

**Examining Ethnic and Cultural Differences in the
Prediction of Violence Risk Among Male Former
Offenders**

**by
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Abstract

The use of violence risk assessment instruments to estimate an offender's likelihood of recidivism has become commonplace. However, questions abound regarding the cross-cultural validity of these tools, and whether ethnic differences can jeopardize their predictive accuracy. Furthermore, many static risk factors included in these tools are highly associated with race and class, potentially overestimating the risk scores of underprivileged minorities. The current study examined ethnic/cultural differences in the predictive validity of 10 commonly used historical risk factors, and whether certain race-correlated risk factors can be considered "proxies" for race. Caucasian, African American, and Hispanic adult ex-offenders ($N = 270$) completed a series of risk rating scales and reported lifetime engagement in criminal activity. While no risk factors emerged as proxies for race, several risk scores were found to misclassify ethnic minorities as high risk. These findings bear implications for the ethical use of risk assessment with cultural minority groups.

Keywords: risk assessment; race; cross-cultural validity; recidivism; prediction; sentencing

Dedication

To my father, Farshad Monjazez, my mother, Mahvash Monjazez, and my sister, Sanaz Monjazez. I am forever indebted to the universe for blessing me with such a devoted family whose unconditional love and support are directly responsible for my success.

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Chapter 1.

Introduction

It has become common knowledge that the United States locks up more individuals per capita than any other nation. Accounting for just 5% of the world's population, the U.S. now holds approximately 25% of the world's inmates (ACLU, 2018). This explosion in incarceration rates is largely credited to the "tough on crime" policies of the 1980's and 1990's. Given the exorbitant costs involved in maintaining prison systems and housing inmates, the country has turned to the use of violence risk assessment tools in the hopes of remedying the problem of mass incarceration and reducing its prison population. Advocates of risk assessment instruments frequently argue that the use of these tools can promote more equitable decision-making and help to divert low-risk offenders from incarceration, thus reducing rates of incarceration without jeopardizing public safety (Monahan & Skeem, 2016).

These evidence-based instruments are now widely used in sentencing and corrections to estimate an offender's likelihood of reoffending based on the presence of various empirically supported risk factors. In particular, actuarial risk assessment tools involve explicit rules to combine a predetermined set of static risk factors that are unlikely to change (e.g., criminal history, age, marital status). This algorithm results in a total score that is linked to an estimate of recidivism probability, eliminating the human aspect of this decision-making process. Across the United States, these risk scores have become mandated for use in critical decisions concerning pre-trial detention, parole eligibility, security classifications, release conditions, treatment services, and most contentious of all, post-conviction sentencing. At present, at least 20 states have begun to implement actuarial risk assessments into the determination of a defendant's sentence, while the majority of states already instruct parole boards to consider static risk factors in their decision-making (Starr, 2014).

Despite the growing popularity of standardized risk assessment instruments, many scholars have raised concerns about the utility of these tools for diverse populations, specifically when used in sentencing decisions. Given the significance of these decisions for the preservation of both public safety and offenders' freedoms and

privileges, it is imperative that these tools are immune from discriminatory biases that could result in unethical treatment and disparate impact for disadvantaged groups. In any type of correctional decision-making, a high-risk misclassification holds significant implications for a defendant's case processing, while a low-risk misclassification could be detrimental to the welfare of society. To minimize the potential for these types of adverse effects, the relations between risk scores and offending outcomes (i.e., the predictive validity of these tools) must remain consistent across the different populations to which they are applied. In other words, risk instruments must be able to predict future recidivism/violence equally well for offenders from different subgroups. However, many actuarial instruments were originally validated on samples of primarily Caucasian male offenders and are thus based on theories and research relevant to Caucasian male crime (Wilson & Gutierrez, 2014). This has led critics to question whether risk factors reflecting a Western viewpoint are comparable across ethnic subgroups, and whether important differences between ethnic subgroups can jeopardize the predictive accuracy of these tools and produce disparities in sentencing (Shepherd & Lewis-Fernandez, 2016). For instance, pronounced ethnic differences in socioeconomic conditions—often caused by historical discrimination and marginalization—may indeed allude to differences in the etiology of crime for offenders outside of the mainstream culture (Hannah-Moffat, 2013).

A second issue that has been raised is that certain historical risk factors based on immutable demographic or socioeconomic variables (e.g., employment, education, neighborhood disadvantage) are unfairly associated with race and class and may artificially inflate the risk scores of underprivileged minorities. For instance, epidemiological studies have repeatedly demonstrated that ethnic minorities, such as African Americans and Hispanics, are more likely to live in neighborhoods with high rates of crime and poverty, which may result in fewer educational and employment opportunities, all of which may ultimately result in inflated risk scores. These risk scores may in turn engender a discriminatory effect by contributing to significantly harsher punishments for minorities who may have committed similar types of offenses as less disadvantaged Caucasian offenders (Whiteacre, 2006). Over time, these biased practices may materialize in the overrepresentation of ethnic minorities in the correctional population.

Indeed, the repercussions of using static factors and immutable characteristics in sentencing decisions have been noted by former Attorney General Eric Holder (2014), who stated that these practices may “inadvertently undermine efforts to ensure individualized and equal justice” by “exacerbating unwarranted and unjust disparities that are already far too common in our criminal justice system.” Though advocates of evidence-based sentencing freely tout the advantages of these tools in reducing budgetary costs and social harms, they very often fail to address the discriminatory consequences of risk instruments for defendants who are rendered high risk based on characteristics for which they have no control over. Certain researchers and policymakers have thus argued that any practical benefits offered by risk tools may ultimately be “offset by costs to social justice” (Monahan et al., 2017), as they may simultaneously be exacerbating the racial disparities that are already commonplace in America’s criminal justice system.

To put the extent of these racial disparities into perspective, according to the most recent data released from the Bureau of Justice Statistics (Carson, 2018), young African American males between the ages of 18-19 are 11.8 times more likely to be imprisoned than White males of the same age. Further, the ACLU (2018) has documented that one in three African American males and one in six Hispanic males can expect to be incarcerated in their lifetime, compared to one in 17 White men. Finally, in 2017 non-Hispanic White individuals composed 60.7% of the total U.S. population, Hispanic individuals composed 18.1%, and African American individuals composed 13.4% (United States Census Bureau, 2017). In contrast, only 21.5% of all convicted federal offenders in the United States were non-Hispanic White, whereas 53.2% were Hispanic and 21.1% were African American (United States Sentencing Commission, 2017). These striking racial differences may be a byproduct of institutionalized discrimination, in which ethnic disparities in imprisonment and sentencing arise from the application of policies that are racially neutral on the surface, but ultimately produce de facto prejudicial outcomes. While risk assessment instruments appear color-blind in theory, in practice, basing sentencing decisions on race-correlated variables like prior criminal history can worsen the racial disparities that already pervade the criminal justice system.

As a result, there remains a pressing need to investigate the accuracy of and potential racial bias in such risk tools when used in these offender subgroups. Thus, the

purpose of the present study was to examine the cross-cultural applicability of a set of traditionally used static risk factors when used with African Americans and Hispanics. In addition to the problems associated with cross-cultural variance and racial conflation on public policy grounds, a legal argument will be made that such practices are unjustifiable based on constitutional violations. The following sections involve an elaborate discussion of the two primary problems that may be associated with the use of these tools in ethnic minorities.

1.1. Cross-Cultural Predictive Validity

Currently, although the literature is replete with studies aiming to validate risk assessment instruments, the majority of validation samples to date have been composed of predominantly Caucasian individuals. Of those samples that comprise diverse participants, relatively few have examined whether estimates of predictive validity vary across ethnic and cultural subgroups, particularly for violent outcomes (Olver et al., 2014). As mentioned above, most risk assessment instruments were normed on samples of Caucasian participants, so caution is warranted when using them to predict violence/re-offending in ethnic samples who were not included in the development of these tools. For instance, international meta-analyses of risk instrument validity have demonstrated that predictive accuracy decreases as samples become more ethnically heterogeneous, with the strongest accuracy reported for predominantly Caucasian samples (Leistico et al., 2008; O'Shea et al., 2013; Singh et al., 2011). This is particularly troubling given that minority groups are often disproportionately represented in correctional populations.

Applying risk factors based on ethnocentric models of crime to minority subgroups becomes more problematic when assessing offenders on unchangeable characteristics (e.g., family history of incarceration, history of unemployment). While associated with recidivism at the group level, these static risk factors fail to account for individual and contextual factors relevant for minority subgroups. Thus, the predictive accuracy of risk tools for ethnic minorities is likely to be further compromised by focusing exclusively on static, historical factors to forecast offending behavior. More racially sensitive approaches to violence prediction could involve a shift in focus from historical correlates of crime to more dynamic factors that allow for change and reductions in risk scores over time (e.g., substance use, antisocial attitudes). Indeed, meta-analyses have

reported improvements in predictive accuracy with the use of dynamic versus static risk factors for a range of outcomes (Campbell et al., 2009; Gendreau et al., 1996; O'Shea et al., 2013). As well, more discretionary approaches incorporating structured professional judgment (SPJ) tools may help overcome these limitations for diverse samples by allowing evaluators to tailor risk judgments to the individual under assessment.

One prominent illustration of the negative implications of risk instruments for underrepresented groups concerns their use with Indigenous offenders. For instance, within the Canadian correctional system, although Indigenous people made up only 4.1% of the adult Canadian population in 2016-2017, they accounted for approximately 27-28% of admissions to provincial and federal correctional services (Statistics Canada, 2018). Scholars have posited that Indigenous offenders may be overrepresented in the justice system due to the fact that they are overrepresented in many of the risk factors that contribute to criminal behavior. Due in large part to the systemic effects of colonialism, many correlates of crime and violence (e.g., childhood abuse/neglect, substance use, mental illness, reduced educational/employment opportunities, marital problems) are frequently observed at significantly higher rates among Indigenous populations compared to the majority culture (Gutierrez et al., 2016). As a result, the literature shows that, trans-nationally, Indigenous offenders frequently receive higher risk scores across several major adult and youth instruments (e.g., Static-99; LS/CMI; LSI-R; SAVRY; VRS-SO; YLS/CMI; PCL-R) compared with White offenders (Olver et al., 2014; Olver et al., 2016; Olver et al., 2018; Shepherd et al., 2014; Wilson & Gutierrez, 2014). In some cases, Indigenous risk scores have been demonstrated to be twice as high as those of Caucasian individuals within the same correctional settings (Wormith et al., 2015).

However, higher risk scores among certain ethnic subgroups do not point to test bias per se (Warne et al., 2014), as group differences in scores may reflect genuine differences in recidivism risk based on differential exposure to criminogenic factors across racial groups. The primary determinant of a risk tool's appropriateness for use with ethnic samples is whether the tool predicts the likelihood of violence and offending with similar validity across majority and minority groups. With regard to Indigenous offenders, findings on this topic are mixed; while some studies have found risk tools to successfully predict re-offending among this group (Bonta et al., 1997; Olver et al., 2012; Schmidt et al., 2006; Stockdale et al., 2014), instruments in general exhibit diminished

predictive accuracy for this group compared with Caucasian offenders (Babchishin et al., 2012; Gutierrez et al., 2013; Holsinger et al., 2006; Olver et al., 2016; Olver et al., 2014; Shepherd et al., 2015; Wilson & Gutierrez, 2014; Wormith et al., 2015).

Owing to the legal significance of this issue, a recent high-profile court case was brought to the Supreme Court of Canada on the problematic use of actuarial instruments with Aboriginal prisoners (*Ewert v. Canada*, 2018). Mr. Jeffrey G. Ewert, an Aboriginal offender sentenced to two life sentences by the Correctional Service of Canada (CSC), filed a grievance claiming that many of the risk tools used by the CSC were culturally inappropriate with respect to Aboriginal offenders, and that results generated by these tools had adversely affected critical aspects of his incarceration (i.e., parole eligibility, security classification, denial of escorted temporary absences). In response, the Court concluded that the research base advocating for the psychometric properties of five actuarial risk assessment instruments (i.e., PCL-R, VRAG, SORAG, Static-99, VRS-SO) was inadequate, viewing these measures as invalid predictors of re-offense for Aboriginal offenders. The Court ruled that the CSC violated its mandate under section 4 of the *Corrections and Conditional Release Act* (CCRA) to “respect ethnic and cultural differences and be responsive to the special needs of Indigenous peoples.” Furthermore, the Court deemed certain actuarial tests to be susceptible to cultural biases, acknowledging the potential for ostensibly neutral risk assessment practices to produce discriminatory outcomes for Indigenous offenders. The majority of justices ultimately ruled that, “what is required, at a minimum, is that if the CSC wishes to continue to use the impugned tools, it must conduct research into whether and to what extent they are subject to cross-cultural variance when applied to Indigenous offenders” (*Ewert v. Canada*, 2018).

Importantly, the legal foundation on which the *Ewert* ruling rests could theoretically apply to other jurisdictions in which actuarial tools are used with ethnic minorities, including the United States. As mentioned above, the use of risk tools in correctional decision-making has rapidly expanded across the country, with several states now adopting risk assessment into their sentencing guidelines that judges are permitted to consider when imposing sentences (Monahan & Skeem, 2016). One could argue that African American and Hispanic offenders in the US represent the equivalent of Indigenous offenders in Canada, in terms of their heightened vulnerability to discriminatory practices and disproportionate representation in the U.S. correctional

system. Paralleling international research findings on Indigenous groups, the cross-cultural variance of risk assessment instruments when applied to African American and Hispanic groups in the U.S. remains a subject of debate, yet comparatively less empirical attention has been given specifically to African American and Hispanic offenders in this area. Although the socioeconomic inequities and disproportionate criminal justice contact experienced by these groups is well-recognized, this has not translated to equivalent participant representation in risk validation studies (Shepherd & Lewis-Fernandez, 2016). Few studies examine comparative validity of risk tools for African Americans and Hispanics using U.S. adult offender samples, and risk research that does exist for these minority groups is inconclusive.

While several studies have shown that actuarial tools are able to predict recidivism equally well for African American and/or Hispanic adult offenders (Brennan et al., 2009; Flores et al., 2016; Hanson et al., 2014; Olver et al., 2014; Skeem & Lowencamp, 2016; Snowden et al., 2010; Varela et al., 2013), there is a fairly consistent pattern of reduced accuracy relative to White offenders (Chenane et al., 2015; Fass et al., 2008; Larson et al., 2016; Leguízamo et al., 2015; Schlager & Simourd, 2007; Varela et al., 2013; Walsh, 2013; Whiteacre, 2006). Moreover, documented rates of predictive validity for ethnic minorities may appear higher than they actually are due to the frequent over-policing of disadvantaged non-White neighborhoods (Weitzer & Brunson, 2015). More aggressive police practices in ethnic communities lead to higher arrest rates (a commonly used outcome measure) that in some cases may validate the disproportionately higher risk ratings of these groups (Shepherd & Lewis-Fernandez, 2016). Other common criterion measures focus on additional forms of sanctions such as number of charges, convictions, or revocations, all of which may reflect not only the differential participation of ethnic groups in crime, but also the differential selection of ethnic groups by prosecutors when indicting defendants, as well as by judges and juries when convicting defendants (Blumstein, 1993).

To my knowledge, only seven empirical studies have directly compared the cross-cultural validity of risk instruments among a U.S. sample of White, African American, and Hispanic adult male offenders. Of these studies, only two found evidence of equal predictive effects across some or all of these ethnic groups (Hanson et al., 2014; Varela et al., 2013). Hanson et al. (2014) examined the predictive accuracy of Static-99 and Static-99R total scores for subsequent sexual recidivism on the basis of an

arrest for a sexual offense. Similarly, Varela et al. (2013) investigated the accuracy of Static-99/99-R risk scores for recidivism outcomes based on arrest charges, though the authors utilized two categories of offending—violent sexual recidivism and the combination of violent sexual or violent non-sexual recidivism. Both studies were conducted among large, ethnically heterogeneous samples of adult male sexual offenders and involved mean follow-up periods of approximately five years. Area under the curve (AUC) values were used to assess the predictive ability of risk scales in each sample. Hanson et al. (2014) reported large AUC values for Whites, African Americans, and Hispanics; although AUCs were slightly superior for Whites (0.86) compared to African Americans and Hispanics (0.75), no significant differences were found across groups. While Varela et al. (2013) did not find risk scores to significantly predict sexually violent recidivism, scores were significant predictors of the combined recidivism category for Whites and African Americans, exhibiting moderate AUC values for each group (0.62). Neither the Static-99 nor Static-99R were significantly predictive of this outcome for Hispanic offenders, though the effects were not significantly smaller for this group compared to Whites and African Americans. An important caveat to these findings is that both studies suffered from reduced statistical power due to extremely low base rates of recidivism in their samples.

Other methodological limitations commonly found in risk assessment validation studies concern defining recidivism outcomes on the basis of legal charges, as well as the use of insufficient performance indicators. Although recidivism is often operationalized dichotomously using criminal record data, these outcome measures are likely to underestimate actual offense rates as they are limited to crimes detected by the criminal justice system (Blumstein & Larson, 1971). Further, official justice records may be vulnerable to biases in the decision-making of legal actors, which can contribute to racial disparities and inflated rates of arrest or conviction. This is particularly true for sanctions based on general recidivism (e.g., drug use, property crimes) that involve greater discretion on the part of legal actors, as opposed to violent recidivism (Piquero & Brame, 2008). Notably, both Hanson et al. (2014) and Varela et al. (2013) relied on official arrest records to obtain outcome information, with the former study including noncontact offenses in its definition of recidivism (i.e., “victimless” crimes potentially prone to bias in arrest decisions).

In addition, many violence prediction studies are limited by the types of performance indicators used for analysis. Briefly, the predictive validity of risk tools can be separated into two components: calibration (i.e., how well a tool's risk predictions coincide with actual observed risk) and discrimination (i.e., how well a tool is able to distinguish between those who went on to be violent from those who did not) (Cook, 2007). Studies that fail to assess both types of components provide an incomplete portrayal of predictive accuracy (Singh, 2013). Notably, both Hanson et al. (2014) and Varela et al. (2013) used performance indicators of discrimination only (i.e., AUC values), and thus did not provide satisfactory proof of predictive utility.

The five other risk validation studies that have to date been conducted among White, African American, and Hispanic offenders in the U.S. have found evidence of cross-cultural variance using a number of commonly-used instruments (Chenane et al., 2015; Fass et al., 2008; Schlager & Simourd, 2007; Walsh, 2013; Whiteacre, 2006). To summarize these findings, Chenane et al. (2015) examined whether the predictive validity of the Level of Service Inventory-Revised (LSI-R) and its subcomponents differed across ethnic groups of prison inmates using measures of both discrimination and calibration (i.e., logistic odds ratios, positive predictive values, false positive/negative analyses). Outcome measures were taken from official disciplinary records and included the prevalence and incidence of violent and nonviolent misconduct during each inmate's first two years of confinement. Using z-tests to compare the magnitude of effects, the authors found that LSI-R total and subcomponent scores similarly predicted the occurrence of violent and nonviolent misconduct for White, African American, and Hispanic inmates, but that many of these scores exerted stronger effects on the frequency of both types of misconduct for White inmates compared with non-White inmates. The authors concluded that the LSI-R does not work equally well for White, African American, and Hispanic inmates if evaluators are primarily interested in identifying inmates who frequently perpetrate misconduct (as measured by the incidence of misconduct), highlighting the importance of choosing an appropriate outcome measure in any type of risk assessment.

Schlager and Simourd (2007) also investigated the predictive properties of the LSI-R and its subcomponents among African American and Hispanic parolees using official rearrest and reconviction data as outcome variables. The authors found that none of the risk scores predicted recidivism among Hispanic offenders. As well, total LSI-R

scores were not significant predictors of rearrest for African American offenders. In contrast, composite LSI-R scores were significant predictors of reconviction among African American offenders, and two of the subcomponents—Education/Employment and Family/Marital—were also associated with recidivism among this group. However, two caveats to the findings of this study include its failure to assess the magnitude of effect size differences, as well as its sole reliance on correlation coefficients (a discrimination index) to evaluate predictive validity. The use of Pearson's r to assess the relationship between a risk score and outcome measure presents methodological concerns as it does not distinguish between under- and over-classification errors. An instrument may predict violence equally well for different ethnic groups while also erroneously misclassifying one group as high risk and the other as low risk a significant portion of the time. However, in such a case these correlation coefficients would continue to appear the same for both groups, all else being equal.

Therefore, for an instrument to be fair, it should exhibit approximately equal rates of false positives and false negatives among different groups. Whiteacre (2006) and Fass et al. (2008) conducted calibration-based analyses of classification accuracy across ethnic groups using the LSI-R composite scores. Specifically, Whiteacre (2006) examined classification errors in rates of program failure and disciplinary incidents among a sample of inmates housed in a residential work release facility. He found a consistent overall pattern of classification errors for African Americans compared to Whites and Hispanics. In other words, the LSI-R both over-classified (i.e., misclassified as high-risk offenders) and under-classified (i.e., misclassified as low-risk offenders) African American inmates more frequently than other ethnic groups, depending on the outcome measure being predicted. Similarly, Fass et al. (2008) reported higher rates of false positives for African American offenders, as well as higher rates of false negatives for Whites and Hispanics, when using LSI-R composite scores to predict rearrest. This study also investigated the predictive properties of the Correctional Offender Management Profiling for Alternative Sanctions (COMPAS) tool, observing that African Americans were more frequently over-classified and under-classified compared to Whites or Hispanics. Although Larson et al. (2016) did not include Hispanic offenders in their sample, the authors discovered a similar pattern of results regarding the COMPAS in a large sample of pretrial defendants. Specifically, they found that African American defendants were twice as likely as White defendants to be misclassified as a higher risk

of violent recidivism, while White recidivists were misclassified as low risk 63.2% of the time.

Finally, Walsh (2013) tested the cross-ethnic stability of the predictive relationship between the Psychopathy Checklist-Revised (PCL-R) and violent arrests among a sample of jail inmates. Using a series of Cox regression survival analyses, the author identified ethnic differences in the predictive effects of psychopathy, which was more strongly predictive of violent recidivism among European American relative to African American inmates. In contrast, Walsh (2013) found no significant relationship between psychopathy and violence among Hispanics. Receiver operating characteristic (ROC) curve analyses produced a similar pattern of results. Significant moderate-large AUC values were found for Caucasians (0.71) and African Americans (0.65), whereas no significant relationship (0.57) was found for Hispanics. Pairwise comparisons indicated that the AUC values between Whites and Hispanics differed significantly.

Several reasons have been advanced for potential ethnic differences in predictive validity. As most risk instruments were normed on Caucasian samples, their content is likely skewed towards risk factors that are more relevant to White offenders. While traditional risk factors may well account for a significant proportion of violence risk in African Americans and Hispanics, there may also be unique criminogenic indicators that increase or decrease these offenders' levels of risk. Consequently, current risk scales may inadequately capture meaningful risk items specific to minority populations (Shepherd & Lewis-Fernandez, 2016). For instance, perceived racism or discrimination may predispose minority groups to aggressive behavior and other antisocial outcomes. Multiple longitudinal studies have observed significant associations between perceived discrimination and general/violent juvenile delinquency among African American youth (Martin et al., 2011; Simons et al., 2003; Unnever et al., 2017). Other research has found that minority youth who endorse beliefs of mistrust toward other racial or ethnic groups are more likely to engage in aggressive behavior (Zapolski et al., 2016). Additionally, one's level of acculturation could presumably moderate the utility of risk scores as this process involves the adoption of values, customs, and behaviors unique to American culture that are reflected in Western risk tools. For instance, examining within-group differences among the Hispanic population in the United States, Leguízamo et al. (2017) discovered poorer rates of predictive validity for non-U.S.-born individuals compared to their native-born counterparts. The possibility thus exists that certain risk items are better

predictors among individuals who have lived in the U.S. longer or who report greater affiliation with the mainstream culture.

Variation in the cross-cultural manifestation and expression of existing risk items may represent another explanation for inequivalent predictive validity across ethnic groups. Risk factors measured with risk assessment tools are generally indicators of underlying risk constructs or propensities for violence. While these broad risk-relevant constructs may be applicable to criminality among offenders of varying ethnicities, the specific risk items or indicators of those constructs, or alternatively the significance afforded to those indicators, may be different for cultural subgroups. For example, impulsivity, a risk construct theoretically related to violence, is further operationalized by specific risk factors such as substance use, employment instability, and frequent infidelity. However, scholars have noted that certain risk factors may not be indicators of the same construct for White and non-White offenders. For example, whereas substance abuse may signify self-regulation problems for White offenders, it may suggest a form of self-medication to cope with trauma or other adverse conditions among marginalized Indigenous offenders (Helmus et al., 2012). Similarly, noncompliance with treatment or supervision may indicate a lack of community support resources due to socioeconomic disadvantage instead of negative attitudes toward intervention (Shepherd & Lewis-Fernandez, 2016). Differences in the way similar underlying propensities for risk are expressed may thus partially explain diminished predictive accuracy for minority group offenders.

Finally, it is not mutually exclusive for well-established antecedents of crime to extend to African Americans and Hispanics while also being experienced disproportionately across ethnic groups. African American and Hispanic offenders have historically exhibited many more risk factors as a consequence of structural disadvantage. As a result, it is possible that a greater potency of risk factors is needed to predict recidivism for these minority subgroups (Gutierrez et al., 2016). In other words, the point at which items become criminogenic may occur at different levels of exposure for different ethnic groups (Shepherd & Lewis-Fernandez, 2016). For example, Schilling et al. (2007) found that adverse childhood experiences such as exposure to violence led to greater drug use and antisocial behavior in White youth compared with African American and Hispanic youth from similar geographical regions. One explanation for this finding is that marginalized African American and Hispanic youth are more likely to face

structural problems such as poverty and family disruption, which may predispose them to stronger coping mechanisms and reduced vulnerability to adversity. Thus, if certain risk factors are shown to carry different weight for minorities, the predictive accuracy of such tools can vary depending on the cultural background of the offender. In this way, ethnicity can also have a moderating influence on rates of predictive validity.

1.2. Risk Factors as Proxies for Race

A second and more controversial issue concerns the potential for actuarial risk assessment to create disparate impact or differential treatment for minority groups. Critics claim that certain controversial risk factors may be used as “proxies” for minority race and poverty (Harcourt, 2015; Starr, 2014). While most risk instruments do not explicitly consider race, the socioeconomic, family, and neighborhood-related factors that the instruments do consider are often highly race-correlated. Variables such as arrest history or poverty may be so highly race-correlated that they are labeled as proxies and can be used as indirect indicators of race, substituting for race when it is not measured directly. Compounding this problem is the fact that many of these alleged proxies are static risk factors that defendants cannot control, such as their education level or employment history. Of particular relevance are risk factors reflecting socioeconomic disadvantage that have their roots in historical injustices and ongoing racial discrimination. For instance, African Americans and Hispanics are more likely to suffer from poverty and be more economically disadvantaged than Caucasians (Walsh & Kosson, 2007). Discriminatory policies of social control—such as the legacies of slavery, Jim Crow, and overt racial discrimination for African Americans, and employment, housing, and educational discrimination against African Americans and Hispanics—may have caused these risk factors to become so prevalent in these racial communities that they become labeled as intrinsically criminogenic (Tonry, 2011).

As a result, these marginalized groups will unavoidably score higher on risk instruments, not necessarily because of their propensity for violence, but instead because of their elevated exposure to socioeconomic stressors. Many argue that currently used risk practices effectively individualize problems that are systemic in communities of color, categorizing individual offenders as high risk based on unalterable group characteristics (Hannah-Moffat, 2013; Wilson & Gutierrez, 2014). With greater sentencing restrictions imposed on individuals who score higher on these tools, the

question thus becomes at what point are justice officials “criminalizing race” if minorities are more frequently exposed to these types of structural and unchangeable adversities? This issue holds legal and constitutional relevance in terms of equal protections and discrimination law if it can be shown that certain risk factors differentially affect minority offenders who are then legally disadvantaged by their use. Even if factors such as economic strain are shown to increase everyone’s risk for violence at equal rates, the legal system may in effect be perpetrating invidious discrimination against ethnic minorities due to the racially disparate impact of these variables.

A constitutional argument can indeed be made against the use of actuarial static risk measures in judicial decision-making. Advocates of risk assessment acknowledge that socioeconomic-based prediction variables may be more common among minorities but maintain that as long as these risk factors improve predictions of reoffending, it would be irresponsible, in terms of public safety, to exclude such factors in sentencing decisions. However, this argument is founded on the premise that group-based generalizations are an appropriate method by which one can attribute individual risk to defendants. Such a premise has previously been ruled unconstitutional by the Supreme Court of the United States, censuring statistical discrimination (i.e., the use of group tendencies as a proxy for individual characteristics) as a form of forbidden discrimination and violation of the Equal Protection Clause (Starr, 2014). Specifically, in the case of *Bearden v. Georgia* (1983), the Court held that revoking a defendant’s probation simply because he could not afford to pay court-ordered restitution fines was tantamount to unconstitutional wealth-based discrimination. In its defense, the state of Georgia provided several empirical studies demonstrating a correlation between unemployment and recidivism. The Court, however, unequivocally rejected the notion that poverty was a risk factor warranting additional incapacitation. Notably, group-based generalizations rejected by the Court in *Bearden* constitute the entire rationale upon which actuarial risk tools rely (i.e., categorizing individuals as dangerous based on aggregate statistics), thus placing the constitutionality of actuarial instruments into question.

Furthermore, at the core of the Supreme Court's equal protection case law is a concern that individuals should not be penalized for immutable characteristics they have no control over. The Court has identified certain suspect classifications worthy of strict scrutiny in equal protection cases alleging unconstitutional discrimination. Many of the classifications historically subject to heightened scrutiny have involved immutable or

permanent characteristics such as race, national origin, and gender (Aukerman, 2005). The Court has repeatedly emphasized the unjustness of imposing disadvantages based on a characteristic which “its possessors are powerless to escape or set aside” (*Regents of the University of California v. Bakke*, 1978). It can be argued that many of the socioeconomic variables found in actuarial risk instruments are characteristics that marginalized defendants did not choose. For instance, many offenders did not, in a fundamental sense, choose to be poorly housed, poorly employed or unemployed, or poorly educated, though these are all characteristics on which prediction tools are permitted to discriminate against such offenders (Tonry, 2014). Immutability also concerns the central question of whether an individual can alter the respective characteristic, which in the case of static risk factors is altogether impossible. Criminal records, for instance, are generally unchangeable once acquired—while several states permit former offenders to expunge their criminal records, these expungements are restricted to individuals with minor records (Aukerman, 2005).

Risk assessment practices adopt an individualized focus probing for direct causes of violence that originate from an individual’s own choices. In essence, these tools operate on the premise that individuals have control over all risk factors being measured, including static variables. For instance, using criminal history as an example, one could argue that individuals are not born with criminal records, but rather acquire criminal records because they willingly chose to break the law (Aukerman, 2005). On the surface, then, this logic seems to invalidate any notion that risk factors are a suspect class due to their immutability. However, this logic risks committing the “individualistic fallacy” by assuming that individual-level outcomes such as violence can be explained exclusively in terms of individual-level characteristics (Valkonen, 1967). In other words, this reasoning fails to account for broader environmental and sociological factors that can influence one’s access to opportunities for employment, education, health, and socioeconomic advancement, all of which affect one’s propensity to commit crime. Many individuals subject to such deep-rooted conditions of socioeconomic deprivation are in effect powerless to propel themselves out of those circumstances by their own volition.

The question of immutability thus comes into play if systemic factors are depriving individuals of the opportunity to reduce their risk factors and scores (Kamorowski, 2018). Empirically, there is evidence to support that community and neighborhood context do affect one’s risk by restricting individual choices. For instance,

the MacArthur study of mental disorder and violence observed that mentally ill patients discharged to impoverished neighborhoods were nearly three times more likely to commit an assault after controlling for individual characteristics associated with violence (Monahan et al., 2001). Other studies have demonstrated that racial and ethnic differences in offending rates disappear when neighborhood disadvantage is controlled for (Peeples & Loeber, 1994; Silver, 2000). Thus, to the extent that ethnic groups lack control over macro-level adverse surroundings that render them higher risk and result in discriminatory treatment, certain risk factors may qualify as a suspect class in violation of equal protection case law.

In sum, many of the static socioeconomic and demographic variables currently employed by risk tools appear to meet relevant legal criteria signifying the potential for discrimination. Within the context of sentencing, these variables are used indirectly to approximate risk, thus rendering them “proxies” for risk (Monahan & Skeem, 2016). Given their strong correlations with class and race, it is all but guaranteed that these risk proxies will disparately impact marginalized groups of minorities—theoretically, then, they may ultimately function as proxies for race as well. To date, research on risk factors functioning as proxies for race has focused mainly on criminal history, highlighting its importance relative to other factors as well as its highly intertwined relationship with race. While several scholars have provided theoretical arguments in support of criminal history as a proxy for race (Hamilton, 2015; Harcourt, 2015; Starr, 2014), to my knowledge only one study has statistically analyzed this hypothesis. Skeem and Lowencamp (2016) refuted that criminal history was a proxy for race, instead arguing that criminal history mediates the relationship between race and future violent arrest. In contrast, no studies have analyzed the potential for other static factors to operate as proxies for race.

The present study will thus represent the first attempt to empirically test the role of other key variables included in risk classification. Listed below are a set of historical/static risk factors taken from the Historical scale of the Historical-Clinical-Risk Management 20 Version 3 (HCR-20v3; Douglas et al., 2013) risk assessment instrument that, based on supporting epidemiological evidence from the United States Census Bureau and other reputable primary sources, I argue are so highly entangled with race and class that they may discriminate against minorities by functioning as proxies for race. In the following sections, I will highlight how these disparities in risk are a product

of both a) increased exposure to risk factors due to systemic inequalities, and b) disproportional rates of ethnic minorities affected by mass incarceration. In many ways, these two causes mutually reinforce one another.

1.2.1. Prior Criminal History.¹

Risk factors often come to be associated with race sequentially, beginning with racial disparities in arrest and imprisonment rates. In 2017, the imprisonment rate of state and federal prisoners was 397 per 100,000 White males, compared to 2,336 per 100,000 African American males and 1,054 per 100,000 Hispanic males (United States Department of Justice, 2019). These disproportionate imprisonment rates are largely attributed to the high drug arrest rates of African Americans and Hispanics beginning in the 1980s with the War on Drugs. For instance, between 1980 and 2000, the national African American drug arrest rate increased from roughly 6.5 to 29.1 per 1,000 persons, compared to the minor increase in the White drug arrest rate from 3.5 to 4.6 per 1,000 persons (Beckett et al., 2006). Explanations for ethnically skewed drug arrest rates asserting that minorities use and sell drugs at higher rates than Whites have generally been disproven, as the former have been shown to use drugs less often and sell drugs no more than the latter. Instead, empirical research has demonstrated that the problem begins with racially profiled policing: police arrest minorities for drug involvement much more often than Whites, and once minorities are arrested, they are more likely than Whites to be convicted and imprisoned (Tonry, 2011). Blumstein's (1993) landmark study highlighted this latter fact by showing that the degree of racial disproportionality in incarceration rates that was unrelated to arrest was the highest for drug offenses at 50%.

Once an individual is arrested, he or she immediately acquires a criminal record. While current actuarial risk instruments differ extensively in the number and type of risk factors they contain, virtually all place heavy weight on prior criminal history. Widely used risk measures like the Level of Service Inventory-Revised (LSI-R; Andrews & Bonta, 1995), the Violence Risk Appraisal Guide-Revised (VRAG-R; Rice et al., 2013), and the Static-99R (Helmus et al., 2012) have all come to rely on one's history of arrests, convictions, and incarcerations as a statistical predictor of recidivism. This

¹ See Appendix B for additional epidemiological data.

emphasis on prior criminality has shaped not only actuarial prediction, but also state and federal sentencing guidelines in the United States that have turned to criminal history as a more effective way to predict future dangerousness (Harcourt, 2015). Stark racial disparities in arrest and imprisonment rates inevitably translate to a disproportionate share of ethnic minorities with some sort of criminal history. Thus, prediction instruments emphasizing prior criminality negatively impact African American and Hispanic communities, exacerbating pre-existing racial disparities in jails and prisons. Harcourt (2007) has characterized this process as a “ratchet effect,” in which a targeted population (i.e., ethnic minorities) gradually becomes disproportionate to its representation in the offending population. These racial imbalances are perpetuated as legal actors depend on arrest/conviction rates of the previous year to set the next year’s profiling targets. In effect, a cycle is formed in which past discriminatory decision-making informs future discriminatory decision-making. Over time, this ratchet effect engenders macro-level costs in the lives of profiled African Americans and Hispanics, who are faced with poorer employment, education, social, and familial outcomes (Harcourt, 2007).

