

Indigenous Youth Gang Involvement

Risk Factor Pathways and Adult Consequences

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The Crime Reduction Research Program

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The CRRP is a research grant program administered and funded by the Province of British Columbia in collaboration with the Royal Canadian Mounted Police (RCMP). The CRRP is focused on investing in independent research to inform priority policing operations, policies, and programs related to public safety in British Columbia. In doing so, the CRRP also aims to foster greater collaboration between government, law enforcement, and academic experts in the field of policing and public safety.

Eligible research topics are identified on an annual basis by the BC Ministry of Public Safety & Solicitor General and the RCMP based on current and emerging provincial priorities. All grants are awarded on a merit basis by the CRRP Working Group.

Disclaimer

The statements, findings, and recommendations contained in this report have been reached independently by the authors of this report and do not necessarily reflect the views of the Province of British Columbia.

Executive Summary

Problem Area

The overrepresentation of Indigenous youth in the justice system is well-known, yet this problem has gone unresolved for several decades (LaPrarie, 2002). The attempted genocide of Indigenous Persons, forced assimilation laws, the 60s Scoop, and other macro-level structural inequalities are argued to play a direct role in this overrepresentation (Maurutto & Hannah-Moffat, 2007; Shepherd et al., 2014). Additionally, these structural factors may play an indirect role in overrepresentation by increasing the likelihood that Indigenous youth experience individual-level risk factors associated with criminal behavior. Gang involvement has received particular attention as a risk factor for Indigenous overrepresentation in the justice system. Substantial resources have been allocated to understanding pathways into gang involvement for Indigenous youth and the consequences of being involved in gangs (e.g., continued offending in adulthood).

Despite the prolific discourse surrounding Indigenous youth gang involvement, the research base to support any assertion about Indigenous youth gang involvement is surprisingly thin and often of poor methodological quality. Studies regularly make conclusions about risk factors for Indigenous youth gang involvement and their overrepresentation in gangs (e.g., National Crime Prevention Centre, 2022) despite lacking a comparison sample of (1) Indigenous youth who engage in criminal behavior but are not gang-involved and/or (2) non-Indigenous youth involved in gangs and criminal behavior. Without appropriate comparison groups, it is not possible to conclude, for example, whether a particular risk factor is specific to Indigenous youth gang involvement or just Indigenous youth involvement in offending more generally. If a comparison sample of White youth who are gang involved is not available, it is also not possible to identify *unique* pathways that may explain Indigenous overrepresentation in gang involvement. Furthermore, much of this discourse assumes that gang involvement is a priority risk factor for Indigenous youth to prevent overrepresentation in the justice system. This assumption is often made in the absence of Canadian research examining, for example, whether gang involvement predicts negative adult outcomes and whether gang involvement is a more important predictor of negative adult outcomes for Indigenous youth compared to other risk factors (e.g., substance abuse, foster care placement).

Solution

The current report uses data on 305 Indigenous youth and 467 White youth who participated in the Incarcerated Serious and Violent Young Offender Study in British Columbia, Canada. Gang involvement, dozens of other risk factors from a variety of domains (e.g., family, school, substance use, adverse childhood experiences), and negative outcomes in adulthood (e.g., offending, mortality, substance abuse) were measured across several decades. Using these data, this report addresses two main questions: (1) do the risk/need factors associated with gang involvement differ for Indigenous youth compared to White youth and (2) do the outcomes of gang involvement differ for

Indigenous youth compared to White youth. For both questions, this report investigates whether conclusions differ when examining youth from urban (e.g., Lower Mainland District) versus rural (e.g., Northern British Columbia) settings. Geographic isolation is associated with more severe offending (Jones, 2020) and therefore the consequences of gang involvement may be higher for Indigenous Persons living in less urban locations.

Key Findings

Logistic regression analyses identified several dozen risk factors that predicted youth gang involvement. Moderation analyses investigating the interaction between ethnicity and gang involvement showed that almost all of these risk factors were informative of gang involvement for both Indigenous youth and White youth. The following significant interactions were observed:

- Living with at least one parent was a protective factor against gang involvement for White youth but not for Indigenous youth.
- Leaving the family home before age 12 to go live somewhere else was a risk factor for gang involvement for White youth but not for Indigenous youth.
- Getting in trouble at school for selling drugs was a risk factor for gang involvement for Indigenous youth but not for White youth.
- More positive emotions (e.g., excited, proud) increased the likelihood of gang involvement for White youth but not for Indigenous youth.

With respect to the second research question, logistic regression analyses identified that Indigenous youth gang involvement was a significant predictor of a variety of negative outcomes in adulthood, including:

- Firearm offending, homicide offending, and receiving a Federal custody sentence.
- Negative relationships with family members in adulthood.
- Substance abuse in adulthood.

A variety of other risk factors, including foster care and early substance use, were consistently significantly stronger predictors of these negative adult outcomes. Youth gang involvement is not always the most important, and certainly not the only risk factor, that predicts negative outcomes.

Whether the Indigenous youth participant had, at the time of their initial involvement in the justice system, resided in an urban or rural context made little difference for the interpretation of findings. Some evidence was found for the conclusion that early criminal behavior is less important to joining gangs for Indigenous youth living in rural areas. Rural versus urban distinctions did not influence the impact of gang involvement on adult outcomes.

Overall, although there are many risk factors associated with gang involvement for Indigenous youth, these risk factors also predict gang involvement for White youth

and thus, as individual risk factors, cannot explain Indigenous youth overrepresentation in gangs. Indigenous youth overrepresentation in gang involvement may simply be a matter of exposure to more risk factors as opposed to being exposed to a unique type of risk factor. Indigenous youth gang involvement is an important predictor of negative outcomes in adulthood, but so too are foster care placement, substance use versatility, and maladaptive personality traits. Intervention programs should match which risk factor they intervene on with the type of outcome they are trying to prevent; foster care for preventing negative social outcomes, substance use versatility for preventing chronic offending, and gang involvement for preventing serious/violent offending. Wrap-around services should be implemented with caution given their limited evidence base (Doleac, 2019). Programs like Stop Now and Plan that have already demonstrated efficacy in reducing negative outcomes boys, girls, and youth of different ethnicities, may be an ideal means of disrupting pathways to gang involvement before risk factors accumulate and make intervention difficult.

Introduction

Even though the overrepresentation of Indigenous youth in the criminal justice system is well-known, the problem has gone unresolved for several decades (LaPrarie, 2002). The attempted genocide of Indigenous Persons, policies such as forced assimilation laws, the 60s Scoop involving the separation of Indigenous children from their family, and other macro-level structural inequalities are argued to play a direct role in the overrepresentation of Indigenous Persons in Canada's criminal justice system (Maurutto & Hannah-Moffat, 2007; Shepherd et al., 2014). Additionally, these structural factors may play an indirect role in Indigenous overrepresentation by increasing the likelihood that Indigenous youth experience individual-level risk/need factors associated with criminal behavior.

Some key questions posed by researchers are with respect to distinguishing between which individual-level risk/need factors relate specifically to criminal behavior, which relate specifically to other negative social outcomes (e.g., suicidal ideation), and whether the risk factors typically included in justice system risk assessment and screening tools actually apply to Indigenous youth (Yessine & Bonta, 2009). Addressing these questions has been made difficult because of a lack of individual-level offending data specific to Indigenous Peoples (Piquero, 2015) and a failure of researchers to perform methodologically rigorous analyses that will allow for reliable answers to these questions. There are few studies on Canadian youth involved in crime, fewer that have sufficient samples of Indigenous youth, fewer that include key risk factors that are of importance to intervention programs and policy-making (e.g., gang involvement), and even fewer that study such persons longitudinally to measure what happens after experiencing these risk factor.

Gang membership is one risk factor that is often asserted to be uniquely related to Indigenous youth. There is some evidence that Indigenous youth are more likely to join gangs than White youth in Canada (Corrado & Cohen, 2011) and substantial resources have been allocated to understanding why Indigenous youth join gangs (e.g., Public Safety Canada, 2007). However, the evidence-basis is built on a relatively shaky methodological foundation that includes a reliance on small sample sizes and a lack of comparison groups. For example, studies may observe that physical abuse history is prevalent among Indigenous youth gang members and subsequently conclude that physical abuse is an important risk factor for Indigenous youth gang involvement. There are several issues with this approach.

First, socioeconomic markers of disadvantage are disproportionately more common among Indigenous Peoples (Maurutto & Hannah-Moffat, 2007; Shepherd et al., 2014) and therefore, without appropriate comparison groups, it is unclear as to whether physical abuse is a risk factor unique to Indigenous youth gang members, Indigenous youth involved in criminal behavior, or Indigenous youth in general. Second, if the goal is to understand why *overrepresentation* in gang involvement exists for Indigenous youth, it is necessary to understand whether there are *unique* risk factors for Indigenous youth gang involvement. As demonstrated by McCuish and Corrado (2018), while substance use,

family adversity, and school attendance were significant risk factors for chronic offending, when a moderation analysis was performed, it was revealed that, for example, while not attending school is a risk factor for chronic offending among White youth, it does not increase the likelihood of chronic offending for Indigenous youth, even though Indigenous youth were more likely to not attend school compared to White youth. **The lesson learned here is that a risk factor being more common for Indigenous youth does not imply that it necessarily is a risk factor for *specific* outcomes, including gang involvement.** Third, the belief that Indigenous youth are disproportionately involved in gangs and that gang involvement increases risk for offending often is based on reports of prison-based gangs in Canadian correctional facilities (Corrado & Cohen, 2011). Such studies are more informative of how people adapt to prison contexts. They cannot inform as to whether Indigenous youth are more likely to join gangs in the community, nor are they informative of offending upon community re-entry.

A further concern is an assumption that knowing whether an Indigenous youth is gang involved offers important information about their future risk. Substantial resources are given to helping understanding pathways to gang involvement without basing decisions about the allocation of resources on whether there is evidence that gang involvement leads to worse outcomes than other risk factors (e.g., substance abuse, foster care placement). It is possible that Indigenous overrepresentation in the justice system persists because interventions are focusing too much on gang involvement and not enough on the factors in adolescence that are most informative of negative outcomes in adulthood.

There is also a tendency to treat Indigenous Persons as a homogenous group. Exposure to urban versus rural settings may have important implications for Indigenous youth pathways to offending, including the types of risk factors experienced and the influence of these risk factors on offending outcomes in adulthood (Fitzgerald & Carrington, 2008). Distinguishing between urban and rural settings is important for developing more precise crime prevention strategies (Posick & Rocque, 2017) but this line of analysis has been ignored in Canadian research on Indigenous youth involved in gang activity and crime. Geographic isolation is associated with more severe offending (Jones, 2020) and therefore the consequences of gang involvement may be disproportionately high for Indigenous Persons living outside the Lower Mainland District of British Columbia.

