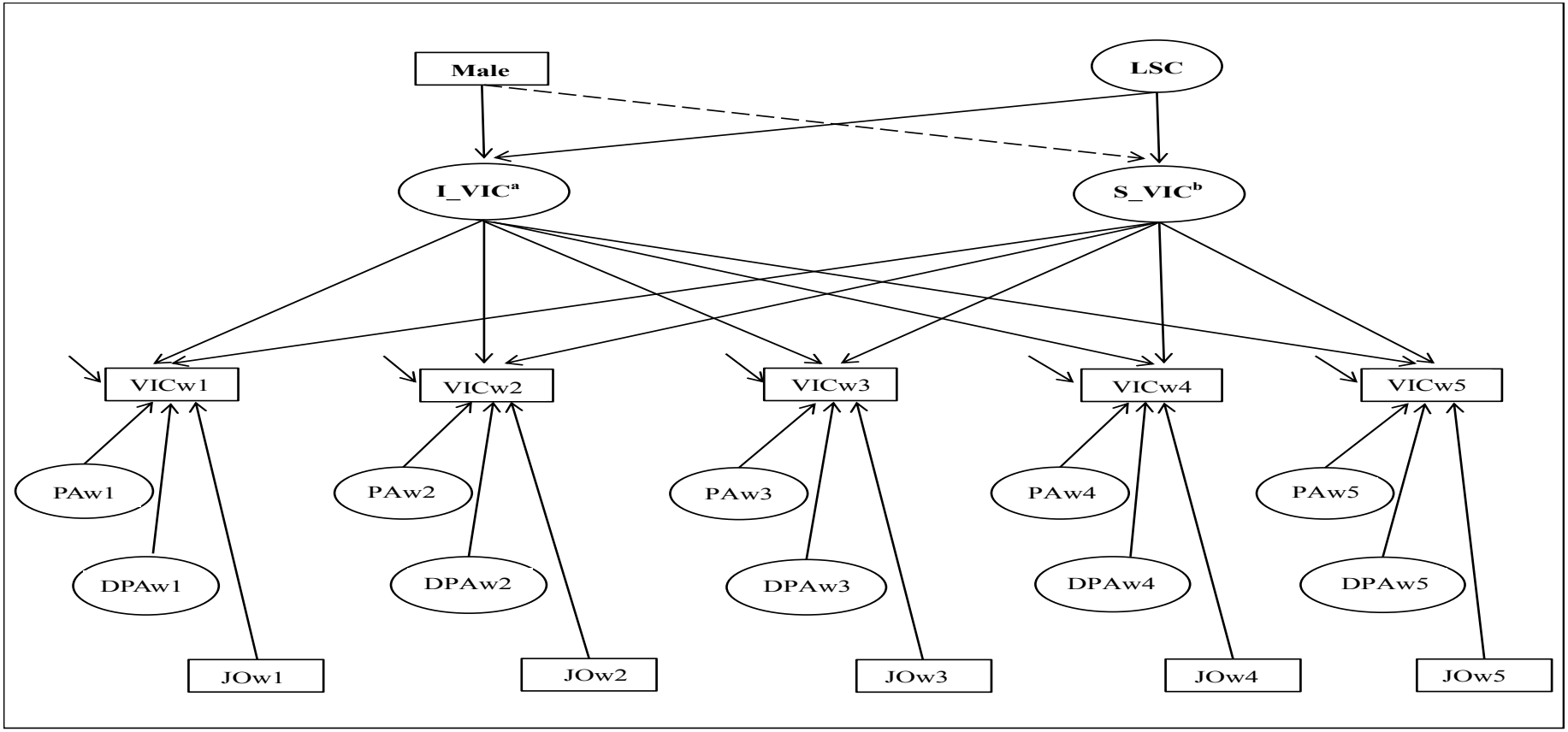
A comparison of cross-sectional findings between models 2 and 3 in table 4.12 indicates that the cross-sectional effect of *male* on personal victimization was rendered nonsignificant after controlling for lifestyle factors (PA, DPA, and JO). Also, LSC had a significant cross-sectional effect in both model 2 and model 3 ($p < 0.05$), but the significant longitudinal effect in model 1 was rendered nonsignificant in model 2. In other words, LSC had no significant effect on the rate of change in personal victimization after controlling for the time-varying covariates. Also, students who had engaged in offending during the fourth grade were more likely to be victimized ($p < 0.05$). Related to changes in victimization risk over time, the rate of change in personal victimization was significantly and positively related to the rate of change in juvenile offending ($p < 0.01$), but was unrelated to rates of change in parental attachment and delinquent peers.

Model 3 in Table 4.12 presents the LGCM with the effects of PA, DPA, and JO at each wave. Figure 4.8 is a diagram of model 3. The nonsignificant effect of *male*, after controlling for time-varying factors, is consistent with the nonsignificant effect of male in the four-part latent growth model (model 2). However, LSC had significant effects on both the average initial value and rate of change in personal victimization, even after controlling for lifestyle variables ($p < 0.01$).

Results for the cross-sectional effects of the time-varying factors at each wave revealed that engaging in offending was significant for predicting personal victimization at each wave. By contrast, PA was a significant predictor of personal victimization only in the last wave ($p < 0.01$), suggesting that parental attachment becomes more important for preventing victimization at later ages. The model fit statistics (CFI, TLI, RMSEA, and SRMR) improved from model 1 to model 3. The overall fit of model 3 was the best, with values of

CFI (0.944), TLI (0.931), RMSEA (0.018), and SRMR (0.017) indicative of an acceptable fit between the statistical model and sampled data.

Figure 4.8. Latent Growth Curve Model of Personal Victimization with Time-Invariant and Time-Varying Covariates Predicting Victimization at Each Wave



a. I_VIC (Intercept of Personal Victimization) = initial starting point of victimization.
b. S_VIC (Slope of Personal Victimization) = rate of change in victimization.

Table 4.13. Latent Growth Curve Model of Personal Victimization with Time-Invariant and Time-Varying Covariates (Robust Maximum Likelihood Estimates Reported with Standard Errors in Parentheses)

		Model 1[a]	Model 2[b]	Model 3 [c]
Time-Invariant	Intercept VIC on MALE	0.066* (0.027)	-0.008 (0.014)	0.020 (0.033)
	Intercept VIC on LSC	0.308*** (0.028)	0.004 *** (0.001)	0.216*** (0.035)
	Slope VIC on LSC	-0.257*** (0.042)	0.000 (0.000)	-0.149** (0.049)
Time-Varying	Intercept VIC on Intercept PA		-0.002 (0.002)	
	Slope VIC on Slope PA		0.005 (0.004)	
	Intercept VIC on Intercept DPA		0.005 (0.007)	
	Slope VIC on Slope DPA		-0.005 (0.006)	
	Intercept VIC on Intercept JO		0.446 * (0.184)	
	Slope VIC on Slope JO		0.817 ** (0.277)	

Table 4.12. (continued)

		Model 1[a]	Model 2[b]	Model 3 [c]
VICw1	PAw1			-0.009 (0.021)
	DPAw1			0.047 (0.026)
	JOw1			0.259*** (0.023)
VICw2	PAw2			-0.008 (0.023)
	DPAw2			0.017 (0.024)
	JOw2			0.186*** (0.024)
VICw3	PAw3			-0.016 (0.024)
	DPAw3			0.032 (0.027)
	JOw3			0.166*** (0.020)

Table 4.12. (continued)

		Model 1[a]	Model 2[b]	Model 3 [c]
VICw4	PAw4			-0.010 (0.022)
	DPAw4			0.034 (0.039)
	JOw4			0.160***(0.024)
VICw5	PAw5			-0.065**(0.024)
	DPAw5			0.026 (0.033)
	JOw5			0.128***(0.031)
		Model 1[a]	Model 2[b]	Model 3 [c]
Model Fit				
CFI		0.873	0.876	0.944

Table 4.12. (continued)

	Model 1[a]	Model 2[b]	Model 3 [c]
Model Fit			
TLI	0.841	0.851	0.931
RMSEA	0.042	0.040	0.018
SRMR	0.034	0.050	0.017

a. Linear growth curve model with Male and Low self-control (LSC) as time-invariant covariates.

b. Linear growth curve model with Male and Low self-control (LSC) as time-invariant covariates, and parental attachment (PA), delinquent peer associations (DPA), and juvenile offending (JO) as time-varying covariates.

c. Linear growth curve model with Male and Low self-control (LSC) as time-invariant covariates, and parental attachment (PA), delinquent peer associations (DPA), and juvenile offending (JO) as time-varying covariates at each single time point.

Autoregressive Latent Trajectory Model

I integrated an autoregressive model with the LGCM, referred to as the "Autoregressive Latent Trajectory Model (ALTM)[4]," assuming that prior victimization might predict later victimization. The ALTM indicated that victimization at time *t* is explained by prior victimization at time *t*-1, even when controlling for the time-invariant and time-varying covariates. Figure 4.9 is a diagram of this model. I expected autoregressive coefficients, thus inclusion of the autoregressive effect of prior victimizations might lead to a better expectation of parameter estimates.[5]