According to the *increased exposure to risk model*, marginalized groups experience greater societal inequalities (e.g., poverty, poor health care and educational systems), causing individual-level risk factors to accumulate which ultimately increase one’s likelihood of arrest (Brown et al., 2014). Fite et al. (2009) found support for this model in a longitudinal study following African American and White youth from childhood to early adulthood. The authors examined 14 risk factors that were all shown to predict subsequent arrest in both racial groups; however, they found that race was significantly related to 10 of these variables, demonstrating that African American offenders exhibited a considerably higher degree of risk across multiple criminogenic domains.

Similarly, Agnew’s (1992) *general strain theory* theorizes that disproportionate environmental strains (e.g., economic, family, community) in minority communities, coupled with their lack of resources for dealing with these strains in prosocial ways, are responsible for racial differences in criminal offending. Research has confirmed that ethnic disparities in criminal behavior are largely reducible to disparities in exposure to stressors, with African Americans and Hispanics typically exposed to significantly more stressful events in their lifetimes compared to Caucasian individuals (Eitle & Turner, 2003; Kaufman et al., 2008). Thus, minorities’ inherent elevations in vulnerability may contribute to higher arrest rates and their ultimate overrepresentation in the criminal

justice system. The reverse is also true, as far too often incarceration carries adverse social consequences that make disadvantaged neighborhoods worse for minorities who return from prison (Clear, 2007). Subsequently, these negative impacts become concentrated in communities of color and jeopardize these individuals' prospects for employment, relationships, and neighborhood cohesion, all areas classified as criminogenic factors by commonly used risk assessment instruments. Thus, it is plausible that these disparate impacts have influenced certain risk factors in becoming proxies for race, discussed in further detail below.

1.2.2. Problems with Relationships.²

This risk factor reflects problems with stable personal relationships that result in a lack of prosocial or emotional support. These problems may include long-term singlehood, serious relationship conflicts, or alienation from friends and family (Douglas et al., 2013). Ethnic minorities in the United States are particularly likely to be affected by these types of difficulties. For instance, Caetano et al. (2005) observed over a 5-year period that African American and Hispanic couples are 2-3 times more likely to report intimate partner violence than White couples. In addition, the rate of recurrence for severe intimate partner violence was found to be 6 and 4 times higher for African American and Hispanic couples, respectively, compared to the rate among White couples. Relationship problems are particularly salient for African Americans, who display lower rates of marriage and higher rates of divorce relative to other ethnic groups (Raley et al., 2015). Whereas having children often serves as a strong incentive for couples to stay together, research has shown that African American couples are less than half as likely as White couples to be living together a year after the birth of their child (Western & McLanahan, 2000). This in turn has led to a higher percentage of African American children being raised in single-parent households (Raley et al., 2015). As discussed below, ethnic differences in marriage patterns are even more pronounced in families affected by incarceration.

Scholars have attributed current African American disparities in marital and familial relations to long-run historical influences stemming from the legacy of slavery. Stevenson (1995) reviewed the dynamics of African American family structure in colonial

² See Appendix B for additional epidemiological data.

times and argued that the restrictive environment of slavery permitted few opportunities for slaves to marry, remain married long enough to produce children, or create co-residential marriages and nuclear families. This oppressive environment functioned through legislation that essentially defined what “family” was for these individuals—for instance, an act passed in 1662 in Virginia mandated that the children of an African American female, regardless of the color or condition of their father, had to take the status of their mother³ (Hening, 1823). For two centuries, slave children’s status and parentage came to be identified solely with their mother, undermining any role of slave fathers who struggled to maintain equal influence in the daily lives of their families. These policies resulted in a prevalence of matrifocal families with mothers considered the head of the household (Stevenson, 1995).

Decades later, this predominance of female family headships among African Americans has endured as African American men continue to suffer from economic and other structural disadvantages. As mentioned above, racial oppression has contributed to high rates of unemployment for African American males. African American women have often been able to find work when African American men could not, and consequently have played a more significant economic role in their families relative to their White counterparts (Hatchett et al., 1995). Importantly, a major risk factor for long-term singlehood and marital instability in African Americans is the economic anxiety experienced by many African American husbands about being able to provide for their families. Indeed, African American single men who possess stable employment are 2 times more likely to marry than their unemployed counterparts (Testa & Krogh, 1995). Longitudinal research has also demonstrated male unemployment to be a strong predictor of intimate partner violence recurrence (Caetano et al., 2005). Additionally, prior discussion on African Americans’ lower rates of educational attainment also proves relevant, as the chance of a marriage ending in divorce is significantly lower for individuals with more education (Aughinbaugh et al., 2013).

Mass incarceration further contributes to the concentration of female-headed, single-parent families in ethnic communities. Imprisonment has been shown to

³ The 1662 statute read: “Whereas some doubts have arisen whether children got by any Englishman upon a negro woman should be slave or free, *Be it therefore enacted and declared by this present grand assembly*, that all children borne in this country shall be held bound or free only according to the condition of the mother” (Hening, 1823, p. 170).

significantly reduce one's likelihood of being married. These effects are felt most strongly by African American men over 23 years old, whose chances of getting married drop by 50 percent after being incarcerated (Thomas, 2005). Former inmates who resume relations with women upon being released are more likely to cohabit instead of getting married, an arrangement which often worsens intergenerational family dysfunction in minority communities. The family attachments of African American and Hispanic male prisoners are also substantially weaker than those of their White counterparts. For instance, 62.7% of African American fathers and 41.0% of Hispanic fathers in state prison had never been married, compared to only 26.7% of White fathers (United States Department of Justice, 1997). For married couples, the likelihood of divorce drastically increases once a spouse is imprisoned (Hairston, 1989). Incarceration also has detrimental effects on relationships between inmate fathers and their children as fathers lose opportunities to create parental bonds and support their children emotionally and financially (Clear, 2007). These effects are particularly salient for male inmates of color who are considerably more likely to have minor children (70.0% African American federal inmates/68.5% Hispanic/47.8% White) as well as a significantly higher number of minor children (United States Department of Justice, 2008).

1.2.3. Problems with Employment.⁴

This risk factor encompasses unemployment, lack of education, and resulting poverty/financial difficulties that have come to be implicitly associated with race. This state of affairs is highlighted by staggering statistics obtained from the United States Census Bureau (2017). For instance, while the official poverty rate in 2017 for non-Hispanic Whites was 8.7%, the rates for African Americans and Hispanics were 21.2% and 18.3%, respectively. A particularly disturbing statistic involves the percentage of children below the poverty line. In 2009, 35.3% of all African American children and 32.5% of all Hispanic children were living in poverty, compared with only 17.0% of all White children (United States Census Bureau, 2012). Childhood poverty status affects approximately one-third of each minority group, or roughly double the levels found among White children. Notably, childhood poverty is associated with a plethora of other social problems—for instance, single-parent households, low educational attainment,

⁴ See Appendix B for additional epidemiological data.

and high rates of involvement in crime—all of which are also frequently assessed and contribute to higher scores in risk instruments (Walker et al., 2000).

Furthermore, median household incomes vary drastically by race—non-Hispanic Whites earned \$68,145 in 2017, compared to African Americans and Hispanics, who earned \$40,258 and \$50,486, respectively (United States Census Bureau, 2017). Additionally, 16.0% of African Americans and 12.5% of Hispanics were unemployed in 2010, compared to only 8.7% of Whites (United States Census Bureau, 2012). Notably, unemployment rates are approximately twice as high for African Americans than Whites. These figures may reasonably be related to the lower levels of educational attainment seen in ethnic minorities, as only 17.7% of African American and 12.9% of Hispanic males graduated college or beyond in 2010, compared to 30.8% of White males (United States Census Bureau, 2012). By and large, these racial disparities have resulted from two main processes. While these disparities were first introduced through systemic inequalities disproportionately affecting ethnic groups, they have been maintained by the pervasive consequences of mass incarceration on communities of color.

Firstly, a lengthy history of social, economic, and political oppression has created a host of unequal power distributions and macro-level inequalities for ethnic minorities in American society. This repressive history has effectively created a “caste system” in the United States, whereby privileged Caucasian groups retain access to the best jobs and other opportunities that mobilize them to the highest stratum of society. Non-privileged colored groups are consequently forced to take jobs in the secondary labor market that are fraught with low wages and instability (Gabiddon, 2010). This economic subordination is particularly salient among African Americans, as it originated from America’s slave system which produced a wealth imbalance that is yet to subside (Shapiro, 2004). Although slavery officially ended after the U.S. Civil War in 1864, subtle efforts to discourage African American upward mobility have endured since the end of the Reconstruction era, resulting in the exclusion of these minorities from decent jobs and incomes as well as quality schools and housing (Gans, 2005). Barriers to occupational mobility are also observed in the current landscape of Hispanic individuals who are disproportionately represented among low-paying, low-skilled jobs, often due to these minorities’ low high school completion rates and high dropout rates (Mundra et al., 2003).

Secondly, it has become evident that mass incarceration exacerbates the socioeconomic outcomes of former inmates, particularly for ethnic minorities who come into contact with the criminal justice system at disproportional rates. Former prison inmates have vastly higher unemployment rates than non-prisoners, and those who do succeed in securing employment suffer a 40% decrease in estimated annual earnings (Monahan, 2017). These consequences are a product of legislation in the United States that limits the economic opportunities of convicted felons and former inmates (Brewer & Heitzeg, 2008). For instance, every state imposes employment restrictions on individuals released from prison. In particular, convicted felons are prohibited from acquiring certain types of paraprofessional employment and employment licenses (Clear, 2007). These restrictions often result in significant loss of income for African American and Hispanic families who previously relied on the income of the male head of household, who may now have a felony conviction. Such families may be forced to go onto public assistance, an option that is also often barred from former inmates. For instance, drug felons are permanently prohibited from receiving welfare programs such as Temporary Assistance for Needy Families (TANF) and food stamps (Brewer & Heitzeg, 2008). Additionally, drug felons are permanently restricted from obtaining federal financial aid for education, further intensifying racial disparities in educational attainment.

Importantly, the constitutional arguments made above indicate the Supreme Court's explicit rejection of the use of poverty or income as recidivism predictors. Starr (2014) has argued that socioeconomic variables based on unemployment, education, and neighborhood characteristics all constitute proxies for poverty and income and are thus considered suspect based on the ruling set out in *Bearden v. Georgia* (1983). While *Bearden* focused specifically on employment status, ruling the use of statistical generalizations based on this variable unconstitutional, the inclusion of education in risk tools is due to its approximation of the defendant's future prospects for employment and legitimate earnings. Neighborhood characteristics could potentially be considered socioeconomic variables as well due to their linkage to poverty (Starr, 2014). Extending this logic, I argue that since racial minorities are disproportionately represented among individuals who are unemployed, have lower educational attainment, and live in disadvantaged neighborhoods, these static socioeconomic-based variables may be construed as proxies for race as well. In the analyses below, I will thus also examine whether certain socioeconomic variables are associated with poverty/income. If used in

sentencing, such variables could amount to unconstitutional wealth-based discrimination; further, given the significant correlation between race and poverty, one could extend these findings to argue that these variables also constitute proxies for race.

1.2.4. Problems with Neighborhoods/Housing.⁵

This risk factor encompasses neighborhood disadvantage (including high-crime neighborhoods) and problematic living situations (including frequent address changes), elements that are also found at higher rates in minority communities. For instance, the United States Census Bureau (2013) has shown that over one-fourth of housing assistance recipients were African American and about one-fifth were Hispanic in 2013. In addition, African American and Hispanic households were significantly less likely to be owner-occupied (46.8% and 50.5%, respectively) compared to 72.3% of owner-occupied White households in 2009 (United States Census Bureau, 2012). These statistics are noteworthy given that renter-occupied households are more likely to be under the poverty line and experience neighborhood and housing disadvantage (e.g., serious crime, street noise, signs of mice/rats). Such racial disparities further compound these individuals' aforementioned economic disadvantage and have similarly resulted from a combination of historical social oppression and the collateral consequences of incarceration.

Because of ethnic minorities' perceived lower status in the social hierarchy, some Whites have historically been reluctant to interact with or live near them. The result is that many African Americans and Hispanics are isolated from decent basic services and employment opportunities that have left marginalized inner-city communities for more affluent suburban areas (Gabiddon, 2010). White preferences for segregation thereby limit the housing market opportunities of African American and Hispanic households. Prior to the passing of the Fair Housing Act in 1968, housing discrimination was rampant, including practices of social steering (i.e., concentrating poor minorities into ghetto-like neighborhoods lacking resources) and redlining (i.e., denying financial support/services to neighborhoods based on class or ethnicity). Consequently, many of these neighborhoods experienced widespread deterioration, perpetuating cycles of poverty and crime (South & Deane, 1993). Due to extensive levels of residential

⁵ See Appendix B for additional epidemiological data.

segregation and the concentration of crime in urban neighborhoods of color, the fact that many risk tools assess for neighborhood crime rate variables is especially concerning.

According to the *social disorganization theory* (Rose & Clear, 1998), mass incarceration of ethnic minorities serves to break down these communities' social organization and human capital. For one, mass incarceration removes large numbers of laborers from these communities, worsening their socioeconomic outcomes. It also increases the mobility in many neighborhoods by creating a cycle of people leaving for and then being released from prison. This leads to weaker ties and greater instability in community social supports that could help suppress deviance (Greene & Gabiddon, 2012). Additionally, this phenomenon fuels the heterogeneity of communities as offenders who were imprisoned adopt new types of antisocial behaviors and cognitions that they then bring back to their neighborhoods (Clear, 2007). Moreover, mass incarceration reduces levels of collective efficacy in a community, decreasing social cohesion and making it less likely that neighbors will intervene on behalf of the common good. Importantly, lower levels of neighborhood cohesion have been linked to greater crime and disorder, whereas communities rich in human capital are prone to less street crime (Clear, 2007). Lastly, drug felons and offenders convicted of violent criminal activity are permanently barred from public housing, potentially further exacerbating accommodation difficulties for ethnic minorities (Brewer & Heitzeg, 2008).

1.2.5. Problems with Adverse Childrearing Experiences.⁶

This risk factor encompasses a history of experiencing harmful or traumatic events as a child through parental behaviors or lifestyle choices that have been shown to cause negative outcomes in youth and adults. It includes parental behaviors that model antisocial behavior for the child (e.g., parental criminality, domestic violence) or that produce unstable home environments (e.g., frequent moving, institutional raising) (Douglas et al., 2013). This factor is hypothesized to afflict ethnic minorities more often than Whites to the extent that African American and Hispanic children are more likely to have a parent in prison, which often results in a host of behavioral and emotional problems for the child. In 2007, an estimated 1,559,200 children had a father in prison, and nearly half of these were children of African American fathers (United States

⁶ See Appendix B for additional epidemiological data.

Department of Justice, 2008). During this year, African American children were 7.5 times more likely and Hispanic children were more than 2.5 times more likely than White children to have a parent in prison.

Murray and Farrington (2005) found that children of incarcerated parents were between 2 and 13 times more likely to suffer various negative outcomes compared to children without parental separation or children for whom parental separation was caused by other factors. These adverse outcomes frequently include mental health problems, poor academic performance, aggression, delinquency, and drug abuse (Clear, 2007). Additionally, Pattillo et al. (2004) demonstrated that as the number of risk factors of an incarcerated father increases, the likelihood of his children living in foster care or other nonparental care arrangements increases in turn. Striking ethnic differences exist with respect to the percentage of children in foster care. African American children are most seriously affected by disproportionality in the foster care system, comprising 38% of the children in care while only 15% of the child population. Hispanic children are slightly overrepresented in child welfare, comprising 17% of the children in care while only 12.5% of the child population, with indications that they are coming into care at faster rates than other children (Chipungu & Bent-Goodley, 2004). Notably, foster care placements have also been linked to a variety of negative long-term life outcomes, such as incarceration (Courtney & Barth, 1996). Finally, African American and Hispanic children are at greater risk of child maltreatment, chiefly by witnessing domestic violence (Roberts et al., 2011).

1.2.6. Problems with Supervision Response.⁷

Finally, this risk factor reflects a history of serious problems complying with supervision plans (e.g., probation and parole) that are intended to reduce an offender's risk of violence (Douglas et al., 2013). The sociopolitical circumstances that contribute to higher rates of ethnic minorities exhibiting this risk factor are similar to those mentioned above and thus will not be discussed further. Specifically, I hypothesize that this risk factor may serve as a proxy for race in the case of African Americans. A large-scale study of offenders released on probation in 2014 found that African American probationers experienced probation revocation at significantly higher rates than White

⁷ See Appendix B for additional epidemiological data.

and Hispanic probationers (Jannetta et al., 2014). Additionally, ethnic disparities have been shown to exist in rates of parole violation. Examining a large sample of prisoners released on parole between 1983 and 2003, Mechoulam and Sahuguet (2015) found that being African American was associated with an average increase of 12 percentage points in the probability of parole violation.

1.3. Current Study

Existing research on the cross-cultural generalizability of risk instruments suggests that current risk assessment practices in the United States are insufficiently responsive to the unique needs and circumstances of African American and Hispanic minority groups. Additionally, several of the most commonly measured risk factors in risk tools have been demonstrated to show strong correlations with these races. Neither public policy nor empirical research has yet to confront the fact that using these risk factors may be the functional equivalent of using race as a criterion in sentencing and other criminal justice decision-making, a clear violation of equal protections under the law. Examining whether static risk factors found in these tools exhibit equivalent rates of predictive accuracy across groups, as well as whether certain factors unjustly function as proxies for race, can help inform whether these instruments can perpetuate disparities in correctional outcomes between White and non-White offenders. In the absence of adequate research on the psychometric properties of these tools, they remain liable to implicit discrimination and caution is thus warranted when using them with ethnic minorities. Furthermore, greater understanding of potential test bias in risk assessment has implications for the ethical practice of professional psychologists. For instance, the American Psychological Association's (APA) *Ethical Principles of Psychologists and Code of Conduct* specifically references the need for psychologists to utilize assessment tools "whose validity and reliability have been established for use with members of the population tested" (APA, 2002, p. 1071). Thus, to address these gaps in both the literature and public policy, the aims of this Master's thesis are as follows.

First, I will analyze if there are any differences in the prevalence of 10 core historical risk factors across Whites, African Americans, and Hispanics. Although mean score differences between groups do not in and of themselves signify test bias, the use of instruments that result in such differences may engender disparate impact in

correctional outcomes. Even if risk tools accurately measure one's risk level, the use of these tools could still be viewed as morally unfair.

Second, I will examine the association between risk scores and a variety of outcomes to assess for predictive bias⁸ across ethnic groups. This study contributes to the risk instrument validation literature by also investigating whether acculturation level moderates the relationship between risk factors and offending outcomes. To address the limitations in previous research, the current study provides a more multifaceted evaluation of predictive validity involving a combination of discrimination- and calibration-based indicators (i.e., point-biserial correlation coefficients, AUC values, logistic odds ratios, sensitivity, specificity, positive predictive values, negative predictive values, and false positive/false negative analyses). This will allow for more comprehensive descriptions of the risk instrument's performance in identifying higher- versus lower-risk groups, as well as whether certain ethnic groups were more or less likely to be misclassified as high/low risk.

Furthermore, given that the predictive accuracy of risk tools is contingent upon the specific outcome being evaluated, the current study attempted to avoid any methodological problems associated with a biased criterion measure by examining predictive bias with a range of outcome variables (e.g., violence prevalence, antisocial behavior prevalence, any arrest, violence incidence, and a composite prior criminal history variable consisting of number of arrests, convictions, and incarcerations). While prior studies examined differences in offending/violence using solely binary outcomes—generally any arrest and violent arrest—I opted to assess the accuracy of risk scores using both dichotomous and continuous outcome measures. Examining both violence prevalence (i.e., whether an individual engaged in violence) and violence incidence (i.e., the frequency of violent activities) will provide a more comprehensive evaluation of validity since certain predictors may be more relevant or valid in identifying one or the other type of outcome (Blumstein et al., 1978). Additionally, by examining outcomes other than one's general arrest history, this approach also circumvents any potential bias

⁸ Given that the outcomes of the current study were past crime and violence, I was limited to examining the concurrent/postdictive validity of risk factors. The terms “predictive bias” or “predictive validity” in this context are thus used loosely to refer to bias/validity with regard to the association between risk factors and past criminality across ethnic groups.

that might stem from the differential selection theory, in which racial disparities are viewed as effects of over-policing (Skeem & Lowencamp, 2016).

Finally, in contrast to former studies that limited their examination of predictive accuracy to the global level (i.e., total risk scores on the respective scale), the current study advances existing research by analyzing predictive accuracy at both the global level (i.e., total risk score) and the individual risk domain level (i.e., all 10 risk factor scores). Although the appropriate level for evaluating test fairness is the test level, this approach was chosen to ensure any bias at both the test and subscale levels was identified, as differences in fairness across individual risk factors could be obscured at the global level (Skeem & Lowencamp, 2016). For instance, within cognitive testing, it is “common to find roughly equal numbers of differentially functioning items favoring each subgroup, resulting in no systematic bias at the test level” (SIOP, 2018, p. 24).

Third, I will address the contentious issue of whether any risk factors can be characterized as proxies for ethnicity. Building on Skeem and Lowenkamp’s (2016) findings in which criminal history was investigated as a proxy for race, this study provides the first comprehensive analysis of whether nine other key risk factors are disproportionately associated with, and could thus serve as indirect substitutes for, minority racial groups. Given the constitutionally forbidden use of class- and wealth-based discrimination, I will also examine whether socioeconomic indicators in my sample are associated with, and amount to proxies for, poverty and income. Because of the significant correlation between race and poverty, one could extrapolate these findings to argue that these variables also cannot be meaningfully distinguished from race or ethnicity.

Chapter 2.

Method

2.1. Participants

Three-hundred and two adult males were recruited through Amazon's Mechanical Turk (MTurk) in exchange for a monetary payment; 32 of these participants were excluded from analyses (explanation below) resulting in a final sample of 270 participants. The majority of the sample (57.8%) was between the ages of 25 and 34. In terms of their ethnicity, 38.1% ($n = 103$) of participants identified as White/Caucasian, 35.2% ($n = 95$) identified as Black/African American, and 26.7% ($n = 72$) identified as Hispanic/Latino. Although an a priori power analysis indicated that a sample of at least 337 would allow detection of a small to medium effect ($d = .25$) with an alpha of .05 and a desired minimum power of .80, the recruited sample size represents the number of participants that were accessible via MTurk.

2.1.1. Inclusion Criteria

In order to take part in the survey, participants must have reported: (1) being male, (2) being at least 18 years old, (3) being able to speak English, (4) currently residing in the United States, and (5) identifying as either Caucasian, African American, or Hispanic. Quotas were implemented to ensure 33.3% of participants identified as Caucasian, 33.3% identified as African American, and 33.3% identified as Hispanic. In addition, quotas were established to ensure 50% of each ethnic category had engaged in prior violent activity. Specifically, to qualify, these participants must have reported lifetime engagement in at least one violent activity from a list of 13 major offenses. The experimental group consisted of adult former violent offenders since research on the cross-cultural accuracy of risk assessment in this population is lacking, with many risk validation studies focusing on youth offenders or psychiatric inpatients (Shepherd et al., 2014; Snowden et al., 2010; O'Shea et al., 2013).

I relied on participants' self-reports of previous violent activity for inclusion criteria as I did not have access to official justice records. Self-report measures are frequently

used within forensic psychology and criminology and offer several distinct advantages (Thornberry & Krohn, 2000). It is widely recognized that recorded incidence and prevalence rates of offending represent significant underestimations of “true” recidivism as they are limited to crimes detected by the police (Blumstein & Larson, 1971). Indeed, considerably larger crime rates have repeatedly been reported in offender self-report studies, indicating the more exhaustive nature of self-report data (Dunford & Elliot, 1984). Additionally, research has found self-report measures of criminal activity to exhibit comparable levels of reliability and validity to other standard outcome measures within social science (Hindelang et. al., 1981; Huizinga & Elliot, 1983). Studies utilizing a variety of assessment measures and follow-up periods have demonstrated consistently high test-retest reliability and predictive validity for self-reports of antisocial behavior (Farrington, 1973; Farrington, 2003; Huizinga & Elliot, 1986). Therefore, given my goal to recruit individuals with a history of violent offending (as opposed to only individuals charged for their crimes), I used self-reported engagement in violent activity to generate an appropriate sample.

However, given the susceptibility of self-report data to response bias, I included a validation check requiring participants to report their violent activity at both the beginning and end of the survey (Hanniball et al., 2019). As the online survey was quite lengthy (131+ questions taking most participants approximately 30 minutes or more to complete), I presumed that participants who may have been dishonest about their criminal activities at the start of the survey would be unable to accurately report the same activity at the end. Therefore, I compared criminal activities listed at both time points to confirm matched reports. Participant responses must have been identical at both time points for inclusion in data analyses. Responses from 32 individuals did not match and these individuals were thus excluded.

2.2. Procedure

Participants were recruited from a post on Amazon’s MTurk website that included a brief description of the study. The post provided a link to the online survey, which was hosted on Qualtrics, a secure web server. Prior to starting the questionnaire, all participants were presented with a list of five inclusion criteria to ensure they were eligible to participate in the study. Participants who did not meet these criteria were informed that they did not qualify and were directed away from the survey. Participants

who did meet these criteria were then presented with an online consent form that introduced the nature of the study and provided the researcher's contact information should they have any questions regarding the study before participating. Participants had to select the option indicating they consented to the study before they could proceed. Participants who declined to consent were automatically exited from the survey. Lastly, participants were asked if they would like to be contacted in the future to answer a series of follow-up questions. Individuals who agreed to this follow-up contact were asked to provide their MTurk worker ID. All data collected from participants is securely stored on Simon Fraser University's computing server. Ethics approval was received from Simon Fraser University's Office of Research Ethics prior to data collection.

2.3. Materials

2.3.1. Violent and Antisocial Activity

Participants were first asked to report their violent behavior by indicating any and all violent activities they had engaged in within their lifetime from a list of 13 common felony offenses (Table 2.1). Half of the participants from each ethnic group who selected at least one criminal action, as well as half of the participants from each ethnic group who did not select any criminal actions, were allowed to complete the study. I next asked participants to list which non-violent activities they had been involved in over their lifetime from a list of 17 antisocial actions. "Violence prevalence" served as my primary outcome measure while "antisocial behavior prevalence" served as a secondary outcome measure. Both variables are dichotomous and indicate whether an individual has ever committed a violent or antisocial act, respectively, in their lifetime. I also totaled up the number of offense types that each individual reported engaging in from Table 2.1, creating a continuous outcome measure called "violence incidence." As mentioned above, utilizing both prevalence and incidence of violent offenses as outcome measures allows for a more comprehensive examination of violence, which is important since some predictors may be more relevant for understanding whether an individual engaged in violence at all (i.e., prevalence), while others may be stronger predictors of the frequency of violence (i.e., incidence) (Chenane et al., 2015).

My final sample consisted of 36.7% ($n = 99$) of participants indicating any violent activity and 51.5% ($n = 139$) reporting any antisocial activity. Among Caucasians, 41.7% ($n = 43$) reported at least one type of violent activity, compared to 36.8% ($n = 35$) of African Americans and 29.2% ($n = 21$) of Hispanics.

Table 2.1. Reported violent activity of participants ($n = 270$).

Offense Type	% (n)
Assault	22.2% (60)
Battery	10.4% (28)
Robbery	10.4% (28)
Weapons offenses	8.1% (22)
Other violent activity	5.6% (15)
Arson	4.8% (13)
Sexual assault	3.7% (10)
Attempted murder	3.3% (9)
Manslaughter	3.0% (8)
Murder	2.2% (6)
Kidnapping	2.2% (6)
Human trafficking	1.9% (5)
Hijacking	1.5% (4)

Note: Some individuals in this sample reported committing more than one type of offense.

Within the H1 risk domain described below, participants were also asked about their prior criminal history (i.e., number of times they have been arrested, convicted, and incarcerated). “Any arrest” was used as an additional dichotomous criterion measure in my analyses. Further, an individual’s total number of arrests, convictions, and incarcerations was consolidated into the count variable “prior criminal history,” which was also used as an outcome measure. The means and standard deviations of these criminological variables and all aforementioned outcome variables across ethnic groups are reported in the Results section below (see Table 4.3).

2.3.2. Demographic Variables

Participants were next asked to report their state of residence, nature of residence (i.e., urban, suburban, or rural), population of residence, primary language, country of origin, and parents’ country of origin. These demographics were collected to serve as potential covariates in subsequent analyses.

2.3.3. Acculturation Measure

Vancouver Index of Acculturation (VIA).

The VIA (Ryder et al., 2000) is a 20-item questionnaire that assesses the extent to which respondents participate in and identify with the nondominant and dominant cultures. Each cultural orientation subscale has 10 items, which are identical in wording except for the culture referenced (heritage or American). These items assess three domains of acculturation: values, social relationships, and adherence to traditions. The VIA items are rated on a 9-point Likert scale, ranging from 1 (strongly disagree) to 9 (strongly agree). The self-ratings on each subscale were summed to derive a Heritage Orientation and Mainstream Orientation score for each participant, which could range from 10 to 90, with higher scores indicating greater acculturation to either the heritage culture or mainstream culture, respectively. The VIA has been demonstrated to have good reliability ($\alpha = .83$) across many different samples (Huynh et al., 2009). The VIA subscale scores demonstrated excellent internal consistency (Heritage Orientation $\alpha = .90$; Mainstream Orientation $\alpha = .91$) in the current sample.

2.3.4. Violence Risk Factor Measures

Violence risk factors were measured by a series of questions within 10 risk factor domains. These domains are guided by the 10 risk factors assessed on the Historical (H) scale in the Historical-Clinical-Risk Management 20 Version 3 (HCR-20_{v3}; Douglas et al., 2013)⁹ structured professional judgment tool, and reflect a summary of what the present literature indicates to be “core” risk factors for violence. The 10 factors span across three general categories: (a) past problems in adjustment or living (H3: Relationships, H4: Employment, and H8: Traumatic Experiences); (b) past problems with mental health (H5: Substance Use, H6: Major Mental Disorder, and H7: Personality Disorder); and (c) past antisociality (H1: Violence, H2: Other Antisocial Behavior, H9: Violent Attitudes, and H10: Treatment or Supervision Response) (Douglas et al., 2013). Because of the cross-sectional and postdictive nature of the study, I opted not to incorporate the Clinical or Risk Management subscale items since these indices emphasize dynamic risk factors that are likely to change over time. However, the

⁹ See Appendix C for the HCR-20_{v3} research measure.

Historical index on the HCR-20_{v3} has been shown to possess robust predictive validity for violence in and of itself (Doyle et al., 2014; Grann et al., 2000). When assessing for H1-H10, the appropriate timeframe is over the participant's lifetime, which I have emulated in this study.

Risk factor indices were operationalized by composite scores created to reduce the number of variables and increase the reliability of measurement. Each composite was made up of multiple variables intended to capture the theoretical meaning of each respective risk factor based on the comprehensive descriptions provided in the HCR-20_{v3} user manual. In addition to defining each risk factor, the manual provides item indicators that clarify the definition of each risk factor and help evaluators make judgments of both the presence and relevance of each risk factor. Inspired by this dual assessment of presence and relevance, each composite variable included four general questions assessing the presence of each risk factor in the individual's past as well as the relevance of each risk factor for their risk of violence. As each risk factor may express itself differently and be more or less influential vis-à-vis violence across individuals, it is an important step to evaluate how each risk factor manifests for each individual by gathering relevance ratings. Indeed, the authors of the HCR-20_{v3} have noted that individual relevance ratings contribute incremental validity to presence ratings (Douglas et al., 2013).

The remaining items within each composite variable were logically selected based on salient item indicators in the HCR-20_{v3} manual. Within each index, certain items were adapted from validated instruments measuring similar constructs to the respective risk factor, while other items were developed specifically for this study. As the individual items within each index were measured on different scales, I standardized the items and summed the z-scores together to create each composite risk factor score, with higher scores indicating greater problems with the respective risk factor. This resulted in 10 separate subscales that were subsequently added together to create a total risk factor scale, allowing for analyses at both the individual and the global level. Cronbach's alpha was calculated for each index based on its standardized items. Information concerning the specific items and internal consistency of each subscale is described below.

H1. History of Problems with Violence.

This risk factor reflects a history of problems stemming from an individual's perpetration of violence (Douglas et al., 2013). The subscale consists of nine items reflecting presence and relevance of the risk factor, as well as certain aspects of the H1 definition and indicators listed in the HCR-20 manual. These items assess the presence of many different types of violence, whether violence started at a young age (i.e., before puberty), as well as a history of legal consequences as a result of violence. The latter is quantified by number of prior arrests, prior convictions, and prior incarcerations. H1 subscale scores demonstrated excellent internal consistency ($\alpha = .90$) in the current sample.

H2. History of Problems with Other Antisocial Behavior.

This risk factor reflects a history of problems stemming from an individual's perpetration of antisocial behavior other than violence (Douglas et al., 2013). The subscale consists of six items reflecting presence and relevance of the risk factor, as well as certain aspects of the H2 definition and indicators listed in the HCR-20 manual. These items assess the presence of self-reported problems with other antisocial behavior, many different types of other antisocial behavior, and whether antisocial behavior started at a young age (i.e., before puberty). H2 subscale scores demonstrated good-excellent internal consistency ($\alpha = .88$) in the current sample.

H3. History of Problems with Relationships.

This risk factor reflects a history of serious problems establishing and maintaining stable personal relationships that results in a lack of positive social or emotional support (Douglas et al., 2013). This includes problems with both intimate and non-intimate relationships. This subscale consists of 37 items reflecting presence and relevance of the risk factor, as well as certain aspects of the H3 definition and indicators listed in the HCR-20 manual. H3 subscale scores demonstrated excellent internal consistency ($\alpha = .91$) in the current sample.

Regarding intimate relationships, the items assess a lack of long-term intimate relationships; frequent break-ups; frequent infidelity; emotionally distant relationships; and intimate partner abuse and violence. Several of these questions were taken from the Pathways Characteristics of Romantic Relationships measure, which is part of a

comprehensive battery of measures used in the Pathways to Desistance study (Mulvey, 2014).

The Relationship Assessment Scale (RAS; Dicke & Hendrick, 1998) was used to assess the level of emotional distance within one's intimate relationships. The RAS is a seven-item measure of global relationship satisfaction that is applicable to anyone in an intimate relationship, including married, dating, cohabiting, and engaged couples. The measure has previously shown good internal consistency ($\alpha = .86$) (Vaughn & Baier, 1999). For the current study, four questions were adopted from the RAS based on judgment of similarity to the HCR-20 manual's content and were reverse scored so that higher scores indicated lower relationship satisfaction. The RAS was only given to individuals who reported at least one current or former relationship.

The Revised Conflict Tactics Scale (CTS2)—Short Form (CTS2S; Straus & Douglas, 2004) was used in the current study to assess one's experiences of intimate partner abuse/violence, and more generally conflict and instability within one's romantic relationships. The instrument contains 20 items situated within several scales that measure tactics used when there is conflict in the relationships of dating, cohabiting, or marital couples. The CTS2S includes 10 questions assessing the behavior of the respondent; these 10 questions are then repeated to assess the behavior of the respondent's partner. Research has demonstrated high levels of concurrent and construct validity using the CTS2S. For the current study, eight of these questions were selected based on judgment of similarity to the HCR-20 manual's content, for a total of 16 questions. The measure has been adapted for the current study to allow for the summing of these items to obtain a total score. Higher scores indicate higher levels of relationship conflict. The CTS2S was only given to individuals reporting at least one current or former relationship.

Regarding non-intimate relationships, subscale items assess social isolation and emotional distance from friends; social isolation and emotional distance from children (i.e., if the participant reported having children); and relationships with people who exerted a negative or antisocial influence (i.e., family involved in criminal activity, antisocial peers). Several of these questions were taken from the Pathways Characteristics of Family, Characteristics of Friendship Quality, and Peer Delinquency-Antisocial Influence measures (Mulvey, 2014).

H4. History of Problems with Employment.

