RISK LEVEL AND THE MMPI-2 PROFILE OF INDIVIDUALS WITH A HISTORY OF SEXUAL OFFENDING

by

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ABSTRACT

The purpose of this study was to assess whether there is a relationship between sexual recidivism risk and personality in individuals with history of sexual offending. Personality characteristics and risk levels were measured using 4, 8, and 9 MMPI-2 scales and Static-99, respectively. The participants were individuals incarcerated in Alberta for sexual crimes (N = 535) who were enrolled in the Phoenix Treatment Program. Zero-order correlations were examined between MMPI-2 scales and Static-99. A MANOVA showed significantly higher scores on the combined MMPI-2 scales for high risk individuals when compared to the low risk group. A discriminant analyses indicated that the effect sizes of the relationship between the scales 4 and 9 with risk scores were larger than the effect size of the relationship between the scale 8 and risk scores. These findings could benefit clinicians in treatment planning for individuals with previous sexual offending behaviours.

Keywords: male sex offenders, personality characteristics, MMPI-2, recidivism, Static-99

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CHAPTER 1: INTRODUCTION

In the last 30 years, there has been a significant amount of empirical research examining personality characteristics and/or the Minnesota Multiphasic Personality Inventory–2 (MMPI-2; Butcher et al., 1989) profiles among heterogeneous groups of sex offenders, including child molesters, pedophiles, rapists, juvenile sex offenders, female sex offenders, and other groups. Researchers have tried to understand sex offenders' personality profiles, categorize them into different groups, and build specific sex offender typologies (Curnoe & Langevin, 2002; Erickson et al., 1987; Hall, 1989; Hall et al., 1986). Many studies have also investigated factors that contribute to recidivism (Beckett et al., 1994; Hanson et al., 1993; Hanson & Bussiere,1998; Quinsey et al., 1995). Despite the significant amount of research on sex offenders' personality profiles (Armentrout & Hauer, 1978; Babchishin et al., 2015; Panton, 1978; Siegel, 2001), it is still impossible to reliably determine the common personality characteristics among different groups of sex offenders. This being said, the personality construct of psychopathy has been researched among high risk sex offenders (Gendreau et al., 2002; Hanson & Morton-Bourgon, 2004). It has been found that psychopathic offenders with elevated scores on the Psychopathy Checklist-Revised (Hare, 2003), a rating scale that is used to assess psychopathy, are more likely to recidivate than those with less score elevation. Research has also shown that the Psychopathic Deviate scale on MMPI-2 is predictive of sexual recidivism (Hanson & Morton-Bourgon, 2004). However, predicting who is most likely to recidivate is still a great challenge to authorities.

Researchers have also shown that a general antisocial orientation is a risk factor for sexual offending and sexual offence recidivism (Doren, 2004; Hanson & Bussiere, 1998; Hanson & Morton-Bourgon, 2005). In a meta-analysis of 82 recidivism studies, Hanson and Morton-Bourgon (2005) stated that antisocial orientation and deviant sexual preferences are the major

predictors of sexual recidivism among adults and adolescent individuals with a history of sexual offending. Hanson and Morton-Bourgon (2004) stated that antisocial orientation includes characteristics such as unstable lifestyle and history of rule violation. Review of research in this area, therefore, highlighted that sexual deviancy and antisocial tendencies represent two broad domains that strongly associated with sexual crime and sexual recidivism (Doren, 2004; Hanson & Bussiere, 1998; Hanson & Morton-Bourgon, 2005).

Several researchers have also found personality differences between high risk and low risk sex offenders (Coxe & Holmes, 2009; Greene, 2000). As an example, Greene (2000) found that high risk sex offenders show greater levels of psychological distress, unconventional thinking, psychopathology, and psychological maladjustment than low risk sex offenders. Greene also suggested that high risk sexual offenders are more likely to be suggestible, naive, and lack insight into their own and others' behaviours. In another study, researchers found that high risk sex offenders had significantly higher scores on cognitive distortion than the low-risk sex offenders (Coxe & Holmes, 2009). In addition, these authors also stated that three MMPI-2 clinical scales, i.e., Psychopathic Deviate, Paranoia, and Schizophrenia, were shown to be above the standard score of 65 for the high risk sex offenders. Research of this type highlights significant differences for personality variables between groups of high risk and low risk sex offenders. It also emphasizes the importance of further research pertaining to sex offenders' personality characteristics and their risk levels.

Statement of the Problem

Research has shown that sex offenders are a heterogeneous group (Mogavero & Hsu, 2018) and that sex offenders' personality characteristics differ from that of general population offenders (Ahlmeyer et al., 2003). In addition, there are different personality profiles within

heterogeneous groups of sex offenders. Many researchers have also used MMPI scales to compare various sex offender groups in terms of their personality profiles (Armentrout & Hauer, 1978; Panton, 1978; Siegel, 2001). The lack of consistency across different MMPI studies regarding sex offenders' personality profiles highlights the importance of further research in this area. Notably, we are still uninformed about the association between sex offenders' personality characteristics and their sexual offence recidivism. Further review of research on sex offenders' characteristics showed that a general antisocial orientation is a risk factor for sexual offending and sexual offence recidivism (Doren, 2004; Hanson & Bussiere, 1998; Hanson & Morton-Bourgon, 2005). Research on MMPI also showed that the MMPI 49/94 code type is indicative of an antisocial personality profile (Dahlstrom et al., 1972). Having said this, it is possible to investigate the relationship between sex offenders' personality profiles, particularly antisocial orientation, and sexual offence recidivism to assess if high risk sex offenders have higher presentation of antisocial characteristics as compared to low risk sex offenders. A better understanding of sex offenders' personality characteristics and their associations with sexual offence recidivism could potentially improve sexual offender risk assessment and treatment.

Definition of Key Terms

In this section, I provided several definitions related to key terms used in the current study. The definition of sexual offence varies across literature and in different countries. The definition used by researchers and how sexual offence is recorded in different jurisdictions have an implication on the incarceration rate of sex offenders. For instance, there will be a higher incarceration rate for sex offenders if the jurisdiction defines the sex offence as unwanted sexual attention rather than sexual penetration. Therefore, it is crucial to give a unified definition of the term sexual offence in the present paper. Since the participants of this study were convicted adult

male sex offenders who had voluntarily participated in the Phoenix Treatment Program at the Alberta Hospital Edmonton, the definition of sexual offence in the current research comes from the Criminal Code of Canada (Statistics Canada, 1999).

As specified by the Criminal Code of Canada, the term *sexual offence* includes a broad range of criminal acts. These criminal acts could range from "unwanted sexual touching to sexual violence resulting in serious physical injury or disfigurement to the victim" (Statistics Canada, 1999, p. 3). These criminal acts also encompass sexual offences against children, which protect children from sexual abuse (Statistics Canada, 1999).

Personality Characteristics

In this study, I assessed the personality characteristics of sex offenders. Thus, it is important to give a definition of the term *personality characteristic* as I have used it in the current study. The term personality characteristic refers to relatively enduring psychological features that are considered to be risk factors for sexual recidivism. In a study on psychologically meaningful risk factors for sexual recidivism (Mann et al., 2010), some of the risk relevant characteristics identified were sexual preoccupation, deviant sexual interests, offence supportive attitudes, impulsivity, negative social influences, and hostility. I provide a more detailed discussion of psychologically meaningful risk factors in Chapter 2.