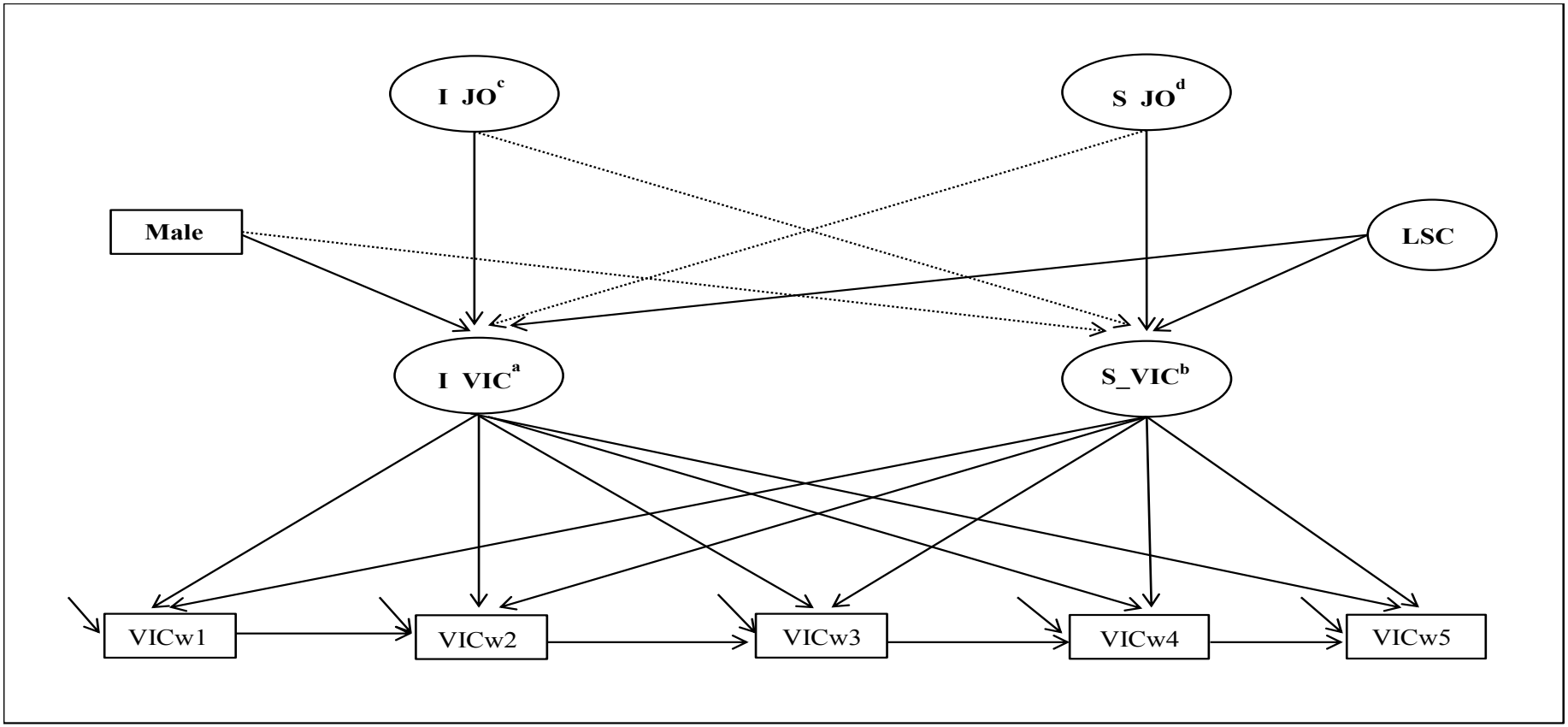
Model 1 in table 4.13 shows that prior personal victimization was a significant predictor of later personal victimization at each wave except when predicting victimization at wave 3, and Models 2 and 3 show that these significant effects hold even when controlling for time-invariant factors only as well as both time invariant and time-varying factors (only juvenile offending had a significant effect in the conventional LGCM). These findings suggest that adding an autoregressive component of prior victimizations to the conventional LGCM might be necessary for proper model specification. In this study, personal victimization at wave 1 negatively impacted victimization at wave 2, yet personal

[4] As mentioned in the analytical strategy section, the Auto-Regressive Cross-Lagged (ARCL) analysis indicates whether victimization at the first time point is predictive of victimization at the second time point, whether victimization at the second time point is predictive of victimization at the third time point, etc. Each parameter estimate represents the stability (correlation) of time-adjacent relations of observed repeated measures between Time 1 vs. Time 2, Time 2 vs. Time 3, etc. This means that each parameter estimate reflects the relative level (location) change of each mean of victimization within each time point but not the rate of change in victimization over time. If these estimates are significant, then the omission of an autoregressive component can lead to biases for all substantial parameter estimates of the LGCM as well as biases in the information criteria of model fit (Sivo, Fan, & Witta, 2005). For this reason, I combined an "autoregressive structure" into the traditional LGCM, referred to as the "Autoregressive Latent Trajectory (ALT) Model."

[5] Sivo, Fan, and Witta (2005) found both bias of parameter estimates of the conventional LGCM and bias of model fit when the autoregressive part was excluded.

victimization at waves 3 and 4 positively impacted victimization at waves 4 and 5, respectively. It is possible that the inverse effect reflects youths adopting more protective factors between waves 1 and 2 only, although this idea cannot be tested with the data. The findings for models 2 and 3 (ALTM) in table 4.13 were similar to those of the conventional LGCM in table 4.12 in terms of time invariant covariates (*male* and *low self-control*) and a time varying factor (juvenile offending). Male students were more likely to be victimized, and students with less self-control experienced higher levels of personal victimization. After controlling for the time varying lifestyle factor (JO), gender was rendered nonsignificant for personal victimization although low self-control remained significant for the initiation and escalation of victimization. Further, the fourth grade students who engaged in offending were more likely to be victimized, and the rate of change in personal victimization was significantly and positively related to the rate of change in juvenile offending.

Figure 4.9. Autoregressive Latent Trajectory Model of Personal Victimization



a. I_VIC (Intercept of Personal Victimization) = initial starting point of victimization.
b. S_VIC (Slope of Personal Victimization) = rate of change in victimization.
c. I_JO (Intercept of Juvenile Offending) = initial starting point of offending.
d. S_JO (Slope of Personal Offending) = rate of change in offending.

Table 4.14. Maximum Likelihood Estimates from Autoregressive Latent Trajectory Models (Robust Maximum Likelihood Estimates Reported with Standard Errors in Parentheses)

	Autoregressive Model	**ALTM**	
	Model 1[a]	Model 2[b]	Model 3[c]
VICW5 on VICW4	0.193*** (0.050)	0.184*** (0.051)	0.194*** (0.050)
VICW4 on VICW3	0.090** (0.035)	0.084* (0.036)	0.092** (0.035)
VICW3 on VICW2	0.030 (0.023)	0.028 (0.024)	0.034 (0.023)
VICW2 on VICW1	-0.047** (0.015)	-0.048** (0.015)	-0.048** (0.015)
Time-Invariant			
Intercept VIC on Male		0.037 ** (0.014)	0.000 (0.014)
Intercept VIC on LSC		0.008 *** (0.001)	0.004*** (0.000)
Slope VIC on LSC		-0.312*** (0.051)	0.001** (0.001)
Time-Varying			
Intercept VIC on Intercept JO			0.690*** (0.115)
SlopeVIC on SlopeJO			0.526*** (0.154)
Information Criteria			
CFI	0.968	0.946	0.956
TLI	0.947	0.910	0.905
RMSEA	0.026	0.032	0.042
SRMR	0.024	0.025	0.035

$^{***}p \leq .001$; $^{**}p \leq .01$; $^{*}p \leq .05$.

a. Autoregressive structure without covariates.
b. Autoregressive latent trajectory model with gender and LSC as time-invariant covariates.
c. Autoregressive latent trajectory model with gender and LSC as time-invariant covariates; juvenile offending (JO) as a time-varying covariate.

A Multi-level Growth Curve Model

For the final stage of the longitudinal analysis, I examined a two-level growth model (technically a three-level analysis) with (1) individual-trait variables (*male* and LSC) as time-invariant factors, and a lifestyle variable (JO) as a time-varying factor at the individual-level, and (2) collective efficacy at the school-level. The three level analysis integrates the longitudinal with the multi-level analysis. The within-person model (i.e., intra-individual changes in personal victimization) is employed at level-1, and the between-person model (i.e., inter-individual differences in the intercept and slope of personal victimization explained by individual level factors) is used at level-2. Collective efficacy (at the school level) is included at level-3. Only for this analysis of collective efficacy, I aggregated the six survey items and factor analyzed them in SPSS to create one factor (CE) at the school level as a time invariant factor. The path diagram is shown in Figure 4.10.

Figure 4.10. A Multi-level Growth Model with Time Period (Wave) at Level-1, Youths at Level-2, and Schools at Level-3