This risk factor reflects a history of serious problems seeking, maintaining, or abiding by the rules of legal employment (including self-employment) or educational or training programs (Douglas et al., 2013). This subscale consists of 17 items reflecting presence and relevance of the risk factor, as well as certain aspects of the H4 definition and indicators listed in the HCR-20 manual. The items assess frequent job changes; poor work performance (i.e., unauthorized absenteeism or tardiness); frequently being fired from jobs; frequently quitting jobs without another job lined up; refusal to seek legitimate employment (i.e., making money illegally); inability to provide for one's basic needs (i.e., failed to pay bills on time); financial reliance on others; and financial difficulties due to long-term jailing/imprisonment. H4 subscale scores demonstrated good-excellent internal consistency ($\alpha = .86$) in the current sample.

Several of these items were adopted from the Pathways Employment measure (Mulvey, 2014). In addition to the indicators listed in the HCR-20 manual, I also included five items assessing neighborhood disorganization, which can be considered a proxy for financial difficulties to the extent that it measures socioeconomic status. Much research has demonstrated an association between disadvantaged neighborhoods and violence/offending behavior (Kubrin & Stewart, 2006; Silver, 2000). These items were adopted from the Neighborhood Disorganization—Seattle Social Development Project (Arthur et al., 2002), which consists of five items that measure an individual's perception of crime in their community. The measure has demonstrated acceptable-good internal consistency ($\alpha = .79$), with higher scores indicating higher levels of neighborhood disorganization.

H5. History of Problems with Substance Use.

This risk factor reflects a history of problems with the use of, abuse of, or dependence on mind- or mood-altering substances, including alcohol, illicit drugs, licit (prescription or over-the-counter) drugs, or incidental substances (i.e., glue, solvents, gas) that cause impairment in psychosocial functioning or mental or physical health (Douglas et al., 2013). This subscale consists of 15 items reflecting presence and relevance of the risk factor, as well as certain aspects of the H5 definition and indicators listed in the HCR-20 manual. The items assess lifetime use of multiple substances; whether alcohol and/or drug use has spanned multiple developmental periods (i.e.,

began in childhood/adolescence); impairment of functioning due to substance use (i.e., health, social, legal, or financial problems); and use in the recent past (i.e., past year). H5 subscale scores demonstrated excellent internal consistency ($\alpha = .91$) in the current sample.

Several of these items were adopted from the NIDA Quick Screen V1.0 and NIDA-Modified ASSIST V2.0 (National Institute on Drug Abuse, 2009) screening tools, which were developed by the National Institute on Drug Abuse to help clinicians assess patients for alcohol and drug use as well as problems related to drug use. In total, the tools comprise nine questions. For the current study, six questions were selected based on judgment of similarity to the HCR-20 manual's content. Higher scores indicate higher levels of substance use and problems with substance use.

H6. History of Problems with Major Mental Disorder.

This risk factor reflects a history of major mental disorders characterized by disturbances of cognition or affect (Douglas et al., 2013). This subscale consists of 16 items reflecting presence and relevance of the risk factor, as well as certain aspects of the H6 definition and indicators listed in the HCR-20 manual. The items assess presence of an official diagnosis (i.e., general, psychotic, or major mood disorder); substantial interference with major life domains (i.e., social, familial, financial, or occupational functioning); lifetime psychiatric hospitalization; having been prescribed psychotropic medication for psychological problems; experience of acute positive symptoms (i.e., hallucinations, delusions); evidence of onset of psychosis or major mood disorder in childhood/adolescence; and experience of depressive and/or manic symptoms. H6 subscale scores demonstrated excellent internal consistency ($\alpha = .92$) in the current sample.

Items inquiring about psychotic disorders were adapted from the Psychosis Screening Questionnaire (PSQ; Bebbington & Nayani, 1995), a 12-item screening tool assessing features of psychosis. The instrument has been demonstrated to have a sensitivity of 96.9% and a specificity of 95.3%, with higher scores indicating higher levels of psychotic symptoms. For the current study, four questions were selected based on judgment of similarity to the HCR-20 manual's content.

Items inquiring about major mood disorders were adapted from the Patient Health Questionnaire-9 (PHQ-9; Spitzer et al., 1999) and the Mood Disorder Questionnaire (Hirschfeld et al., 2000). The PHQ is a 9-item questionnaire assessing the frequency of depressive symptoms. PHQ-9 scores have been shown to have a sensitivity of 88% and a specificity of 88% for major depression, with higher scores indicating higher levels of depressive symptoms. The Mood Disorder Questionnaire is a 15-item questionnaire assessing symptoms and functional impairment of bipolar spectrum disorder. Internal consistency for the Mood Disorder Questionnaire has been reported as $\alpha = .90$, with higher scores indicating higher levels of manic/hypomanic symptoms.

H7. History of Problems with Personality Disorder.

This risk factor reflects a history of serious problems resulting from fixed and maladaptive personality traits related to interpersonal style, behavioral controls, emotionality, cognitive style, and sense of self (Douglas et al., 2013). This subscale consists of 31 items reflecting presence and relevance of the risk factor, as well as certain aspects of the H7 definition and indicators listed in the HCR-20 manual. The items assess behavioral problems related to personality disorders of the antisocial type (i.e., problems following the law, taking advantage of others, or being very impulsive); diagnostic criteria for Antisocial Personality Disorder; and a constellation of socially undesirable personality traits related to psychopathic personality disorder. H7 subscale scores demonstrated excellent internal consistency ($\alpha = .94$) in the current sample.

The Structured Clinical Interview for DSM-IV Personality Disorders (SCID-II PD; First et al., 1997) is a semi-structured interview guide for making the major DSM-IV diagnoses of personality disorders. The SCID-II has demonstrated adequate internal consistency ($\alpha = .71-.94$) (Maffei et al., 1997). The current study utilized the 15-item dichotomous self-report questionnaire assessing traits of Antisocial Personality Disorder. Higher scores indicate higher levels of Antisocial Personality Disorder traits.

The Dirty Dozen (DD; Jonason & Webster, 2010) is a 12-item questionnaire used to assess a constellation of three socially undesirable personality traits known as the Dark Triad: narcissism, psychopathy, and Machiavellianism. Internal consistency for the scale has been reported as $\alpha = .83$, with higher scores indicating higher levels of antisocial traits. The current study adopted all 12 items for the H7 subscale.

H8. History of Problems with Traumatic Experiences.

This risk factor reflects a history of experiencing harmful or traumatic events, at any point in the lifespan, that may disrupt normative development, attachment processes, or learning of prosocial attitudes and problem-solving skills (Douglas et al., 2013). This subscale consists of 12 items reflecting presence and relevance of the risk factor, as well as certain aspects of the H8 definition and indicators listed in the HCR-20 manual. The items assess parental/primary caregiver child abuse (i.e., emotional, physical, or sexual); parental substance use problems; having grown up with a household member who was depressed or mentally ill; having grown up with a household member who went to prison; having witnessed spousal violence; and foster home placements. H8 subscale scores demonstrated excellent internal consistency ($\alpha = .91$) in the current sample.

Several items were adapted from the Adverse Childhood Experiences Questionnaire (Felitti et. al., 1998), a 17-item dichotomous measure assessing various forms of childhood abuse and exposure to household dysfunction. Adequate construct validity for the measure has been demonstrated, with higher scores indicating higher levels of adverse childhood experiences.

H9. History of Problems with Violent Attitudes.

This risk factor – similar to attitudes supportive of violence – reflects a history of entrenched violent attitudes, beliefs, values, or thoughts (Douglas et al., 2013). This subscale consists of 13 items reflecting presence and relevance of the risk factor, as well as certain aspects of the H9 definition and indicators listed in the HCR-20 manual. The items assess derisive attitudes toward law enforcement; justification of violence/law-breaking to obtain financial, material, or personal benefit; consistent association with violent/law-breaking peers; having often thought, fantasized, or daydreamed about violence; and whether these daydreams, if reported, have intensified over time. H9 subscale scores demonstrated good-excellent internal consistency ($\alpha = .86$) in the current sample.

Several items were adopted from the Criminal Sentiments Scale-Modified (CSS-M; Shields & Simourd, 1991), a 41-item questionnaire that measures antisocial attitudes, values, and beliefs directly related to criminal activity. The instrument is grouped into five

subscales; seven questions on the H9 subscale were incorporated from the Attitudes Toward the Police, Tolerance for Law Violations, and Identification with Criminal Others subscales, chosen to best reflect the HCR-20 manual's content. Prior research has found the internal consistency of the CSS-M to be adequate ($\alpha = .73$), with higher scores indicating higher levels of antisocial attitudes (Simourd, 1997).

Several items assessing presence and intensification of violent daydreams were adopted from the Schedule of Imagined Violence (SIV; Grisso et al., 2000), a structured set of eight questions inquiring about daydreams or thoughts about physically hurting or injuring others. Responses do not contribute to a total score; each question is examined separately. The SIV has demonstrated high concurrent validity with other risk measures. In addition to the first question concerning presence of violent daydreams, the current study selected one follow-up question inquiring about the change in seriousness of harm of the respondent's ideas, for a total of two questions. These questions were utilized to best reflect the content of the HCR-20's manual.

H10. History of Problems with Treatment or Supervision Response.

This risk factor reflects a history of serious problems complying with or responding to forensic, mental health, or correctional treatment, rehabilitation, or supervision plans designed to improve the person's psychosocial adjustment or mental health and/or to reduce the chances of violence (Douglas et al., 2013). This subscale consists of 10 items reflecting presence and relevance of the risk factor, as well as certain aspects of the H10 definition and indicators listed in the HCR-20 manual. The items assess overall presence of problems complying with or responding to supervision; failure to attend treatment or supervision as directed; failure to take prescribed psychiatric medications; negative attitude toward treatment; failure to appear for scheduled court proceedings; failure to abide by conditions of treatment or supervision (i.e., minor-serious violation of parole/probation conditions); and escape from correctional, forensic, or other secure facilities. H10 subscale scores demonstrated excellent internal consistency ($\alpha = .94$) in the current sample.

Total H Score.

Individual subscale scores were summed to create a total risk factor scale score representing the cumulation of H1-H10. Predictive bias was thus able to be examined at

both the global and individual levels of risk factors. Total H scale scores demonstrated excellent internal consistency ($\alpha = .91$) in the current sample.

Chapter 3.

Data Analysis

3.1. Preliminary Analyses

All data analyses for this research were conducted using the Statistical Package for the Social Sciences (SPSS), Version 25. Prior to analyses, individual risk items were standardized and scores for each risk domain were calculated using these z-scores. This was done to prevent certain items measured on different scales from contributing differently to the final subscale score. Interaction terms between ethnicity and risk factor scores, as well as between risk factor scores and the Mainstream Orientation acculturation variable, were calculated. Acculturation scores were mean-centered before calculating cross-product interactions to reduce nonessential multicollinearity (Cohen et al., 2003).

Prior to conducting any analyses, assumptions of all statistical procedures were tested. All variables of interest were examined for normality using z-scores for skewness and kurtosis (i.e., the ratio of skewness and kurtosis to their respective standard errors), rejecting normality at absolute z-values over 3.29, given the total sample was medium-sized (Kim, 2013). In cases of non-normality due to positive skewness, square root and base 10 log transformations were applied to remedy this assumption violation. In cases of non-normality due to negative skewness, reflect and square root transformations were applied to remedy this assumption violation. Non-parametric procedures that do not assume a population distribution were used in cases in which scores remained skewed following these transformations.

3.1.1. Descriptive Statistics

Frequencies and percentages of several demographic variables were calculated (e.g., nature of residence, population of residence, age, education level, employment status, marital status, income bracket, and neighborhood disorganization). These statistics were compared across ethnic groups and violent vs. non-violent groups using chi-square tests of independence.

As well, means and standard deviations were calculated for each of the outcome variables. Chi-square tests of independence were used to examine whether there were racial differences in categorical outcome variables (violence prevalence, antisocial behavior prevalence, any arrests). Ethnic differences in continuous outcome variables (violence incidence, prior criminal history) were investigated using the appropriate parametric or non-parametric test (i.e., ANOVA or Kruskal-Wallis H test) based on assumptions of normality in each distribution. Significant tests were examined using the appropriate post-hoc analyses to determine the source of significance.

3.1.2. Covariates

Demographic factors with theoretical linkages to violence that were found to be significantly associated with violence above were investigated for possible inclusion as covariates in analyses.

3.2. Primary Analyses

3.2.1. Descriptive Statistics

The mean and standard deviation was calculated for each of the predictor variables (H1-H10, H Total, Heritage Orientation, Mainstream Orientation). These statistics were compared across ethnic groups and violent vs. non-violent groups. In cases of non-normal variable distributions, differences in quantitative values between groups were tested by a non-parametric Mann-Whitney U test or Kruskal-Wallis H test. In cases of normal variable distributions, differences in quantitative values between groups were tested by one-way analysis of variance (ANOVA) or independent samples t tests. Finally, intercorrelations were calculated among individual and global risk factor domains.

3.2.2. Concurrent Validity

Degree of Relationship.

Since participants were asked to report historical criminal behavior, violence was not assessed prospectively, and thus concurrent validity is a more accurate concept than predictive validity in the current study. Concurrent validity was evaluated using several

different types of analyses. Point-biserial correlations (r_{pb}) and the Area under the Curve (AUC) of Receiver Operating Characteristic (ROC) analyses were used to examine the concurrent validity of the risk indices with violence prevalence and any arrest as the outcomes. Both statistics were calculated using the entire sample as well as separately for each ethnic group. Because the three ethnic groups have differing base rates of violence, ROC analyses offer a more appropriate comparison of predictive/concurrent validity (Mossman, 1994). In general, AUCs can be interpreted as the probability that a randomly selected individual with a history of violence/any arrests would have a higher score than a randomly selected individual without a history of violence/any arrests (Hanson & Thornton, 2000). AUC values range from 0 to 1 with .50 indicating the level of prediction that would be expected by chance, and higher numbers indicating greater accuracy. In accordance with the guidelines of Rice and Harris (2005), AUC values of .64 to .70 are considered equivalent to a medium effect size, while values of .71 and greater are suggestive of large effects. Subsequent to these AUC analyses, I also assessed the significance of the difference between AUC values for ethnic groups using z-tests.

Predictive fairness was additionally investigated by calculating sensitivity (i.e., the conditional probability that a violent individual would receive higher risk scores), specificity (i.e., the conditional probability that a non-violent individual would receive lower risk scores), positive predictive values (PPV; i.e., the proportion of individuals with high risk scores who were violent), negative predictive values (NPV; i.e., the proportion of individuals with low risk scores who were not violent), false positives (i.e., over-classification errors), and false negatives (i.e., under-classification errors). The median split on the Total H score and each individual risk domain was used as the cut-off for these calculations. Median splits were chosen as the cut-off point given their close approximation to the point in which sensitivity and specificity were optimized on their respective ROC curves.

Form of Relationship.

Following these analyses of predictive fairness, which examined whether the *degree* of the relationship between total risk scores and violence/any arrest varied due to race, predictive bias was next assessed in the *functional form* of this relationship. If risk scores do indeed perform similarly in predicting violence/any arrest across race, the

regression slope and intercept of this relationship should also be similar across ethnic subgroups. In other words, I am testing for assessment bias by examining whether an average risk score of X corresponds to an average violence/arrest history of Y across my three racial groups. This logic is in accordance with standard practices for examining whether a particular test is biased against a particular group (SIOP, 2018). These analyses were conducted using both the Total H score and individual risk scores in each domain.

Specifically, to test for this type of predictive bias, I estimated four hierarchical logistic regression models for the outcomes of violence/any arrest and compared these models to determine whether slope and intercept differences existed between Caucasians and ethnic minorities. Ethnic groups were coded as two dummy variables, with Caucasians being used as the reference category. Drawing upon the methodology employed by Flores et al. (2016) as well as Skeem and Lowencamp (2016), model one will predict violence/any arrest with race; model two with risk score; model three with race and risk score; and model four with all of the above variables, as well as an interaction term for ethnicity and risk score.

Comparing models three and four, if the addition of the interaction term is not significant (i.e., does not improve the prediction of violence for the model overall), I may deduce that the slope of the relationship between risk scores and violence/any arrest is similar across ethnic groups, and that ethnicity does not moderate the predictive utility of the risk factors. Additionally, a comparison of models two and three would establish the presence of any significant racial differences in the intercept/constant for the relationship between risk ratings and violence/any arrest, which might indicate that certain risk factors overestimate the criterion variables for a particular race. Taken together, a lack of subgroup differences in regression slopes or intercepts would indicate that there are no significant differences in the functional form of the relationship between risk scores and violence/arrest history across all three ethnic groups, and that a given risk score translates into approximately the same likelihood of violence/any arrest regardless of the subject's race.

As an additional test of predictive bias at the global level using my continuous outcome measures, I assessed whether the relationship between Total H score and violence incidence/prior criminal history was similar in form across ethnicity. Poisson or

negative binomial regression are the recommended methods when modeling highly skewed count data; as well, these approaches provide more accurate modeling estimates than standard Ordinary Least Squares regression (Gardner et al., 1995). Because overdispersion (i.e., a high proportion of zero or one responses causing the variance to be greater than the mean of each distribution) was present within each of these count variables, negative binomial models were used for both analyses. To examine moderation effects after the removal of shared variance from demographic factors, demographic factors found to be significantly associated with violence in the Covariates section above were controlled for in these analyses. Applying the guidelines of Baron and Kenny (1986), moderation effects were tested for by entering control variables, Total H score, and ethnicity in the first block of a negative binomial regression model followed by their cross-product term in the second block of the analysis.

Moderation Analyses of Acculturation.

To examine whether acculturation level moderated the relationship between Total H scores and violence prevalence/any arrest, hierarchical logistic regression was used. In particular, to examine whether total risk scores were better predictors of violence/any arrest among individuals with higher levels of acculturation to the dominant American culture, acculturation scores from the Mainstream Orientation subscale were examined. Both Total H and Mainstream acculturation scores were entered in the first block, and their interaction term was entered in the second block.

3.2.3. Risk Factors as Proxies for Race

The question of whether certain risk factors could effectively function as proxies for race was examined using several different types of analyses. Bivariate associations between each risk domain and ethnicity were first calculated to understand whether certain indices were more/less associated with various ethnic groups. These coefficients were then compared to the bivariate correlations between each risk domain and violence/any arrest obtained in section 3.2.2 above. This was done to examine whether certain risk indices were correlated more strongly with race than criminological outcome variables, which would be considered suspect as it may result in higher risk scores for minorities without necessarily identifying individuals with a higher probability of violence/arrest.

To understand whether certain risk factors and racial groups demonstrated stronger relationships with one another based on one's violent history, I conducted a series of more refined tests of association among the violent sub-sample ($n = 99$) using categorical risk variables. Each risk domain was divided into four quartiles (i.e., 0-25th percentile, 25th-50th percentile, 50th-75th percentile, and 75th-100th percentile) to examine whether higher proportions of ethnic minorities scored above the median and/or 75th percentile of each risk category.

Next, using Kraemer et al.'s (2001) criteria, I examined whether any risk factors could be considered proxies for race, focusing on violence prevalence, antisocial behavior prevalence, and any arrest as the criterion measures. Using H2 as an example, to be considered a proxy for race, race must precede H2, race and H2 must be correlated, and race must "dominate" in predicting the outcome variables. To test this latter requirement, Cramer's V was used to calculate the strength of association between race and dichotomous outcome variables.

As a further test of the association between risk factors and ethnicity, binary logistic regression was conducted with all 10 risk factors simultaneously predicting each race as a dichotomous outcome. Pseudo- R^2 was calculated to evaluate the total variation explained by H1-H10 for each ethnic group.

To next assess the proportion of unique variance in my outcome variables explained by each risk factor after controlling for race, I conducted a series of regressions of incremental validity. Three hierarchical logistic regression models predicting violence prevalence, antisocial behavior prevalence, and any arrest were examined. Two additional hierarchical negative binomial regressions were conducted using violence incidence and prior criminal history as the outcome measures. In each model, race was entered in the first block, followed by individual risk factor scores in the second block. After controlling for race, any risk factors that fail to add any appreciable variance to the model could potentially be conceptualized as pseudo-proxies for race as race will have dominated in predicting the outcome. However, if the relationship between the risk factor and outcome remains significantly predictive, this would suggest that the risk factor increases the probability of the outcome regardless of race and thus does not capture the criteria of a pseudo-proxy for race. In other words, this would indicate that

the risk factor displays a relationship with the outcome over and above any potential association with race.

Finally, I examined whether quasi-suspect socioeconomic-based variables (education level, H4 scores, and neighborhood disorganization) were associated with income and could effectively function as proxies for poverty. A chi-square test of independence was run to examine whether there was a relationship between income and education level. Based on assumptions of normality, the appropriate parametric or non-parametric test for mean comparisons (i.e., ANOVA or Kruskal-Wallis *H* test) was conducted to determine whether participants with different income brackets showed statistically significant differences in their levels of H4 and neighborhood disorganization.

Chapter 4.

Results

4.1. Preliminary Analyses

4.1.1. Descriptive Statistics

Table 4.1 demonstrates that ethnic groups did not vary in their levels of any relevant demographic variables.

Table 4.1. Descriptive statistics of ethnic groups.

Variable	White	Hispanic	African American	χ^2
	N (%)	N (%)	N (%)	
Age Group				
18-24	5 (4.9)	5 (6.9)	10 (10.5)	8.11
25-44	82 (79.6)	64 (88.9)	72 (75.8)	
45+	16 (15.5)	3 (4.2)	13 (13.7)	
Highest Education				
Less than high school degree	0 (0)	0 (0)	3 (3.2)	12.54
High school degree or equivalent	16 (15.5)	8 (11.1)	9 (9.5)	
Some college but no degree	18 (17.5)	16 (22.2)	25 (26.3)	
Trade/technical/vocational training	4 (3.9)	4 (5.6)	5 (5.3)	
Associate degree	14 (13.6)	11 (15.3)	10 (10.5)	
Bachelor's degree	48 (46.6)	28 (38.9)	37 (38.9)	
Graduate degree	3 (2.9)	5 (6.9)	6 (6.3)	
Employed Currently	88 (85.4)	63 (87.5)	85 (89.5)	0.30
Married Currently	33 (32.0)	27 (37.5)	33 (34.7)	0.60
Neighborhood Disorganization ₁				
Low	60 (58.3)	38 (52.8)	43 (45.3)	3.35
High	43 (41.7)	34 (47.2)	52 (54.7)	

₁The median split of Neighborhood Disorganization was used as the cut-off for the categories of Low/High.

Table 4.2 reveals that violent vs. non-violent groups showed significant differences in neighborhood disorganization, $\chi^2(1) = 12.00, p = 0.001$ (discussed below under Covariates section). Post-hoc analyses revealed that individuals with a history of violence reported significantly greater rates of high neighborhood disorganization compared to individuals without a history of violence. Mann-Whitney *U* tests were conducted to examine whether low and high neighborhood disorganization groups showed significant differences in violence incidence and prior criminal history scores.

Non-parametric analyses were used due to significant non-normality within the distributions of each count variable (skewness z-scores = 10.84-31.63; kurtosis z-scores = 5.27-91.08). Mean violence incidence and prior criminal history scores were statistically significantly higher in the high neighborhood disorganization group than in the low group, $U = 11,214.50$, $z = 3.86$, $p < 0.001$, and $U = 11,077.00$, $z = 3.56$, $p < 0.001$, respectively.

Table 4.2. Descriptive statistics of violent vs. non-violent groups.

Variable	Violent N (%)	Non-Violent N (%)	χ^2
Nature of Residence			
Urban	55 (55.6)	87 (50.9)	0.88
Suburban	36 (36.4)	65 (38.0)	
Rural	8 (8.1)	19 (11.1)	
Population of Residence			
<20,000	10 (10.1)	23 (13.5)	7.05
20,000 – 100,000	29 (29.3)	59 (34.5)	
100,000 – 300,000	24 (24.2)	33 (19.3)	
300,000 – 1,000,000	17 (17.2)	22 (12.9)	
1,000,000 – 3,000,000	13 (13.1)	13 (7.6)	
>3,000,000	6 (6.1)	21 (12.3)	
Age Group			
18-24	5 (5.1)	15 (8.8)	1.43
25-44	83 (83.8)	135 (78.9)	
45+	11 (11.1)	21 (12.3)	
Highest Education			
Less than high school degree	1 (1.0)	2 (1.2)	0.66
High school degree or equivalent	13 (13.1)	20 (11.7)	
Some college but no degree	20 (20.2)	39 (22.8)	
Trade/technical/vocational training	5 (5.1)	8 (4.7)	
Associate degree	12 (12.1)	23 (13.5)	
Bachelor's degree	42 (42.4)	71 (41.5)	
Graduate degree	6 (6.1)	8 (4.7)	
Income Bracket			
Under \$20,000	12 (12.1)	16 (9.4)	2.57
\$20,000 - \$34,999	25 (25.3)	43 (25.1)	
\$35,000 - \$49,999	27 (27.3)	40 (23.4)	
\$50,000 - \$74,999	16 (16.2)	39 (22.8)	
\$75,000 - \$99,999	12 (12.1)	18 (10.5)	
Over \$100,000	7 (7.1)	15 (8.8)	
Neighborhood Disorganization [†]			
Low	38 (38.4)	103 (60.2)	12.00**
High	61 (61.6)	68 (39.8)	

** $p < 0.001$.

[†]The median split of Neighborhood Disorganization was used as the cut-off for the categories of Low/High.

Table 4.3 examines whether there were racial differences in any criminological outcome variables. Chi-square tests of independence revealed that ethnic groups did not

vary in their rates of violence prevalence or any arrests. However, there was a significant difference among ethnic groups in terms of antisocial behavior prevalence, $\chi^2(2) = 7.74$, $p = 0.02$. Post-hoc analyses revealed that Whites reported significantly higher levels of antisocial behavior compared to Hispanics and African Americans. Furthermore, Kruskal-Wallis H tests showed that ethnic groups did not vary in their levels of violence incidence or prior criminal history.

As a secondary exploratory analysis, I also analyzed whether mean values of violence incidence and prior criminal history varied solely amongst individuals scoring one or higher on these variables (i.e., excluding individuals who reported no violent activity or no arrests/convictions/incarcerations). This was done to ensure mean values were not unduly influenced by zero responses in certain ethnic categories, due to the high proportion of zero responses within the count variables, as well as the fact that zero responses were inconsistently distributed between ethnic groups. Analyses limited to this violent sub-sample were conducted solely at the descriptive level to understand whether important differences in the frequency of misconduct emerged across ethnic groups. Similar to above, results showed that Whites, Hispanics, and African Americans exhibited similar rates of misconduct within each count variable.

Table 4.3. Comparison of ethnic groups by outcome variables.

Variable	White	Hispanic	African American	Test Statistic
	<i>N (%) or M (SD)</i>	<i>N (%) or M (SD)</i>	<i>N (%) or M (SD)</i>	
Violence Prevalence				
Violent	43 (41.7)	21 (29.2)	35 (36.8)	$\chi^2 = 2.89$
Non-Violent	60 (58.3)	51 (70.8)	60 (63.2)	
Antisocial Behavior Prevalence				
Antisocial	64 (62.1)	31 (43.1)	44 (46.3)	$\chi^2 = 7.74^*$
Non-Antisocial	39 (37.9)	41 (56.9)	51 (53.7)	
Any Arrest				
Yes	40 (38.8)	24 (33.3)	36 (37.9)	$\chi^2 = 0.60$
No	63 (61.2)	48 (66.7)	59 (62.1)	
Violence Incidence				
Including Zero Responses	0.91 (2.01)	0.60 (1.68)	0.81 (1.68)	$H = 2.91$
Excluding Zero Responses	2.19 (2.64)	2.05 (2.64)	2.20 (2.17)	$H = 0.58$
Prior Criminal History				
Including Zero Responses	1.71 (2.65)	1.11 (2.07)	1.64 (2.57)	$H = 1.58$
Excluding Zero Responses	4.40 (2.50)	3.33 (2.33)	4.22 (2.46)	$H = 3.31$

* $p < 0.05$.

4.1.2. Covariates

Chi-square tests of independence revealed that neighborhood disorganization ($p < 0.001$) was associated with violence prevalence. No other demographic variables exhibited significant associations with violent vs. non-violent group membership. Mann-Whitney U tests also confirmed that this difference between the means of low and high neighborhood disorganization groups was statistically significant on continuous outcome variables violence incidence and prior criminal history. Thus, only neighborhood disorganization was included in subsequent regression analyses as a covariate.

4.2. Primary Analyses

4.2.1. Descriptive Statistics

Table 4.4 reports descriptive statistics of all continuous predictor variables, using standardized data for risk factor scores (hence all means are zero). Univariate normality was assessed by calculating z-scores for skewness and kurtosis. Examinations of these z-scores revealed that all risk factor score distributions were positively skewed and non-normally distributed. A similar pattern of non-normality was found when calculating z-values for each ethnic group. Violations of normality persisted after applying square root and base 10 log transformations, and thus non-parametric procedures were used in subsequent analyses of risk factor scores.

Similarly, inspections of acculturation score distributions revealed that both the Heritage Orientation and Mainstream Orientation subscales were negatively skewed and non-normally distributed. A similar pattern of non-normality was found when calculating z-values for each ethnic group. Reflect and square root transformations were applied as a remedy for this assumption violation. Post-transformation, absolute z-scores of skewness (-2.91 to -1.56) and kurtosis (0.12 to 0.26) for both subscales remained below 3.29, resulting in normality and permitting the usage of transformed scores in subsequent analyses.

Further, assessing normality of the continuous neighborhood disorganization variable revealed that this distribution was positively skewed and non-normally distributed. Neither square root nor base 10 log transformations were successful in

remedying this violation, and thus non-parametric tests were conducted in subsequent analyses using the continuous form of neighborhood disorganization scores.

Table 4.4. Descriptive statistics of predictor variables.

Variable	<i>M (SD)</i>	Median	Range	Skew (<i>SE</i>)	Kurtosis (<i>SE</i>)
H1	0 (6.68)	-4.63	-4.63 – 23.53	1.34 (0.15)	0.73 (0.30)
H2	0 (4.71)	-3.28	-3.28 – 14.52	1.21 (0.15)	0.15 (0.30)
H3	0 (16.66)	-3.78	-23.64 – 71.08	1.80 (0.15)	3.85 (0.30)
H4	0 (9.05)	-1.34	-12.40 – 36.52	0.92 (0.15)	0.81 (0.30)
H5	0 (9.94)	-3.75	-9.84 – 38.06	1.13 (0.15)	0.78 (0.30)
H6	0 (10.71)	-5.50	-8.07 – 37.75	1.51 (0.15)	1.42 (0.30)
H7	0 (18.11)	-4.95	-21.83 – 73.68	1.29 (0.15)	2.06 (0.30)
H8	0 (8.44)	-4.12	-5.85 – 30.23	1.52 (0.15)	1.34 (0.30)
H9	0 (8.00)	-2.27	-8.61 – 28.75	1.30 (0.15)	1.25 (0.30)
H10	0 (7.42)	-1.84	-2.81 – 47.94	4.29 (0.15)	19.04 (0.30)
H Total	0 (79.90)	-20.34	-94.82 – 358.22	1.72 (0.15)	3.75 (0.30)
Heritage Orientation	65.36 (14.83)	66.00	18.00-90.00	-0.55 (0.15)	0.30 (0.30)
Mainstream Orientation	69.43 (13.56)	71.00	22.00 – 90.00	-0.85 (0.15)	1.01 (0.30)
Neighborhood Disorganization	8.28 (3.52)	7.00	4.00-20.00	0.93 (0.15)	0.10 (0.30)

Table 4.5 displays results of Mann-Whitney *U* tests examining mean risk factor score differences between violent and non-violent groups. Violent individuals scored significantly higher than non-violent individuals on all risk indices ($p < 0.001$), with the exception of H10, which approached significance ($p = 0.057$). Overall, these differences provide evidence of the construct validity of my self-generated risk factor domains, which all appear to be capturing the accurate constructs or propensities for violence.

Table 4.5. Comparison of violent and non-violent groups by risk scores.

Risk Domain	Violent <i>M (SD)</i>	Non-Violent <i>M (SD)</i>	<i>U</i>
H1	6.30 (6.91)	-3.65 (2.54)	15,702.00**
H2	3.37 (5.50)	-1.95 (2.69)	13,289.50**
H3	8.10 (19.98)	-4.69 (12.21)	12,366.00**
H4	4.64 (10.19)	-2.69 (7.07)	12,164.00**
H5	6.12 (11.02)	-3.54 (7.20)	13,242.00**
H6	5.44 (13.10)	-3.15 (7.44)	12,057.00**
H7	13.24 (19.48)	-7.66 (11.78)	14,136.00**
H8	4.74 (10.00)	-2.75 (5.86)	12,384.00**
H9	4.46 (9.47)	-2.58 (5.59)	12,416.00**
H10	2.97 (11.53)	-1.72 (1.54)	9,152.00
H Total	59.39 (92.34)	-34.38 (44.08)	14,339.00**

** $p < 0.001$.

Table 4.6 summarizes results of Kruskal-Wallis H tests examining mean risk factor score differences between ethnic groups. Results indicated that there were no significant differences and thus that ethnic groups experienced each risk domain at roughly equal levels. To understand if mean score differences emerged more broadly between Whites and non-Whites, Mann-Whitney U tests were also calculated using a dummy-coded ethnicity variable (i.e., Whites = 0, Hispanics/African Americans = 1). Results showed that Whites reported significantly more problems with antisocial behavior (H2), $U = 7,481.00$, $z = -2.00$, $p = 0.046$, and substance use (H5), $U = 7,298.00$, $z = -2.00$, $p = 0.037$.

Table 4.6. Comparison of ethnic groups by risk scores.

Risk Domain	White		Hispanic		African American		H
	M	SD	M	SD	M	SD	
H1	0.55	6.61	-1.22	5.90	0.33	7.24	3.68
H2	0.82	5.27	-0.55	4.29	-0.47	4.27	4.11
H3	-0.09	17.74	0.37	16.46	-0.19	15.76	0.43
H4	-0.40	10.05	-0.55	7.97	0.85	8.70	2.65
H5	1.72	10.69	-0.80	8.81	-1.26	9.72	4.76
H6	1.47	12.32	-0.46	9.17	-1.25	9.79	1.67
H7	1.54	19.05	-2.42	18.49	0.16	16.70	3.51
H8	0.70	9.61	-0.15	7.80	-0.65	7.52	0.33
H9	-0.51	8.23	-0.32	7.97	0.80	7.80	3.07
H10	0.83	8.90	-0.28	7.08	-0.69	5.71	1.03
H Total	6.64	89.86	-6.38	73.61	-2.36	73.01	0.63

Table 4.7 describes the results of a one-way analysis of variance (ANOVA) F test evaluating whether differences exist in acculturation levels across ethnic groups. Results demonstrated that neither Heritage Orientation ($p = .894$) nor Mainstream Orientation ($p = .388$) scores were significantly different between Whites, Hispanics, and African Americans.

Table 4.7. Comparison of ethnic groups by acculturation scores.

Acculturation Subscale	White		Hispanic		African American		F
	M	SD	M	SD	M	SD	
Heritage	65.88	12.65	65.88	15.29	64.40	16.66	.112
Mainstream	69.36	12.95	70.96	13.92	68.34	13.96	.950

Finally, Table 4.8 summarizes the intercorrelations between individual and global risk factor domains. As the assumption of bivariate normality among risk domains was violated, non-parametric Spearman's rho correlation coefficients (r_s) were computed.

The assumption of a monotonic relationship between independent and dependent variables was established by visual inspection of bivariate scatterplots. Following Cohen's (1988) criteria, apart from correlations with H10, all other correlations were medium to large in magnitude ($r \approx 0.40$ to $r \approx 0.88$) and statistically significant ($p < 0.01$) at the two-tailed level. H1, H5, H7, H9, and H Total were all significantly correlated with H10 ($p < 0.05$ for H1 and H7; $p < 0.01$ for H5, H9, and H Total), although the correlations were small in magnitude ($r \approx 0.14$ to $r \approx 0.20$). In contrast, H2, H3, H4, H6, and H8 were not significantly correlated with H10. As the majority of individuals received scores of 0 on H10, these findings are likely a consequence of range restriction which would attenuate the strength of the correlations.

Table 4.8. Intercorrelations (r_s) between risk factor domains.