Respectful Language

Labeling individuals based on their criminal conviction or past behaviour has been apparent across research and in the field of correctional and forensic psychology. *Sex offender* is one of these labels (Willis, 2018). However, in recent years, there has been a de-labelling movement in correctional or forensic psychology (Willis, 2018; Willis & Letourneau, 2018). The researchers proposed that scholars and professionals should refrain from using the term *sex*

offenders to refer to individuals with a history of sexual offending (Willis, 2018; Willis & Letourneau, 2018). It is argued that the continued use of stigmatizing and pejorative labels, i.e., referring to the individuals as *sex offenders*, may lead to much greater stability in negative perception than what is actually observed in behaviour (Willis, 2018). In the present study, I agree that a less pejorative language (e.g., individuals with a history of sexual offending instead of sex offenders) is important to cultivate. Therefore, when the term sex offenders used in this document, it reflects common usage in much of the literature and I ask the readers to remind themselves that the more complete phrase is the more appropriate one.

CHAPTER 2: LITERATURE REVIEW

This chapter aimed to provide a comprehensive review of existing knowledge on sex offenders' personality characteristics. In particular, I discussed psychological risk factors associated with sexual offending and sexual offence recidivism. In the next section, I introduced the MMPI-2. In the following section, I examined research comparing the sex offenders' typology based on the MMPI. I also provided a literature review addressing different aspects of sex offenders' personality. In this review, I included a discussion of sex offenders' demographic, early developmental factor and family context, common personality characteristics, and recidivism among sex offenders. I also covered an introduction of the Static-99. In the last few pages of this chapter, I explained the theoretical framework of the study which include an explanation of the social cognition theory. I also presented the purpose of the study, research question, and the hypothesis.

The Psychological Characteristics Associated with Sexual Offending

In this section, I examine several psychological risk factors associated with sexual offending and sexual offence recidivism. These risk factors may play an important role when a clinician works through risk assessment and treatment of sexual offenders. As Andrews and Bonta (2006) explained, these risk factors can be divided into two categories of static and dynamic risk factors. Static risk factors can be defined as historical factors that are fixed or very unlikely to change over time (e.g., age or prior criminal history). Static risk factors are not suitable targets of an intervention. In contrast, dynamic risk factors can be defined as psychological or behavioural characteristics of the offenders that fluctuate over time and increases or decreases the risk of reoffending (e.g., distorted thoughts or antisocial attitudes). Dynamic risk factors are usually targeted during an intervention (see also, Mann et al., 2010;

Seto, 2018, Chapter 7).

In an article by Mann et al. (2010), they adopted the concept of psychologically meaningful risk factors instead of dividing them into static and dynamic risk factors. They stated that these risk factors can be explained as offenders' propensities that could or could not be revealed at any particular point of time. In their study, the term propensities is used to explain the psychologically meaningful risk factors to highlight that it is through the interaction with the environment that the problematic behaviour arises. Mann et al. classified the potential risk factors into five categories based on the strength of the evidence that each factor predict recidivism. These five categories include "empirically supported risk factors", "promising risk factors", "risk factors that are unsupported overall, but with interesting exceptions", "risk factors that are worth exploring", and "factors with little or no relationship to sexual recidivism". According to Mann et al., for the empirically supported characteristics, the evidence was sufficient to consider them as risk factors. These empirically supported risk factors included sexual preoccupation, deviant sexual interest (i.e., sexual preference for children, sexualized violence, and multiple paraphilias), offence-supportive attitudes, emotional congruence with children, lack of emotionally intimate relationships with adults (i.e., never married and conflicts in intimate relationships), lifestyle impulsivity, general self-regulation problems (i.e., impulsivity and recklessness, and employment instability), poor cognitive problem solving, resistance to rules and supervision (i.e., childhood behaviour problems, noncompliance with supervision, violation of conditional release), grievance or hostility, and negative social influences. These risk factors were all empirically identified as predictors of sexual recidivism (Mann et al., 2010).

Mann et al. (2010) stated that promising risk factors had less empirical support compared to the empirically supported risk factors. However, these factors yielded some supporting

evidence. The promising risk factors included hostility toward women, Machiavellianism, callousness or lack of concern for others, and dysfunctional coping (i.e., sexualized coping and externalizing). These researchers also discussed risk factors that were unsupported overall but some interesting exceptions were noted. These are the potential risk factors that was not supported in the meta-analytic summary (i.e., showed a small, nonsignificant effect) but there was a significant result in either one large credible study or a study assessing subgroups of sexual offenders. These potential risk factors included denial, low self-esteem, major mental illness, and loneliness. Mann et al. also listed some potential risk factors that are worth exploring in future studies. These risk factors include adversarial sexual orientation, fragile narcissism, and sexual entitlement. According to Mann and colleagues, these risk factors showed some evidence for being considered as risk factors. However, the extent to which these factors can predict recidivism need to be explored further. Finally, Mann et al. included a list of factors with little or no relationship to sexual recidivism. To conclude that these factors are not risk factors, five or more prediction studies must have failed to find a significant result and the estimated effect should have not been more than trivial. These factors included depression, poor social skills, poor victim empathy, and lack of motivation for treatment at intake. According to Mann et al., among all these five categories, the “empirically supported factors” are worthy of being considered as risk factors. These risk factors can also be considered as candidate for psychologically meaningful causal risk factors. However, further research is necessary to determine their causal connection to recidivism.

In some other studies on dynamic predictors of sexual recidivism among sex offenders in the community (Hanson & Harris, 2000; Hanson et al.,2007), researchers provided a list of dynamic risk factors that distinguished sex offenders into sex offenders who reoffended and sex

offenders who did not. These dynamic risk factors included antisocial lifestyles and poor social support, attitudes tolerant of sexual offending, struggle to cooperate with supervision, and inability to regulate sexual thoughts and urges. These risk factors were strongly associated with recidivism, even after the recidivist and nonrecidivist offenders were matched on a set of static risk factors.

In their book, Lalumière et al. (2005, Chapter 6) reviewed studies on the prevalence of psychopathologies among men who commit rape and examined particular psychopathologies that have been suggested to be causal factors in rape. In their review of studies on psychopathology among rapists, Lalumière and colleagues stated that, except for antisocial personality disorder, there is insufficient evidence to conclude that rapists are different from other offenders in the prevalence of any mental disorder (Hudson & Ward, 1997). Investigating potential risk factors, they examined specific or general brain damage, testosterone and other hormonal imbalances, childhood sexual abuse, alcoholism and other substance abuse, and rape as an addiction. In their conclusion, they stated that there is not enough evidence to indicate that rapists are affected by brain damage or mental disorder. However, they stated that there is evidence indicating that childhood history of abuse victimization and history of alcohol abuse are more prevalent among rapists than nonrapists. Lalumière et al. advised that the interpretation of these findings is not clear yet.

To summarize, in this section, I reviewed a list of psychologically meaningful (and potential) risk factors for sexual offending and sexual offence recidivism which have been proposed and investigated by different researchers. The next section provides an introduction to the MMPI-2, a brief summary of MMPI-2 scales and their establishment, a review of specific MMPI scales used to study particular personality characteristics in this thesis project, and a brief

discussion on the critics and strength of MMPI among professionals treating and evaluating sex offenders.