In sum, there are three questions that are important to resolve: (1) are pathways into gang involvement unique for Indigenous youth such that unique intervention strategies are also required and (2) does youth gang involvement lead to worse outcomes in adulthood, and (3) do the answers to these questions vary depending on exposure to urban versus rural contexts? There is a fairly substantial body of research reviewing risk factors for Indigenous youth offending (Corrado & Cohen, 2011; Grekul & LaBoucane-Benson, 2006; Public Safety Canada, 2007; Yessine & Bonta, 2009). This includes a report commissioned by the BC government specifically to learn about the risk/needs factors of Indigenous youth (First Nations Education Steering Committee, 2021). The current report will not duplicate these efforts by repeating a review of the literature. In fact, a major concern that is raised by this report, and something that has been discussed for several

years but gone unaddressed (see McCuish & Corrado, 2018), is that the research discussed by these commissioned literature reviews lacks reliability and is poorly-suited to addressing questions about Indigenous overrepresentation in the justice system, especially when it comes to the narrower focus on Indigenous youth gang involvement. As a consequence, these reports, while thorough, are reviewing research that it often not capable of directly answering the questions that are of interest to policymakers, stakeholders, and analysts.

Report Aims

Consideration was given as to whether this research should be conducted in the first place. Indigenous scholars have advocated for the return of their right to self-government. This includes autonomy over their legal system, which may include the abandonment of risk assessment and expression of probabilities of offending and other positivistic determinations of community risk (McGuire & Murdoch, 2022). In the absence of any clear intention of Canadian governments to return justice system sovereignty to Indigenous Persons, it is critical that Canada's approach to addressing Indigenous overrepresentation in the justice system involves a more precise understanding of which individual-level factors (a) are actually more likely to occur among this population and (b) are actually influencing involvement in criminal behavior.

An overarching aim of this report is to avoid duplicating past literature reviews (see First Nations Education Steering Committee, 2021) and instead focus on contributing to the small body of research seeking to reliably address empirical questions of relevance to policymakers and justice system professionals interested in the prevention and treatment of Indigenous youth gang involvement. Two main questions will be addressed: (1) do the risk/need factors associated with gang involvement differ for Indigenous youth compared to White youth and (2) do the outcomes of gang involvement (e.g., degree of involvement in chronic, serious, and violent offending, mortality) differ for Indigenous youth compared to White youth. Both questions are addressed while giving attention to potential differences across urban (e.g., Lower Mainland District) versus rural (e.g., Northern British Columbia) settings. The analyses in this report address these questions using data on 772 youth from the ISVYOS. The sample includes 305 Indigenous youth and 467 White youth. Among the full sample, 203 participants reported regular gang activity. Thus, the current study has sufficient base rates of gang activity to address the questions posed. The sample is large and includes relevant comparison groups of other youth in the justice system who are not gang-involved. A more detailed description of this sample is given below.

Methodology

Sample

Data were used from the Incarcerated Serious and Violent Young Offender Study (ISVYOS), which has been ongoing in British Columbia, Canada since 1998. As part of this study, adolescent offenders (age 12-19) were interviewed in open and secure custody facilities throughout the province. The ISVYOS consists of two cohorts, one of which was sampled at the time that Canada's *Young Offender Act* represented the federal legislation in charge of youth justice, the second of which was sample at the time that Canada's *Youth Criminal Justice Act* represented the federal legislation in charge of youth justice. Participants from Cohort I were excluded from the sample as they did not receive questions about gang involvement. Participants who self-reported being part of a non-Indigenous Ethnic minority group (e.g., Black, East Asian) were also excluded. The final sample used in the current study included 772 youth, including 305 Indigenous youth and 467 White youth.

Procedure

The study received research ethics approval from the Ministry of Children and Family Development (MCFD) as well as the Simon Fraser University Research Ethics Board. Youth assented to participate after they were informed of the study's purpose, how information would be collected (e.g., interview and file information), and that all information would be kept confidential apart from direct threats against themselves or someone else. Participants were told that their involvement or non-involvement would not affect court outcomes, nor would it affect their stay in custody. RAs interviewed participants in an isolated interview room away from their living unit, other youth, and custody staff. Access to file information prior to interviews ensured that RAs were aware of discrepancies between interview responses and official records. After collecting interview data, to learn about adult outcomes, including offending, social environment, and mortality, the ISVYOS research team used CORNET to search the CS#s associated with participants. Participants in this study were an average age of 29.88 ($SD = 2.25$) at the most recent wave of data collection. Specific measures, including the data that were coded from CORNET, are described below.

Measures

Gang Involvement. Gang involvement was measured based on responses to four questions included in the ISVYOS intake interview that pertained to gang activity: (1) Have you ever taken part in a teens' group (gang) fight?, (2) In general, do you get in fights that are gang-related?, (3) In general, do you get into fights in custody that are gang related?, and (4) What do you feel led you towards involvement in crime - Protection through gang membership? To simplify the interpretation of analyses, youth who answered in the affirmative to at least three of these questions were considered to demonstrate a high level of gang involvement (26.3% of the sample). The coding approach ensured that the measure of gang involvement was not watered down by involvement in relatively

innocuous youth peer group antisocial behavior. For example, nearly two-thirds of the sample answered in the affirmative to at least one question regarding gang involvement.

Despite common assumptions about Indigenous youth being overrepresented in gangs (e.g., Corrado & Cohen, 2011; Grekul, J. & LaBoucane-Benson, 2006; Public Safety Canada, 2007), in the current study, Indigenous youth were not significantly more likely to be gang involved compared to White youth. Only 25.9% of Indigenous youth self-reported gang involvement compared to 26.6% of White youth ($\chi^2 [1] = 0.04, p = .841$). Importantly, it should be recognized that this is a sample of incarcerated youth. It is possible that these findings differ when looking at community-based samples. However, in British Columbia, among the highest risk youth, the likelihood of gang involvement does not vary between Indigenous youth and White youth.

Urban Versus Rural Environment. To focus on the location in which Indigenous youth resided in, we relied on postal code history from CORNET to extract the location a participant lived in at the time of their earliest involvement in the justice system. For the purpose of these analyses, it was not possible to examine, for example, changes in location from urban to rural contexts or vice-versa. A relatively simplistic measure was used that began by defining urban contexts as those in the Greater Vancouver Regional District (e.g., Vancouver, Burnaby, Surrey), those that were on the border of the GVRD (e.g., Chilliwack, Abbotsford, Squamish), cities on Vancouver Island and the Okanagan (e.g., Victoria, Nanaimo, Kelowna) and towns that were on the border of these cities (e.g., Duncan, West Kelowna). Prince George was included as an urban location. All other locations in British Columbia were treated as rural locations. In total, among 321 Indigenous youth who had data available, 22.1% ($n = 71$) were identified as living in a remote location.

Family Circumstances. A negative family environment can play an important role in pushing youth into gangs, especially if this family environment lacks the types of supervision or positive reinforcement that can prevent gang involvement (Catalano & Hawkins, 1996). Family circumstances may be especially salient for Indigenous youth given the cultural importance of family, especially extended family (Whitbeck et al., 2014). Family circumstances included measures of whether the participant was living with both biological parents at the time of their incarceration (8.9% of the sample), whether participants had been placed in foster care (62.6%), and whether they ever had left home to go live somewhere else before age 12 (17.2%). A family dysfunction scale was also created ($M = 3.24$; $SD = 1.71$) that measured the sum of six items regarding whether a family member experienced any of the following: (1) problem with alcohol, (2) problem with drugs, (3) history of physical abuse, (4) history of sexual abuse, (5) criminal record, or (6) mental illness. A 19-item scale ($M = 11.86$; $SD = 5.02$) was also included that identified the number of different ways that a participant got into trouble at home (e.g., coming home late, drinking, lying, having weapons in the home).

School Circumstances. Schooling can offer a means of staying out of gangs through connections to prosocial peers. It is also possible that negative behavior at school, or

being asked to leave school, creates the opportunity to be recruited into gangs, especially if the failure to attend school gives persons more unstructured free time (Catalano & Hawkins, 1996). Measures of school circumstances used in the current report included whether the participant was attending school prior to incarceration (43.8%) and whether they ever had been expelled (70.1%). A scale measuring the number of different types of behaviors participants got into trouble at school before the age of 12 was also created ($M = 4.02$; $SD = 3.49$). Finally, participants were also asked about the number of different times they changed schools ($M = 5.57$; $SD = 5.65$).

Substance Use. Substance use can be a pathway into gang involvement either through connection to gang members through shared drug use or as part of the interaction between drug user and drug seller (i.e., gang member) (Howell & Egley, 2005). Drug debts or the need to earn money for drugs can also influence gang involvement. Almost all participants used at least one type of drug and thus it was necessary to not simply measure whether substance use was present or absent. To capture use of more serious forms of substances, street drug use was defined as the use of at least one of heroin, crack cocaine, or crystal methamphetamine (52.0%). A substance use versatility scale based on the number of different types of drugs used before age 12 included the sum of 9 different types of substances: alcohol, marijuana, ecstasy, hallucinogens, cocaine, crack cocaine, heroin, crystal methamphetamine, and prescription pills ($M = 1.06$; $SD = 1.16$). The focus was on drug use prior to age 12 to help establish temporal order between substance use and gang involvement. To capture substance abuse, we used the Massachusetts Youth Screening Instrument (MAYSI) substance abuse scale that included eight items (e.g., "Have you done anything you wish you hadn't, when you were drunk or high?") ($M = 5.23$; $SD = 2.28$).

Antisocial Behavior. Like the measure of substance use versatility, focus was on antisocial behavior occurring before age 12 in order to help avoid measuring behaviors that may be a consequence of gang involvement as opposed to a risk factor for gang involvement. The pathway for antisocial behavior to gang involvement aligns with Thornberry et al.'s (1993) description of how individuals can be 'selected' into gang involvement because they demonstrated to fellow gang members their capacity to engage in crime. Participants were asked if they had ever been in trouble for selling drugs (30.9%). Two scales were used to capture the degree of aggressive behavior ($M = 2.19$; $SD = 2.47$) and general offending versatility ($M = 1.16$; $SD = 1.74$) engaged in prior to age 12. A general measure of delinquent behavior engaged in over participants' lifetime (up to the intake interview) was also included ($M = 9.38$; $SD = 3.34$).

Adverse Childhood Experiences. Difficulties in childhood can create a sense of unbelonging and lack of positive, prosocial ties to others. This in turn may lead to gang involvement (Howell & Egley, 2005). Dichotomous indicators of adverse childhood experiences included whether participants had ever experienced physical abuse (48.1%) and whether they had ever experienced sexual abuse (14.2%). The Conflict Tactics Scale (CTS) was used to measure the degree to which the participant and their parent interacted negatively (e.g., parent hit child; child hit parent; $M = 17.20$; $SD = 13.63$). The CTS was also

used to measure the degree to which the participant was exposed to negative interactions between their parents (e.g., mother hit father; father hit mother; $M = 13.39$; $SD = 14.97$). Finally, the MAYSI Trauma subscale was used to measure early traumatic experiences (e.g., "Have you ever in your whole life had something very bad or terrifying happen to you?"; $M = 2.64$; $SD = 1.54$).