	H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	H Total
H1	-	.59**	.55**	.50**	.61**	.45**	.65**	.51**	.50**	.14*	.74**
H2		-	.43**	.49**	.52**	.54**	.54**	.50**	.44**	.11	.66**
H3			-	.53**	.53**	.48**	.62**	.57**	.57**	.10	.78**
H4				-	.55**	.51**	.56**	.51**	.46**	.10	.74**
H5					-	.50**	.64**	.54**	.48**	.16**	.77**
H6						-	.55**	.54**	.40**	.12	.71**
H7							-	.59**	.66**	.15*	.88**
H8								-	.49**	.08	.71**
H9									-	.20**	.72**
H10										-	.14*
H Total											-

** $p < 0.01$, two-tailed.

* $p < 0.05$, two-tailed.

4.2.2. Concurrent Validity

Degree of Relationship.

Table 4.9 presents the point-biserial correlations (r_{pb}) between risk scores and violence prevalence, both for the total sample and each ethnic sub-sample. Of note is that the assumption of normality was violated based on the skewed nature of each risk factor distribution for both the violent and non-violent groups. Given that I wished to determine the correlation between continuous variables and a true dichotomous variable, rank-order correlations such as Spearman's rho did not seem appropriate in this case. Thus, I opted to utilize point-biserial correlations despite this violation given its robustness to mild non-normality. Nearly every risk score was significantly associated with violence, regardless of sample. The one exception was H4 for Hispanics ($r = 0.23$, p

= 0.053), though this relationship approached significance. The lack of significance in this case may be due to the smaller cell size, and hence diminished power, within the Hispanic subgroup. The majority of significant correlations were medium to large in magnitude ($r \approx 0.31$ to $r \approx 0.74$), though it is noted that H1 scores were likely partially conflated with the outcome measure. Coefficients for H6 and H10 among African Americans were small-to-moderate in magnitude ($r = 0.26$ and $r = 0.27$, respectively).

Fisher's r -to- z transformations were calculated to assess the significance of the difference between correlation coefficients (Lowrey, 2001). Results showed that the difference between H4 correlations for African Americans, $r(93) = 0.47$, $p < 0.01$, and for Hispanics, $r(70) = 0.23$, $p = 0.05$, was statistically significant, $Z = 1.72$, $p < 0.05$. Additionally, the difference between H6 correlations for Whites, $r(101) = 0.47$, $p < 0.01$, and for African Americans, $r(93) = 0.26$, $p < 0.05$, was statistically significant, $Z = 1.69$, $p < 0.05$. Both effects were quite small in magnitude ($d = 0.17$ and 0.24 , respectively) (Cohen, 1988).

Table 4.9. Bivariate associations between risk scores and violence prevalence.

Risk Score	Violence Prevalence				Post Hoc
	Total Sample	White (W)	Hispanic (H)	Black (B)	
H1	0.72**	0.74**	0.68**	0.73**	
H2	0.55**	0.57**	0.55**	0.51**	
H3	0.37**	0.41**	0.36**	0.34**	
H4	0.39**	0.42**	0.23	0.47**	B > H _a
H5	0.47**	0.43**	0.54**	0.47**	
H6	0.39**	0.47**	0.39**	0.26*	W > B _a
H7	0.56**	0.54**	0.49**	0.62**	
H8	0.43**	0.43**	0.38**	0.47**	
H9	0.43**	0.39**	0.37**	0.52**	
H10	0.31**	0.32**	0.33**	0.27**	
H Total	0.57**	0.56**	0.54**	0.59**	

** $p < 0.01$, two-tailed; * $p < 0.05$, two-tailed.
Differences significant at $ap < 0.05$, one-tailed.

I next computed the point-biserial correlations between risk scores and any arrest, both for the total sample and each ethnic sub-sample. Similar to above, despite the violation of normality, point-biserial correlations were deemed to be the most appropriate choice of analysis given the true dichotomous nature of the dependent variable. As well, point-biserial correlations exhibit relative robustness to deviations from normality. Table 4.10 shows that all risk scores were significantly associated with any

arrest, regardless of sample. The majority of correlations were medium to large in magnitude ($r \approx 0.30$ to $r \approx 0.72$), though again it is noted that H1 scores were likely partially conflated with the outcome measure. Similar to the correlations with violence prevalence, H6 and H10 for African Americans continued to exhibit small-to-moderate effect sizes ($r = 0.28$ and $r = 0.26$, respectively). In contrast to the associations with violence prevalence, H6, H8, and H10 all demonstrated small-to-moderate effect sizes with any arrest for Hispanics ($r = 0.29$, $r = 0.27$, and $r = 0.29$, respectively). Notably, while the relationship between H4 and violence prevalence for Hispanics was previously insignificant, its association with any arrest reached significance ($r = 0.43$, $p < 0.01$). However, while the relationships between risk scores and any arrest were generally stronger than their relationships with violence prevalence for Whites, the same was not true for ethnic minorities, the majority of whose correlations with any arrest declined vis-à-vis violence prevalence. Hence, performing analyses using both outcomes appears appropriate with this sample.

Fisher's r -to- z transformations demonstrated that H2 correlations for Whites, $r(101) = 0.64$, $p < 0.01$, were significantly different from those for Hispanics, $r(70) = 0.33$, $p < 0.01$, and for African Americans, $r(93) = 0.40$, $p < 0.01$ ($Z = 2.65$, $p < 0.01$ and $Z = 2.32$, $p < 0.05$, respectively). Additionally, there was a statistically significant difference between H6 correlations for Whites, $r(101) = 0.51$, $p < 0.01$, and those for both Hispanics, $r(70) = 0.29$, $p < 0.05$, and for African Americans, $r(93) = 0.28$, $p < 0.01$ ($Z = 1.69$, $p < 0.05$ and $Z = 1.90$, $p < 0.05$, respectively). Finally, H8 correlations for Whites, $r(101) = 0.49$, $p < 0.01$, were significantly different from those for Hispanics, $r(70) = 0.27$, $p < 0.05$ ($Z = 1.66$, $p < 0.05$). All effects were relatively small in magnitude ($d = 0.10$ - 0.29) (Cohen, 1988).

Table 4.10. Bivariate associations between risk scores and any arrest.

Any Arrest					
Risk Score	Total Sample	White (W)	Hispanic (H)	Black (B)	Post Hoc
H1	0.70**	0.72**	0.67**	0.70**	
H2	0.49**	0.64**	0.33**	0.40**	W > H _c , B _b
H3	0.41**	0.47**	0.39**	0.35**	
H4	0.51**	0.60**	0.43**	0.44**	
H5	0.52**	0.57**	0.53**	0.46**	
H6	0.38**	0.51**	0.29*	0.28**	W > H _a , B _a
H7	0.47**	0.52**	0.45**	0.43**	
H8	0.39**	0.49**	0.27*	0.36**	W > H _a
H9	0.39**	0.43**	0.33**	0.40**	
H10	0.30**	0.34**	0.29*	0.26*	
H Total	0.56**	0.62**	0.51**	0.52**	

** $p < 0.01$, two-tailed; * $p < 0.05$, two-tailed.

Differences significant at $a_p < 0.05$, one-tailed, $b_p < 0.05$, two-tailed, $c_p < 0.01$, two-tailed.

Concurrent validity of individual and global risk factor indices was also evaluated using ROC analysis. Table 4.11 presents the AUCs between risk scores and violence prevalence, both for the entire sample and for each ethnic subgroup. Following the predictive benchmark effect sizes of Rice and Harris (2005), where AUC values of .64 and .71 signify medium and large effects, respectively, the results indicate a medium to large degree of predictive accuracy for most risk scores, irrespective of sample. The one exception was H10, which failed to achieve any statistically significant AUC values for any sample. It should again be noted that the high degree of accuracy for H1 scores is suggestive of conflation with the outcome definition, while the low degree of accuracy for H10 scores is suggestive of range restriction. Overall, Total H scores showed strong predictive utility for violence prevalence across all three ethnic groups (AUC = 0.81 to 0.88).

To compare the AUC values for different ethnic groups, I used the procedures recommended by Hanley and McNeil (1982). These comparisons revealed that the difference between AUC values for H9 predicting violence prevalence among African Americans (AUC = 0.81, $p < 0.001$) and Whites (AUC = 0.69, $p < 0.05$) was statistically significant ($Z = 1.73$, $p < 0.05$). However, this effect was relatively small in magnitude ($d = 0.25$) (Rosenthal & DiMatteo, 2001).

Table 4.11. AUC for violence prevalence using risk scores.

Risk Score	Violence Prevalence				Post Hoc
	Total Sample	White (W)	Hispanic (H)	Black (B)	
H1	0.93**	0.94**	0.89**	0.93**	
H2	0.79**	0.80**	0.77**	0.77**	
H3	0.73**	0.77**	0.76**	0.68*	
H4	0.72**	0.70*	0.66*	0.78**	
H5	0.78**	0.76**	0.79**	0.80**	
H6	0.71**	0.73**	0.72*	0.70*	
H7	0.84**	0.85**	0.79**	0.87**	
H8	0.73**	0.73**	0.75*	0.74**	
H9	0.73**	0.69*	0.71*	0.81**	B > W _a
H10	0.54	0.55	0.57	0.51	
H Total	0.85**	0.84**	0.81**	0.88**	

* $p < 0.05$; ** $p < 0.001$.

Differences significant at $\alpha p < 0.05$, one-tailed.

Table 4.12 presents the AUCs between risk scores and any arrest, both for the entire sample and for each ethnic subgroup. The results indicate a medium to large degree of predictive accuracy for most risk scores, irrespective of sample. Again, the one exception was H10, which failed to achieve any statistically significant AUC values across any sample. It should again be noted that the high degree of accuracy for H1 scores is suggestive of conflation with the outcome definition. Overall, Total H scores showed strong predictive accuracy for any arrest across all three ethnic groups (AUC = 0.82 to 0.91). Similar to the bivariate results obtained above, Whites' risk scores generally showed stronger AUC values for any arrest compared to violence prevalence. In contrast, African Americans' risk scores generally showed diminished predictive accuracy for any arrest compared to violence prevalence.

Comparisons of AUC values across ethnic groups demonstrated that Whites' AUC values for H2 (AUC = 0.86, $p < 0.001$) were significantly different from those of Hispanics (AUC = 0.68, $p < 0.05$) as well as African Americans (AUC = 0.74, $p < 0.001$) ($Z = 2.19$, $p < 0.05$, two-tailed and $Z = 1.78$, $p < 0.05$, one-tailed, respectively). Further, Whites had significantly different AUC values for H3 (AUC = 0.81, $p < 0.001$) compared to African Americans (AUC = 0.69, $p < 0.05$) ($Z = 1.65$, $p < 0.05$). Effect sizes ranged from small to moderate in magnitude ($d = 0.24$ - 0.34) (Rosenthal & DiMatteo, 2001).

Table 4.12 AUC for any arrest using risk scores.

Any Arrest					
Risk Score	Total Sample	White (W)	Hispanic (H)	Black (B)	Post Hoc
H1	0.95**	0.93**	0.96**	0.95**	
H2	0.77**	0.86**	0.68*	0.74**	W > H _b , B _a
H3	0.76**	0.81**	0.77**	0.69*	W > B _a
H4	0.79**	0.84**	0.77**	0.75**	
H5	0.81**	0.85**	0.79**	0.78**	
H6	0.72**	0.79**	0.67*	0.68*	
H7	0.77**	0.81**	0.77**	0.74**	
H8	0.72**	0.77**	0.68*	0.70*	
H9	0.72**	0.71**	0.72*	0.74**	
H10	0.51	0.52	0.53	0.49	
H Total	0.86**	0.91**	0.82**	0.82**	

* $p < 0.05$; ** $p < 0.001$.

Differences significant at $a_p < 0.05$, one-tailed, $b_p < 0.05$, two-tailed.

Finally, predictive fairness of risk scores was evaluated by the use of several additional calibration and discrimination performance indicators. Notably, while AUC values are considered resistant to base rates and sample size, sensitivity, specificity, positive predictive values (PPV), and negative predictive values (NPV) are all base-rate dependent (Singh, 2013). Base rates are critical due to their influence on the level of classification errors produced by risk assessment measures. Specifically, very infrequent events (with base rates deviating from 50% and approaching 0) are prone to greater false positive errors (Brennan, 1993). Because the base rate for violence prevalence within the current sample is only 36.7%, I will also include antisocial behavior prevalence as an outcome measure, which has a higher base rate of 51.5%. The median split on the Total H score and each individual risk domain was used as the cut-off to calculate sensitivity, specificity, PPV and NPV for each ethnic group (e.g., Total H score median = -20.34, dichotomized into two groups: less than -20.34 and -20.34 or greater).

Tables 4.13, 4.14, and 4.15 report the classification analyses for Caucasians, Hispanics, and African Americans, respectively. Sensitivity, specificity, PPV, NPV, false positive, and false positive rates were calculated for violence and antisocial behavior prevalence. To obtain a more comprehensive classification analysis, any arrest was also examined for false positive and false negative rates. Results revealed that the median cut-off for H Total score predicted the correct violence outcomes rather consistently for each race (i.e., 81.4% of Whites, 81.0% of Hispanics, and 85.7% of African Americans). Hispanics were slightly more likely to be misclassified as high risk for violence than were

either Whites or African Americans (33.3% vs. 31.7% and 28.3%, respectively), while African Americans were more likely to be misclassified as high risk for both antisocial behavior (31.4% vs. 23.1% Whites and 22.0% Hispanics) and any arrest (32.2% vs. 27.0% Whites and 27.1% Hispanics). Interestingly, African Americans were also much more likely to be misclassified as low risk for any arrest (22.2%) compared to Whites and Hispanics (7.5% and 12.5%, respectively). Additionally, Hispanics were slightly more likely to be misclassified as low risk for violence compared to Whites and African Americans (19.0% vs. 18.6% and 14.3%, respectively). In contrast, Whites displayed the highest rates of under-classification for antisocial behavior (29.7%).

Examining the performance indicators of individual risk domains, H10 appeared to be a poor index of low risk discrimination, as evidenced by low rates of specificity, NPVs, and false negatives. This can be attributed to the extremely low variability in H10 scores, with the majority of individuals receiving scores of 0. This low base rate event is thus also responsible for the high rates of false positives found for H10. Other notable findings showed that several of the variables hypothesized to be proxies for race (i.e., H3, H4, and H8) exhibited higher rates of false positives for African Americans and Hispanics compared to Whites across all three outcomes. Interestingly, H3 was also shown to underestimate the risk level of African Americans for each outcome. H9 scores were also observed to misclassify African Americans and Hispanics as high risk for each outcome more frequently than Whites. In contrast, Whites were misclassified as low risk across a range of outcomes more often than ethnic minorities on H4, H8, and H9.

Table 4.13. Performance indicators for Caucasians.

	Sensitivity %		Specificity %		PPV %		NPV %		FP %			FN %		
	Violence	ASB	Violence	ASB	Violence	ASB	Violence	ASB	Violence	ASB	Any Arrest	Violence	ASB	Any Arrest
H1	97.7	76.6	80.0	87.2	77.8	90.7	98.0	69.4	20.0	12.8	22.2	2.3	23.4	0.0
H2	76.7	70.3	71.7	87.2	66.0	90.0	81.1	64.2	28.3	12.8	25.4	23.3	29.7	15.0
H3	69.8	59.4	65.0	66.7	58.8	74.5	75.0	50.0	35.0	33.3	33.3	30.2	40.6	25.0
H4	69.8	59.4	73.3	79.5	65.2	82.6	77.2	54.4	26.7	20.5	23.8	30.2	40.6	22.5
H5	76.7	68.8	58.3	64.1	56.9	75.9	77.8	55.6	41.7	35.9	34.9	23.3	31.3	10.0
H6	67.4	64.1	58.3	66.7	53.7	75.9	71.4	53.1	41.7	33.3	38.1	32.6	35.9	25.0
H7	81.4	67.2	68.3	71.8	64.8	79.6	83.7	57.1	31.7	28.2	36.5	18.6	32.8	22.5
H8	69.8	60.9	65.0	69.2	58.8	76.5	75.0	51.9	35.0	30.8	33.3	30.2	39.1	25.0
H9	58.1	51.6	66.7	69.2	55.6	73.3	69.0	46.6	33.3	30.8	33.3	41.9	48.4	40.0
H10	88.4	90.6	3.3	2.6	39.6	60.4	28.6	14.3	96.7	97.4	100.0	11.6	9.4	17.5
H Total	81.4	70.3	68.3	76.9	64.8	83.3	83.7	61.2	31.7	23.1	27.0	18.6	29.7	7.5

ASB = Antisocial Behavior; PPV = Positive Predictive Value; NPV = Negative Predictive Value; FP = False Positive; FN = False Negative.

Table 4.14. Performance indicators for Hispanics.

	Sensitivity %		Specificity %		PPV %		NPV %		FP %			FN %		
	Violence	ASB	Violence	ASB	Violence	ASB	Violence	ASB	Violence	ASB	Any Arrest	Violence	ASB	Any Arrest
H1	85.7	71.0	80.4	85.4	64.3	78.6	93.2	79.5	19.6	14.6	8.3	14.3	29.0	0.0
H2	66.7	71.0	76.5	90.2	53.8	84.6	84.8	80.4	23.5	9.8	25.0	33.3	29.0	41.7
H3	81.0	77.4	54.9	61.0	42.5	60.0	87.5	78.1	45.1	39.0	41.7	19.0	22.6	16.7
H4	71.4	74.2	56.9	65.9	40.5	62.2	82.9	77.1	43.1	34.1	37.5	28.6	25.8	20.8
H5	76.2	67.7	64.7	68.3	47.1	61.8	86.8	73.7	35.3	31.7	31.3	23.8	32.3	20.8
H6	76.2	67.7	58.8	61.0	43.2	56.8	85.7	71.4	41.2	39.0	41.7	23.8	32.3	29.2
H7	71.4	74.2	68.6	80.5	48.4	74.2	85.4	80.5	31.4	19.5	31.3	28.6	25.8	33.3
H8	81.0	67.7	56.9	56.1	43.6	53.8	87.9	69.7	43.1	43.9	43.8	19.0	32.3	25.0
H9	61.9	64.5	56.9	63.4	37.1	57.1	78.4	70.3	43.1	36.6	39.6	38.1	35.5	33.3
H10	95.2	93.5	2.0	0.0	28.6	41.4	50.0	0.0	98.0	100.0	100.0	4.8	6.5	8.3
H Total	81.0	80.6	66.7	78.0	50.0	73.5	89.5	84.2	33.3	22.0	27.1	19.0	19.4	12.5

ASB = Antisocial Behavior; PPV = Positive Predictive Value; NPV = Negative Predictive Value; FP = False Positive; FN = False Negative.

Table 4.15. Performance indicators for African Americans.

	Sensitivity %		Specificity %		PPV %		NPV %		FP %			FN %		
	Violence	ASB	Violence	ASB	Violence	ASB	Violence	ASB	Violence	ASB	Any Arrest	Violence	ASB	Any Arrest
H1	94.3	77.3	85.0	84.3	78.6	81.0	96.2	81.1	15.0	15.7	10.2	5.7	22.7	0.0
H2	71.4	79.5	76.7	92.2	64.1	89.7	82.1	83.9	23.3	7.8	23.7	28.6	20.5	30.6
H3	60.0	56.8	61.7	62.7	47.7	56.8	72.5	62.7	38.3	37.3	39.0	40.0	43.2	41.7
H4	80.0	77.3	60.0	64.7	53.8	65.4	83.7	76.7	40.0	35.3	42.4	20.0	22.7	25.0
H5	74.3	63.6	71.7	70.6	60.5	65.1	82.7	69.2	28.3	29.4	28.8	25.7	36.4	27.8
H6	62.9	61.4	66.7	70.6	52.4	64.3	75.5	67.9	33.3	29.4	35.6	37.1	38.6	41.7
H7	85.7	68.2	66.7	60.8	60.0	60.0	88.9	68.9	33.3	39.2	40.7	14.3	31.8	27.8
H8	74.3	70.5	63.3	66.7	54.2	64.6	80.9	72.3	36.7	33.3	37.3	25.7	29.5	27.8
H9	85.7	72.7	58.3	54.9	54.5	58.2	87.5	70.0	41.7	45.1	44.1	14.3	27.3	19.4
H10	85.7	86.4	1.7	0.0	33.7	42.7	16.7	0.0	98.3	100.0	100.0	14.3	13.6	16.7
H Total	85.7	70.5	71.7	68.6	63.8	66.0	89.6	72.9	28.3	31.4	32.2	14.3	29.5	22.2

ASB = Antisocial Behavior; PPV = Positive Predictive Value; NPV = Negative Predictive Value; FP = False Positive; FN = False Negative.

Form of Relationship.

Binomial logistic regression analyses include the assumption of linearity between the continuous independent variables and the logit transformation of the dependent variable, as well as an absence of multicollinearity and significant outliers. All continuous independent variables were found to be linearly related to the logit of the dependent variable using the Box-Tidwell (1962) procedure. Predictor variables were checked for multicollinearity by inspection of the variance inflation factors (VIF). No indication of multicollinearity was found as VIF values (VIFs = 2.21–3.80) were all less than 10 (Cohen et al., 2003). Finally, standardized residuals of each continuous predictor variable were examined for significant outliers. In line with conventional criteria (Tabachnick & Fidell, 2013), z-scores above an absolute value of 3.29 were considered extreme and filtered out of the analysis.

Tables 4.16 and 4.17 present the results of four logistic regression models for the outcomes violence prevalence and any arrest, with Table 4.16 comparing slope and intercept differences between Whites and Hispanics, and Table 4.17 between Whites and African Americans. Comparing models two and three, results revealed that there were no significant racial differences in the intercept of the relationship between H Total scores and violence prevalence or any arrest. As well, the slope of the relationship between H Total scores and each criterion measure was similar for both minority groups in relation to Whites. Comparing models three and four across all analyses, I did not find that the addition of the interaction term improved the prediction of any arrest or violence prevalence for Hispanics or African Americans. Further, the odds ratios for the interaction terms remained statistically insignificant across the board. In sum, ethnicity was not shown to moderate the utility of Total H scores in predicting any arrest or violence prevalence.

Table 4.16. Logistic regression models testing predictive fairness of Total H score between Whites and Hispanics.

Any Arrest								
	Model 1		Model 2		Model 3		Model 4	
	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
Race (Hispanic)	.78	.41-1.46	-	-	.81	.36-1.80	.76	.34-1.70
Total H Score	-	-	1.02**	1.02-1.03	1.02**	1.02-1.03	1.03**	1.02-1.05
Race x Total H Score	-	-	-	-	-	-	.99	.97-1.00
(Constant)	.65*		.63		.63		.67	
Model X ₂	.66		106.78**		106.78**		110.05**	
Model Pseudo-R ₂	.003		.447		.447		.458	
Violence Prevalence								
	Model 1		Model 2		Model 3		Model 4	
	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
Race (Hispanic)	.54	.28-1.03	-	-	.41*	.17-.98	.44*	.19-1.01
Total H Score	-	-	1.03**	1.02-1.04	1.03**	1.02-1.04	1.03**	1.02-1.04
Race x Total H Score	-	-	-	-	-	-	1.00	.98-1.01
(Constant)	.73		.80		.80		.78	
Model X ₂	3.61		120.61**		120.61**		123.12**	
Model Pseudo-R ₂	.018		.497		.497		.505	

Note: Race terms represent the unique effect for Hispanic compared with White (i.e., Hispanic dummy coded as 1).

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

Table 4.17. Logistic regression models testing predictive fairness of Total H score between Whites and African Americans.

Any Arrest								
	Model 1		Model 2		Model 3		Model 4	
	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
Race (African American)	.95	.53-1.68	-	-	1.03	.50-2.11	.96	.45-2.05
Total H Score	-	-	1.02**	1.02-1.03	1.02**	1.02-1.03	1.03**	1.02-1.05
Race x Total H Score	-	-	-	-	-	-	.99	.97-1.01
(Constant)	.65*		.63		.63		.67	
Model X ₂	.66		106.78**		106.78**		110.05**	
Model Pseudo-R ₂	.003		.447		.447		.458	
Violence Prevalence								
	Model 1		Model 2		Model 3		Model 4	
	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
Race (African American)	.81	.46-1.45	-	-	.83	.40-1.72	.90	.42-1.97
Total H Score	-	-	1.03**	1.02-1.04	1.03**	1.02-1.04	1.03**	1.02-1.04
Race x Total H Score	-	-	-	-	-	-	1.01	.99-1.03
(Constant)	.73		.80		.80		.78	
Model X ₂	3.61		120.61**		120.61**		123.12**	
Model Pseudo-R ₂	.018		.497		.497		.505	

Note: Race terms represent the unique effect for African American compared with White (i.e., African American dummy coded as 1).
 * $p < .05$; ** $p < .001$.

Although no evidence of predictive bias was found at the global level for H Total scores, there may be greater variability in the racial fairness of individual risk domains. To examine this possibility, I conducted a similar set of logistic regression analyses in Tables 4.18 (Whites and Hispanics) and 4.19 (Whites and African Americans) to determine whether the association between each risk factor index and any arrest/violence prevalence was similar in form across ethnicity. H1 was excluded from these analyses due to the potential for criterion contamination.

Results demonstrated that there were no significant ethnic differences in the intercept of the relationship between risk domains and any arrest. However, both Hispanic and African American race were shown to moderate the effect of H3 (relationships) in predicting any arrest, $\text{Exp}(B) = 0.92$, $p = 0.02$, and $\text{Exp}(B) = 0.92$, $p = 0.03$, respectively [$\chi^2(1) = 7.06$, $p = 0.03$; Pseudo- $R^2 \Delta = 0.029$]. Figure 1 demonstrates that the slopes of these regression lines were significantly different for Hispanics and African Americans compared to Whites, suggesting that the H3 domain predicted any arrest better for Whites than for both ethnic minorities.

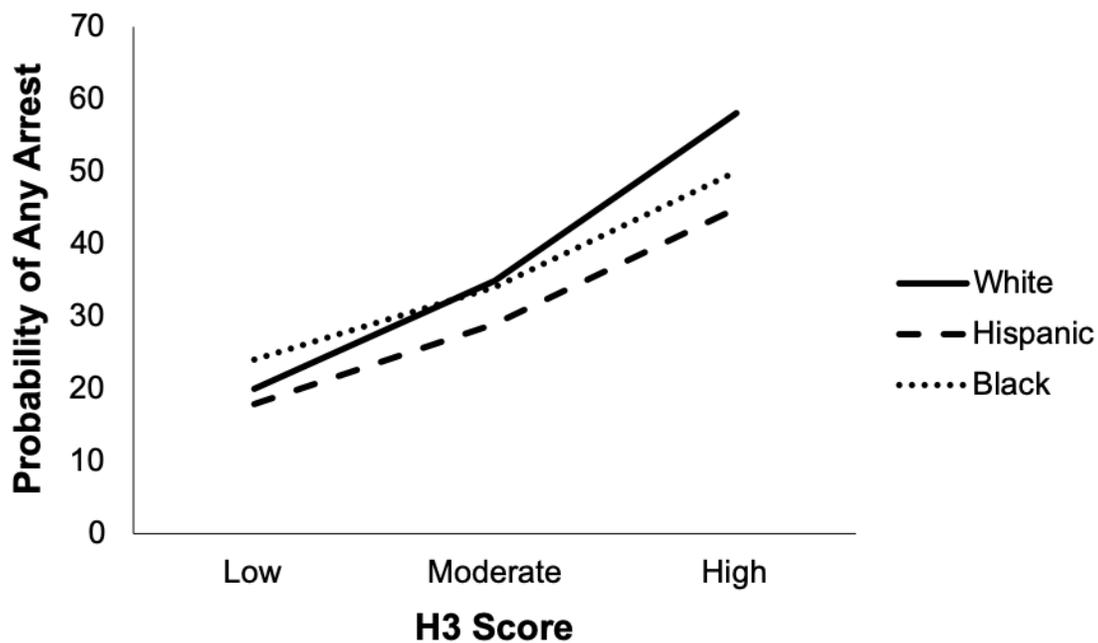


Figure 1. Predicted probabilities of any arrest by H3 score and ethnicity.

An overall pattern of null results was observed for the relationship between risk domain scores and violence prevalence. No evidence of slope or intercept bias was

found, indicating that all risk domains performed similarly in predicting violence for Whites, Hispanics, and African Americans. In other words, a given score on a risk domain translated into approximately similar likelihoods of having ever engaged in violence, regardless of an individual's race.

Table 4.18. Logistic regression models testing predictive fairness of individual risk domains between Whites and Hispanics.

	Intercept Comparisons (Models 2 vs. 3)				Slope Comparisons (Models 3 vs. 4)				
	<i>R</i> ² Change	<i>X</i> ²	OR, Race (Model 3)	95% CI	<i>R</i> ² Change	<i>X</i> ²	OR, Interaction (Model 4)	95% CI	
Any Arrest									
H2	.00	69.19**	1.03	.49-2.14	.023	74.91**	1.03	.49-2.14	
H3	.00	57.04**	.62	.30-1.28	.029	64.09**	.92*	.86-.99	
H4	.00	76.76**	.70	.33-1.46	.004	77.98**	.95	.86-1.06	
H5	.00	79.73**	1.01	.48-2.12	.001	79.99**	1.00	.91-1.10	
H6	.00	40.53**	.89	.45-1.77	.007	42.19**	.97	.90-1.04	
H7	.00	65.56**	.96	.46-1.97	.005	66.65**	.98	.93-1.03	
H8	.00	41.74**	.82	.41-1.64	.006	43.25**	.95	.87-1.03	
H9	.00	43.47**	.73	.37-1.46	.002	44.01**	.97	.88-1.06	
H10	.00	28.34**	.86	.44-1.67	.003	29.06**	1.07	.83-1.38	
Violence Prevalence									
H2	.00	85.44**	.71	.33-1.53	.00	85.55**	1.02	.86-1.23	
H3	.00	46.55**	.47*	.23-.95	.008	48.29**	.97	.91-1.02	
H4	.00	46.42**	.52	.26-1.05	.012	49.25**	.97	.89-1.05	
H5	.00	69.85**	.56	.26-1.18	.015	73.58**	1.10	.99-1.21	
H6	.00	42.99**	.62	.31-1.23	.007	44.56**	1.00	.93-1.08	
H7	.00	108.85**	.62	.28-1.38	.018	109.16**	.97	.92-1.03	
H8	.00	53.23**	.56	.27-1.14	.004	54.39**	1.00	.92-1.09	
H9	.00	54.77**	.49*	.24-1.00	.008	56.73**	.99	.90-1.09	
H10	.00	31.58**	.60	.31-1.19	.005	32.70**	1.11	.83-1.48	

Note: Race terms represent the unique effect for Hispanic compared with White (i.e., Hispanic dummy coded as 1).

p* < .05; *p* < .001.

Table 4.19. Logistic regression models testing predictive fairness of individual risk domains between Whites and African Americans.

	Intercept Comparisons (Models 2 vs. 3)				Slope Comparisons (Models 3 vs. 4)				
	<i>R</i> ² Change	<i>X</i> ₂	OR, Race (Model 3)	95% CI	<i>R</i> ² Change	<i>X</i> ₂	OR, Interaction (Model 4)	95% CI	
Any Arrest									
H2	.00	69.19**	1.31	.67-2.56	.023	74.91**	1.31	.67-2.56	
H3	.00	57.04**	.86	.46-1.64	.029	64.09**	.92*	.86-.99	
H4	.00	76.76**	.76	.39-1.50	.004	77.98**	.95	.86-1.05	
H5	.00	79.73**	1.51	.76-3.00	.001	79.99**	.98	.90-1.07	
H6	.00	40.53**	1.21	.65-2.27	.007	42.19**	.96	.90-1.03	
H7	.00	65.56**	1.00	.52-1.92	.005	66.65**	.98	.93-1.03	
H8	.00	41.74**	1.09	.59-2.04	.006	43.25**	.98	.90-1.07	
H9	.00	43.47**	.80	.43-1.50	.002	44.01**	.99	.91-1.09	
H10	.00	28.34**	1.10	.60-2.01	.003	29.06**	1.09	.83-1.43	
Violence Prevalence									
H2	.00	85.44**	1.13	.57-2.24	.00	85.55**	1.03	.86-1.22	
H3	.00	46.55**	.75	.41-1.40	.008	48.29**	.97	.92-1.03	
H4	.00	46.42**	.68	.36-1.28	.012	49.25**	1.05	.96-1.14	
H5	.00	69.85**	1.15	.59-2.23	.015	73.58**	1.03	.94-1.11	
H6	.00	42.99**	.99	.53-1.86	.007	44.56**	.96	.91-1.03	
H7	.00	108.85**	.68	.33-1.38	.018	109.16**	1.05	.98-1.13	
H8	.00	53.23**	.90	.48-1.70	.004	54.39**	1.05	.96-1.15	
H9	.00	54.77**	.63	.33-1.20	.008	56.73**	1.06	.96-1.17	
H10	.00	31.58**	.91	.50-1.66	.005	32.70**	1.11	.81-1.52	

Note: Race terms represent the unique effect for African American compared with White (i.e., African American dummy coded as 1).

p* < .05; *p* < .001.

My final test of predictive bias involved negative binomial regression analyses using the continuous criterion measures of violence incidence and prior criminal history. Negative binomial regression analyses include the assumption of independence of observations, which was upheld as participants completed the study individually and only one set of ratings were obtained per participant.

Table 4.3 above demonstrated that the only demographic factor found to be significantly associated with violence was Neighborhood Disorganization. Hence, this variable was controlled for in the first block of these analyses along with ethnicity and Total H score. The interaction term of ethnicity and Total H score was subsequently entered in the second block. Results demonstrated that neither ethnicity significantly moderated the relationship between H Total score and violence incidence, $\text{Exp}(B) = 1.00$, 95% CI = [1.00 to 1.01], $p = 0.21$ to 0.22 , nor between H Total score and prior criminal history, $\text{Exp}(B) = 1.00$, 95% CI = [0.99 to 1.01], $p = 0.65$ to 0.97 .

Moderation Analyses of Acculturation.

To test whether Mainstream acculturation scores moderated the relationship between H Total scores and each criminological outcome measure, a series of regression analyses were performed. Hierarchical negative binomial regression was used to predict violence incidence and prior criminal history, controlling for the covariate of Neighborhood Disorganization. Main effects of H Total scores and mean-centered acculturation scores were entered in the model, along with the cross-product term of H Total and acculturation. Results showed that the interaction term was significant, $\text{Exp}(B) = 1.00$, 95% CI = [1.00-1.00], $p = 0.008$. However, given that an odds ratio of 1 signifies a lack of relationship between predictor and outcome, acculturation was not observed as a highly influential predictor in moderating the utility of H Total scores for violence incidence. Further, no significant moderation effect was observed when predicting prior criminal history.

A similar pattern of null results was found using binary logistic regression to predict violence prevalence and any arrest. Again, Neighborhood Disorganization was controlled for in the first block, followed by H Total and acculturation scores in the second block, and their interaction term in the final block. While acculturation was not found to significantly moderate the relationship between H Total and either outcome variable, $\text{Exp}(B) = 1.00$, 95% CI = [1.00-1.00], $p = 0.38$ to 0.92 , the main effect of

Mainstream acculturation scores was significant in both analyses, $\text{Exp}(B) = 1.030$ to 1.032 , $95\% \text{ CI} = [1.003-1.061]$, $p = 0.03$. These findings suggest that individuals in the sample reporting higher levels of acculturation to the dominant American culture tended to report modestly higher levels of violence and arrests. Specifically, for every additional unit increase in Mainstream acculturation score, the odds of having been arrested or engaged in violence in my sample increased by 3.0-3.2%, respectively.