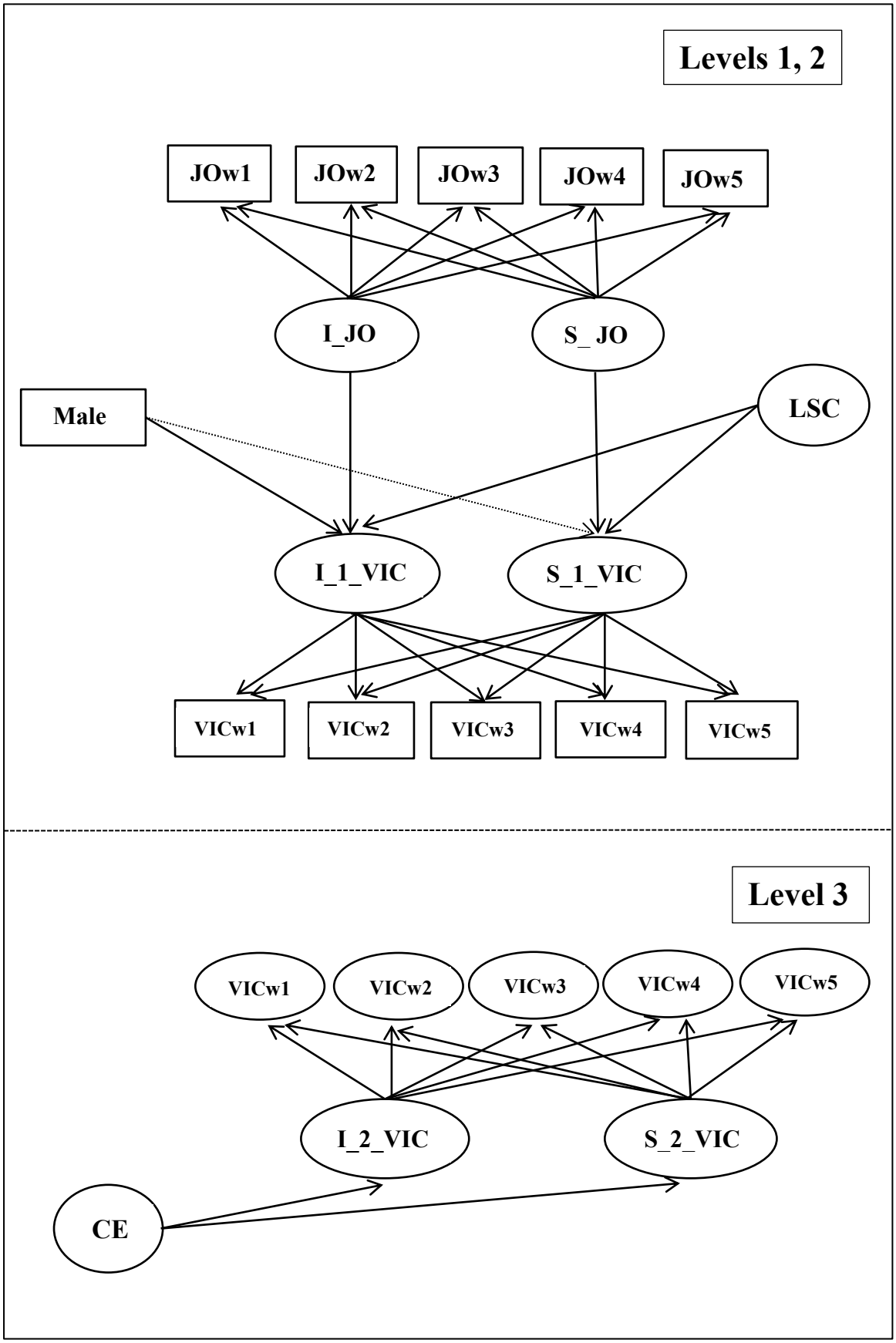


Table 4.14 presents the effects of *male*, low self-control, and juvenile offending (at the individual-level) as well as collective efficacy (at the school-level) on personal victimization risk. The first model of the two-level growth model (model 1) with only the time-invariant covariates included, male students were more likely to have higher risks of personal victimization ($p < 0.01$). Also, students with low self-control tended to start with a higher level of personal victimization at wave 1 ($p < 0.001$), and those with less self-control tended to have a gradually declining rate of change in personal victimization over time ($p < 0.001$). However, collective efficacy at the school-level had no direct effect on personal victimization after controlling for *male* and low self-control at level-2.

Model 2 in Table 4.14 shows similar results for LSC as in the first model, but *male* was rendered nonsignificant after controlling for the risky lifestyle variable (JO). Students who had engaged in offending were more likely to be victimized at wave 1 ($p < 0.001$), indicating that those with higher average values of offending tended to have higher odds of personal victimization. Also, the rate of change in offending was significantly and positively related to the rate of change in personal victimization ($p < 0.001$). Collective efficacy remained nonsignificant, as in model 1.

Table 4.15. Maximum Likelihood Estimates from Multi-level Growth Models (Robust Maximum Likelihood Estimates Reported with Standard Errors in Parentheses)

	Level 1 and 2 (Individual-Level)			
	Model 1[a]		**Model 2[b]**	
	Intercept of VIC	Slope of VIC	Intercept of VIC	Slope of VIC
Male	0.041** (0.014)		0.011 (0.014)	
LSC	0.009*** (0.001)	-0.002*** (0.001)	0.006*** (0.001)	-0.001*** (0.001)
Intercept of JO			0.535*** (0.113)	
Slope of JO				0.653*** (0.204)
	Level 3 (School-Level)			
	Intercept of VIC	Slope of VIC	Intercept of VIC	Slope of VIC
CE	-0.024 (0.060)	0.016 (0.019)	-0.031 (0.060)	0.016 (0.019)
Model Fit				
Akaike (AIC)	61963.189		75704.802	
Bayesian (BIC)	62123.090		75989.070	
Adjusted BIC	62037.302		75836.558	

$^{***}p \leq .001$; $^{**}p \leq .01$; $^{*}p \leq .05$.

a. A multi-level growth curve model with time-invariant covariates.
b. A multi-level growth curve model with time-invariant and time-varying covariates.

SUMMARY OF RESULTS

Table 4.15 presents a brief summary of results across the four stages of the analysis. In the cross-sectional study, there are direct effects on personal victimization of individual level factors (male, low self-control, parental attachment, delinquent peer association, and juvenile offending). Fourth grade male students were more likely to be victimized than females, and students with less self-control were generally at higher risk for personal victimization. Risky lifestyles (delinquent peer association and juvenile offending) had significant effects on personal victimization for lower grade youths, while parental attachment was significant for higher grade youths. Controlling for lifestyle factors generated a nonsignificant effect of *male* on victimization risk, yet low self-control remained a significant predictor of personal victimization.

Also, there were significant indirect effects of low self-control on personal victimization via lifestyle factors (parental attachment, delinquent peer associations, and juvenile offending). Fourth and sixth grade students with less self-control tended to associate with delinquent peers and engage in offending, thereby increasing personal victimization risk, whereas the indirect effect via parental attachment was significant for eighth grade students only. The indirect effect via juvenile offending was significant for all waves examined.

In addition, there was gender invariance in the measurement models at the individual level, and findings for low self-control were the same for both sexes. However, delinquent peer associations had a significant effect on personal victimization for females in the fourth and sixth grades but not for males in these grades. Victimization risk in elementary school was influenced by juvenile offending to roughly the same extent for both males and females, whereas juvenile offending among youths in junior high school was relevant for males only. Overall, low self-control maintained significant direct effects and significant indirect effects

via lifestyle factors on personal victimization risk for both sex groups across all three waves.

The multi-level analysis presented no statistically significant effects of collective efficacy on victimization risk, controlling for compositional differences in the individual level factors (individual trait and lifestyle factors). Also, there was no conditional effect of collective efficacy at the school-level on the link between individual level factors and personal victimization.

In the longitudinal analysis, the rate of change in personal victimization was significantly and positively related to the rate of change in juvenile offending, but was unrelated to rates of change in parental attachment and delinquent peers. In the autoregressive latent trajectory model, findings revealed that prior victimization was predictive of future victimization even when controlling for other significant individual level effects. Finally, the multi-level growth curve model showed no direct effect of collective efficacy on personal victimization at level-2, even after controlling for compositional differences in *male*, *low self-control*, and *juvenile offending.*

Table 4.16. Summary of Empirical Findings

		Level-1					**Level-2**	**Autoregressive Latent Trajectory**
Effects on Personal Victimization		Male	Low Self-control	Parental Attachment	Delinquent Peer Associations	Juvenile Offending	Collective Efficacy	Prior Victimization
Cross-Sectional Effect	Direct	☑	☑	☑ (wave 5)	☑ (waves 1& 3)	☑ (waves1,3, & 5)	NO	☑
	Indirect		☑					
	↘ Indirect Effect of LSC via...			☑ (wave 5)	☑ (waves 1 & 3)	☑ (waves1,3, & 5)		
	Mediating			NO	NO	NO		
	Moderating	☑					NO	
	↘ Moderating of Gender with…				☑ (waves 1 & 3): *only* female-*sig*	☑ (waves1 & 3): both groups-*sig*		
						☑ (wave 5): *only* male-*sig*		
Longitudinal Effect	Intercept on Intercept	☑	☑			☑	NO	
	Slope on Slope					☑	NO	

The next chapter discusses the compatibility of my findings with previous empirical research, the applicability of the theories examined to South Korean youths, and possible theoretical and policy implications.

CHAPTER V

DISCUSSION

In this chapter, I discuss whether the findings at each stage of the analysis support or refute previous research. The discussion then turns to the applicability of theories of low self-control, lifestyles and routine activities, and collective efficacy to an understanding of personal victimization among South Korean youths. Finally, the implications of my results for future research are presented.

COMPATIBILITY WITH PREVIOUS EMPIRICAL FINDINGS

Direct and Indirect Micro Level Effects on Personal Victimization

This study contributes to the victimization literature by integrating three theories—low self-control (LSC), lifestyles and routine activities (LRA), and collective efficacy (CE)—for a better understanding of youth vulnerability to personal victimization in South Korea. The results from various models support the idea that LSC and LRA theories should not be considered separately for understanding personal victimization among South Korean youths.

The first stage of the analysis investigated: (1) the direct effect of low self-control and lifestyle factors (parental attachment [PA], delinquent peer associations [DPA], and juvenile offending [JO]) on personal victimization risk, and (2) the indirect effects of low self-control (LSC) via lifestyle factors (as a mediator) on personal victimization. The first model in this stage only involved the time invariant factors (gender and low self-control). The cross-sectional finding revealed that male youths were more likely than female youths to be victimized. However, the strength of gender was rendered nonsignificant after controlling for lifestyle factors. This finding supports the logic of lifestyles and routine activities (LRA) theory. At its core, LRA theory argues that demographic variation in victimization coincides with variation in lifestyles and routine activities across demographic groups. This theory

assumes that demographic characteristics are seen as proxies for lifestyles and routine activities. This finding provides further empirical evidence supporting previous research (Cohen & Cantor, 1980; Cohen & Felson, 1979; Cohen, Kluegel, & Land, 1981; Hindelang, 1976; Hindelang et al., 1978; Messner & Tardiff, 1985).

Additionally, youths with less self-control had a higher risk of personal victimization at each wave examined. Schreck (1999) first recognized that self-control theory might be applied to an understanding of an individual's risk of being victimized. He found that individuals with low self-control were more likely to be victimized. This finding is consistent with the "risky heterogeneity perspective" and the prediction that less self-control corresponds with a higher risk of personal victimization (Daigle et al., 2008*;* Forde & Kennedy, 1997; Schreck, 1999; Schreck et al., 2006*;* Piquero et al., 2005*)*. Thus, the finding examined in this study provides further empirical evidence in support of Schreck's (1999) theoretical prediction and subsequent research on the link between self-control and victimization (Franklin, 2011; Ousey, Wilcox, & Fisher, 2011; Piquero et al., 2005; Schreck, Wright, & Miller, 2002; Stewart, Elifson, & Sterk, 2004; Tillyer, Fisher, & Wilcox, 2011; Turanovic & Pratt, 2014; Vazsonyi et al., 2012).