Introduction to the MMPI-2

The MMPI-2 is an updated and restandardized version of the MMPI. MMPI-2 is one of the most widely used psychological assessment tools which is designed to evaluate major personality and emotional issues. The MMPI-2 is based on the respondents' self-reports. This true-false questionnaire assists mental health professionals in the diagnosis of personality or mental disorders (Butcher et al., 1989). The MMPI-2 is a widely researched personality measure that has been used by forensic psychologists in different forensic settings, including sex offenders' court cases and convictions, and in different forensic psychological evaluations, such as offenders' mental health assessment and personality adjustment (e.g., Lally, 2003; Olver et al., 2018).

The MMPI-2 can be administered to one person or to groups of individuals. The MMPI-2 requires that a test taker have eighth-grade reading comprehension. Several internal checks are available as part of the MMPI-2 to assure that the general requirements have been met. The MMPI delivers objective scores and profiles according to national norms. The interpretation of MMPI-2 test scores can be guided by years of research on MMPI component scales and the existing pattern of the interrelationship between these component scales (Butcher et al., 1989).

The MMPI-2 uses client's self report on 567 true-false questionnaire (Butcher et al., 1989; Butcher et al., 2001) which include 8 Validity Scales, 10 Clinical Scales, and 15 Content Scales. More recently, the MMPI-2 has been restructured into 9 Restructured Clinical Scales, the Personality Psychopathology Five Scales, and additional Supplementary Scales. Some of these scales can be used to map patterns of more or less disturbing personality traits and behavioural

styles for different individuals and patients in different settings (Derksen, 2006). To obtain more detailed information on the test, Graham (2006) and Greene (2000) can be considered good secondary resources.

The classic MMPI-2 includes the following 10 clinical scales: scale 1 (Hs: Hypochondriasis), scale 2 (D: Depression), scale 3 (Hy: Conversion Hysteria), scale 4 (Pd: Psychopathic Deviate), scale 5 (Mf: Masculinity-Femininity), scale 6 (Pa: Paranoia), scale 7 (Pt: Psychasthenia), scale 8 (Sc: Schizophrenia), scale 9 (Ma: Hypomania), and scale 0 (Si: Social Introversion) (Butcher et al., 1989).

Scale 1 was developed on neurotic patients who showed extreme somatic concerns and presented variety of somatic pains and complaints, occasionally without any organic basis. Items on this scale reflect the specific complaints and particular symptoms, the self-centered focus of these individuals, and the general bodily preoccupation. Scale 2 was developed on psychiatric patients who have suffered from different kinds of symptomatic depression, such as the individuals with depressive reactions or manic-depressive disorder. Items on this scale shows the clinical status of depressed individuals by reflecting on characteristics, such as hopelessness, feeling of discouragement, and pessimism. It also includes some basic personality characteristics, such as high personal standards, hyper-responsibility, and intransitiveness. Scale 3 was developed on patients who showed sign of sensory or motor disorder without a known organic basis. Some of the items in scale 3 reflects the troubling disorders or the specific physical complaints. Some other items in scale 3 include the denial of these issues in the life of the individual or the lack of social anxiety often observed among individuals with these defenses (Butcher et al., 1989).

Scale 4 was established on individuals who continued to have difficulties with the law

even though they possessed normal intelligence, had no cultural deprivation, and had no serious psychotic or neurotic disorders. Some items of scale 4 reflect the individuals' lack of concern about most of the moral and social standards of conduct. Other items on this scale indicate the individuals' willingness to acknowledge these types of trouble (Butcher et al.,1989). Scale 5 was constructed on men who reached out for psychiatric help to gain control over their homoerotic feelings and to learn strategies to cope with their painful confusion over their gender role. The items comprising scale 5 cover different types of emotional reaction, attitudes, interests, and feelings about relationships, social, work, and hobbies that men and women tend to differ (Butcher et al., 1989).

Scale 6 was developed on patients who showed some form of paranoid condition or paranoid state. The contents of items in scale 6 indicate significant interpersonal sensitivities and the propensity of individuals to misinterpret the intention and motives of people. Characteristics such as self-centeredness and insecurity are also included in the contents of some of these items. Scale 7 was constructed on patients who showed obsessive-compulsive symptoms such as compulsive rituals, extreme fears, and obsessive worries. The item content on this scale covers some of these symptomatic concerns. However, the scale as a whole also reflects the more generalized anxiety and distress, self-blame for things going wrong, presentation of high moral standards, and high strive to control impulses. Scale 8 was developed on psychiatric patients who demonstrated different forms of schizophrenic disorder. The contents of items in this scale include a broad range of special sensitivities characteristics of these individuals, their unusual experiences, and their strange beliefs (Butcher et al., 1989).

Scale 9 was constructed on patients who were in the early stages of a manic episode of manic-depressive disorder. The content of items in this scale indicates some of the behavioural

features of this disorder and its associated characteristic, including high aspirations, over-ambitiousness, and extraversion. Scale 0 was developed by Drake (1946) on a sample of college students whose scores reflected the extreme of the social extraversion and introversion scale in the thinking-Social-Emotional Introversion Inventory (Evans & McConnell, 1941). In scale 0, scores above the mean reflect social withdrawal and desire for solitary pursuits, high level of social shyness, and absence of social assertiveness. In this scale, scores below the mean indicate the opposite tendencies of individuals toward social involvement and participation (Butcher et al., 1989).

In the preceding paragraphs, I described MMPI-2 clinical scales to provide a better understanding of these 10 scales and their intended use. Among these scales, the clinical scales 4, 8, and 9 were selected as three of the variables for use in the present study. In the following paragraphs, I summarized the psychological characteristics captured by these three scales. Given this, I reviewed some general findings on MMPI 49/94 profile and scale 8, and some specific sex offenders' findings on scale 4.

Researchers used MMPI 49/94 code type across many studies and with different populations. For instance, in one study on narcotic addicts divided into two diagnostic groups based on their MMPI profile types (i.e., MMPI 49 sociopathic and MMPI 468 paranoid), researchers compared the emotion profile gained from the patient self-report and the clinical judgement. The result showed that the two patient groups with different MMPI profile types have different emotion profiles (Sheppard et al., 1968). In another study, assessing the usefulness of MMPI-A among delinquent boys in a state training school, the MMPI 49/94 code type was the most common 2-point code (Pena et al., 1996). In addition, in a study assessing the frequency of the MMPI 2-point code types among drug abusers in a psychiatric therapeutic community,

Patalano (1980) found that 48/84 and 49/94 codes were the most frequent 2-point codes. Researchers emphasized that 49/94 and 48/84 MMPI profile types are associated with characteristics such as problem with authority, antisocial attitudes, poor judgement skills, impulsivity, difficulty establishing or maintaining close interpersonal relationship, and poor self-concept (Dahlstrom et al., 1972).

Studies have also been conducted on the scale 8 with various populations. For instance, in a cluster-analytic investigation of MMPI profiles, Espelage et al. (2003) investigated the psychological profiles of serious male and female juvenile offenders. The results showed four distinct cluster profiles among these juvenile offenders. The normative and disorganized clusters were identified among male juvenile offenders, while the impulsive-antisocial and irritable-isolated clusters were identified among female juvenile offenders. Each cluster showed different clinical elevation, except the normative sample that had no clinically elevated scores. The disorganized cluster produced clinical elevations on scales 8, 6, 4, and 7. The impulsive-antisocial cluster showed clinical elevations on scale 4, reflecting delinquent and antisocial behaviours. The irritable-isolated cluster revealed elevations on scales 4, 8, 6, and 7. In another study, using MMPI, its Overcontrolled Hostility scale, and the Buss Durkee Hostility Inventory, Brad et al. (2014) examined the psychological characteristics of homicide offenders, incarcerated group of rapists, and generally violent men. The findings of this study indicated that all three groups had high scores elevation on the MMPI scales 4 and 8. The result of this study is consistent with previous Erickson et al.'s (1987) findings which indicated the 4-8 profile among rapists, and with a meta-analytic study's findings (Craig, 2008) which showed the 4-8 profile in approximately 37% of homicide offenders. Some of the characteristics associated with this profile type comprise anger, impulsivity, lack of empathy, negative emotionality, and a tendency

to blame others (Brad et al., 2014).