Although I found little evidence to suggest the predictive accuracy of total risk scores was contingent upon one's level of mainstream acculturation, it remained a possibility that certain individual risk domains were more or less valid depending on one's acculturation score. I thus ran an additional series of binary logistic regression analyses predicting violence prevalence and any arrest with each individual risk score and acculturation score entered in the first block, followed by their interaction term in the second block. Results indicated that the slope of the relationship between H3 scores and violence/any arrest was different based on one's level of mainstream acculturation. The addition of the interaction term in block two improved the prediction of violence prevalence, $X^2(1) = 4.21$, $p = 0.04$, $\text{Pseudo-}R^2 \Delta = 0.018$, as well as any arrest, $X^2(1) = 5.88$, $p = 0.02$, $\text{Pseudo-}R^2 \Delta = 0.024$. The odds ratio for the interaction terms, while small, were statistically significant, $\text{Exp}(B) = 1.002$, $95\% \text{ CI} [1.000-1.003]$ and $[1.000-1.004]$, $p = 0.027$ to 0.048 . Disaggregating the analyses by ethnicity, results indicated that this interaction term was particularly salient for Hispanics' arrest risk. In particular, the addition of the interaction term significantly improved the prediction of any arrest for Hispanics, $X^2(1) = 5.72$, $p = 0.02$, $\text{Pseudo-}R^2 \Delta = 0.08$. In contrast to Whites and African Americans, the odds ratio for Hispanic individuals was significant, $\text{Exp}(B) = 1.005$, $95\% \text{ CI} [1.00-1.01]$, $p = 0.03$. The significant interaction term thus signifies the greater predictive power of H3 for any arrest among Hispanics with high mainstream acculturation scores compared to Hispanics with low mainstream acculturation scores.

4.2.3. Risk Factors as Proxies for Race

Several analyses were conducted to examine whether risk factors could operate as proxies for race. Bivariate associations between each risk domain and dummy-coded ethnicity variable were first computed. Assumptions of point-biserial correlation analyses include homogeneity of variances and normality in the distributions of each group of the dichotomous variable (i.e., race). While the point-biserial correlation demands that

homoscedasticity is present, it is relatively robust to violations of mild non-normality (Kraemer, 1980). All risk factors displayed equal variances across each ethnic group with the exception of H4 and H6. Thus, Kendall's tau-b coefficients were derived as a non-parametric alternative to the point-biserial correlation for these two domains (Marascuilo & McSweeney, 1977). Table 4.20 reports the results of both r_{pb} and τ_b correlations. No significant correlations were observed among Hispanics or African Americans. White individuals exhibited small but significant correlations with H2 and H5, $r = 0.14$, $p = 0.02$ to 0.03 .

Table 4.20. Bivariate associations between risk scores and ethnic groups.

Risk Score	White (W)	Hispanic (H)	Black (B)	Post Hoc
H1	.06	-.11	.04	
H2	.14*	-.07	-.07	
H3	-.004	.01	-.01	
H4	$\tau_b = -.07$	$\tau_b = -.01$	$\tau_b = .08$	B > W _a
H5	.14*	-.05	-.09	W > B _a
H6	$\tau_b = .05$	$\tau_b = .01$	$\tau_b = -.07$	
H7	.07	-.08	.01	
H8	.07	-.01	-.06	
H9	-.05	-.02	.07	
H10	.09	-.02	-.07	
H Total	.07	-.05	-.02	

* $p < 0.05$, two-tailed.

Differences significant at $a_p < 0.05$, one-tailed, $b_p < 0.05$, two-tailed, $c_p < 0.01$, two-tailed.

Fisher's r -to- z transformations were calculated to assess the significance of the difference between correlation coefficients (Lowrey, 2001). Kendall's formula (1970) was used to convert values of tau into Pearson's r in order to conduct Fisher's transformations. Results showed that the difference between H4 correlations for African Americans, $r(93) = 0.13$, and for Whites, $r(101) = -0.11$, was statistically significant, $Z = 1.63$, $p < 0.05$. Additionally, the difference between H5 correlations for Whites, $r(101) = 0.14$, $p < 0.05$, and African Americans, $r(93) = -0.09$, $p = 0.13$, was statistically significant, $Z = 1.60$, $p < 0.05$. Comparison of correlations in Table 4.20 to those found in Tables 4.9 and 4.10 between risk scores and violence prevalence/any arrest revealed no instances of suspect risk indices which may have correlated more strongly with race than the criterion variables.

To understand if violent ethnic minorities were more likely than violent Whites to receive higher scores on risk factors, I next examined the proportion of each racial group falling within the upper quartiles of each risk category, using a violent sub-sample of

individuals ($n = 99$). Results showed that African Americans in particular (54.3%), but also Hispanics (42.9%), were significantly more likely to fall above the 75th percentile on H9 compared to Whites (34.9%), $\chi^2(6) = 12.37, p = 0.05$. Figure 2 visually displays these findings in a bar chart.

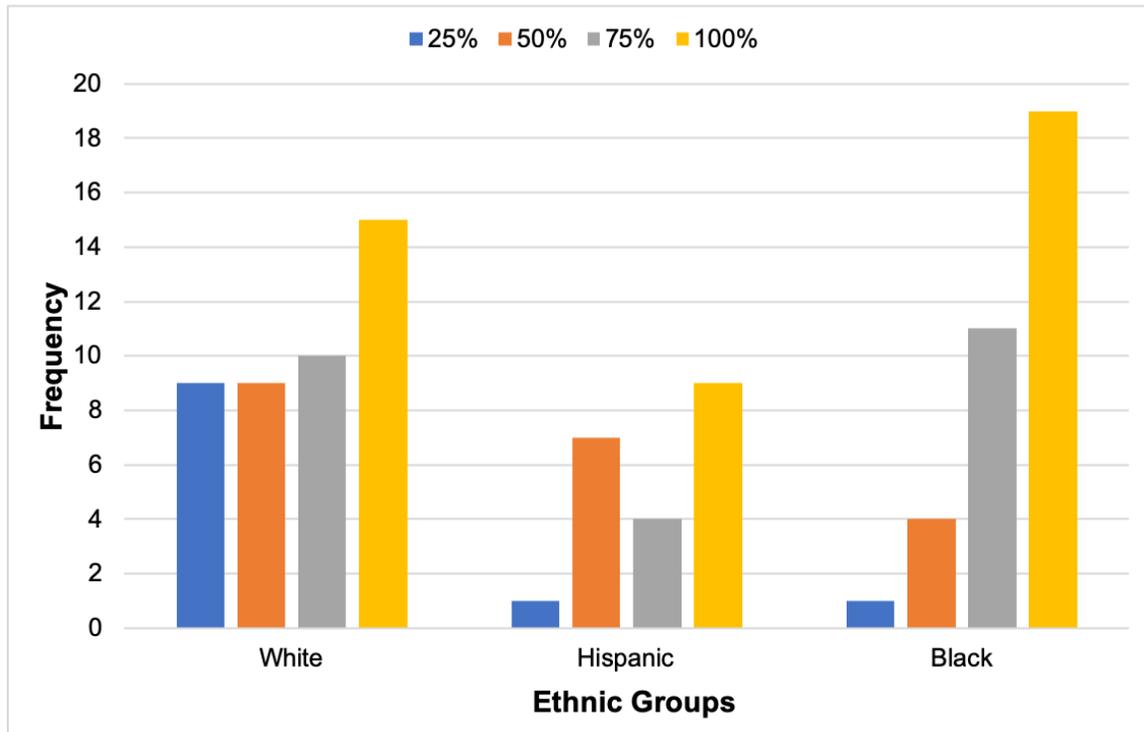


Figure 2. Comparison of violent ethnic groups across H9 quartiles ($n = 99$).

Applying Kraemer et al.'s (2001) criteria for assessing the relationship between two risk factors, the only risk domains with potential to function as proxies for race were H2 and H5, due to their correlations with race (i.e., White). Phi coefficients were calculated for the association between each race with violence prevalence ($\phi = -0.09$ to 0.08), antisocial behavior prevalence ($\phi = -0.10$ to 0.17), and any arrest ($\phi = -0.05$ to 0.03). The only phi coefficient to reach significance was that between Whites and antisocial behavior prevalence ($\phi = 0.17, p = 0.006$). However, this coefficient did not prove strong enough to dominate the associations between H2 and H5 with antisocial behavior prevalence ($r = 0.39$ to 0.55). Thus, because both risk domains were shown to predict the outcome more strongly than the White race variable, using Kraemer et al. (2001)'s criteria, I did not find evidence to suggest either risk factor functioned as proxies for race.

Three binary logistic regression models were next analyzed with H1-H10 simultaneously predicting each race to compare pseudo- R^2 values across ethnic groups. The set of 10 risk factors explained 14.3% of the variance for Caucasians, $X^2(10) = 29.92$, $p = 0.001$. Individual risk scores proving to be significant in the final model for Caucasians were H4, $\text{Exp}(B) = 0.94$, $p = 0.009$, H5, $\text{Exp}(B) = 1.06$, $p = 0.004$, and H9, $\text{Exp}(B) = 0.92$, $p = 0.005$. Results demonstrated that H4 and H9 tended to decrease in relation to being White; in other words, for every additional increase in problems with employment or violent attitudes, the odds of being White decreased by 6.0-7.6%, respectively. Slightly less variance (12.3%) was explained by the risk factors for African American race, $X^2(10) = 25.24$, $p = 0.005$. This time, significant risk domains included H1, $\text{Exp}(B) = 1.08$, $p = 0.034$, H4, $\text{Exp}(B) = 1.06$, $p = 0.01$, and H5, $\text{Exp}(B) = 0.94$, $p = 0.01$, with H9 approaching significance, $\text{Exp}(B) = 1.05$, $p = 0.056$. In contrast to Whites, findings showed that H4 and H9, as well as H1, tended to increase in conjunction with being African American; put differently, for every additional increase in problems with employment, violent attitudes, and violence, the odds of being African American increased by 6%, 5%, and 8%, respectively. In line with hypotheses, these findings provide modest evidence to suggest prior criminal history and employment problems may approximate for, or are simply more experientially related to, being African American. Finally, in contrast to analyses for Whites and African Americans, the model predicting Hispanic race was not found to be significant, Pseudo- $R^2 = 0.05$, $X^2(10) = 9.55$, $p = 0.48$, with no risk factors exhibiting statistical significance.

Next, incremental validity analyses were conducted to assess the proportion of unique variance in the criterion measures attributed to each risk factor once the effects of race are controlled. A series of hierarchical logistic regression models predicting violence prevalence, antisocial behavior prevalence, and any arrest were investigated. All risk indices continued to significantly predict the outcome measures regardless of race, suggesting that Whites, Hispanics, and African Americans with comparable levels of risk showed no differences in their rates of violence, antisocial behavior, and arrest.

Finally, based on the legal challenges of Starr (2014), a series of analyses were conducted to examine whether socioeconomic variables were confounded with, and could theoretically operate as proxies for, poverty/income. A chi-square test of independence revealed that education level was significantly associated with income, with individuals reporting lower educational attainment levels falling in significantly lower

income brackets compared to those reporting higher levels of educational attainment, $\chi^2(5) = 65.03, p < 0.001$. Additionally, two Kruskal-Wallis H tests were conducted to examine potential differences in H4 and neighborhood disorganization scores (treated continuously in this case) across income brackets. Results confirmed that there was a statistically significant difference in both H4 scores, $\chi^2(5) = 19.07, p = 0.002$, and neighborhood disorganization scores, $\chi^2(5) = 13.12, p = 0.02$, between income brackets. Pairwise comparisons were performed using Dunn's (1964) procedure with a Bonferroni correction for multiple comparisons. Post hoc analyses revealed statistically significant differences in median H4 scores between the first income bracket (under \$20,000; median = 8.48) and the third (\$35,000-\$49,999; median = -1.10, $p = 0.02$), fourth (\$50,000-\$74,999; median = -3.64, $p = 0.002$), fifth (\$75,000-\$99,999; median = -2.06, $p = 0.04$), and sixth (over \$100,000; median = -6.04, $p = 0.008$) income brackets. This difference remained significant after running an additional analysis with H4 scores excluding the individual items for neighborhood disorganization. Pairwise comparisons further revealed statistically significant differences in median neighborhood disorganization scores between individuals earning less than \$20,000 per year (11.00) and individuals earning greater than \$100,000 per year (5.00), $p = 0.01$.

Chapter 5.

Discussion

Although extensive research has been conducted on risk instrument validation, very few of these studies have included ethnically heterogeneous samples. The lack of systematic research on cross-cultural predictive validity is quite ironic seeing as correctional populations are disproportionately comprised of minority groups. The limited body of research investigating within-sample generalizability has recurrently found poorer predictive accuracy for minority samples compared with Caucasian populations. Further, many of the variables assessed by risk tools, such as criminal history and employment, have been criticized for their conflation with race and class. These issues are particularly concerning given the legal and clinical ramifications that consistently inaccurate or inflated risk scores would have for minority groups. This study attempted to contribute to the existing cross-cultural risk validation literature by examining the relevance of these tools for African American and Hispanic offenders in the United States. Specifically, this study addressed four questions:

1. To what extent do risk factors produce average score differences between ethnic groups that may cause disparate impact? It was hypothesized that African Americans and Hispanics would obtain higher risk scores compared to Whites.
2. To what extent are global and individual risk scores affected by predictive bias? It was hypothesized that ethnicity and acculturation would moderate the accuracy of risk scores for African American and Hispanic participants.
3. To what extent can controversial race-conflated variables function as proxies for race or ethnicity? It was hypothesized that criminal history (H1/H2), relationship problems (H3), employment and neighborhood problems (H4), adverse childrearing experiences (H8), and supervision response problems (H10) would evince strong associations with race.
4. To what extent can socioeconomic variables operate as proxies for poverty and income? It was hypothesized that education level, problems with

employment, and neighborhood disorganization would be strongly associated with income level. Such an association could theoretically extrapolate to race as well, given the pervasive correlation between race and poverty.

5.1. Summary of Descriptive Findings

At a descriptive level, several findings are worthy of further discussion. First, individuals reporting at least one type of violent activity were significantly overrepresented among those reporting higher levels of neighborhood disorganization. While results from this sample did not reveal significant ethnic differences in neighborhood disorganization (although a greater proportion of African Americans and Hispanics endorsed high levels of disorganization compared to Whites), a large body of research recognizes the overrepresentation of African American and Hispanic minority groups living in structurally disadvantaged neighborhoods characterized by higher levels of poverty, greater exposure to crime, and fewer access to resources (Firebaugh & Farrell, 2016; Intrator et al., 2016; Logan & Stults, 1999). Additionally, although ethnic minorities generally exhibit higher rates of arrests, convictions, and incarceration, studies have observed significant interaction effects between individual risk factors for offending and the context in which an individual resides (Bellair & McNulty, 2005; Kubrin et al., 2007; Peeples & Loeber, 1994; Sampson et al., 2005). For instance, examining the racial gap in violent crimes among adolescents in Chicago, Sampson et al. (2005) discovered that the odds of an African American youth committing a violent crime were 85 percent higher than for a White youth, but approximately 33 percent of this difference was accounted for by neighborhood characteristics. However, because risk instruments are stripped of contextual meaning, these associations between race and neighborhood disadvantage are rendered invisible (Moore & Padavic, 2011). Ethnic minorities may consequently be labeled higher risk on items such as prior criminal history, family instability, unemployment, low educational attainment, and violent attitudes purely due to structural imbalances beyond their control that predispose them to higher levels of these factors. In the end, such a process could reasonably contribute to racially disparate impact in correctional outcomes and ultimately the overrepresentation of minorities in the criminal justice system.

With that being said, the current study did not find any significant mean score differences across ethnic groups that theoretically could materialize in disparate impact.

Such findings were surprising given the body of epidemiological data and primary studies indicating a greater prevalence of adverse risk factors afflicting African American and Hispanic minority groups in the United States (see, e.g., Bureau of Labor Statistics, 2013; United States Census Bureau, 2012). Given the significance of ecological phenomena for one's exposure to criminogenic factors, these null findings might also reflect the lack of ethnic differences in neighborhood disorganization within this sample. Both sets of null findings could be artifacts of sample selection bias as well (discussed further below).

5.2. Summary of Major Findings

5.2.1. Concurrent Validity of Risk Factors

In terms of concurrent validity, point-biserial correlations revealed that total and individual risk scores were generally correlated with violence prevalence and any arrest for each ethnic group. Additionally, using the AUC method of indexing predictive validity, total scores displayed consistently strong accuracy for each outcome, irrespective of sample. AUC values are particularly useful measures of comparative predictive accuracy as they are unaffected by base rates of violence and arrests, both of which varied across ethnic groups. With the exception of H10 (due to problems with range restriction), all individual risk domains exhibited medium to large degrees of predictive accuracy for violence and any arrest for White, African American, and Hispanic samples.

Despite this overall pattern of equivalent performance, results of both discrimination indices suggested diminished accuracy in the prediction of arrest for African Americans compared to Whites. Such discrepancies highlight the significance of selecting an appropriate outcome measure when evaluating instrument accuracy. As mentioned above, arrest data (whether official or self-report) is prone to underestimating true recidivism rates as it excludes offenders whose crimes do not lead to arrest, as well as offenders whose crimes were not reported to the police. Such distortions in arrest data may be particularly pronounced in African American communities with strained police-citizen interactions. African American communities who report having less trust in the police may be less inclined to report criminal activity to the police, resulting in disproportionately lower arrest rates and therefore reduced predictive accuracy for this group. For instance, studies have found the association between criminal offending and

arrest to be weaker in neighborhoods with higher tolerance of deviance, likely because residents in these neighborhoods are less likely to report crimes to police (Kirk, 2008). Notably, posthoc comparisons of AUC values revealed that H9 (violent attitudes) predicted violence better for African American than for White participants; as well, African Americans were disproportionately represented among the highest quartile of H9 scores.

While little evidence of predictive bias was found using point-biserial correlations and AUC values, classification analyses revealed several risk factors to be less accurate in predicting outcomes for African Americans and Hispanics. At the global level, total scores were both more likely to over-classify and under-classify African Americans' risk for any arrest, as well as Hispanics' risk for violence. At the domain level, scores on H3 (relationship problems), H4 (employment problems), H8 (traumatic experiences), and H9 (violent attitudes) all showed a general tendency to mischaracterize African Americans and Hispanics as high risk across a range of outcomes. In contrast, H4, H8, and H9 scores were more likely to mislabel Whites as low risk compared to ethnic minorities. These findings of greater over-classification errors among non-Whites (particularly among African Americans), as well as greater under-classification errors among Whites, were consistent with previous research by Fass et al. (2008), Larson et al. (2016), and Whiteacre (2006).

The higher rates of false positives, coupled with the lower rates of positive predictive values, among minority groups indicate that a greater proportion of African Americans and Hispanics were judged to be at high risk who did not engage in offending behavior in comparison to Whites. Such findings may suggest differential risk marker sensitivity across ethnic groups that in turn alters the thresholds at which certain risk factors become criminogenic. In other words, certain risk indicators, such as relationship conflict in H3, financial difficulties in H4, or parental criminality in H8, may be more prevalent and thus less symptomatic of relationship, employment, or trauma problems for African American and Hispanic compared to White offenders. Indeed, epidemiological data confirms that African American and Hispanic communities exhibit many more risk factors in these risk domains compared to their Caucasian counterparts (see Appendix B).

Other caveats to uniform predictive utility across race were found using logistic odds ratios as a performance indicator. Although ethnicity did not moderate the predictive accuracy of risk scores at the global level, slope differences were discovered at the individual level using H3 scores, which predicted any arrest more strongly for Whites than African Americans or Hispanics. This differential accuracy was corroborated by the significantly higher AUC values observed between H3 scores and any arrest for Whites vis-à-vis African Americans and Hispanics. Examination of Figure 1 suggests that higher scores on H3 corresponded to lower levels of arrest for minorities compared to Whites, and that this disparity was particularly salient among Hispanics. One reason that relationship problems were found to overestimate risk for minority groups might relate to the impact of neighborhood disadvantage discussed above. For example, research has found that controlling for neighborhood context eliminates not only racial differences in offending, but also in parenting practices (e.g., lower levels of warmth, inconsistent discipline) thought to be associated with higher risk in children (Pinderhughes et al., 2001). African American families experience significantly higher rates of single-parent households and lower rates of marriage. While these individual risk factors are often understood as “causes” of antisocial outcomes, in actuality they may simply be symptoms of a more distal and fundamental cause of crime and arrest, neighborhood disadvantage (Prins & Reich, 2018). Such risk items may therefore suffer reduced validity for the prediction of African American offending as most of the variance in these outcomes is instead explained by broader environmental phenomena.

Further, contrary to hypotheses, no meaningful interaction effects between mainstream acculturation levels and total risk scores were found for ethnic subgroups. Indeed, no significant differences in heritage nor mainstream orientation were observed between groups. It is likely that this lack of variance resulted in range restriction issues which would in turn attenuate the strength of the association between acculturation and criterion measures. However, analyses of the individual risk domains suggested that H3 scores predicted violence prevalence and any arrest better for individuals showing greater acculturation to the mainstream culture. Such results may provide further evidence that problems with relationships is an example of a risk item skewed towards individualized, Western-centric models of violence risk.

For example, Hispanic Americans tend to be more collectivistic and prioritize the needs of the family over those of its individual members. This often results in the

formation of extended family households, particularly for recent Hispanic immigrants who reside with extended family for economic reasons. In contrast, Caucasian groups are more individualistic and place greater value on self-reliance (Kamo, 2000). Much risk item content reflects Western conceptualizations of the nuclear family and considers frequent moving between households to be evidence of discontinuity of care and familial instability in childhood (Shepherd & Lewis-Fernandez, 2016). These practices can thus have the unintended consequence of overestimating risk levels of Hispanic individuals whose living with several extended family members is a customary cultural practice. In fact, disaggregating the moderated logistic regression analysis by ethnicity revealed that, among Hispanics, 33.5% of the variance in Model 2 was explained by the interaction term of H3 and mainstream orientation, compared to 24.6% for Whites and 17.9% for African Americans. Thus, the extent to which one has acculturated to the United States appears particularly salient in determining the severity of relationship instability for Hispanics' violence risk. It may be that for less acculturated Hispanic families who retain a stronger sense of *familismo* (i.e., identification with extended family), the impacts of relationship dysfunction are offset by greater access to social support.

Despite the relatively small effects of acculturation in this sample, one's acculturation level or immigrant generation could be a unique factor to consider in the risk assessment of all foreign-born offenders. Studies have found that violence levels are comparatively lower for more recent immigrants. Analyzing ethnic disparities in violence using a large multi-wave sample, Sampson et al. (2005) observed that recent immigrant status was protective against violence for Whites, African Americans, and Mexican Americans, with first-generation immigrants' odds of violence being nearly half those of third-generation immigrants. These results are consistent with findings in the current study, which suggested a roughly three percent increase in the likelihood of arrest/violence for every additional unit increase in one's mainstream acculturation score.

Finally, though both minority groups were disproportionately represented among the highest quartile of H9, their scores on this risk domain were also more likely to misclassify them as high risk. While I did not hypothesize problems with violent attitudes would exhibit strong associations with race, it is possible that a similar line of reasoning could explain the observed relations between H9 and African Americans/Hispanics. For instance, the structural circumstances common to disadvantaged neighborhoods in

which African Americans and Hispanics are overrepresented can engender a foundation for derisive attitudes towards law enforcement as well as tolerance of law violations. As these communities face disproportionately higher arrest and victimization rates, they inevitably develop different belief systems or “codes of the street” to aid their survival and deter others from attempting to disrespect or oppress them (Anderson, 2000). Violent attitudes might therefore be a necessary cultural adaptation to adverse surroundings. Thus, these findings again allude to the importance of examining culturally- and context-specific manifestations of risk constructs when assessing minority group offenders, particularly when an evaluator wishes to determine the salience of a risk item across cultural backgrounds. Failure to do so risks pathologizing individuals who possess limited control of their environments.

5.2.2. Risk Factors as Proxies for Race

While I predicted that certain race-conflated variables (i.e., H1, H2, H3, H4, H8, and H10) would function as statistical proxies for race, I found minimal evidence to suggest that the primary connection between these risk factors and any of the criterion measures was race. When examining the total variation in each race explained by the set of 10 risk factors, however, I found modest evidence to suggest that the odds of being African American increased alongside increases in H1 (violence problems) and H4 (employment problems). One could argue that depending on how the term “proxy” is defined, there are many different ways to analytically demonstrate one variable to be a proxy for another. However, in line with research by Skeem and Lowencamp (2016), I relied on the operational definitions supplied by Kraemer et al. (2001) to guide these analyses. As I did not observe any instances in which either minority race “dominated” in predicting violence, antisocial behavior, or any arrest, my results were thus inconsistent with several scholars’ objections to actuarial risk assessment (Harcourt, 2015; Starr, 2014).

However, concerns raised by law professor Sonja Starr (2014) about the use of socioeconomic variables related to poverty were corroborated in several analyses. Specifically, I found that individuals with lower levels of education, higher levels of neighborhood disorganization, and higher levels of employment problems were significantly more likely to report incomes falling below the 2018 U.S. poverty line. Such findings lent credence to the notion that static socioeconomic- and demographic-related

risk factors might be constitutionally suspect due to their approximations for wealth-based classifications that have explicitly been prohibited from being considered as recidivism predictors by the Supreme Court (*Bearden v. Georgia*, 1983).

As this study represents the first attempt to empirically ascertain whether risk factors other than prior criminal history could function as proxies for race, it is largely exploratory in nature and thus allows for a degree of discretion in formulating novel theories. Consequently, I argue that by nature of African Americans' and Hispanics' overrepresentation among the “underclass”—urban neighborhoods mired in chronic and intergenerational poverty—one could extrapolate that these socioeconomic variables also cannot meaningfully be distinguished from race, and thus may amount to proxies for ethnic groups. As a testament to the economic stagnation of the underclass, the 2007 median net worth of White families was \$170,400, compared to only \$27,800 for non-White families (United States Census Bureau, 2012). Such figures are particularly striking given the significant role of wealth in perpetuating inequality from generation to generation.

5.3. Strengths and Limitations

5.3.1. Use of Online Sample

The use of online crowdsourcing software such as Amazon's Mechanical Turk (MTurk) has become increasingly popular for recruiting large samples of participants rapidly and at relatively low cost. Satisfactory psychometric properties (i.e., internal reliability, test-retest reliability, criterion validity) of personality scales and mental health measures have previously been demonstrated using an MTurk population (Buhrmester et al., 2011; Shapiro et al., 2013). Cross-sample examinations have also demonstrated that relative to college undergraduate samples and community samples collected near college towns, MTurk samples are significantly more diverse and representative of the U.S. population on a number of demographic dimensions (e.g., gender, race/ethnicity, employment status, number of children) (Schleider & Weisz, 2015). However, studies have suggested that MTurk workers tend to be younger and report greater unemployment compared to the national population (Paolacci et al., 2010). Such demographics could have implications for the current study to the extent that young age and unemployment are each considered markers for heightened risk. As well, studies

suggest that most MTurk workers are Caucasian and that a considerable number of workers report a positive screen for potential substance abuse problems (Shapiro et al., 2013). These demographics also appear to be reflected in the current study as the majority of recruited participants were White and this sub-sample reported considerably higher levels of substance use.

More generally, the use of an MTurk population could result in selection bias. Despite their varying ethnicities, participants may have been more similar than not in terms of variables such as socioeconomic status or acculturation level. For instance, previous MTurk studies have found that workers are predominantly middle class and typically more educated than the general U.S. population (Paolacci et al., 2010). As well, it is reasonable to assume that more recent U.S. immigrants are underrepresented in the MTurk population, as the crowdsourcing platform was conceived in the U.S. and other cultures may have less familiarity with its use. In a similar vein, given that one of my inclusion criteria involved English fluency, the generalizability of findings to cross-cultural research involving non-English-speaking populations is inherently restricted. Ideally, samples should be drawn from different sociocultural strata within the United States to maximize cross-cultural variance. Nevertheless, despite potentially limited cultural variance, differences in concurrent validity were observed for a handful of items. It is plausible, however, that more risk items would exhibit reduced accuracy if groups were recruited from more divergent communities.

The use of a convenient online sample poses several additional limitations that warrant mention. First and foremost, the observed distribution of risk factors and prevalence of violence is unlikely to generalize to other samples of interest, such as forensic and clinical populations. The base rates of violence and other criminological outcomes, as well as the variability in risk factor scores, were both low, as would be expected among a non-forensic sample. It is likely that this produced restrictions in range which may have impacted the predictive ability in this study. Finally, it is reasonable to assume that participants in the study possessed greater levels of adaptive coping or access to resources than would be expected among individuals in an institutional setting. It is thus imperative that future risk validation research is conducted using higher risk and more ethnically heterogeneous samples to maximize the external validity of findings.

5.3.2. Use of Self-Report Measures

The use of self-report measures can be viewed as both a strength and weakness of the study. While self-reports of criminal activity may be more comprehensive than official justice records, thus overcoming some of the limitations associated with traditional arrest data, these responses may have been vulnerable to recall bias. It is also plausible that some participants were not entirely truthful in their identification as former offenders, or more generally that the online survey biased certain participants into responding at random or without due diligence. However, participants were removed from analyses that did not report consistent types of violent activity at the beginning and end of the survey. Additionally, several worker qualifications were implemented within the MTurk system to ensure high-quality data (i.e., task approval rating greater than 97%, number of tasks approved greater than 10,000). Further, as requesters have discretion to reject work, MTurk participants are incentivized to complete tasks carefully and truthfully since worker “reputation” determines their eligibility for future tasks (Schleider & Weisz, 2015).

The use of self-report also necessitates reliance on participants’ opinions of which risk items are problematic for them or hold relevance for their likelihood of violence. From a risk assessment standpoint, this is also not ideal as it precludes an experienced evaluator from making risk ratings based on his/her professional judgment and a comprehensive review of information. As a result, this study is unable to make any direct conclusions about the actual HCR-20. To circumvent these issues, future studies should ideally utilize a structured professional judgment approach involving a clinical interview, file review, and access to collateral sources of information. However, while SPJ instruments provide assessors with discretion in identifying the relevance of risk factors for specific clients, this flexibility also increases the potential for personal prejudices and stereotypes to affect the assessment (Shepherd & Willis-Esqueda, 2018). Many risk items require a more thorough inquiry of the client in order to be scored (e.g., attitudes toward treatment, lack of empathy, lack of insight, symptoms of mental disorder). If the rater is from a different cultural background, the potential exists for misdiagnosis or mislabeling of symptoms due to unfamiliarity with the client’s language, interpersonal style, belief systems, and expressions.

5.3.3. Retrospective Design

Yet another limitation of the current study is its retrospective design, as participants were asked to make risk ratings based on offense-related outcomes that occurred throughout their lifetime. From a methodological standpoint, this is the least strong design as the outcome is already known, and it does not represent the manner in which risk assessment instruments are intended to be used in practice. Certain predictors, such as H1 (problems with violence) and H2 (problems with antisocial behavior), may have been conflated with certain outcome definitions (i.e., violence prevalence, antisocial behavior prevalence), overestimating the association between these variables.

Consequently, offending outcomes were assessed postdictively, and I was only able to estimate concurrent validity between risk factors and criterion measures. “Predictive” validity is therefore loosely defined, and no definite conclusions can be made regarding these risk factors’ predictive accuracy. Given that a risk tool’s relationship with future reoffending outcomes is of the greatest significance, it is crucial that future studies examine the cross-cultural predictive validity of risk tools using a prospective, longitudinal design. Ideally, this research would involve multiple time-points in order to track fluctuations in risk state as well as potential culturally specific factors moderating the relationship between risk and reoffending. Accurate risk evaluations entail the regular reassessment of risk factors to capture changes in dynamic risk. Failure to do so may underestimate the predictive accuracy of SPJ ratings (Rettenberger & Hucker, 2011). Given the viability of longitudinal data collection on MTurk, I envision adding a prospective component to this study by re-contacting the same participants approximately six months after survey completion and inquiring about their recent involvement in criminal activity.

5.3.4. Other Limitations

Another limitation of this study concerns its sole examination of cross-cultural differences in historical risk factors, which were deemed more appropriate given the cross-sectional nature of the study. However, it is likely that variability exists in the cross-cultural expression of dynamic risk variables as well. Future research would benefit from

replicating this work with a more comprehensive set of risk items, perhaps incorporating items from the clinical (C) and risk management (R) scales of the HCR-20 tool.

Finally, the current study required all participants to identify a single ethnicity or cultural background. While multiracial individuals were instructed to select the ethnicity or background that they identified most strongly with, this may have obfuscated potential risk-relevant differences among participants of mixed racial heritage. This is particularly the case for Hispanic individuals given the considerable diversity within the Hispanic population in the United States. Future research should implement more sensitive measures of ethnic identification to fully capture both between- and within-group differences in risk factor validity.

5.4. Implications for Theory

The theoretical underpinning of violence risk may need to come to terms with the fact that simply being an ethnic minority may itself be a risk-enhancing factor. While the empirical associations between risk factors and criminal offending are well-recognized, there is also irrefutable evidence that adverse situational factors and exposure to neighborhood disadvantage precede the development of these risk factors. Since African American and Hispanic communities disproportionately face these types of structural problems, it may be this suite of macro-level problems that render them to be identified as inherently “high risk.” Furthermore, static risk factors cause society to ignore the reality that African American and Hispanic ex-offenders are more likely than White ex-offenders to return to communities with concentrated poverty, unemployment, and crime. Thus, they are at a greater risk of returning to crime not because they exhibit fixed personal defects, but because they are entangled in criminogenic environments (Olusanya & Gau, 2012). Risk factors may be predictive for these ethnic groups simply because they are correlated with this suite of problems that come with being marginalized and impoverished. In effect, this may be causing us to “criminalize race” since more minorities are exposed to these types of structural adversities.

Legally, the practice of penalizing defendants based on immutable characteristics that are out of their control violates the very heart of the Supreme Court’s equal protection case law. The United States is a highly individualistic society whose criminal justice system espouses attributions of individual responsibility and moral culpability.

Individuals who willfully choose to break the law are expected to bear the consequences of their decisions. Proponents of evidence-based sentencing justify using risk tools to identify high-risk offenders based on the notion that risk factors reflect individual behavior. This results in a highly simplified formulation of risk that overlooks the role of more fundamental causes of crime often beyond the control of the individual. Apart from posing a constitutional violation, the current application of actuarial risk assessment also remains susceptible to reduced predictive power by failing to capture more salient causes of crime that place certain groups “at risk of risks” (Prins & Reich, 2018). At a theoretical level, then, certain assumptions about the nature of offending behavior may need to be updated to reflect cross-ethnic variations in risk exposure.

5.5. Implications for Policy and Practice

Overall, the results of this study suggest that historical risk factors tend to perform fairly well in terms of predictive validity across ethnic groups. However, the most consistent finding across a range of analyses was that certain risk factors may misclassify ethnic minorities as higher risk. The information derived from risk assessment instruments often influences offenders’ liberties and treatment decisions. Thus, if these instruments are consistently less accurate for particular ethnic groups, individuals from such groups may be disadvantaged by their use (Shepherd & Lewis-Fernandez, 2016). In particular, high rates of over-classification errors for ethnic minorities may subject these offenders to unnecessarily harsh conditions within the justice system, such as custody in higher security settings and unwarranted denial of parole. Overestimated risk estimates may also decrease access to rehabilitative opportunities by barring an inmate from a gradual and structured release into the community on parole before the expiration of a fixed-term sentence.

As such, these tools should be routinely tested for predictive bias. If enough significant differences across ethnicity are found, and continue to be replicated, further development and optimization of these instruments may be required. This could perhaps include specialized subgroup norms for assessing violence risk in ethnic minorities. This may also foster the development of more culture-specific approaches to violence risk reduction and management. The current state of cross-cultural risk assessment is particularly perturbing as many measures have never undergone stringent tests of reliability or validity with ethnic groups they are regularly applied to. From an ethical

perspective, professionals assessing diverse populations with such measures are susceptible to liability concerns, poor clinical decision-making, and ultimately may endanger public safety by failing to properly manage individuals at risk of reoffending.

Finally, as has been made clear, instruments normed on the customs and practices of the dominant culture risk misconstruing the significance of certain factors for minority cultural groups, as well as neglecting factors uniquely applicable to these groups. In the current study, several risk factors appeared to suffer diminished accuracy for African American and Hispanic individuals. Problems with interpersonal relationships (H3), employment and neighborhood disadvantage (H4), traumatic and adverse childrearing experiences (H8), and attitudes supportive of violence (H9) all appeared to be stronger correlates of violence and offending for Whites compared to non-Whites. From a practice perspective, paying careful attention to the ways in which these risk factors manifest for clients of diverse backgrounds, as well as to the relative normativity of these factors within a client's home community, may be particularly helpful for estimating and managing risk with these offenders.

