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Three Studies Examining the Mechanisms Linking Stress Exposure to Delinquency and Substance Use among North American Indigenous Adolescents

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THREE STUDIES EXAMINING THE MECHANISMS LINKING STRESS EXPOSURE TO DELINQUENCY AND SUBSTANCE USE AMONG NORTH AMERICAN INDIGENOUS ADOLESCENTS

by

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Objective: The purpose of this dissertation research was to examine in three separate studies the mechanisms linking a variety of stressors to delinquency/substance use among North American Indigenous (i.e., American Indian and Canadian First Nations) youth.

Method: Data for the three empirical chapters come from an eight-wave longitudinal study of 676 Indigenous youth and their caretakers from three U.S. reservations and four Canadian First Nations reserves.

Study 1 Results: The objective was to examine the intergenerational transmission of problem behavior from female caretakers to their children via caretaker stress exposure, psychosocial functioning, and parenting practices. Early caretaker adversity and problem behavior undermined caretaker warmth and support through their positive effects on adult financial strain. Early caretaker problem behavior had a direct negative association with warmth and support and was partially mediated by adult problem behavior. As expected, caretaker warmth and support linked these processes with their child's problem behavior.

Study 2 Results: The objective was to examine the mechanisms linking perceived racial discrimination with aggression. Path analysis results showed that

discrimination was indirectly associated with aggression through its negative effect on school bonds and positive effect on delinquent peer associations. The indirect effect for school bonds, however, was stronger when depressive symptoms were high. Delinquent peer associations also amplified the positive effect of perceived discrimination on aggression. Depressive symptoms did not operate as a mediator or moderator.

Study 3 Results: The objective was to examine ecological moderators of the relation between violence exposure and meeting past year criteria for a substance use disorder (SUD). Logistic regression analyses suggested that dating violence victimization amplified the effect caretaker victimization had on SUD risk, whereas family warmth and support buffered this association. Moreover, the effect of community violence exposure on SUD risk was greater for those living in remote communities and high income families. Although delinquent peer associations had a direct effect on SUD risk, it did not moderate any of the violence exposure measures.

Conclusion: Collectively, this dissertation demonstrates the usefulness of stress-based models for understanding heightened Indigenous delinquency and substance use, and provides insights into prevention/intervention policies among Indigenous youth.

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CHAPTER 1

INTRODUCTION

There are 566 federally recognized tribes in the United States and 634 recognized First Nations tribes in Canada, which comprise 0.9% and 4.3% of the population, respectively (Statistics Canada 2013; United States Census 2012). Because the data used for this dissertation research span across these two countries, the term North American Indigenous is used over American Indian/Native American or First Nations/Aboriginal. Perhaps due to their small population size in both countries, research on North American Indigenous youth has been largely absent from the mainstream criminological literature (Martin 2014). The lack of attention to Indigenous populations impedes our understanding of the applicability of general risk/protective factors identified in the wider criminological literature to Indigenous populations and our ability to identify unique risk/protective factors among this group (Pridemore 2004). This absence, in turn, limits the extent to which effective delinquency prevention and intervention programming can be developed and implemented within rural reservation/reserve communities.

Delinquency has been identified as a significant social problem among Indigenous groups. Large nationally representative studies indicate that Indigenous youth engage in more violent behavior than their white and Asian counterparts (McNulty and Bellair 2003; Pavkov et al. 2010). Moreover, Indigenous groups are overrepresented at every stage of the criminal justice process (Greenberg and Smith 1999), with one in three Indigenous males expected to experience incarceration at least once in their lifetime (Duran and Duran 1995). Likewise, Indigenous youth tend to initiate substance use early in adolescence (Miller et al. 2008) and progress to regular use (Beauvais 1998), both of

which accelerate the course to dependence (Cheadle and Whitbeck 2011; Cheadle and Sittner Hartshorn 2012; Sittner 2015). Epidemiological data further indicate that Indigenous youth have the highest rates of problematic substance use and substance use disorders (Wallace et al. 2002; Whitbeck et al. 2014; Wu et al. 2011). A considerable body of evidence suggests that the development and continuity of offending and other health risk behavior begins early in the life course (Moffitt 1993; Sampson and Laub 2005; Tarter and Vanyukov 1994). As such, identifying salient processes influencing delinquency and substance use in the early life stages is paramount to developing long lasting prevention and intervention programs aimed at reducing Indigenous problem behavior and criminal justice involvement.

Despite heightened levels, research examining the mechanisms underlying general Indigenous delinquency and substance use has been limited in quantity and scope. The small body of empirical work centers on testing whether general criminological theories of delinquency, such as the general theory of crime (Gottfredson and Hirschi 1990), general strain theory (Agnew 1992), and social learning theory (Akers 1998), are applicable to Indigenous samples (Eitle and Eitle 2013; Eitle, Eitle, and Johnson-Jennings 2013; Morris and Wood 2010; Morris, Wood, and Dunaway 2006; Winfree, Griffiths, and Sellers 1989). There is little focus, however, on contextualizing or adapting theories for the unique situations of Indigenous groups. Pridemore (2004) noted that many of the same criminogenic risk and protective factors operate similarly across racial and ethnic groups. He argued, however, that it would be unwise to ignore culturally-relevant risk and protective factors that are unique or particularly important among this population. The current Indigenous delinquency literature speaks more to the

applicability of mainstream theories to different racial/ethnic groups and sheds little light on the more influential correlates of delinquency among this population. Although this dissertation research draws from many of these mainstream theories, the goal is to contextualize them to increase their relevance for Indigenous populations and the broader criminological literature.

Although there are many theories focusing on the causes of antisocial behavior, one potentially relevant explanation for the disparate rates of offending and problematic substance use among racial and ethnic minorities is differential exposure to stress (Agnew 2015; Kaufman et al. 2008). Racial and ethnic minorities experience a disproportionate amount of strain within their social environments (Hatch and Dohrenwend 2007; Turner and Avison 2003) and have fewer resources to cope with this strain in non-criminal ways (Kaufman et al. 2008). Research suggests that once stress exposure is controlled for, the effect of minority race/ethnicity on crime disappears (Eitle and Turner 2003).

The stress paradigm provides a general conceptual and analytic framework for understanding the relationship between stress and various outcomes, including delinquency and substance use (Agnew 2006; Pearlin 1989). In general, social stress models typically focus on three components: (1) stressors, (2) personal and social resources, and (3) manifestations or outcomes of stress. Pearlin's (1989) stress process model is the most popular and general social stress model (Wheaton 2010). General strain theory (Agnew 1992, 2001, 2006) is the most relevant criminological explanation linking stress exposure to delinquent behavior, because it explicitly specifies multiple intervening and conditional influences and incorporates insights from other

criminological theories to explain the stress exposure-delinquency association. Additional frameworks such as interactional theory (Thornberry 1987; Thornberry 2009) and the family stress process model (Conger et al. 1992; Conger et al. 1994) offer additional theoretical insights because they incorporate at least one component of the social stress paradigm, which allows them to be integrated with the aforementioned stress models.

Drawing on these perspectives, this dissertation develops a framework based on stress exposure in order to advances an explanation of heightened Indigenous risk for delinquency. The stress process model (Pearlin 1989) highlights the role of social structural contexts in shaping exposure to stressors, available coping resources, and manifestations or outcomes of stress. Broadly, the stress process model argues that systems of social stratification (e.g., race, gender, class) shape the lived experiences of incumbents such that those occupying marginalized social statuses are likely to experience a greater variety and amount of stress and have less ways of effectively coping with this persistent strain. North American Indigenous populations experience high rates of violent victimization (Greenfield and Smith 1999; Perrault 2011; Perry 2004), suicide (Cutcliffe 2005; Wexler et al. 2015), poverty (Kendall 2001; Ogunwole 2006), persistent thoughts of historical cultural losses (Whitbeck et al. 2004; Whitbeck et al. 2009), and discriminatory experiences (Whitbeck et al. 2002; Sittner Hartshorn, Whitbeck, and Hoyt 2011) compared to other racial and ethnic groups.

These contemporary stressors may be a manifestation of long term historical and contemporary processes stemming from European colonization. As Walters and Simoni (2002) argued, North American Indigenous groups continue to exist within a "fourth-

world" context which "refers to situations in which a minority [I]ndigenous population exists in a nation wherein institutionalized power and privilege are held by a colonizing, subordinating majority" (p. 520). Evans-Campbell (2008) noted that, from an Indigenous point of view, these heightened levels of stress exposure are a contemporary manifestation of past assaults and trauma stemming from Indigenous groups' colonized status. Consequently, these stressors take on increased emotional and cultural significance and are an inherent part of the North American Indigenous experience (Belcourt-Ditloff & Stewart 2000). Whitbeck and colleagues (2014) recently proposed a model of Indigenous adolescent development to account for these historical and contemporary effects of cultural losses on Indigenous youth development. They argued that each domain of development (e.g., community, family, school, peer, and individual) has been and continues to be influenced by historical cultural losses. Taken together with Walters and Simoni's (2002) work, this model suggests that many of the theoretical processes linking stress exposure with delinquency (e.g., parenting, peer associations) that will be analyzed in this dissertation research need to be interpreted within the context of historical cultural losses to avoid pathologizing Indigenous delinquency and perpetuating power inequalities (Poupart 2002).

Purpose and Overview of the Chapters

The overarching purpose of this dissertation is to examine the mechanisms linking stress exposure to delinquency/substance use among a large longitudinal sample of reservation/reserve residing Indigenous youth in the Midwest of the United States and Canada. More specifically, this dissertation, in three separate studies, focuses on a variety of stressors to examine the mechanisms by which they influence delinquency

and/or substance use. The purpose of the first empirical paper is to examine how distal and proximal stressors and problem behavior reported by female caretakers influence their child's delinquency through caretaker psychosocial functioning and parenting practices. The study highlights intergenerational processes, proposing that stressors within family systems may proliferate across time and influence subsequent generations (Pearlin et al. 2005). The purpose of the second empirical paper is to examine the culturally-relevant stressor of perceived racial discrimination. This paper draws from an integrated version of general strain theory (Agnew 2006) to examine the traditional (i.e., mediation and moderation) and less traditional (e.g., moderated mediation) social processes linking perceived racial discrimination to aggression. The purpose of the third empirical study is to examine moderators of the relation between exposure to violence (i.e., community violence exposure, vicarious caretaker victimization, and direct dating violence victimization) and substance use disorders. This study draws from an ecologically-oriented stress process model (Foster and Brooks-Gunn 2009) and examines understudied facets of the adolescents' environment that may augment the association between violence exposure and substance abuse.

This dissertation research also collectively spans the entire course of adolescence and focuses on age-relevant stressors and social processes. For example, the intergenerational study uses data from the first three waves of the study (youth are 10-15 years of age) and focuses on processes important during early adolescence (e.g., parenting practices). The perceived racial discrimination study covers the middle part of adolescence when youth are entering the high school years and their peak delinquent behavior. Moreover, this paper focuses heavily on school and peer experiences, which

during this period of adolescence, are increasingly important socializing agents. The exposure to violence study covers the last two waves of the dataset, which is the when the youth are entering young adulthood. It covers cumulative violence exposure experiences that have the long-term potential to carry over into adulthood through increased problem behavior and re-victimization. This provides a logical sequence for the three empirical studies. These implicit life-course implications will be explicitly elaborated in the overall discussion section.

Healing Pathways Study

As previously noted, research and theories attempting to explain Indigenous delinquency must be contextualized within the historical and contemporary social contexts in which Indigenous people live. Moreover, the research process must be adapted to fit the unique geographical, historical, and cultural circumstances of Indigenous communities to ensure ethical data collection and dissemination (Pridemore 2004; Whitbeck 2006). Historically, Indigenous groups have been distrustful of university researchers and Western research practices because of numerous examples of exploitation from outside sources. A group of Indigenous researchers comprising the work group on American Indian Research and Evaluation Methodology (Caldwell et al. 2005) developed a set of recommendations to promote ethical research among North American Indigenous groups to enhance trust and collaboration between outside research teams and tribal communities to avoid exploitive research practices. These recommendations center on equitable collaboration between tribal communities and university research teams in which the primary research questions, designs, and findings are developed and implemented within this collaborative relationship.

The data for this dissertation were drawn from an eight-wave longitudinal study that was designed in partnership with three United States American Indian reservations and four Canadian First Nations reserves and meet many of the recommendations for community based participatory research (CBPR) among Indigenous groups (for full details, see Whitbeck et al. 2014). As part of the CBPR approach, permission to conduct research in each community was obtained through tribal councils to respect the sovereignty of each reservation/reserve. Although participants were recruited from different sites, all participants are members of the same cultural group and share a common cultural tradition and language with only minor variations in dialects. As part of confidentiality agreements to ensure privacy and limit potential exploitation, the names of the cultural group and reservations/reserves are not provided, nor are any attempts made to make comparisons across the study locations. Because North American Indigenous groups are culturally and geographically heterogeneous, results emanating from this dataset may not be generalizable to other Indigenous groups outside of the cultural group examined. Moreover, because this is a rural reservation/reserve sample, the results may not be generalizable to urban Indigenous youth of the same cultural group.

At each site, Tribal Council-appointed advisory boards were responsible for handling personnel difficulties, advising the research team on questionnaire development, and reviewing and approving reports and presentation proposals to promote tribal ownership of the research process and final products. To give preference to tribal members, all participating staff on the reservations/reserves (e.g., interviewers, site coordinators) were approved by the advisory boards and were either enrolled tribal members or spouses of enrollees. Interviewers for this project were trained concerning

methodological guidelines of personal interviewing and all were certified for work with human subjects.

At the beginning of the study, each community provided a list of families of tribally-enrolled children aged 10-12 years who lived on or proximate to (within 50 miles) the reservation/reserve. Attempts were made to contact all families with a target child within the specified age range to achieve a population sample. Families for this study were recruited through personal interviewer visits during which they were presented a traditional gift, an overview of the project, and an invitation to participate. Families were chosen for visits if at least one child in the house was between the ages of 10 and 12 years and was tribally enrolled. For those families who agreed to participate, both the study adolescent and one adult caretaker (and in some cases, two adults) were given $20 upon completion of the interviews. Recruitment and incentive procedures were approved both by community-based advisory boards and the University of Nebraska Institutional Review Board.

The recruitment procedure resulted in a baseline response rate of 79.4% (n = 674). Table 1.1 displays the completion rates for each wave of the study and their basic descriptive statistics. By the last wave (Wave 8), 77.6% of the Wave 1 sample remained in the study. At Wave 1, the study was almost evenly split by gender (females: 50.3%; males: 49.7%) and the average age of the adolescent participants was 11.10 years (*S.D.* = 0.83). The average per capita family income was $5,450 (*S.D.* = $4,040). Few participants lived in a remote location (10%), meaning the community is not fully accessible by road at all times of the year, and/or lived off reservation/reserve land

(17%). Because the three empirical papers use data from the same study, specific analytic and missing data strategies are provided separately.

CHAPTER 2

INTERGENERATONAL TRANSMISSION OF PROBLEM BEHAVIOR BETWEEN FEMALE CARETAKERS AND THEIR CHILDREN

An old adage maintains that "crime runs in families." Although a modest proportion of this continuity stems from heritable influences (D'Onofrio et al. 2007), intergenerational social processes likely explain a larger portion of this phenomenon (Thornberry 2009). Indigenous reservations/reserves are socially and economically disadvantaged (United States Census Bureau 2006), which increases exposure to social stressors such as early childhood adversity, economic strain, negative life events, and cultural stressors (Bombay et al. 2009; Manson, et al. 2005). Stressors and hardships experienced within the family may influence caretaker's emotional well-being, which undermines their ability to provide warm and supportive relationships to their children (Conger, Conger, and Martin 2010; Shaw and Shelleby 2014). Because extended familial contexts (e.g., support and monitoring) are an important aspect of Indigenous adolescent development (Whitbeck, Sittner Hartshorn, and Walls 2014), and have been identified as a key protective factor against multiple negative developmental outcomes including delinquency (Mmari, Blum, and Teufel-Shone 2010; Pridemore 2004), family-based models appear to be important for understanding the origins and transmission of problem behavior from one generation to the next.

Life course research focuses on understanding how people's lives unravel within specific socio-historical contexts (Elder, Johnson, and Crosnoe 2003). For Indigenous peoples, historical trauma is the ongoing context in which they live (Evans-Campbell 2008), and provides a narrative for connecting past historical events to contemporary

processes (Mohatt et al. 2014). The enduring effects of historical trauma continue to influence Indigenous families primarily through intergenerational trauma and stress exposure (Bombay et al. 2009; Evans-Campbell 2008). Bombay and colleagues (2009) argued that given the significance of trauma and stress in the lives of North American Indigenous people, understanding the mechanisms by which their effects spread across generations is needed to disrupt continuity in these conditions. Life course research also draws attention to the linking of lives, such that individuals are embedded in a complex web of relationships, and the experiences of one person has the potential to reverberate across social networks and time (Elder, Johnson, and Crosnoe 2003). The effects distal and proximal caretaker processes such as stress exposure, depression, and problem behavior have on parent's ability to adequately provide for their children are expected to be the key mechanisms through which parent characteristics are transmitted to their children's problem behavior.

The purpose of this study is to examine the intergenerational processes linking caretakers' experiences and behavior during adolescence to their children's problem behavior during the same developmental period. Insights from the stress process (Pearlin 1989), interactional theory (Thornberry 2005), and the family stress process (Conger et al. 1992; Conger et al. 1994) were integrated to weave together an intergenerational model (see Figure 2.1). In the first part of this conceptual model, early caretaker adversity and problem behavior are connected to caretakers' levels of stress exposure, depressive symptoms, and problem behavior in adulthood. In the second part of the model, caretaker characteristics during adolescence and adulthood are posited to influence parenting practices, which in turn, are expected to link these processes with

their children's delinquency. Third, possible direct effects from adult caretaker characteristics and their children's delinquency are examined.

Connecting the Past to the Present: Early Adversity and Problem Behavior

Figure 2.1 displays the intergenerational model that will be tested in this chapter. The first part of the model focuses on early (i.e., childhood and adolescence) caretaker adverse environments and problem behavior and their associations with caretaker stress exposure and psychosocial functioning in adulthood. Early stressors may create chains of risk (Kuh et al. 2003) that accumulate across the early life course to sustain high levels of stress exposure and negative health outcomes (Thoits 2010). Childhood/adolescent traumas and adverse conditions have been shown to be a fairly strong predictor of subsequent stress exposure (Turner and Turner 2005; Wheaton 1994), which may be in the form of subsequent traumas or more enduring strains (Thoits 2010). Pearlin and colleagues (2005) refer to this process as stress proliferation, in which primary stressors (e.g., adverse family environment) influence later health through secondary stressors (e.g., current stress exposure). Further, Pearlin and colleagues (2005) noted that "because of their very nature, traumatic events are etched deeply into the emotions and consciousness of people, their initial impact echoing across time" (p. 210). Indeed, there is evidence to suggest that early trauma and adversity are directly associated with adult mental health (Turner and Lloyd 1995; Walls and Whitbeck 2011) and indirectly associated through the accumulation of stress (Turner and Avison 2003; Wheaton 1994). *From this framework, early caretaker adversity is expected to increase current stress exposure and undermine adult psychosocial functioning in the form of depressive symptoms and problem behavior.*

A consistent theme within the developmental and life course criminology literature suggests stability and continuity in antisocial behavior across multiple developmental periods (Farrington 2003). Although some of this may be a function of stable individual characteristics (e.g., Gottfredson and Hirschi 1990), dynamic social processes play a strong role linking early delinquent behavior with adult outcomes (Laub and Sampson 2003). Multiple theoretical models highlight an interactional approach in which early problem behavior reduces social bonds in early adulthood which results in continuity of problem behavior, enhanced risk for emotional problems, and exposure to negative social experiences (i.e., stressors) in adulthood. For example, Sampson and Laub's (1997) life course theory focuses on cumulative disadvantage in which early antisocial behavior severs social bonds in young adulthood which reduces controls that inhibit long-term trajectories of problem behavior. Early delinquency may jeopardize relationships with parents, which results in continued antisocial behavior (Thornberry 1987). Indeed, adolescents who are delinquent are likely to be rejected from prosocial peers (Crick and Dodge 1994) and select into delinquent peer groups which reduce controls that inhibit the continuity of problem behavior (Thornberry et al. 2005).

Thornberry's (2005, 2009) interactional theory makes a similar argument in which early problem behavior has a negative effect on successful transitions into adult roles which results in structural adversity into adulthood. For example, recent evidence suggests that early externalizing behavior results in decreased educational outcomes and opportunities, thereby reducing an important form of social capital (McLeod and Fettes 2007). Likewise, early problem behavior has been linked with precocious role transitions such as early parenthood and involvement in the criminal justice system (Krohn, Lizotte,

and Perez 1997; Thornberry et al. 2005). These structural adversities resulting from early delinquency increase exposure to contemporary hardships and undermined psychosocial functioning. *As such, early caretaker problem behavior is expected to increase exposure to stressors, depressive symptoms, and problem behavior in adulthood.*

Family Stress Process

The second part of the model focuses on parenting practices, which comprise a key component of the overall intergenerational model. For Indigenous youth, family processes are one of the most important domains for adolescent development (Whitbeck et al. 2014) making it an important mechanism through which intergenerational processes are transmitted to subsequent generations. Indeed, Pridemore's (2004) review of risk and protective factors for delinquency among Indigenous youth pointed to the family as a key source of resilience. Likewise, Mmari et al. (2010) found among three communities that family support, communication, and monitoring were the most important protective factors for Indigenous delinquency. As such, distal and proximal determinants that may undermine family functioning are expected to have important consequences for Indigenous delinquency because it undermines a culturally salient form of social control. *As such, caretaker warmth and support is expected to be negatively associated with adolescent problem behavior.*

Although many criminological theories treat parenting practices as exogenous constructs, the family stress process model posits that parental stressors and psychosocial resources are indirectly associated with adolescent development through the disruption created in the lives of their parents (Conger et al. 1992; Conger et al. 1994). More specifically, the traditional family stress process model (Conger et al. 1992) posits that

stressors experienced by parents undermine their emotional well-being, which in turn, disrupts their ability to engage in nurturing and involved parenting practices. Although the focus is typically on proximal parent-child processes, the family stress model would appear to have intergenerational implications as well (Thornberry, Freeman-Gallant, and Lovegrove 2009).

If early adolescent stressors and problem behavior have direct links to adult stress exposure and psychosocial functioning (Thornberry 2009), they likely have indirect influences on current parenting behavior through these processes. Indeed, multiple studies suggest that parent antisocial behavior during childhood and adolescence is associated with harsh parenting practices through adult stress exposure (Thornberry et al. 2009), antisocial behavior (Neppl et al. 2009; Loeber et al. 2009), and depression (Thornberry et al. 2009). Bombay and colleague's (2009) intergenerational trauma model posits that early adverse life experiences influence the ways in which Indigenous people view and experience the world around them and methods of coping with adversity. Individuals who experience early trauma may develop ineffective and maladaptive forms of coping, which may lead to subsequent stress exposure (stress proliferation) and negative mental health outcomes, both of which are expected to be transmitted to subsequent generations through their effects on parenting practices. The stress proliferation argument suggests that early adversity is a strong predictor of adult stress exposure (Turner and Turner 2005) and poor psychosocial functioning (Avison and Comeau 2013), which in turn, have been shown to undermine positive parenting practices (Conger et al. 1992; Conger et al. 1994). *Drawing from intergenerational and family stress research, early adversity and problem behavior are expected to undermine*

caretaker's ability to provide warmth and support to their child through increased stress exposure, depressive symptoms, and problem behavior in adulthood.

Parenting practices are the key hypothesized mechanism linking distal and proximal parent stress and psychosocial functioning with adolescent delinquency (Patterson, DeBaryshe, and Ramsey 1989). Prior tests of the family stress model support this conclusion (Conger et al. 1992; Conger et al. 1994; Conger et al. 2002), in which the effect of parent stress exposure and depressive symptoms on adolescent outcomes is completely mediated through parenting practices. Likewise, intergenerational research indicates that early parent experiences and behavior are associated with their children's externalizing behavior primarily though the effect they have on parenting behaviors (Brook et al. 2012; Bailey et al. 2009; Neppl et al. 2009; Thornberry et al. 2003). *Drawing from the traditional family stress process model, caretaker stress exposure, depressive symptoms, and problem behavior in adulthood are expected to increase their child's problem behavior through their negative effects on caretaker warmth and support.*

Although distal and proximal caretaker stressors and psychosocial functioning are expected to be indirectly associated with their child's problem behavior through undermined family warmth and support, the third part of the model highlights potential reasons for positing direct effects between caretakers' experiences and their child's problem behavior. Caretaker stressors may be indirectly experienced, to varying degrees, by the adolescents themselves. Indeed, it is difficult disentangling genuine intergenerational effects from structural conditions that multiple generations share in common (Thornberry 2005). Milkie (2010) argued that because the fates of family

members are so intimately tied together, family stressors (e.g., unemployment) may affect individuals above and beyond what they directly experience.