In the second cross-sectional model at each wave, the time varying factors (PA, DPA, and JO) were added to the time invariant factors. Fourth and sixth grade students who associated with delinquent peers and who engaged in offending were significantly more likely to be victimized compared to youths who did neither. For all grades, engaging in offending was a strong predictor of personal victimization. These results suggest that youths involved in risky lifestyles (e.g., associating with delinquent peers and/or engaging in offending) are more likely to place themselves in a risky situation by exposing themselves to

motivated offenders. Thus, they have more contact with potential offenders, and this can lead to a higher risk of victimization. This finding is consistent with the notion derived from a "state dependence perspective" that prior experiences of offending/victimization might cause subsequent offending/victimization (Burrow & Apel, 2008; Campbell Augustine et al., 2002; Farrell, Tseloni, & Pease, 2005; Fisher et al., 1998; Jensen & Brownfield, 1986; Lauritsen et al., 1992; Mustaine & Tewksbury, 1998; Pease & Laylock, 1996; Sampson & Lauritsen, 1990; Schreck, 1999; Schreck et al., 2003; Wittebrood & Nieuwbeerta, 2000).

For eighth grade students, associating with delinquent peers did not significantly predict personal victimization risk. Instead, parental attachment had a significant and inverse effect on personal victimization for eighth grade students *only*. This is consistent with the findings of Cho and her colleagues (2015) and Noh (2007) who examined South Korean youth victimization. Cho, Wooldredge, and Park (2015) found that ties to parents and teachers had significant inverse effects on victimization. They indicated that strong ties to parents, teachers, and other school staff may be symptomatic of capable guardians that can protect children from criminal victimization. In other words, strong ties to parents and teachers reduce children's exposure to potential offenders. Overall, this finding provides empirical support for LRA theory applied to South Korean youths in the sense that certain lifestyles among these youths increased their risk of victimization (Finkelhor & Asdigian, 1996; Fisher, Sloan, Cullen, & Lu, 1998; Franklin et al., 2012; Kennedy & Forde, 1990; Miethe, Stafford, & Long, 1987; Mustaine & Tewksbury, 1998; Sampson & Wooldredge, 1987; Popp & Peguero, 2011; Schreck & Fisher, 2004; Schreck, Stewart, & Fisher, 2006).

Although controlling for lifestyle factors generated a nonsignificant effect of *male* on victimization risk, LSC remained a significant predictor of personal victimization. In other

words, lifestyle factors did not fully mediate the correlation between low self-control and victimization. Several studies have examined whether lifestyles somehow mediate the effects of low self-control on victimization risk (Schreck, 1999; Franklin, 2011; Schreck et al., 2002; Stewart et al., 2004). The authors of these studies originally assumed that the effects of low self-control are significantly reduced or are rendered nonsignificant after controlling for the intervening mechanisms of lifestyle factors. The cross-sectional findings of this study refute the idea that lifestyle factors mediate the link between low self-control and victimization. This indicates that low self-control affects personal victimization independently of lifestyle factors (i.e., engaging in offending, and associating with delinquent peers or maintaining weak attachments to parents), which is consistent with previous research (Franklin, 2011; Franklin, Franklin, Nobles, & Kercher, 2012; Schreck et al., 2002; Stewart et al., 2004; Woo & Cho, 2013).

In addition to direct effects, I also examined the indirect effects of LSC on personal victimization via lifestyle factors. The differences in some of the significant direct effects of lifestyle factors between waves 1 and 3 (significant effects of DPA and JO, not PA) versus wave 5 (significant effects of PA and JO, not DPA) translated into differences in significant indirect effects between elementary school and junior high school. It appears that students with lower self-control in the fourth and sixth grades were more likely to be victimized due to their greater likelihood of having delinquent peer associations and of engaging in offending. On the other hand, eighth grade students with low self-control were more likely to be victimized due to weaker ties to their parents and higher odds of engaging in offending. These findings support Schreck's (1999) application of LSC to victimization risk. He purported that individuals with low self-control engage in certain behavioral processes (e.g.,

engaging in deviant activities, associating with delinquent peers) that increase victimization risk. This finding is also consistent with prior studies on school-based victimization that have also examined low self-control in conjunction with lifestyles and routine activities (Campbell Augustine et al., 2002; Schreck, 1999; Schreck, Wright, & Miller, 2002; Wilcox et al., 2009).

Gender Differences in Micro Level Effects on Victimization

The second stage of the analysis included an analysis of whether a youth's sex conditioned any of the micro level effects examined in the first stage of the analysis. It was assumed that males involved in a male-dominated offending network have a greater risk of victimization. This implies that relationships between risky lifestyle factors and victimization might be stronger among male students (Dugan & Apel, 2003; Jensen & Brownfield, 1986; Lauritsen, Heimer, & Lynch, 2009). I found that delinquent peer associations had a significant effect on personal victimization for female elementary school students (4^{th} and 6^{th} grades), but not for male elementary school students. However, delinquent peer associations were nonsignificant predictors of victimization risk for both male and female junior high school students (8^{th} grade). In short, associating with delinquent peers significantly increased the risk of personal victimization for fourth and sixth grade girls only.

Another difference between boys and girls is that offending behaviors were significantly related to the risk of personal victimization for males in junior high but not for females in junior high. Therefore, victimization risk in elementary school was influenced by juvenile offending to roughly the same extent for both males and females, whereas juvenile offending among youths in junior high school was a significant predictor of victimization for males only.

In addition, the indirect effect of low self-control via delinquent peer associations (DPA) was significant for female elementary school students (4^{th} and 6^{th} grades) but not for male

elementary school students. However, DPA was not significant for both groups at the junior high school level. On the other hand, engaging in offending was significant for both groups at the elementary school level, but it was stronger for male students than female students at the junior high school level.

The findings presented in this study are consistent with previous studies finding that gender conditions the strength of other lifestyle factors on personal victimization, perhaps because it shapes differences in motivated offenders' perceptions of an individual's vulnerability as a potential target (Dugan & Apel, 2003; Finkelhor & Asdigian, 1996; Han et al., 2008; Jensen & Brownfield, 1986; Lauritsen, Heimer, & Lynch, 2009; M. Lee, 2003; Mustaine & Tewksbury, 2002; Noh, 2007; Popp & Peguero, 2011; Verweij & Nieuwbeerta, 2002; Wilcox, Tillyer, & Fisher, 2009; Zaykowski & Gunter, 2013). These findings, however, suggest that females are less likely to be exposed to potential offenders and are far less likely than males to engage in deviant activities (Maher, 1997; Steffensmeier, 1983; Zaykowski & Gunter, 2013). Females are also more likely to be "guarded" by their stronger attachments to parents (Cho, Wooldredge, & Park, 2015; Kim, 2007).

Regarding how a youth's sex might indirectly influence victimization risk through lifestyle factors, few studies have researched whether lifestyle factors mediate the relationship between demographic characteristics in general and victimization risk (Messner, Lu, Zhang, & Liu, 2007; Miethe et al., 1987; Pratt, Holtfreter, & Reisig, 2010). Some studies have indicated that sex remained significant even after controlling for these lifestyle factors (Augustine et al., 2002; Finkelhor & Asdigian, 1996; Jensen & Brownfield, 1986), whereas others have indicated that the effects of demographic characteristics on criminal victimization were reduced or rendered nonsignificant after risky lifestyles were controlled (Cohen &

Felson, 1979; Cohen, Kluegel, & Land, 1981; Corrado, Roesch, Glackman, Evans, & Ledger, 1980; Hindelang, Gottfredson, & Garafalo, 1978; Jensen & Brownfield, 1986; Meier & Miethe, 1993; Messner, Lu, Zhang, & Liu, 2007; Miethe & Meier, 1990; Miethe et al., 1987; Pratt, Holtfreter, & Reisig, 2010). The nonsignificant effects of male in the cross-sectional models with both time invariant and time varying factors included indicates support for the idea that sex effects are fully mediated by youth lifestyles. This finding provides further empirical evidence that gender shapes individual routine activities that vary in ways that make males more likely to be targeted as victims (Baker, Mednick, & Carothers, 1989; Dugan & Apel, 2003; Jensen & Brownfield, 1986; Lauritsen, Heimer, & Lynch, 2009; Planty & Truman, 2012; Schreck et al., 2003).

Collective Efficacy and Risk for Personal Victimization

The third stage of the analysis examined the main and moderating effects of collective efficacy (CE) at the local area level on victimization risk. The findings of individual level factors (male, LSC, PA, DPA, and JO) in this stage were similar to the findings examined in the first stage. However, CE did not significantly predict personal victimization after controlling for individual level factors (low self-control and lifestyles). This finding refutes the applicability (to South Korean youths and the types of "communities" examined) of previous empirical findings arguing that opportunities for criminal victimization can operate simultaneously and independently at different levels (Browning & Erickson, 2009; Garofalo, 1987; Kennedy & Forde, 1990; Sampson & Wooldredge, 1987; Smith & Jarjoura, 1989; Wilcox, Gialopsos & Land, 2013; Wilcox, Land, & Hunt, 2003).

I also examined whether individual level effects on personal victimization varied in magnitude by area levels of collective efficacy. Based on previous studies, it was expected that CE might affect the magnitude of the individual level effects on personal victimization

(Duncan et al., 2003; Sampson, Raudenbush, & Earls, 1997; Simons, Simons, Burt, Brody, & Cutrona, 2005). However, my findings revealed that CE did not condition any of the individual level effects examined. Overall, these findings do not support the applicability of previous findings to South Korean youths in that the relationship between lifestyle factors and victimization did not vary by collective efficacy (Berg & Loeber, 2011; Berg, Stewart, Schreck, & Simons, 2012; Browning & Erickson, 2009; Fisher, Sloan, Cullen, & Lu, 1998; Miethe & McDowall, 1993; Outlaw, Ruback, & Britt, 2002; Rice & Smith, 2002; Schreck, Miller, & Gibson, 2003; Wilcox, Madensen, & Tillyer, 2007; Wilcox Rountree, Land, & Miethe, 1994).

Change over Time in Victimization Risk

The fourth stage of the analysis focused on individual differences in developmental trajectories in the risk of personal victimization during a five-year period. The longitudinal findings revealed that during the fourth grade, male students were more likely to be victimized and students with lower self-control experienced higher levels of personal victimization. After controlling for the time varying lifestyle factors (PA, DPA, and JO), gender was rendered nonsignificant for personal victimization although low self-control remained significant. Parental attachment was not a significant factor for the fourth grade students nor was the rate of change in PA significant for the rate of change in personal victimization. Juvenile offending was the only factor that predicted personal victimization out of the three lifestyle factors. Students who engaged in offending were more likely to be victimized during the fourth grade. Further, the rate of change in personal victimization was significantly and positively related to the rate of change in juvenile offending.