5.6. Future Directions

First and foremost, more risk validation studies comparing validation estimates across participant cultural backgrounds are desperately needed. While the majority of validation studies to date have focused on examining predictive invariance (i.e., equal relationships between risk scores and criterion variables) across cultural groups, scholars should expand their testing to take measurement invariance (i.e., equal relationships between latent variables and risk scores) into consideration as well. Predictive invariance is essentially meaningless if instrument scores inaccurately reflect the latent traits of the cultural groups being measured (Millsap, 2007). Failure to compare latent attributes across groups precludes any certainty as to whether risk tools are quantifying the same construct cross-culturally (Shepherd & Lewis-Fernandez, 2016). Finally, researchers should also strive to examine the conceptual invariance of risk tools to ascertain whether the latent constructs being measured are expressed consistently across cultural groups. As mentioned earlier, certain risk factors (e.g., substance abuse) may not be indicators of the same construct (e.g., self-control problems) for different cultural groups. Conceptual-based validation requires qualitative and quantitative research conducted in the emic tradition (i.e., from the perspective of

the cultural group). This approach could involve modifying or reconstructing risk instruments in consultation with multicultural professionals and community members. Such an approach would enhance instrument sensitivity to the risk needs of diverse clients, ensuring that the validity of tools remains commensurate across cultural groups (Shepherd & Willis-Esqueda, 2018).

Furthermore, both actuarial and SPJ risk assessment instruments should be scrutinized for cross-cultural bias. While the selection of risk factors in the current study was based on an SPJ tool, much of the literary criticism to date has focused on static actuarial tools. In principle, however, there is a great deal of overlap in the risk factors measured by both types of instruments, many of which reflect Western norms and behavioral expectations. Although SPJ instruments enable evaluators to incorporate culture-specific information, in both research and practice they are often used additively (i.e., with a risk-scoring algorithm like actuarial tools). Therefore, future research on predictive, measurement, and conceptual invariance testing should ideally examine the risk factors and risk estimates provided by both forms of violence risk assessment.

On a more psycho-legal level, greater research is required specifying the conditions under which risk assessment impacts sentencing disparities. Using larger and more diverse samples, studies should continue to examine how strongly different tools correlate with race, and which risk items in particular underlie those correlations. Risk factors identified as contributing to disparate impact should be empirically scrutinized to determine whether their exclusion from risk instruments would compromise predictive accuracy. Examination of socioeconomic and demographic variables should be especially prioritized given their significant associations with race and class. For instance, using a large sample of African American and White felony offenders, Petersilia and Turner (1987) observed that socioeconomic and demographic risk factors such as employment, education, marital status, substance abuse, and mental health variables could collectively be eliminated from risk tools without a significant loss of predictive utility, as criminal history and other crime characteristics explained the majority of variance in their model.

Finally, greater research should be conducted on the impact of acculturation on risk assessment. One's length of residence in the U.S. as well as level of assimilation to U.S. cultural norms may indeed moderate the predictive properties of certain risk items.

Validation studies should thus include comparisons between different generations of minority offenders with different levels of acculturation to understand if and how these factors impact the violence risk of foreign-born offenders.

References

- Agnew, R. (1992). Foundation for a General Strain Theory of crime and delinquency. *Criminology*, *30*, 47-87.
- American Civil Liberties Union. (2018). Mass incarceration. Retrieved April 06, 2018, from <https://www.aclu.org/issues/mass-incarceration#current>.
- American Psychological Association (2002). Ethical principles of psychologists and code of conduct. *American Psychologist*, *57*, 1060–1073. doi:10.1037//0003-066X.57.12.1060
- Anderson, E. (2000). *Code of the street: Decency, violence, and the moral life of the inner city*. New York, NY: W.W. Norton.
- Andrews, D. A. & Bonta, J. (1995). *Level of Service Inventory – Revised*. Toronto: Multi-Health Systems.
- Aughinbaugh, A., Robles, O., & Sun, H. (2013). Marriage and divorce: Patterns by gender, race, and educational attainment. *Monthly Labor Review*, *136*(1). Retrieved from <http://www.bls.gov/opub/mlr/2013/article/marriage-and-divorce-patterns-by-gender-race-andeducational-attainment.htm>.
- Aukerman, M.J. (2005). The somewhat suspect class: Towards a constitutional framework for evaluating occupational restrictions affecting people with criminal records. *The Journal of Law in Society*, *7*, 18–87.
- Babchishin, K. M., Blais, J., & Helmus, L. (2012). Do static risk factors predict differently for Aboriginal sex offenders? A multi-site comparison using the original and revised Static-99 and Static-2002 scales. *Canadian Journal of Criminology and Criminal Justice*, *54*, 1–43. <http://dx.doi.org/10.3138/cjccj.2010.E.40>
- Baron, R. M., & Kenny, D. A. (1986). The moderator–mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, *51*, 1173–1182. doi:10.1037/0022-3514.51.6.1173.
- Bearden v. Georgia, 461 U.S. 660 (1983).
- Beckett, K., Nyrop, K., Pflingst, L. (2006). Race, drugs, and policing: Understanding disparities in drug delivery arrests. *Criminology*, *44*(1), 105–137.
- Bellair, P. E., & McNulty, T. L. (2005). Beyond the bell curve: Community disadvantage and the explanation of black-white differences in adolescent violence. *Criminology*, *43*(4), 1135–1168.

- Blumstein, A. (1993). Racial disproportionality of U.S. prison populations revisited. *University of Colorado Law Review*, 64, 743-760.
- Blumstein, A., & Larson, R. C. (1971). Problems in modeling and measuring recidivism. *Journal of Research in Crime and Delinquency*, 8(2), 124-132. doi: <https://doi.org/10.1177/002242787100800202>
- Blumstein, A., Cohen, J., & Nagin, D. (1978). *Deterrence and incapacitation: Estimating the effects of criminal sanctions on crime rates*. Washington, DC: National Academy of Sciences.
- Bonta, J., LaPrairie, C., & Wallace-Capretta, S. (1997). Risk prediction and re-offending: Aboriginal and non-Aboriginal offenders. *Canadian Journal of Criminology*, 39(2), 127-144.
- Box, G. E. P., & Tidwell, P. W. (1962). Transformation of the independent variables. *Technometrics*, 4, 531-550.
- Brennan, T. (1993). Risk assessment: An evaluation of statistical classification methods. In *Classification: A tool for managing today's offenders* (pp. 46-69). Arlington, VA: American Correctional Association.
- Brennan, T., Dieterich, W., & Ehret, B. (2009). Evaluating the predictive validity of the COMPAS risk and needs assessment system. *Criminal Justice and Behavior*, 36, 21-40. <http://dx.doi.org/10.1177/0093854808326545>
- Brewer, R. M. & Heitzeg, N. A. (2008). The racialization of crime and punishment: Criminal justice, color-blind racism, and the political economy of the prison industrial complex. *American Behavioral Scientist*, 51, 625-644.
- Brown, S. L., Jones, N. J., & Greiner, L. (2014). Taking stock of the intersection of race, gender, and crime: Statistics, theory, and correctional applications. In M. L. Miville & A. D. Ferguson (Eds.), *Handbook of race-ethnicity and gender in psychology* (pp. 151-187). Springer New York. doi:10.1007/978-1-4614-8860-6_8
- Buhrmester, M., Kwang, T., & Gosling, S. (2011). Amazon's Mechanical Turk: A new source of inexpensive, yet high-quality, data? *Perspectives on Psychological Science*, 6, 3-5. doi:10.1177/1745691610393980
- Bureau of Labor Statistics. (2013) Table A-2: Employment Status of the Civilian Population by Race, Sex, and Age. Available at <http://www.bls.gov/news.release/empsit.t02.htm>.
- Caetano, R., Field, C. A., Ramisetty-Mikler, S., McGrath, C. (2005). The 5-year course of intimate partner violence among white, black, and Hispanic couples in the United States. *Journal of Interpersonal Violence*, 20(9), 1039-1057. doi:10.1177/0886260505277783

- Campbell, M. A., French, S., & Gendreau, P. (2009). The prediction of violence in adult offenders: A meta-analytic comparison of instruments and methods of assessment. *Criminal Justice and Behavior*, 36(6), 567-590. doi:10.1177/0093854809333610
- Cao, L., Adams, A., Jensen, V. J. (1997). A test of the black subculture of violence thesis: A research note. *Criminology*, 35(2), 367-379.
- Carson, E. A. (2018). *Prisoners in 2016*. Washington, DC: Bureau of Justice Statistics. Retrieved from <https://www.bjs.gov/content/pub/pdf/p16.pdf>.
- Carson, E. A., & Sabol, W. J. (2012). *Prisoners in 2011 (NCJ239808)*. Washington, DC: Bureau of Justice Statistics. Retrieved from <http://www.bjs.gov/content/pub/pdf/p11.pdf>.
- Chenane, J. L., Brennan, P. K., Steiner, B., & Ellison, J. M. (2015). Racial and ethnic differences in the predictive validity of the level of service inventory-revised among prison inmates. *Criminal Justice and Behavior*, 42, 286–303. <http://dx.doi.org/10.1177/0093854814548195>
- Chipungu, S. S. & Bent-Goodley, T. B. (2004). Meeting the challenges of contemporary foster care. *The Future of Children*, 14(1), 74-93.
- Clear, T. (2007). *Imprisoning communities: How mass incarceration makes disadvantaged neighborhoods worse*. New York: Oxford University Press.
- Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Hillsdale, NJ: Lawrence Erlbaum Associates. doi:10.1234/12345678
- Cohen, J., Cohen, P., West, S.G., & Aiken, L.S. (2003). *Applied Multiple Regression/Correlation Analysis for the Behavioral Sciences* (3rd ed.). New Jersey: Lawrence Erlbaum Associates.
- Cook, N. R. (2007). Use and misuse of the receiver operating characteristic curve in risk prediction. *Circulation*, 115, 928-935. doi:10.1161/CIRCULATIONAHA.106.672402
- Cooke, D. J., Hart, S., Logan, C., & Michie, C. (2004). Comprehensive Assessment of Psychopathic Personality-Institutional Rating Scale (CAPP-IRS). Unpublished manuscript. Glasgow Caledonian University, Glasgow, UK.
- Courtney, M. & Barth, R. (1996). Pathways of older adolescents out of foster care: Implications for Independent Living Services. *Social Work*, 41(1), 75-84.

- Desmarais, S. L., Johnson, K. L., Singh, J. P. (2016). Performance of recidivism risk assessment instruments completed in U.S. correctional settings. *Psychological Services*, 13, 206-222.
- Douglas, K. S., Hart, S. D., Webster, C. D., & Belfrage, H. (2013). HCR-20V3: Assessing risk of violence – User guide. Burnaby, Canada: Mental Health, Law, and Policy Institute, Simon Fraser University.
- Dunford, F. W., & Elliot, D. S. (1984). Identifying career offenders using self-report data. *Journal of Research in Crime and Delinquency*, 21, 57-86.
- Dunn, O. J. (1964). Multiple comparisons using rank sums. *Technometrics*, 6, 241-252.
- Eitle, D. & Turner, R. J. (2003). Stress exposure, race, and young adult male crime. *The Sociological Quarterly*, 44(2), 243-269. doi:10.1111/j.1533-8525.2003.tb00557.x
- Ewert v. Canada, SCC 30 (2018).
- Farrington, D. P. (1973). Self-reports of deviant behavior: Predictive and stable?. *Journal of Criminal Law & Criminology*, 64(1), 99-110.
- Farrington, D. P. (2003). Key results from the first forty years of the Cambridge Study in Delinquent Development. In T.P. Thornberry & M.D. Krohn (Eds.), *Taking stock of delinquency: An overview of findings from contemporary longitudinal studies* (pp. 137–183). New York: Kluwer Academic/Plenum.
- Fass, T. L., Heilbrun, K., DeMatteo, D., & Fretz, R. (2008). The LSI-R and the COMPAS: Validation on two risk-needs tools. *Criminal Justice and Behavior*, 35, 1095-1108.
- Firebaugh, G., & Farrell, C. R. (2016). Still large, but narrowing: The sizable decline in racial neighborhood inequality in metropolitan America, 1980–2010. *Demography*, 53(1), 139–164. <https://doi.org/10.1007/s13524-015-0447-5>
- Fite, P. J., Wynn, P., & Pardini, D. A. (2009). Explaining discrepancies in arrest rates between Black and White male juveniles. *Journal of Consulting and Clinical Psychology*, 77(5), 916–927.
- Flores, A. W., Bechtel, K., Lowenkamp, C. T. (2016). False positives, false negatives, and false analyses: A rejoinder to “Machine Bias: There’s Software Used Across the Country to Predict Future Criminals. And It’s Biased Against Blacks.” *Federal Probation*, 80(2), 38-46.
- Fujii, D. E., Tokioka, A. B., Lichten, A. I., & Hishinuma, E. (2005). Ethnic differences in prediction of violence risk with the HCR-20 among psychiatric inpatients. *Psychiatric Services*, 56, 711-716.

- Gabiddon, S. L. (2010). *Race, ethnicity, crime, and justice: An international dilemma*. London, England: Sage Publications.
- Gans, H. J. (2005). Race as class. *Contexts*, 4, 17-21.
- Gardner, W., Mulvey, E. P., & Shaw, E. C. (1995). Regression analyses of counts and rates: Poisson, overdispersed Poisson, and negative binomial models. *Psychological Bulletin*, 118, 392–404. doi:10.1037/0033-2909.118.3.392.
- Gendreau, P., Little, T., & Goggin, C. (1996). A meta-analysis of the predictors of adult offender recidivism: What works. *Criminology*, 34(4), 575-608.
- Greene, H. T., & Gabiddon, S. L. (2012). *Race and crime: A text/reader*. Los Angeles, CA: Sage Publications.
- Gutierrez, L., Helmus, L. M., & Hanson, R. K. (2016). What we know and don't know about risk assessment with offenders of Indigenous heritage. *Journal of Threat Assessment and Management*, 3(2), 97-106.
- Gutierrez, L., Wilson, H. A., Rugge, T., & Bonta, J. (2013). The prediction of recidivism with Indigenous offenders: A theoretically informed meta-analysis. *Canadian Journal of Criminology and Criminal Justice*, 55, 55–99. <http://dx.doi.org/10.3138/cjccj.2011.E.51>
- Hairston, C. F. (1989). Men in prison: Family characteristics and parenting views. *Journal of Offender Counseling, Services and Rehabilitation*, 14, 23-30.
- Hamilton, M. (2015). Back to the future: The influence of criminal history on risk assessments. *Berkeley Journal of Criminal Law*, 20(1), 75-133.
- Hanley J. A., & McNeil B. J. (1982). The meaning and use of the area under a Receiver Operating Characteristic (ROC) curve. *Radiology*, 143, 29– 36.
- Hannah-Moffat, K. (2013). Actuarial sentencing: An “unsettled” proposition. *Justice Quarterly*, 30(2), 270–296.
- Hanniball, K. B., Akin, L. B., Douglas, K. S., & Viljoen, J. L. (2019). Does helping promote well-being in at-risk youth and ex-offender samples? *Journal of Experimental Social Psychology*, 82, 307-317.
- Hanson, R. K. & Thornton, D. (2000). Improving risk assessments for sex offenders: A comparison of three actuarial scales. *Law and Human Behavior*, 24, 119–136.
- Hanson, R. K., Lunetta, A., Phenix, A., Neeley, M. B., & Epperson, D. (2014). The field validity of Static-99/R sex offender risk assessment tool in California. *Journal of Threat Assessment and Management*, 1, 102-117. doi:10.1037/tam0000014

- Harcourt, B. (2007). *Against prediction: Profiling, policing, and punishing in an actuarial age*. Chicago: University of Chicago Press.
- Harcourt, B. (2015). Risk as a proxy for race: The dangers of risk assessment. *Federal Sentencing Reporter*, 27, 237–243.
- Harris, G. T., Rice, M. E., & Quinsey, V. L. (1993). Violent recidivism of mentally disordered offenders: The development of a statistical prediction instrument. *Criminal Justice and Behavior*, 20, 315-335.
- Hatchett, S., Veroff, J., & Douvan, E. (1995). Marital instability among black and white couples in early marriage. In M. B. Tucker & C. Mitchell-Kernan (Eds.), *The decline in marriage among African Americans* (pp. 177-218). New York: Russell Sage Foundation.
- Helmus, L., Babchishin, K. M., & Blais, J. (2012). Predictive accuracy of dynamic risk factors for indigenous and non-indigenous sex offenders: An exploration comparison using STABLE-2007. *International Journal of Offender Therapy and Comparative Criminology*, 56, 856–876.
<http://dx.doi.org/10.1177/0306624X11414693>
- Helmus, L., Thornton, D., Hanson, R. K., & Babchishin, K. M. (2012). Improving the predictive accuracy of Static-99 and Static-2002 with older sex offenders: Revised age weights. *Sexual Abuse: Journal of Research and Treatment*, 24, 64-101. doi:10.1177/1079063211409951.
- Hening, W. W. (1823). *The statutes at large of Virginia (1619-1682)* (2nd ed.). (Vol. 2). New York: R. & W. & G. Bartow.
- Hindelang, M. J., Hirschi, T., & Weis, J. G. (1981). *Measuring delinquency*. Beverly Hills, CA: Sage.
- Holder, E. (2014, August 1). Attorney General Eric Holder speaks at the National Association of Criminal Defense Lawyers 57th Annual Meeting and 13th State Criminal Justice Network Conference. *The United States Department of Justice*. Retrieved from <https://www.justice.gov/opa/speech/attorney-general-eric-holder-speaks-national-associationcriminal-defense-lawyers-57th>
- Holsinger, A. M., Lowenkamp, C. T., & Latessa, E. J. (2006). Exploring the validity of the Level of Service Inventory- Revised with Native American offenders. *Journal of Criminal Justice*, 34, 331–337. doi:10.1016/j.jcrimjus.2006.03.009
- Huizinga, D., & Elliot, D. S. (1983). *A preliminary examination of the reliability and validity of the National Youth Survey self-reported delinquency indices*. National Youth Survey Project Report 27. Boulder, Colorado: Behavioral Research Institute.

- Huynh, Q., Howell, R. T., & Benet-Martínez, V. (2009). Reliability of bidimensional acculturation scores: A meta-analysis. *Journal of Cross-Cultural Psychology, 40*(2), 256-274.
- Intrator, J., Tannen, J., & Massey, D. S. (2016). Segregation by race and income in the United States 1970–2010. *Social Science Research, 60*, 45–60. <https://doi.org/10.1016/j.ssresearch.2016.08.003>
- Jannetta, J., Breau, J., Ho, H., & Porter, J. (2014). Examining racial and ethnic disparities in probation revocation: Summary findings and implications from a multisite study. Washington, DC: Urban Institute.
- Kamo, Y. (2000). Racial and ethnic differences in extended family households. *Sociological Perspectives, 43*(2), 211–229.
- Kamorowski, J. (2018). *Anatomy of risk: Cumulative disadvantage and risk assessment instruments*. (Unpublished master's thesis). George Mason University, Fairfax, VA.
- Kaufman, J. M., Rebellon, C. J., Thaxton, S., & Agnew, R. (2008). A General Strain Theory of racial differences in criminal offending. *The Australian and New Zealand Journal of Criminology, 41*(3), 421-437.
- Kendall, M. G. (1970). *Rank correlation methods* (4th ed.). London: Charles Griffin & Co.
- Kim, H. Y. (2013). Statistical notes for clinical researchers: assessing normal distribution (2) using skewness and kurtosis. *Restorative Dentistry & Endodontics, 38*(1), 52-54.
- Kirk, D. S. (2008). The neighborhood context of racial and ethnic disparities in arrest. *Demography, 45*(1), 55-77. doi:10.1353/dem.2008.0011
- Kraemer, H. C. (1980). Robustness of the distribution theory of the product moment correlation coefficient. *Journal of Educational Statistics, 5*(2), 115-128.
- Kraemer, H., Stice, E., Kazdin, A., Offord, D., & Kupfer, D. (2001). How do risk factors work together? Mediators, moderators, and independent, overlapping, and proxy risk factors. *American Journal of Psychiatry, 158*, 848–56.
- Kubrin, C. E. & Stewart, E. A. (2006). Predicting who reoffends: The neglected role of neighborhood context in recidivism studies. *Criminology, 44*, 165-198.
- Larson, J., Mattu, S., Kirchner, L., & Angwin, J. (2016). How we analyzed the COMPAS recidivism algorithm. Retrieved from <https://www.propublica.org/article/how-we-analyzed-the-compas-recidivism-algorithm>.

- Leguizamo, A., Lee, S. C., Jeglic, E. L., & Calkins, C. (2015). Utility of the Static-99 and Static-99R with Latino sex offenders. *Sexual Abuse*. Advance online publication. <http://dx.doi.org/10.1177/1079063215618377>
- Leistico, A., Salekin, R., DeCoster, J., & Rogers, R. (2008). A large-scale meta-analysis relating the Hare measures of psychopathy to antisocial conduct. *Law and Human Behavior*, 32, 28–45.
- Logan, J. R., & Stults, B. J. (1999). Racial differences in exposure to crime: The city and suburbs of Cleveland in 1990. *Criminology*, 37, 251-276.
- Lowrey, R. (2001). *VassarStats: Significance of the difference between two point-biserial correlation coefficients*. Retrieved from <http://www.vassarstats.net/rdiff.html>.
- Marascuilo, L. A., & McSweeney, M. (1977). *Nonparametric and distribution-free methods for the social sciences*. Belmont, CA: Wadsworth Publishing Company.
- Markowitz, F. E. & Felson, R. B. (1998). Social-demographic attitudes and violence. *Criminology*, 36(1), 117-138.
- Martin, M., McCarthy, B., Conger, R., Gibbons, F., Simons, R., Cutrona, C., & Brody, G. (2011). The enduring significance of racism: Discrimination and delinquency among Black American youth. *Journal of Research on Adolescence*, 21, 662–676.
- Mechoulan, S. & Sahuguet, N. (2015). Assessing racial disparities in parole release. *Journal of Legal Studies*, 44, 39-74.
- Millsap, R. E. (2007). Invariance in measurement and prediction revisited. *Psychometrika*, 72, 461– 473. <http://dx.doi.org/10.1007/s11336-007-9039-7>
- Monahan, J. (2017). Risk assessment in sentencing. In E. Luna (Ed.), *Reforming criminal justice: A report of the Academy for Justice on bridging the gap between scholarship and reform* (Vol. 4, pp. 77-94). Phoenix, AZ: Academy for Justice.
- Monahan, J., & Skeem, J. L. (2016). Risk assessment in criminal sentencing. *Annu. Rev. Clin. Psychol.*, 12, 489-513.
- Monahan, J., Skeem, J. L., & Lowenkamp, C. T. (2017). Age, risk assessment, and sanctioning: Overestimating the old, underestimating the young. *Law and Human Behavior*, 41(2), 191–201.
- Monahan, J., Steadman, H., Silver, E., Appelbaum, P., Robbins, P., Mulvey, E., Roth, L., Grisso, T., & Banks, S. (2001). *Rethinking risk assessment: The MacArthur study of mental disorder and violence*. New York: Oxford University Press.

- Moore, L. D., & Padavic, I. (2011). Risk assessment tools and racial/ethnic disparities in the juvenile justice system. *Sociology Compass*, 5(10), 850–858. <https://doi.org/10.1111/j.1751-9020.2011.00416.x>
- Mossman, D. (1994). Assessing predictions of violence: Being accurate about accuracy. *Journal of Consulting and Clinical Psychology*, 62, 783-792. doi:10.1037/0022-006X.62.4.783
- Mossman, D. (1994). Assessing predictions of violence: Being accurate about accuracy. *Journal of Consulting and Clinical Psychology*, 62, 783-792. doi:10.1037/0022-006X.62.4.783
- Mundra, K., Moellmer, A., & Lopez-Aqueres, W. (2003). Investigating Hispanic underrepresentation in managerial and professional occupations. *Hispanic Journal of Behavioral Sciences*, 25(4), 513-529.
- Murray, J. & Farrington, D. (2005). Parental imprisonment: Effects on boys' anti-social behavior and delinquency through the life course. *Journal of Child Psychology and Psychiatry*, 46(12), 1269-1278.
- Nagel, B., Matsuo, H., McIntyre, K. P., & Morrison, N. Attitudes toward victims of rape: Effects of gender, race, religion, and social class. *Journal of Interpersonal Violence*, 20(6), 725-737.
- O'Shea, L. E., Mitchell, A. E., Picchioni, M. M., & Dickens, G. L. (2012). Moderators of the predictive efficacy of the Historical, Clinical and Risk Management-20 for aggression in psychiatric facilities: Systematic review and meta-analysis. *Aggression and Violent Behavior*, 18(2), 255–270.
- Olusanya, O. & Gau, J. M. (2012). Race, neighborhood context, and risk prediction. *Criminal Justice Studies*, 25(2), 159-175.
- Olver, M. E., Neumann, C. S., Sewall, L. A., Lewis, K., Hare, R. D., & Wong, S. C. P. (2018). A comprehensive examination of the psychometric properties of the Hare Psychopathy Checklist-Revised in a Canadian multisite sample of Indigenous and non-Indigenous offenders. *Psychological Assessment*, 30(6), 779-792.
- Olver, M. E., Sowden, J. N., Kingston, D. A., Nicholaichuk, T. P., Gordon, A., Beggs Christofferson, S. M., & Wong, S. C. P. (2016). Predictive accuracy of Violence Risk Scale-Sexual Offender Version risk and change scores in treated Canadian Aboriginal and non-Aboriginal offenders. *Sexual Abuse: A Journal of Research and Treatment*. Advance online publication. <http://dx.doi.org/10.1177/1079063216649594>
- Olver, M. E., Stockdale, K. C., & Wong, S. C. P. (2012). Short and long-term prediction of recidivism using the youth level of service/case management inventory in a sample of serious young offenders. *Law and Human Behavior*, 36, 331–344. <http://dx.doi.org/10.1037/h0093927>

- Olver, M. E., Stockdale, K. C., & Wormith, J. S. (2014). Thirty years of research on the level of service scales: A meta-analytic examination of predictive accuracy and sources of variability. *Psychological Assessment, 26*, 156–176.
<http://dx.doi.org/10.1037/a0035080>
- Paolacci, G., Chandler, J., & Ipeirotis, P. (2010). Running experiments on Amazon Mechanical Turk. *Judgment and Decision Making, 5*, 411–419.
- Pattillo, M., Weiman, D., & Western, B. (2004). *Imprisoning America: The social effects of mass incarceration*. New York: Russell Sage Found.
- Peeples, F., & Loeber, R. (1994). Do individual factors and neighborhood context explain ethnic differences in juvenile delinquency? *Journal of Quantitative Criminology, 10*(2), 141–157.
- Petersilia, J., & Turner, S. (1987). Guideline-based justice: Prediction and racial minorities. *Crime & Justice, 9*, 151-181.
- Pinderhughes, E. E., Nix, R., Foster, E. M., Jones, D. (2001). Parenting in context: Impact of neighborhood poverty, residential stability, public services, social networks, and danger on parental behaviors. *Journal of Marriage and the Family, 63*, 941–953.
- Piquero, A. R., & Brame, R. (2008). Assessing the race-crime and ethnicity-crime relationship in a sample of serious adolescent delinquents. *Crime & Delinquency, 54*, 390–422.
- Prins, S. J., & Reich, A. (2018). Can we avoid reductionism in risk reduction? *Theoretical Criminology, 22*(2), 258-278. doi:10.1177/1362480617707948
- Raley, R. K., Sweeney, M. M., & Wondra, D. (2015). The growing racial and ethnic divide in U.S. marriage patterns. *Future Child, 25*(2), 89-109.
- Regents of the University of California v. Bakke, 438 U.S. 265 (1978).
- Rettenberger, M., & Hucker, S. J. (2011). Structured professional guidelines: International applications. In D. P. Boer, R. Eher, L. A. Craig, M. H. Miner, & F. Pfäfflin (Eds.), *International perspectives on the assessment and treatment of sexual offenders: Theory, practice, and research* (pp. 85-110). Chichester, UK: Wiley-Blackwell. doi: 10.1177/0306624X08328755
- Rice, M. E., & Harris, G. T. (2005). Comparing effect sizes in follow-up studies: ROC Area, Cohen's *d*, and *r*. *Law and Human Behavior, 29*(5), 615-620. doi: 10.1007/s10979-005-6832-7
- Rice, M. E., Harris, G. T., & Lang, C. (2013). Validation of and revision to the VRAG and SORAG: The Violence Risk Appraisal Guide—Revised (VRAG-R). *Psychological Assessment, 25*(3), 951-965.

- Roberts, A. L., Gilman, S. E., Breslau, J., Breslau, N., Koenen, K. C. (2011). Race/ethnic differences in exposure to traumatic events, development of post-traumatic stress disorder, and treatment-seeking for post-traumatic stress disorder in the United States. *Psychological Medicine*, *41*(1), 71-83. doi:10.1017/S0033291710000401
- Rose, D. R., & Clear, T. R. (1998). Incarceration, social capital, and crime: Implications for social disorganization theory. *Criminology*, *36*, 441-479.
- Rosenthal, R., & DiMatteo, M. R. (2001). Meta-analysis: Recent developments in quantitative methods for literature reviews. *Annual Review of Psychology*, *52*, 59-82.
- Ryder, A. G., Alden, L. E., & Paulhus, D. L. (2000). Is acculturation unidimensional or bidimensional? A head-to-head comparison in the prediction of personality, self-identity, and adjustment. *Journal of Personality and Social Psychology*, *79*(1), 49-65.
- Sampson, R. J., Morenoff, J. D., & Raudenbush, S. (2005). Social anatomy of racial and ethnic disparities in violence. *American Journal of Public Health*, *95*(2), 224–232. <https://doi.org/10.2105/AJPH.2004.037705>
- Schilling, E. A., Aseltine, R. H., & Gore, S. (2007). Adverse childhood experiences and mental health in young adults: A longitudinal survey. *BMC Public Health*, *7*. <http://dx.doi.org/10.1186/1471-2458-7-30>
- Schlager, M. D., & Simourd, D. J. (2007). Validity of the Level of Service Inventory-Revised (LSI-R) among African American and Hispanic male offenders. *Criminal Justice and Behavior*, *34*, 545–554. <http://dx.doi.org/10.1177/0093854806296039>
- Schleider, J. L., & Weisz, J. R. (2015). Using Mechanical Turk to study family processes and youth mental health: A test of feasibility. *J Child Fam Stud*, *24*, 3235-3246.
- Shapiro, D. N., Chandler, J., & Mueller, P. A. (2013). Using Mechanical Turk to study clinical populations. *Clinical Psychological Science*, *1*, 213–220.
- Shapiro, T. M. (2004). *The hidden cost of being African American: How wealth perpetuates inequality*. New York: Oxford University Press.
- Shepherd, S. M., & Willis-Esqueda, Cynthia. (2018). Indigenous perspectives on violence risk assessment: A thematic analysis. *Punishment & Society*, *20*(5), 599-627.
- Shepherd, S. M., Luebbers, S., Ferguson, M., Ogloff, J. R. P., & Dolan, M. (2014). The utility of the SAVRY across ethnicity in Australian young offenders. *Psychology, Public Policy, and Law*, *20*, 31–45. <http://dx.doi.org/10.1037/a0033972>

- Shepherd, S. M., Singh, J. P., & Fullam, R. (2015). Does the youth level of service/case management inventory generalize across ethnicity? *International Journal of Forensic Mental Health*, *14*, 193–204.
<http://dx.doi.org/10.1080/14999013.2015.1086450>
- Shepherd, S.M. & Lewis-Fernandez, R. (2016). Forensic risk assessment and cultural diversity: Contemporary challenges and future directions. *Psychol Public Policy Law*, *22*:427–438.
- Silver, E. (2000). Race, neighborhood disadvantage, and violence among persons with mental disorders: The importance of contextual measurement. *Law Hum Behav*, *24*(4) 449-456.
- Simons, R. L., Chen, Y., Stewart, E. A., & Brody, G. H. (2003). Incidents of discrimination and risk for delinquency: A longitudinal test of strain theory with an African American sample. *Justice Quarterly*, *20*(4), 827-854.
doi:10.1080/07418820300095711
- Singh, J. P (2013). Predictive validity performance indicators in violence risk assessment: A methodological primer. *Criminal Justice and Behavior*, *31*(1), 8-22.
- Singh, J. P., Grann, M., Fazel, S. (2011) A comparative study of violence risk assessment tools: A systematic review and metaregression analysis of 68 studies involving 25,980 participants. *Clin Psychol Rev*, *31*:499-513.
- Skeem, J. L., Edens, J. F., Camp, J., & Colwell, L. H. (2004). Are there ethnic differences in levels of psychopathy? A meta-analysis. *Law and Human Behavior*, *28*(5), 505-527.
- Skeem, J. L., & Lowenkamp, C. T. (2015). Risk, race, & recidivism: Predictive bias and disparate impact (SSRN Scholarly Paper No. ID 2687339). Rochester, NY: Social Science Research Network.
- Snowden, R. J., Gray, N. S., & Taylor, J. (2010) Risk assessment for future violence in individuals from an ethnic minority group. *International Journal of Forensic Mental Health*, *9*(2), 118-123.
- Society for Industrial and Organizational Psychology (SIOP). (2018). *Principles for the Validation and Use of Personnel Selection Procedures*. (5th ed.). Bowling Green, OH: Author. <https://www.apa.org/ed/accreditation/about/policies/personnel-selection-procedures.pdf>.
- South, S J., & Deane, G. D. (1993). Race and residential mobility: Individual determinants and structural constraints. *Social Forces*, *72*(1), 147-167.
- Starr, S. (2014). Evidence-based sentencing and the scientific rationalization of discrimination. *Stanford Law Review*, *66*, 803–872.

- Starr, S. (2015). The new profiling: Why punishing based on poverty and identity is unconstitutional and wrong. *Federal Sentencing Reporter*, 27(4), 229-236.
- Statistics Canada. (2018). Adult and youth correctional statistics in Canada, 2016/2017. *Juristat*. (Catalogue 85-002-X). Ottawa, ON: Jamil Malakieh. Retrieved from <https://www150.statcan.gc.ca/n1/pub/85-002-x/2018001/article/54972-eng.pdf>.
- Stevenson, B. E. (1995). Black family structure in colonial and antebellum Virginia: Amending the revisionists. In M.B. Tucker & C. Mitchell-Kernan (Eds.), *The decline in marriage among African-Americans: Causes, consequences, and policy implications* (pp. 27-56). New York: Russell Sage Foundation.
- Stockdale, K. C., Olver, M. E., & Wong, S. C. P. (2014). The validity and reliability of the violence risk scale-youth version in a diverse sample of violence young offenders. *Criminal Justice and Behavior*, 41, 114–138. <http://dx.doi.org/10.1177/0093854813496999>
- Sullivan, E. A., Abramowitz, C. S., Lopez, M., & Kosson, D. S. (2006). Reliability and construct validity of the Psychopathy Checklist-Revised for Latino, European American, and African American male inmates. *Psychological Assessment*, 18, 382–392. doi:10.1037/1040-3590.18.4.382
- Tabachnick, B. G., & Fidell, L. S. (2013). *Using multivariate statistics*. Boston: Pearson/Allyn & Bacon.
- Testa, M. & Krogh, M. (1995). The effects of employment on marriage among black males in inner-city Chicago. In M.B. Tucker & C. Mitchell-Kernan (Eds.), *The decline in marriage among African Americans: Causes, consequences, and policy implications* (pp. 59-95). New York: Russell Sage Foundation.
- Thomas, A. (2005). The old ball and chain: Unlocking the correlation between incarceration and marriage. Unpublished manuscript.
- Thornberry, T. P., & Krohn, M. D. (2000). The self-report method for measuring delinquency and crime. *Criminal Justice*, 4(1), 33-83.
- Tonry, M. (2014). Legal and ethical issues in the prediction of recidivism. *Federal Sentencing Reporter*, 26, 167–176.
- Tonry, M. H. (2011). *Punishing race: A continuing American dilemma*. New York: Oxford University Press.
- Triandis, H. C, Bontempo, R., Villareal, M. J., Asai, M., & Lucca, N. (1988). Individualism and collectivism: Cross-cultural perspectives on self-ingroup relationships. *Journal of Personality and Social Psychology*, 54, 323-338.