Within a criminological context, Agnew (2002) argued that vicarious strains are likely to lead to delinquency, which he defined as "the real-life strain experienced by others around the individual, especially close others like family members" (p. 603). The types of vicarious strains that are likely to lead to delinquency are those that are experienced by close others (e.g., family), occur to members of groups to which people belong (e.g., race/ethnic groups), and are physically proximate (e.g., within the same household). This suggests a possible contagion effect in which living in strained/adverse households influence adolescent development independent from parenting processes. *As such, caretaker stress exposure is expected to be positively associated with adolescent delinquency.*

Shaw and Shelleby (2014) argued that the traditional family stress model should be revised to incorporate a double mediation process in which parental psychosocial functioning affects adolescent conduct problems directly and indirectly via parenting practices. Indeed, meta-analyses suggest that maternal depression has a moderate effect on their children's externalizing behavior even after controlling for various demographic and research design variables (Connell and Goodman 2002; Goodman et al. 2011). Moreover, a study of Indigenous youth and their caretakers found that caretaker depressive symptoms had a direct effect on adolescent externalizing behavior that was not transmitted through parenting practices (Walls and Whitbeck 2012). *Based on this revised family stress model, caretaker depressive symptoms are expected to have a direct positive association with adolescent problem behavior.*

Similarly, caretaker problem behavior may have a direct effect on adolescent delinquency through social learning mechanisms. Parents who continue to be involved in problematic behavior into adulthood increase their child's exposure to antisocial norms favorable toward delinquency, positive reinforcements for problem behavior, and antisocial sources of behavior emulation (Akers 1998). A meta-analysis of social learning theory by Pratt and colleagues (2010) found a moderate association between parent problem behavior and adolescent delinquency. *As such, parent antisocial behavior in adulthood is expected to be positively associated with adolescent problem behavior.*

Summary

Family contexts appear to be a salient area for understanding crime and delinquency among North American Indigenous groups (Pridemore 2004). The purpose of this study is to examine the intergenerational processes through which early childhood/adolescent experiences of caretakers influence their children's problem behavior during the same developmental period. To summarize, the first part of the model focuses on caretakers, positing a relationship between early adverse experiences and problem behavior with adult stress exposure and psychosocial functioning. Early stressful experiences and problem behavior set in motion cumulative processes that are expected to result in structural disadvantages as an adult that increase the likelihood of stress exposure, depressive symptoms, and continued problem behavior. Although these intermediate processes are not measured in the current study, they provide the necessary theoretical link from one developmental period to the next.

The second part of the model focuses on distal and proximal determinants of caretakers' parenting practices, specifically warmth and support. Drawing from family stress models, distal and proximal stressful experiences and poor psychosocial functioning may have a direct effect on adult parenting practices. In addition, early stressors and problem behavior may be indirectly associated with adult parenting practices through stress exposure and poor psychosocial functioning in adulthood. Although caretaker stress exposure and psychosocial functioning in adulthood are expected to be indirectly associated with their children's delinquency during adolescence, the third part of the model suggests potential reasons to expect direct effects. Consequently, a less explicit intergenerational pathway may result from distal stressful experiences and problem behavior having an effect on adult stress exposure and psychosocial functioning, which in turn, bypass parenting practices to affect their child's problem behavior.

Method

Sample

Data for this chapter were taken from Waves 1-3, which were collected every year from 2002-2004. Because a large majority of the caretakers who participated in the study were female, the sample was restricted to female caretakers and their child. In addition, because caretakers may change throughout the study, only caretakers who remained the same in all three waves under examination were included (n = 558). At the first wave of the study, the sample was approximately evenly split by gender (female – 52.9%; males – 47.1%). About one-tenth of the families (9.3%) were living in a remote community

meaning the communities are not fully accessible by road at all times of the year, and just over one-quarter (27.0%) of the families are single caretaker households.

Measures *(See Appendix A for list of individual items used to create indexes/scales)*

Caretaker early adversity. At Wave 1 of the study, caretakers were asked four (1) yes or (0) no questions about their experiences growing up: (1) did anyone in your home have a serious drinking problem?; (2) did anyone in your home have a mental health problem?; (3) was anyone in your family violent toward another family member?; and (4) did your parents or people who raised you have serious marital problems? Because prior research shows a dose dependent relationship between trauma experiences and various health outcomes (e.g., Feletti et al. 1998; Turner and Lloyd 1995), the yes responses were summed together to create an index of early adverse experiences (M = 1.76, *S.D.* = 1.36, α = 0.71, proportion missing = 0.00).

Caretaker early problem behavior. At the first wave of the study, caretakers were asked to retrospectively report on nine behaviors they may have engaged in when they were a child or teenager (similar age as the adolescents in the study). Sample items include shoplifting, deliberately damaging property, getting into physical fights, and running away from home (no = 0; yes = 1). The yes items were summed to create an index of early caretaker problem behavior (M = 3.18, *S.D.* = 2.24, α = 0.75, proportion missing = 0.00).

Caretaker current stress exposure. Turner and colleagues (Turner, Wheaton, and Lloyd 1995; Turner and Avison, 2003) argued that not comprehensively measuring stress exposure underestimates the stress-distress relationship among certain racial and ethnic minorities. For Indigenous communities, comprehensively measuring stress must

include culturally meaningful stressors such as perceived racial discrimination (Walls and Whitbeck 2011). As such, this study separately examines multiple indicators of caretaker stress exposure including their financial, cultural, and life event stressors.

Caretaker life event stress exposure. At Wave 1, caretakers were asked whether or not (no = 0; yes = 1) they have experienced twenty different negative life events in the past year (e.g., divorce, death of loved one). The yes items were summed together to create an index of negative life events (M = 3.28, *S.D.* = 2.39, α = 0.64, proportion missing = 0.00).

Caretaker cultural stress exposure. At Wave 1, a measure of perceived racial discrimination was created using items from an adapted version of the Schedule of Racist Events (Landrine and Klonoff 1996). Caretakers were asked how often in the past year (0 = never to 3 = always) they perceived eleven experiences of discrimination (e.g., someone said something derogatory or insulting to you because you are [cultural group]). The items were summed to create a scale of perceived racial discrimination (M = 0.26, *S.D.* = 0.18, α = .90, proportion missing = 0.05).

Caretaker financial stress exposure. At Wave 1, caretakers were asked 16 yes (1) or no (0) questions about past year financial-related negative life events (e.g., got laid off, got evicted). The yes responses were summed together to create an index of financial events (M = 0.13, *S.D.* = 0.14, α = .70, proportion missing = 0.00). In addition, six items were used to create a scale of financial strain. The first four items asked caretakers how much they agreed or disagreed (0 = strongly agree to 3 = strongly disagree) that they have enough money to afford the home they need, have enough money to afford the kind of clothing they need, have enough money to afford the kind of food they need, and have

enough money to afford the kind of medical care they need. The other two items asked how much difficulty (0 = no difficulty at all to 4 = a great deal of difficulty) caretakers had paying their bills and how much money they have left over at the end of the month (0 = more than enough to 4 = not enough to make ends meet). Because the items have different response options, all six items were standardized and summed together to create a scale of financial strain (M = 0.41, $S.D.$ = 0.19, α = .84, proportion missing = 0.00). The two scales were used as indicators for an underlying financial stress exposure latent variable in which both factor loadings were fixed to one.

Caretaker depressive symptoms (adulthood). At Wave 1 of the study, caretaker depressive symptoms were measured using the Center for Epidemiological Studies-Depression (CES-D) scale (Radloff 1977). Caretakers were asked how often in the past week they experienced twenty symptoms of depression (e.g., felt sad, felt depressed; 0 = 0 days to 4 = 5-7 days). All positively worded items (e.g., felt happy) were reversed coded so higher values correspond with higher levels of depressive symptoms. The twenty items were summed to create a scale of depressive symptoms (M = 12.70, $S.D.$ = 9.65, α = .90, proportion missing = 0.002).

Caretaker problem behavior (adulthood). Two indicators were used to create a latent construct of caretaker problem behavior in adulthood that are similar to the constructs used to assess their child's adolescent problem behavior (see below). First, at Wave 2 of the study, caretakers were asked whether or not (no = 0; yes = 1) they have engaged in four antisocial behaviors in the past year (i.e., been in physical fights, been in a serious car accident, drove while under the influence of drugs or alcohol, and been arrested). The yes responses were summed to create an index of general caretaker

problem behavior (*M* = 0.08; *S.D.* = 0.16, proportion missing = 0.00). Second, at Wave 2, caretakers were asked whether or not (0 = no; 1 = yes) in the past year their drinking, being hung over, or drug use interfered with work on a job, at home, or at school; caused physical fights; interfered with relationships with friends or family and continued to do so even after initial problems; resulted in arrest; resulted in going to treatment; and caused physical fights with spouse or partner. The yes responses were summed to create a problem drinking index (*M* = 0.06, *S.D.* = 0.15, α = .83, proportion missing = 0.00). The two indices were used as indicators for an underlying latent caretaker problem behavior variable in which both factor loadings were fixed to one.

Caretaker warmth and support. A measure of caretaker warmth and support was created at Wave 2 using items adapted from the original Iowa Youth and Families Study (Conger and Elder 1994). Caretakers were asked six questions about how often they provide warmth and support to their child (never = 0 to always = 4). Likewise, adolescents were asked five questions about how often someone in their family provides warmth and support. Example items include having someone to talk to, being part of family decisions, and receiving praise for positive behavior. Although the adolescent reported items are not specific to one family member, an overwhelming majority rated their mother as the primary source of warmth and support (Whitbeck et al. 2014). Response options ranged from (0) never to (2) always. For both the caretakers and adolescents, items were summed up and were used as indicators of an underlying latent variable in which factor loadings were fixed to one (caretaker reported: *M* = 0.79, *S.D.* = 0.14, α = .73, proportion missing = 0.00; adolescent reported: M = 0.67, S.D. = 0.18, α = .68, proportion missing = 0.002*)*. This approach was chosen over using reports from one

or the other because families share a common reality that is not wholly captured by one reporter (Cook and Goldstein 1993) and latent constructs distinguish what is common among multiple reporters (e.g., shared reality) and what is unique to each reporter (e.g., error variance). Moreover, prior studies suggest that adolescent reports of their parent's parenting are more strongly associated with their own self-reports of behavior. Conversely, parent reports of their own parenting are only weakly associated with adolescent reported outcomes, but modestly associated with self-reports of their own behavior and their child's behavior (Sweeting 2001).

Adolescent problem behavior. A latent problem behavior construct was created using three indicators. First, a measure of delinquency was constructed at Wave 3 using 28 adapted items from the conduct disorder module of the Diagnostic Interview Schedule for Children IV (Shaffer et al. 2000). Adolescents were asked whether or not (0 = no, 1 = yes) they had engaged in various delinquent behaviors (e.g., got into a fight, stole money) in the past year. The yes responses were summed to create an index of delinquent behavior (M = 0.12, $S.D.$ = 0.14, α = .86, proportion missing = 0.04). Second, respondents were asked a series of questions regarding lifetime and past year alcohol use. Participants were asked whether or not they have ever had more than a sip of beer, wine, and/or any other kind of alcoholic beverage, and whether they have consumed alcohol in the past 12 months. Respondents were also asked if they had ever smoked marijuana, and whether they had smoked marijuana in the past 12 months. For those reporting past 12 month drinking and/or marijuana use, *drinking frequency* and *marijuana use frequency* were examined with separate questions which asked how often participants drank alcohol/smoked marijuana in the past year. Response options ranged from (1) one

or two times to (6) every day. Those reporting no lifetime or past year alcohol and/or marijuana use were coded as zero (drinking frequency: *M* = 0.09, *S.D.* = 0.17; proportion missing = 0.05; marijuana use frequency: *M* = 0.11, *S.D.* = 0.24, proportion missing = 0.04). A latent variable was created by fixing the loading for the general delinquency indicator to one and estimating the other two.

Controls. Five demographic variables at Wave 1 were included in all of the analyses that may account for the various associations between the endogenous and exogenous components of the model: adolescent gender (male = 0; female = 1), adolescent age at the start of the study (*M* = 11.11, *S.D.* = 0.83), family structure (two-parent household = 0, single parent household = 1), female caretaker age (*M* = 38.77, *S.D.* = 9.34), and remote location (defined as sites that are not fully accessible by road at all times of the year; non-remote location = 0, remote location = 1).

Analytic Strategy

A fully recursive structural equation model was estimated to test the proposed hypotheses. Because all of the endogenous variables are continuous, maximum likelihood estimation with standard errors and chi-square test statistic that are robust to non-normality (Yuan and Bentler 2000) was used in Mplus Version 6 (Muthen & Muthen 1998-2010). Missing data is accounted for by the use of full information maximum likelihood estimation (88.7% of respondents had complete data on all items), which produces unbiased and efficient parameter estimates when the data are missing completely at random (MCAR) or missing at random (MAR; Enders and Bandalos 2001).

Model fit was assessed using chi-square, root mean square error of approximation (RMSEA), comparative fit index (CFI), and standardized root mean residual (SRMR)

estimates. A non-significant chi-square value indicates that the observed differences between the sample and model implied variance-covariance matrices are not significantly different from zero. In large samples, however, chi-square values tend to be overpowered and can detect trivial differences. Instead, Hu and Bentler's (1999) general guidelines for model fit were used. A CFI value of .95 or higher, an RMSEA value below .06, and an SRMR value below .08, with converging evidence across fit indices, indicates adequate model fit.

Results

Table 2.1 presents that maximum likelihood correlation estimates for the latent and observed variables. The correlational analyses provided general support for the model. Early caretaker adversity and problem behavior were positively associated with all three indicators of stress exposure, depressive symptoms, and problem behavior in adulthood ($p < .05$). Moreover, early caretaker adversity, early caretaker problem behavior, financial strain, depressive symptoms, and adult problem behavior were negatively associated with warmth and support ($p < .05$). The only variable significantly correlated with adolescent problem behavior was caretaker warmth and support, which was negatively associated ($p < .05$).

The proposed analytic model provided a good fit to the data ($\chi^2 = 120.77(76)$, $p < .05$; *CFI* = .97; *TLI* = .94; *RMSEA* = .03; *SRMR* = .03). Table 2.2 and Figure 2.2 present the results of the structural equation model. As hypothesized in the first part of the model, early caretaker adversity was positively associated with financial ($\beta = .13$, $p < .05$), cultural ($\beta = .15$, $p < .01$), and life event ($\beta = .14$, $p < .01$) stressors. Contrary to expectations, early caretaker adversity was not associated with caretaker problem

behavior or caretaker depressive symptoms in adulthood. As hypothesized, early caretaker problem behavior was positively associated with financial (β = .15, p < .01), cultural (β = .21, p < .001), and life event (β = .23, p < .001) stressors. Unlike early caretaker adversity, early caretaker problem behavior was positively associated with caretaker problem behavior (β = .17, p < .001) and depressive symptoms (β = .28, p < .001) in adulthood.

As hypothesized in the second part of the model, caretaker problem behavior during childhood/adolescence (β = -.27, p < .001) and adulthood (β = -.20, p < .05) were negatively associated with caretaker warmth and support. Although the three contemporary stress measures were significantly associated with warmth and support, only one of them was in the expected direction. As hypothesized, financial stressors were negatively associated with warmth and support (β = -.25, p < .05). Contrary to expectations, cultural (β = .23, p < .01) and life event (β = .17, p < .05) stressors were positively associated with warmth and support, and early caretaker adversity and caretaker depressive symptoms were not significantly associated with warmth and support.

Caretaker warmth and support was the only variable associated with adolescent problem behavior (β = -.21, p < .05), which, as expected, was negatively associated. None of the other direct effects posited in the third part of the model were significantly associated with problem behavior. Thus, it appears that early caretaker adversity influences their child's problem behavior through adult financial strain undermining family warmth and support. Early caretaker problem behavior operates through a similar pathway; however, early caretaker problem behavior was also indirectly associated with

their child's problem behavior though undermined warmth and support and continued problem behavior in adulthood undermining warmth and support.

Discussion

Life course research draws attention to the linking of lives across generations, interdependencies, and historical contexts (Elder et al. 2003). Experiences during the early life course have the potential to influence trajectories of behavior into adulthood and influence subsequent generations. For North American Indigenous groups, family contexts are an important component of adolescent development (Whitbeck et al. 2014) and resilience (Pridemore 2004). Consequently, examining the intergenerational transmission of behavior would appear to be a ripe area of research for understanding the sources and development of delinquency among Indigenous youth, which have important short- and long-term prevention and intervention implications. The purpose of the current study was to examine the intergenerational linkages between female caretaker experiences in adolescence and their child's delinquency during the same developmental period. Because stressors, traumas, and poor emotional well-being are a common reality for many Indigenous people (Evans-Campbell 2008; Walter and Simoni 2002), these processes were integrated into an intergenerational model based on multiple theoretical frameworks. In general, the results suggest that distal and proximal experiences influence subsequent generation's delinquency primarily though the altering of positive parenting practices, which overwhelmingly supports family stress (Conger, Conger, and Martin 2010), intergenerational (Thornberry 2005, 2006), and Indigenous research (Mmari et al. 2009; Pridemore 2004).

As expected, early caretaker adversity during childhood/adolescence was positively associated with their current levels of stress exposure in adulthood. This finding supports the stress proliferation explanation (Pearlin et al. 2005) in which early adversity and strain proliferates across the life course to knit together a long chain of enduring hardships that comprise adult operant stress burden (Thoits 2010; Turner and Turner 2005). In addition, early caretaker problem behavior during childhood/adolescence was associated with stress exposure, depressive symptoms, and continued problem behavior in adulthood. These findings are supportive of Thornberry's (1987, 2005, 2009) interactional theory and cumulative disadvantage (Sampson and Laub 1997) models in which early delinquent behavior severs adult social bonds and increase the odds of precocious role transitions. These processes, in turn, produce structural disadvantages in adulthood that increase exposure to stressful experiences, distress, and continued problem behavior. More importantly, these two distal processes can be integrated within a cumulative disadvantage framework (Sampson and Laub 1997; Thoits 2010) such that early experiences and behaviors set in motion chains of risk (Kuh et al. 2003) that accumulate over the early life course and influence long-term trajectories of well-being. These cumulative processes provide a conduit through which early childhood/adolescent factors influence experiences in adulthood that may be potentially transmitted to the development of subsequent generations and produce intergenerational continuity of antisocial behavior.

Contrary to expectations, early caretaker adversity was not associated with their levels of depressive symptoms or problem behavior in adulthood. One explanation may be that early childhood events are only indirectly associated with adult mental health

through the accumulation of stress. Research among Canadian First Nations adults supports this argument in which early childhood trauma indirectly affected adult depression through adult stress exposure (McQuaid et al. 2015). Other research among Indigenous adults, however, indicates that early childhood adversity is associated with adult depressive symptoms even when accounting for contemporary stress exposure (Walls and Whitbeck 2011). Testing these additional pathways would increase the complexity of the current model, and would detract from the current focus which is on adolescent delinquency. Future research would benefit by examining these more complex stress exposure models and their potential implications for the intergenerational transmission of social behavior.

Family stress process theories (Conger et al. 1992; Conger et al. 1994) posit that family stressors influence adolescent outcomes through the disruption created in the lives of parents, which would appear to have intergenerational implications. Early adolescent experiences that have direct links to adult functioning were expected to have an indirect effect on parenting practices later in life. Indeed, early caretaker adversity was indirectly associated with caretaker warmth and support through increased financial strain in adulthood, which supports Bombay and colleague's (2009) intergenerational trauma model. Early caretaker problem behavior had a direct negative association with caretaker warmth and support and an indirect association through increased financial strain and continued problem behavior in adulthood. This supports Thornberry's (1987, 2005, 2006) interactional theory in which early delinquency and its effects accumulate to produce structural disadvantages in adulthood which undermine family functioning.

Drawing from the family stress process model (Conger et al. 1992; Conger et al. 1994), proximal caretaker stressors and psychosocial problems were expected to undermine family warmth and support. As expected, financial strain and caretaker problem behavior in adulthood decreased perceptions of warmth and support. The former finding is consistent with the bulk of the family stress literature in which economic stressors have the strongest effect on parenting behavior over other forms of stress (Conger et al. 2010). The latter finding supports prior research showing parent antisocial behavior and substance use having a negative effect on positive parenting practices (Auty, Farrington, and Coid 2015; Loeber et al. 2009). Neither financial strain nor caretaker problem behavior in adulthood were directly associated with their child's delinquency. Instead, these two proximal processes were indirectly associated with adolescent delinquency through their destabilizing effect on caretaker warmth and support.

Contrary to expectations, caretaker life event and cultural stressors were positively associated with perceived warmth and support. Several factors may explain these counterintuitive findings. First, caretakers who experience and perceive discrimination based on race/ethnicity/culture may attempt to insulate their children from its damaging effects. Indeed, Berkel and colleagues (2009) found that African American parents who experienced discrimination were motivated to instill in their children a sense of racial and cultural pride, which may be considered a form of warmth and support. Second, the measure of life event stressors contains many items about death and illness within the community and family. Although these things may be a source of strain and weaken family relationships, they may also mobilize family members to come together to

protect others from their harmful effects (Milkie 2010). Third, Behnke and colleagues (2008) found that economic pressure had detrimental effects on parenting among white families, but had a positive effect among Hispanic families. They noted that parent's cultural, social, and historical backgrounds may influence how stress is perceived and how it influences parenting practices. Because Indigenous communities operate within a unique social and historical context (Walters and Simoni 2002), the ways in which certain stressors influence family dynamics may be different than those found in primarily white and African American samples.

Limitations

Two limitations warrant discussion. First, according to Cairnes and colleagues (1998), the design of the study is not truly intergenerational. The hallmarks of intergenerational designs are (1) individuals in both generations should be similar in age and/or developmental period, (2) prospective rather than retrospective reports, and (3) data should be collected from multiple sources and/or informants. The current study fits the first criteria. The early caretaker measures asked about when they were adolescents, which is the same developmental period their children were in. The early caretaker data, however, were retrospective which may introduce recall bias. With the exception of caretaker warmth and support, all of the measures in this study were reported by one informant. Consequently, response biases between caretaker and adolescent reported data may be present that do not actually reflect the shared reality of family life which may attenuate associations between caretaker and adolescent reported variables (Cook and Goldstein 1993). Despite these limitations, very few truly intergenerational studies exist because they require large amounts of time and resources to carry out, and selective

attrition becomes an important problem which reduces sample size over time. At present, the analytic approach taken in this study is the closest research will get to understanding intergenerational linkages among Indigenous youth until true intergenerational data are collected.

Second, several analytic and measurement limitations are present. Most importantly, only female caretakers were included in the model and they were not necessarily biological parents. Indigenous groups emphasize extended familial relationships (Whitbeck et al. 2014), which are not captured in this study. Including multiple family members may shed light on additional intergenerational processes that are not necessarily present for female caretakers. Indeed, prior research suggests that intergenerational pathways linking one generation to the next vary by mothers and fathers (Thornberry et al. 2009). In addition, the relationship between parenting and adolescent conduct problems is interactional in nature such that parenting has an effect on adolescent outcomes and vice versa (Conger et al. 2010). Future research would benefit be moving away from these general linkages of behavior and experiences across time and interrogate more of the fine-tuned processes occurring within and between each generation.

The measure for early caretaker problem behavior includes items that primarily capture less severe forms of delinquency such as skipping school and running away. Moreover, this measure does not include substance use behavior which was included in the adult and adolescent measures. Therefore, the measures across time and generations are not completely invariant. In addition, the stressors included in this study are a limited subset of the stressors facing Indigenous communities and do not give a comprehensive picture of how stress and adversity are transmitted across time and

generations (Bombay et al. 2009; Evans-Campbell 2008). Future research would benefit by including a wider array of stressors and behaviors to better capture the underlying constructs included in this study.

Conclusion

To summarize, parenting practices appear to be a key mechanism through which distal and proximal caretaker stress exposure and psychosocial functioning are associated with the development of problem behavior in their children. Given the importance of family for Indigenous adolescent development (Mmari et al. 2010; Pridemore 2004; Whitbeck et al. 2014), focusing on factors that promote or destabilize positive parenting practices would be a fruitful area of research for understanding the origins and development of delinquency. With regard to understanding the association between stress exposure and delinquency, the findings suggest broadening the conceptualization of stressors to emphasize those experienced by family network members and identifying family mechanism linking it with adolescent development. Moreover, the findings underscore the importance of examining the configuration of stress across time (Pearlin et al. 2005; Slocum 2010) and their effects on the individuals experiencing them and the people they share important social ties with.

CHAPTER 3

EXAMINING THE LONGITUDINAL MECHANISMS LINKING PERCEIVED RACIAL DISCRIMINATION WITH AGGRESSIVE DELINQUENCY

Variations in offending by race/ethnicity are posited to be a function of differences in experiences within the social environment that are associated with offending (Agnew 2015). Discrimination and its effect on multiple social and individual processes in particular have been used to explain the link between race and crime (Kaufman et al. 2008; Unnever and Gabbidon 2011). Bogart and colleagues (2013) provided general support for this argument in their study which suggested that eliminating discrimination would effectively reduce disparities in problem behavior among racial and ethnic minorities relative to whites.

Although perceptions and experiences of discrimination are prevalent among racial and ethnic minorities (Kessler, Mickelson, and Williams 1999), the socio-historical context in which discrimination is generated and plays out within a contemporary context varies across different racial and ethnic groups. Discrimination among North American Indigenous populations has deep historical roots stemming from European colonization (Evans-Campbell 2008) and Indigenous people's continued "fourth-world" status position (Walters and Simoni 2002). A contemporary manifestation of this historical legacy is discrimination based on racial and cultural differences (Evans-Campbell 2008), which becomes part of the social fabric in which Indigenous youth develop (Whitbeck, Sittner Harshorn, and Walls 2014) and an ongoing context in which communities, families, and individuals operate (Belcourt-Ditloff and Stewart 2000; Evans-Campbell 2008). Experiences and perceptions of racial discrimination influence the inner-worlds of

Indigenous adolescents and their early experiences with social institutions (Whitbeck et al. 2014). These social processes are posited to link perceived discrimination with multiple adverse developmental outcomes such as delinquency.