Earlier cross-sectional studies have shown the significant effects of deviant lifestyles on victimization risk, but relatively few studies have examined this effect with a longitudinal

research design (Finkelhor, 1995, 1997; Lauritsen et al., 1991; Lauritsen & Davis Quinet, 1995; Wittebrood & Nieuwbeerta, 2000). Lauritsen and Davis Quinet (1995) analyzed panel data on victimization to explain the link between prior and later victimization, but they did not explore how changes in deviance affected victimization during a five-year period. Miethe, Stafford, and Sloane (1990) studied how changes in routine activity patterns affected victimization, but only during a two-year period. Wittebrood and Nieuwbeerta (2000) found significant effects of both prior victimization experiences and routine activity patterns on subsequent victimization by studying changes in persons' lives. That is, individuals who had been victimized tended to have a higher risk of subsequent victimization that was explained by previous patterns of routine activities, although they could not explain the rate of change in victimization. Chen (2009) also found that the rate of change in deviant lifestyle patterns was significantly and positively related to the rate of change in victimization risk over time. However, both studies did not examine changes in low self-control on victimization.

In the South Korean youth sample, victimization risk steadily decreased over time. This finding is consistent with other longitudinal studies (Chen, 2009; Lauritsen, 1998; Smith, Shu, & Madsen, 2001). However, it is inconsistent with other cross-sectional studies that have indicated an increase in victimization risk from early to late adolescence (Bureau of Justice Statistics, 1999; Hindelang, 1976). In this study, the rate of change in individual differences in developmental trajectories of victimization is significantly and positively related to the rate of change in deviant lifestyles (i.e., engagement in offending but not delinquent peer associations), which is consistent with previous victimization studies (Camodeca, Goossens, Terwogt, & Schuengel, 2002; Lauritsen & Davis Quinet, 1995; Salmivalli & Nieminen, 2002; Wittebrood & Nieuwbeerta, 2000). Results support the

applicability of LRA theory to an understanding of changes in youth victimization risk over time while also reinforcing the importance of individual trait factors (e.g., low self-control) for understanding youth victimization.

In addition, I examined the auto-regressed effect of prior victimization experience on subsequent victimization at each wave by integrating an autoregressive model with the LGCM. It is important to note that prior personal victimization was a significant predictor of later personal victimization. In this study, personal victimization at wave 1 negatively impacted victimization at wave 2, yet personal victimization at waves 3 and 4 positively impacted victimization at waves 4 and 5, respectively. Also, these significant effects of prior personal victimization remained even when controlling for *only* time invariant factors and when controlling for both time invariant and time varying factors. The findings for low self-control and engaging in offending were consistent with the findings examined in the LGCM. Male students were more likely to be victimized, and students with less self-control experienced higher levels of personal victimization. After controlling for a time varying lifestyle factor (JO), gender was rendered nonsignificant for personal victimization although low self-control remained significant for the initiation and escalation of victimization. Further, fourth grade students who engaged in offending were more likely to be victimized, and the rate of change in personal victimization was significantly and positively related to the rate of change in juvenile offending. Consistent with the literature on repeat victimization, prior victimization had a significant effect on subsequent victimization (Cook, 1986; Farrell, Tseloni, & Pease, 2005; Hindelang et al., 1978; Lauritsen & Davis Quinet, 1995; Ousey, Wilcox, & Brummel, 2008; Pease & Laylock, 1996; Wittebrood & Nieuwbeerta, 2000).

Finally, I examined a two-level growth model to assess the direct and moderating

effects of collective efficacy on personal victimization at the school level over time. The findings for the individual level factors are consistent with the findings from the previous stage. The fourth grade male students were more likely to be victimized. Students with less self-control tended to have a higher risk of personal victimization during the fourth grade, and those with less self-control showed a gradual decrease in the rate of change in personal victimization. Students in the fourth grade who engaged in offending tended to start with a higher level of personal victimization. The rate of change in personal victimization was significantly and positively related to the rate of change in juvenile offending. However, collective efficacy at the school-level had no direct effect on both the initial level and the rate of change in personal victimization after controlling for compositional differences in the time invariant factors (male and low self-control) as well as the time vary factor (juvenile offending) at level-2.

APPLICABILITY OF THEORIES TO SOUTH KOREAN YOUTHS

Low Self-Control Theory

The cross-sectional and longitudinal findings revealed a significant direct effect of low self-control on personal victimization that is consistent with Schreck's (1999) application of Gottfredson and Hirschi's (1990) general theory of crime to understanding victimization risk. This study supports the application of Gottfredson and Hirschi's (1990) theory to help understand personal victimization among South Korean youths. Studies conducted in the US have found significant direct effects of low self-control on victimization (Baron et al., 2007; Fox et al., 2009; Franklin et al., 2012; Higgins et al., 2009; Holtfreter et al., 2008, 2010; Kerley et al., 2009; Piquero et al., 2005; Schreck, 1999; Schreck, Stewart, & Fisher, 2006; Schreck, Wright, & Miller, 2002; Stewart, Elifson, & Sterk, 2004; Tillyer, Fisher, & Wilcox, 2011). Woo and Cho (2013) also found that South Korean students with low self-control had

higher risks of victimization, even when controlling for demographic characteristics (gender and family income).

The finding reveals that after controlling for lifestyle factors, LSC remained a significant predictor of personal victimization. This indicates that lifestyle factors did not fully mediate the correlation between low self-control and victimization in South Korea. Empirical tests in the US have provided mixed or inconsistent findings for these mediating effects of lifestyle factors on victimization. On the one hand, some studies have found that lifestyle factors do not fully mediate the relationship between low self-control and victimization (Franklin, 2011; Schreck, Wright, & Miller, 2002). For instance, Schreck, Wright, and Miller (2002) found that low self-control remained significant even after controlling for exposure to motivated offenders (i.e., unmonitored and unstructured leisure activities as well as associations with peers who have been arrested). The finding of Schreck, Stewart, and Fisher (2006) was also consistent with Schreck et al.'s (2002) earlier study. Both low self-control and risky lifestyles (i.e., delinquency and delinquent peer associations) had a direct effect on the risk of victimization, and there was no mediating effect of lifestyle factors on the link between low self-control and victimization in the full model. Stewart and his colleagues (2004) showed that low self-control was significant and positive for victimization even after controlling for risky activities (e.g., drug use). Franklin, Franklin, Nobles, and Kercher (2012) found that low self-control was significant and positive for victimization even after lifestyle factors (i.e., proximity to crime, exposure to motivated offenders, target attractiveness, and guardianship) were held constant. Franklin (2011) and Gibson (2012) found that adding various types of risky lifestyles and routine activities into one analysis had no effect on the link between victimization and low self-control. Both authors found that low

self-control had a significant effect on victimization independent of lifestyle factors. Franklin (2011) and Gibson (2012) implied that low self-control can make an individual's situation risky, while the presence of high self-control can make his/her situation safe. Woo and Cho (2013) found that risky lifestyles for South Korean youths (eighth grade students) did not fully mediate the link between low self-control and victimization, similar to the findings of this dissertation.

On the other hand, other studies have found that low self-control was significantly reduced or rendered nonsignificant when controlling for risky lifestyle factors (Turanovic & Pratt, 2014). Despite the finding that the effect of low self-control was not fully mediated by lifestyle factors in the South Korean sample examined here, there were still significant indirect effects of low self-control on victimization risk via lifestyle factors. Schreck (1999) argued that findings of fully mediated effects would suggest a significant indirect effect of low self-control on victimization via lifestyle factors. The effect of low self-control on victimization is therefore assumed to be indirect via lifestyle factors, where low self-control places individuals in risky situations (e.g., associating with delinquent peers and engaging in deviant activities) that, in turn, lead to a greater risk of personal victimization. Schreck, Wright, and Miller (2002), however, found no significant indirect effect of low self-control via risky lifestyles. Although the findings for indirect effects found in my analysis are inconsistent with those of Schreck et al. (2002), my study still supports the applicability of Schreck's (1999) general thesis that low self-control is relevant for understanding victimization risk. Among South Korean youths, it appears that low self-control has a significant effect on the risk of personal victimization and even after controlling for other lifestyle factors (a direct effect of low self-control). Also, students with low self-control

tended to associate with delinquent peers and engaged in offending that, in turn, led to an increase in victimization risk (an indirect effect of low self-control).

Lifestyle and Routine Activities Theory

This study supports the applicability of LRA theory in the investigation of personal victimization risk among South Korean youths. LRA theory purports that certain lifestyles and routines (e.g., engagement in offending) can create one's risk of victimization (Cohen & Felson, 1979; Felson, 2002; Garofalo, 1987; Hindelang, Gottfredson, & Garofalo, 1978; Jensen & Brownfield, 1986; Miethe & Meier, 1994; Mustaine & Tewksbury, 2000; Schreck et al., 2004; Smith & Ecob, 2007; Taylor et al., 2008; Woodward & Fergusson, 2000). In this study, parental attachment, delinquent peer associations, and juvenile offending are variables that are used as "lifestyle" factors.

A large body of research in the US has applied LRA theories in an effort to understand juvenile victimization (Finkelhor & Asdigian, 1996; Franklin et al., 2012; Popp & Peguero, 2011; Schreck & Fisher, 2004; Schreck, Stewart, & Fisher, 2006). Those studies have observed that engaging in delinquency and delinquent peer associations have significant effects on the risk of victimization (Henson, Wilcox, Reyns, & Cullen, 2010; Jensen & Brownfield, 1986; Lauritsen, Laub, & Sampson, 1992; Lauritsen, Sampson, & Laub, 1991; Sampson & Lauritsen, 1990). This observation also applies to research on victimization in school settings (Burrow & Apel, 2008; Campbell Augustine, Wilcox, Ousey, & Clayton, 2002; Peguero, 2009; Schreck & Fisher, 2004; Schreck, Miller, & Gibson, 2003; Schreck, Stewart, & Fisher, 2006; Schreck, Wright, & Miller, 2002; Wilcox, May, & Roberts, 2006; Wilcox, Tillyer, & Fisher, 2009).