- United States Census Bureau. (2012). *Statistical abstract of the United States: 2012*. Retrieved from <https://www2.census.gov/library/publications/2011/compendia/statab/131ed/2012-statab.pdf>.
- United States Census Bureau. (2013). *Participation rates in other assistance programs: 2013*. Retrieved from <https://www.census.gov/content/dam/Census/library/publications/2017/demo/p70br-149.pdf>.
- United States Census Bureau. (2016). *The Supplemental Poverty Measure: 2016*. Retrieved from <https://www.census.gov/content/dam/Census/library/publications/2017/demo/p60-261.pdf>.
- United States Census Bureau. (2017). *Income and poverty in the United States: 2016*. Retrieved from <https://www.census.gov/content/dam/Census/library/publications/2017/demo/P60-259.pdf>.
- United States Census Bureau. (2017). *QuickFacts*. Retrieved from <https://www.census.gov/quickfacts/fact/table/US/PST045217>.
- United States Department of Health and Human Services. (2013). *Results from the 2013 National Survey on Drug Use and Health: Summary of national findings*. Retrieved from <https://www.samhsa.gov/data/sites/default/files/NSDUHresultsPDFWHTML2013/Web/NSDUHresults2013.pdf>.
- United States Department of Justice (2008). *Parents in Prison and Their Minor Children*. Retrieved from <https://www.bjs.gov/content/pub/pdf/pptmc.pdf>.
- United States Department of Justice. (1997). *Surveys of Inmates in State and Federal Correctional Facilities* [MRDF]. Ann Arbor, Michigan: Inter-university Consortium for Social and Political Research.
- United States Department of Justice. (2018). *Prisoners in 2016*. Retrieved from <https://www.bjs.gov/content/pub/pdf/p16.pdf>.
- United States Department of Justice. (2019). *Prisoners in 2017*. Retrieved from <https://www.bjs.gov/content/pub/pdf/p17.pdf>.
- United States Sentencing Commission. (2017). *2017 annual report*. Retrieved from <https://www.ussc.gov/sites/default/files/pdf/research-and-publications/annual-reports-and-sourcebooks/2017/2017-Annual-Report.pdf>.
- Unnever, J. D., Cullen, F. T., & Barnes, J. C. (2016). Racial discrimination and pathways to delinquency. *Race and Justice*, 7(4), 350–373.

- Valkonen, T. (1967). Individual and structural effects in ecological research. In M. Dogan and S. Rokkam (Eds.), *Social ecology* (pp. 53–68). Cambridge, MA: MIT Press.
- Varela, J. G., Boccaccini, M. T., Murrie, D. C., Caperton, J. D., & Gonzalez, E., Jr. (2013). Do the Static-99 and Static-99R perform similarly for White, Black, and Latino Sexual Offenders? *International Journal of Forensic Mental Health, 12*, 231–243. <http://dx.doi.org/10.1080/14999013.2013.846950>
- Walker, S., Spohn, C., & DeLone, M. (2000). *The color of justice: Race, ethnicity, and crime in America*. 2nd ed. Belmont, CA: Wadsworth.
- Walsh Z., Kosson, D. S. (2007). Psychopathy and violent crime: A prospective study of the influence of SES and ethnicity. *Law and Human Behavior, 31*:209–229. doi: 10.1007/s10979-006-9057-5.
- Walsh, Z. (2013). Psychopathy and criminal violence: The moderating effect of ethnicity. *Law and Human Behavior, 37*, 303–311. doi: 10.1037/lhb0000017
- Walters, G. D., Whites, T. W., & Denney, D. (1991). The Lifestyle Criminality Screening Form: Preliminary data. *Criminal Justice and Behavior, 18*, 406-418.
- Warne, R. T., Yoon, M., & Price, C. J. (2014). Exploring the various interpretations of “test bias.” *Cultural Diversity & Ethnic Minority Psychology, 20*, 570–582. <http://dx.doi.org/10.1037/a0036503>
- Weitzer, R., & Brunson, R. K. (2015). Policing different racial groups in the United States. *Cahiers Politiestudies, 5*(35), 129–145.
- Western, B. & McLanahan, S. (2000). Fathers behind bars: The impact of incarceration on family formation. *Contemporary Perspective in Family Research, 2*, 309–324.
- Whiteacre, K. W. (2006). Testing the Level of Service Inventory-Revised (LSI-R) for racial/ethnic bias. *Criminal Justice Policy Review, 17*, 330–342. <http://dx.doi.org/10.1177/0887403405284766>
- Wilson, H. A., & Gutierrez, L. (2014). Does one size fit all? A meta-analysis examining the predictive ability of the Level of Service Inventory (LSI) with Aboriginal offenders. *Criminal Justice and Behavior, 41*, 196-219. doi:10.1177/0093854813500958
- Wormith, J. S., Hogg, S. M., & Guzzo, L. (2015). The predictive validity of the LS/CMI with Aboriginal offenders in Canada. *Criminal Justice and Behavior, 42*, 481–508. <http://dx.doi.org/10.1177/0093854814552843>
- Zapolski, T. C., Garcia, C. A., Jarjoura, G. R., Lau, K. S. L., & Aalsma, M. C. (2016). Examining the influence of ethnic/racial socialization on aggressive behaviors among juvenile offenders. *OJJDP Journal of Juvenile Justice, 5*, 65–79.

Appendix A.

Study Protocol

In order to be eligible for this study, you must:

1. Be male
2. Be at least 19 years old
3. Currently reside in the United States
4. Identify as either Caucasian, Hispanic, or African American
5. Be fluent in English

Please select the appropriate response below based on whether you meet these inclusion criteria.

Yes, I am
Eligible

No, I am
Not Eligible

Participants will be asked to consent at this point in the process.

Inclusion Criteria (Screening Questions)

1. What is your gender?
2. What is your age?
3. Do you currently reside in the United States?
4. What is your ethnicity/cultural background?
5. Are you fluent in English?

Violent/Nonviolent Activity (Screening Questions)

6. In your lifetime, which of the following **violent** activities have you engaged in, regardless of whether you were arrested, charged, or convicted for it? Select all that apply.
 - Murder (If yes, indicate number of times: ___)
 - Manslaughter (If yes, indicate number of times: ___)
 - Attempted murder (If yes, indicate number of times: ___)
 - Assault (If yes, indicate number of times: ___)
 - Sexual assault (e.g., rape, incest, indecent exposure) (If yes, indicate number of times: ___)
 - Battery (If yes, indicate number of times: ___)
 - Robbery (If yes, indicate number of times: ___)
 - Weapons offenses (e.g., possession of a weapon, dangerous use of firearm) (If yes, indicate number of times: ___)
 - Kidnapping (e.g., unlawful confinement, abduction) (If yes, indicate number of times: ___)
 - Hijacking (If yes, indicate number of times: ___)
 - Arson (If yes, indicate number of times: ___)
 - Human trafficking (If yes, indicate number of times: ___)

- Any other violent activity (specify and indicate number of times)
7. In your lifetime, which of the following **nonviolent** activities have you engaged in, regardless of whether you were arrested, charged, or convicted for it? Select all that apply.
- Theft over \$5,000 (If yes, indicate number of times: ____)
 - Burglary (If yes, indicate number of times: ____)
 - Fraud (e.g., using stolen credit cards) (If yes, indicate number of times: ____)
 - Forgery (If yes, indicate number of times: ____)
 - Drug-related offenses (e.g., possession, trafficking) (If yes, indicate number of times: ____)
 - Major driving offenses (e.g., driving while intoxicated, hit and run) (If yes, indicate number of times: ____)
 - Criminal negligence (If yes, indicate number of times: ____)
 - Obstruction of justice (e.g., assaulting a police officer, resisting arrest) (If yes, indicate number of times: ____)
 - Perjury (If yes, indicate number of times: ____)
 - Treason (If yes, indicate number of times: ____)
 - Escape (e.g., escaping lawful custody, breaking out of prison) (If yes, indicate number of times: ____)
 - Jumping bail (If yes, indicate number of times: ____)
 - Failure to appear (e.g., failure to attend court, failure to comply with probation order) (If yes, indicate number of times: ____)
 - Motor-vehicle theft (If yes, indicate number of times: ____)
 - Vandalism (If yes, indicate number of times: ____)
 - Miscellaneous minor offenses (e.g., causing a disturbance, driving while prohibited) (specify and indicate number of times)
 - Any other nonviolent activity (specify and indicate number of times)

Demographics

8. What state do you live in? (*experimenter will provide checklist of 50 states*)
9. Which of the following best describes the area you live in?
 - a. Urban
 - b. Suburban
 - c. Rural
10. What is the approximate population of the city or town you live in?
 - a. <20,000
 - b. 20,000 – 100,000
 - c. 100,000 – 300,000
 - d. 300,000 – 1,000,000
 - e. 1,000,000 – 3,000,000
 - f. >3,000,000
11. What is your primary language (i.e., the one you speak most of the time)?
12. What country were you born in?
13. What country/countries were your parents born in?

Vancouver Index of Acculturation

Please answer each question as carefully as possible by circling *one* of the numbers to the right of each question to indicate your degree of agreement or disagreement.

Many of these questions will refer to your *heritage culture*, meaning the culture that has influenced you most (other than North American culture). It may be the culture of your birth, the culture in which you have been raised, or another culture that forms part of your background. If there are several such cultures, pick the one that has influenced you *most* (e.g., Irish, Chinese, Mexican, African American). If you do not feel that you have been influenced by any other culture, please try to identify a culture that may have had an impact on previous generations of your family.

Use the following key to help guide your answers:

Strongly Disagree				Neutral/ Depends				Strongly Agree
1	2	3	4	5	6	7	8	9

14. I often participate in my *heritage cultural* traditions.
15. I often participate in mainstream American cultural traditions.
16. I would be willing to marry a person from my *heritage culture*.
17. I would be willing to marry an American person.
18. I enjoy social activities with people from the same *heritage culture* as myself.
19. I enjoy social activities with typical American people.
20. I am comfortable working with people of the same *heritage culture* as myself.
21. I am comfortable working with typical American people.
22. I enjoy entertainment (e.g., movies, music) from my *heritage culture*.
23. I enjoy American entertainment (e.g., movies, music).
24. I often behave in ways that are typical of my *heritage culture*.
25. I often behave in ways that are 'typically American.'
26. It is important for me to maintain or develop the practices of my *heritage culture*.
27. It is important for me to maintain or develop American cultural practices.
28. I believe in the values of my *heritage culture*.
29. I believe in mainstream American values.
30. I enjoy the jokes and humor of my *heritage culture*.
31. I enjoy typical American jokes and humor.
32. I am interested in having friends from my *heritage culture*.
33. I am interested in having American friends.

H1. History of Problems with Violence:

34. Have you ever had problems with violence, defined as any actual, attempted, or threatened physical harm of another person? For example, have you ever physically assaulted, raped, or murdered someone?
 - a. Yes₁
 - b. No₀
35. Have people ever told you that you have problems with violence?
 - a. Yes₂
 - b. Somewhat₁

- c. No₀
 - i. (If yes to either of above) How bad do you think these problems with violence are?
 - a. Quite a bit₂
 - b. A little₁
 - c. Not at all₀
 - ii. (If yes to either of above) Do you think your history of violence has contributed to ongoing problems with violence in any way?
 - a. Yes₂
 - b. Somewhat₁
 - c. No₀
 - d. N/A
 - iii. (If yes to either of above) At what age(s) did you engage in violence? (Select all that apply)
 - As a child (12 and under)
 - As an adolescent (13-17)
 - As an adult (18 and over)
36. How many times have you been arrested in your lifetime?
- a. 0
 - b. 1
 - c. 2
 - d. 3 or more
37. How many prior convictions do you have?
- a. 0
 - b. 1
 - c. 2
 - d. 3 or more
38. How many times have you been incarcerated in a jail or prison?
- b. 0
 - c. 1
 - d. 2
 - e. 3 or more

H2. History of Problems with Other Antisocial Behavior:

39. Have you ever had problems with other antisocial behavior, defined as behavior that was illegal but not violent? For example, have you ever engaged in fraud, vandalism, or theft?
- a. Yes₁
 - b. No₀
40. Have people ever told you that you have problems with other antisocial behavior?
- a. Yes₂
 - b. Somewhat₁
 - c. No₀
 - i. (If yes to either of above) How bad do you think these problems with antisocial behavior are?
 - a. Quite a bit₂
 - b. A little₁
 - c. Not at all₀
 - ii. (If yes to either of above) Do you think your history of antisocial behavior has contributed to ongoing problems with violence in any way?
 - a. Yes₂

- b. Somewhat₁
- c. No₀
- d. N/A
- iii. (If yes to either of above) At what age(s) did you engage in antisocial behavior? (Select all that apply)
 - As a child (12 and under)
 - As an adolescent (13-17)
 - As an adult (18 and over)

H3. History of Problems with Relationships:

The next set of questions will ask about your history of relationships, both intimate and non-intimate, including romantic partners, family members, and friends.

- 41. Have you ever had problems creating or maintaining stable personal relationships with other people, such as romantic partners or friends? For example, have you ever cheated on or been cheated on by a romantic partner, engaged in spousal violence, or been friends with people who have a negative influence on you?
 - a. Yes₂
 - b. Somewhat₁
 - c. No₀
- 42. Have people ever told you that you have problems with stable personal relationships?
 - a. Yes₂
 - b. Somewhat₁
 - c. No₀
 - i. (If yes to either of above) How bad do you think these problems with relationships are?
 - a. Quite a bit₂
 - b. A little₁
 - c. Not at all₀
 - ii. (If yes to either of above) Do you think your history of relationship problems has contributed to ongoing problems with violence in any way?
 - a. Yes₂
 - b. Somewhat₁
 - c. No₀
 - d. N/A

Pathways Characteristics of Romantic Relationships Measure

- 43. Are you currently married or in a domestic partnership?
 - a. Yes₀
 - b. No₁
- 44. Have you ever been married or in a domestic partnership in the past?
 - a. Yes
 - b. No
 - i. (If yes to above) How many times have you been married in the past?
 - a. 1
 - b. 2
 - c. 3 or more
- 45. Do you currently have a **girlfriend** or boyfriend?
 - a. Yes

- b. No
- 46. How many girlfriends or boyfriends have you had in the past?
 - a. 1
 - b. 2
 - c. 3
 - d. 4
 - e. 5 or more
 - f. N/A
- 47. What is the longest period of time you have stayed in one relationship?
 - a. 4 weeks or less
 - b. 1-2 months
 - c. 3-6 months
 - d. 7 months-1 year
 - e. 1-2 years
 - f. 2 or more years
 - g. N/A
- 48. Have you ever been unfaithful to your partner, or had sex with another person while in a relationship?
 - a. Yes
 - b. No
 - i. (If yes to above) How many partners have you been unfaithful to or cheated on?
 - a. 1
 - b. 2
 - c. 3 or more

The next few questions are about your current partner, if married or in a relationship. If currently single, please answer these questions about your *longest* former marriage or relationship.

Relationship Assessment Scale

- 49. How often does/did your partner meet your needs? (*Reverse scored*)
 - a. Never₁
 - b. Not very often₂
 - c. Sometimes₃
 - d. Most of the time₄
 - e. All of the times₅
- 50. In general, how satisfied are/were you with your relationship? (*Reverse scored*)
 - a. Very unsatisfied₁
 - b. Unsatisfied₂
 - c. Neither satisfied nor unsatisfied₃
 - d. Satisfied₄
 - e. Very satisfied₅
- 51. How much do/did you love your partner? (*Reverse scored*)
 - a. Not at all₁
 - b. Not very much₂
 - c. Somewhat₃
 - d. A lot₄
 - e. Very much₅
- 52. How many problems are/were there in your relationship?
 - a. None₅

- b. A few⁴
- c. Some³
- d. Many²
- e. Very many¹

Revised Conflict Tactics Scale (CTS2)—Short Form

No matter how well a couple gets along, there are times when they disagree, get annoyed with the other person, want different things from each other, or just have spats or fights because they are in a bad mood, are tired or for some other reason. Couples also have many different ways of trying to settle their differences. This is a list of things that might happen when you have differences. Please mark how many times you did each of these things in the past year, and how many times your partner did them in the past year. If you or your partner did not do one of these things in the past year, but it happened before that, select “b” for that question. If it never happened, select “a”.

- 53. I explained my side or suggested a compromise for a disagreement with my partner
 - a. This has never happened⁰
 - b. Not in the past year, but it did happen before¹
 - c. Once in the past year²
 - d. Twice in the past year³
 - e. 3-5 times in the past year⁴
 - f. 6-10 times in the past year⁵
 - g. 11-20 times in the past year⁶
 - h. More than 20 times in the past year⁷
- 54. My partner explained his or her side or suggested a compromise for a disagreement with me
 - a. This has never happened⁰
 - b. Not in the past year, but it did happen before¹
 - c. Once in the past year²
 - d. Twice in the past year³
 - e. 3-5 times in the past year⁴
 - f. 6-10 times in the past year⁵
 - g. 11-20 times in the past year⁶
 - h. More than 20 times in the past year⁷
- 55. I insulted or swore or shouted or yelled at my partner
 - a. This has never happened⁰
 - b. Not in the past year, but it did happen before¹
 - c. Once in the past year²
 - d. Twice in the past year³
 - e. 3-5 times in the past year⁴
 - f. 6-10 times in the past year⁵
 - g. 11-20 times in the past year⁶
 - h. More than 20 times in the past year⁷
- 56. My partner insulted or swore or shouted or yelled at me
 - a. This has never happened⁰
 - b. Not in the past year, but it did happen before¹
 - c. Once in the past year²
 - d. Twice in the past year³
 - e. 3-5 times in the past year⁴
 - f. 6-10 times in the past year⁵

- g. 11-20 times in the past year⁶
 - h. More than 20 times in the past year⁷
57. I showed respect for, or showed that I cared about my partner's feelings about an issue we disagreed on
- a. This has never happened⁰
 - b. Not in the past year, but it did happen before¹
 - c. Once in the past year²
 - d. Twice in the past year³
 - e. 3-5 times in the past year⁴
 - f. 6-10 times in the past years⁵
 - g. 11-20 times in the past year⁶
 - h. More than 20 times in the past year⁷
58. My partner showed respect for, or showed that he or she cared about my feelings about an issue we disagreed on
- a. This has never happened⁰
 - b. Not in the past year, but it did happen before¹
 - c. Once in the past year²
 - d. Twice in the past year³
 - e. 3-5 times in the past year⁴
 - f. 6-10 times in the past years⁵
 - g. 11-20 times in the past year⁶
 - h. More than 20 times in the past year⁷
59. I pushed, shoved, or slapped my partner
- a. This has never happened⁰
 - b. Not in the past year, but it did happen before¹
 - c. Once in the past year²
 - d. Twice in the past year³
 - e. 3-5 times in the past year⁴
 - f. 6-10 times in the past years⁵
 - g. 11-20 times in the past year⁶
 - h. More than 20 times in the past year⁷
60. My partner pushed, shoved, or slapped me
- a. This has never happened⁰
 - b. Not in the past year, but it did happen before¹
 - c. Once in the past year²
 - d. Twice in the past year³
 - e. 3-5 times in the past year⁴
 - f. 6-10 times in the past years⁵
 - g. 11-20 times in the past year⁶
 - h. More than 20 times in the past year⁷
61. I punched or kicked or beat-up my partner
- a. This has never happened⁰
 - b. Not in the past year, but it did happen before¹
 - c. Once in the past year²
 - d. Twice in the past year³
 - e. 3-5 times in the past year⁴
 - f. 6-10 times in the past years⁵
 - g. 11-20 times in the past year⁶
 - h. More than 20 times in the past year⁷
62. My partner punched or kicked or beat-me-up
- a. This has never happened⁰

- b. Not in the past year, but it did happen before₁
 - c. Once in the past year₂
 - d. Twice in the past year₃
 - e. 3-5 times in the past year₄
 - f. 6-10 times in the past year₅
 - g. 11-20 times in the past year₆
 - h. More than 20 times in the past year₇
63. I destroyed something belonging to my partner or threatened to hit my partner
- a. This has never happened₀
 - b. Not in the past year, but it did happen before₁
 - c. Once in the past year₂
 - d. Twice in the past year₃
 - e. 3-5 times in the past year₄
 - f. 6-10 times in the past year₅
 - g. 11-20 times in the past year₆
 - h. More than 20 times in the past year₇
64. My partner destroyed something belonging to me or threatened to hit me
- a. This has never happened₀
 - b. Not in the past year, but it did happen before₁
 - c. Once in the past year₂
 - d. Twice in the past year₃
 - e. 3-5 times in the past year₄
 - f. 6-10 times in the past year₅
 - g. 11-20 times in the past year₆
 - h. More than 20 times in the past year₇
65. I used force (like hitting, holding down, or using a weapon) to make my partner have sex
- a. This has never happened₀
 - b. Not in the past year, but it did happen before₁
 - c. Once in the past year₂
 - d. Twice in the past year₃
 - e. 3-5 times in the past year₄
 - f. 6-10 times in the past year₅
 - g. 11-20 times in the past year₆
 - h. More than 20 times in the past year₇
66. My partner used force (like hitting, holding down, or using a weapon) to make me have sex
- a. This has never happened₀
 - b. Not in the past year, but it did happen before₁
 - c. Once in the past year₂
 - d. Twice in the past year₃
 - e. 3-5 times in the past year₄
 - f. 6-10 times in the past year₅
 - g. 11-20 times in the past year₆
 - h. More than 20 times in the past year₇
67. I insisted on sex when my partner did not want to or insisted on sex without a condom (but did not use physical force)
- a. This has never happened₀
 - b. Not in the past year, but it did happen before₁
 - c. Once in the past year₂
 - d. Twice in the past year₃
 - e. 3-5 times in the past year₄

- f. 6-10 times in the past year⁵
 - g. 11-20 times in the past year⁶
 - h. More than 20 times in the past year⁷
68. My partner insisted on sex when I did not want to or insisted on sex without a condom (but did not use physical force)
- a. This has never happened⁰
 - b. Not in the past year, but it did happen before¹
 - c. Once in the past year²
 - d. Twice in the past year³
 - e. 3-5 times in the past year⁴
 - f. 6-10 times in the past year⁵
 - g. 11-20 times in the past year⁶
 - h. More than 20 times in the past year⁷
69. Do you have any children?
- a. Yes
 - b. No
 - i. (If indicated having children) How many children do you have?
 - a. 1
 - b. 2
 - c. 3
 - d. 4
 - e. 5 or more
 - ii. (If indicated having children) With whom did you have your children? (Select all that apply)
 - With my current wife or domestic partner
 - With my former wife or domestic partner
 - With my current partner (e.g., girlfriend/boyfriend)
 - With my former partner (e.g., girlfriend/boyfriend)
 - I did not have a serious relationship with this person
 - iii. (If indicated having children) How would you rate the quality of your relationship with your children?
 - a. Very Poor¹
 - b. Poor²
 - c. Acceptable³
 - d. Good⁴
 - e. Very Good⁵
 - iv. (If indicated having children) Do you currently live with your children?
 - a. Yes
 - b. No
 - v. (If indicated having children) How often do you see your children?
 - a. Never¹
 - b. A few times a year²
 - c. A few times a month³
 - d. A few times a week⁴
 - e. Every day⁵

Pathways Characteristics of Family Measure

70. Has anyone in your family ever been involved in criminal activity?

- a. Yes
- b. No
 - i. (If yes to above) What is the relationship to you of the family member(s) who was/were involved in criminal activity? (Select all that apply)
 - Biological father
 - Biological mother
 - Biological sister
 - Biological brother
 - Stepfather
 - Stepmother
 - Stepsister
 - Stepbrother
 - Other relative (specify)
 - ii. (If yes to above) Were any of these family member(s) arrested or jailed?
 - a. Yes
 - b. No

Pathways Characteristics of Friendship Quality Measure

- 71. How much can you count on your close friend(s) for help with a problem? (*Reverse scored*)
 - a. Not at all₁
 - b. A little₂
 - c. Quite a bit₃
 - d. Very much₄
 - e. N/A
- 72. How much has your close friend(s) tried to influence you to do something most people would think is wrong?
 - a. Not at all₁
 - b. A little₂
 - c. Quite a bit₃
 - d. Very much₄
 - e. N/A

Pathways Peer Delinquency-Antisocial Influence Measure

- 73. How many of your friends have suggested or claimed that you have to get drunk or high to have a good time?
 - a. None of them₁
 - b. Very few of them₂
 - c. Some of them₃
 - d. Most of them₄
 - e. All of them₅
- 74. How many of your friends have suggested that you should sell drugs?
 - a. None of them₁
 - b. Very few of them₂
 - c. Some of them₃
 - d. Most of them₄
 - e. All of them₅
- 75. How many of your friends have suggested that you should steal something?

- a. None of them₁
 - b. Very few of them₂
 - c. Some of them₃
 - d. Most of them₄
 - e. All of them₅
76. How many of your friends have suggested that you should hit or beat someone up?
- a. None of them₁
 - b. Very few of them₂
 - c. Some of them₃
 - d. Most of them₄
 - e. All of them₅
77. How many of your friends have suggested that you should carry a weapon?
- a. None of them₁
 - b. Very few of them₂
 - c. Some of them₃
 - d. Most of them₄
 - e. All of them₅

H4. History of Problems with Employment:

The following questions are about your history of employment and education, as well as any problems with finances or housing you may have experienced.

78. Have you ever had problems finding, maintaining, or following the rules of legal employment or educational/training programs? For example, have you ever had long or frequent periods of unemployment, or financial difficulties?
- a. Yes₂
 - b. Somewhat₁
 - c. No₀
79. Have people ever told you that you have problems with employment or finances?
- a. Yes₂
 - b. Somewhat₁
 - c. No₀
 - i. (If yes to either of above) How bad do you think these problems with employment or finances are?
 - a. Quite a bit₂
 - b. A little₁
 - c. Not at all₀
 - ii. (If yes to either of above) Do you think your history of employment or finance problems has contributed to ongoing problems with violence in any way?
 - a. Yes₂
 - b. Somewhat₁
 - c. No₀
 - d. N/A
80. What is your highest level of education?
- a. Grade school or less
 - b. Some high school, no diploma
 - c. High school graduate (diploma, GED, or equivalent)
 - d. Some college credit, no degree
 - e. Trade/technical/vocational training

- f. Associate degree
 - g. Bachelor's degree
 - h. Master's degree
 - i. Professional degree
 - j. Doctorate degree
81. Which best describes your current annual household income?
- a. Under \$10,000
 - b. \$10,000 to \$14,999
 - c. \$15,000 to \$19,999
 - d. \$20,000 to \$24,999
 - e. \$25,000 to \$29,999
 - f. \$30,000 to \$34,999
 - g. \$35,000 to \$39,999
 - h. \$40,000 to \$44,999
 - i. \$45,000 to \$49,999
 - j. \$50,000 to \$59,999
 - k. \$60,000 to \$74,999
 - l. \$75,000 to \$84,999
 - m. \$85,000 to \$99,999
 - n. \$100,000 to \$149,999
 - o. \$150,000 to \$199,999
 - p. \$200,000 to \$249,999
 - q. \$250,000 and above

Pathways Employment Measure

82. Are you currently employed?
- a. Yes
 - b. No
83. What is the longest time period you have ever held one job? (including current job if applicable)
- a. ___ Days
 - b. ___ Weeks
 - c. ___ Months
 - d. ___ Years
 - e. N/A
84. How many different jobs have you had?
- a. 0
 - b. 1
 - c. 2-3
 - d. 4-6
 - e. 7 or more
85. Did/do you miss work or come in late a lot?
- a. Yes
 - b. No
 - c. N/A
86. Have you ever been fired?
- a. Yes
 - b. No
 - c. N/A
 - i. (If indicated being fired) How many times have you been fired?

- a. 1 time
 - b. 2 times
 - c. 3 times
 - d. 4 or more times
87. Have you ever left one job without another one lined up?
- a. Yes
 - b. No
 - c. N/A
88. Have you ever made money any other way, including activities that are illegal?
- a. Yes
 - b. No
 - c. N/A
 - i. (If indicated making money in other ways) What is it that you do/did (to make money besides working)?
 - a. Sold stolen property
 - b. Sold drugs
 - c. Stole merchandise
 - d. Gambling
 - e. Prostitution
 - f. Under-the-table (but not illegal)
 - g. Other (specify)
89. Have you ever failed to pay bills like rent, telephone, or electricity on time?
- a. Yes
 - b. No
 - c. N/A
90. Have your parents or friends ever helped you out financially?
- a. Yes
 - b. No
 - c. N/A
91. Have you ever had problems with employment due to long-term jailing or imprisonment?
- a. Yes
 - b. No
 - c. N/A

Neighborhood Disorganization—Seattle Social Development Project (Arthur et al., 2002):

Please indicate to what extent the following five statements accurately describe your neighborhood.

92. Crime and/or drug selling
- a. Very false¹
 - b. Somewhat false²
 - c. Somewhat true³
 - d. Very true⁴
93. Fights
- a. Very false¹
 - b. Somewhat false²
 - c. Somewhat true³
 - d. Very true⁴
94. Lots of empty or abandoned buildings

- a. Very false₁
 - b. Somewhat false₂
 - c. Somewhat true₃
 - d. Very true₄
95. Lots of graffiti
- a. Very false₁
 - b. Somewhat false₂
 - c. Somewhat true₃
 - d. Very true₄
96. I feel safe in my neighborhood (*Reverse scored*)
- a. Very false₁
 - b. Somewhat false₂
 - c. Somewhat true₃
 - d. Very true₄

H5. History of Problems with Substance Use:

The following questions are about your history of substance use, abuse, or dependence that may have caused problems in your mental or physical health.

97. Have you ever had problems with using, abusing, or depending on mind- or mood-altering substances, including alcohol, illicit drugs, prescription drugs, over-the-counter drugs, etc.? For example, have drugs or alcohol ever affected your physical or mental health, or interfered with your employment?
- a. Yes₂
 - b. Somewhat₁
 - c. No₀
98. Have people ever told you that you have problems with substance use?
- a. Yes₂
 - b. Somewhat₁
 - c. No₀
 - i. (If yes to either of above) How bad do you think these problems with substance use are?
 - a. Quite a bit₂
 - b. A little₁
 - c. Not at all₀
 - ii. (If yes to either of above) Do you think your history of substance use problems has contributed to ongoing problems with violence in any way?
 - a. Yes₂
 - b. Somewhat₁
 - c. No₀
 - d. N/A

NIDA Quick Screen V1.0/NIDA-Modified ASSIST V2.0

99. In the past year, how often have you used the following?
- i. Alcohol (5 or more drinks a day)
 - a. Never₁
 - b. Once or Twice₂
 - c. Monthly₃

- d. Weekly⁴
 - e. Daily or Almost Daily⁵
 - ii. Tobacco Products
 - a. Never¹
 - b. Once or Twice²
 - c. Monthly³
 - d. Weekly⁴
 - e. Daily or Almost Daily⁵
 - iii. Prescription Drugs for Non-Medical Reasons
 - a. Never¹
 - b. Once or Twice²
 - c. Monthly³
 - d. Weekly⁴
 - e. Daily or Almost Daily⁵
 - iv. Illegal Drugs
 - a. Never¹
 - b. Once or Twice²
 - c. Monthly³
 - d. Weekly⁴
 - e. Daily or Almost Daily⁵
- 100. In your *LIFETIME*, which of the following substances have you ever used? (Select all that apply)
 - Cannabis (marijuana, pot, grass, hash, etc.)
 - Cocaine (coke, crack, etc.)
 - Prescription stimulants (Ritalin, Concerta, Dexedrine, Adderall, diet pills, etc.)
 - Methamphetamine (speed, crystal meth, ice, etc.)
 - Inhalants (nitrous oxide, glue, gas, paint thinner, etc.)
 - Sedatives or sleeping pills (Valium, Serepax, Ativan, Xanax, Librium, Rohypnol, GHB, etc.)
 - Hallucinogens (LSD, acid, mushrooms, PCP, Special K, ecstasy, etc.)
 - Street opioids (heroin, opium, etc.)
 - Prescription opioids (fentanyl, oxycodone [OxyContin, Percocet], hydrocodone [Vicodin], methadone, buprenorphine, etc.)
 - Other (specify: ____)
 - i. (If indicated using at least one substance) In the past three months, how often have you used the drug(s) you mentioned?
 - a. Never¹
 - b. Once or Twice²
 - c. Monthly³
 - d. Weekly⁴
 - e. Daily or Almost Daily⁵
 - ii. (If indicated using at least one substance) In the past three months, how often have you had a strong desire or urge to use the drug(s) you mentioned?
 - a. Never¹
 - b. Once or Twice²
 - c. Monthly³
 - d. Weekly⁴
 - e. Daily or Almost Daily⁵

- iii. (If indicated using at least one substance) During the past three months, how often has your use of drug(s) led to health, social, legal, or financial problems?
 - a. Never₁
 - b. Once or Twice₂
 - c. Monthly₃
 - d. Weekly₄
 - e. Daily or Almost Daily₅
 - iv. (If indicated using at least one substance) During the past three months, how often have you failed to do what was normally expected of you because of your use of drug(s)?
 - a. Never₁
 - b. Once or Twice₂
 - c. Monthly₃
 - d. Weekly₄
 - e. Daily or Almost Daily₅
101. (If indicated using alcohol) At what age did you first start using alcohol?
- a. As a child (12 and under)
 - b. As an adolescent (13-17)
 - c. As an adult (18 and over)
102. (If indicated using at least one substance) At what age did you first start using drugs?
- a. As a child (12 and under)
 - b. As an adolescent (13-17)
 - c. As an adult (18 and over)

H6. History of Problems with Major Mental Disorder:

The following questions are about your history of mental health problems that may have caused difficulties in your thinking or emotions, and/or interfered with your functioning in areas like work, family, health, or finances.

103. Have you ever had problems with your mental/psychological health? For example, have you ever suffered from intense feelings of sadness or experienced things (sounds, sights) that were not really there?
- a. Yes₂
 - b. Somewhat₁
 - c. No₀
104. Have people ever told you that you have problems with your mental/psychological health?
- a. Yes₂
 - b. Somewhat₁
 - c. No₀
 - i. (If yes to either of above) How bad do you think these problems with your mental/psychological health are?
 - a. Quite a bit₂
 - b. A little₁
 - c. Not at all₀
 - ii. (If yes to either of above) Do you think your history of problems with mental/psychological health has contributed to ongoing problems with violence in any way?