Indeed, a growing body of research among Indigenous youth suggests that perceived racial discrimination is a culturally-salient risk factor for a wide range of delinquent behavior (Cheadle and Whitbeck 2011; Hautala et al. 2014; Hautala, Sittner, and Whitbeck 2015; Mmari, Blum, and Teufel-Shone 2010; Sittner Hartshorn, Whitbeck, and Hoyt 2011; Whitbeck et al. 2014; Whitbeck et al. 2001) and criminogenic factors such as negative affect, social bonds, and delinquent peer associations (Whitbeck et al. 2014). Because perceptions of racial discrimination are important for understanding delinquency among racial and ethnic minorities in general, and Indigenous youth specifically, examining under what conditions it leads to delinquency has important theoretical and pragmatic implications. Theoretically, understanding the conditions (i.e., mediating, moderating, and conditional indirect) under which strain is associated with delinquency may elucidate the inconsistent mediation and moderation findings found in the empirical literature (see Agnew 2006 for review). Pragmatically, understanding the conditions under which perceptions and experiences of discrimination influence violent delinquency may offer ways to ameliorate its potential negative consequences on Indigenous adolescent development and the communities in which they live.

Drawing from an integrated general strain theory (GST; Agnew 2005, 2006) and related frameworks (e.g., Unnever and Gabbidon's [2011] theory of African American offending), the purpose of the study is to examine the mediating, moderating, and conditional indirect mechanisms through which perceived racial discrimination

influences delinquent behavior. The focus is on interpersonal experiences of perceived discrimination rather than internalized or systematic forms of discrimination, and more specifically, on perceptions of discrimination from adult authority figures. This focus was chosen because recent evidence suggests that the context of discrimination matters for various outcomes, particularly characteristics of the perpetrator (Benner and Graham 2013; Rucker, Neblett, and Anyiwo 2013). Benner and Graham (2013) found that racial discrimination from school authority figures was associated with decreased school adjustment, but not psychological adjustment. Moreover, adult authority figures comprise an important form of social control during adolescence. Consequently, discrimination from these conventional sources of social control may have greater impact on behavior than non-specific or global acts of discrimination.

General Strain Theory

Agnew's (1992, 2001, 2006) GST provides a general theoretical lens through which the intervening and conditional mechanisms linking perceived racial discrimination to delinquency can be examined. The proposed model suggests that the effect of perceived racial discrimination on delinquency is primarily indirect through negative affect, social bonds, and delinquent peer associations. Recent iterations of GST (Agnew 2005, 2006) integrate a number of mechanisms from other criminological theories to explain the strain-delinquency association (see Jang and Rhodes 2012 for empirical support). Agnew (2006) argued that GST has strong potential to elucidate the causes of crime that are central to other theoretical frameworks such as emotional temperament, social bonds, and delinquent peer associations. Because of the close association among these different theoretical processes, an integrated framework derived

from GST is useful to examine the mechanisms linking perceived racial discrimination to delinquency.

Agnew (2001) specified four types of criminogenic strains that are likely to lead to delinquency: (1) strains high in magnitude, (2) strains viewed as unjust, (3) strains associated with low social control, and (4) strains that create pressure for delinquency. Perceived discrimination meets all four of these criteria. First, discrimination based on race/ethnicity may be considered an identity salient stressor (Thoits 1991), and thus, one that is highly central to a person's identity. Discrimination, intentional or not, also violates a widely valued social ideal of equal treatment, which may promote feelings of injustice. Third, chronic experiences of discrimination may undermine racial and ethnic minority adolescents' ability to form social bonds with white dominated institutions, thereby reducing social control (Unnever and Gabbidon 2011). Fourth, discrimination promotes a criminogenic knowledge structure that increases the propensity of antisocial behavior through learned definitions of crime (Burt and Simons 2015; Simons and Burt 2011).

Mediating Mechanisms

Negative Affect. Negative emotions are central to GST (Agnew 1992, 2001, 2006) which posits that exposure to strains induce negative affect which create pressure for corrective action, delinquency being one possible outcome. Likewise, Unnever and Gabbidon's (2011) theory of African American offending argues that racial discrimination in particular influences delinquency through the oscillating feelings of depression, anger, and defiance. Perceived racial discrimination is a consistent and robust predictor of negative mental health outcomes among adolescents (Priest et al., 2013) and

adults (Paradies 2005; Pascoe and Richman 2009; Williams and Mohammed 2009; Williams, Neighbors, and Jackson 2003). More specifically, among North American Indigenous populations, perceived racial discrimination has been linked with increased depressive symptoms (Whitbeck et al. 2001; Whitbeck et al. 2014). Agnew (2006) argued that strain induced depression likely creates pressure for corrective action and reduces the ability to cope in a legal manner. Adolescents who exhibit high levels of depressive symptoms are more likely to be irritable, impatient, and explosive (Berkowitz 1989) as well as being withdrawn from others (Schaefer, Kornienko, and Fox, 2011). Likewise, depressive symptoms undermine youths' aspirations and hopes for the future which promotes feelings of hopelessness (Nyborg and Curry 2003) and "nothing to lose" attitudes (Harris, Duncan, and Boisjoly 2002).

Consequently, GST posits that negative emotions resulting from perceptions of discrimination should mediate its association with delinquency. Prior research provides support for this theoretical proposition in which the association between perceived racial discrimination and delinquent behavior operates through post-traumatic stress disorder symptoms (Flores et al. 2010), general internalizing symptoms (Roberts et al. 2012), and depressive symptoms (Brody et al. 2006; Gibbons et al. 2004; Simons et al. 2003). From this, p*erceived discrimination is expected to be associated with delinquency through its positive effect on depressive symptoms.*

Social bonds. Agnew (2006) also argued that strains may temporarily reduce social control which makes delinquent coping more likely to occur. Chronic and repeated experiences of discrimination from adult authority figures (e.g., school staff) may reduce one's emotional attachment to these conventional figures, which frees the inhibitory bond

school attachment may have on delinquent behavior. Unnever and Gabbidon's (2011) theory of African American offending further suggests that discrimination undermines the ability of minority youth to build strong bonds with white dominated institutions such as schools (Unnever, Cullen, and Barnes 2016), which explains their heightened levels of delinquent behavior relative to whites. This argument would appear to apply to Indigenous youth.

During adolescence, youth spend a large portion of their time within school settings. Moreover, academic performance tends to decline as youth enter into the high school years (Barber and Olsen 2004). Although school experiences are a robust source of resilience among Indigenous youth (LaFromboise et al. 2006), perceived racial discrimination has been shown to decrease school bonds in early adolescence (Whitbeck, et al. 2014). Moreover, Indigenous youth who experience high levels of discrimination show steeper declines in school adjustment during entry into the high-school years compared to youth who experience low-levels of discrimination (Crawford, Cheadle, and Whitbeck 2010). This effect was even more pronounced in off reservation/reserve schools (Crawford et al. 2010), where perceptions of discrimination appear to be more common.

Few studies have examined school bonds as a possible mediator linking perceived racial discrimination with delinquent behavior. Among African American adolescents, perceived racial discrimination was associated with delinquent behavior through decreased school engagement (Brody, Kogan, and Chen 2012; Unnever et al. 2016). Among Indigenous youth, school bonds decrease the odds of delinquent behavior and conduct disorder, even when accounting for other criminogenic factors such as parenting

relationships, delinquent peer associations, and prior delinquency (Sittner and Hautala 2016; Whitbeck et al. 2014). Moreover, McNulty and Bellair (2003) found that school factors accounted for differences in violent delinquency between Indigenous and white youth. From this, p*erceived discrimination is expected to be associated with delinquency through its undermining effect on school bonds.*

Delinquent peer associations. In addition to producing negative affective responses and decreasing social control, experiences of strain over time may decrease one's stake in conformity and make delinquent peer relationships more attractive (Agnew 1992). Agnew (2006) argued that strain may temporarily foster the social learning of crime, and tests of GST have also found that strains are associated with delinquent behavior through delinquent peer associations (Jang and Rhodes 2012; Paternoster and Mazerolle 1994). Perceptions of discrimination may be a signal of social rejection based on racial/ethnic differences which leads to feelings of devaluation and demoralization (Whitbeck et al. 2014). Consequently, youth who feel devalued and demoralized are less likely to accept conventional values and drift into peer groups that also reject these conventional values (Brody et al. 2012). During adolescence, youth start developing independence from their parents and peers take on a more important developmental role. The rural context of reservations/reserves may influence the size and composition of peer networks. For example, youth may be embedded in small peer cohorts that they grow up with making delinquent peer associations a salient source of risk for antisocial behavior among this group (Whitbeck et al. 2014).

A handful of studies have examined the relationship between perceived racial discrimination and delinquent peer associations, which show a modest positive

relationship (e.g., Brody et al. 2012; Gibbons et al. 2004; Simons and Burt 2011). Research indicates that delinquent peer associations account for part (Cheadle and Whitbeck 2011; Gibbons et al. 2004; Simons and Burt 2011) or all of the association (Brody et al. 2012) between discrimination and delinquent behavior. Whitbeck and colleagues (2014) found in their study of Indigenous youth that the effect of delinquent peer associations on delinquency is so strong that it often overshadows the statistical effects of other social processes such as parenting practices. Moreover, research among Indigenous youth also suggests that early delinquent peer associations predict chronic trajectories of aggressive delinquency across the course of adolescence (Sittner and Hautala 2016). From this, p*erceived discrimination is expected to be associated with delinquency through its positive effect on delinquent peer associations*

Moderating Mechanisms

The first part of the proposed model suggests that the effect of perceived racial discrimination on delinquency is indirect through various personal and social mechanisms. GST, however, also specifies multiple conditional (moderating) relationships that influence the odds that individuals will react to strain in a delinquent manner. The second part of the proposed model suggests that the effect of perceived racial discrimination on delinquency is conditional on the aforementioned mechanisms. First, Agnew (2006) argued that trait-based negative emotions such as depression may condition the association between strain and delinquency. Consistent with prior research (Crick and Dodge 1994; Dodge and Pettit 2003; Piquero et al. 2011), emotions encapsulated by depression shape cognitive schemas conducive toward aggressive behavior through selective attention to certain social cues (e.g., less aware of the full

range of consequences of crime), interpreting other's intentions as hostile (e.g., more likely to experience emotional reactions to strain), and decreased ability to respond to strain in a non-criminal manner. Consequently, trait-based negative emotionality should amplify the effect of discrimination on delinquency. Although the moderating effect of depression has yet to be examined in the discrimination literature, prior research suggests that trait-based depression increases the odds that individuals react to strain such as victimization with delinquency (e.g., Manasse and Ganem 2009). As such, d*epressive symptoms (which, depending on how it is measured, may serve as a proxy for trait-based emotions) are expected to moderate the discrimination-delinquency association (more specifically, the positive effect of discrimination on delinquency should be amplified at high levels of depressive symptoms).*

Second, GST also suggests that adolescents low in social control are less able to cope with strain in legitimate ways making delinquency a more likely outcome. Although discriminatory experiences may undermine minority youths' bonds to schools, some youth retain their attachment and commitment to school. As previously noted, school bonds are a strong source of resilience among Indigenous youth (LaFromboise et al. 2006). Consequently, the costs of engaging in delinquent behavior are greater for those most attached to school because delinquency jeopardizes one's bond with this institution. Conversely, the costs of engaging in delinquency are lower for those low in social control, which increases the odds that strains will produce delinquent coping responses. This assertion has been supported among African American samples in which school bonding and efficacy were found to buffer the effect of perceived racial discrimination on delinquency (Brody et al. 2006; Unnever et al. 2009). *Therefore, school bonds are*

expected to buffer the effect of perceived racial discrimination on delinquency (more specifically, the positive effect of discrimination on delinquency should be attenuated for those high in school bonds).

Third, Agnew (2006) argued that peers are likely to promote the reappraisal of stressors as high in magnitude and unjust, reduce perceived costs of crime, and provide little support for legal coping. Peers provide opportunities for delinquency (Haynie and Osgood 2005), promote the learning of definitions favorable toward crime (Warr, 2002), and reinforce delinquent behaviors (Brauer 2009; Rebellon 2006). In addition, developmental models of perceived discrimination suggest that youth who experience racial discrimination are likely to attribute it as such if others (e.g., peers) affirm their attribution (Brown and Bigler 2005). Thus, delinquent peer associations are expected to amplify the positive effect of perceived racial discrimination on delinquency. Brody and colleagues (2006) found among African American youth that prosocial peers buffered the association between perceived discrimination and delinquency. The reverse is also expected to hold true. For example, although there is mixed support for a moderating effect of delinquent peer associations in the GST literature (e.g., Moon et al. 2009), several studies have found that delinquent peer associations amplify the strain-delinquency relationship (Paternoster and Mazerolle 1994; Mazerolle and Maahs 2000; Mazerolle et al. 2000). As such, d*elinquent peer associations are expected to moderate the perceived racial discrimination-delinquency association (more specifically, the positive effect of perceive racial discrimination on delinquency should be amplified when delinquent peer associations are high).*

Conditional Indirect Effects

Drawing from an integrated GST, depressive symptoms, school bonds, and delinquent peer association may be considered as both mediators and moderators linking perceived discrimination to delinquency (although not simultaneously within the same time period—see Jacoby and Sassenberg 2010). The third part of the model considers conditional indirect effects (Preacher, Rucker, and Hayes 2007), in which depressive symptoms, school bonds, and delinquent peer associations moderate the aforementioned mediation processes. This examination provides a more integrated view of the conditions under which discrimination leads to delinquency than the basic mediation and moderation hypotheses generated from GST, which may elucidate the inconsistent mediation and moderation results found in the empirical literature. Adolescents who depressed and irritable tend to elicit negative interactional patterns with others which may result in decreased ability to properly function in academic settings and prosocial peer groups (Crick and Dodge 1994). Consequently, depressive symptoms may increase the likelihood that adolescents respond to perceptions of discrimination with decreased school bonding and increased delinquent peer associations. In addition, youth who are more bonded and integrated with conventional social institutions should be less likely to respond to perceptions of discrimination with negative emotions and delinquent peer group selection because social integration acts as a stress buffer against maladaptive outcomes (Pearlin 1989). Moreover, delinquent peers provide few opportunities for prosocial coping (Agnew 2006), which likely increases the odds that perceived discrimination leads to negative emotions and decreased school bonding. *Stated generally, depressive symptoms and delinquent peer associations are posited to amplify the hypothesized mediating effects, while school bonds are posited to buffer the*

hypothesized mediating effects.

Method

The data used in the current study come from Waves 2, 3, and 5 (Wave 4 did not assess variables of interest). At Wave 2, the sample was evenly split by gender. The average age of the participants was 12.09 (S.D. = .86), and approximately one in ten (11.0%) adolescents lived in a remote location meaning the community is not fully accessible by road at all times of the year and is a prohibitive distance from a larger community. A total of 659 adolescents completed at least one of the Waves included in this study (Wave 2 – 636; Wave 3 – 626; Wave 5 – 605). Full-information maximum likelihood estimation was used to account for item missing data and missing data due to wave non-completion (81.79% of participants had complete data—see Table 3.2 for item missingness).

Measures *(See Appendix B for individual items used to create each index/scale)*

Aggressive delinquency (Waves 2, 3, and 5). Aggressive delinquency consists of nine yes/no items, which were adapted from the conduct disorder module of the Diagnostic Interview Schedule for Children IV (DISC-IV; Shaffer et al. 2000). Respondents were asked whether or not in the past 12 months they have engaged in aggressive behaviors (i.e., attacking someone to steal, threatening someone to steal from them, starting a fire without permission, physical cruelty to an animal, bullying others, being in a physical fight, and hurting someone with a weapon). An index of aggressive behavior was created by summing the nine items together (W2 Kuder Richardson 20 [KR] = .68; W3 KR = .69; W5 KR = .69).

Perceived racial discrimination (Wave 2). Perceived racial discrimination from

authority figures was measured with five items adapted from the Schedule of Racist Events (Landrine and Klonoff 1996). Respondents were asked how often in the past 12 months they have perceived to be discriminated against from adult figures (e.g., store owner, sales clerk, police, adults, teachers, and school staff) because they are a member of [cultural group] (Table 3.1 presents the exact wording of each item). Response options ranged from (0) never to (2) many times. A scale was created by summing the items together ($\alpha = .71$).

Depressive symptoms (Waves 2 and 3). Depressive symptoms were assessed using a 19-item version (see Armenta et al. 2014) of the Centers for Epidemiological Studies—Depression Scale (Radloff 1977). Respondents were asked how often in the past week they had experienced various symptoms associated with depression (e.g., I felt depressed, I enjoyed life). Response options ranged from (0) rarely or none of the time to (3) most or all of the time, any positively worded questions were reversed coded. The 19 items were summed to form a scale of depressive symptoms (W2 $\alpha = .87$; W3 $\alpha = .87$).

School bonds (Waves 2 and 3). School bonds were assessed using seven (0) disagree or (1) agree items about school attitudes/behaviors (see Crawford et al. 2010). Respondents were asked if they like school a lot, do well in school, try hard at school, get good grades, get along with teachers, try hard at difficult classes, and teachers think they are a good student. The agree responses were summed to create an index of school bonds (W2 KR = .77; W3 KR = .75).

Delinquent peers (Waves 2 and 3). A measure of peer delinquency was created using nine commonly used items about the respondent's friends. Participants were asked how many of their three best friends smoke cigarettes, drink alcohol, don't get along with

their parents, have gotten into trouble at school, have gotten in trouble with the police, are sexually active, have parents who drink or use drugs, have played the pass-out/black-out game, and use meth. Response options ranged from (0) no friends to (3) three friends. The items were averaged to create a scale of peer delinquency (W2 $\alpha = .81$; W3 $\alpha = 82$).

Controls (Wave 2). Three demographic variables that have been shown to be associated with aggressive behavior and/or perceived racial discrimination among Indigenous youth were controlled in the analyses: sex, age, and remote location. Males tend to engage in more aggressive behavior than females (male = 0; female = 1). In addition, aggression patterns tend to increase through mid- to late-adolescence and decrease thereafter (Sittner and Hautala 2016). Age was treated as a continuous variable. In addition to gender and age, adolescents living in remote communities (those not accessible by road at all times of the year and a prohibitive distance from larger communities) tend to experience less discrimination than youth living in non-remote communities (Whitbeck et al. 2014). As such, for each endogenous component of the model, the three demographic variables were controlled for.

Analytic Strategy

The mediation hypotheses were tested via lagged panel path analysis models (see Cole and Maxwell, 2003). Mediation was determined by assessing the significance of the indirect effect of perceived discrimination on aggression through the hypothesized mediators (MacKinnon 2008). The top portion of Figure 3.1 displays the proposed analytic strategy for the mediation model. Autoregressive paths from Wave 2 aggression to W3 aggression, Wave 3 aggression to Wave 5 aggression, and Wave 2 mediators to Wave 3 mediators were added. These autoregressive paths were added to control for prior

levels of each mediator/outcome and to assess residual change over time for each mediator/outcome (Cole and Maxwell 2003). In addition, paths from Wave 2 discrimination to the Wave 3 mediators/outcomes, Wave 2 mediators to W3 aggression, and W3 mediators to W5 aggression were added to set up the basic mediation panel model (Cole and Maxwell 2003; Maxwell, Cole, and Mitchell 2011). Variables within each wave were allowed to covary with one another (covariances not shown). Because of the uneven spacing between the waves, both half-longitudinal and full-longitudinal indirect effects were estimated. The half-longitudinal indirect effects were calculated by multiplying the path coefficient from perceived racial discrimination at Wave 2 to the mediator at Wave3 (path a_1) with the path coefficient from the mediator at Wave 2 to aggression at Wave 3 (path b_1). The full-longitudinal indirect effects were calculated by multiplying the path coefficient from discrimination at Wave 2 to the mediator at Wave 3 (path a_1) with the path coefficient from the mediator at Wave 3 to aggression at Wave 5 (path b_2). The significance of the indirect effect was assessed using 95% bias-corrected bootstrap confidence intervals (95% CI) based on 5,000 bootstrap resamples (Shrout and Bolger 2002). Simulation studies suggest that traditional approaches (e.g., Sobel tests) result in low statistical power and type 1 error rates along with asymmetric confidence intervals (MacKinnon, Lockwood, and Williams 2004). The bias-corrected bootstrap approach, in contrast, is a non-parametric approach that does not make distributional assumptions and has been shown to outperform other techniques for examining the significance of indirect effects (MacKinnon et al. 2004).

Moderation was tested within this mediation framework to examine conditional indirect effects (see Preacher et al. 2007 for review). Figure 3.1 displays the analytic

model with moderating effects added for depressive symptoms as an example (each mechanism was tested as its own model). Interaction terms (12 total) were created by centering perceived discrimination and each of the hypothesized mechanisms at their maximum likelihood mean estimates at Wave 2 and multiplying them together (to account for missing data, reduce multicollinearity, and aid in interpretation—see Enders, Baraldi, and Cham 2014). Paths were added from the Wave 2 interaction term to each of the hypothesized mechanisms (except the moderator of interest) and aggression at Waves 3 and 5. To incorporate all possible lower order effects, paths were added from the Wave 2 moderator of interest to the other Wave 3 variables and Wave 5 aggression. Paths were also added from Wave 2 discrimination to Wave 5 aggression (see bold paths in bottom portion of Figure 2 for addition paths added). Significant interactions were plotted at +/- 1 SD around the mean. Simple slope analyses were tested to further probe significant interaction effects (Aiken and West 1991).

Maximum likelihood estimation with chi-square and standard errors robust to non-normality (Yuan and Bentler 2000) were used to estimate the models and account for missing data (Enders 2010) in Mplus Version 6 (Muthen and Muthen 1998-2010). Alternative estimation procedures such as negative binomial regression with numerical integration, and bootstrapping with bias corrected confidence intervals generated similar findings to the robust maximum likelihood estimator. Model fit was assessed using chi-square, root mean square error of approximation (RMSEA), comparative fit index (CFI), and standardized root mean residual (SRMR) estimates. A non-significant chi-square value indicates that the observed differences between the sample and model implied variance-covariance matrices are not significantly different from zero. In large samples,

this test tends to be sensitive to minor deviations making it less ideal to assess model fit. Instead, Hu and Bentler's (1999) general guidelines for model fit will be used. A CFI value of .95 or higher, an RMSEA value below .06, and an SRMR value below .08, with converging evidence across fit indices, indicates adequate model fit.

Results

Table 3.1 displays the prevalence of perceived racial discrimination from adult authority figures at the second wave of the study. A total of 39.6% of adolescents reported experiencing at least one form of discrimination from an adult authority figure in the past 12 months. The two most common sources were from school staff the least common source was from police. Table 3.2 presents all of the maximum likelihood descriptive statistics and correlations for all variables included in the analyses. The bivariate analyses indicated that perceived racial discrimination was positively associated with aggression at all three waves ($p < .05$). Moreover, the bivariate results indicated that all of the hypothesized mediating/moderating variables were significantly associated with aggression in the expected direction ($p < .05$). For the multivariate analyses, the mediation hypotheses were modeled and tested first. In the second step, moderating effects were added to the final mediation model.

Mediation Model

The proposed mediation model (top portion of Figure 3.1) provided an adequate fit to the data ($\chi^2 = 67.41(14)$, $p < .01$; *CFI* = .95; *RMSEA* = .08; *SRMR* = .04). The modification indices, however, suggested that adding a path from Wave 2 school bonds to Wave 3 delinquent peer associations would appreciably improve model fit. The proposed model with this new path added provided a good fit to the data ($\chi^2 = 46.30(13)$,

$p < .01$; *CFI* = .97; *RMSEA* = .06; *SRMR* = .03).

The results of the final mediation model are presented in Table 3.3 and the top portion of Figure 3.2. Unlike the bivariate analyses, perceived racial discrimination did not have an effect on aggression at Wave 3 in the multivariate models (the covariance, however, between Wave 2 discrimination and Wave 2 aggression was significant). Instead, the effect seems to be completely indirect. Perceived racial discrimination had a marginal positive effect on Wave 3 depressive symptoms ($\beta = .07$, $p = .07$). Perceived racial discrimination was negatively associated with Wave 3 school bonds ($\beta = -.08$, $p < .05$), and positively associated with Wave 3 delinquent peer associations ($\beta = .08$, $p < .05$). Depressive symptoms at Wave 2 were not associated with Wave 3 aggression. School bonds at Wave 2 were negatively associated with Wave 3 aggression ($\beta = -.12$, $p < .05$), and delinquent peer associations at Wave 2 were marginally positively associated with aggression at Wave 3 ($\beta = .09$, $p = .06$). The half longitudinal-indirect effects were significant for school bonds ($b = .10$, 95% CI = .001, .029) and delinquent peer associations ($b = .008$, 95% CI = .001, .024).

Depressive symptoms at Wave 3 were not significantly associated with aggression at Wave 5. School bonds at Wave 3 were negatively associated with aggression at Wave 5 ($\beta = -.13$, $p < .01$) and delinquent peer associations at Wave 3 were positively associated with aggression at Wave 5 ($\beta = .14$, $p < .01$). At Waves 3 ($\beta = -.08$, $p < .05$) and 5 ($\beta = -.07$, $p < .10$), females had lower levels of aggression than males, and at Wave 5, those living in remote communities reported lower levels of aggression that those living in non-remote communities ($\beta = -.10$, $p < .01$).