Psychopathology. Typically, mental health is not examined as a risk factor for gang involvement because gang involvement is often assumed to be a social phenomenon (e.g., Thrasher, 1927). However, certain aspects of personality (e.g., a positive self-identity) may be protective against gang involvement. Other factors, like psychopathy, have been proposed as risk factors for gang involvement. To explore the role of psychopathology, a positive self-identity was measured using the 15-item Schneider (1990) Good Citizen Scale ($M = 69.14$; $SD = 10.29$) where participants were asked, for example, to report on a scale from 1-7 whether they felt "bad" or "good". Two scales from the MAYSI were used to assess angry/irritable attitudes (e.g., "Have you felt angry a lot?"; $M = 5.05$; $SD = 2.74$) and the degree of anxiety/depression experienced by participants (e.g., "Have you felt like life was not worth living?" $M = 2.62$; $SD = 2.64$). The Millon Adolescence Clinical Inventory Psychopathy Content Scale was used to measure psychopathy (e.g., "I sometimes scare other kids to get them to do what I want"; $M = 12.57$; $SD = 3.44$). Finally, two subscales from the Positive and Negative Affect Scale (PANAS) were used to measure the degree of positive (e.g., "I generally feel active"; $M = 31.47$; $SD = 8.63$) and negative emotions (e.g., "I generally feel afraid" $M = 21.06$; $SD = 7.61$) experienced by participants.

Adult Offending Outcomes. Adult offending outcomes were measured using official data stored on a software system, CORNET, which contains information on an offender's movement in and out of custody as well as the exact criminal offense, date of conviction, and sentence type received. CORNET data were used to code, for each year of age, the number of and types of convictions incurred, and the number of days spent in custody. This information was used to perform a trajectory analysis that modeled the number of convictions per year of age between ages 12-29 (i.e., the average age of participants at the most recent wave of data collection). Time incarcerated was accounted for as an exposure variable.

The outcome of the trajectory analysis¹ (shown in Figure 1) resulted in a four-group trajectory model in which two trajectories (slow rising persistent and high rate persistent) resembled patterns of chronic offending. Membership in a chronic offending trajectory (35.3% of the sample) was used as the key outcome of interest to capture whether gang members were more likely to show a pattern of persistent offending. However, it is also possible that gang members are more likely to engage in more serious forms of offending

¹ Although a seven-group solution had BIC values closest to zero of the eight models tested, when moving from a five-group solution to a six-group solution, as opposed to an additional trajectory with unique shape, there were simply two trajectories of nearly identical shape and height. The model demonstrated excellent classification accuracy, with posterior probabilities ranging from .92 to .98, indicating excellent classification accuracy; Nagin, 2005).

and not just engage in frequent offending (McCuish et al., 2015). This was captured through measures of whether participants committed, in adulthood, a homicide offense (4.8%), a firearm offense (23.7%), an offense or offenses resulted in incarceration in a Federal penitentiary (14.3%), or were placed on the High-Risk Offender Identification Program (HROIP; 3.5%).

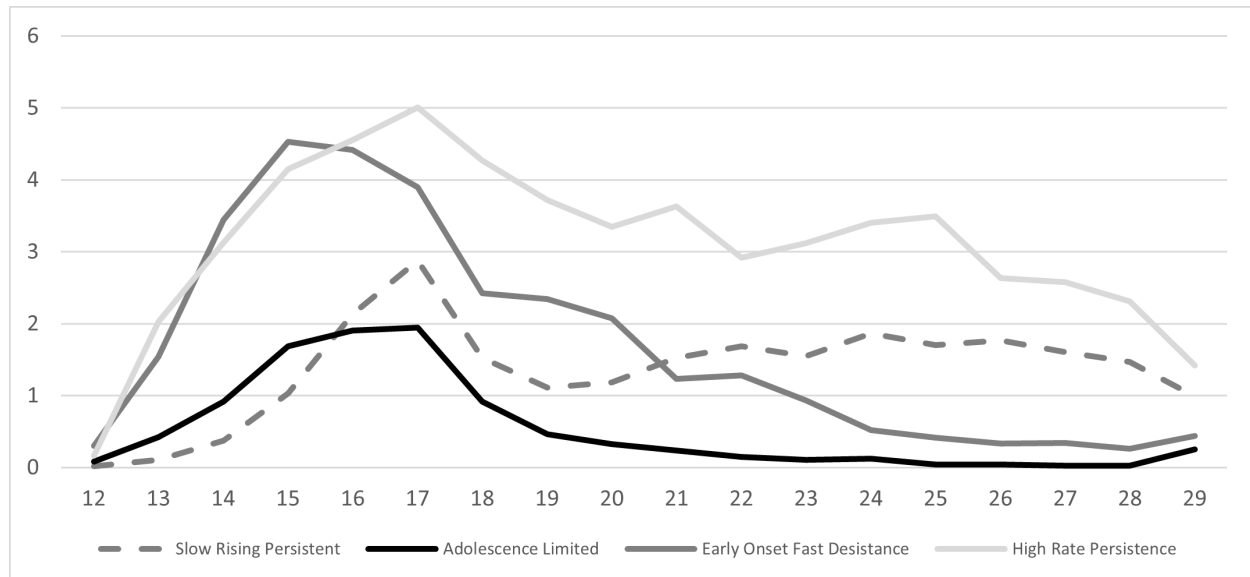


Figure 1. Trajectory model for the sample of Indigenous and White Participants. Note: The X-axis displays the age of participants. The Y-axis displays the average number of convictions for a given trajectory.

Adult Health Outcomes. Especially based on media coverage, gang involvement appears to be characterized by a risky lifestyle that increases the likelihood of early mortality. However, this question has not been empirically addressed, especially when it comes to whether this outcome is unique to Indigenous youth gang involvement. CORNET records combined with media articles and information passed down from justice system professionals were used to code whether an ISVYOS participant was deceased (8.6%). The percent of deceased participants was not large enough to examine individual types of cause of death (e.g., homicide). Data from the CRNA were also used to examine whether a participant's probation officer identified them as having issues with substance abuse (38.0%). Given gang member involvement in the drug trade (McConnell, 2015), reports on youth gang involvement have raised the possibility that youth gang members will be more likely to have substance abuse issues (e.g., Public Safet Canada, 2007).

Adult Social Outcomes. Gang involvement is thought to result in cumulative disadvantage by mortgaging the future in ways that make adult outcomes less positive (Sampson & Laub, 1997; Thornberry et al., 1993). Being involved in a gang is anticipated to cut persons off from positive/prosocial sources of support. This idea, including whether it applies specifically to Indigenous youth gang involvement, was directly tested in the current study. The Community Risk-Need Assessment (CRNA) was used to measure participants' social environment in early adulthood (i.e., between ages 18-25). The CRNA is a structured

assessment tool developed to reflect the risk-need-responsivity model and the central eight risk factors (Bonta & Andrews, 2007). The CRNA includes five items (family relationships, intimate relationships, living arrangements, employment, and academic/vocational skills) scored on a four-point scale that were used to construct a measure of informal social control in the adult lives of ISVYOS participants. Items are rated based on the degree of positive influence they have on an individual's path to desistance, which aligns with recent conceptualizations of informal social control (Laub & Sampson, 2003; Nguyen & Loughran, 2018). Very rarely were participants given the most positive score on any given item. Accordingly, the CRNA items were dichotomized so that a value of one represented no problems in the participant's life and a value of zero indicated that the item in question was causing interference in their pathway to desistance. Even still, positive outcomes were rare when it came to family relationships (30.9%), living arrangements (40.6%), intimate partners (12.3%), academic/vocational skills (45.8%), and employment (38.9%).

Analytic Strategy

Logistic regression analyses were used to address all aims of this report. Logistic regression is used when the dependent variable is binary (e.g., present or absent). For the analyses addressing the first aim of this report gang involvement is the dependent variable. In these analyses, odds ratios indicate, for example, the difference in odds of gang involvement for Indigenous youth compared to White youth. For the analyses addressing the second aim of this report, the dependent variable is a binary indicator of various negative criminal, social, and health outcomes.

To give an example of how to interpret odds ratios, suppose that three of 10 Indigenous youth are gang members, and four of 10 White youth are gang members. If you are an Indigenous youth, the probability of gang involvement is 0.3 and the probability of non-gang involvement is 0.7. For White youth, the probability of gang involvement is 0.4 and the probability of non-gang involvement is 0.6. Thus, the odds of gang involvement for Indigenous youth are $0.3/0.7 = .429$ and the odds of gang involvement for White youth are $.667$. The odds ratio is calculated as $.429/.667 = 0.64$. Any odds ratio of less than one indicates that the outcome of interest (i.e., gang involvement) is less likely to occur for our group of interest (i.e., Indigenous youth) compared to our reference category (i.e., White youth). Thus, in this *hypothetical* scenario, the odds of Indigenous youth gang involvement are lower than the odds of White youth gang involvement. More precisely, Indigenous youth are $(1-.64)$ 36% less likely to be gang involved compared to White youth.

Interaction analyses help indicate whether the influence of a risk factor on an outcome (e.g., family adversity on gang involvement) varies as a function of a third factor (e.g., ethnicity). In the Figure below, the Y-axis represents the probability of an outcome occurring (e.g., gang involvement) and the X-axis indicates the risk factor of interest (e.g., whether drug use is present or absent). Taken together, the intersection of the X-axis and Y-axis shows whether the probability of gang involvement varies based on whether drug use is present or absent. The colored shades of the graph indicate the probability of gang

involvement given drug use for a specific group (e.g., Indigenous youth). This allows for a comparison of whether the probability of gang involvement for someone who uses drugs varies depending on their ethnicity.

An example of how to interpret an interaction analysis is shown in Figure 2 below. The top panel shows that the probability of gang involvement for Indigenous male youth (red line, left side) is about .3 and the probability of gang involvement for Indigenous female youth (red line, right side) is about .12. These two probabilities are essentially the same for White youth (blue line). The overlapping confidence intervals (shown by the red shaded areas for Indigenous youth and blue shaded area for White youth) allows for the conclusion that there is not significant differences in the relationship between gender and gang membership across White and Indigenous youth. This indicates that being male compared to being female increases the odds of being gang involved compared to not gang involved and that this is true for both Indigenous youth and White youth. The bottom panel shows how things play out over each year of age. For both Indigenous youth and White youth, the probability of gang membership is slightly higher at younger ages compared to older ages.