Studies of youth victimization in South Korea have provided evidence in support of the notion that activities related to an individual's exposure/proximity to motivated offenders

are related to victimization risks (Cho, Wooldredge, & Park, 2015; Jung & Park, 2010; M. Lee, 2003; S. Lee, 1995, Noh, 2007; Woo & Cho, 2013). Woo and Cho (2013) found that students who engaged in deviant activities (unexcused absences and running away) and conventional routine activities (school-based club activities and academic support activities) tended to have a higher risk of victimization.

Cho, Wooldredge, and Park (2015) found that the number of school club activities (the average number of hours spent per week in school club activities) had a significant and positive effect on victimization risk. Overall, it can be said that LRA theory can improve understanding of South Korean youths' risk of personal victimization.

Gender Differences in the Applicability of Micro Level Theories

Both cross-sectional and longitudinal findings revealed that male youths were more likely than females to be victimized, and a sex effect was rendered nonsignificant after controlling for lifestyle factors except for the last wave in the cross-sectional analyses. Following the logic of LRA theory, behavioral patterns might be shaped by demographic characteristics such as age and sex (Cohen, Kluegel, & Land, 1981; Hindelang et al., 1978). In other words, sex effects should be eliminated or reduced after sex-specific behavioral patterns are incorporated in the model. In other words, there may be particular variables that contribute to the correlation between a person's sex and their risk of victimization. The findings examined in this study are consistent with the logic of lifestyle and routine activities theory; the sex effect was rendered nonsignificant after controlling for lifestyle factors.

Despite consistency of the findings with the logic of LRA theory, there exists a central premise that has been understudied. Lifestyle and routine activities theory has overlooked the significance of gender, such as the interaction/moderating effects of gender, despite consistent findings of a strong empirical link between gender and victimization risk

(Belknap, 2007; Daly & Chesney-Lind, 1988). Furthermore, LRA theory does not specify how gender might shape the behavioral patterns that influence victimization (Cohen & Felson, 1979; Jensen & Brownfield, 1986; Meier & Miethe, 1993; Miethe & Meier, 1990). For this reason, some of the empirical research on the impact of lifestyles and routine activities on victimization has examined whether risk factors vary by a person's sex.

Several studies to date on youth victimization have revealed significant sex-based differences in victimization risk both in the US (Popp & Peguero, 2011; Wilcox, Tillyer, & Fisher, 2009; Zaykowski & Gunter, 2013) and in South Korea (Han et al., 2008; Kim, 2007; M. Lee, 2003; Noh, 2007). Popp and Peguero (2011) found that extracurricular activities had different effects on victimization depending on a 10^{th} grade student's sex. For females only, club activities and interscholastic sports had inverse effects on youth victimization, while intramural sports had a positive effect. Wilcox et al. (2009) showed that criminal involvement was a stronger predictor for theft and violent victimization among female students relative to males. Zaykowski and Gunter (2013) found that the impact of alcohol consumption and participation in sports on victimization risk was stronger for males relative to females. Cho, Wooldredge, and Park (2015) revealed that South Korean females drove the significant effects of lifestyle factors (relationships with parents and teachers and particular types of extracurricular activities) on victimization.

This study found that delinquent peer associations significantly increased the risk of personal victimization for female youths in elementary school but not male youths in elementary school (only at waves 1 and 3), while engaging in offending was significantly related to personal victimization for male middle school students (only at wave 5). These differences in the direct effects of DPA and JO between waves 1and 3 versus wave 5

translated into significant indirect effects of LSC on personal victimization in sex effects. The fourth and sixth grade females with less self-control were more likely to be victimized by associating with delinquent peers that, in turn, led to an increase of personal victimization risk. The eighth grade male students with less low self-control tended to engage in offending, thereby increasing their victimization risk. These findings are consistent with prior research on significant sex-based differences in victimization risk (Han et al., 2008; Kim, 2007; M. Lee, 2003; Noh, 2007; Popp & Peguero, 2011; Wilcox, Tillyer, & Fisher, 2009; Zaykowski & Gunter, 2013).

Collective Efficacy Theory

Early victimization studies of opportunity theories neglected to examine how the structural contexts where individual behaviors occur influence the link between those behaviors and victimization (Browning & Erickson, 2009; Lauritsen & Laub, 2007; Sampson & Lauritsen, 1990). However, it is reasonable to assume that the social context might condition the relationship between individual level risk factors and victimization (Berg & Loeber, 2011; Berg, Stewart, Schreck, & Simons, 2012). Previous macro level studies of neighborhood context have focused largely on the US, but some have examined South Korea. This dissertation examined the main and moderating effects of collective efficacy at the macro (school) level on victimization risk. It was predicted that individual level effects (male, LSC, PA, DPA, and JO) on personal victimization would vary in strength depending on the collective efficacy of local area populations.

Some early scholarship in the US examined the main effects of macro level factors but without considering micro level effects might vary depending on these macro level factors (Garofalo, 1987). On the other hand, some later studies discovered that the relationships between some individual level factors and victimization vary by neighborhood

disadvantage (Berg & Loeber, 2011; Berg, Stewart, Schreck, & Simons, 2012; Browning & Erickson, 2009; Rountree, Land, & Miethe, 1994).

This study did not find either significant main or moderating effects of collective efficacy on personal victimization risk among South Korean youths. Perhaps this is because South Korea is an ethnically homogenous nation, and some of the significant findings in US studies have been linked to different race groups. In the US, empirical relationships between race and victimization might differ depending on neighborhood factors. For example, African American residents are more concentrated in neighborhoods with low levels of collective efficacy, and thus they are more likely to be victimized by violence. However, neighborhoods with high proportions of immigrants tend to be characterized by high levels of shared expectations, thereby having high levels of collective efficacy (Sampson, Morenoff, & Raudenbush, 2005). On the other hand, others have argued that a high concentration of minorities and poverty is more likely to cause an increase in residents' perception of disorder, and this perception results in a lower level of collective efficacy that, in turn, leads to higher rates of crime (Sampson & Raudenbush, 2004). Many studies in the US have indicated that a high level of collective efficacy coincides with a low level of violent victimization (Browning & Erickson, 2009).

The inapplicability of collective efficacy to an understanding of youth victimization in South Korea might also be due to different social processes that make LSC and lifestyle factors' effects on victimization more pronounced in South Korea relative to the US, making them impervious to the effects of collective efficacy. In short, collective efficacy theory might not apply to an understanding of personal victimization among South Korean youths.

IMPLICATIONS FOR FUTURE RESEARCH

Low self-control is considered one of the strongest predictors of crime (Pratt &

Cullen, 2000). It has been concluded that "future research that omits self-control from its empirical analyses risks being misspecified" (Pratt & Cullen, 2000, p 952). In recent years, a consequential development has arisen from the low self-control tradition, indicating that individuals with less self-control are more likely to be victimized (Schreck, 1999; Schreck et al., 2006; Stewart et al., 2004). This observation suggests that both offending and victimization may be the products of similar processes (Baron, Forde, & May, 2007; Holtfreter, Reisig, & Pratt, 2008; Schreck, Stewart, & Fisher, 2006; Schreck, Wright, & Miller, 2002). The findings of this study are consistent with this perspective in that youths with less self-control were more likely to be victimized even when controlling for lifestyle factors.

It is important to note that Gottfredson and Hirschi's (1990) General Theory of Crime was not originally proposed as a theory of victimization. However, they did discuss how low self-control might influence both crime and other risky behaviors. This is because individuals with low self-control are not aware of the potential negative consequences of their situational choices, implying that they might fail to link their behaviors to victimization risk (Kerley, Xu, & Sirisunyaluck, 2008). For this reason, it might be difficult for researchers to develop a preventive strategy. Focusing on the criminal events and immediate circumstances under which crimes occur (risky lifestyles) rather than criminality (low self-control) could be helpful to develop prevention measures.

This study treated parental attachment as a component of lifestyle factors derived from LRA theory, and I found that low self-control is significantly related to personal victimization via parental attachment. However, Gottfredson and Hirschi (1990) argued that deficiencies in self-control are developed early in life due to ineffective parental socialization

and disciplining practices, and that they remain relatively stable during the life course. Low self-control fluctuates very little, thus it was treated as a time invariant factor in the model of this dissertation. Gottfredson and Hirschi (1990) suggested that children can learn how to control tempers and impulsivity, and to avoid risky situations. Thus, children can have higher levels of self-control, and so it is an individual trait characteristic that is impervious to changing social contexts (Gottfredson & Hirschi, 1990). From this perspective, future research might consider treating parental attachment as an antecedent that affects a youth's level of low self-control, as opposed to treating it as a "lifestyle" factor.

A particular strength of this analysis was the examination of possible interaction effects between individual level and school level factors, and whether changes in individual lifestyle factors corresponded with changes in personal victimization risk over time. Although cross-sectional findings have supported empirical relationships between risky lifestyles and victimization, few studies have examined these effects longitudinally (Lauritsen et al., 1991; Lauritsen & Davis Quinet, 1995; Wittebrood & Nieuwbeerta, 2000). Thus, the dynamic causal effects of lifestyle factors on victimization over time, in particular among youths having dramatic changes in a short period, cannot be fully explained with cross-sectional studies. This study addressed this issue by employing three models for the longitudinal study to examine the link between the time varying covariates (lifestyles) and personal victimization: (1) the latent growth curve model (LGCM), (2) Autoregressive Latent Trajectory Model (ALTM), and (3) a multi-level growth curve model.

Use of the LGCM provides much promise for understanding (1) intra-individual changes in victimization risk, and (2) inter-individual differences in average risk for the first wave and changes in risk across subsequent waves explained by individual-trait

characteristics as time invariant factors (such as *male* and LSC) as well as lifestyle factors (such as PA, DPA, and JO) as time-varying covariates. It is assumed that changes in victimization might coincide with increased involvement in risky lifestyles, especially deviant activities among youths. Also, early offenders might be more often rejected by conventional peer groups and are more likely to associate with delinquent peers in childhood, thereby increasing victimization risks (Chen, 2009; Chen et al., 2007; Moffitt, 1993; Moffitt & Caspi, 2001). The longitudinal analysis presented here provides new insight into the dynamic causal effects of lifestyle factors on victimization over time, in particular among South Korean youths having dramatic changes in lifestyles during short periods of time.