The full-longitudinal indirect effects were significant for school bonds ($b = .01$,

95% CI =.001, .029) and delinquent peer associations (*b* = .01, 95% CI = .002, .031). Thus, as hypothesized, both the half- and full-longitudinal indirect effects indicated that the mediating mechanisms through which perceived racial discrimination influence aggression is through decreased school bonds and increased delinquent peer associations. Contrary to expectations, depressive symptoms did not appear to be a significant mediator linking perceived racial discrimination to aggression.

Conditional Models

Based on the final mediation model, moderating effects were added and tested separately for each of the three mechanisms. For the three separate models examined, only depressive symptoms and delinquent peer associations had moderating effects on various parts of the model (two out of the twelve interactions were significant, which may be due to type I error). Contrary to expectations, school bonds did not have a moderating effect. The significant interaction effects along with the necessary lower-order paths were added to the final mediation model, which provided a good fit to the data ($\chi^2 = 42.92(18)$, $p < .05$; *CFI* = .97; *RMSEA* = .05; *SRMR* = .03). The results for the final combined mediation and moderation model are displayed in Table 3.4 and the bottom portion of Figure 3.2. Depressive symptoms at Wave 2 moderated the negative effect of perceived racial discrimination at Wave 2 on school bonds at Wave 3 (β = -.10, $p < .05$). The plots at +/- 1 S.D. around the mean indicate that the negative effect of perceived racial discrimination on school bonds was stronger at high levels of depressive symptoms (see top portion of Figure 3.3). The simple slopes analyses indicated that high depressive symptoms (standard deviation above the mean) had a significant moderating effect (*b* = -.14, $p < .01$), whereas low depressive symptoms (standard deviation below

the mean) do not (*b* = .07, *p* = .42). Following Preacher and colleagues (2007), conditional indirect effects were calculated at -/+ 1 S.D. (low/high) around the mean of depressive symptoms. As hypothesized, the conditional indirect effect of school bonds was significant at high levels of depressive symptoms (*b* = .02, 95% CI = .002, .036), but was not significant at low levels of depressive symptoms (*b* = -.01, 95% CI = -.036, .008).

As hypothesized, the positive effect of perceived racial discrimination on aggression at Wave 5 was stronger when delinquent peer associations were high (*b* = .17, *p* < .001; see bottom portion of Figure 3.3). The simple slope analyses indicate that this moderating effect was only significant at high levels (one standard deviation above the mean) of delinquent peer associations (*b* = .16, p < .01). The moderating effect at low levels (one standard deviation below the mean) was not significant (*b* = -.07, *p* = .26). Moreover, the longitudinal indirect effect of Wave 3 delinquent peer associations remained significant (*b* = .01, 95% CI = .001, .029), suggesting that delinquent peers serve as both a mediator and moderator linking perceived discrimination to delinquency (not simultaneously, though).

Discussion

Interpersonal racial discrimination and its effects on multiple social and individual processes have been used to explain variations in offending among racial and ethnic minorities (Agnew 2015; Unnever and Gabbidon 2011). North American Indigenous youth develop within a unique cultural and social context which is shaped by a legacy of historical cultural losses and contemporary social and economic disadvantage (Whitbeck et al. 2014). A contemporary manifestation of this historical legacy is discrimination

based on racial and cultural differences (Evans-Campbell 2008). Consequently, understanding the mechanisms through which perceived racial discrimination influences delinquency has general criminological relevance for the study of race and crime, and specific relevance for Indigenous adolescent development. The central argument, based on an integrated version of GST (Agnew 2006), posits that perceptions and experiences of discrimination influence the inner-worlds of adolescents and their experiences with social institutions. As general mechanisms linking discrimination to delinquency, depressive symptoms, school bonds, and delinquent peer associations were examined as possible mediators and/or moderators. The results of the current study revealed partial support for an integrated GST with school bonds and delinquent peer associations explaining most of the indirect association between perceived discrimination and delinquency. The role of negative affect, which is central to GST, had more complex associations.

Although perceived discrimination was marginally associated with depressive symptoms, contrary to expectations, depressive symptoms did not mediate, nor did it moderate the discrimination-delinquency association. This finding contradicts multiple studies among African American youth in which depressive symptoms accounted for a portion of the variation between perceived discrimination and delinquency (Brody et al. 2006; Gibbons et al. 2004; Simons et al. 2003). Prior research among Indigenous youth, however, suggests that depressive symptoms do not always account for the association between discrimination and delinquency (Whitbeck et al. 2002).

Three factors may explain these findings. First, given that the outcome is overt aggression, different emotions such as anger may be a better psychosocial mediator

linking perceived discrimination to delinquency, which has been supported by previous research among Indigenous youth (Sittner Hartshorn et al. 2011). According to Agnew (2006), anger is a more potent emotion that creates a strong desire to correct perceived injustices and disposes individuals to other-directed crime. Second, prior research suggests that perceptions of discrimination from adult authority figures have little effect on psychological adjustment compared to perceptions of discrimination from peers (Benner and Graham 2013). As such, it is plausible that depressive symptoms may mediate the effect of discrimination on delinquency when alternative sources of discrimination are examined. Third, the CES-D scale (Radloff 1977) may be more of a measure of trait-based depression than state-based depression (Dumenci and Windle 1996). According to GST, state-based emotions are more consistently found to mediate the strain-delinquency association (Moon et al. 2009). More research is needed that examines both state- and trait-based depression to determine whether and how either links perceived discrimination to aggression.

In addition to negative affect, Unnever and Gabbidon (2010) argued that discrimination inhibits minority youths' ability to form strong social bonds with white dominated institutions, which undermines a developmentally salient form of social control. Although school factors are a strong source of resilience among Indigenous youth (LaFromboise et al. 2006), the current study indicates that school authority figures are the most common source of discrimination, and not surprisingly, a key source of decreased school bonding during early adolescence (Crawford et al. 2010). Drawing from GST, discrimination was posited to lead to delinquency by reducing social control. As hypothesized, perceived discrimination was associated with delinquency through its

undermining effect on school bonds, which is supportive of prior research (Brody et al. 2010; Unnever et al. 2016). A more interesting conditional finding, however, emerged from the combined mediation and moderation models. The indirect effect school bonds had on delinquency was stronger when depressive symptoms were high. This finding suggests that the association between discrimination and delinquency may be more complex than basic mediation/moderation arguments derived from GST.

Instead, emotional temperament may augment individual's reactions to strain that conditions the indirect effects posited by GST and other theories. The environments in which adolescents are embedded and the stressors to which they are exposed likely shape the emotional responses and temperaments of individuals, which may shape how individuals experience and respond to subsequent strains such as continued discrimination (Agnew 2006). For Indigenous youth, historical trauma and its contemporary manifestation of discrimination (Evans-Campbell 2008) becomes part of the social fabric in which Indigenous youth develop (Whitbeck et al. 2014) and an ongoing context in which communities, families, and individuals operate (Belcourt-Ditloff and Stewart 2000; Evans-Campbell 2008). Consequently, these emotional temperaments shaped by socio-historical contexts become embodied to produce disparities is behavioral outcomes (Walters et al. 2011). This combination may have insidious implications in which youth respond to discrimination in their social environments through disengagement in school, which may explain high rates of Indigenous school drop-out (National Center for Education Statistics 2010). As a result, an important form of social capital is undermined and may set in motion an amplification process in which stressors such as discrimination and other criminogenic factors

reciprocally interact with one another to sustain aggressive behavior (e.g., Slocum 2010).

In addition to school bonds, delinquent peer associations, as hypothesized, mediated and moderated the effect of perceived racial discrimination on delinquency which supports predictions made by an integrated GST (Agnew 2006). More specifically, perceptions and experiences of discrimination increased delinquent peer associations, which in turn, increased delinquent behavior. This finding aligns with previous research among Indigenous (Cheadle and Whitbeck 2011) and African American adolescents (Gibbons et al. 2004; Simons and Burt 2011). Perceptions of discrimination may lead to feelings of devaluation and demoralization (Whitbeck et al. 2014), in which youth reject conventional values and drift into peer groups that also reject these conventional values (Brody et al. 2012). Furthermore, delinquent peer associations, as expected, amplified the positive effect of discrimination on delinquency. Brody and colleagues (2006) found that pro-social peers buffered the effect of discrimination on delinquency among African American youth. It appears that the other end of peer continuum operates to produce the opposite effect. Given the rural context of the reservations/reserves, delinquent peers would appear to be robust and less malleable risk factor for delinquency and one that amplifies other risk factors for delinquency. Consequently, repeated and chronic experiences of discrimination may lead to the early enmeshment of youth into stable delinquent peer groups, which limit opportunities for long-term pro-social involvement and continuity in aggressive behavior.

Limitations and Directions for Future Research

Several limitations warrant discussion. First, several measurement limitations make interpretation of the results challenging. Although the measure of discrimination

was limited to adult authority figures, other contextual factors such as race/ethnicity of the perpetrator (e.g., Rucker et al. 2013), relationship with perpetrator, and location of discrimination (e.g., Riina et al. 2013) may be important in understanding how perceived discrimination influences delinquency. Future research would benefit by examining these possibilities and their implications for understanding the conditions under which perceived racial discrimination influences delinquent behavior. Moreover, the measure of negative affect does not necessarily capture responses to specific strains (state-based emotions), which may influence the mediation and moderation results (Agnew 2006). The measure of peer delinquency was derived from reports from the respondent, potentially introducing measurement error because individuals have a tendency to project their own delinquency on reports of their own friend's delinquency (Boman et al. 2012). Social network measures of peer delinquency may provide better conclusions about the association between discrimination and delinquent peer associations.

Second, the spacing between waves may be too long to observe mediating and moderating effects and/or large effect sizes. After controlling for prior levels of each mediator/outcome, there is a smaller amount of variation to be explained by other variables, which may account for some of the small effect sizes. The fact that significant effects emerge is noteworthy and demonstrates the robustness of the findings. Future research would benefit by taking both a shorter-term mechanistic approach highlighted in this paper, and a life course approach to understanding the interplay of discrimination, emotions, social processes, and delinquency over time.

As alluded to, perceptions and experiences of discrimination may be considered a chronic stressor and ongoing social context that may influence multiple individual and

social processes over time in potentially complex ways that may be associated with variations in antisocial behavior across the life course. Future research would benefit by using longitudinal data spanning multiple developmental time periods along with qualitative research to understand the more nuanced processes through which racial discrimination influences antisocial behavior and identify potential sources of resilience (e.g., culturally-relevant coping strategies) that may ameliorate the negative effects of discrimination on multiple developmental outcomes.

More research is also needed to better understand the association between perceived racial discrimination and delinquency in general, and among Indigenous youth specifically. Because the socio-historical processes that may shape discrimination and the ways in which it is manifested and perceived by others may vary across racial, ethnic, and cultural groups (e.g., Unnever and Gabbidon 2011), research would benefit by taking a within-group approach and using the accumulated evidence to make comparisons and generalizations between racial/ethnic groups.

Conclusion

Despite these limitations, the study provides a rigorous examination of the mechanisms linking perceived discrimination to aggression among an under-studied population, which contributes to the growing literature on Indigenous delinquency and discrimination as a salient explanation for understanding the link between race/ethnicity and crime. Unnever and Gabbidon's (2011) argument that perceptions and experiences of racial discrimination are a key cause of delinquency among African Americans would appear to generalize to Indigenous adolescents. Poupart (2002) argued that crime in Indigenous communities can only be understood as a response to ongoing historical

trauma and unresolved grief, a manifestation of which is discrimination (Evans-Campbell 2008). Consequently, discrimination can be considered a highly salient stressor among Indigenous youth and one that has potentially complex associations with delinquency.

CHAPTER 4

ECOLOGICAL MODERATORS OF THE RELATION BETWEEN VIOLENCE EXPOSURE AND SUBSTANCE USE DISORDERS

Substance abuse and violence are two of the leading public health concerns among North American Indigenous communities, and are associated with the leading causes of mortality among Indigenous youth (Harder et al. 2012; West and Naumann 2011). Although there is modest body of literature focusing on general risk and protective factors for Indigenous adolescent substance use (see Whitesell et al. 2012 for review), there is little research focusing on violence exposure and its effects on Indigenous adolescent substance abuse. Indigenous youth in the United States and Canada experience higher rates of direct and vicarious violent victimization compared to other racial/ethnic groups (Greenfield and Smith 1999; Perreault 2011), and such exposure is associated with detrimental developmental consequences (Macmillan 2001; Margolin and Goldis 2000). Consequently, understanding the relationship between the two is important for prevention and intervention efforts aim at reducing their deleterious effects.

Lin and colleagues (2011) argued that understanding the effect of direct violence exposure in concert with vicarious exposure reveals a more expansive picture of the violence exposure-delinquency association than examinations of one or the other. As such, the current study examines three understudied forms of violence exposure among Indigenous youth. First, relatively little research has examined objective and subjective measures of community violence among rural communities in general (Lynch 2003) and Indigenous communities specifically. Drawing from Uniform Crime Report data, Bachman (1992) found that homicide rates were elevated in counties containing a

reservation, which she attributed to social disorganization and economic deprivation. Prior research using perceptions of neighborhood crime and dangerousness indicate that Indigenous youth rate their neighborhoods as more dangerous than White youth (Friese, Grube, and Seninger 2015), which may explain some of the disparities in offending between these two groups (McNulty and Bellair 2003). Because adolescent's subjective interpretation of their environments as detrimental or beneficial has important consequences for their development (Bronfenbrenner and Morris 2006), understanding the association between subjective community violence and substance abuse is warranted.

Second, national data indicate that American Indian and Canadian First Nations adults experience greater per capita rates of victimization and violence than other racial/ethnic groups (Greenfield and Smith 1999, Perry 2004), particularly for intimate partner violence (Breiding et al. 2014; Perrault 2011; Tjaden and Thoennes 2000). Likewise, Manson and colleagues (2005) found among two American Indian tribes higher rates of victimization and experienced trauma to loved ones than were found in the National Comorbidity Survey (Kessler et al. 1995). Based on this evidence, Indigenous youth are at high risk for experiencing vicarious victimization of family members. Given the importance of family for Indigenous adolescent development (Whitbeck, Sittner Hartshorn, and Walls 2014; Burnette and Cannon 2014), caretaker victimization exposure may be a salient vicarious stressor conducive to SUDs.

Third, little is known about dating violence victimization among Indigenous adolescents (Bachman et al. 2008). For example, Ackard and Neumark-Sztainer (2002) found that approximately seven percent of Indigenous adolescents attending Minnesota

high schools reported ever being the victim of violence on a date, while Youth Behavior Risk Surveillance survey data indicate that 12-17% (Pavkov et al. 2010; Rutman et al. 2008) of Indigenous youth have experienced dating violence victimization in the past year. These data sources, however, likely underestimate true prevalence rates because they measure dating violence with one direct question (Russell and Bolen 2001). A recent study by Hautala and colleagues (2014), using a wide array of behaviorally-specific items, found that one-third of their sample of Indigenous youth reported lifetime dating violence victimization by late adolescence. Because romantic relationships are an important component of adolescent development (Connolly and McIsaac 2000), dating violence victimization may be considered an understudied and salient age-graded stressor.

Taken together, exposure to violence within the community, family, and dating relationships appear to be prevalent stressors among Indigenous youth that may increase the risk for meeting diagnostic criteria for a substance use disorder (Hawkins, Cummins, and Marlatt 2004; Whitesell et al. 2012). Consequently, understanding the conditions under which victimization is likely to lead to substance abuse is not only important for substance use prevention and intervention efforts, but also for disrupting the potential cycle of violence that results from the multiple cascading effects caused by direct and vicarious violence exposure (Macmillan 2001). Thus, the purpose of the study is to examine ecological (i.e., community, family, peer, and individual) moderators of the relation between violence exposure and meeting criteria for a substance use disorder diagnosis (SUDx).

Literature Review

Exposure to Violence and Substance Use

Agnew (2001, 2006) specified multiple strains that are likely to lead to maladaptive outcomes such as substance abuse. He argued that strains high in magnitude, those viewed as unjust, those associated with low social control, and those that create pressure for criminal coping are likely to lead to delinquency. Direct exposure to violence fits all four of these criteria (see Agnew 2002, 2006). Although strains are typically conceptualized as those directly experienced by individuals, such as dating violence victimization, Agnew (2002, 2006) also differentiated between experienced and vicarious strains. Community violence and caretaker victimization exposure may be considered a form of vicarious strain, which he defined as those that are experienced by close others such as family and friends. An individual may directly witness strain experienced by others or may learn about them from others. Thus, vicarious strains do not need to be directly witnessed by individuals. Agnew (2002) argued that vicarious strains that fit the aforementioned criteria and those experienced by close others within proximal settings (e.g., neighborhood and home) are likely to lead to maladaptive outcomes such as substance abuse. Buka and colleagues (2001) offer an alternative conceptualization, which instead of distinguishing between direct and vicarious exposure to violence, focuses on levels of exposure, including primary (direct victimization), secondary (witnessing violence), and tertiary (learning about violence from others) levels.

Simons and Burt (2011) argue that unpredictable social environments influence crime because they teach lessons about relationships and how the world operates. Adolescents who perceive their communities to be violent may feel continually at risk for violent victimization against themselves and others around them, which may result in

chronic emotional and physiological arousal (Buka et al. 2001; Fowler et al. 2009). Because of this, adolescents may use drugs and alcohol to cope with this vulnerability (Cooley-Quille et al. 2001). Indeed, a recent meta-analysis by Fowler and colleagues (2009) found that direct victimization, witnessing violence, and hearing about violence within the community all had independent associations with externalizing behavior. A limited body of evidence among Indigenous youth suggests that neighborhood violence and dangerousness are associated with more frequent alcohol and marijuana use (Friese, Grube, and Seninger 2015; Nalls, Mullis, and Mullis 2009). Moreover, the rural context of the reservation/reserve systems makes community violence exposure potentially relevant because crime and victimization incidents are likely widely known by others and its effects likely spread beyond the individuals who directly experience violence. *As such, perceptions of community violence are expected to increase the odds of meeting criteria for a SUD.*

Reviews of the literature spanning the past three decades (Artz et al. 2014; Kitzmann et al. 2003; Margolin and Gordis 2000) suggest that exposure to violence within the family has numerous deleterious consequences for adolescent development. For substance use specifically, recent longitudinal studies show that exposure to violence within the family increases general externalizing behavior (Cisler et al. 2012; Holmes 2013; Kitzmann et al. 2003) and SUDs (Cisler et al. 2012; Schiff et al. 2014). Research among Indigenous youth shows positive associations between vicarious violence exposure and lifetime alcohol use (O'Connell et al. 2007) and poly-drug use (Brockie et al. 2015). Studies among Indigenous groups also suggest that childhood adversity experienced within the family, including family violence exposure, is a strong predictor

of substance use in adulthood (Boyd-Ball et al. 2006; Ehlers et al. 2013; Koss et al. 2003; Whitesell et al. 2009). *As such, caretaker victimization exposure is expected to increase the odds of meeting criteria for a SUD.*

Although the consequences of violence exposure within the family are well-documented, research examining the consequences of dating violence victimization among adolescents is relatively limited in scope. Because of its high prevalence among adolescents (O'Leary et al. 2008) and consistent associations with negative mental, physical, and behavioral health outcomes (Roberts et al. 2013) focusing on dating violence victimization is warranted. Dating violence victimization has been linked with general substance use (Haynie et al. 2013; Roberts and Klein 2003; Roberts, Klein, and Fisher 2003) and substance use disorders (Brown et al. 2008; Exner-Cortens, Eckenrode, and Rothman 2013; Silverman, et al. 2001). Although no research has examined the consequences of dating violence victimization among Indigenous youth, research shows that direct violent victimization increases the odds of poly-substance use (Brockie et al. 2015; O'Connell et al. 2007). *Therefore, dating violence victimization is expected to increase the odds of meeting criteria for a SUD.*

Ecological Moderators

Adolescents are embedded in multiple ecological contexts, which likely augment how they react to experiences within their environment (Bronfenbrenner 1979). Foster and Brooks-Gunn (2009) further noted that little research has examined ecological moderators of violence exposure, which limits our understanding of the conditions under which it leads to detrimental outcomes. The three violence exposure constructs span different ecological domains (i.e., community, family, and individual) and may moderate

the effects of one another. Risk and protective factors in other ecological domains including family (family warmth and support), peer (delinquent peer association), and individual (depressive symptoms) levels were examined for their potential moderating effects.

Exposure to multiple forms of violence. Social stress theories indicate that cumulative exposure to stressors and strains have a greater impact on health outcomes than exposure to single forms of stress (Agnew 2006; Turner and Lloyd 1995), which is supported in the adolescent substance use literature (Turner and Lloyd 2003; Lloyd and Turner 2008; Whitesell et al. 2007). In addition, there is a growing body of evidence highlighting the importance of poly-victimization or exposure to multiple forms of victimization and violence (Finkelhor, Ormrod, and Turner 2007). Youth exposed to multiple forms of violence in different contexts are expected to be more adversely affected than youth exposed to one form of victimization or violence in just one context (Mrug, Loosier, and Windle 2008). Recent evidence suggests that multiple forms of violence exposure have a greater effect on general substance use and SUDs than single forms or no violence exposure (Ford et al. 2010; Wright, Fagan, and Pinchevsky 2013). A related area of research focuses on a "double whammy" phenomenon (Hughes, Parkinson, and Vargo 1989), in which the effects of direct forms of violence exposure become amplified in the presence of vicarious forms of violence. *Taken together, the three violence exposure measures are expected to amplify the effect of one another on SUD risk.*

Family warmth and support. Among Indigenous groups, extended familial influences are a culturally salient source of resilience (Whitbeck et al. 2014). Stress

process research overwhelmingly indicates that social supports, including those that derive from families, buffers the deleterious effects of stress on general health outcomes (Milkie 2010; Turner and Turner 2013). Margolin (1998) argued that research should focus on sources of resilience, such as family social support, that buffer the effect of violence exposure on maladaptive outcomes. Adolescents who have supportive relationships likely possess prosocial coping skills, which lower the odds that stressors (e.g., violence exposure) lead to negative outcomes such as substance abuse (Agnew 2006; Pearlin 1989). Several studies indicate the warm and supportive relationships with other family members buffers the effect of violence exposure within the community (Fowler et al. 2009), family (Levendosky, Huth-Bocks, and Semel 2002; Tajima et al. 2011), and dating relationships (Holt and Espelage 2005*)* on multiple mental health outcomes. Prior research also indicates that violence within community (Buka et al. 2001), family (Burnette and Cannon 2014), and dating relationships (Ashley and Foshee 2005) undermines social support from family members. Having strong social supports may confer protection against stressors (Turner and Turner 2013). Conversely, low social supports may amplify the negative effect violence exposure has on health outcomes such as SUDs because individuals have fewer options for non-criminal coping (Agnew 2006). *Drawing from social stress theories, family warmth and support is expected to decrease the odds of a SUD. Moreover, family warmth and support is expected to buffer the association between violence exposure and SUD risk. Conversely, low family warmth and support is expected to amplify the associations between violence exposure and meeting criteria for a SUD.*

Delinquent peer associations. In addition to community and family contexts, peer associations may help explain the link between violence exposure and substance abuse. Children and adolescents exposed to adverse family environments tend to have problematic relationships with peers and are rejected from prosocial peer groups (Margolin and Goldis 2000). Consequently, youth may select into delinquent peers groups, which enhances risk for antisocial behavior. Indeed, Maschi and colleagues (2008) found that exposure to violence in the family increased delinquent peer associations, which in turn, increased delinquent behavior. Although research has examined delinquent peer associations as a risk factor for dating violence victimization (Howard et al. 2003), no studies have examined peer relationships as a moderator linking dating violence victimization with adverse outcomes. General strain theory suggests peers may promote maladaptive coping strategies as a response to strain and/or provide opportunities that make delinquent behavior more likely (Agnew 2006). Although there is mixed evidence on the moderating effects of delinquent peer associations, several studies indicate that delinquent peers amplify the effect of violence exposure on delinquency (Buka et al. 2001; Lin et al. 2011). Moreover, the developmental context of the reservations/reserves influences the size, density, and composition of peer groups such that adolescents form stable peer groups with whom they spend most of childhood/adolescence with (Whitbeck et al. 2014). *Consequently, delinquent peer associations are expected to increase the odds of meeting criteria for an SUD. Moreover, delinquent peers are expected to increase the odds that youth will cope with violence exposure in an illicit manner, thereby magnifying its association with SUDx risk.*

Depressive symptoms. Although depressive symptoms are typically treated as an outcome in most stress process models (e.g., Pearlin 1989) and as a mediator within general strain theory (Agnew 2006), negative emotions may also moderate the association between strain and various health risk behaviors (Agnew et al. 2002). The stressors to which adolescents are exposed likely shapes their emotional temperaments. Given the high rates of violence exposure among Indigenous groups (Greenfield and Smith 1999), victimization likely undermines youths' sense of control and increases negative beliefs about others (Macmillan 2001). Indeed, prior research and reviews of the literature suggest that exposure to violence within the community, family, and dating relationships increase the odds of internalizing symptoms even after controlling for extensive controls and potential selections effects (Artz et al. 2014; Fowler et al. 2009; Johnson et al. 2014; Margolin and Gordis 2000; Roberts et al. 2003). These negative attributions likely contribute to depression (Margolin and Goldis 2000), which is expected to increase self-directed forms of delinquency such as substance use (Agnew 2006). In addition, adolescents who exhibit high levels of depressive symptoms are more likely to be withdrawn from others (Schaefer, Kornienko, and Fox, 2011), have decreased aspirations and hopes for the future which promotes feelings of hopelessness (Nyborg and Curry 2003), and possess "nothing to lose" attitudes (Harris, Duncan, and Boisjoly 2002). These characteristics, in turn, are expected to make individuals more reactive to strain, which has been supported in the victimization literature (Maness and Ganem 2009). *Consequently, depressive symptoms are expected to be positively associated with SUDx odds, and amplify the positive effect violence exposure has on SUD risk.*

Method

Sample

The data come from the last two waves of the study (Waves 7 and 8), collected in 2007-2009. The focus on late adolescence was chosen for practical and empirical reasons. The measure of dating violence victimization was first assessed in the seventh wave of the study and community violence exposure was only assessed in Wave 8. In addition, research shows a "sleeper effect" of family and community violence exposure on adolescent outcomes that become more salient in late adolescence/early adulthood (Fowler et al. 2009; Holmes 2013). A total of 604 participants completed Wave 7 and/or Wave 8 (89.6% of the original Wave 1 sample). A total of 174 respondents (28.8%) were missing data on at least one of the measures included in the analyses. Multiple imputation by chained equations (MICE; White, Royston, and Wood 2011) was used in Stata Version 13 (StataCorp 2013) to account for missing data (logistic regression specification for binary variables and linear regression for continuous variables). Analyses were based on 50 imputed datasets and pooled regression estimates and standard errors using Rubin's rules. Although the dependent variable was used in the imputation equation, cases with missing data on the dependent variable (n = 83) were excluded from the imputation-based analyses (see von Hippel 2007) for a final analytic sample of 521 participants.