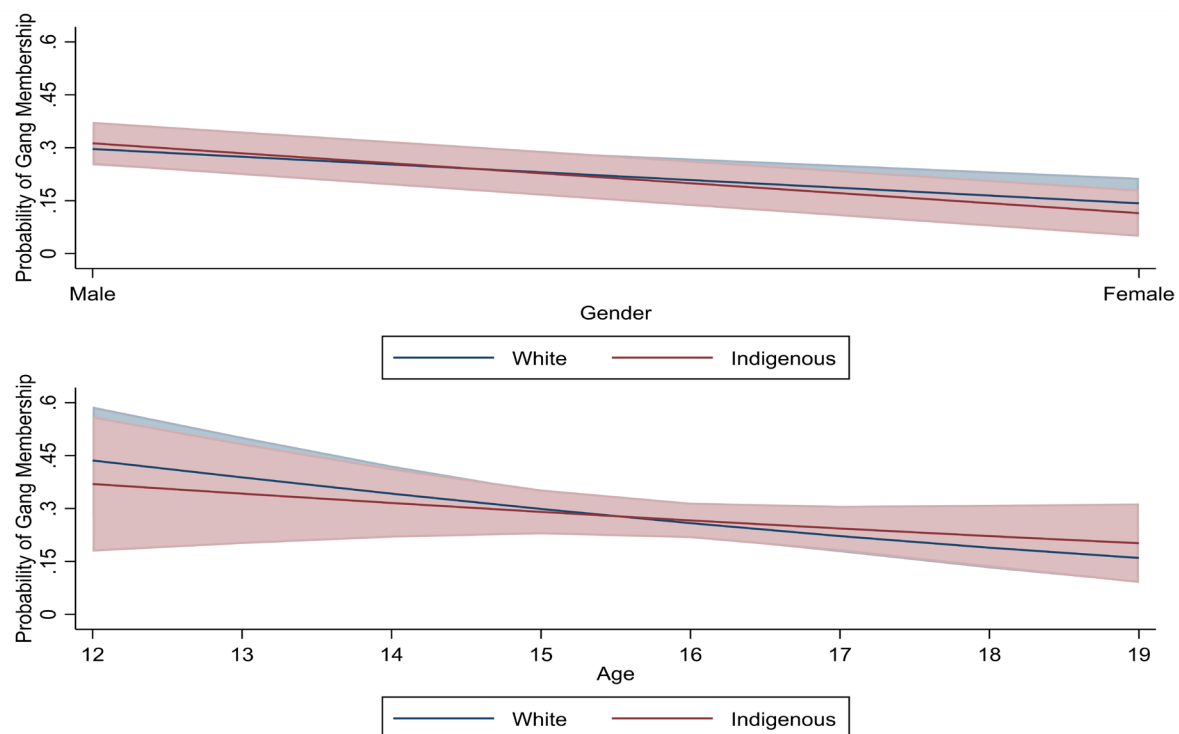


Figure 2. Example of non-significant interaction terms. Note: The top panel shows an interaction term between gender and ethnicity. The bottom panel shows an interaction term between age and ethnicity.

The Receiver Operating Characteristic (ROC) Curve allows for a determination of the magnitude of the effect that a particular risk factor has on an outcome. The ROC Curve indicates how sensitive and specific the model is. Sensitivity indicates the true positive rate (i.e., the outcome predicted to happen actually happened) and specificity indicates the

true negative rate (i.e., the outcome predicted to not happen did not happen. The area under the curve (AUC) value indicates how well a statistical model distinguishes between the outcome occurring/not occurring. AUC values of .556 and greater generally indicate small effect sizes, values of .639 or greater indicate moderate effect sizes, and values of .714 or greater indicate large effect sizes (Rice & Harris, 1995). AUC values were used to help identify, for example, which risk factors were most strongly related to gang involvement. AUC values are more informative of the overall strength of the relationship between an independent variable and dependent variable compared to an odds ratio as the latter is influenced by the scale of the independent variable of interest (e.g., odds ratios will generally be smaller for independent variables with a wider range of possible values).

Research Aim #1: Risk Factors for Gang Involvement across Indigenous and White Youth

What is known about risk factors for gang involvement mostly comes from community-based studies conducted in the United States. These American studies identified neighborhood, family, school, peer, and individual-level risk factors that increased the probability of gang involvement (Howell & Egley, 2005). However, because of historical differences between Canada and the United States, especially in terms of justice system principles (Lussier et al., 2022), US-based research may not generalize to gang involvement in Canada (McConnell, 2015). This is especially true for Indigenous gang involvement given the unique impact of colonialism, attempted genocide of Indigenous Persons and their culture, the 60s Scoop, and the current overrepresentation of Indigenous youth in foster care (Corrado & Cohen, 2011; Preston et al., 2012; Yang et al., 2022). Structural inequalities in Canada that result in individual-level differences in access to resources and barriers to services may be especially important to understanding why Indigenous persons appear overrepresented in gangs based on prison-based surveys (e.g., Corrado & Cohen, 2011). There is a need for structural-level changes that do more to, for example, provide greater autonomy to Indigenous groups. However, these types of macro-level changes do not happen swiftly, and thus parallel to this need for structural change is a need for understanding of how to address individual-level risk/need factors for gang involvement.

Canadian research has had difficulties reliably identifying risk/need factors influencing Indigenous youth gang involvement. This is because the extant research tends to rely on small samples, lacks control groups, and relies on bivariate analyses. For example, Grekul and LaBoucane-Benson (2008) reported that Indigenous gang involvement was associated with a high prevalence of a wide range of difficult life circumstances. However, they failed to clarify whether these risk factors were also highly prevalent among (a) White persons involved in gangs and (b) Indigenous persons not involved in gangs. It is difficult to elucidate what the specific needs of Indigenous youth gang members are when studies fail to examine whether risk/need factors common to Indigenous youth are also common among non-Indigenous youth. If these needs are also common to, for example, White

gang members, then such risk factors cannot explain why Indigenous youth are overrepresented in gangs (Corrado & Cohen, 2011).

In general, studies included in reviews of risk factors for Indigenous gang involvement (e.g., First Nations Education Steering Committee, 2021) lacked the ability to make conclusions about which risk factors were specific or unique to *Indigenous* youth gang involvement. What these studies do is either (a) report on risk factors for gang involvement in general or (b) report on risk factors based on studies that focused specifically on Indigenous youth. Neither of these approaches can make conclusions about which risk factors are *unique* to Indigenous youth gang involvement. Thus, these studies should not be used to make conclusions about whether unique programs are required to prevent gang involvement for Indigenous youth.

Making conclusions about the uniqueness of a risk factor for gang involvement requires comparing Indigenous youth to a reference group from another ethnicity (e.g., White youth). It is also necessary to control for other demographic characteristics (e.g., gender, age) since these can vary between Indigenous youth and youth from other ethnicities who are in conflict with the law. Finally, interaction analyses, sometimes referred to as moderation analyses, are needed to examine whether a particular risk factor is related to gang involvement specifically for White youth, specifically to Indigenous youth, or applicable to both groups. If the main effect of a particular risk factor is a significant predictor of gang involvement but the interaction term (e.g., ethnicity*drug use) is not significant, then the risk factor applies to both ethnic groups. If the interaction term is significant, then it is necessary to view the figures below to see for which group the risk factor applies to in terms of predicting gang involvement.

For conceptual clarity we divide out measures into the following categories: demographic characteristics, family circumstances, school circumstances, substance use, antisocial behavior, adverse childhood experiences, and psychopathology. Each Table shows models that control for gender and age. Figures only show the interaction terms that were significant. We then examine whether our findings vary depending on whether the Indigenous young person resided in a rural or urban area of British Columbia.

Demographic Characteristics and Gang Involvement

Table 1 shows that a one-unit increase in age *decreases* the odds of being gang-involved by 19% ($1.00 - .81 = .19$). Thus, being younger increases the likelihood of gang involvement. This finding likely represents the fact that persons who are incarcerated at a younger age tend to be at a higher risk of future offending. The interaction term (Age*Ethnicity) was not significant, which means that the relationship between age and gang involvement was true for both Indigenous youth and White youth. Table 1 also shows that the odds of being gang involved compared to not gang involved were approximately 61% lower ($1.00 - .39$) for girls compared to boys, which is consistent with the literature on gang involvement. As with age, the interaction term was not significant.

Table 1. Logistic Regression Analyses of Demographic Characteristics Predicting Youth Gang Involvement. Note: Each covariate examined in a separate model that controls for age, gender, and ethnicity. OR = odds ratio. AUC = Area Under the ROC Curve.

	OR (95% C.I.)	AUC Value
Age Model		
Age	.81 (.70–.95)*	
Age*Ethnicity	1.09 (.84–1.41)	0.615
Gender Model		
Female Participant	.39 (.21–.74)**	
Gender*Ethnicity	.72 (.28–1.88)	0.613

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

Family Circumstances and Gang Involvement

The family context is especially valued within Indigenous cultures (Sittner & Hautala, 2016). Familial factors may be particularly important to examine across ethnicity given that there are marked family structure differences between Indigenous and White youth, with Indigenous youth being more likely to have the extended family play a larger role in social upbringing (Whitbeck et al., 2014). Table 2 shows that the odds of being gang involved compared to not gang involved were approximately 70% lower (1.00-.30) for youth who were living with both their biological parents compared to youth who were not living with both parents. Additionally, the odds of being gang involved compared to not gang involved were significantly higher for each of the foster care, leaving home before age 12 to go and live somewhere else, and family dysfunction models. The AUC values indicate that among each of the four models, the model for leaving home before age 12 had the strongest relationship with gang involvement (AUC = .677).

Table 2. Logistic Regression Analyses of Family Circumstances Predicting Youth Gang Involvement. Note: Each covariate examined in a separate model that controls for age, gender, and ethnicity. OR = odds ratio. AUC = Area Under the ROC Curve.

	OR (95% C.I.)	AUC Value
Living Situation Model		
Living with Parents	.30 (.11–.78)*	
Living with Parents*Ethnicity	4.46 (1.19–16.74)*	0.629
Foster Care Model		
Foster Care	1.60 (1.02–2.49)*	
Foster Care*Ethnicity	.83 (.39–1.75)	0.638
Left Home Model		
Left Home Before Age 12	3.46 (2.05–5.81)***	
Left Home Before Age 12*Ethnicity	.40 (.17–.97)*	0.677
Family Dysfunction Model		
Family Dysfunction Scale	1.23 (1.08–1.41)**	
Family Dysfunction Scale*Ethnicity	.96 (.77–1.19)	0.638

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

Importantly, interaction terms were significant for the living situation model and the left home model. Figure 3 shows that living with both biological parents helped reduce the probability of gang involvement for White youth. However, this measure did not protect against gang involvement for Indigenous youth. Specifically, regardless of whether Indigenous youth did or did not live with their biological parents, their odds of gang membership were similar. The same finding was observed when looking at the risk factor measuring leaving home before age 12. While this factor significantly increased the odds of gang membership for White youth, it did not increase the odds of gang membership for Indigenous youth. One possible interpretation of this finding is that living in the immediate family home is not as important for Indigenous youth because, at least in some Indigenous cultures, the extended family plays a large role in child-rearing (Whitbeck et al., 2014).