The MMPI ability to distinguish sex offenders' personality characteristics from nonoffenders and other offender groups has also been studied across literature. The results of studies on sex offender personality characteristics based on MMPI have not been consistent, except for the scale 4. For instance, Davis and Archer (2010) reviewed 37 articles on the ability of multiscale personality inventories to discriminate between sex offender and nonoffender control groups as well as sex offender and other offender groups. Their review showed that among 37 articles, 33 of them used MMPI to evaluate the psychopathological characteristics of sex offenders. Among the articles reviewed, Davis and Archer found that the scale 4 was the only clinical scale of MMPI that has shown to have moderate to large effect sizes when distinguishing between sex offender and control group or other offender groups. However, they highlighted that the scale 4 elevation among sex offenders may be reflective of general antisocial behaviours and not sex offenders' specific trait or personality characteristics. Davis and Archer also pointed out that another reason for higher scale 4 score could be the chronicity of offending. These researchers stated that there were much less consistent results on elevations of other MMPI basic scales. Davis and Archer stated that that it is difficult to generalize these findings considering the heterogeneity that exist among sex offender population. In the last few paragraphs, I included findings of studies on MMPI 49/94 profile, scale 8, and scale 4. In the next paragraph, I discussed some findings on the effectiveness of the use of MMPI in sex offenders research and treatment programs.

It is important to highlight that Davis and Archer's (2010) review, as well as earlier reviews (e.g., Levin & Stava, 1987), have consistently suggested that the MMPI has not been an accurate and consistent measure to distinguish between characteristics of sex offenders and other

groups of offenders and has not been able to conclude a specific personality profile associated with sex offenders. However, the MMPI remained as invaluable tool in recognizing the important factors required in the sex offender treatment programs. Having said this, review of articles in recent years also indicated that the MMPI-2 has fallen out of favour among professionals and clinicians who provide assessments and treatments to individuals with history of sexual offending. In fact, it has become more common for these professionals to use specialized risk assessment tools instead of MMPI-2 (Kelley et al., 2020). However, to examine the hypothesis in the current study, I used archival data on the MMPI-2 sores of sex offenders. This archival data set were collected during the time that the researchers and evaluators were commonly using the MMPI-2 in the assessment and treatment of sex offenders. Therefore, I assessed the hypothesis in this study using the MMPI-2 scores available as part of the archival data set. In this section, I introduced MMPI-2, its' clinical scales, and their intended use. In addition, I included some research findings on 49/94 MMPI profiles and the clinical scales 8 and 4. I have also discussed findings regarding the effectiveness of the use of MMPI in sex offender assessments and treatments. Additional information on the validity of MMPI-2 will be presented in the method section under the discussion of rigour and validity. Also, MMPI is a personality test which has been frequently used in research on sex offenders' personality profiles. An overview of these findings is presented in the next few pages.

Sex Offenders' Typology Based on MMPI

Sexual offenders are a heterogeneous group of individuals. There have been various typologies proposed for sex offender populations based on sex offenders' offending motivation and offence characteristics (Robertiello & Terry, 2007). The classification schemes applied to sex offender populations separate these offenders into different types such as adult and juvenile

offenders, rapists and child molesters, physical and cyber offenders, male and female offenders, and individuals with various types of paraphilias. There are also typologies that differentiate between subtypes of sex offenders, such as intrafamilial versus extrafamilial child sexual abusers (Terry, 2006). Researchers have also attempted to categorize sex offenders based on their MMPI scale elevations. For instance, some researchers have sought to separate sex offenders from other criminals based on their MMPI scores (e.g., Curnoe & Langevin, 2002). There are also other categorizations of sex offenders based on their MMPI scale elevations, such as MMPI profiles for subtypes of sex offenders. The purpose of this section is to provide an overview of research findings in categorizing sex offenders according to their MMPI profiles and to clarify whether elevations on certain MMPI clinical scales are associated with higher likelihoods of sexual recidivism. I organized the research findings in this section into the following categories: MMPI profiles for distinguishing sex offenders from other criminals, MMPI profiles describing sex offenders in general, MMPI profiles describing a specific group of sex offenders, and MMPI profiles for distinguishing among different groups of sex offenders.

Many studies have compared the MMPI profiles of sex offenders to the profiles of other criminal offenders. An example was a study by Curnoe and Langevin (2002). In this study, researchers utilized the MMPI and the Clarke Sex History Questionnaire Fantasy scales to divide a sample of 228 sex offenders and non-sex offender controls into two groups based on the presence or absence of deviant sexual fantasies. Results showed that the group of sex offenders with deviant sexual fantasies had more clinically significant scores on F (Infrequency) scale, scale 4, scale 5, scale 6, and scale 8 compared to the sex offender group with nondeviant fantasies. These results could suggest that deviant fantasizers are less emotionally stable and more socially alienated than nondeviant fantasizers (Curnoe & Langevin, 2002). Researchers

suggested that scale 4 elevation could reflect more significant interpersonal behaviour and more trouble with the law and authority (Matsuzawa, 2009). Moreover, Brad et al. (2014) mentioned that the 4-8 profile type is associated with characteristics such as anger, impulsivity, lack of empathy, negative emotionality, and a tendency to blame others.

Many researchers have also investigated the MMPI profile among sex offender population in general. For instance, some researchers have tried to determine two-point codes among sex offenders (Erickson et al., 1987; Hall, 1989; Hall et al., 1986), but many of these researchers were not successful in finding one typical MMPI profile among these offenders. These findings suggested that there could be a wide variety of profiles among the sex offender population, indicating that sex offenders are a heterogeneous group (Becker & Murphy, 1998; Erickson et al., 1987; Hall et al., 1986). However, a few researchers were able to find consistent results regarding the two-point code among groups of sex offenders they studied. That is, found an overall 48/84 profile among child and adult sex offenders (Armentrout & Hauer, 1978; Curnoe & Langevin, 2002; Erickson et al., 1987; Hall et al., 1991). Armentrout and Hauer (1978) suggested that the 4-8 code type has been associated with characteristics of impulsive individuals who have poor judgement and low social intelligence, are in conflicts with law and authority, prevent close emotional relationship, and have hostile and irritable behaviours. These characteristics are similar to the empirically supported psychological risk factors found by Mann et al. (2010). Some of these psychological risk factors include lifestyle impulsivity, poor cognitive problem-solving skills, resistance to rules and supervision, lack of emotionally intimate relationships with adults, hostility, and general self-regulation problems. In their article, Mann et al. identified these factors as psychological risk factors because there was enough empirical evidence that these factors predict recidivism. Therefore, these findings could suggest that sex

offenders with 48/84 profiles are more likely to have a higher rate of recidivism.