Measures *(See Appendix C for individual items used to create each index/scale)*

Substance use disorder diagnosis. Substance use disorders were assessed with the Diagnostic Interview Schedule for Children (DISC-IV; Shaffer et al. 2000). The DISC-IV is an interviewer-administered instrument that may be administered by trained interviewers with no formal clinical training. Standardized scoring algorithms were used

to obtain diagnoses of nicotine dependence, alcohol abuse and dependence, marijuana abuse and dependence, and other substance abuse and dependence based on the criteria outlined in the 4th edition of the Diagnostic and Statistical Manual for Mental Disorders (DSM-IV; American Psychiatric Association 2000). In accordance with the DSM-5 (American Psychiatric Association 2013), both abuse and dependence criteria were combined. Participants who met past year criteria for a SUD were coded as one and those who did not were coded as zero.

Perceived community violence. Perceptions of community violence were assessed with 10 items measured at Wave 8 of the study. Respondents were asked how often in the past 12 months there was violence in their community (i.e., a fight in which a weapon was used, violence between neighbors, gang fights, sexual assault or rape, robbery, mugging or physical assault, murder, harassment, threats, and vandalism). Response options ranged from (0) never to (2) often. Principal axis factor analysis indicated that one factor best accounted for the correlations among the variables and factor loadings were sufficiently high (greater than .45). The items were summed to create a scale of community violence exposure ($\alpha = .89$).

Caretaker victimization exposure. At Waves 2, 3, 5, and 7, caretakers were asked whether or not (0 = no; 1 = yes) in the past 12 months they were robbed or burglarized, had something valuable lost or stolen, were physically attacked or assaulted, threatened with a weapon, and whether or not anyone was violent toward another family member (no = 0, yes = 1). At each wave, the yes responses were summed to create an index of caretaker victimization exposure. To account for cumulative experiences across time and differentiate between intermittent and persistent victimization exposure (Foster

and Brooks-Gunn 2009), each victimization index was summed to create a cumulative victimization scale at Wave 7. Bivariate logistic regression analyses showed a non-linear association between cumulative caretaker victimization experiences and meeting criteria for a past 12-month SUD. More specifically, preliminary analyses suggested that the predicted probability of meeting criteria for a SUD was particularly pronounced at high levels of cumulative caretaker victimization exposure (results available upon request). Because a third of the caretakers reported no victimization during the time period under examination, the continuous measure was split into three dummy variables (tertile split) to create no victimization exposure (32.0%), moderate victimization exposure (37.0%), and high victimization exposure categories (31.0%). Alternative statistical procedures that account for variation across time (e.g., group based trajectory modeling) resulted in a similar three group model with high correspondence to the measure used in this paper (results available upon request). In subsequent analyses, no victimization was excluded from the models and served as the reference group.

Dating violence victimization. Lifetime experiences of dating violence were assessed at Wave 7 using 12 adapted items from the Safe Dates Physical Violence scales, which were designed for use with adolescents (Foshee 1996) and previously used in a study of Indigenous youth (Hautala et al. 2014). Respondents were asked in self-reported questionnaires whether a person they have been on a date with had ever used physical violence against them (i.e., slapped; physically twisted arm; slammed or held against a wall; kicked, choked, pushed, grabbed, or shoved; threw something; burned; hit with a fist; hit with hard object; beat up; assaulted with gun or knife). Respondents were asked only to report experiences that their dating partner initiated and were not done to the

respondent in self-defense. Response options ranged from (0) never to (3) five or more times. The 12 items were summed together to create an overall dating violence victimization frequency score (α = .90). To account for the extreme positive skew and aid in interpretation, the victimization scale was dichotomized such that those reporting no dating violence victimization were coded as 0 and those reporting any lifetime dating violence victimization were coded as 1.

Family warmth and support. A measure of family warmth and support was created at Wave 7 using items adapted from the original Iowa Youth and Families Study (Conger and Elder 1994). Adolescents were asked how often someone in their family provided warmth and support, which includes items such as having someone to talk to, being part of family decisions, and getting praise for positive behavior. Response options ranged from (0) never to (2) always. Items were summed to create a scale of family warmth and support (α = .78)

Delinquent peer associations. Delinquent peer associations were measured at Wave 7 by asking participants to indicate how many of their three best friends they believe smoke cigarettes, drink alcohol, have gotten into trouble at school, have gotten into trouble with the police, and are sexually active. Responses options ranged from (0) none and (3) three. Composite scale scores were computed by averaging across the items (α = .80).

Depressive symptoms. A 19-item version of the Centers for Epidemiological Studies Depression scale (CES-D; Radloff 1977) was used to assess depressive symptoms at Wave 7. Prior analyses (Armenta et al. 2014) using this dataset indicated

that one item was not psychometrically associated with underlying depressive symptoms construct (you felt everything you did was an effort). Consequently, this item was dropped from the original CES-D scale. Respondents were asked how often in the past week they experienced various symptoms of depression. Positively worded items were reversed coded such that higher values on each item were associated with more frequent depressive symptoms (0 = never to 3 = 5-7 days). The 19-items were summed to create a scale of depressive symptoms (α = .86).

Control variables. Five control variables were included in the analyses to account for prior SUD diagnoses and demographic characteristics. At Wave 6 of the study (Wave 7 was a non-diagnostic wave), lifetime SUD diagnosis was assessed using the DISC-IV (no lifetime SUD = 0; lifetime SUD = 1). Four demographic variables at Wave 1 were included that may be associated with both violence exposure and substance use among Indigenous youth (see Hautala et al. 2014; Whitbeck et al. 2014). Gender (male = 0; female = 1), age at the beginning of the study (continuous), remote location (non-remote location = 0; remote location = 1), and per capita family income (per 1,000 dollars; continuous measure) were controlled for.

Analytic Strategy

Because the relationship between victimization and substance abuse is likely bidirectional (Roberts et al. 2003), studies examining the effect of one on the other must include two factors to draw valid conclusions. First, proper temporal ordering between violence exposure and substance abuse needs to be established. In this study, the victimization measures assessed lifetime exposure by Wave 7 of the study, preceding the past year SUDs assessed at Wave 8. Community violence exposure, however, was

measured concurrently with Wave 8 substance use diagnosis (SUDx), which may bias temporal interpretations. Second, because prior history of substance abuse may cause both violence exposure and subsequent SUDs, controls for prior SUD diagnoses from Wave 6 were included in the model. As such, the outcome assesses the emergence of new SUD cases at Wave 8.

Because the dependent variable is dichotomous, logistic regression was used to test the hypotheses. In the first three models, each exposure to violence measure was examined separately along with the five control variables. In model 4, all three of the exposure to violence measures were assessed simultaneously to assess their joint effects. In models 5 through 7, family warmth and support, delinquent peer associations, and depressive symptoms were added separately along with the exposure to violence measures and the five controls variables. In model 8, all variables were examined simultaneously. A total of thirty interaction terms were tested for each of the violence exposure measures by multiplying them together with all of the other variables in the model. Within each imputed dataset, interaction terms were created and results were based on pooled estimates (passive method). Each interaction was tested separately (see models 9 through 12 for significant interactions); however, only significant interaction terms were included in a final model (see model 13).

Results

Table 4.1 presents the descriptive statistics for all variables included in the analyses. Most notably, one-quarter (26.0%) of the youth met criteria for a past year SUD at the last wave of the study. Table 4.2 presents the logistic regression models predicting SUDx. In models 1 through 3, each violence exposure measure was assessed

separately with the five control variables. As hypothesized, community violence exposure (Model 1: *OR* = 1.13, $p < .001$), high caretaker victimization exposure (Model 2: *OR* = 2.02, $p < .05$), and dating violence victimization (Model 3: *OR* = 2.18, $p < .01$) increased the odds of a SUDx net of controls. Moderate caretaker victimization exposure was not associated with meeting criteria for a SUD. In model 4, all three violence exposure measures were assessed simultaneously with controls. As hypothesized, community violence exposure (*OR* = 1.12, $p < .001$) and dating violence victimization (*OR* = 1.93, $p < .01$) remained significant. High caretaker victimization exposure, however, was only marginally significant ($p = .07$) once all the violence exposure measures were added.

In model 5, family warmth and support was added to the model. As expected, family warmth and support decreased the odds of a SUDx (*OR* = .87, $p < .05$); however, its inclusion did not alter the magnitude of the other violence exposure measures. In model 6, the measure for delinquent peer associations was added separately. As expected, delinquent peer associations increased the odds of a SUDx (*OR* = 2.12, $p < .001$), and reduced the coefficient for dating violence victimization to marginal significance ($p = .06$). In model 7, depressive symptoms were added separately. Contrary to expectations, depressive symptoms were not associated with the odds of meeting criteria for a SUD, nor did it alter the violence exposure coefficients. In model 8, all variables were entered simultaneously. As expected, community violence exposure (*OR* = 1.09, $p < .01$), delinquent peer associations (*OR* = 2.04, $p < .001$), and meeting lifetime criteria for a SUD at Wave 6 (*OR* = 3.03, $p < .001$) increased the odds of a SUDx, while family warmth and support decreased the odds (*OR* = 0.89, $p < .05$). Contrary to expectations,

caretaker victimization exposure, dating violence victimization (marginally significant), depressive symptoms, and all demographic control variables were not associated with meeting criteria for a SUDx.

For each exposure to violence measure, interaction terms were tested separately (see Table 4.3). For community violence exposure, two demographic variables moderated its effect on SUDx risk. In the top portion of Figure 4.1, the predicted probability for SUDx risk was highest for those exposed to high levels of community violence (one standard deviation above the mean) and who live in a remote location. The bottom portion of Figure 4.1 also indicates that high levels of community violence (one standard deviation above the mean) had a slightly stronger effect on SUDx risk when per capita income was high (one standard deviation above the mean).

For caretaker victimization exposure, dating violence victimization and family warmth and support moderated its effect on SUDx risk. The top portion of Figure 4.2 shows that, as hypothesized, dating violence victimization amplified the effect of high caretaker victimization exposure on meeting criteria for a SUD. The bottom portion of Figure 4.2 indicates that, as hypothesized, high family warmth and support (one standard deviation above the mean) buffered the positive effect of high caretaker victimization on SUDx risk, whereas low family warmth and support (one standard deviation below the mean) appeared to amplify this effect. Besides high caretaker victimization exposure, no other variable moderated the effect of dating violence on SUDx risk.

Discussion

North American Indigenous groups experience high rates adversity across multiple contexts, which are likely a consequence of historical processes stemming from

European colonization (Braveheart and DeBruyn 1998; Evans-Campbell 2008). Violence and problematic substance use are contemporary manifestations of this ongoing historical trauma (Evans-Campbell 2008), and are associated with the leading causes of mortality among Indigenous youth (Harder et al. 2012; West and Naumann 2011). North American Indigenous groups experience per capita rates of victimization and SUDs that are higher than the general population in the United States and Canada (Greenfield and Smith 1999; Perreault 2011; Wu et al. 2011). Moreover, reviews of the literature spanning the past several decades indicate that violence exposure within multiple settings has deleterious impacts on adolescent development that likely start to manifest by early adulthood (Macmillan 2001). Given the salience of both violence exposure and substance abuse among Indigenous groups, it is surprising that little research exists examining the relationship between the two, which has important substance use and violence prevention/intervention implications. The purpose of the study was to examine moderators of the relation between violence exposure and meeting criteria for a SUD. Drawing from a general ecological model derived from social stress theories (Foster and Brooks-Gunn 2009), moderators were analyzed within community, family, peer, and individual contexts.

Those who perceive their communities to be unsafe and dangerous may be constantly reminded of their vulnerability, which increases emotional and physiological arousal (Fowler et al. 2009). To reduce negative feelings emanating from this vulnerability, youth may turn to drugs and alcohol to cope (Cooley-Quille et al. 2001). Indeed, community violence exposure significantly increased the odds of meeting criteria

for a SUD, which supports prior research among Indigenous youth showing community violence and crime rates as predictors of drug use (Friese et al. 2015; Nalls et al. 2009).

Although not explicitly hypothesized, two demographic characteristics moderated the effect of community violence exposure on SUDx odds. First, community violence exposure appeared to have a stronger effect for youth living in high per capita income households. This finding supports the status threat hypothesis, which suggests that neighborhood disadvantage endangers the status of individuals who perceive themselves to better off than other people in their neighborhood (Schieman, Pearlin, and Meersman 2006). Second, the effect of community violence exposure was amplified for youth living in a remote location. The remote reservation/reserve communities in this study are small and isolated from larger population centers. This rural context and isolation makes community violence exposure relevant because crime and victimization incidents are likely widely known by others and its effects likely spread beyond individuals who directly experience violence. Moreover, this finding underscores the need to examine community violence exposure within rural contexts, which has yet to receive adequate attention (Buka et al. 2001; Lynch 2003)

In addition, the results showed that adolescents whose caretakers experienced high levels of victimization had increased odds of meeting criteria for a SUD; however, this direct effect was not significant when additional variables were entered into the model. Despite this, it appears that there is a non-linear association between caretaker victimization exposure and substance use risk, such that chronic caretaker victimization has a stronger effect on adolescent substance use risk compared to no victimization or moderate/less frequent victimization. This finding has important implications for

prevention and intervention. Identifying families that are at high risk for repeated victimization and violence may help offset risk for other maladaptive behaviors among family members. In addition to the two vicarious violence measures, dating violence victimization increased the odds of a SUDx, which supports a growing body of literature examining its consequences among youth (Brown et al. 2008; Exner-Cortens et al. 2013; Silverman et al. 2001).

Various strands of scholarship suggest that cumulative exposure to multiple forms of violence in multiple contexts (e.g., community, family, and dating relationships) has more severe consequences than exposure to single forms of violence or exposure to violence in one context (Finkelhor et al. 2007; Hughes et al. 1989; Turner and Lloyd 2003). As expected, the probability of meeting diagnostic criteria for a SUD was highest when adolescents experienced dating violence victimization and lived with caretakers who experienced high levels of victimization. This finding supports a growing body of research which indicates that cumulative victimization experiences have a greater effect on substance use outcomes than exposure to no violence or single victimization incidents (Ford et al. 2010; Wright et al. 2013). Alternative explanations may also account for this moderating relationship. Classic victimization models such as routine activities/lifestyles theory (Cohen and Felson 1979; Hindelang, Gottfredson, and Garafolo 1978) suggest that those most at risk for victimization tend to engage in risk behaviors such as associating with antisocial peers and substance use (Jensen and Brownfield 1986; Lauritsen, Sampson, and Laub 1991). Consequently, caretaker victimization exposure may be a proxy for risky family environments, which have been shown to amplify the effect of violence exposure on mental health outcomes (Hanson et al. 2006).

Familial contexts are an important source of cultural and personal resilience (Whitbeck et al. 2014). Victimization experienced by caretakers, however, may undermine their ability to provide warmth and support to other family members (Burnette and Cannon 2014), which in turn, may magnify the effect caretaker victimization has on adolescent substance use problems. Indeed, the results indicate that the relationship between caretaker victimization exposure and adolescent SUDx odds were highest when family warmth and support was weakest. Conversely, high family warmth and support appeared to buffer the association between caretaker victimization exposure and adolescent SUD risk, such that the effect of high caretaker victimization on SUD risk was lower under conditions of high warmth and support, which supports prior research (Levendosky et al. 2002; Tajima et al. 2011). Given the salience of family processes for Indigenous adolescent development (Whitbeck et al. 2014), promoting strong family relationships across the early life course will likely have positive consequences extending beyond victimization and problematic substance use.

Contrary to expectations, neither delinquent peer associations nor depressive symptoms moderated the association between violence exposure and meeting criteria for a SUD. Delinquent peer associations, however, had a direct positive association with SUDx odds, which supports prior research among Indigenous youth (Cheadle and Whitbeck 2011; Cheadle and Sittner Hartshorn 2012). The context of the reservation/reserve shapes the backdrop in which peer groups develop such that youth grow up in small, stable peer groups that may shape the availability and attractiveness of drug use (Whitbeck et al. 2014). Consequently, delinquent peer associations are a relevant target for substance use prevention and intervention programs (Hawkins et al.

2004). One reason for the lack of moderating effects may be that these factors by themselves do not necessarily modify the effect of strain on substance abuse. Instead, it may be a unique configuration of these variables that has the potential to modify the association between violence exposure and substance use risk (e.g., Agnew 2013; Herrenkohl et al. 2005). More research is needed to assess this claim and examine how complex interrelationships among risk and protective factors within ecological contexts modify individual's perceptions and reactions to stressors within their environment.

Limitations

Two limitations warrant discussion. First, a more expansive set of violence exposure measures would allow for a comprehensive analysis of how cumulative experiences across ecological domains influence SUDx risk. The only direct victimization measure in the study was dating violence. Moreover, the caretaker victimization exposure measure includes a limited range of victimization experiences, which may underestimate the relationship between caretaker victimization exposure and adolescent substance use risk (Finkelhor et al. 2007). In addition, the measures lack contextual indicators that would allow for a more a nuanced understanding of violence exposure experiences and their relevance for understanding substance abuse risk. Future research would benefit by examining a more expansive set of measures with contextual indicators (e.g., timing, duration, severity, proximity to violence; Buka et al. 2001) that may help elucidate the association between two highly important health risks among Indigenous youth.

Second, the relationship between victimization/violence exposure and substance use is likely reciprocal in nature. Although proper temporal ordering was mostly

established between the violence exposure measures and SUDx, the measure for community violence exposure was measured concurrently with meeting criteria for an SUD. In addition, the measure for dating violence victimization was not assessed until Wave 7 of the study, which limits the developmental time frame that can be analyzed, and precludes examination of indirect effects linking violence exposure to SUDs because mediation hypotheses assume proper temporal order among independent variables, mediators, and outcomes to draw valid mediation inferences (Cole and Maxwell 2003). Future research would benefit by examining the interplay between the two across the early life course and their implications for prevention and intervention purposes.

Conclusion

The results have implications for understanding the stress-delinquency relationship. Adolescents are embedded in multiple ecological contexts, which moderate their experiences within their environment (Bronfenbrenner 1979). Because of this, focusing on moderating effects is useful for understanding the conditions under which stressors such as violence exposure are related to antisocial outcomes. Moreover, the framework used in this chapter (Foster and Brooks-Gunn 2009) allows for the incorporation of ecological dimensions into each component of the stress process model, which expands its focus beyond single forms of stress, coping, and/or outcomes of stress exposure.

CHAPTER 5

GENERAL DISCUSSION

Despite high rates of delinquency and substance abuse (Miller et al. 2008; Pavkov et al. 2010; Whitbeck et al. 2014), research on North American Indigenous populations has been absent in the mainstream social science (e.g., sociology, criminology, and psychology) literatures (Perry 2009; Pridemore 2004; Hawkins, Cummins, and Marlatt 2004), which likely reflects broader cultural and structural issues that perpetuate the legacy of colonialism and keeps Indigenous groups out of the minds of many people (Martin 2014). This absence, in turn, limits our understanding of the general and unique risk/protective factors for delinquency/substance use among this group, which has important theoretical, empirical, and prevention/intervention implications. Theoretically, many mainstream criminological frameworks claim to be "general" and apply to all demographic groups. Unique social factors (e.g., historical cultural losses), however, make certain demographic groups unique and necessitates contextualization to make these theories applicable and/or relevant (Pridemore 2004). Empirically, this lack of attention to Indigenous delinquency and substance use limits the extent to which extant research findings can be compared and generalized to other racial ethnic groups and be used to identify factors that may be unique or particularly salient to Indigenous youth. Taken together, the lack of theoretical contextualization and empirical work limits the extent to which effective delinquency and substance use prevention/intervention programming can be developed, implemented, and evaluated within reservation/reserve communities.

Recent scholarship has pointed toward stress-based models for understanding heightened risk for racial and ethnic minority offending and substance use (Agnew 2015; Kaufman et al. 2008; Turner and Lloyd 2003). Indigenous groups experience a disproportionate rate of stressors within their social environments (Evans-Campbell 2008; Walters and Simoni 2002). Therefore, understanding the mechanisms though which they are associated with a variety of delinquent outcomes is warranted. The purpose of this dissertation research was to examine the mechanisms linking a variety of stressors with delinquency/substance use among a large longitudinal sample of Indigenous youth and their caretakers from the Northern Midwest of the United States and Canada. The stress paradigm offered numerous insights into this relationship, and provided a general framework through which multiple theories could be subsumed (e.g., general strain theory).

As demonstrated throughout the dissertation, the mechanisms through which exposure to stressors is associated with delinquency/substance use are myriad, taking on multiple functional forms. For example, they may be direct as was the case with community violence exposure in Chapter 4. In addition, the relationship may be indirect though other social and personal processes such as caretaker warmth and support in Chapter 2. The relationship may also be conditional on multiple developmental factors such as dating violence victimization in Chapter 4, or a complex combination of the three as was the case with the conditional indirect effect finding in Chapter 3. The goal of this general discussion is to evaluate the usefulness of stress theories for understanding heightened Indigenous delinquency, place the results within a broader life course

framework to inform future research, and identify possible prevention and intervention implications.

Stress Exposure and Indigenous Delinquency

Stress models have been popular across multiple research traditions (e.g., sociology, criminology, psychology). For example, the stress process model has been the predominant theoretical approach in the sociology of mental health (Aneshensel 2015; Wheaton 2010) and has been instrumental in transforming early, unsuccessful iterations of strain theory (see Burton and Cullen 1992 for review) into a core criminological perspective (Cullen, Wright, Blevins 2008). Wheaton (2010) attributes the success of the stress paradigm to its embracement of innovations, improvements, and complexity. Although some may argue that stress process models are not parsimonious (Akers and Sellers 2010), Wheaton (2010) argued that parsimony suppresses complex explanations. Consequently, theoretical models that embrace complexity over parsimony may better capture social realities and promote new empirical possibilities. This is particularly important for understanding the mechanisms linking stress exposure to delinquency among Indigenous youth. Evans-Campbell (2008) noted that our ability to understand the full impacts of historical and contemporary traumas among Indigenous populations are constrained by our current models and ways of thinking.

With regard to this dissertation research, the flexibility of the stress paradigm was important for understanding the mechanisms through which stress exposure leads to delinquency. For example, the first empirical chapter (Chapter 2) required integrating two stress theories, a life course iteration of the stress process (Pearlin et al. 2005) and the family stress process model (Conger et al. 1992; Conger et al. 1994), with a non-stress

theory (Thornberry's interactional theory). Although interactional theory does not focus on the stress-delinquency association, insights from the theory allow it to be connected to the larger stress process which provided more complex intergenerational insights than any single theory. Likewise, an integrated general strain theory (Agnew 2006) was used in the second empirical chapter (Chapter 3). Agnew (2006) argued that general strain theory has strong potential to elucidate the causes of crime that are central to other theoretical frameworks. The ability of general strain theory to incorporate insights from other theories allowed for a more holistic explanation of how stress leads to delinquency. Moreover, it allowed for the possibility of examining more complex mechanisms that are not explicit within the theory (e.g., moderated mediation), but nonetheless support the underlying assumptions. In the third empirical chapter (Chapter 4), insights from the broader developmental victimology and exposure to violence literatures were integrated into a generalized stress process framework (Foster and Brooks-Gunn 2009) to emphasize potential ecological moderators. Emphasizing the ecological dimensions of the stress process helped illuminate potential cross-level effects that are not necessarily apparent in generic stress models.