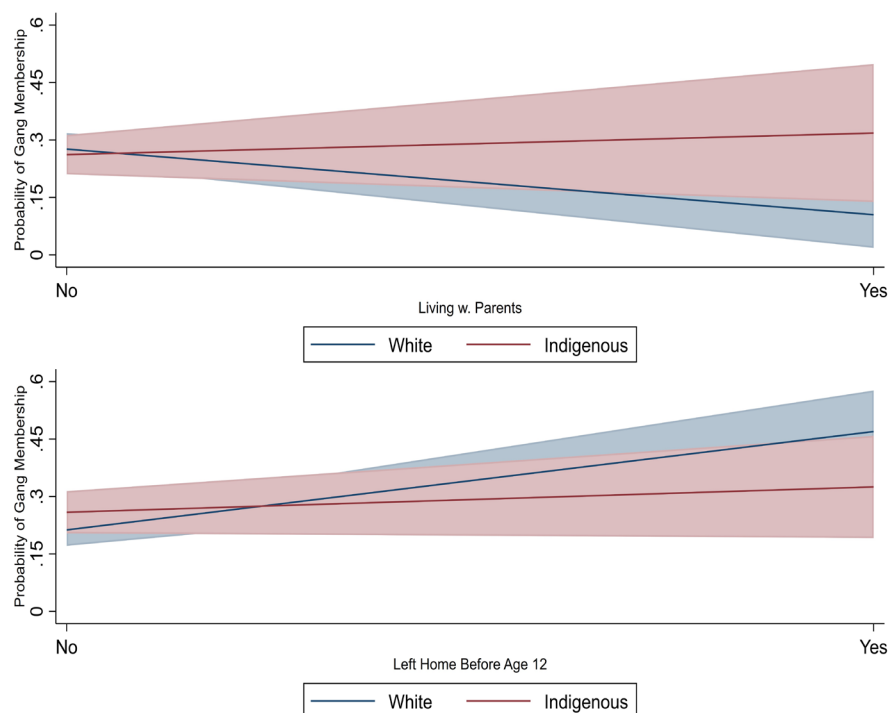


Figure 3. Significant Interaction Terms for Family Circumstances Models. Note: The top panel shows an interaction term between living with parents and ethnicity. The bottom panel shows an interaction term between leaving home before age 12 and ethnicity.

School Circumstances and Gang Involvement

Table 3 shows that attending school had no relationship to gang involvement. However, the odds of being gang involved compared to not gang involved were approximately 214% higher for youth who were expelled from school, 117% higher for each one-unit increase in the number of school behavior problems prior to age 12, and 105% higher for each one-unit increase in the number of times the participant changed schools. The AUC values

indicate that early school behavior problems had the strongest relationship to gang involvement (AUC = .685). None of the interaction terms were significant.

Table 3. Logistic Regression Analyses of School Circumstances Predicting Youth Gang Involvement. Note: Each covariate examined in a separate model that controls for age, gender, and ethnicity. OR = odds ratio. AUC = Area Under the ROC Curve.

	OR (95% C.I.)	AUC Value
School Attendance Model		
Attending School	1.06 (.69–1.62)	.610
Attending School*Ethnicity	1.08 (.55–2.12)	
School Expulsion Model		
Expelled from School	2.14 (1.28–3.57)**	.671
Expelled from School*Ethnicity	2.30 (.93–5.73)	
Early School Behavior Problems Model		
Early School Behavior Problems	1.17 (1.09–1.24)***	.685
Early School Behavior Problems*Ethnicity	.98 (.89–1.08)	
School Change Model		
Number of School Changes	1.05 (1.01–1.09)*	.629
Number of School Changes*Ethnicity	.98 (.93–1.04)	

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

Substance Use and Gang Involvement

Table 4 shows that the odds of being gang involved compared to not gang involved were approximately 1.66 times higher for each one-unit increase in the early substance use versatility scale, which measured the number of different types of illicit substances used prior to age 12. Street drug use was unrelated to gang involvement. The MAYSI scale measuring substance use problems indicated that a one-unit increase on this scale increased the odds of being gang involved compared to not being gang involved by 121%. The AUC value was largest for the early substance use versatility model (.680). None of the interaction terms were significant.

Table 4. Logistic Regression Analyses of Substance Use Predicting Youth Gang Involvement. Note: Each covariate examined in a separate model that controls for age, gender, and ethnicity. OR = odds ratio. AUC = Area Under the ROC Curve.

	OR (95% C.I.)	AUC Value
Substance Use Versatility Model		
Early Substance Use Versatility	1.66 (1.36-2.02)***	.680
Early Substance Use Versatility*Ethnicity	.81 (.61-1.08)	
Street Drug Use Model		
Street Drug Use	1.51 (.98-2.30)	.634
Street Drug Use*Ethnicity	1.18 (.60-2.33)	
MAYSI Substance Use Problems Model		
MAYSI Substance Use Problems	1.21 (1.07-1.37)**	.666
MAYSI Substance Use Problems*Ethnicity	1.05 (.86-1.29)	

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

Antisocial Behavior and Gang Involvement

Table 5 shows that the odds of being gang-involved compared to not being gang-involved significantly increased for each one-unit increases on the early aggression versatility, early self-reported offending versatility, and self-reported delinquency models. The odds of being gang involved compared to not being gang-involved were 2.86 times higher for those who reported selling drugs at school compared to those who did not report such behavior. The self-reported delinquency model had the highest AUC value (.740).

Table 5. Logistic Regression Analyses of Antisocial Behavior Predicting Youth Gang Involvement. Note: Each covariate examined in a separate model that controls for age, gender, and ethnicity. OR = odds ratio. AUC = Area Under the ROC Curve.

	OR (95% C.I.)	AUC Value
Early Aggressive Behavior Model		
Early Aggression Versatility	1.28 (1.18–1.39)***	.702
Early Aggression Versatility*Ethnicity	.96 (.84–1.11)	
Early Self-Reported Offending Model		
Early Offending Versatility	1.30 (1.16–1.47)***	.676
Early Offending Versatility*Ethnicity	1.00 (.83–1.21)	
Self-Reported Delinquency Model		
Self-Reported Delinquency	1.34 (1.23–1.47)***	.740
Self-Reported Delinquency*Ethnicity	.96 (.83–1.10)	
Drug Dealing Model		
Selling Drugs at School	2.86 (1.86–4.41)***	.718
Selling Drugs at School*Ethnicity	2.36 (1.15–4.88)*	

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

Importantly, the interaction term in the drug dealing model was also significant. Figure 4 shows that the probability of gang membership for those who did not get in trouble for selling drugs at school was similar across Indigenous youth and White youth. However, Indigenous youth who were in trouble for selling drugs at school were significantly more likely to be gang-involved compared to White youth who were in trouble for selling drugs in school. One possible interpretation of this finding is that the label of “drug dealer” has a more severe impact on Indigenous youth compared to White youth.

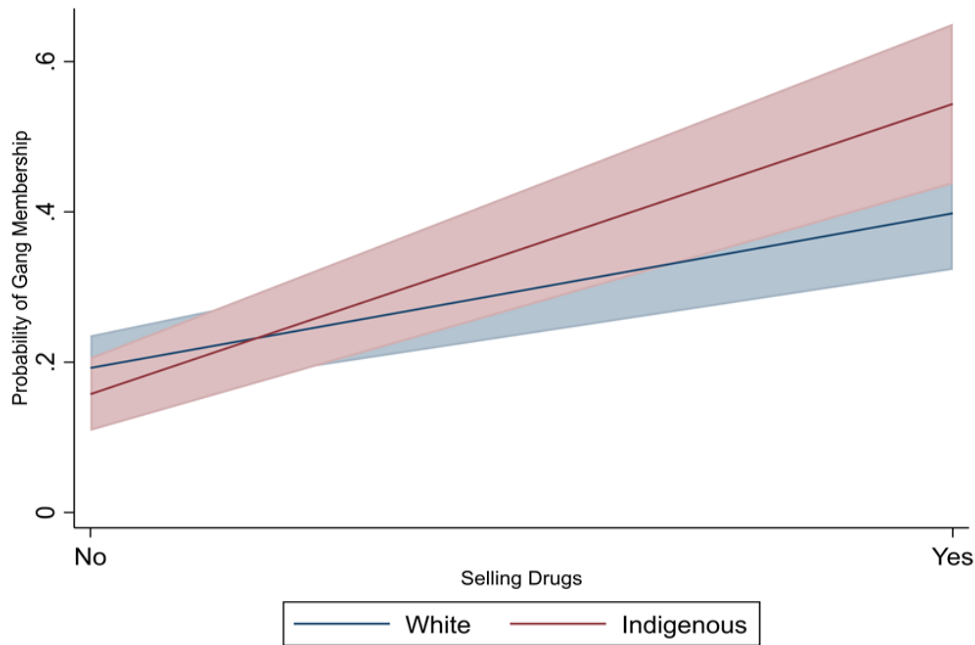


Figure 4. Significant Interaction Term for Selling Drugs at School Model.

Adverse Childhood Experiences and Gang Involvement

Table 6 shows that the odds of being gang involved compared to not gang involved were approximately 210% higher for youth who experienced physical abuse. Sexual abuse was unrelated to gang involvement. For the conflict tactics scale, a one-unit increase in parent-child conflict and a one-unit increase in exposure to mother-father conflict significantly increased the odds of being gang-involved compared to not being gang-involved. Additionally, the odds of being gang involved compared to not gang involved increased significantly as scores on the MAYSI trauma scale increased. The parent-child conflict model had the highest AUC value. For all five models, the interaction terms were not significant.

Table 6. Logistic Regression Analyses of Adverse Childhood Experiences Predicting Youth Gang Involvement. Note: Each covariate examined in a separate model that controls for age, gender, and ethnicity. OR = odds ratio. AUC = Area Under the ROC Curve.