- a. Yes²
 - b. Somewhat¹
 - c. No⁰
 - d. N/A
105. Have you ever been officially diagnosed with a major mental disorder(s) by a professional?
- a. Yes
 - b. No
 - i. (If indicated official diagnosis) What type of disorder were you diagnosed with? (Select all that apply)
 - Psychotic disorder (e.g., schizophrenia or other psychotic disorders with symptoms such as perceiving things that are not really there, strongly believing that someone is out to get you or controlling your thoughts/actions, having disorganized thoughts, producing unusual movements)
 - Major mood disorder (e.g., depression, bipolar disorder, or other major mood disorders with symptoms such as intense sadness or hopelessness, intense happiness or excitement, rapid shifts in mood, agitated movements like fidgeting/pacing, slowed movements and speech, thoughts about hurting or killing yourself)
 - Neurodevelopmental disorder (e.g., intellectual disability, Autism spectrum disorder, or other neurodevelopmental disorders with symptoms such as deficiencies in mental/intellectual abilities, difficulties in social interactions, difficulties in speech/language, repetitive patterns of behavior)
 - Major neurocognitive disorder (e.g., Alzheimer's disease, traumatic brain injury, Parkinson's disease, or other major neurocognitive disorders with symptoms such as declines in memory or cognition, disturbed emotional functioning, or significant personality changes)
 - Posttraumatic stress disorder (e.g., exposure to a traumatic event that causes symptoms such as repeated upsetting memories, negative emotions like fear/anger/guilt, problems with sleep or concentration)
 - Other major mental disorder (specify)
 - ii. (If indicated official diagnosis) Did this disorder cause significant problems in your social, familial, financial, or occupational functioning?
 - a. Yes²
 - b. Somewhat¹
 - c. No⁰
106. Have you ever in your lifetime been admitted for an overnight stay in a hospital or other facility to receive help for problems with your emotions, nerves, mental health, or your use of alcohol or drugs?
- a. Yes
 - b. No
107. Have you ever taken any type of prescription medicine for problems with your emotions, substance use, energy, concentration, sleep, or ability to cope with stress? Include medicines even if you took them only once.
- a. Yes
 - b. No

Psychosis Screening Questionnaire

108. Have you ever felt that your thoughts were directly interfered with or controlled by some outside force or person?
 - a. Yes₁
 - b. No₀
109. Have there ever been times when you felt that people were against you?
 - a. Yes₁
 - b. No₀
110. Have there ever been times when you felt that something strange was going on?
 - a. Yes₁
 - b. No₀
111. Have there ever been times when you heard or saw things that other people couldn't?
 - a. Yes₁
 - b. No₀
112. (If indicated any psychotic symptoms) How much of a problem did any of these cause you – like being unable to work; having family, money, or legal troubles; getting into arguments or fights; or interfering with your health?
 - a. No problems₁
 - b. Minor problem₂
 - c. Moderate problem₃
 - d. Serious problem₄
113. (If indicated any psychotic symptoms) At what age did you first experience these symptoms?
 - a. As a child (12 and under)
 - b. As an adolescent (13-17)
 - c. As an adult (18 and over)
114. Have you ever in your life had a period of time lasting two weeks or longer when most of the day you felt sad, empty or depressed?
 - a. Yes
 - b. No

Patient Health Questionnaire-9

115. (If indicated yes to above) For the two weeks in your life that you were the most blue, sad, or depressed, how often were you bothered by any of the following problems?
 - i. Little interest or pleasure in doing things
 - a. Not at all₁
 - b. Several days₂
 - c. More than half the days₃
 - d. Nearly every day₄
 - ii. Feeling down, depressed, or hopeless
 - a. Not at all₁
 - b. Several days₂
 - c. More than half the days₃
 - d. Nearly every day₄
 - iii. Trouble falling or staying asleep, or sleeping too much
 - a. Not at all₁

- b. Several days²
 - c. More than half the days³
 - d. Nearly every day⁴
 - iv. Feeling tired or having little energy
 - a. Not at all¹
 - b. Several days²
 - c. More than half the days³
 - d. Nearly every day⁴
 - v. Poor appetite or overeating
 - a. Not at all¹
 - b. Several days²
 - c. More than half the days³
 - d. Nearly every day⁴
 - vi. Feeling bad about yourself — or that you are a failure or have let yourself or your family down
 - a. Not at all¹
 - b. Several days²
 - c. More than half the days³
 - d. Nearly every day⁴
 - vii. Trouble concentrating on things, such as reading the newspaper or watching television
 - a. Not at all¹
 - b. Several days²
 - c. More than half the days³
 - d. Nearly every day⁴
 - viii. Moving or speaking so slowly that other people could have noticed? Or the opposite — being so fidgety or restless that you have been moving around a lot more than usual
 - a. Not at all¹
 - b. Several days²
 - c. More than half the days³
 - d. Nearly every day⁴
 - ix. Thoughts that you would be better off dead or of hurting yourself in some way
 - a. Not at all¹
 - b. Several days²
 - c. More than half the days³
 - d. Nearly every day⁴
116. (If indicated any depressive symptoms) How much of a problem did any of these symptoms cause you – like being unable to work; having family, money, or legal troubles; getting into arguments or fights; or interfering with your health?
- a. No problems¹
 - b. Minor problem²
 - c. Moderate problem³
 - d. Serious problem⁴
117. (If indicated any depressive symptoms) At what age did you first experience these symptoms?
- a. As a child (12 and under)
 - b. As an adolescent (13-17)
 - c. As an adult (18 and over)

Mood Disorder Questionnaire

118. Has there ever been a period of time when you were not your usual self and...
- i. ...you felt so good or so hyper that other people thought you were not your normal self or you were so hyper that you got into trouble?
 - a. Yes₁
 - b. No₀
 - ii. ...you were so irritable that you shouted at people or started fights or arguments?
 - a. Yes₁
 - b. No₀
 - iii. ...you felt much more self-confident than usual?
 - a. Yes₁
 - b. No₀
 - iv. ...you got much less sleep than usual and found you didn't really miss it?
 - a. Yes₁
 - b. No₀
 - v. ...you were much more talkative or spoke faster than usual?
 - a. Yes₁
 - b. No₀
 - vi. ...thoughts raced through your head or you couldn't slow your mind down?
 - a. Yes₁
 - b. No₀
 - vii. ...you were so easily distracted by things around you that you had trouble concentrating or staying on track?
 - a. Yes₁
 - b. No₀
 - viii. ...you had more energy than usual?
 - a. Yes₁
 - b. No₀
 - ix. ...you were much more active or did many more things than usual?
 - a. Yes₁
 - b. No₀
 - x. ...you were much more social or outgoing than usual, for example, you telephoned friends in the middle of the night?
 - a. Yes₁
 - b. No₀
 - xi. ...you were much more interested in sex than usual?
 - a. Yes₁
 - b. No₀
 - xii. ...you did things that were unusual for you or that other people might have thought were excessive, foolish, or risky?
 - a. Yes₁
 - b. No₀
 - xiii. ...spending money got you or your family in trouble?
 - a. Yes₁
 - b. No₀
119. If you checked YES to more than one of the above, have several of these ever happened during the same period of time?
- a. Yes₁
 - b. No₀

120. If you checked YES to more than one of the above, how much of a problem did any of these cause you – like being unable to work; having family, money, or legal troubles; or getting into arguments or fights?
- No problems₁
 - Minor problem₂
 - Moderate problem₃
 - Serious problem₄
121. (If indicated any manic/hypomanic symptoms) At what age did you first experience these symptoms?
- As a child (12 and under)
 - As an adolescent (13-17)
 - As an adult (18 and over)

H7. History of Problems with Personality Disorder:

The following questions are about your history of difficulties getting along with other people and/or taking advantage of other people since adolescence. This may have caused problems with your interpersonal relationships or problems with the law.

122. Since the age of 15, have you ever had problems following the law, taking advantage of others, or being very impulsive, aggressive, or irresponsible? For example, do you have a history of doing illegal things (e.g., destroying property, stealing), being manipulative to get what you want, making decisions on the spur of the moment, or getting into physical fights with others?
- Yes₂
 - Somewhat₁
 - No₀
123. Have people ever told you that you have problems with following the law, taking advantage of others, or being very impulsive, aggressive, or irresponsible?
- Yes₂
 - Somewhat₁
 - No₀
 - (If yes to either of above) How bad do you think these problems with following the law, taking advantage of others, or being very impulsive, aggressive, or irresponsible are?
 - Quite a bit₂
 - A little₁
 - Not at all₀
 - (If yes to either of above) Do you think your history of problems with following the law, taking advantage of others, or being very impulsive, aggressive, or irresponsible has contributed to ongoing problems with violence in any way?
 - Yes₂
 - Somewhat₁
 - No₀
 - N/A

Structured Clinical Interview for DSM-IV Personality Disorders

124. Before you were 15, did you...

- i. Bully or threaten other kids?
 - a. Yes₁
 - b. No₀
- ii. Start fights?
 - a. Yes₁
 - b. No₀
- iii. Hurt or threaten someone with a weapon, like a bat, brick, broken bottle, knife or gun?
 - a. Yes₁
 - b. No₀
- iv. Deliberately torture someone or cause someone physical pain and suffering?
 - a. Yes₁
 - b. No₀
- v. Torture or hurt animals on purpose?
 - a. Yes₁
 - b. No₀
- vi. Rob, mug, or forcibly take something from someone by threatening him or her?
 - a. Yes₁
 - b. No₀
- vii. Force someone to have sex with you, to get undressed in front of you, or touch you sexually?
 - a. Yes₁
 - b. No₀
- viii. Set fires?
 - a. Yes₁
 - b. No₀
- ix. Deliberately destroy things that weren't yours?
 - a. Yes₁
 - b. No₀
- x. Break into houses, other buildings, or cars?
 - a. Yes₁
 - b. No₀
- xi. Lie a lot or "con" other people?
 - a. Yes₁
 - b. No₀
- xii. Sometimes steal or shoplift things, or forge someone's signature?
 - a. Yes₁
 - b. No₀
- xiii. Run away from home and stay away overnight?
 - a. Yes₁
 - b. No₀
- xiv. Often stay out very late, long after the time you were supposed to be home?
 - a. Yes₁
 - b. No₀
- xv. Often skip school?
 - a. Yes₁
 - b. No₀

The Dirty Dozen

Use the following key to help guide your answers:

Strongly Disagree				Neutral/ Depends				Strongly Agree
1	2	3	4	5	6	7	8	9

- 125. I tend to manipulate others to get my way.
- 126. I have used deceit or lied to get my way.
- 127. I have used flattery to get my way.
- 128. I tend to exploit others towards my own end.
- 129. I tend to lack remorse.
- 130. I tend to be unconcerned with the morality of my actions.
- 131. I tend to be callous or insensitive.
- 132. I tend to be cynical.
- 133. I tend to want others to admire me.
- 134. I tend to want others to pay attention to me.
- 135. I tend to seek prestige or status.
- 136. I tend to expect special favors from others.

H8. History of Problems with Traumatic Experiences:

The following questions are about your history of experiencing harmful or traumatic events as a child that may have caused problems for you later in life.

- 137. Have you ever had problems with traumatic or adverse childrearing experiences? For example, as a child did you ever experience domestic violence, physical or sexual abuse, parental substance use problems, or an unstable home environment (i.e., frequent moving, crowded housing)?
 - a. Yes²
 - b. Somewhat¹
 - c. No⁰
- 138. Have people ever told you that you have had problems with traumatic or adverse childrearing experiences?
 - a. Yes²
 - b. Somewhat¹
 - c. No⁰
 - i. (If yes to either of above) How bad do you think these problems with traumatic or adverse childrearing experiences are?
 - a. Quite a bit²
 - b. A little¹
 - c. Not at all⁰
 - ii. (If yes to either of above) Do you think your history of problems with traumatic or adverse childrearing experiences has contributed to ongoing problems with violence in any way?
 - a. Yes²
 - b. Somewhat¹
 - c. No⁰
 - d. N/A

Adverse Childhood Experiences Questionnaire

- 139. When you were growing up, did a parent or adult in the household...

- i. Often or very often swear at, insult, or put you down?
 - a. Yes₁
 - b. No₀
- ii. Often or very often act in a way that made you afraid you would be physically hurt?
 - a. Yes₁
 - b. No₀
- iii. Often or very often push, grab, shove, or slap you?
 - a. Yes₁
 - b. No₀
- iv. Often or very often hit you so hard that you had marks or were injured?
 - a. Yes₁
 - b. No₀
- 140. When you were growing up, did an adult or person at least 5 years older ever...
 - i. Touch or fondle you in a sexual way?
 - a. Yes₁
 - b. No₀
 - ii. Attempt sexual intercourse with you?
 - a. Yes₁
 - b. No₀
- 141. When you were growing up...
 - i. Did you ever live with anyone who was a problem drinker or alcoholic?
 - a. Yes₁
 - b. No₀
 - ii. Did you ever live with anyone who used street drugs?
 - a. Yes₁
 - b. No₀
 - iii. Was a household member depressed or mentally ill?
 - a. Yes₁
 - b. No₀
 - iv. Did a household member ever attempt suicide?
 - a. Yes₁
 - b. No₀
 - v. Did a household member ever go to prison?
 - a. Yes₁
 - b. No₀
- 142. When you were growing up, was your mother or stepmother...
 - i. Sometimes, often, or very often pushed, grabbed, slapped, or had something thrown at her?
 - a. Yes₁
 - b. No₀
 - ii. Sometimes, often, or very often kicked, bitten, hit with a fist, or hit with something hard?
 - a. Yes₁
 - b. No₀
 - iii. Ever repeatedly hit over at least a few minutes?
 - a. Yes₁
 - b. No₀
 - iv. Ever threatened with, or hurt by, a knife or gun?
 - a. Yes₁
 - b. No₀

143. As a child, were you ever placed in a foster home, or in the care of a non-relative adult?
- a. Yes
 - b. No

H9. History of Problems with Violent Attitudes:

The following questions are about your history of attitudes, beliefs, and values that are supportive of violence.

144. Have you ever had problems with violent attitudes? For example, have you ever believed that the use of violent behavior is justified in order to gain status, respect, or financial benefit?
- a. Yes₂
 - b. Somewhat₁
 - c. No₀
145. Have people ever told you that you have problems with violent attitudes?
- a. Yes₂
 - b. Somewhat₁
 - c. No₀
 - i. (If yes to either of above) How bad do you think these problems with violent attitudes are?
 - a. Quite a bit₂
 - b. A little₁
 - c. Not at all₀
 - ii. (If yes to either of above) Do you think your history of problems with violent attitudes has contributed to ongoing problems with violence in any way?
 - a. Yes₂
 - b. Somewhat₁
 - c. No₀
 - d. N/A

Criminal Sentiments Scale-Modified

Read each statement carefully and decide how you feel about it. Mark Agree if you agree with the statement or Disagree if you disagree with the statement. If you are undecided or cannot make up your mind about the statement, mark Undecided. Remember – there are no right or wrong answers.

146. The police are as crooked as the people they arrest.
- a. Disagree₀
 - b. Undecided₁
 - c. Agree₂
147. Society would be better off if there were more police. (*Reverse scored*)
- a. Disagree₀
 - b. Undecided₁
 - c. Agree₂
148. Sometimes a person like me has to break the law to get ahead in life.
- a. Disagree₀
 - b. Undecided₁
 - c. Agree₂
149. It's OK to break the law as long as you don't get caught.

- a. Disagree₀
 - b. Undecided₁
 - c. Agree₂
150. A hungry man has the right to steal.
- a. Disagree₀
 - b. Undecided₁
 - c. Agree₂
151. People who have broken the law have the same sorts of ideas about life as me.
- a. Disagree₀
 - b. Undecided₁
 - c. Agree₂
152. I prefer to be with people who obey the law rather than people who break the law.
(Reverse scored)
- a. Disagree₀
 - b. Undecided₁
 - c. Agree₂
153. People who have been in trouble with the law are more like me than people who don't have trouble with the law.
- a. Disagree₀
 - b. Undecided₁
 - c. Agree₂

Schedule of Imagined Violence

154. Do you ever have daydreams or thoughts about physically hurting or injuring some other persons?
- a. Yes₁
 - b. No₀
- i. (If indicated daydreams above) Since the first time you started having these thoughts, have the injuries that you think about gotten more serious, less serious, or have they always been about the same?
- a. Less Serious₀
 - b. Same₁
 - c. More Serious₂

H10. History of Problems with Treatment or Supervision Response:

The following questions are about your history of problems complying with treatment or supervision meant to improve your mental health or reduce your chances of violence. This supervision may have occurred in institutional settings, such as prisons/jails, or in the community, such as parole/probation officers and/or court-mandated treatment programs.

155. Have you ever been mandated to institutional or community supervision, such as being imprisoned in a correctional facility, placed under probation or parole, or court-ordered to attend a drug treatment program?
- a. Yes₁
 - b. No₀
156. (If indicated being mandated to supervision) Have you ever had problems complying with or responding to the demands of supervision in these types of environments? For example, have you ever failed to attend treatment as directed, or violated the conditions of your probation or parole?
- a. Yes₂

- b. Somewhat₁
 - c. No₀
157. (If indicated being mandated to supervision) Have people ever told you that you have problems complying with treatment or supervision (e.g., correctional officers, therapists, etc.)?
- a. Yes₂
 - b. Somewhat₁
 - c. No₀
 - i. (If yes to either of above) How bad do you think these problems with treatment or supervision compliance are?
 - a. Quite a bit₂
 - b. A little₁
 - c. Not at all₀
 - ii. (If yes to either of above) Do you think your history of problems with treatment or supervision compliance has contributed to ongoing problems with violence in any way?
 - a. Yes₂
 - b. Somewhat₁
 - c. No₀
 - d. N/A
158. (If indicated problems with supervision compliance) Listed below are various examples of failing to abide by forensic, mental health, or correctional treatment or supervision. Please check each box that relates to the problem(s) you have experienced.
- Refusal to attend treatment/therapy programs in prison (due to poor motivation, unwillingness, etc.)
 - Failure to attend court-ordered psychiatric or substance use treatment in community
 - Failure to take prescribed psychiatric medications
 - Negative/uncooperative attitudes toward treatment or therapists
 - Failure to appear for scheduled court dates
 - Serious violation of parole/probation conditions, leading to re-arrest or re-institutionalization (e.g., re-offending during probation)
 - Less serious violation of parole/probation conditions, leading to reprimand, loss of privileges, or other minor disciplinary action (e.g., missing curfew, using alcohol or drugs while prohibited)
 - Escape/attempted escape from a prison, hospital, or other secure facility
 - Other (specify)

Validation/Attention-Check Questions: Violent/Nonviolent Activity

159. In your lifetime, which of the following **violent** activities have you engaged in, regardless of whether you were arrested, charged, or convicted for it? Select all that apply.
- Murder (If yes, indicate number of times: ____)
 - Manslaughter (If yes, indicate number of times: ____)
 - Attempted murder (If yes, indicate number of times: ____)
 - Assault (If yes, indicate number of times: ____)
 - Sexual assault (e.g., rape, incest, indecent exposure) (If yes, indicate number of times: ____)
 - Battery (If yes, indicate number of times: ____)
 - Robbery (If yes, indicate number of times: ____)

- Weapons offenses (e.g., possession of a weapon, dangerous use of firearm) (If yes, indicate number of times: ____)
 - Kidnapping (e.g., unlawful confinement, abduction) (If yes, indicate number of times: ____)
 - Hijacking (If yes, indicate number of times: ____)
 - Arson (If yes, indicate number of times: ____)
 - Human trafficking (If yes, indicate number of times: ____)
 - Any other violent activity (specify and indicate number of times)
160. In your lifetime, which of the following **nonviolent** activities have you engaged in, regardless of whether you were arrested, charged, or convicted for it? Select all that apply.
- Theft over \$5,000 (If yes, indicate number of times: ____)
 - Burglary (If yes, indicate number of times: ____)
 - Fraud (e.g., using stolen credit cards) (If yes, indicate number of times: ____)
 - Forgery (If yes, indicate number of times: ____)
 - Drug-related offenses (e.g., possession, trafficking) (If yes, indicate number of times: ____)
 - Major driving offenses (e.g., driving while intoxicated, hit and run) (If yes, indicate number of times: ____)
 - Criminal negligence (If yes, indicate number of times: ____)
 - Obstruction of justice (e.g., assaulting a police officer, resisting arrest) (If yes, indicate number of times: ____)
 - Perjury (If yes, indicate number of times: ____)
 - Treason (If yes, indicate number of times: ____)
 - Escape (e.g., escaping lawful custody, breaking out of prison) (If yes, indicate number of times: ____)
 - Jumping bail (If yes, indicate number of times: ____)
 - Failure to appear (e.g., failure to attend court, failure to comply with probation order) (If yes, indicate number of times: ____)
 - Motor-vehicle theft (If yes, indicate number of times: ____)
 - Vandalism (If yes, indicate number of times: ____)
 - Miscellaneous minor offenses (e.g., causing a disturbance, driving while prohibited) (specify and indicate number of times)
 - Any other nonviolent activity (specify and indicate number of times)

Appendix B.

Epidemiological Data on Risk Factor-Race Associations

Risk factors expected to be correlated with race:

H1/H2. Violence/Antisocial Behavior

Prior Criminal History:

- **Number of sentenced prisoners under jurisdiction of state or federal correctional authorities, by race/sex:** (United States Department of Justice, 2018)
 - 390,900 White, non-Hispanic male prisoners in 2016
 - 466,600 African American, non-Hispanic male prisoners in 2016
 - 320,000 Hispanic male prisoners in 2016
- **Imprisonment rate of sentenced state and federal prisoners per 100,000 U.S. residents, by sex, race, Hispanic origin, and age:** (United States Department of Justice, 2018)
 - White, non-Hispanic males: 400 per 100,000
 - African American, non-Hispanic males: 2,415 per 100,000
 - Hispanic males: 1,092 per 100,000
 - *This varies by age, with the greatest disparities occurring between *younger* White and African American/Hispanic males aged between 18-39
- **Percent of sentenced prisoners under jurisdiction of state correctional authority, by offense (2015):** (United States Department of Justice, 2018)
 - Violent offenses:
 - 47.1% non-Hispanic Whites
 - 58.8% non-Hispanic African Americans
 - 60.2% Hispanics
 - *Significant since prior *violence* or *violent history* is often used in risk instruments
- **Arrests by Race: 2009** (United States Department of Justice, 2018)
 - 3.6% Whites charged with a violent offense
 - 5.9% African Americans charged with a violent offense
- African American males ages 18 to 19 were 11.8 times more likely to be imprisoned than white males of the same age. This age group had the highest African American-to-white racial disparity in 2016. (United States Department of Justice, 2018)
- In 2008, 65.08% of inmates in state/federal prisons/jails were nonwhite, compared to 34.92% of whites (Harcourt, 2015)

H3. Relationships

Marital/Familial Instability:

- In 2007, more than 4 in 10 fathers in state or federal prisons were African American, about 3 in 10 were white, and about 2 in 10 were Hispanic. (United States Department of Justice, 2008)
- **State and federal inmates who reported having minor children, by gender, race, and Hispanic origin (2004):** (United States Department of Justice, 2008)

- 44.8% White/non-Hispanic male state inmates had minor children, 47.8% federal
- 54.0% African American/non-Hispanic male state inmates had minor children, 70.0% federal
- 57.0% Hispanic male state inmates had minor children, 68.5% federal
- Also, on average, African American/Hispanic fathers had a significantly higher number of minor children, compared to Whites
- **Parents in federal prison who reported living with their minor children in the month before arrest or just prior to incarceration, by gender (2004):** (United States Department of Justice, 2008)
 - 54.7% of fathers lived with their minor children either in the month before arrest or just prior to incarceration
- In 2000, African American couples were less than half as likely as white couples to be living together a year after the birth of their child. Hispanics, however, were not strongly different from whites.
 - The odds of an African American couple being married a year after their child's birth was only 10% of that for a white couple with similar age and education. (Western & McLanahan, 2000)
- **Marital Status of Fathers in State Prison and the Noninstitutional Population (1997):** (Pattillo et al., 2004)
 - In the prison population, 39.4% of White fathers had been *divorced*, compared to 3.5% in the general population
 - In the prison population, 26.7% of White fathers had *never married*, compared to 6.9% in the general population
 - In the prison population, 11.4% of African American fathers had been *divorced*, compared to 4.1% in the general population
 - In the prison population, 62.7% of African American fathers had *never married*, compared to 20.1% in the general population
 - In the prison population, 15.8% of Hispanic fathers had been *divorced*, compared to 1.8% in the general population
 - In the prison population, 41.0% of Hispanic fathers had *never married*, compared to 17.1% in the general population

H4. Employment

Unemployment:

- **Unemployment Status of High School Graduates/Dropouts by Race (2010):** (United States Census Bureau, 2012)
 - Foreign Born: Total 12.0% unemployment rate for people in civilian labor force with less than a high school diploma and 10.2% for high school graduates/no college
 - Native Born: Total 17.7% unemployment rate for people in civilian labor force with less than a high school diploma and 10.3% for high school graduates/no college
 - 19.5% White high school graduates and 25.5% White dropouts unemployed in 2010
 - 33.9% African American high school graduates and 46.6% African American dropouts unemployed in 2010
- **Unemployment Status by Race, as percent of labor force (2010):** (United States Census Bureau, 2012)

- 8.7% Whites unemployed (7.4% Foreign-Born White non-Hispanic; 8.0% Native-Born)
- 16.0% African Americans unemployed (12.4% Foreign-Born African American non-Hispanic; 16.5% Native-Born)
- 12.5% Hispanics unemployed (further breaks down by Mexican, Puerto Rican, & Cuban) (11.3% Foreign-Born average of Hispanics; 13.8% Native-Born)
- **Displaced Workers by Selected Characteristics (2010):** (United States Census Bureau, 2012)
 - Includes persons 20+ years old with tenure of 3+ years who lost/left a job between January 2007-December 2009 b/c of plant closings/moves, slack work, or abolishment of their positions
 - White males: 37.8% unemployed in 2010; 48.2% lost jobs due to slack/insufficient work
 - African American males: 48.4% unemployed in 2010; 47.9% lost jobs due to slack/insufficient work
 - Hispanic males: 38.9% unemployed in 2010; 59.8% lost jobs due to slack/insufficient work

Poverty:

- **Official percentage of people in poverty (2017):** (United States Census Bureau, 2017)
 - Official poverty rate in 2017 was 12.3%
 - White, not Hispanic: 8.7%/17 million (compared to 60.5% non-Hispanic Whites in population in 2017)
 - African American: 21.2%/9 million (compared to 13.3% African Americans in population)
 - Hispanic (any race): 18.3%/10.8 million (compared to 17.8% Hispanics in population)
- **Median household income (2017):** (United States Census Bureau, 2017)
 - Median household income was \$61,372 in 2017
 - White, not Hispanic: \$68,145
 - African American: \$40,258
 - Hispanic (any race): \$50,486
- **Correlation between education attainment and poverty:** (United States Census Bureau, 2017)
 - 24.8% of people without a high school diploma were below poverty
 - 13.3% high school/no college were below poverty
 - 9.4% some college/no degree were below poverty
 - 4.5% Bachelor's degree or higher were below poverty
- **Reliance upon social assistance:** (United States Census Bureau, 2013)
 - About 1 in 5 people who received clothing assistance (20.5 percent) were of Hispanic origin.
 - Over one-fourth of housing assistance recipients (28.5 percent) were non-Hispanic African American.
 - About 1 in 5 people who received housing assistance (19.1 percent) were of Hispanic origin.
 - In 2013, 200 percent of the poverty threshold for a family of four with two adults and two children was about \$47,250.
 - 79.3% of Whites were 15+ years, 75.5% were 15+ years with household incomes below 200% of their poverty thresholds, and 68.6% were 15+ years with household incomes below 200% of their poverty thresholds who received any type of other assistance (downward trend)

- 12.3% of African Americans were 15+ years, 15.7% were 15+ years with household incomes below 200% of their poverty thresholds, and 22.4% were 15+ years with household incomes below 200% of their poverty thresholds who received any type of other assistance (upward trend)
 - 15.2% of Hispanics (any race) were 15+ years, 20.6% were 15+ years with household incomes below 200% of their poverty thresholds, and 17.1% were 15+ years with household incomes below 200% of their poverty thresholds who received any type of other assistance (upward trend)
- **Families below poverty by type of family (2016):** (United States Census Bureau, 2017)
 - Married couple: 5.1%
 - Female householder/no husband present: 26.6%
 - Male householder/no wife present: 13.1%

Education:

- **Educational Attainment by Race/Sex (2010):** (United States Census Bureau, 2012)
 - Total high school graduate or more % for all male races in 2010: 86.6%
 - Total college graduate or more % for all male races in 2010: 30.3%
 - White male high school graduate or more: 86.9%; college graduate or more: 30.8%
 - African American male high school graduate or more: 83.6%; college graduate or more: 17.7%
 - Hispanic male high school graduate or more: 61.4%; college graduate or more: 12.9% (also breaks down by Hispanic total, Mexican, Puerto Rican, & Cuban)
- **Mean Earnings by Highest Degree Earned (2009):** (United States Census Bureau, 2012)
 - White males with Bachelor's degree: \$71,286; Master's degree: \$91,776
 - African American males with Bachelor's degree: \$55,655; Master's degree: \$68,890
 - Hispanic males with Bachelor's degree: \$58,570; Master's degree: \$80,737

Neighborhood Disadvantage:

- **Home Purchase Loans by Race and Sex (2009):** (United States Census Bureau, 2012)
 - White males who applied for a home purchase loan were denied 19.5% of the time (109,000 denied/559,000 applications received)
 - African American males who applied for a home purchase loan were denied 38.7% of the time (12,000 denied/31,000 applications received)
- **Reliance upon Housing Assistance:** (United States Census Bureau, 2013)
 - Over one-fourth of housing assistance recipients (28.5%) were non-Hispanic African American.
 - About 1 in 5 people who received housing assistance (19.1%) were of Hispanic origin.
- **Occupied Housing Units—Tenure by Race of Householder (2009):** (United States Census Bureau, 2012)
 - 72.3% of White occupied units were owner-occupied
 - 46.8% of African American occupied units were owner-occupied
 - 50.5% of Hispanic occupied units were owner-occupied
- **Occupied Housing Units—Financial Summary by Selected Characteristics of the Householder: 2009** (United States Census Bureau, 2012)
 - 42.7% of African American house *renters* have monthly housing costs of 40% or more of their income, while only 26.6% of African American house *owners* do

- 44.6% of Hispanic house *renters* have monthly housing costs of 40% or more of their income, while only 29.8% of Hispanic house *owners* do
- In general, 38.0% of house *renters* have monthly housing costs of 40% or more of their income, while only 20.0% of house *owners* do
- **Indicators of Neighborhood/Housing Disadvantage (2009):** (United States Census Bureau, 2012)
 - Shows that, on average, African American and Hispanic *renters* experience more neighborhood disadvantage (serious crime in past 12 months, street noise or heavy traffic, minor/major trash or litter present, etc.) compared to *owners*
 - Also, on average, African American and Hispanic *renters* experience more housing disadvantage (signs of mice/rats, holes in floors, water leakage, etc.) compared to *owners*
- Also see Table 998 for Mortgage Characteristics, showing that African Americans'/Hispanics' mortgage types often correlate with those of households below the poverty level (United States Census Bureau, 2012)

H8. Traumatic Experiences/Adverse Childrearing Experiences

- An estimated 1,559,200 children had a father in prison at midyear 2007; nearly half (46%) were children of African American fathers. (United States Department of Justice, 2008)
- **Parents in federal prison who reported living with their minor children in the month before arrest or just prior to incarceration, by gender (2004):** (United States Department of Justice, 2008)
 - 54.7% of fathers lived with their minor children either in the month before arrest or just prior to incarceration
- In 2007, African American children (6.7%) were seven and a half times more likely than white children (0.9%) to have a parent in prison. Hispanic children (2.4%) were more than two and a half times more likely than white children to have a parent in prison. (Pattillo et al., 2004; United States Department of Justice, 2008)
- As the number of risk factors of the incarcerated father goes up, the likelihood of his children living in foster care or other nonparental care arrangements goes up (Pattillo et al., 2004)
- African American children are most seriously affected by disproportionality in the foster care system, composing only 15% of the child population yet 38% of children in care
 - Hispanic children are slightly overrepresented in child welfare, composing 12.5% of the child population and 17% of the children in care; but there are indications that they are coming into care at faster rates than other children (Chipungu & Bent-Goodley, 2004—data retrieved from United States Department of Health and Human Services)
- **Lifetime prevalence of PTSD, by race (2004-2005):** (Roberts et al., 2011)
 - Highest among African Americans: 8.7%
 - Intermediate among Hispanics: 7.0%
 - Intermediate among Whites: 7.4%
- **Differences in type of traumatic event, by race (2004-2005):** (Roberts et al., 2011)
 - African Americans and Hispanics had higher risk of child maltreatment, chiefly witnessing domestic violence
 - African Americans also had significantly higher exposure to assaultive violence than Whites
 - Whites were more likely to have any trauma, to learn of a trauma to someone close, and to learn of an unexpected death

H10. Treatment of Supervision Response

- **Rates of probation revocation, by race (2014):** (Jannetta et al., 2014)
 - In all four study sites (with sample sizes ranging from 11,923 to 56,011), African American probationers experienced probation revocation at significantly higher rates than white and Hispanic probationers.
 - Revocation rates for African American probationers ranged from 55 percent higher than that of white probationers in Dallas County to over 100 percent higher in Multnomah County (albeit with a low base rate of revocations).
- **Rates of parole violation between African Americans/Whites (2015):** (Mechoulan & Sahuguet, 2015)
 - Study found that being African American was associated with an average increase of 12 percentage points in the probability of parole violation
 - African American parolees have an average violation rate of 44%, compared to white parolees' average violation rate of 32% in indeterminate-sentencing states

Risk factors NOT expected to be correlated with race:

H5. Substance Use

- **Rates of current illicit drug use for racial groups in 2013:** (United States Department of Health and Human Services, 2013)
 - 9.5% for Whites
 - 10.5% for African Americans
 - 8.8% for Hispanics
 - “There were no statistically significant differences in the rates of current illicit drug use between 2012 and 2013 for any of the racial/ethnic groups.”
- **Rates of illicit drug use in lifetime among persons 12 and older, by race (2016):** (United States Department of Health and Human Services, 2013)
 - 53.7% Whites (not Hispanic/Latino)
 - 46.0% African Americans (not Hispanic/Latino)
 - 37.3% Hispanic/Latino
- **Rates of illicit drug use in past month among persons 12 and older, by race (2016):** (United States Department of Health and Human Services, 2013)
 - 10.8% Whites (not Hispanic/Latino)
 - 12.5% African Americans (not Hispanic/Latino)
 - 9.2% Hispanic/Latino
- **Rates of substance use disorder in past year among persons 12 and older, by race (2016):** (United States Department of Health and Human Services, 2013)
 - 7.8% Whites (not Hispanic/Latino)
 - 7.6% African Americans (not Hispanic/Latino)
 - 6.8% Hispanic/Latino

H6. Major Mental Disorder

- **Any mental illness in past year among persons 18 and older, by race (2016):** (United States Department of Health and Human Services, 2013)
 - 19.9% Whites (not Hispanic/Latino)
 - 14.5% African Americans (not Hispanic/Latino)
 - 15.7% Hispanic/Latino

- **Serious mental illness in past year among persons 18 and older, by race (2016):** (United States Department of Health and Human Services, 2013)
 - 4.8% Whites (not Hispanic/Latino)
 - 3.1% African Americans (not Hispanic/Latino)
 - 3.6% Hispanic/Latino

H7. Personality Disorder

- Meta-analysis in 2004 ($N = 8,890$) showed that African Americans and Whites do not meaningfully differ in their levels of psychopathic traits (African Americans exceeded Whites by an average of less than 1 point on PCL-R total score) (Skeem et al., 2004)
- Few studies of psychopathy on Latin American men also report general similarity to European/African American men (Sullivan et al., 2006)
- Item response theory analyses generally show no differential test functioning (Skeem et al., 2004)

H9. Violent Attitudes

- Markowitz & Felson (1998), using a sample size of 386, found weak evidence that race was related to attitudes toward retribution (ex: “Violence deserves violence”), but did not find any evidence that race was related to disputatiousness (ex: “Suppose a man you didn't know cussed you out after you accidentally bumped into him on the sidewalk. Would you: ignore him; reason with him; cuss back at him; or hit or threaten to hit him”) or attitudes toward courage (ex: “It is extremely important not to be a coward in a fight or argument”)
- Nagel et al. (2005), using a sample size of 220, initially found that victims of rape are viewed more sympathetically by Whites than by African Americans, but this racial effect disappeared when controlling for education and income, suggesting that this variance is better explained by differences in SES (this finding may help explain the mixed results reported in prior literature)
- Cao et al. (1997), using a sample size of 3,218, found that there is no significant difference between white and African American males in beliefs in violence in offensive situations (based on questions that attempted to capture support for violent responses to nonphysical threat or unintentional conduct).

Appendix C.

Historical-Clinical-Risk Management 20 Version 3 (HCR-20v3) Measure

Historical Scale (History of Problems with...)

- H1. Violence
 - c. As a Child (12 and Under)
 - d. As an Adolescent (13-17)
 - e. As an Adult (18 and Over)
- H2. Other Antisocial Behavior
 - a. As a Child (12 and Under)
 - b. As an Adolescent (13-17)
 - c. As an Adult (18 and Over)
- H3. Relationships
 - a. Intimate
 - b. Non-Intimate
- H4. Employment
- H5. Substance Use
- H6. Major Mental Disorder
 - a. Psychotic Disorder
 - b. Major Mood Disorder
 - c. Other Major Mental Disorders
- H7. Personality Disorder
 - a. Antisocial, Psychopathic, and Dissocial
 - b. Other Personality Disorders
- H8. Traumatic Experiences
 - a. Victimization/Trauma
 - b. Adverse Childrearing Experiences
- H9. Violent Attitudes
- H10. Treatment or Supervision Response

Clinical Scale (Recent Problems with...)

- C1. Insight
 - a. Mental Disorder
 - b. Violence Risk
 - c. Need for Treatment
- C2. Violent Ideation or Intent
- C3. Symptoms of Major Mental Disorder
 - a. Psychotic Disorder
 - b. Major Mood Disorder
 - c. Other Major Mental Disorders
- C4. Instability
 - a. Affective
 - b. Behavioral
 - c. Cognitive

- C5. Treatment or Supervision Response
 - a. Compliance
 - b. Responsiveness

Risk Management Scale (Future Problems with...)

- R1. Professional Services and Plans
- R2. Living Situation
- R3. Personal Support
- R4. Treatment or Supervision Response
 - a. Compliance
 - b. Responsiveness
- R5. Stress or Coping