Another major strength of the stress paradigm is the emphasis placed on the social determinants of human behavior, including the historical and macro-structural contexts that shape each component of the stress-delinquency relationship (i.e., stress exposure, social/personal resources, and manifestations of stress). Pearlin (1989) argued that systems of social stratification shape the lived experiences of incumbents such that those occupying marginalized statuses are exposed to a greater amount and variety of stressors and have limited coping repertoires from which to draw, all of which contributes to a

range of mental, physical, and behavioral health outcomes. Indeed, as noted throughout the dissertation, Indigenous populations are exposed to a disproportionate amount of stressors such as violent victimization (Greenfield and Smith 1999; Perreault 2011), racial discrimination (Evans-Campbell 2008), and early childhood trauma and adversity (Manson et al. 2005), which are likely manifestations of long-term historical and contemporary processes stemming from European colonization and Indigenous group's continued "fourth-world" status (Walters and Simoni 2002). Poupart (2002) argued that crime in Indigenous communities can only be understood as a response to ongoing economic dependence and social disadvantage, and as a response to ongoing historical trauma and unresolved grief. The ability to incorporate historical and contemporary context into the stress paradigm helps avoid pathologizing Indigenous delinquency because its causes can be traced back to their structural roots rather than individual deficits (Poupart 2002). Moreover, giving consideration to context also reflects a key principle of life course; lives are shaped by historical times and places (Elder, Johnson, and Crosnoe 2003).

The ability to incorporate context into stress models can be considered a strength; however, it points to a clear limitation of previous research, which has undermined our ability to understand the nuanced mechanisms linking stress exposure to negative outcomes among Indigenous populations**.** More specifically, variations in stress exposure, coping resources, and criminological outcomes are assumed to be a function of macro-structural inequalities. When these macro-structural inequalities are not explicitly incorporated into our analytic models, we may fail to understand the connections between macro-structural factors and individual processes. As previously noted, historical trauma

provides an ongoing context in which Indigenous people operate (Evans-Campbell 2008) and a narrative for linking historical events to contemporary life (Mohatt et al. 2014). Whitbeck and colleagues (2014) argued that historical traumas and losses continue to shape each ecological domain of human development (e.g., community, family, school, peer, and individual). For example, the reservation/reserve system creates communities that are geographically and socially isolated from surrounding non-Indigenous communities. Families are influenced by where they live and also their involvement in traditional culture. Youth who reside on reservation/reserve land may attend school in off-reservation/reserve locations which exposes them to members of outside communities, or an on-reservation school that is relatively insular. The context of the reservation/reserve system influences the size, density, and stability of peer networks. All of these factors influence individual processes such as enculturation and mental health.

Consequently, these historical and contemporary processes stemming primarily from European colonization shape the structure and content of proximate environments, which in turn, shape subjective experiences of individuals and personal agency (McLeod 2012). These proximal environments shape the perception of resource availability, people's ability to use these resources, all of which impact how stress leads to delinquency. These environments also shape the sites where individuals interact with one another and negotiate meaning (McLeod 2012; McLeod and Lively 2007). Subjective experiences and meaning may shape individual's appraisal of stress and available coping resources (Lazarus and Folkman 1984). Moreover, when collective traumas and events occur, entire communities negotiate meaning (McLeod 2012). For Indigenous people,

historical trauma can be considered a collective trauma (Brave Heart 1998) and one that provides an ongoing narrative for linking macro-structural historical events with contemporary life. The extent to which meaning alters stress appraisals for both individuals and groups of people provides a conduit through which socio-historical structures affect the core components stress models (stressors, personal/social resources, and outcomes).

Examining these processes has important implications for understanding the relationship between stress and delinquency among Indigenous youth. More specifically, as this dissertation research alluded to, theoretical models should explicitly incorporate assumptions made about stress exposure being a manifestation of historical trauma/loss and delinquency/substance use being a response to economic and social marginalization and ongoing unresolved trauma (Evans-Campbell 2008; Poupart 2002). This may be achieved through two routes. First, research may incorporate measures on historical cultural losses such as the one developed by Whitbeck and colleagues (2004) and examine how they influence each components of the stress process (see also Walls and Whitbeck 2012). Second, research could take on a more micro-level, qualitative approach to understanding how Indigenous people construct meaning and its implications for each part of stress process model. This approach would also allow for an examination of how inequality and structural disadvantages are reproduced through everyday interaction, and would provide a more nuanced understanding of the mechanisms that are difficult or impossible to fully interrogate with quantitative methodologies (e.g., historical processes). Both approaches, in turn, helps ground theories within the lived experiences of Indigenous peoples. Moreover, such models would allow for in-depth insights into the

unique aspects of the stress-delinquency association for Indigenous youth, leading to possible policy solutions aimed at reducing problem behavior.

Life Course Principles, General Limitations, and Directions for Future Research

The Healing Pathways study is unique in that it is the only study to follow Indigenous youth and their caretakers over the entire course of adolescence (Whitbeck et al. 2014). The life course perspective (Elder et al. 2003) and life course adaptations of specific stress theories (e.g., Agnew 2006; Pearlin et al. 2005) provide insights into the broader limitations of the current dissertation research and opportunities for future research endeavors. A key principle of life course research is in regards to life span development (Elder et al. 2003), which means individuals experience biological, psychological, and social changes over the entire life course that shape human development. Although this data was an enormous undertaking to collect (Whitbeck et al. 2014), it only focuses on one developmental time period and lacks data from early childhood and/or adulthood. Future research would benefit by extending data collection across the life course, which would allow for within developmental period examinations of how stress is associated with delinquency (e.g., Chapters 3 and 4) or how exposure to stress over multiple developmental time periods and/or generations has an influence on individuals and others within their social network (e.g., Chapter 2).

A second and related principle of life course research is timing, or the idea that consequences of transitions and life events vary as a function of timing in the life course. Each of the three empirical chapters covers approximately one-third of the dataset, or developmentally, early-, mid-, and late-adolescence. Moreover, each of the empirical chapters highlights important stressors and processes linking stress with

delinquency/substance use. Although most of these stressors and social processes are salient throughout adolescence, some are particularly important during specific periods. For example, meta-analyses of parenting practices, which were a key component in Chapter 2, show stronger effects at younger ages (Hoeve et al. 2009). In addition, during adolescence, school and peer influences, which were the two important processes in Chapter 3, take on an increasingly important socializing role during adolescence (Thornberry 1987). Likewise, research suggests that exposure to violence has a cumulative effect that manifests as negative outcomes in late adolescence and early adulthood (Fowler et al. 2009; Holmes 2013).

Although prior research supports the developmental salience of each stressor and its mechanisms linking it with delinquency, this argument remains an untested assumption. Future research examining the relationship between stress and delinquency would benefit by incorporating the ideas of timing, duration, and chronicity (Elder et al. 2003) to stress exposure to examine whether or not stressors have more of an effect at certain ages (Slocum 2010) as has been shown for violence exposure (Fowler et al. 2009; Margolin and Goldis 2000). Moreover, the stressors to which individuals experience and their length of exposure likely shapes individual temperaments (e.g., low constrain-negative emotionality; Agnew et al. 2002) and stress appraisals that may increase the odds that individuals respond to subsequent strains in their environment in a delinquent manner. For example, Bombay and colleagues (2014) found among Indigenous adults that greater levels of past discrimination amplified appraisals of future discriminatory experiences as harmful, which in turn, increased depressive symptoms. This same logic could be applied to delinquency research in which the relationship between stress

exposure and delinquency is contingent upon past experiences with stressors.

A third key principle of life course research is linked lives, or the idea the lives are lived interdependently and human development is shaped by networks of shared relationships. All three empirical chapters, to varying extents, highlight this life course dimension. Chapter 2 focused on the intergenerational transmission of problem behavior through caretaker stress exposure, psychosocial functioning, and warmth and support. Chapter 4 focused on vicarious community violence exposure and victimization of caretakers. Chapters 3 and 4 incorporate delinquent peer associations. Indigenous groups tend to emphasize collective rather than individualistic orientations; therefore, what happens to one individual has the potential to reverberate across networks. This assumption, however, is not directly incorporated in any of the analyses. As such, social network analysis might elucidate the stress-delinquency association in novel ways that have yet to receive adequate attention (Rees et al. 2013). For example, it would allow for a more fine-tuned examination of how stressors lead to selection into delinquent peer networks (the assumption underlying delinquent peer associations as a mediator of the stress-delinquency association), and once embedded in these peer groups whether or not it amplifies delinquency (e.g., Thornberry et al. 1993). In addition, it would allow for a unique examination of how family stressors, structures, and networks influence developmental outcomes.

Policy Implications

The results of this dissertation research have potential for informing prevention and intervention policy. Broadly, stress process models argue that eliminating stressors (especially ones conducive to delinquency) and/or enhancing protective factors that

decrease the odds that individuals react to stress with delinquency will reduce or prevent negative outcomes (Agnew 2006). As previously argued, historical and macro-structural contexts shape exposure to stressors (Evans-Campbell 2008; Pearlin 1989) and promote violence within Indigenous communities (Poupart 2002; Weaver 2009). Because the underlying causes are structural in nature, solutions to these issues must also be structural in nature. Weaver (2009) highlights several approaches aimed to address this challenge. First, identifying and recognizing the social contexts that perpetuate violence is necessary. Second, decolonizing strategies that empower tribal sovereignty helps Indigenous communities regulate their own futures. Third, efforts should be made to reduce negative stereotypes (e.g., drunken Indian stereotype) and combat white supremacy. Fourth, collective willingness to advocate for social change is needed among Indigenous and non-Indigenous people to translate these ideas into action.

Because macro-structural factors are resistant to change (Sewell 1992), other pragmatic solutions have potential to reduce delinquency and substance use among Indigenous youth. Because stressors and the mechanisms linking it with problem behavior range across developmental domains (Agnew 2006; Foster and Brooks-Gunn 2009; Pearlin 1989; Wheaton 1994), prevention and intervention should reflect this ecological framework and focus on community, family, school, peer, and individual prevention/intervention (Hawkins et al. 2004). Reducing risk and promoting protective factors at one level may have mutually reinforcing effects across other levels. For example, strengthening family relationships may reduce delinquent peer associations (Moon et al. 2014) and enhance positive mental health (Whitbeck et al. 2014). Moreover, the underlying causes of delinquency and substance use are similar (Jessor and Jessor

1977); therefore, prevention/intervention should target multiple problem behaviors rather than single forms. To achieve these prevention goals, programs must take into account the unique developmental context of Indigenous youth (Whitbeck et al. 2014) to capitalize on key community and cultural strengths that may be overlooked in general violence and substance use programs (Hawkins et al. 2004; Whitbeck 2006).

Reservation/reserve communities are relatively unique in that they are small, people live within close proximity to one another, and tribal governments are sovereign and have autonomy to operate as they see fit. In Chapter 4, community violence exposure increased the odds of meeting criteria for a substance use disorder. Empowering communities and actively engaging members may help reduce this deleterious stressor, while simultaneously enhancing community cohesion, which has been shown to buffer the effects of neighborhood disadvantage on crime (Hill and Maimon 2013). For substance use specifically, communities have the ability to control the availability of substances, law enforcement involvement, and the messages that youth are exposed to about the effects of substance use (Whitbeck et al. 2014).

The results of this dissertation research also suggest that family factors may increase risk for delinquency (Chapter 2 and Chapter 4) and buffer the harmful effect of stress (Chapter 4). Prevention and interventional programming aimed at strengthening family relationships may help reduce family risk factors (e.g., stress, negative parenting behavior, and harmful parenting practices), while strengthening protective bonds that serve as stress buffers. Indeed, family-based delinquency prevention programming has been shown to be successful at reducing delinquent behavior (Farrington and Welsh 2003; Piquero et al. 2009). Whitbeck and colleagues (2014), however, caution that

family-based programs should take into account extended familial contexts and incorporate cultural strengths within the family that are often overlooked in general prevention programming.

In chapter 3, most youth reported school staff as the primary sources of discrimination from adult authority figures, which has been shown to produce steeper declines in school adjustment compared to those exposed to fewer discriminatory experiences (Crawford, Cheadle, and Whitbeck 2011). Not surprisingly, perceptions of discrimination were associated with aggressive delinquency though its undermining effect on school bonds. School-based programs aimed at reducing discriminatory behaviors among school staff and promoting cultural awareness may reduce disparities in problem behavior and the possibility of school dropout. Prior research among Indigenous youth also suggests that school factors are a key source of resiliency (LaFromboise et al. 2006). Thus, school-level policies aimed at reducing negative experiences, such as discrimination, within school settings eliminates possible stressors conducive to delinquency and promotes an important protective factor that may inhibit delinquent responses.

During adolescence, peers take on an increasingly important role in shaping attitudes and behavior (Thornberry 1987). In chapters 3 and 4, delinquent peer associations were examined and appear to have direct effects on delinquency (Chapter 4) and serve as a mediating mechanism through which stress leads to delinquency (Chapter 3). The context of the reservation/reserve system is unique such that youth grow up in small tight-knit peer groups that they spend most of their childhood, adolescence, and potentially adulthood with (Whitbeck et al. 2014). Consequently, delinquent peer groups

are a highly salient and less malleable risk factor for delinquency. Youth may select into delinquent peer groups as a response to strain in their environments (Agnew 2006). As such, reducing strain across multiple contexts may prevent this from occurring. Likewise, promoting protection in other developmental domains may reduce the odds that youth select into delinquent peer groups. For example, prior research among Indigenous youth suggests that positive family practices reduce delinquent peer associations (Moon et al. 2014). Conversely, promoting positive peer relationships may serve as a buffer for various stressful experiences. For example, Brody and colleagues (2006) found that prosocial peers buffered the effect of discrimination on delinquency.

Although individual-level factors such as depressive symptoms were not associated with delinquency or substance use (Chapter 3 and 4), it did amplify the negative effect discrimination had on school adjustment (Chapter 3). Stress has deleterious consequences for mental health and self-concept (Thoits 2010). As such, reducing strains across developmental contexts has the potential to reduce negative mental health outcomes and promote positive self-esteem and mastery. Likewise, promoting protective factors across developmental contexts may help buffer the negative effect of stress on mental health outcomes and reduce the odds that individuals react to strain with delinquency (Agnew 2006). Although not tested in this dissertation research, cultural resources may serve as an important individual-level stress buffer (Walters and Simoni 2002). There is mixed evidence supporting the protective effect of cultural factors on problem behavior for Indigenous youth (Morris and Wood 2010; Morris, Wood, and Dunaway 2006); however, prior research suggests that traditional cultural involvement buffers the negative effects of discrimination on depressive symptoms

(Whitbeck et al. 2001). Consequently, cultural factors may have a more complex protective effect (e.g., moderated mediation) than simple direct, indirect, or conditional associations. Moreover, research primarily conducted among African American youth indicate that racial and ethnic socialization (i.e., the messages parents instill in their children about their race/ethnicity) serves as a buffer against racial/ethnic salient stressors on externalizing behavior (Burt, Simons, and Gibbons 2012; Caldwell et al. 2004). This example serves as one of many possibilities of stress models for understanding delinquency, it causes, and potential solutions. Achieving these prevention/intervention and future research goals, however, requires an ongoing understanding of Indigenous delinquency, contextualizing promising theories and frameworks, and embracing Indigenous knowledge structures.

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Table 1.1

Completion Rates and Demographics across Waves

	Completion Rate (Number of Participants)	Completion Rate (Percentage)	Percentage Female	Average Age (Standard Deviation)
Wave 1	674	100.00	50.0	11.10 (0.83)
Wave 2	636	94.4	50.0	12.09 (0.86)
Wave 3	626	92.9	49.7	13.06 (0.87)
Wave 5	605	89.8	50.7	15.27 (0.97)
Wave 6	591	87.7	50.3	16.25 (0.90)
Wave 7	569	84.4	51.0	17.23 (0.88)
Wave 8	523	77.6	52.8	18.28 (0.89)

Table 2.1

Maximum Likelihood Correlations (N = 558)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
(1) Early Caretaker Adversity	1													
(2) Early Caretaker Prob. Behavior	.33*	1												
(3) Caretaker Negative Life Events	.22*	.29*	1											
(4) Caretaker Cultural Stressors	.21*	.25*	.22*	1										
(5) Caretaker Financial Stressors	.19*	.22*	.36*	.38*	1									
(6) Parent Problem Behaviors	.15*	.24*	.30*	.07	.25*	1								
(7) Parent Depressive Symptoms	.12*	.30*	.25*	.11*	.36*	.25*	1							
(8) Caretaker Warmth & Support	-.14*	-.26*	-.03	.08	-.22*	-.26*	-.18*	1						
(9) Delinquency	-.04	.09	.07	.05	.07	.08	.08	-.26*	1					
(10) Adolescent Gender (female = 1)	.04	-.01	.07	.06	-.05	-.05	-.05	.1	-.02	1				
(11) Adolescent Age	-.03	-.01	.05	.04	.04	.03	.01	-.24*	.31*	-.08*	1			
(12) Caretaker Age	-.14*	-.21*	-.15*	-.01	-.17*	-.24*	-.09	-.02	.12*	-.06	.14*	1		
(13) Single Parent Household	-.01	.04	.20*	-.06	.13*	.24*	.10*	-.06	.04	.03	.07	-.19*	1	
(14) Remote Location	.03	.07	-.02	-.10*	.00	-.02	.04	-.09	-.04	.03	-.06	-.14*	.03	1

*$p < .05$

Table 2.2

Structural Equation Modeling Results (*N*= 558)

	Caretaker Life Event Stressors	Caretaker Cultural Stressors	Caretaker Financial Stressors	Caretaker Depressive Symptoms	Caretaker Problem Behaviors	Caretaker Warmth & Support	Adolescent Delinquency
	b (s.e.) β	b (s.e.) β	b (s.e.) β	b (s.e.) β	b (s.e.) β	b (s.e.) β	b (s.e.) β
Early Adversity →	**0.01 (0.00)** 0.14	**0.02* (0.01)** 0.15	**0.01* (0.00)** 0.13	0.01 (0.00) 0.02	**0.01 (0.00)** 0.07	-0.00 (0.00) -0.06	
Early Problem Behaviors →	**0.25 (0.05)** 0.23	**0.02* (0.04)** 0.21	**0.01* (0.00)** 0.15	**1.20* (0.19)** 0.28	**0.01* (0.00)** 0.17	**-0.01* (0.00)** -0.27	
Life Event Stressors →						0.01* (0.00) 0.17	0.00 (0.00) 0.05
Cultural Stressors →						0.10* (0.04) 0.23	0.02 (0.03) 0.04
Parent Financial Stressors →						-0.18* (0.08) -0.25	-0.02 (0.07) -0.03
Current Problem Behaviors →						-0.14* (0.06) **-0.20**	0.02 (0.05) 0.02
Depressive Symptoms →						0.00 (0.00) **-0.02**	0.00 (0.00) 0.03
Caretaker Warmth & Support →							**-0.26* (0.13)** **-0.21**
Single Parent Family →	**1.05* (0.24)** 0.20	**0.03 (0.02)** 0.06	**0.03* (0.01)** 0.13	**1.74 (0.94)** 0.08	**0.06* (0.02)** 0.22	-0.01 (0.01) -0.03	0.00 (0.01) 0.01
Adolescent Female →	0.27 (0.19) 0.06	**0.02 (0.02)** 0.07	-0.02 (0.02) -0.07	-0.90 (0.79) -0.05	**-0.02 (0.01)** -0.07	0.01 (0.01) 0.04	0.01 (0.01) 0.03
Adolescent Age →	0.15 (0.12) 0.05	0.01 (0.01) 0.04	0.01 (0.01) 0.05	0.10 (0.47) 0.01	0.01 (0.01) 0.03	**-0.02* (0.01)** -0.24	**0.03* (0.01)** 0.24
Remote Location →	-0.34 (0.32) -0.04	**-0.07* (0.03)** -0.11	-0.01 (0.02) -0.02	0.39 (1.46) 0.01	-0.02 (0.02) -0.05	-0.02 (0.02) -0.08	-0.01 (0.01) -0.03
Female Caretaker Age →	-0.01 (0.01) -0.06	0.00 (0.00) 0.05	**-0.00 (0.00)** -0.12	-0.01 (0.05) -0.01	**-0.01 (0.01)** -0.17	-0.00* (0.00) -0.13	0.00 (0.00) 0.09

*$p < .05$; NOTE: Model Fit: 120.77(76), p < .05; CFI = .97; RMSEA = .03; SRMR = 0.03

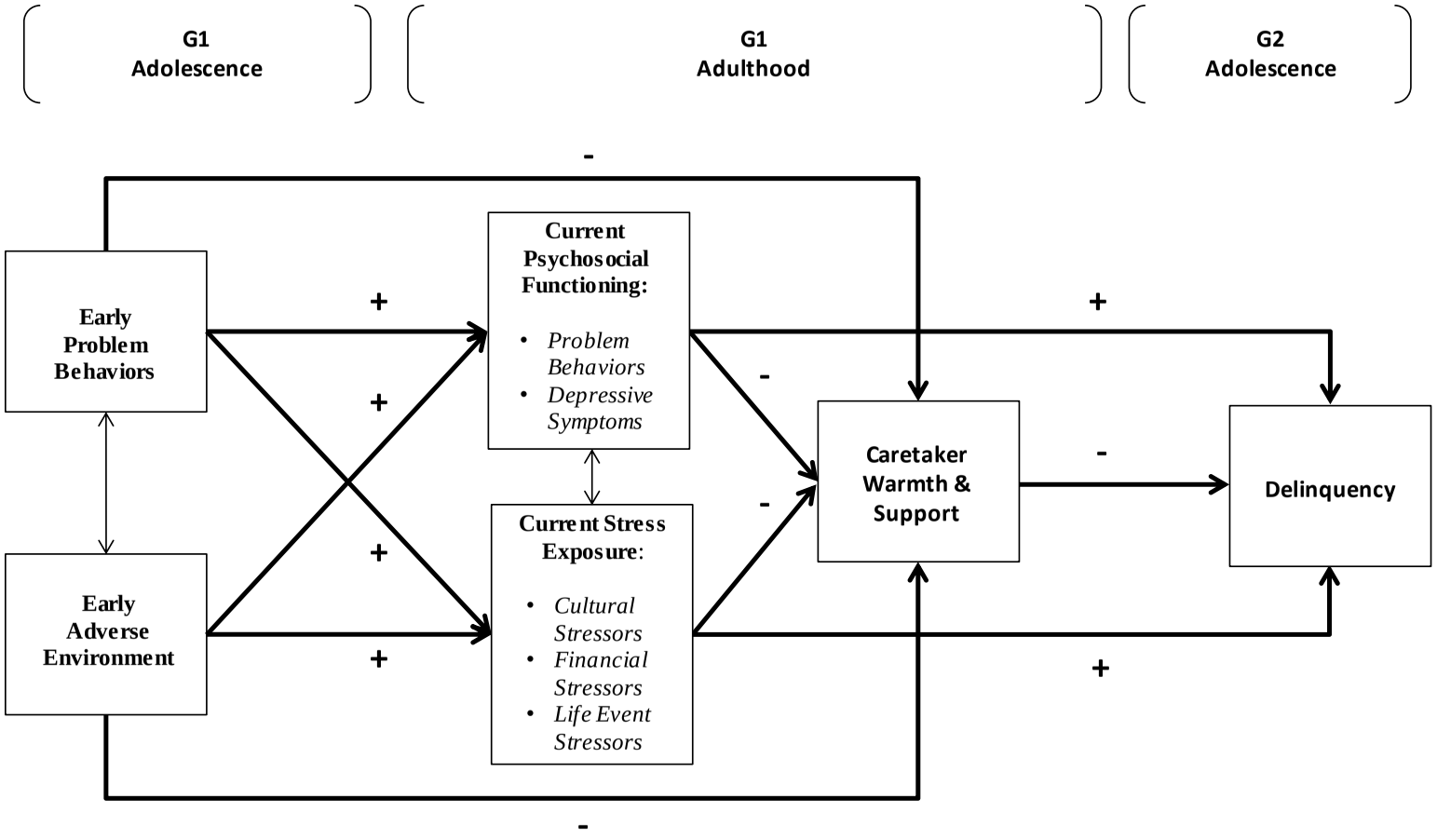


Figure 2.1
Intergeneration model linking caretaker (G1) and adolescent (G2) outcomes