The ALTM tested whether victimization at time *t* was explained by prior victimization at time *t*-1, even when controlling for the time-invariant and time-varying covariates. The findings from this part of the longitudinal analysis support the state dependence perspective that prior victimization experience is a significant predictor of subsequent victimization, with additional significant effects of both time invariant and time varying factors. Finally, in combining the LGC and multi-level models (i.e., the multi-level growth curve model), I examined a three-level model that allows for an analysis of school-level "collective efficacy" trends as well as individual variability in the initial starting point and rate of change in personal victimization over time. Given the notion that individual variability exists in developmental trajectories in victimization across neighborhoods, I thus examined the main effects of changes over time in the individual-level factors (PA, DPA, and JO) and the school-level factor (CE) on personal victimization. Although the findings for this model did not support the relevance of collective efficacy theory in South Korea, it might still be useful for future research with different geographic units.

The next chapter provides a discussion of research limitations and their implications for future research on the topic. Also covered are some practical considerations for understanding and reducing personal victimization risks, based on my findings.

CHAPTER VI

CONCLUSIONS

In this chapter, I discuss some practical considerations for understanding and reducing victimization risk. I then explore the limitations of the analyses for future research. Finally, some concluding thoughts are presented.

PRACTICAL CONSIDERATIONS FOR REDUCING VICTIMIZATION RISK

This study examined whether low self-control, lifestyles, and collective efficacy had independent effects on the risk of personal victimization among South Korean youths by employing cross-sectional, longitudinal, multi-level, and two-level growth models. Findings from these analyses have several implications for reducing personal victimization among youths. Youths are seen to be at a high risk for victimization during childhood and adolescence; thus, it is important to identify specific predictors of victimization in order to develop early prevention and intervention strategies.

The findings revealed that low self-control was a significant predictor of personal victimization risk. Relative to delinquent offending and delinquent peer associations, individual differences in low self-control tend to be stable during childhood and exhibit greater longitudinal stability. Individuals with persistent vulnerability (i.e., low self-control), in turn, have a higher risk of victimization via risky lifestyles. Thus, it might be worthwhile to identify antecedents to low self-control in order to prevent subsequent negative outcomes, because low self-control can result in negative social and psychological outcomes across developmental stages (Moffitt et al., 2011). Therefore, childhood prevention measures that target low self-control will be more likely to prevent victimization compared to prevention programs that only focus on situational factors (e.g., risky lifestyles). Despite empirical evidence of the stability of low self-control throughout childhood, some research has

suggested that low self-control changes in later stages of a person's life course (Caspi, Roberts, & Shiner, 2005; Roberts, Walton, & Viechtbauer, 2006). Thus, early intervention efforts might be important for focusing on developmentally sensitive periods in order to encourage individuals to consider behavioral consequences.

This study also demonstrated the relevance of opportunity/situation-related concepts—criminal events—for predicting personal victimization. Risky lifestyles, such as delinquent peer associations and engagement in offending, exhibited significant positive relationships with personal victimization risk among South Korean youths. The most risky activities for youths were engaging in deviant behaviors. Also, the rate of change in the prevalence of offending coincided with the rate of change in the prevalence of personal victimization over time. Thus, it should be noted that victims and offenders in South Korea are not mutually exclusive. This suggests that intervention strategies related to victimization and offending might be merged. Thus, not only might delinquency prevention strategies be useful to reduce offending among delinquent groups, but they should also be useful to reduce victimization among groups in proximity to delinquent groups. This means that victimization prevention strategies should focus on engagement in offending, and high-risk delinquent groups should be targeted since they increase the rates of subsequent offending and victimization. Also, given the importance of parental attachment for predicting victimization risk among middle school students, the role of parents for reducing a youth's risk of victimization should also be considered (towards the end of influencing their children's lifestyles). Focusing on these individual level predictors might contribute to the prevention of both violence and victimization among South Korean youths.

Overall, based on these findings, I recommend integrating situational crime

prevention and intervention efforts that target individual trait characteristics (i.e., low self-control). In other words, if low self-control places youths at a higher risk situation for personal victimization, then it would follow that individuals with less self-control should change their risky lifestyles, such as associating with delinquent peers and engaging in offending. Prevention strategies for reducing delinquency might also impact victimization risk. LRA theory is currently considered the most useful framework for understanding victimization (Fisher et al., 1998; Gover, 2004; Hindelang, Gottfredson, & Garofalo, 1978; Miethe & Meier, 1994; Miethe et al., 1987; Mustaine & Tewksbury, 1998; Schreck & Fisher, 2004). Moreover, LRA scholars should routinely investigate low self-control as a precursor to lifestyles and victimization risk.

Further, personal victimization is age-graded with effects of time varying lifestyle factors on victimization risks. Engaging in delinquency and associating with delinquent peers at earlier ages may play a significant role in shaping developmental trajectories in personal victimization at later ages. However, the cross-sectional analysis revealed that fourth and sixth grade youths who associated with delinquent peers were significantly more likely to be victimized compared to youths who did not, but associating with delinquent peers did not significantly predict personal victimization risk among eighth grade youths. Instead, parental attachment had a significant and inverse effect on personal victimization for eighth grade youths only.

A particular strength of the multi-level model examined here is that it considers both the direct effect as well as the moderating effects of neighborhood level factors (e.g., collective efficacy) on personal victimization risk. Given the findings that personal victimization among South Korean youths is a product of both low self-control and lifestyle

factors, the challenge is to identify the characteristics of a youth's environment that might condition both his/her self-control and lifestyle choices. In other words, ecological contexts that increase a youth's victimization risk are important to identify. For example, certain neighborhood contexts might decrease personal victimization by fostering collective efficacy and prosocial conditions. However, this study did not demonstrate that local area levels of collective efficacy were significantly related to victimization. Further, levels of collective efficacy did not condition the relationships between individual level factors (low self-control, parental attachment, delinquent peer associations, and juvenile offending) and victimization risk. These findings are inconsistent with previous research (Garofalo, 1987; Lauritsen, Sampson, & Laub, 1991) and may reflect differences between eastern and western cultures, not to mention differences in the level-2 units examined (i.e., those units are not as small as the typical "neighborhood" units examined in studies conducted in the US). Nevertheless, this study provides a path for future research in the investigation of possible interaction effects involving individual lifestyles and routine activities, personal traits, and social contexts on personal victimization among South Korean youths.

The longitudinal portion of this study also has significant implications. This study adds to the literature that has explored the effects of time invariant and time varying factors on individual differences in the developmental trajectories of personal victimization. The longitudinal study revealed that personal victimization risk gradually decreased over time between elementary school and middle school. This finding is consistent with the "risky heterogeneity perspective" and the prediction that less self-control would coincide with a higher risk of personal victimization. Also, the initial starting time point of personal victimization was significantly and positively related to risky lifestyles (juvenile offending).

In other words, higher victimization risk at wave 1 coincided with higher juvenile offending. Further, the decreasing rate of victimization risk over time coincided with a decreasing rate of offending. This finding is consistent with the notion derived from a "state dependence perspective" that prior experiences of offending/victimization might cause subsequent offending/victimization. Overall, this study provided evidence in support of the integration of both the state dependence and risky heterogeneity perspectives, because the inter-individual changes in personal victimization were explained by low self-control as well as the initial status and changes in lifestyles.

The longitudinal analysis also provides an explanation of (1) the dynamic causal effects of lifestyle factors on victimization over time, and (2) changes in lifestyles that coincide with the rate of change in personal victimization during a short period. A longitudinal analysis can also potentially expand on the mechanisms by which neighborhood and risky lifestyles shape the life course consequences of victimization among youths. Crime and victimization prevention and intervention strategies should not only focus on personal traits and lifestyles, but also on the impact of social context on individual developmental trajectories in personal victimization. Based on the multi-level analyses in this study, I suggest that future investigators of victimization pay more attention to the multi-level growth analysis (i.e., the three-level model). This would allow us to examine: 1) if individual level factors (low self-control and lifestyles) are significant for predicting victimization risk in the presence of the school level factor (collective efficacy), 2) if individual level explanations of personal victimization vary by ecological contexts, and 3) if the rates of change in time varying covariates at the individual level coincide with the rate of change in personal victimization risk, independent of school level factors (e.g., collective efficacy).

LIMITATIONS OF THE ANALYSES

Despite the contributions of this study to the victimization literature, it is important to identify limitations of the analyses that should be considered in future research. First, the macro level units examined here were not true "neighborhoods." Instead, the school level units were used in this study and were operationalized as the "administrative districts" nested within cities. In terms of a geographic perspective, there is inconsistency in the territorial definition of neighborhoods used in this study with definitions in the US, and school level units are broader than "neighborhoods." According to the definition of Anthony Downs (1981), "neighborhoods are geographic units within which certain social relationships exist, although the intensity of these relationships and their importance in the lives of the individual may vary tremendously." Also, Conzen (1980) stated that the neighborhood is defined as "the geographic units that touch our lives and retain a history and an influence over the lives of its residents." Given these definitions, collective efficacy measured at the school level is imperfect. On the other hand, in support of using "administrative districts," each administrative district does maintain unique social relationships between residents in South Korea as well as a history and an impact over residents' lives.

A second limitation of this study involves the examination of individual traits and lifestyle factors across a relatively short developmental period spanning elementary and junior high school only. As shown in the cross-sectional analysis, there were some differences in the significant predictors of personal victimization in elementary school versus middle school. For instance, associating with delinquent peers was significant for elementary school students whereas parental attachment had a significant effect among junior high school students. This inconsistency across elementary and junior high school levels might

influence longitudinal findings when examining rates of change for the time varying covariates and their impact on the rate of change in personal victimization. Further, due to the focus on younger ages, it is unknown whether the effects of these predictors are the same for high school students or adults in South Korea. Thus, future research is needed to determine if the results persist across other developmental stages, because victimization risk might be shaped differently across these stages. To fully understand the developmental trajectories in victimization, data should be used with a wider time frame.