Other researchers have attempted to assess the MMPI profile among a specific group of sex offenders. For instance, in one study, Mann et al. (1992) examined the MMPI-2 profile of incarcerated pedophiles who participated in three different types of treatment programs: state prison, federal prison, and military confinement facility. The sex offenders in each treatment program came from different educational and social backgrounds. The findings of this study indicated that there was no specific MMPI-2 profile for samples of pedophiles with different educational and social backgrounds. In this study, however, Mann et al. were able to find several consistencies between the sex offenders' MMPI-2 scores in their study and the sex offenders' MMPI scores in previous research findings. One finding by Mann and colleagues, which was consistent with previous research findings, was with regard to scale 4 elevation. Matsuzawa (2009) suggested that at a lower level, scale 4 elevations suggest a nonconforming individual who may occasionally be impulsive and have poor social adjustment and at a higher level, elevations on scale 4 suggest that the individual may have more trouble with the law and authority and more significant interpersonal behaviour. However, as previously mentioned, it is important to note that higher score elevation on scale 4 as found by Mann et al. could be suggestive of general antisocial behaviours among incarcerated pedophiles and not sex offenders' specific personality types (See Davis & Archer, 2010).

Another finding by Mann and colleagues (1992) indicated somewhat frequent elevations on scale 0 and scale 1. However, literature shows that this finding did not receive much attention in previously conducted research on sex offenders' MMPI profiles. Elevations on scale 0 suggest that male pedophiles may have difficulties relating to others, including adult females. These pedophiles may also suffer from social inadequacy and shyness, which could be why they isolate

themselves, withdraw from adult relationships, and use children for their social and sexual purposes (Groth et al., 1982). Scale 1 elevations may suggest an individual who experiences anxiety and presents this anxiety in the form of physical complaints (Graham, 2006). Groth et al. explained that pedophiles could use various coping mechanisms, such as somatization, due to their tendency to internalize emotional problems, which could help them avoid confronting anxiety associated with their sexual deviance. However, the findings that the scales 0 and 1 were elevated among sex offenders was not consistent across different studies. Moreover, characteristics associated with elevations on these two scales, such as difficulties relating to others, social inadequacy, anxiety, and physical complaint, are not specific to sex offenders and could be seen among other individuals suffering from anxiety or internalizing behaviours.

In one of the earlier studies assessing MMPI profiles among a specific group of sex offenders, McCreary (1975) attempted to identify different subgroups among child molesters. This study showed that child molesters with prior arrests have shown mean profile elevations on scales 4 and 8, while child molesters without any prior arrests showed no mean profile elevations. Instead, the group with no prior arrests showed significantly lower scores on scales 1, 3, 4, and 8. According to Graham (2006), elevation on scale 4 may represent that the individual has difficulty incorporating the values and standards of society, and elevation on scale 8 may represent a schizoid lifestyle that includes feelings of isolation and alienation, unacceptance by peers, and being misunderstood. In the above study, characteristics of child molesters associated with higher elevations on scales 4 and 8 seemed to be similar to some of the empirically supported psychological risk factors for sexual recidivism found by Mann et al. (2010). These psychological risk factors were sexual preference for children, emotional congruence with children, resistance to rules and supervision, and lack of intimate relationships. These findings

could suggest that child molesters, as one subgroup of sex offenders, had similar characteristics to the larger group of sex offenders in Mann et al.'s article.

Another study on examining personality characteristics based on MMPI among a specific group of sex offenders was a study by Hall et al. (1986). Hall and his colleagues assessed the ability of the MMPI to describe a hospitalized male sex offender population (n = 406) who had sexually assaulted children and to divide this offender population based on their offence characteristics. The results of their study showed that the MMPI scales 4 and 8 were significantly elevated in the mean profile of this sex offender group. Elevations on scales 4 and 8 among sex offenders have shown to be consistent across literature.

The literature has also shown how MMPI has been used to compare different heterogeneous groups of sex offenders. An example of this is an early study by Panton (1978), which used MMPI to compare child rapists (n = 20), adult rapists (n = 30), and nonviolent child molesters (n = 28). The findings of this study showed that nonviolent child molesters were lower on scales 6, 8, and 9 and remarkably higher on scales 4, 2, and L (Lie) compared to the child and adult rapist groups. These profile characteristics may suggest that nonviolent child molesters have feelings of unworthiness and insecurity, self-doubt, low self-esteem, problems relating to others, and forming meaningful relationships. In this study, all three groups showed scale 4 elevation, but the two rapist groups demonstrated higher scores on scales 8 and 9 as well. The two rapist groups' MMPI profiles could indicate self-centredness, poor impulse control, self-isolation, and inhibited aggression. Some of these characteristics were similar to the psychologically meaningful risk factors found by Mann et al. (2010) which include psychological characteristics among sex offender population including general self-regulation problems, lack of emotionally intimate relationships with adults, and lifestyle impulsivity. Mann

et al. indicated that there was strong empirical evidence that these psychological risk factors predict recidivism. The Findings by Panton (1978) and previous research findings have consistently shown that elevation on scale 4 and the 4-8 MMPI profiles were common among different groups of sex offenders (Armentrout & Hauer, 1978; Brad et al., 2014; Erickson et al., 1987).

In summary, review of articles in this section have shown that different personality characteristics have been found among sex offenders. I have also stated that researchers categorized sex offenders into different groups to compare and study these personality characteristics. These groups consisted of MMPI profiles for distinguishing sex offenders from other criminals, MMPI profiles describing sex offenders in general, MMPI profiles describing a specific group of sex offenders, and MMPI profiles for distinguishing among different groups of sex offenders. The results of these studies showed some tendencies toward consistent findings on several personality characteristics among sex offenders. The most common personality and social characteristics among these individuals consisted of trouble with the law and authority, problems relating to others and forming meaningful relationships, impulsivity, anger, negative emotionality, poor judgement, low social intelligence, hostility, irritability, and antisocial attitudes.

These personality characteristics among sex offenders have also shown to be similar to the psychologically meaningful risk factors found by Mann et al. (2010). Mann and colleagues stated that these psychologically meaningful risk factors predict sexual recidivism among sex offenders. They listed these psychological risk factors as lifestyle impulsivity, poor cognitive problem-solving skills, resistance to rules and supervision, lack of emotionally intimate relationships with adults, hostility, and general self-regulation problems. The psychological risk

factors found by Mann et al. display a replication and extension of personality characteristics found among sex offenders in this section. In the article by Mann et al., these authors showed that there is strong evidence that these psychologically meaningful risk factors predict sexual recidivism. Therefore, it is expected that the personality characteristics found among sex offenders in this section will predict sexual recidivism.

In the above studies, we have also seen that these personality characteristics were associated with specific clinical scales of MMPI. The most common findings in the above studies were the scale 4 elevation. The personality characteristics associated with scale 4 elevation included individuals who had more trouble with the law and authority, more significant interpersonal behaviour, and more problems relating to others and forming meaningful relationships. In addition, in the above studies, the researchers showed that that 4-8 profile was one of the most common MMPI profiles among sex offender populations (Armentrout & Hauer, 1978; Brad et al., 2014; Erickson et al., 1987; Panton, 1978). The personality characteristics associated with 4-8 MMPI profile consisted of impulsivity, anger, lack of empathy, negative emotionality, poor judgement, low social intelligence, hostility, irritability, lack of close emotional relationship, and conflict with the law and authority. Furthermore, as we have seen so far, the antisocial orientation, reflecting 49/94 MMPI profile, has shown to be a common factor among different groups of sex offenders. The characteristics associated with 4-9 MMPI profile could be listed as problem with authority, antisocial attitudes, poor judgement skills, poor impulse control, self-isolation, poor self-concept, and difficulty establishing or maintaining close interpersonal relationship (Dahlstrom et al., 1972). Therefore, in this study, the clinical scales 4, 8, and 9 on MMPI can be used to assess these personality characteristics among sex offenders.