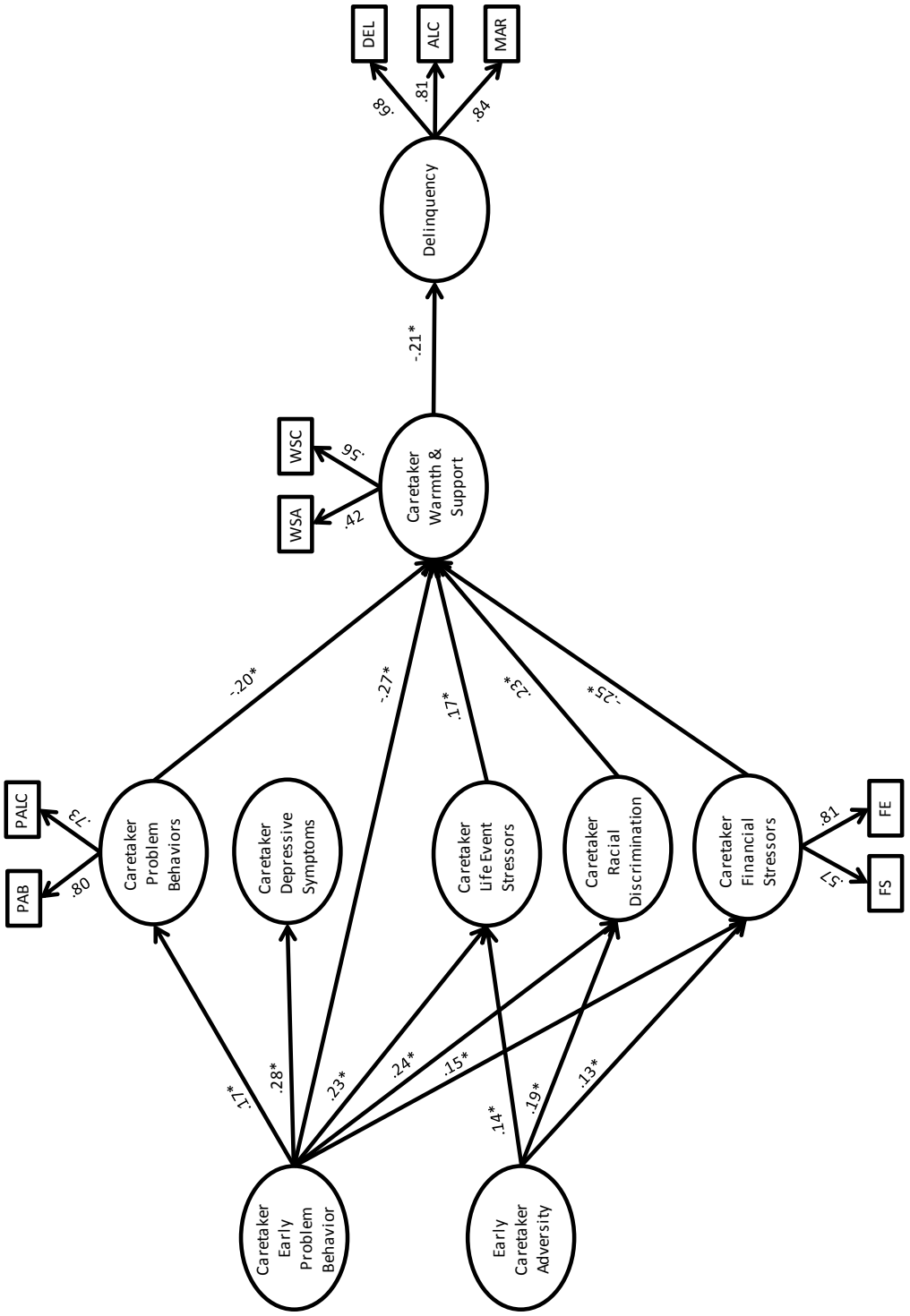


Figure 2.2
Structural Equation Model Results (Standardized Coefficients Shown)
Model Fit: 120.77(76), p < .05; CFI = .97; RMSEA = .03; SRMR = 0.03
*$p < .05$

Table 3.1

Prevalence of Perceived Racial Discrimination

Item	Never	A Few Times	Many Times	Mean
How often has a store owner, sales clerk, or person working at a place of business treated you in a disrespectful way because you are [cultural group]?	81.0%	16.3%	2.7%	.47
How often have the police hassled you because you are [cultural group]?	95.7%	3.8%	0.5%	.05
How often have adults suspected you of doing something wrong because you are [cultural group]?	83.5%	14.6%	1.9%	.18
How often have you had a teacher who didn't expect you to do as well because you are [cultural group]?	81.0%	15.8%	3.2%	.22
How often do you feel school staff members treat you different from non-Native kids?	78.8%	16.9%	4.3%	.26
Any discrimination	60.4%	39.6%		

Table 3.2

Maximum likelihood mean, standard deviation, and correlations estimates (n = 659)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
1. Perceived racial discrimination	1												
2. Depressive symptoms W2	.31*	1											
3. Depressive symptoms W3	.23*	.54*	1										
4. School adjustment W2	-.22*	-.35*	-.27*	1									
5. School adjustment W3	-.18*	-.25*	-.30*	.48*	1								
6. Delinquent peers W2	.27*	.44*	.33*	-.41*	-.32*	1							
7. Delinquent peers W3	.25*	.40*	.41*	-.42*	-.40*	.63*	1						
8. Aggression W2	.28*	.35*	.22*	-.39*	-.28*	.45*	.40*	1					
9. Aggression W3	.21*	.27*	.23*	-.32*	-.38*	.35*	.46*	.49*	1				
10. Aggression W5	.18*	.14*	.12*	-.14*	-.28*	.23*	.29*	.28*	.40	1			
11. Female	.01	.09*	.19*	.05	.01	-.00	.02	-.14*	-.13*	-.11*	1		
12. Age	.10*	.10*	.09*	-.24*	-.10*	.27*	.28*	.14*	.14*	.04	-.04	1	
13. Remote location	-.04	-.01	-.10*	.02	.07*	-.01	-.02	-.08*	-.08*	-.13*	.02	-.07	1
Mean	0.91	11.44	12.25	5.67	5.35	0.75	0.96	1.12	1.15	1.19	0.50	11.10	0.11
S.D.	1.49	8.52	8.53	1.69	1.80	0.68	0.74	1.50	1.53	1.56		0.83	
Alpha	0.71	0.87	0.87	0.77	0.75	0.81	0.82	0.68	0.69	0.69			
Proportion Missing	0.04	0.04	0.09	0.04	0.05	0.06	0.07	0.03	0.05	0.08	0.00	0.00	0.00

*$p < .05$

Table 3.3

Path Analysis Model Examining Mediating Mechanisms Linking Perceived Discrimination to Delinquency (n = 659)

	Depressive Symptoms (W3)	School Adjustment (W3)	Delinquent Peer Associations (W3)	Aggression (W3)	Aggression (W5)
	b (s.e.) β	b (s.e.) β	b (s.e.) β	b (s.e.) β	b (s.e.) β
Discrimination (W2) →	0.41 (0.22)†	-0.10 (0.05)*	0.04 (0.02)*	0.06 (0.04)	
	0.07	-0.08	0.08	0.06	
Depressive Symptoms (W2) →	0.48 (0.04)***			0.00 (0.01)	
	0.49			0.02	
School Adjustment (W2) →		0.48 (0.05)***	-0.08 (0.02)***	-0.11 (0.04)*	
		0.46	-0.17	-0.12	
Delinquent Peer Associations (W2) →			0.53 (0.04)***	0.20 (0.11)†	
			0.49	0.09	
Aggression (W2) →				0.33 (0.05)***	
				0.33	
Depressive Symptoms (W3) →					-0.01 (0.01)
					-0.04
School Adjustment (W3) →					-0.11 (0.04)**
					-0.13
Delinquent Peer Associations (W3) →					0.29 (0.11)**
					0.14
Aggression (W3) →					0.30 (0.06)***
					0.29
Female →	2.65 (0.56)***	-0.06 (0.13)	0.05 (0.05)	-0.24 (0.11)*	-0.21 (0.12)†
	0.16	-0.02	0.03	-0.08	-0.07
Age →	0.35 (0.36)	0.05 (0.08)	0.09 (0.03)**	0.04 (0.07)	-0.11 (0.07)
	0.03	0.02	0.10	0.02	-0.06
Remote Location →	-2.60 (1.08)*	0.37 (0.17)*	-0.00 (0.98)	-0.23 (0.16)	-0.51 (0.16)**
	-0.10	0.06	-0.00	-0.05	-0.10

$^{\dagger}p < .10$; $^{*}p < .05$; $^{**}p < .01$; $^{***}p < .001$

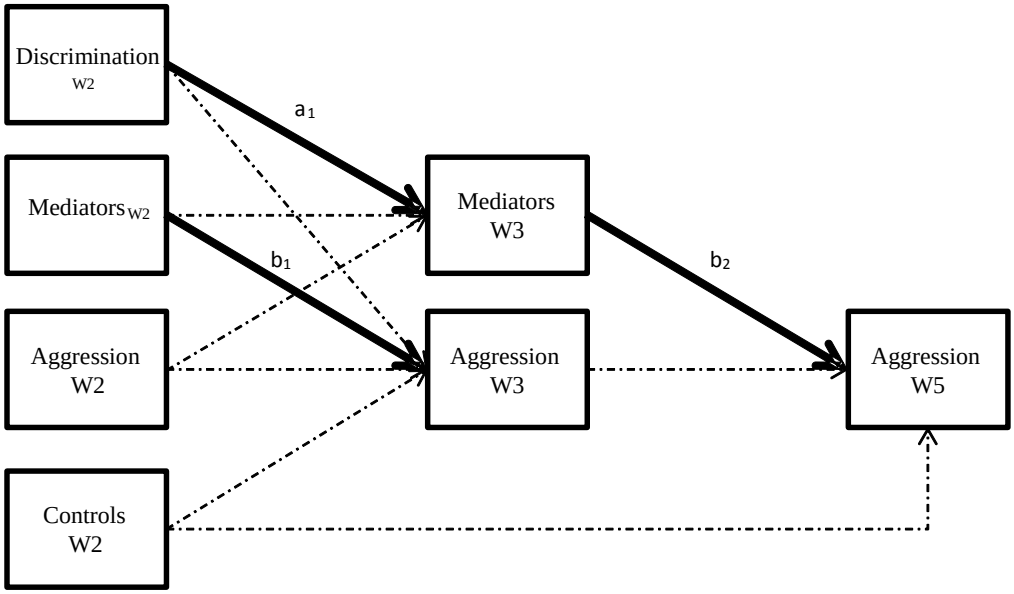
Table 3.4

Combined Mediation and Moderation Path Model Results Linking Discrimination to Aggression (n = 659)

	Depressive Symptoms (W3)	School Adjustment (W3)	Delinquent Peer Associations (W3)	Aggression (W3)	Aggression (W5)
	b (s.e.) β	b (s.e.) β	b (s.e.) β	b (s.e.) β	b (s.e.) β
Discrimination (W2) →	0.40(0.22)† 0.07	-0.04(0.06) -0.03	0.04(0.02)* 0.08	0.06(0.04) 0.06	0.04(0.04) 0.04
Depressive Symptoms (W2) →	0.49(0.04)*** 0.49	-0.01(0.01) -0.04		0.01(0.01) 0.03	
School Adjustment (W2) →		0.47(0.05)*** 0.45	-0.08(0.02)*** -0.17	-0.10(0.04)* -0.11	
Delinquent Peer Associations (W2) →			0.53(0.04)*** 0.50	0.20(0.11)† 0.09	0.08(0.11) 0.03
Aggression (W2) →				0.33(0.05)*** 0.33	
Depressive Symptoms (W3) →					-0.01(0.01) -0.05
School Adjustment (W3) →					-0.11(0.04)* -0.12
Delinquent Peer Associations (W3) →					0.25(0.12)* 0.11
Aggression (W3) →					0.28(0.06)*** 0.28
Female →	2.64(0.56)*** 0.16	-0.03(0.13) -0.01	0.05(0.05) 0.03	-0.24(0.11)* -0.08	-0.21(0.12)† -0.07
Age →	0.34(0.36) 0.03	0.05(0.08) 0.02	0.09(0.03)** 0.10	0.04(0.07) 0.02	-0.13(0.07)† -0.07
Remote Location →	-2.60(1.08)* -0.09	0.38(0.17)* 0.06	-0.00(.08) -0.00	-0.23(0.16) -0.05	-0.50(0.16)** -0.10
Discrimination (W2) x Depressive Symptoms (W2) →		-0.01(0.01)* -0.10			
Discrimination (W2) x Delinquent Peer Association (W2) →					0.17(0.05)** 0.12

†$p < .10$; *$p < .05$; **$p < .01$; ***$p < .001$

A) Longitudinal mediation model



B) Longitudinal mediation/moderation model (example for depressive symptoms)

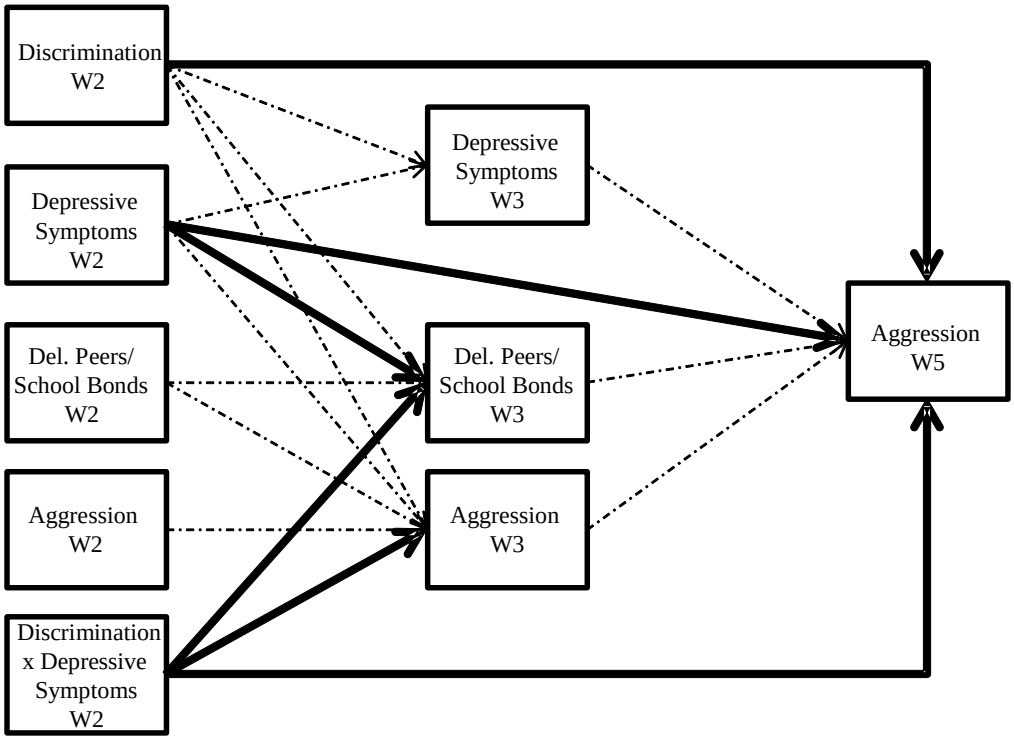
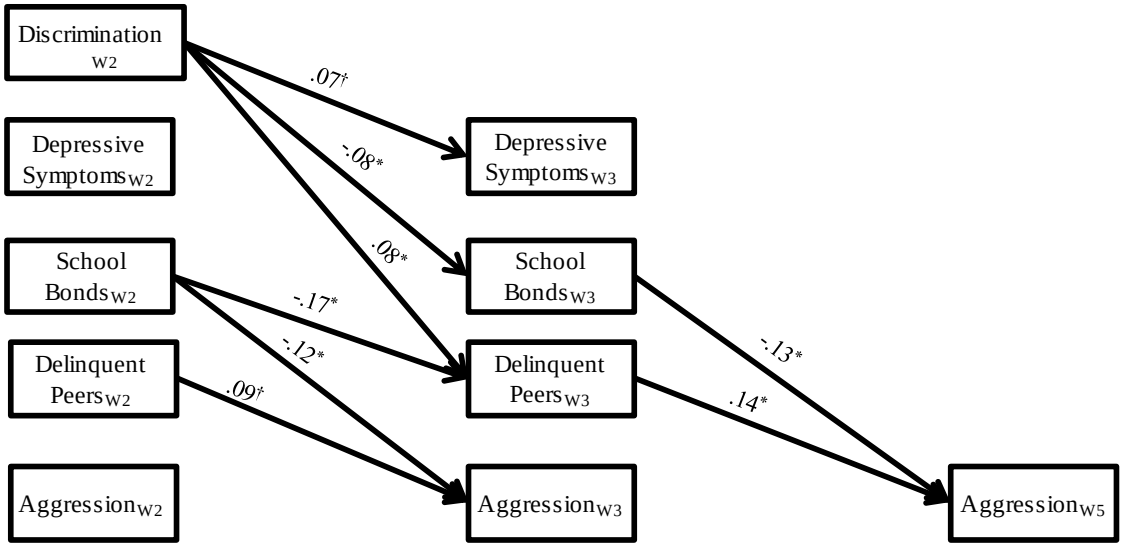


Figure 3.1
Chapter 3 Analytic Strategy (Note: Within wave covariances were estimated, but are not shown)

A) Final Mediation Model (Full Results on Table 2)



B) Final Combined Mediation-Moderation Model (Full Results on Table 3)

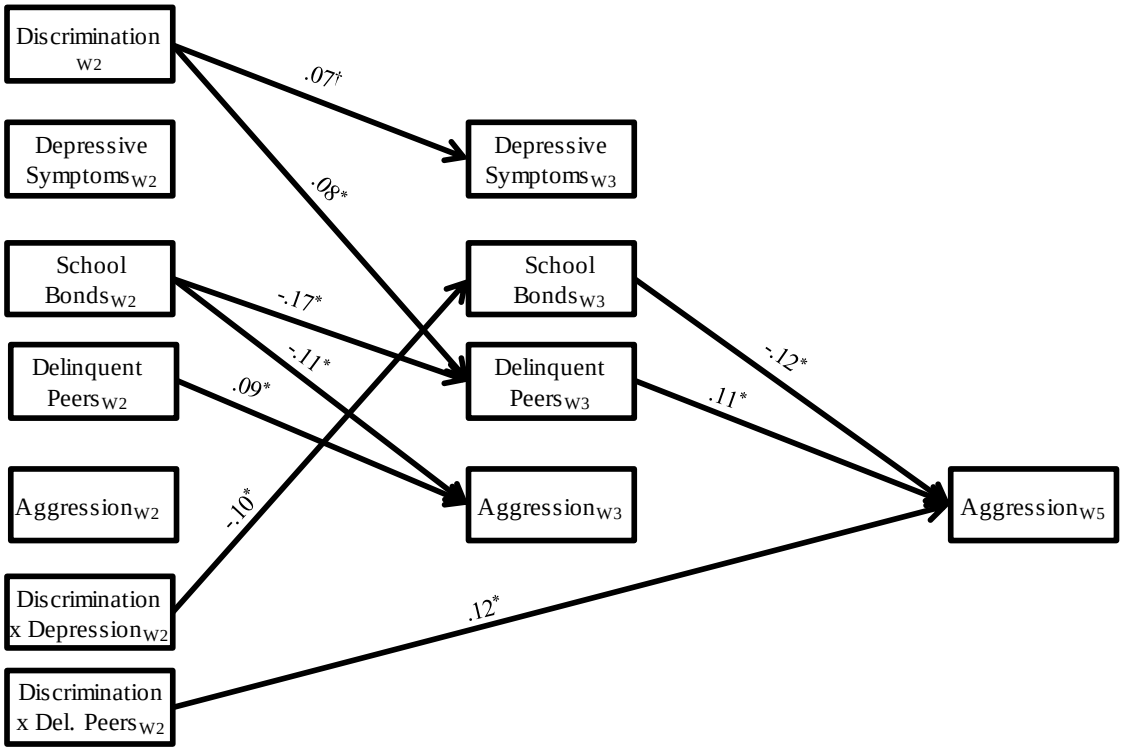


Figure 3.2
Path Model Results Predicting Aggression (Note: Standardized coefficients shown; *$p < .05$)

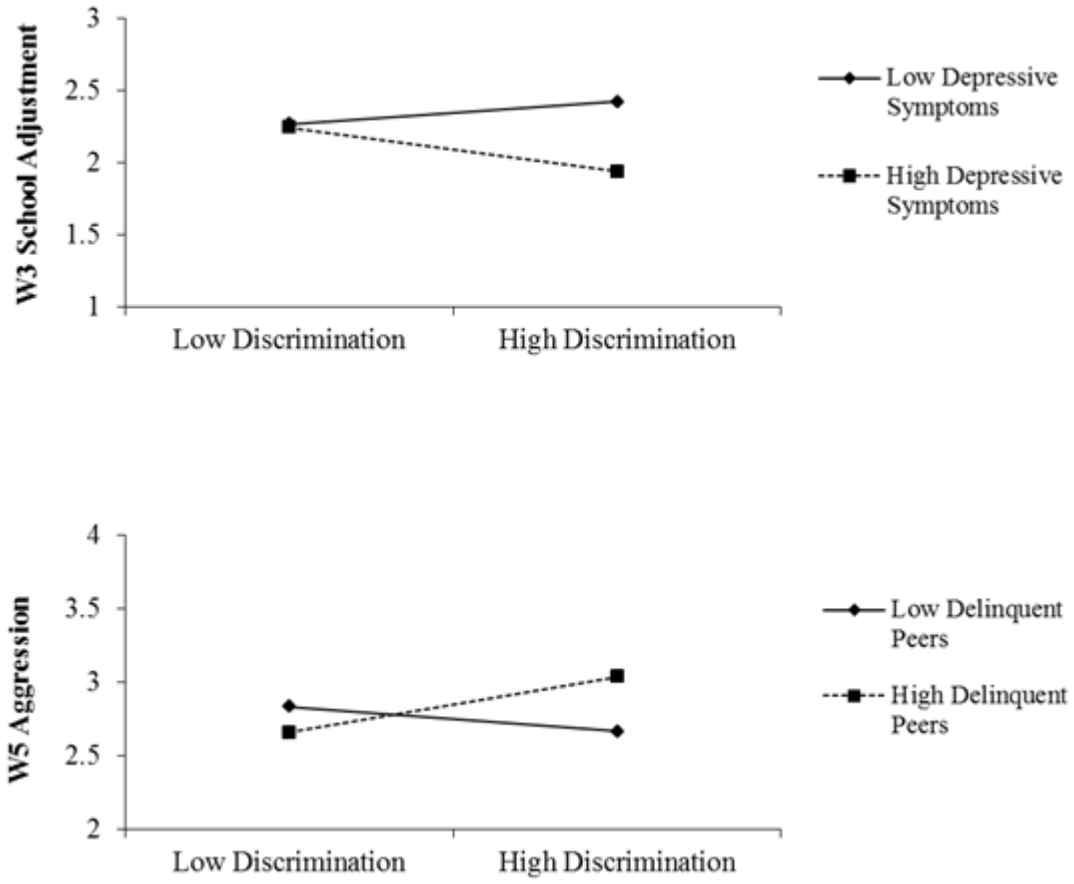


Figure 3.3

Moderation Plots for Discrimination x Depressive Symptoms Predicting School Bonds (top portion) and Discrimination x Delinquent Peer Associations Predicting Aggression (bottom portion)

Table 4.1

Descriptive Statistics (N = 521)

	Full Sample			Imputed Sample[a]	
	Mean	Standard Deviation	Proportion Missing	Mean	Standard Deviation
Past Year SUD Wave 8	0.26	0.44	0.14	0.26	0.44
Lifetime SUD Wave 6	0.33	0.47	0.05	0.33	0.48
Moderate Caretaker Victimization	0.37	0.48	0.00	0.37	0.48
High Caretaker Victimization	0.31	0.46	0.00	0.31	0.46
Dating Violence Victimization	0.31	0.46	0.07	0.31	0.49
Community Violence	7.37	4.36	0.17	7.34	4.48
Family Warmth & Support	6.43	2.07	0.06	6.42	2.15
Delinquent Peer Associations	1.59	0.75	0.07	1.60	0.78
Depressive Symptoms	11.43	8.19	0.06	11.44	8.49
Female	0.53	0.50	0.00	0.53	0.50
Age	11.07	0.83	0.00	11.08	0.83
Remote Location	0.11	0.31	0.00	0.11	0.31
Per Capita Family Income	5.42	3.89	0.00	5.42	3.96

a. (N = 521)

Table 4.2

Logistic Regression Models Predicting Past Year Substance Use Disorders (N = 521)[b]

	Model 1	**Model 2**	**Model 3**	**Model 4**	**Model 5**	**Model 6**	**Model 7**	**Model 8**
	OR	*OR*	*OR*	*OR*	*OR*	*OR*	*OR*	*OR*
Community Violence Exposure	1.13***			1.12***	1.12***	1.09**	1.11***	1.09**
Moderate Caretaker Victimization[a]		1.39		1.16	1.13	1.13	1.12	1.09
High Caretaker Victimization[a]		2.02*		1.70#	1.66#	1.58	1.67#	1.53
Dating Violence Victimization			2.18**	1.93**	1.87*	1.61#	1.77*	1.53#
Family Warmth and Support					0.87*			0.89*
Delinquent Peer Associations						2.12***		2.04***
Depressive Symptoms							1.02	1.01
Lifetime SUD Wave 6	4.45***	4.43***	4.07***	3.79***	3.75***	3.04***	3.69***	3.03***
Female	0.82	0.88	0.91	0.87	0.92	0.88	0.83	0.90
Age	0.87	0.88	0.87	0.86	0.90	0.83	0.88	0.87
Per Capita Family Income	1.00	1.00	1.00	1.01	1.01	1.02	1.01	1.03
Remote Location	1.27	1.17	0.91	1.24	1.12	1.13	1.19	1.03

# $p < .10$, * $p < .05$; ** $p < .01$; *** $p < .001$

a. No caretaker victimization is the reference group

b. Analyses based on 50 imputed datasets and pooled coefficients and standard errors

Note: OR – Odds Ratio

Table 4.3

Logistic Regression Models Predicting Past Year Substance Use Disorders with Significant Moderators (N = 521)[b]