	OR (95% C.I.)	AUC Value
Physical Abuse Model		
Physical Abuse	2.10 (1.30–3.39)**	.651
Physical Abuse*Ethnicity	.91 (.43–1.93)	
Sexual Abuse Model		
Sexual Abuse	1.18 (.48–2.91)	.595
Sexual Abuse*Ethnicity	1.38 (.43–4.43)	
Parent-Child Conflict Model		
Parent-Child Conflict	1.04 (1.02–1.06)**	.693
Parent-Child Conflict*Ethnicity	1.02 (.99–1.05)	

	OR (95% C.I.)	AUC Value
Mother-Father Conflict Model		
Mother-Father Conflict	1.03 (1.00–1.05)*	.650
Mother-Father Conflict*Ethnicity	.98 (.95–1.02)	
MAYSI Trauma Scale Model		
MAYSI Trauma Scale	1.51 (1.24–1.85)***	.677
MAYSI Trauma Scale*Ethnicity	.95 (.70–1.30)	

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

Psychopathology and Gang Involvement

Table 7 includes six different models examining different forms of psychopathology. Four of the six models showed a significant main effect of psychopathology. Specifically, higher levels of angry/irritable, depression/anxiety, positive emotionality, and psychopathy each significantly increased the odds of gang involvement compared to not being gang involved. Among the different models, the highest AUC value was observed for the MAYSI scale measuring angry/irritable traits (AUC = .731).

Table 7. Logistic Regression Analyses of Psychopathology Predicting Youth Gang Involvement. Note: Each covariate examined in a separate model that controls for age, gender, and ethnicity. OR = odds ratio. AUC = Area Under the ROC Curve.

	OR (95% C.I.)	AUC Value
Self-Identity Model		
Self-Identity	.98 (.96–1.00)	.631
Self-Identity*Ethnicity	.98 (.94–1.01)	
MAYSI Angry/Irritable Model		
MAYSI Angry/Irritable Scale	1.33 (1.19–1.49)***	.731
MAYSI Angry/Irritable Scale*Ethnicity	1.10 (.85–1.20)	
MAYSI Depression/Anxiety Model		
MAYSI Depression/Anxiety Scale	1.19 (1.06–1.35)**	.662
MAYSI Depression/Anxiety Scale*Ethnicity	1.06 (.88–1.27)	
PANAS Positive Emotionality Model		
PANAS Positive Emotionality	1.05 (1.02–1.09)**	.628
PANAS Positive Emotionality*Ethnicity	.96 (.90–.99)*	
PANAS Negative Emotionality Model		
PANAS Negative Emotionality	1.06 (1.03–1.10)	.643
PANAS Negative Emotionality*Ethnicity	.96 (.91–1.01)	
MACI Psychopathy Model		
MACI Psychopathy Content Scale	1.13 (1.03–1.24)*	.668
MACI Psychopathy Content Scale*Ethnicity	1.03 (.89–1.20)	

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

A significant interaction term was observed for positive emotionality and ethnicity. As shown in Figure 5, a higher level of positive emotions significantly increased the odds of gang involvement compared to not being gang-involved for White youth but not for Indigenous youth. Importantly, positive emotions did not necessarily mean “good”

emotions. Positive emotions represented traits such as excited, proud, enthusiastic, and so on. It is possible that for Indigenous youth, gang involvement is not associated with sensation-seeking the way it might be for White youth who are looking to satiate their stimulation needs. Rather, for Indigenous youth, gang involvement is more of a response to social/contextual/environmental factors as opposed to internal factors.

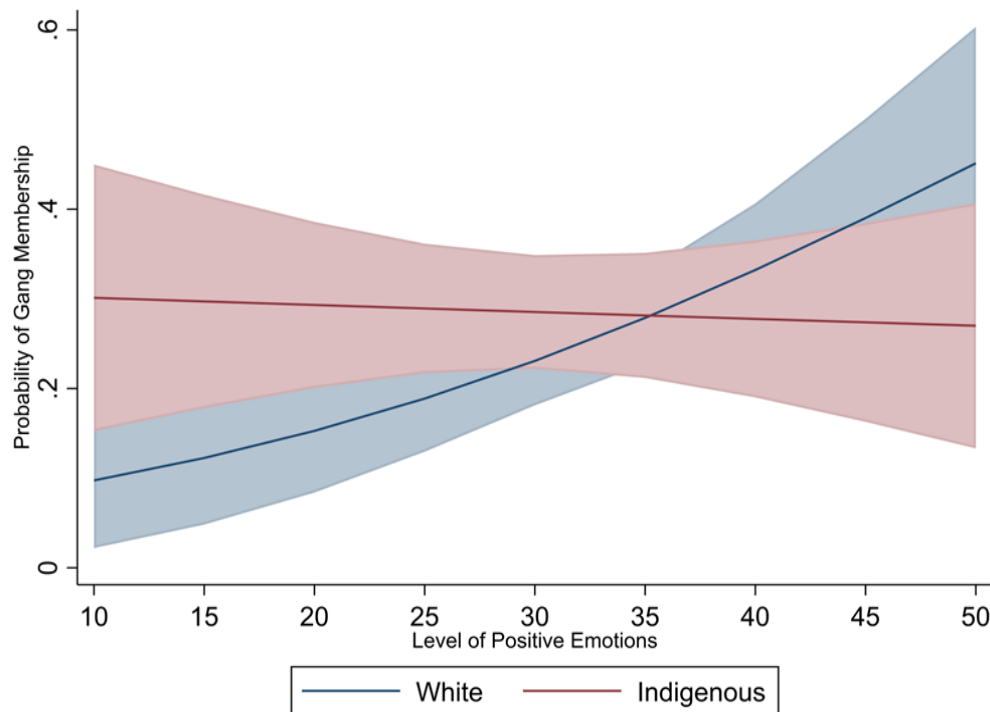


Figure 5. Significant Interaction Term for the PANAS Positive Emotionality Scale.

Do Risk Factors for Indigenous Gang Involvement Vary Across Rural Versus Urban Locations?

The above analyses were replicated, but this time White youth participants were excluded from analyses and instead we examined whether the influence of risk factors on gang involvement varied depending on whether the Indigenous youth grew up in a rural or urban environment. In the Lower Mainland of British Columbia, gang activity is an opportunity to engage in lucrative forms of crime (McConnell, 2015). However, for inner-city or impoverished areas, gangs offer an alternative culture and opportunities for social relationships (Dunbar, 2018). Since economic barriers are especially common in rural Indigenous communities, pathways to gang involvement may be unique (Preston et al., 2012).

Of the nearly 30 different risk factors examined, only one varied between Indigenous youth who were identified as living in a rural location compared to Indigenous youth who were identified as living in a non-rural location. Specifically, as shown in Figure 6, for Indigenous youth living in urban centers, a more versatile pattern of early (i.e., before

age 12) self-reported offending increased the odds of gang membership. However, this finding was not observed for Indigenous youth living in rural locations.

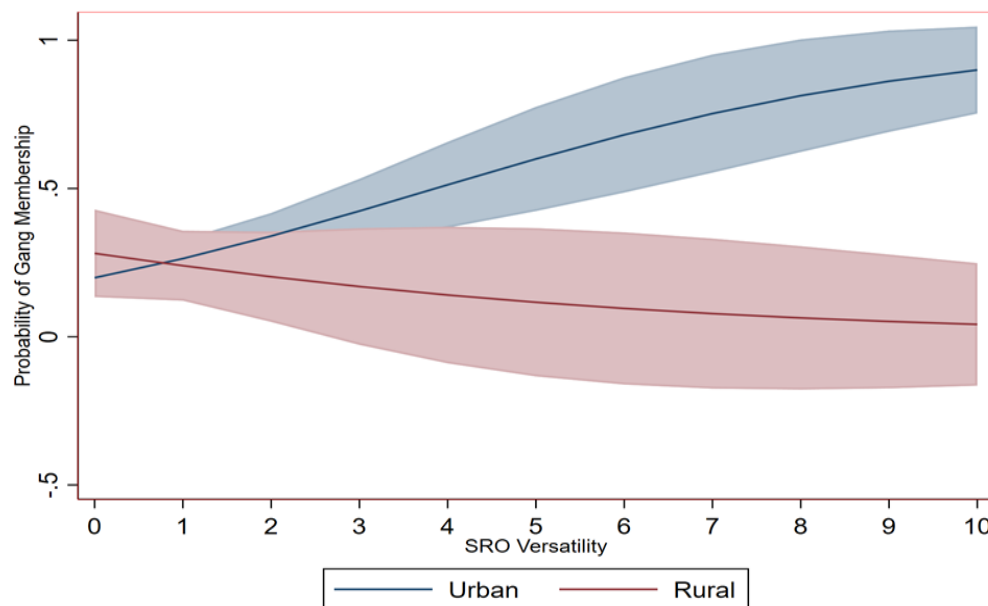


Figure 6. Comparison of the Probability of Gang Membership Based on Self-Reported Offending for Indigenous Youth in Urban Versus Rural Locations.

Pathways to gang involvement for youth living in rural locations may be less about opportunities for offending and more about their social environment. However, this finding needs to be interpreted cautiously given that rural settings can be defined in different ways. Future research should link geographic location to population density to develop more sophisticated measures of rural versus urban locations. Moreover, a dichotomous measure of urban versus rural may be overly simplistic. Heterogeneity within these categories (e.g., rural but near urban center versus rural and remote) may mask differences between these categories.

Summary of Risk Factors for Gang Involvement

Nearly 30 different risk/protective factors across a variety of domains were examined. About two dozens of these factors were significant predictors of youth gang involvement for Indigenous participants from the ISVYOS. Indigenous youth were more likely to be gang involved if they experienced:

- Difficult family and school circumstances
- Early drug use and antisocial/violent behavior
- Adverse experiences in childhood
- Different forms of psychopathology

In terms of the most important risk factors from each domain, AUC values were largest for youth who left home before age 12 (AUC = .677), youth demonstrating more early behavioral problems at school (AUC = .685), youth with greater levels of substance use versatility (AUC = .680), youth with higher levels of self-reported delinquent behavior (AUC = .740), youth who had higher levels of conflict with their parents (AUC = .693), and youth with higher levels of anger and irritability (AUC = .731).

The majority of significant risk factors had a non-significant interaction term, meaning that the risk factor of interest influenced gang involvement similarly for White youth compared to Indigenous youth. Only four of the 29 measures examined had significantly variable effects on gang involvement:

- **Living with at least one parent acted as a protective factor against gang involvement for White youth but not for Indigenous youth.**
- **Leaving the family home before age 12 to go live somewhere else acted as a risk factor for gang involvement for White youth but not for Indigenous youth.**
- **Selling drugs at school was a risk factor for gang involvement for Indigenous youth but not for White youth.**
- **For the PANAS scale, more positive emotions increased the likelihood of gang involvement for White youth but not for Indigenous youth.**

The individual section headings above provide potential explanations as to why these interaction terms were significant. In general, the extended family rather than immediate biological parents may be more important to gang involvement for Indigenous youth compared to White youth. The label of “drug dealer” may have a stronger impact on gang involvement for Indigenous youth and thus have a more detrimental impact on forming positive ties to prosocial peers and others in their community. The influence of positive emotions for White youth gang involvement but not for Indigenous youth gang involvement could reflect the possibility that Indigenous youth gang involvement is more likely to be influenced by external factors (e.g., family ties, poverty, lack of opportunity) than internal factors (e.g., sensation-seeking, impulsivity).