A third limitation of the analysis involves the outcome variable—personal victimization—which was aggregated from five continuous scales: (1) being severely teased or bantered during the last year, (2) being threatened, (3) being collectively bullied, (4) being severely beaten, and (5) being robbed. Although previous studies have also examined aggregated measures of victimization (e.g., Messner, Lu, Zhang, & Liu, 2007; Miethe, Stafford, & Sloane, 1990; Mustaine, 1997), it is possible that aggregate measures can generate misleading results for the effects of the individual and neighborhood level factors on victimization risk. This is because analyses of separate types of victimization (e.g., physical assault or threat or robbery) might produce different effects depending on specific types of victimization examined. Future researcher might explore these differences for South Korean youths more carefully.

A fourth limitation of the study is the absence of measures of other core concepts of LRAT. In this study, I did not measure and examine proximity to crime and target attractiveness. Thus, individual level measures and explanations of the core concepts drawn from LRAT are insufficient. Empirical indicators of proximity to crime include living in a high crime area, the degree of population concentration such as an urban area versus rural

area, and the socioeconomic characteristics of the area, such as family income, unemployment rates, and racial composition (Cohen & Cantor, 1981; Cohen et al., 1981; Hough, 1987; Kennedy & Forde, 1990; Miethe & Meier, 1990; Sampson & Wooldredge, 1987; Tseloni, Wittebrood, Farrell, & Pease, 2004). It is assumed that motivated offenders select their targets in close proximity to their residence, implying that living in a high crime area refers to close proximity to crime. However, these indicators can be representative of population heterogeneity, low economic status, and other measures underlying macro sociological theories of criminality, such social disorganization theory. In other words, the positive relationship between individuals living in high crime areas and victimization risks will not necessarily distinguish LRA theory from social disorganization theory.

The above empirical evidence implies that individual victimization may be affected not only by individual differences in lifestyles and routine activities but also by community structures. This study employed only "collective efficacy" as a macro level measure. For this reason, it is important to disentangle the effects of empirical indicators proposed by LRA theory from those defined by social disorganization theory to overcome the limitation of using proxy measures. For future studies, all of the core concepts of the LRA theory should be statistically tested in one analysis while also incorporating multiple indicators of social contexts in to the models to account for how social context might influence individual victimization risk.

Another limitation of the study focuses more on the applicability of LRA theory to a youth population. Following the logic of LRA theory, youths who engage in deviant activities and associate with delinquent peers put themselves in risky situations, thereby increasing the risk of personal victimization. However, LRA theory was originally formulated to predict

various forms of street crime (e.g., burglaries and stranger assaults), yet most youths are victimized by acquaintances and family members, and not by strangers (Finkelhor & Dziuba-Leatherman, 1994). Thus, the literature on youth victimization by acquaintances and family members (e.g., parental assault on children) typically adopts a different framework from LRA theory. LRA theory might not be a realistic framework for understanding some of these other (more common) forms of youth victimization.

Take acquaintance and intra-family victimization (e.g., parental assault on children) as an example. The proportion of time spent away from the house is regarded as an indicator of exposure to motivated offenders. However, this indicator is not well suited to predict this type of victimization. Individual attributes of youth such as femaleness, impairment, or emotional deprivation are more relevant as indicators of target suitability or vulnerability for acquaintance and intra-family victimization, yet these characteristics are independent of lifestyles and routine activities. Further, lack of parent supervision and family social isolation could be conceptualized as capable guardianship for acquaintance and intra-family victimization. In research on parental assaults on children, family relationship factors are conceptualized as the quality of parents' marriage, parent-youth closeness, importance of religion in the home, parental strictness, parental punishments for disobedience, and whether youths talk to parents about personal problems (Paulson, Coombs, & Landsverk, 1990).

Gottfredson and Hirschi (1990) argued that victims and offenders often share similar characteristics, and scholars have provided strong empirical evidence that offenders and victims are often similar in their characteristics and behaviors (Broidy et al., 2006; Gottfredson, 1981; Lauritsen & Laub, 2007; Lauritsen, Laub, & Sampson, 1992; Maxfield, 1987; Mustaine & Tewksbury, 2000; Schreck, Wright, & Miller, 2002; Wolfgang, 1958). My

findings are consistent with this idea due to the overlap found between youths who engaged in offending and those who were victimized. However, this idea is not applicable to understanding a youth's risk of victimization by family violence and child abuse because these crimes obviously involve differences in the characteristics of offenders and victims (Bachman, 1994; McHugh & Frieze, 2006; Turanovic & Pratt, 2013; Widom, 1989). Future research might focus more on modifying the concepts of LRA theory in order to explore the full range of youth victimization. For example, when applied to child abuse and family violence, the concepts of LRAT (proximity/exposure to crime and capable guardianship) might be viewed as environmental conditions which are conductive to victimization, and not as aspects of lifestyles and routine activities. For instance, a lack of capable guardianship might not be viewed as a problem of lifestyles and routine activities, but might be seen as environmental (situational) circumstances that expose and protect victims when it comes to being victimized by parents and siblings.

CONCLUDING THOUGHTS

Early experiences with victimization beget depressive symptoms (Molnar, Buka, & Kessler, 2001; Polusny & Follette, 1995; Wijma, Soderquist, Bjorklund, & Wijma, 2000) and might increase engagement in deviant and violent activities (e.g., substance abuse and self-destructive behaviors) (Boyer & Fine, 1992; Hillis, Anda, Felitti, Nordenberg, & Marchbanks, 2000; NRC, 1993; Wyatt, Guthrie, & Notgrass, 1992). Therefore, effective, research-informed intervention strategies need to be developed. Risky adolescent behaviors are not unidimensional, and there are challenges to developing effective prevention and intervention strategies for reducing these behaviors. To reduce youth victimization, policy-makers and practitioners should draw on evidence-based programs. Existing programs should also be

modified based on current and robust research. For instance, this study revealed that associating with delinquent peers was a significant factor in predicting personal victimization. Thus, prevention programs should target delinquent peer associations since they increase rates of both offending and victimization.

This study also found that parental attachment was significantly and inversely related to personal victimization among South Korean middle school students. Thus, parent trainings and teacher-parent meetings might be useful for reducing personal victimization risk among middle school students in South Korea.

Findings also revealed that a youth's sex plays a significant role as either a main effect or as a moderating effect on victimization risk. Therefore, effective strategies for reducing risk must also consider any sex differences that shape risky activities. Prior research has found that male students are much more likely than female students to engage in risky lifestyles, whereas female students are less likely to be exposed to potential offenders and more likely to be guarded (Cho, Wooldredge, & Park, 2015; Kim, 2007; Wilcox, Tillyer, & Fisher, 2009). This indicates that males are often more likely to be targeted as victims (Baker, Mednick, & Carothers, 1989; Dugan & Apel, 2003; Jensen & Brownfield, 1986; Lauritsen, Heimer, & Lynch, 2009; Planty & Truman, 2012; Schreck et al., 2003). Further, previous studies have found the initiation and peak ages of offending across male and female groups that sex differences in risky activities peak in adolescence (Hindelang, 1981; Jang & Krohn, 1995; Kruttschnitt, 1994, 1996; Wilson & Herrnstein, 1985). For this reason, it is assumed that there may be other factors that contribute to sex differences in victimization risk. Thus, prevention and intervention programs should focus on sex-specific differences in risky and aggressive adolescent behavior.

Although I did not find significant community effects on victimization risk among South Korean youths, more research is needed given the abundance of studies in other countries suggesting that risky adolescent behavior is affected by environmental conditions that regulate risky activities (e.g., Berg & Loeber, 2011; Berg, Stewart, Schreck, & Simons, 2012; Browning & Erickson, 2009; Rountree, Land, & Miethe, 1994; Sampson, 1985). Effective prevention and intervention programs might require addressing the influences of social context on victimization risk, perhaps by recognizing and encouraging environmental conditions that reduce risky behaviors (Ellis et al., 2012).

The adolescent transition from youth into adulthood is critical for the establishment of social statuses and healthy long-term developmental trajectories. Given empirical evidence discussed through this study, risky adolescent behavior has a significant impact on developing social status. For successful intervention or prevention strategies, it is essential to explore why youths engage in deviant activities as well as work with them, instead of against them; for instance, rewarding youths for participating in prosocial activities and for avoiding antisocial behaviors. However, current policies and practices designed to reduce victimization risk among South Korean youths are not grounded in any theoretical approach as well as empirical evidence. Moreover, civilians in South Korea are more likely to depend on the government for crime prevention and intervention and are less likely to participate in volunteer-based crime-prevention efforts such as a neighborhood watch. Thus, the Korean government should create national campaigns that encourage citizens to hold themselves accountable for crime prevention and intervention. In addition, educational programs on how to prevent crime should be available. Further, prevention and intervention strategies for delinquency and victimization should be implemented at all elementary, junior high, and high

school levels in both metropolitan and rural areas. Schools should distribute low self-control survey instruments every two years beginning in elementary school. At-risk students should be identified and funneled into a program that increases self-control. Such efforts would provide youths with the skills to deter delinquency and to manage their emotional and behavioral consequences.

Overall, it is much easier to identify risk factors for victimization than it is to design prevention and intervention programs that reduce the risk. Once risk factors are identified, prevention and intervention strategies can be developed. First, the proposed intervention program should focus on altering individual behaviors and attitudes (e.g., cognitive-behavior, behavior modification, and social-skills training) in order to reduce antisocial and aggressive behaviors of youths. Specifically, cognitive-behavioral programs train youths in cognitive self-control, anger control, social perspective-taking, and attitude changes. Behavior modification programs highlight direct reinforcement and modeling to change individual behaviors and attitudes of youths.

Second, the intervention program should focus largely on altering peer-group norms and the nature of peer associations in order to prevent and reduce delinquent peer associations. This program should eliminate delinquent peer associations and promote a positive, prosocial peer culture (Dahlberg, 1998).

Finally, this study showed that parental attachment had a significant impact on victimization. Thus, the intervention program should provide parents and guardians with education and training on how they can discipline, monitor, and supervise their children. This program could improve the family environment (e.g., family relationships, communications between parents and their children, and problem-solving). Family intervention programs

provide skills and resources for parents to address external factors, which might influence youth violence and victimization, in order to change aggression and antisocial behaviors in youths (Dahlberg, 1998).

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