In previous paragraphs, I showed the common personality characteristics among sex

offenders. Also, I stated how the psychological risk factors found by Mann et al. (2010) were a replication and extension of these personality characteristics. I also indicated how these personality characteristics were associated with specific clinical scales of MMPI. It was shown that the elevation on scale 4 and the 48/84 and 49/94 MMPI profiles are the most common MMPI personality profiles among sex offenders. Throughout this paper, it has been stated that the antisocial orientation, reflecting 49/94 MMPI profile, is predictive of sexual recidivism (Doren, 2004; Hanson & Bussiere, 1998; Hanson & Morton-Bourgon, 2005; Quinsey et al., 1995). For instance, in a meta-analysis study, Quinsey et al. (1995) suggested that unstable and antisocial lifestyle was predictive of different kinds of sexual recidivism, such as rape, child molestation, exhibitionism, and pornography. Based on the findings summarized in this section, we can conclude that higher elevations on scales 4, 8, and 9 is associated with higher likelihoods of sexual recidivism among different groups of sex offender populations. To better understand the findings presented in the last few paragraphs of this section, I have provided these findings in Table 1 below.

Table 1

Sex Offenders' Personality Characteristics and Psychological Risk Factors Associated with Specific MMPI Scales or Profiles

MMPI scale or profile	Personality characteristics	Psychological risk factors
Scale 4	1. Problems relating to others and forming meaningful relationships 2. Trouble with the law and authority 3. General antisocial behaviours 4. Impulsivity 5. Poor social adjustment 6. General antisocial behaviours 7. Feelings of unworthiness and insecurity 8. Self-doubt and low self-esteem	1. Lack of emotionally intimate relationships with adults and hostility 2. Resistance to rules and supervision 3. General self-regulation problems 4. Lifestyle impulsivity 5. Poor cognitive problem-solving skills 6. Any deviant sexual interest and negative social influences
Profile 48/84	1. Angry, hostile and irritable behaviours 2. Impulsivity 3. Lack of close emotional relationship 4. Poor judgement and low social intelligence 5. In conflicts with law and authority 6. Negative emotionality 7. Lack of empathy and Self-centredness 8. Tendency to blame others	1. Hostility 2. Lifestyle impulsivity 3. Lack of emotionally intimate relationships with adults and hostility 4. Poor cognitive problem-solving skills 5. Resistance to rules and supervision 6. General self-regulation problems 7. Recklessness
Profile 49/94	1. Problem with authority 2. Poor judgement skills 3. Impulsivity 4. Difficulty establishing or maintaining close interpersonal relationship 5. Inhibited aggression 6. Antisocial attitudes 7. Poor self-concept	1. Resistance to rules and supervision 2. Poor cognitive problem-solving skills 3. Impulsivity and recklessness 4. Lack of emotionally intimate relationships with adults 5. General self-regulation problems 6. Recklessness

Note. The psychological risk factors were found by Mann et al. (2010).

Characteristics of Sex Offenders

In the following section, I have reviewed research on sex offenders' characteristics. It is important to note that this review is not comprehensive, but it addresses significant findings on sex offenders' demographics, early developmental factors and family context, common personality characteristics, and recidivism. Each section is provided in more detail below.

Demographic

In this section, I discussed important findings concerning sex offenders' demographics, including the sex of their victims, the presence of psychopathology, and the comparison of their offence to other offences. Classifying child molesters by the sex of their victims was one of the earliest methods of classification receiving empirical validation (Prentky, 1999). Grubin and Kennedy (1991) found that sex offenders perpetrating against boys were a distinct group. They found that sex offenders who perpetrated against boys were more likely to be involved in paraphilic behaviour, frotteurism, and exhibitionism in addition to their primary offence. Furthermore, these sex offenders were more likely to perpetrate against a stranger and to have past sexual offence convictions. Several other studies used the sex-of-victims approach, but the results across studies were not consistent. For instance, according to two studies, which used the sex-of-victims approach in the prediction of recidivism with offenders perpetrating against boys or both boys and girls, the authors found that these offenders had more victims and were more likely to reoffend than the offenders who perpetrated against girls only (Beckett et al., 1994; Hanson et al., 1993). However, another study by Craig et al. (2006) found that sex offenders who perpetrated against girls reported having more than double the victims when juxtaposed to those who perpetrated against boys. This finding was in contrast with the previous two studies. This inconsistency may be because boys were less likely to report same-sex assaults. Besides,

according to a study by Prentky et al. (1997), in some cases, the assault of a child of the "less preferred" sex is likely to happen due to certain situational factors, such as substance abuse.

Research has shown that sex offenders compared to nonsex offenders have distinct characteristics and different psychosocial backgrounds (Van Wijk et al., 2007; Craig et al., 2006). A study done by Van Wijk and colleagues (2007) examined the relationship between particular offence categories and psychiatric disorders among young male offenders. In their study, they compared a subgroup of adolescent male sex offenders with violent and nonviolent nonsex offenders on psychiatric disorders and a few sociodemographic and individual characteristics. The researchers concluded that all sex offender subgroups were somehow different from nonsex offender groups. Specifically, Van Wijk et al. found that drug and alcohol abuse were associated with nonsexual offending. This finding was consistent with Craig et al.'s (2006) findings: Among three different populations of sexual, violent, and general offenders, the violent and general offenders were more likely to have a history of substance abuse.

In another study, Chantry and Craig (1994) assessed personality differences among three groups of convicted violent offenders, including child molesters, rapists, and nonsexually aggressive felons. Utilizing the Millon Clinical Multiaxial Personality Inventory to assess personality differences, Chantry and Craig (1994) found that adult rapists were not clinically elevated on the Antisocial Scale. The authors also found that both groups of sexual offenders were more passive-aggressive than the other group. However, child molesters were also more depressed, dependent, and anxious than rapists and nonsexually aggressive felons (Chantry and Craig, 1994; see also Lev-Wiesel & Witzum, 2006). Furthermore, rapists and nonsexually aggressive felons were more narcissistic than child molesters. This study's findings were similar to previous MMPI research findings that rapists' personality characteristics were more similar to

those of nonsexually aggressive felons than those of child molesters (Chantry & Craig, 1994). The research findings, as summarised so far, have demonstrated that there are distinct differences between sex offenders and nonsex offenders, and there are significant characteristics differences among the heterogeneous group of sex offenders, such as rapists and child molesters. To better understand how sex offenders' personality characteristics will lead them to a particular deviant behaviour, it is crucial to consider their developmental factors. In the next section, I aim to present relevant research findings on this topic.