If there are risk factors for gang involvement that are unique to Indigenous youth, it is unlikely that they are included in traditional risk assessment measures, as many of such factors were accounted for in the analyses in this report and did not differentially influence gang involvement for Indigenous youth compared to White youth. **Indigenous youth overrepresentation in gang involvement may simply be a matter of exposure to more risk factors as opposed to being exposed to a unique type of risk factor.**

Future research is needed to investigate factors that may be culturally specific to Indigenous youth. If pathways to gang involvement are unique for Indigenous youth living in urban versus rural contexts, it may be due to risk factors not measured in the current report. Of the dozens of risk factors examined, only one, self-reported offending, was differentially associated with gang membership for Indigenous rural youth versus Indigenous urban youth. Specifically, a higher level of self-reported offending versatility

was only associated with gang involvement for urban youth. Different ways of measuring urban/rural locations, such as by defining BC locations by differentiating Northern BC from Southern BC and the Interior, is an important direction for future research.

Research Aim #2: Consequences of Gang Involvement across Indigenous and White Youth

Preventing crime creates healthier, safer, economically-stable, and more civic-oriented communities (Waller, 2014). Crime prevention requires understanding which factors disproportionately influence crime. Evaluating the cost-benefits of Indigenous-focused and gang-based crime prevention strategies requires understanding the extent to which Indigenous gang involvement influences criminal behavior. If gang-involved Indigenous youth are not more likely to experience negative adult outcomes compared to gang-involved White youth and other Indigenous youth involved in crime, then specific practices and policies targeting Indigenous youth gang members may do little to reduce crime. It must be empirically demonstrated, and not simply assumed, that gang involvement carries unique consequences. In general, policymakers and stakeholders in British Columbia have largely just assumed that gang involvement in adolescence will lead to worse outcomes in adulthood. This is a dangerous assumption to make. Most youth who enter gangs do not remain in gangs very long (Dawson, 2021; Ouellet et al., 2019; Pyrooz et al., 2013; Hashimi et al., 2021). Focusing on youth gang involvement therefore may needlessly divert important financial and programming resources that could be allocated towards addressing more important risk factors for adult offending and other negative social outcomes.

Whereas the prior section focused on risk factors that influenced youth gang involvement, the next set of analyses examined the adulthood consequences of youth gang involvement, including whether any of these consequences varied between Indigenous youth gang members and White youth gang members. As with previous analyses, all models also controlled for gender and age. Additionally, although gang involvement may be significantly related to certain negative outcomes, it is also possible that it is not the most important risk factor and should not be given the level of priority it has in much of the policy discussions regarding how to prevent future offending. This section therefore also investigated whether other risk factors had a stronger impact on adult outcomes.

Urban areas provide more opportunities for gang involvement (Evans et al., 2017), yet in Canada, crime severity is higher in more rural areas (Jones, 2020). It is therefore important to clarify whether being situated in urban settings compared to rural settings increases the likelihood of negative outcomes for Indigenous youth gang members. This section therefore also investigated whether the impact of Indigenous youth gang involvement on adult outcomes varied depending upon whether the participant initially resided in a more urban or more rural location.

Youth Gang Involvement and Offending Outcomes in Adulthood

Table 8 shows that youth gang involvement significantly increased the likelihood of more serious forms of offending in adulthood, including homicide offending, firearm-related offenses, and placement in a Federal Penitentiary (i.e., sentenced to at least two years in custody). The model predicting chronic offending had the highest AUC value, but gang involvement was not significant in this model, indicating that it was more so the impact of gender and age and ethnicity that contributed to the explanation of chronic offending. Gang involvement appeared to have the strongest impact on firearm-related offenses (AUC = .651). None of the interaction terms in these models were significant, meaning that gang involvement had a similar effect on homicide offending and firearm offenses for both Indigenous participants and White participants.

Table 8. Logistic Regression Analyses of Youth Gang Involvement Predicting Adult Offending. Note: Each covariate examined in a separate model that controls for age, gender, and ethnicity. OR = odds ratio. AUC = Area Under the ROC Curve.

	OR (95% C.I.)	AUC Value
Chronic Offending Trajectory Model		
Gang Involvement	1.25 (.81–1.95)	.659
Gang Involvement*Ethnicity	1.29 (.65–2.58)	
Homicide Offending Model		
Gang Involvement	2.57 (1.11–5.94)*	.588
Gang Involvement*Ethnicity	.49 (.11–2.23)	
Firearm Offending Model		
Gang Involvement	1.89 (1.03–2.47)**	.651
Gang Involvement*Ethnicity	1.01 (.46–2.19)	
HROIP Model		
Gang Involvement	2.10 (.78–5.65)	.619
Gang Involvement*Ethnicity	.89 (.64–1.12)	
Federal Penitentiary Model		
Gang Involvement	1.87 (1.09–3.20)*	.646
Gang Involvement*Ethnicity	1.11 (.43–2.85)	

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

Youth Gang Involvement and Social Outcomes in Adulthood

Table 9 examined five different types of positive social outcomes in early adulthood as measured by the CRNA. Youth gang involvement was only a significant predictor of family relationships. Specifically, the odds of having a positive family relationship in adulthood compared to a negative family relationship in adulthood were 67% lower (1.00-.33) for persons with youth gang involvement compared to persons who were not gang-involved as a youth. This model also had the highest AUC value compared to the other four models (AUC = .657). None of the interaction terms were significant.

Table 9. Logistic Regression Analyses of Youth Gang Involvement Predicting Adult Social Outcomes. Note: Each covariate examined in a separate model that controls for age, gender, and ethnicity. OR = odds ratio. AUC = Area Under the ROC Curve.

	OR (95% C.I.)	AUC Value
Family Relationship Model		
Gang Involvement	0.33 (.16-.66)**	
Gang Involvement*Ethnicity	.77 (.24-2.50)	.657
Living Situation Model		
Gang Involvement	.61 (.33-1.12)	
Gang Involvement*Ethnicity	1.56 (.62-3.88)	.561
Intimate Partner Model		
Gang Involvement	.81 (.35-1.82)	
Gang Involvement*Ethnicity	.75 (.15-3.53)	.594
Vocational Skills/Training Model		
Gang Involvement	.96 (.54-1.71)	
Gang Involvement*Ethnicity	.69 (.28-1.70)	.551
Employment Model		
Gang Involvement	.87 (.48-1.59)	
Gang Involvement*Ethnicity	.93 (.37-2.34)	.566

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

Youth Gang Involvement and Health Outcomes in Adulthood

Table 10 examines whether the odds of different health outcomes in adulthood varied as a function of youth gang involvement. For ISVYOS participants, the odds of having a substance abuse problem in adulthood compared to not having a substance abuse problem were 1.96 times higher for those who had experienced youth gang involvement compared to those who self-reported no such youth gang involvement. Gang involvement was unrelated to mortality. Interaction terms examining whether the influence of gang involvement on the probability of health outcomes varied as a function of ethnicity were not significant.

Table 10. Logistic Regression Analyses of Youth Gang Involvement Predicting Mortality. Note: Each covariate examined in a separate model that controls for age, gender, and ethnicity. OR = odds ratio. AUC = Area Under the ROC Curve.

	OR (95% C.I.)	AUC Value
Adult Substance Abuse Model		
Gang Involvement	1.96 (1.08-3.54)*	
Gang Involvement*Ethnicity	.60 (.24-1.49)	.613
Mortality Model		
Gang Involvement	.51 (.26-1.02)	
Gang Involvement*Ethnicity	1.97 (.69-5.66)	.581

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

Is Gang Involvement more Important than other Risk Factors?

Although gang involvement was significantly related to several of the negative offending, social, and health outcomes examined above, this does not necessarily mean that gang involvement should be prioritized by intervention strategies. An important question to address is whether the significant effect of gang involvement is stronger compared to other risk factors. If not, then intervention strategies should prioritize these other risk factors over gang involvement. Risk factors from the previous section that were identified as important predictors of youth gang involvement were included in another set of analyses (see Table 11) that examined the association between these risk factors and each of the 12 adult outcomes examined. The bolded AUC values in Table 11 denote instances in which the risk factor examined had a stronger relationship with the outcome of interest compared to gang involvement (i.e., this particular AUC value was larger than the AUC value for the respective model where gang involvement was used to predict the outcome of interest).

- In eight of the 12 analyses, foster care had a stronger relationship (i.e., a higher AUC value) with the outcome of interest compared to gang involvement.
- In seven of the 12 analyses, the early substance use versatility scale had a stronger relationship with the outcome of interest compared to gang involvement.
- In six of the 12 analyses, the early school behavioral problems scale, MAYSI angry/irritable subscale, and MACI Psychopathy Content Scale had a stronger relationship with the outcome of interest compared to gang involvement.
- In four of the 12 analyses, the MAYSI trauma subscale had a stronger relationship with the outcome of interest compared to gang involvement.
- In two of the 12 analyses, the family dysfunction and early self-reported offending scales had a stronger relationship with the outcome of interest compared to gang involvement.

As a final set of analyses to assess the relative importance of youth gang involvement to adult outcomes, models simultaneously included gang involvement, foster care, and substance use versatility to predict the twelve adult outcomes shown in Table 11. Substance use versatility was the strongest predictor of chronic offending. Gang involvement was the strongest predictor of a federal custody sentence. Foster care was the strongest predictor of a negative living situation and poorer academic/vocational skills. Gang involvement and substance use versatility both predicted firearm-related offenses. Gang involvement and foster care placement both predicted negative family relationships. **In sum, whether interventions place their emphasis on gang involvement, foster care, or substance use in adolescence should depend on the type of outcome they are trying to prevent. Gang involvement seems more strongly related to serious adult offending, substance use more strongly related to frequent offending, and foster care more strongly related to negative social outcomes (e.g., living situation, job training skills), which are also external correlates of offending in adulthood (e.g., McCuish et al., 2021).**

Table 11. AUC Values for Models Examining the Relationship between Early Adolescence Risk Factors and Adult Outcomes. Note: **Boldface type** indicates that the AUC value was larger than the AUC value for the respective gang involvement model. Each covariate examined in a separate model that controls for age, gender, and ethnicity. AUC = Area Under the ROC Curve.