	Model 1	**Model 2**	**Model 3**	**Model 4**	**Model 5**
	OR	*OR*	*OR*	*OR*	*OR*
Community Violence Exposure	1.09**	1.09**	1.10**	1.06*	1.07*
Moderate Caretaker Victimization[a]	0.99	1.12	1.08	1.09	0.91
High Caretaker Victimization[a]	0.88	1.43	1.55	1.50	0.77
Dating Violence Victimization	0.71	1.58#	1.52	1.56#	0.65
Family Warmth and Support	0.88*	1.04	0.89#	0.88*	1.07
Delinquent Peer Associations	2.06***	2.01**	2.07***	2.10***	2.16***
Depressive Symptoms	1.01	1.01	1.01	1.01	1.01
Lifetime SUD Wave 6	2.97***	3.08***	3.15***	3.09***	3.22***
Female	0.92	0.93	0.84	0.91	0.89
Age	0.85	0.88	0.84	0.86	0.82
Per Capita Family Income	1.02	1.02	1.02	1.01	1.02
Remote Location	1.09	1.05	1.12	1.03	1.23
Moderate Caretaker Victimization x Dating Violence	1.64				2.07
High Caretaker Victimization x Dating Violence	4.51*				5.27*
Moderate Caretaker Victimization x Family Warmth and Support		0.92			0.87
High Caretaker Victimization x Family Warmth and Support		0.71*			0.67*
Community Violence Exposure x Per Capita Family Income			1.02*		1.02*
Community Violence Exposure x Remote Location				1.33*	1.36*

# $p < .10$, * $p < .05$; ** $p < .01$; *** $p < .001$

c. No caretaker victimization is the reference group

d. Analyses based on 50 imputed datasets and pooled coefficients and standard errors; All continuous variables centered

Note: OR – Odds Ratio

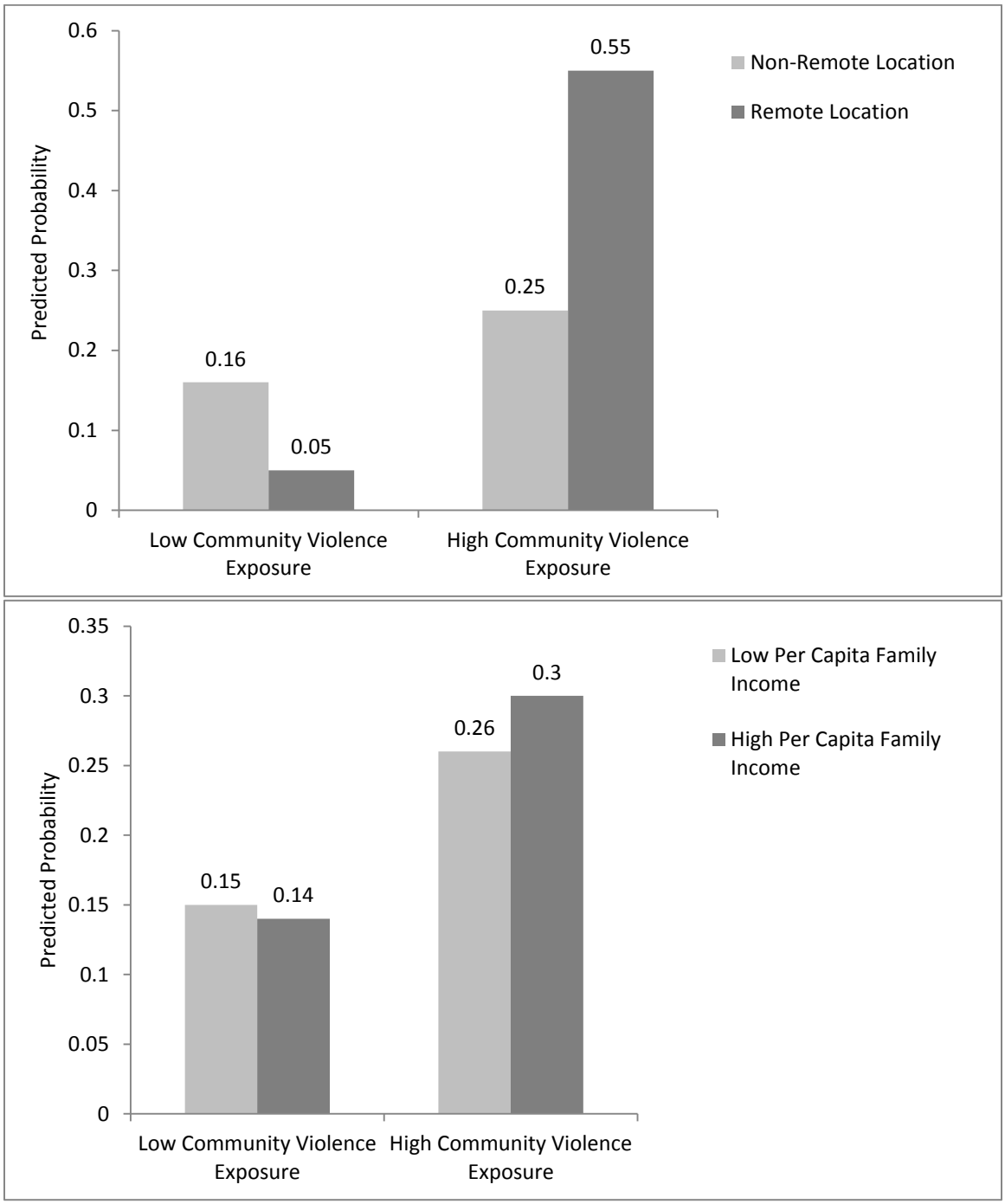


Figure 4.1

Moderation Plots for Community Violence Exposure x Per Capita Family Income (top portion) and Community Violence Exposure x Remote Location (bottom portion) Predicting Substance Use Disorder Odds.

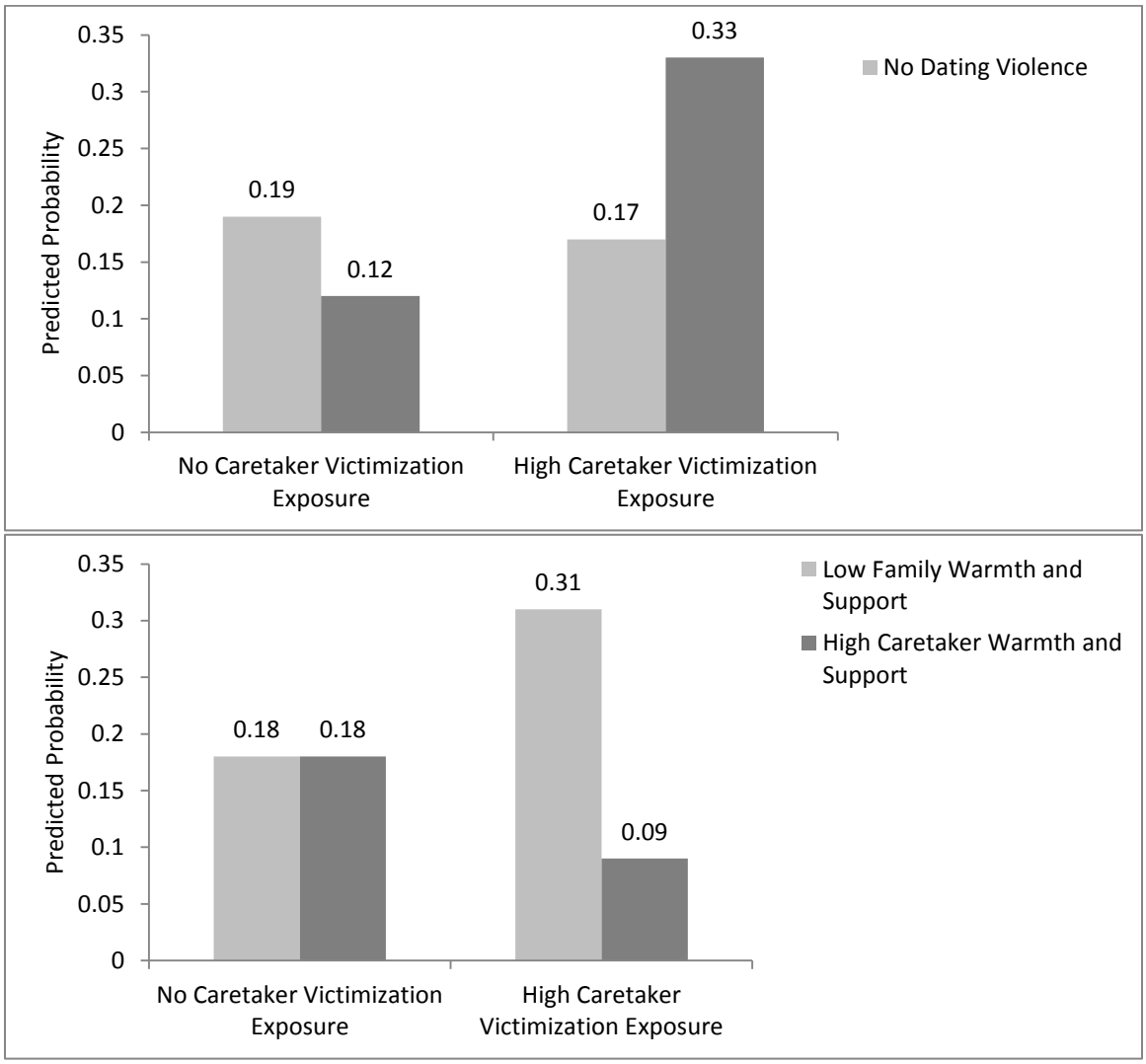


Figure 4.2

Moderation Plots for High Caretaker Victimization x Dating Violence (top portion) and High Caretaker Victimization x Family Warmth and Support (bottom portion) Predicting Substance Use Disorder Odds

APPENDIX A
ITEMS USED TO CREATE INDEXES/SCALES IN CHAPTER 2

Early Caretaker Adversity

While you were growing up:
0 = no, 1 = yes

1. Did anyone in your home have a serious drinking problem?
2. Did anyone in your home have a mental health problem?
3. Was anyone in your family violent toward another family member?
4. Did your parents or the people who raised you have serious marital problems?

Early Caretaker Problem Behavior

When you were a child or teenager:
0 = no, 1 = yes

1. Did you skip school a lot without permission?
2. Did you often stay out much later at night than your parents said you should?
3. Did you ever run away from home and stay away at least overnight?
4. Did you sometimes shoplift?
5. Did you sometimes break into a locked car, house, school, or store?
6. Did you sometimes get out of doing what you were supposed to do by lying or fooling people?
7. Did you sometimes deliberately damage somebody's property?
8. Were you in quite a few physical fights when you were a child or teenager?
9. Did you sometimes use a weapon—like a gun, knife, stick, or bottle—to threaten someone?

Caretaker Financial Stress (Financial Events)

During the past 12 months did you:
0 = no, 1 = yes

1. Take a cut in wage or salary?
2. Get laid off?
3. Suffer a financial loss in business, investments, or property?
4. Lose some or all of your government benefits?
5. Get evicted from where you live?
6. Move to a worse residence or neighborhood?
7. Have a car, furniture, or other items repossessed?
8. Dip heavily into family savings because of financial problems
9. Start receiving government assistance such as TANF, SSI, MFIP, food stamps,/Ontario works, CST or Child Benefits or something else?
10. Take on financial responsibility for a parent, in-law, or other family member?

11. Have any other financial or employment problems?
12. Change residence to save money?
13. Reduce or eliminated auto or household insurance because of financial need?
14. Change food shopping or eating habits to save money?
15. Reduce driving the car to save money?
16. Postpone medical or dental care to save money?

Caretaker Financial Stress (Financial Strain)

For each statement, please tell me if you strongly agree, agree, disagree, or strongly disagree:

0 = strongly agree, 1 = agree, 2 = disagree, 3 = strongly disagree

1. My family has enough money to afford the kind of home we need.
2. We have enough money to afford the kind of clothing we need.
3. We have enough money to afford the kind of food we need.
4. We have enough money to afford the kind of medical care we need.
5. During the past 12 months, how much difficulty have you had paying your bills? Would you say: *0 = no difficulty at all, 1 = a little difficulty, 2 = some difficulty, 3 = quite a bit of difficulty, 4 = a great deal of difficulty*

6. Think again over the past 12 months. Generally, at the end of each month did you end up with: *0 = more than enough money, 1 = some money left over, 2 = just enough to make ends meet, 3 = almost enough to make ends meet, 4 = not enough to make ends meet*

Caretaker Life Event Stressors

During the past 12 months:

0 = no, 1 = yes

1. Did a close relative commit suicide?
2. Did you get engaged or married?
3. Were you robbed or burglarized?
4. Was your driver's license suspended?
5. Did you move to a new residence?
6. Did you start a new hobby, recreational or leisure activity?
7. Did you have serious trouble with the police or the law?
8. Did you have something valuable lost or stolen?
9. Have you joined a new club or group?
10. Were you involved in a life-threatening accident?
11. Did you have any serious illness or injury?
12. Have you performed a heroic deed or helped someone in distress?
13. Were you physically attacked or assaulted?
14. Did you witness someone being badly injured or killed?

15. Were you threatened with a weapon, held captive or kidnapped?
16. Did any close friend or close relative die?
17. Did you receive a valuable or meaningful gift?
18. Did you complete a school course or make an advance in your education?
19. Did you have a son or daughter involved with an unwanted pregnancy?
20. Did you have a family member with a serious illness or injury?
21. Did you have a close friend with serious marital or family problems?
22. Did a family member receive an honor, award or special recognition?
23. Did you have a steady, romantic relationship break up?
24. Did you have a close friendship break up?
25. Did you have a positive change in your employment situation?
26. Did you develop any new friendships that are important to you?
27. Did an elder pass on?
28. Did you learn to do something new?

Caretaker Cultural Stress (adapted from Landrine & Klonoff 1996)

How often have the following situations happened to you:
0 = never, 1 = a few times, 2 = several times, 3 = always

1. How often has someone said something derogatory or insulting to youth because youth are [cultural group]?
2. How often has a store owner, sales clerk, or person working at a place of business treated you in a disrespectful way because you are [cultural group]?
3. How often have the police hassled you because you are [cultural group]?
4. How often has someone ignored you or excluded you from some activity because you are [cultural group]?
5. How often has someone yelled a racial slur or insult at you?
6. How often has someone threatened to harm you physically because you are [cultural group]?
7. How often has someone suspected you of doing something wrong because you are [cultural group]?
8. How often have you been treated unfairly because you are [cultural group] instead of white?
9. How often have you encountered whites who didn't expect you to do well because you are [cultural group]?
10. How often has someone discouraged you from trying to achieve an important goal because you are [cultural group]?
11. How often have you been treated unfairly in country/state/provincial courts because you are [cultural group]?

Parent Depressive Symptoms (CES-D; Radloff 1977)

Please tell me the number of days in the past week including today that:
0 = 0 days, 1 = 1-2 days, 2 = 3-4 days, 3 = 5-7 days

**Items reversed coded*

1. You felt happy*
2. You felt people were unfriendly
3. Your sleep was restless
4. You felt sad
5. You enjoyed life*
6. You had crying spells
7. You felt hopeful about the future*
8. You felt you were as good as other people*
9. You felt that people disliked you
10. You felt bothered by things that usually don't bother you
11. You thought your life had been a failure
12. You felt like not eating; your appetite was poor
13. You felt you could not get going
14. You felt lonely
15. You had trouble keeping your mind on what you were doing
16. You felt that you could not shake off the blues even with help from your family or friends
17. You felt that everything you did was an effort
18. You felt fearful
19. You talked less than usual
20. You felt depressed

Caretaker Adult Problem Behavior (General)

0 = no, 1 = yes

1. In the past 12 months have you been in physical fights?
2. In the past 12 months have you been the driver in an auto accident where someone was seriously hurt or a car was not driveable?
3. In the past 12 months, have you often driven when you were high or drowsy on alcohol or drugs?
4. In the past 12 months, have you been arrested?

Caretaker Adult Alcohol Problems

0 = no, 1 = yes

1. Was there a time in the past 12 months when your drinking, being hung over, or drug use frequently interfered with your work on a job, at home, or at school?
2. Was there a time in the past 12 months when you frequently got into physical fights while drinking or using drugs?
3. In the past 12 months, did your drinking or drug use cause trouble between you and a family member or a friend?

4. During the past 12 months, did you continue to drink or use drugs after you knew that it was causing you problems in getting along with other people?
5. During the past 12, have you been arrested for disturbing the peace or for driving while under the influence of alcohol or drugs?
6. During the past 12 months, have you been in treatment for an alcohol or drug problem?
7. During the past 12 months, have you been in a physical fight with your spouse/significant other while under the influence of alcohol or drugs?

Caretaker Warmth and Support (Caretaker Reported)

0 = never, 1 = seldom, 2 = sometimes, 3 = often, 4 = always

1. When you and [name of child] have problem, how often can the two of you figure out how to deal with it?
2. How often does [name of child] talk to you about things that bother (him/her)?
3. How often do you ask what [name of child] thinks before deciding on family matters?
4. How often do you give [name of child] reasons for your decisions?
5. How often do you ask [name of child] what (he/she) thinks before you make a decision about (him/her)?
6. When [name of child] does something you like or approve of, how often do you let (him/her) know you are pleased?

Caretaker Warmth and Support (Adolescent Reported)

0 = never, 1 = sometimes, 2 = always

1. When you have problems, how often can you talk to someone in your family about it and figure out how to deal with it?
2. When you do what you are supposed to do, how often does someone in your family let you know they are pleased?
3. How often do you get asked what you think before decisions are made about family activities?
4. How often do you talk to someone in your family about things that bother you?
5. When you do something good, how often does someone in your family let you know they are proud of you?

Problem Behavior (Alcohol Use)

0 = none, 1 = one or two times, 2 = less than once a month, 3 = once a month, 4 = every week, 5 = nearly every day, 6 = every day

1. How often in the past 12 months did you drink alcohol?

Problem Behavior (Marijuana Use)

0 = none, 1 = one or two times, 2 = less than once a month, 3 = once a month, 4 = every week, 5 = nearly every day, 6 = every day

1. How often in the past 12 months did you smoke marijuana (pot)?

Problem Behavior (General Delinquency)

For this set of questions I will ask you whether you did it in the past 12 months:
0 = no, 1 = yes

1. Have you secretly stolen money or other things from your family or from other people you live with?
2. Have you shoplifted that is stolen something from a store when you thought no one was looking?
3. Have you stolen from anyone else when they weren't around or weren't looking?
4. Have you faked someone's name on a check or used someone else's credit card without permission?
5. Have you held someone up or attacked somebody to steal from them?
6. Have you threatened someone in order to steal from them?
7. Have you gotten into trouble because you stayed out at night more than two hours past the time you were supposed to be home?
8. Have you run away overnight?
9. Did you stay away for as long as two whole weeks?
10. Have you lied to get money or something else you wanted?
11. Have you lied so that you wouldn't have to pay back money you owed, or to get out of something important you were supposed to do?
12. Have you broken into a house, a building or a car?
13. Have you broken something or messed up some place on purpose, like breaking windows, writing on a building or slashing tires?
14. Have you broken or damaged somebody else's things on purpose?
15. Have you started a fire without permission?
16. Have you started a fire that caused damage or hurt someone?
17. Did you mean for a fire to cause damage or hurt someone?
18. Have you been physically cruel to an animal and hurt it on purpose?
19. In the past 12 months have you bullied someone?
20. Have you bullied other people besides your brother or sister?
21. Have you threatened someone or frightened someone on purpose?
22. Have you been in a physical fight in which someone was hurt or could have been hurt?
23. Have you started a physical fight in which someone was hurt or could have been hurt?
24. Did you start a physical fight with someone else besides your brother or sister?
25. Have you tried to hurt someone badly or been physically cruel to someone?

26. Have you only been physically cruel to someone when you were in a fight?
27. Were you physically cruel to someone when you weren't in a fight?
28. Have you hurt someone with a weapon like a bat, brick, broken bottle, knife, or gun?
29. Have you threatened someone with a weapon like a bat, brick, broken bottle, knife or gun?
30. Have you been in trouble with the police?

APPENDIX B
ITEMS USED TO CREATE INDEXES/SCALES IN CHAPTER 3

Authority Perceived Racial Discrimination

How often in the past 12 months have:
0 = never, 1= a few times, 2 = many times

1. A store owner, sales clerk, or person working at a place of business treated you in a disrespectful way because you are [Cultural group]?
2. Police hassled you because you are [Cultural group]?
3. Adults suspected you of doing something wrong because you are [Cultural group]?
4. You been treated differently in the court system because you are [Cultural group]?
5. School staff members treated you different because you are [Cultural group]?

Center for Epidemiological Studies—Depression Scale (Radloff et al. 1977)

Please tell me the number of days in the past week including today that:
0 = zero days, 1 = one to two days, 2 = three to four days, 3 = five to seven days
*Items reversed coded

1. You felt happy*
2. You felt people were unfriendly
3. Your sleep was restless
4. You felt sad
5. You enjoyed life*
6. You had crying spells
7. You felt hopeful about the future*
8. You felt you were as good as other people*
9. You felt that people disliked you
10. You felt bothered by things that usually don't bother you
11. You thought your life had been a failure
12. You felt like not eating; your appetite was poor
13. You felt you could not get going
14. You felt lonely
15. You had trouble keeping your mind on what you were doing
16. You felt that you could not shake off the blues even with help from your family or friends
17. You felt fearful
18. You talked less than usual
19. You felt depressed

Positive School Adjustment—Adapted from Crawford et al. (2010)

Please tell me if you agree or disagree with these statements about school:

0 = disagree, 1 = agree

1. You like school a lot
2. You do well in school
3. You try hard in school
4. Grades are very important to you
5. You get along well with your teachers
6. You do well in school, even in hard subjects
7. The teachers think you are a good student

Delinquent Peer Associations

How many of your three best friends:
0 = none, 1 = one, 2 = two, 3 = three

1. Smoke cigarettes?
2. Drink alcohol?
3. Don't get along with their parents?
4. Have gotten into trouble at school?
5. Have gotten into trouble with police?
6. Are sexually active?
7. Parents drink or use drugs?

Aggression (Adapted from DISC-IV; Shaffer et al. 2000)

For this set of questions I will ask you whether you did it in the past 12 months:
0 = no, 1 = yes

31. Have you held someone up or attacked somebody to steal from them?
32. Have you threatened someone in order to steal from them?
33. Have you started a fire without permission?
34. Have you been physically cruel to an animal and hurt it on purpose?
35. In the past 12 months have you bullied someone?
36. Have you bullied other people besides your brother or sister?
37. Have you been in a physical fight in which someone was hurt or could have been hurt?
38. Have you started a physical fight in which someone was hurt or could have been hurt?
39. Have you hurt someone with a weapon like a bat, brick, broken bottle, knife, or gun?

APPENDIX C
ITEMS USED TO CREATE INDEXES/SCALES IN CHAPTER 4

Community Violence Exposure

In the past 12 months, how often was there:
0 = never, 1 = sometimes, 2 = often

1. A fight in your community in which a weapon like a gun or knife was used?
2. A violent argument between neighbors?
3. A gang fight?
4. A sexual assault or rape?
5. A robbery?
6. A mugging or physical assault?
7. A murder?
8. Threats?
9. Vandalism/destruction of property?
10. Harassment?

Caretaker Victimization Exposure

During the past 12 months:
0 = no, 1 = yes

1. Did you have something valuable lost or stolen?
2. Were you physically attacked or assaulted?
3. Were you threatened with a weapon, held captive or kidnapped?
4. Was another family member violent toward another family member?

Dating Violence Victimization—Adapted from Safe Dates study (Foshee 1996)

How many times has any person that you have been on a date with done the following things to you?
0 = never, 1 = once, 2 = 2-5 times, 3 = 5 or more times

1. Slapped you
2. Physically twisted your arm
3. Slammed or held you against a wall
4. Kicked you
5. Choked you
6. Pushed you
7. Grabbed you
8. Shoved you
9. Threw something at you
10. Burned you
11. Hit you with a fist

12. Hit you with a hard object
13. Beat you up
14. Assaulted you with a gun or knife

Family Warmth and Support

0 = never, 1 = sometimes, 2 = always

1. When you have problems, how often can you talk to someone in your family about it and figure out how to deal with it?
2. When you do what you are supposed to do, how often does someone in your family let you know they are pleased?
3. How often do you get asked what you think before decisions are made about family activities?
4. How often do you talk to someone in your family about things that bother you?
5. When you do something good, how often does someone in your family let you know they are proud of you?

Delinquent Peer Associations

How many of your three best friends:

0 = none, 1 = one, 2 = two, 3 = three

1. Smoke cigarettes?
2. Drink alcohol?
3. Don't get along with their parents?
4. Have gotten into trouble at school?
5. Have gotten into trouble with police?
6. Are sexually active?
7. Parents drink or use drugs?

Depressive Symptoms (Radloff 1977; See also Armenta et al. 2015)

Please tell me the number of days in the past week including today that:

0 = 0 days, 1 = 1-2 days, 2 = 3-4 days, 3 = 5-7 days

**Items reversed coded*

1. You felt happy*
2. You felt people were unfriendly
3. Your sleep was restless
4. You felt sad
5. You enjoyed life*
6. You had crying spells
7. You felt you were as good as other people*
8. You felt that people disliked you

9. You felt bothered by things that usually don't bother you
10. You thought your life had been a failure
11. You felt like not eating; your appetite was poor
12. You felt you could not get going
13. You felt lonely
14. You had trouble keeping your mind on what you were doing
15. You felt that you could not shake off the blues even with help from your family or friends
16. You felt that everything you did was an effort
17. You felt fearful
18. You talked less than usual
19. You felt depressed