Early Developmental Factor and Family Context

Research on sex offenders' personality characteristics and sex offending behaviours demonstrates the importance of early developmental factors and the family contexts (e.g., exposure to violence, family income, disturbed parent-child relationships, absence of strong family ties, and history of child abuse) among this population (Hayes, 2009; Lang & Langevin, 1991; Lussier and Healey, 2010). Here, I present several findings that explore some of these factors. Several studies have examined early developmental factors in lives of sex offender population and their relation to sex offending behaviour. Hays (2009) assessed the relationship between childhood abuse, history of psychiatric and psychological symptoms, and patterns of violence in later offending. Hays did this study on sex offenders with intellectual disabilities and with nondisabled sex offenders. The results showed that offenders with intellectual disabilities were more likely to report being victims of physical abuse during childhood than nondisabled offenders. Furthermore, the study showed that aggressive behaviours during adulthood were related to a history of childhood physical abuse or exposure to family violence. Specifically, offenders in the intellectual disabilities group with a history of childhood physical abuse during their developmental years were significantly more likely to have threats of violence, use of

violence, and use of a weapon during the sexual offense (Hays, 2009).

In another study on early developmental factors and later sexual offending, Lussier and Healey (2010) searched for the developmental origins of sexual violence. They examined if physically aggressive children were more likely to have sexually deviant behaviours. Using semi-structured interviews completed by the primary caregiver and the child, the authors found that the level of physical aggression in early childhood paralleled the levels of sexual behaviours displayed by these preschool children. Moreover, this study showed that children who had the most difficulties learning to inhibit aggression were also more likely to have difficulties learning to restrain sexual behaviours (Lussier & Healey, 2010).

In another study, using Clarke Parent-Child Relations Questionnaire (PCR) on sex offenders, Lang and Langevin (1991) found that offenders who had a history of physical and sexual abuse as children have shown more disturbance in father relationships compared to offenders who had no history of abuse during their childhood. Furthermore, sex offenders who had a history of victimization in their childhood perceived their parents to be less affectionate and less competent. Also, the offenders who used force in their offending differed from other offenders in that they were more aggressive toward their fathers as children (Lang & Langevin, 1991). The above mentioned studies on early developmental factors and later sexual offending highlight that aggression in childhood could play a role in sexual aggression in adulthood (Hayes, 2009; Lang & Langevin, 1991; Lussier & Healey, 2010).

In the above studies, the authors also assessed several factors in the family environment in which sex offenders were raised. Some of these factors include exposure to violence, family income, disturbed parent-child relationships, and absence of strong family ties. For instance, in the above study by Hayes (2009), the author revealed that exposure to violence during childhood

was related to the development of later psychological symptoms in both groups of sex offenders. Hayes found that offenders with intellectual disabilities were more likely to be diagnosed with psychological and psychiatric disorders, such as depression, post-traumatic stress disorder, suicidal ideation, and attempted suicide when they had a history of exposure to family verbal conflict and prior sexual abuse; whereas among nondisabled sex offenders, family violence and history of childhood physical abuse were related to a higher rates of psychological disorders such as depression, anxiety disorder, and attempted suicide (Hayes, 2009).

In another study by Lussier and Healey (2010), they found that male preschoolers who come from low-income families and have an assessment or treatment referral due to an externalizing spectrum disorder were more likely to exhibit high levels of sexual behaviour and physical aggression. Lang and Langevin (1991) showed that aggressive sex offenders could be distinguished from nonaggressive sex offenders by the degree to which they experienced disturbed parent-child relationships. Using PCR, sex offenders were compared on the parent-child relationships. Contrary to previous findings that mother-son relations were disturbed among sex perpetrators who perpetrate against children, the result of PCR in this study revealed that sex offender groups had more clinically significant disturbances in father-son relations than the control group. Additionally, the Father Strictness scale on PCR revealed a clinical significance in fathers' aggressiveness toward their sons (i.e., offender). The fathers of these offenders were also strict and aggressive to other individuals within the family unit.

Many sex offenders, particularly child molesters, report having been sexually abused in the past. This is true of male sex offenders (e.g., Craissati et al., 2002; Thomas et al., 2013) and there is evidence that many female sex offenders have also been sexually abused as children (e.g., Christopher et al., 2007; Jennings, 1994; Tardif et al., 2005). In a meta-analysis study of 17

studies, Jespersen and colleagues (2009) compared the rate of sexual and other forms of abuse among 1,037 sex offenders and 1,762 nonsex offenders. They found that the prevalence of sexual abuse history among adult sex offenders is higher than among nonsex offenders. However, the two groups did not significantly differ in terms of physical abuse history. Besides, they observed that there was a significantly higher prevalence of sexual abuse history among sex offenders against children compared to sex offenders against adults, while they found the opposite for physical abuse.

Over the past 30 years, more researchers have investigated the presence of mental health consequences and the potential risk of psychopathology for offenders who have a history of child sexual abuse. In one study, offenders with a history of having been sexually abused in the past suffer from more adverse effects, including psychopathology and family dysfunction than offenders without abuse history (Cooper et al., 1996). In this study, Cooper et al. found that the abused offenders appeared to be more emotionally unstable, more psychologically disturbed, and less socially competent than nonabused offenders. They also experienced more suicide ideation and more disturbed family backgrounds. In another study, Schreiber and Lyddon (1998) found that the long-term effects of child sexual abuse include mental health problems such as anxiety, suicidal behaviour, poor self-esteem, depression, relationship difficulties, and a tendency toward substance abuse. In a study by Holmes (1994), he stated that boys who did not receive any sexual abuse treatment during their childhood are likely to become involved in crime, suicide, drug use, and sexual abuse. Given these studies' findings, mental health consequences differ significantly between abused and nonabused offenders.

Common Personality Characteristics

Research has been conducted on the personality characteristics of male sexual offenders.

Even though research findings showed that the personality characteristics of sex offenders are considerably diverse, many of these characteristics tend to overlap or cluster together among this population (McCreary, 1975; Murphy & Peters, 1992). Researchers have found that personality dysfunction and psychological disorders among sex offenders play a crucial role in their sexual offending (Ahlmeyer et al., 2003; Murray, 2000). Most of the research available on the sex offender population has evoked the notion that psychological problems and personality disorders are prevalent (Ahlmeyer et al., 2003; Bogaerts et al., 2004; Craig et al., 2006). For instance, in one study, Fitch (2003) found that in a large sample of male sex offenders (n = 2500), the most frequent psychiatric diagnosis was personality disorders. In fact, among these offenders, 75% met the criteria for a personality disorder.

Research has shown that certain personality disorders, such as antisocial personality disorder (APD) and borderline personality disorder (BPD), are more prevalent among sex offenders. In a study by Borchard et al. (2003), the authors found that among 47 sexual offenders who participated in their study, 72% of offenders had at least one personality disorder and that APD was one of the most common personality disorders. Some of the APD characteristics noted were socially deviant behaviours, lack of impulse control, and lack of concern for others. Other researchers found APD diagnosis among 50%–80% of male sex offenders (Abracen et al., 2008). In another study, Howard et al. (2008) sought to identify the personality and criminal history features related to the combination of APD and BPD. In their study, among a sample of 224 community residents with DSM-diagnosed personality disorder (PD), their findings indicated that those having APD and BPD were more likely to have been convicted for violence and a custodial sentence, had a higher presentation of traits such as anger and impulsivity, and were more likely to have a history of aggression. Howard and colleagues concluded that APD and

BPD had the broadest range of criminal activities and these traits were likely to be overrepresented in high-secure forensic samples. In another study, Laulik et al. (2007) analyzed a small sample of internet sexual offenders (n = 30) for the presence of any psychopathology and maladaptive personality functioning. Utilizing Personality Assessment Inventory, researchers found significant correlations between hours accessing child pornography and the Personality Assessment Inventory scales assessing Schizophrenia, Borderline features, Depression, and Warmth.