	Chronic Offending	Homicide Offending	Firearm Offending	HROIP	Federal Penitentiary	Family Relations	Living Situation	Intimate Partner	Vocation/ Education	Employment	Mortality	Substance Abuse
	AUC	AUC	AUC	AUC	AUC	AUC	AUC	AUC	AUC	AUC	AUC	AUC
Foster Care	.662	.568	.638	.597	.627	.652	.670	.609	.586	.594	.589	.619
Early Substance Use Versatility	.676	.585	.650	.635	.649	.603	.576	.622	.549	.583	.543	.610
Family Dysfunction	.646	.602	.630	.593	.627	.613	.559	.589	.588	.561	.571	.590
Early School Behavioral Problems	.667	.628	.641	.614	.635	.598	.572	.622	.560	.571	.564	.601
Early Self-Reported Offending	.656	.548	.636	.617	.634	.580	.552	.616	.563	.566	.567	.589
MAYSI Trauma Scale	.597	.627	.606	.606	.550	.584	.579	.607	.562	.562	.566	.600
MAYSI Angry/ Irritable Scale	.644	.622	.628	.628	.600	.619	.569	.613	.557	.550	.550	.620
MACI Psychopathy Content Scale	.650	.696	.636	.654	.595	.585	.620	.597	.588	.565	.559	.638

Youth Gang Involvement and Adult Outcomes across Participants from Urban Versus Rural Locations

Based on the specific urban/rural criteria used in the current report (see Measures subsection), none of the interaction terms examining offending outcomes (i.e., adult chronic offending, firearm offending, homicide, sentence to a Federal penitentiary, placement on the HROIP) were significant. Thus, urban versus rural location, at least as per its definition in the current report, did not alter the nature of the relationship between Indigenous youth gang involvement and future offending outcomes in adulthood. Similarly, none of the interaction terms examining social outcomes were significant, meaning that the association between youth gang involvement and, for example, employment outcomes in adulthood did not vary as a function of whether the ISVYOS participant had been living in a rural or urban location at the time of their initial involvement in the justice system.

In terms of health outcomes, urban/rural location did not result in variability in the relationship between gang involvement and mortality and gang involvement and substance abuse. In the current report, findings were reported as significant only in instances where the alpha level was below .05. What has been termed “marginally significant” (i.e., $p < .10$) was not reported given the large number of analyses that inflate the possibility of Type I error. However, given the smaller sample size here (i.e., focused on specific moderation analyses among rural/urban Indigenous youth) and the rarity of mortality outcomes, of potential importance, the p value for the examination of mortality was .063. The interaction term indicated that gang involvement had a stronger relationship with mortality for persons with a history of living in a rural location compared to an urban location (based on how urban/rural was defined in the current study). This may be a worthwhile line of analysis in future studies using larger sample sizes and looking not only at Indigenous youth.

Summary of Youth Gang Involvement and Adult Outcomes

Youth gang involvement significantly increased the odds of the following adult outcomes:

- Firearm offending
- Homicide offending
- Federal custody
- Negative family relationships
- Substance abuse

It could be easy to dismiss these findings as self-evident; the notion that gang involvement leads to negative outcomes is not new. At the very least, these findings substantiate the anecdotal experiences and beliefs of justice system professionals. However, it is also critical to consider the reference group here. Gang-involved youth are not being compared to the average high school student in British Columbia. In such

comparisons, negative adult outcomes would be much more obvious. In the current report, gang-involved youth are compared to other incarcerated youth with their own difficult histories and multiple risk factors. Thus, the findings reiterate that gang involvement is an important risk factor for negative adult outcomes even among other youth who are actively involved in crime, substance use, and come from difficult family circumstances. It is also important to consider that youth are typically only involved in gangs for a short period of time (Pyrooz et al., 2013) and this seems to be the case for members of the ISVYOS sample (Dawson, 2021). This means that even spending a short period involved in gang activity as a youth can have long-term consequences that result in a variety of negative outcomes in adulthood.

Key to the above findings is that non-significant interaction effects between gang involvement and ethnicity were observed in every model. This means that the experience of gang involvement had a similar impact on adult life outcomes for both White and Indigenous ISVYOS participants. Gang involvement was not especially informative of negative social outcomes (e.g., living situation, intimate partner relationships) in adulthood. Relative to criminal behavior, there may be more heterogeneity in social outcomes for gang members given that, for at least some who are involved in gang activity in British Columbia, lucrative offending opportunities (McConnell, 2015) imply that they will have the financial means to, for example, ensure a stable living situation. Indeed, as shown in Table 11, almost all of the other youth risk factors examined had a stronger relationship with each of the five negative social outcomes measured in adulthood.

Conclusion & Recommendations

The analyses in the current report provided local-level evidence that factors traditionally believed to increase the risk of gang involvement (e.g., family circumstance, school behavior, antisocial behavior, drug use, personality characteristics, adverse childhood circumstances) also influence gang involvement for youth involved in serious and violent offenses in the Province of British Columbia, including Indigenous youth. However, the current report failed to find evidence that there is a unique pathway to gang involvement for Indigenous youth compared to White youth. Instead, the analyses provided evidence that the reported observation that Indigenous youth are overrepresented in gangs (National Crime Prevention Centre, 2022) is the result of Indigenous youth being exposed to a greater *number* of risk factors as opposed to experiencing a different *type* of risk factor. This does not mean that unique pathways do not exist. If Indigenous youth overrepresentation in gangs involvement is to be explained, it is perhaps necessary to look beyond traditional criminological risk factors and focus on culturally-specific factors. Examining macro-level historical contexts and issues unique to Indigenous communities (e.g., access to drinking water) seems like a necessary next step for understanding how to prevent Indigenous youth gang involvement. It will be necessary to consider Canada's Tri-Council Policy on ethical conduct in research examining Indigenous culture (e.g., the importance of Indigenous-led research and community-stakeholders).

The large number of risk factors associated with gang involvement (for both Indigenous youth and White youth) implies that interventions focusing directly on gang involvement may only be addressing a small part of the problem (i.e., such youth have many different treatment needs beyond gang involvement). Two recommendations are made:

1. Wrap-around services have been depicted as a necessary response to the wide-ranging risk/need factors associated with youth involved in gangs (e.g., Barrett-Wallis & Goodwill, 2020). **However, empirical support for wraparound services is somewhat limited based on evaluations of randomized control trial adult programs in the United States (Doleac, 2019).** This does not mean that wrap-around services for Canadian youth are not impactful. However, an important lesson learned from these adult studies is that trying to do too much can result in doing nothing impactful across all levels of risk. In fact, wrap-around programs may even have negative consequences for program participants, especially if they are too intensive and give participants less freedom to build their lives (Doleac, 2019).
2. Instead of waiting for risk factors to accumulate to the point that wrap-around services appear warranted, early intervention should be given priority. There are well-validated programs in Canada, including programs developed in British Columbia (e.g., Stop Now and Plan [SNAP]). Yet, such programs have not been implemented to the same extent as other provinces (e.g., compared to Ontario²). SNAP appears effective in a multitude of ways and for demographically diverse populations (e.g., Burke & Loeber, 2015). Yet, program funding strategies in municipalities within British Columbia appear to prioritize smaller, local-based programs. Rarely are these programs properly evaluated. If these programs are too small and program evaluation is not planned at the time of funding, then it will remain unclear as to whether early intervention programs are working effectively. As demonstrated by the risk factor profiles of ISVYOS participants, especially participants who are involved in gang activity, in the absence of effective intervention strategies, multiple negative adult outcomes can be anticipated, and these outcomes bring with them a high cost to society, both in terms of financial cost and costs associated with fear of crime.

Although reducing gang involvement is important for preventing future negative outcomes, other risk factors (see Table 11) should not be overlooked. In particular, compared to gang involvement, early substance use versatility was a stronger predictor of adult chronic offending, homicide offending, placement on the High Risk Offender Identification Program, and receiving a federal custody sentence. Treatment programs should match which risk factor they emphasize intervention on with the type of outcome they are trying to prevent. More specifically, focusing on foster care placement appears especially important for preventing negative social outcomes such as low education attainment, employment difficulties, and difficulties with housing. Substance abuse interventions appear particularly important for reducing chronic offending over the life

² For a list of locations, see [SNAP Licensed Agencies](#) (2020).

course. Gang-related interventions seem especially important for preventing serious/violent offending in adulthood.

Gang-related criminal activity receives considerable media coverage (e.g., Bolan, 2021; Harwood, 2021). Although gang activity should be an intervention priority given its relationship to involvement in particularly serious offenses (McCuish et al., 2015), the analyses conducted in this report showed that reducing offending and other negative social outcomes requires consideration of intervention strategies for youth that are based on broader social issues, including foster care and substance use. Foster care is among the most important predictors of persistent offending and is not moderated by gang involvement (Yang et al., 2017, 2021) and it would seem that much less attention is given to foster care compared to gang involvement. Indeed, very little is known about the contexts in which foster care placements represent positive versus negative life experiences in British Columbia (Freedman, 2013). Especially in the United States, **parenting training programs have shown to help reduce behavior problems for children placed in foster care (Schoemaker et al., 2020). Given ongoing concerns about the overrepresentation of Indigenous youth in foster care in British Columbia (Freedman et al., 2017; Yang et al., 2021), identifying and implementing evidence-based strategies to prevent and respond to Indigenous youth foster care placement seems important for simultaneously reducing youth involvement in gangs as well as negative adult outcomes.**

The analyses conducted in this report should be interpreted with several important contextual considerations in mind. First, regarding generalizability, this is a sample of youth who were involved in serious and violent offenses and experienced incarceration. This comprises a very small proportion of all youth involved in criminal behavior in British Columbia. This is not a representative sample. However, it is also the type of sample associated with highest rates of offending and greatest financial costs to the Province and therefore worthy of investigation. The current study did not include persons whose gang involvement came later in the life course and who may have unique pathways. For example, there is discussion that, especially in the Greater Vancouver Regional District, entry into gangs and offending occurs in early adulthood among those from relatively comfortable financial situations and intact families (McConnell, 2015). Findings from the current report should not be generalized to this group.

Second, gang involvement was based on the degree of gang activity. Self-nomination is a reliable means of measuring gang involvement (Decker et al., 2014). However, different definitions and different measures of gang involvement can produce different findings. For example, the relationship between gang involvement and offending is stronger in cross-sectional compared to prospective longitudinal research designs. The current study relied on a prospective longitudinal research design, which is generally considered an improvement upon cross-sectional research designs (Pyrooz et al., 2016).

Third, it would be useful to have measures of change in gang involvement to examine, for example, how much desistance from gang activity reduces criminal behavior. Do

individuals who drop out of gangs stop offending, or do they have so many other risk factors that their offending nevertheless continues even if they are not gang-involved? Based on the observation that getting into trouble at school for drug dealing was a stronger predictor of gang involvement for Indigenous youth compared to White youth, it is possible that Indigenous youth are more adversely impacted by negative social labels and associated stigmatization. Accordingly, future research should investigate whether desistance from gang involvement is not as strongly associated with positive outcomes for Indigenous youth compared to White youth, as the negative stigma of gang involvement may persist even after the Indigenous young person has exited the gang. Such concerns have implications for gang exiting interventions strategies in that, for Indigenous youth or others who may be especially negatively impacted by gang stigma, leaving the gang may not have the positive impact that such programs anticipate.

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