There is some research evidence that highlights sex offenders' self-centredness and their lack of empathy for their victims. For instance, in one investigation, Barnard et al. (1992) investigated convicted sex offenders (n = 52) in a forensic treatment centre. They reported that many offenders had personality disorders that were narcissistic in nature. Moreover, these offenders exhibited exploitation in relationships and a lack of empathy. Another study by Anderson et al. (1979) analyzed MMPI profiles of 92 sex offenders institutionalized for psychiatric evaluation. They found three personality types characterized by profile peaks on scales F (Infrequency) and Sc, scales Pd and Ma, scales Pd and D. These researchers also suggested that these incarcerated offenders had severe cognitive distortions about their crimes' effects on their victims. The severe cognitive distortion could be why sex offenders may lack empathy for their victims. Finally, Weber (1999) stated:

> People who pursue abusive sexual relationships have become so centered on their own needs that they have lost an understanding of healthy intimacy. This 'self-centeredness' is perhaps the greatest developmental issue associated with sexual offending and is one of the major obstacles we work through in giving sex offenders the skills they need to have healthy relationships. (p. 314)

This quote indicates that sex offenders lack appropriate skills to develop healthy and intimate relationships. The high degree of self-centeredness could have led them to become too self-preoccupied and being too self-preoccupied may have prevented them from considering others' needs. Thus, we could expect to witness some lack of empathy from sex offenders toward their victims.

Recidivism Among Sex Offenders

According to different researchers, there are several predictors of sexual recidivism. In one meta-analysis, Hanson and Bussiere (1998) found that antisocial lifestyle and deviant sexual interests are the largest predictors of sexual recidivism. In another meta-analysis, researchers found similar results; that is, an unstable and antisocial lifestyle was predictive of different kinds of sexual recidivism (Quinsey et al., 1995), such as rape, child molestation, exhibitionism, pornography, and other kinds of sexual recidivism. Quinsey and colleagues indicated that these recidivists were expected to have impulsive behaviour, poor employment history, and frequent rule violations. In the other meta-analysis study, Hanson et al. (2002) suggested that treatment could account for a lower rate of recidivism among sex offenders. In their study, sex offenders who had undergone some forms of treatment had a 5-year recidivism rate of 10%, while those with no treatment had a 5-year recidivism rate of 17%. However, in this study, selection bias could be accounted for some difficulties in estimating treatment effectiveness and lower recidivism rates among sex offenders with some forms of treatment. It is possible that sex offenders who have attended or have completed their treatment program also had more cooperative characteristics.

In another meta-analysis study, Gannon et al. (2019) examined specialized psychological offense treatments and reduction in rate of recidivism. Gannon and colleagues found that such

treatments were associated with reductions in recidivism, for both offense specific and general recidivism. In addition, in a systemic review and meta-analysis study done by Schmucker and Lösel (2017), they compared official recidivism rates of sex offender groups who received treatment with those without the respective treatment. Schmucker and Lösel found that treatment significantly reduced recidivism rates among treated sexual offenders. They observed reduction in recidivism for both sexual recidivism and general recidivism. However, they emphasized that it is hard to draw any conclusion on the overall efficiency of these treatment programs based on the results of the individual studies.

Research has also shown that certain groups of sex offenders are more likely to recidivate compared to other groups. For instance, Hanson & Morton-Bourgon (2004) stated that offenders who were interested in children, those who have better abilities to relate to children, those with general paraphilias (e.g., exhibitionism and voyeurism), and those who had conflicts with their intimate partners were more likely to reoffend than other groups of sex offenders. In another study, Craig et al. (2006) assessed differences in personal history, offence characteristics, and recidivism rates in three different groups of offenders (i.e., sexual, violent, and general offenders). The researchers used the Special Hospitals Assessment of Personality and Socialization to differentiate personality characteristics between the three groups. They found significant differences between sexual, violent, and general offenders. In their study, violent offenders were different from the other group of offenders because they were more likely to have higher recidivism rates.

Introduction to the Static-99

Static-99 (Hanson & Thornton, 1999) is a 10-item actuarial assessment instrument used to assess the long-term potential for sexual and violent recidivism based on objective, and

accessible information, such as age, victim characteristics, and criminal history information. The Static-99 total score categorizes into four risk levels which include low (score 0 and 1), moderate-low (score 2 and 3), moderate-high (score 4 and 5), and high (score 6 and 6 plus) (Hanson & Thornton, 1999, Appendix I). The Static-99 tool was developed from an empirical program of research that investigated historical variables that predicted recidivism and, there were periodical changes and revisions to the Static-99. A revised version of Static-99, called Static-99R, was released in 2009 (Helmus, 2009; Helmus et al., 2012). Static-99 was revised because of ongoing empirical research indicating the need to better explain the relationship between advanced age and reduced potential for sexual recidivism, and to deliver more updated norms from more recent samples (Hanson & Anderson, 2021). The authors of Static-99 no longer recommend its use and they suggest the use of the revised version. In addition, these authors no longer support the four risk levels identified for Static-99 (Hanson & Anderson, 2021).

The archival data used in this study indicated participants' risk scores were obtained from both versions of Static-99 (i.e., the Static-99 and the Static-99R) with the risk scores of a large majority of participants being in the Static-99 version. Through a data clean-up process, I assured that all participants risk scores were converted to one version of this risk assessment tool, the Static-99 version. Although the Static-99 is no longer supported by the tool's authors and the Static-99R is currently a preferred risk assessment tool, the Static-99 scoring system was used in this study to minimize the introduction of errors during the code conversion procedures.

Static-99 scores can be interpreted as risk to reoffend for sexual offenders. To assess participants' rate of recidivism, we would prefer to access the legal records of sex offenders indicating whether or not each of these offenders had reoffended. However, since in this study

access to court data was not available, the risk levels defined by the Static-99 scores were used as a plausible proxy measure of sexual recidivism risk. In the following paragraphs, I describe some findings on reliability and validity of Static-99.

Regarding the reliability of Static-99 scores, most studies indicated excellent levels of reliability in applied settings as well as in research (Hanson & Morton-Bourgon, 2009). Helmus (2009) reviewed 11 studies reporting interrater reliability and found that interrater reliability was consistently high indicating correlations ranging from .86 to .92 and intraclass correlations (ICCs) ranging from .84 to .95. In another study, a large field reliability study which was done on 281 offenders evaluated for Sexually Violent Predator commitment in Florida, Levenson (2004) found strong rater agreement (ICC = .85) in Static-99 total scores. In another field study which compared the rating of clinicians in the field and researchers on 100 adult males sex offenders who completed an outpatient treatment program, Storey et al. (2012) found outstanding agreement for total scores on Static-99 (ICC = .92) as well as most of the individual items yielding intraclass correlations ranging from .56 to .89.

This paragraph provides findings on validity of Static-99 or Static-99R risk assessment tools. The Static-99 and the interpretative materials for the Static-99 were originally designed to assess recidivism rates for sexual and violent reoffending. Since then, due to further empirical findings on these assessment tools and better understanding of individuals with a history of sexual offending, the researchers' views on these risk tools have evolved. The Static-99R was developed as the most recent Static-99 risk tool for sexual recidivism. Static-99R indicates three quantitative risk indicators which include percentile ranks, expected recidivism rates, and risk ratios. It also places individuals into one of five standardized risk levels (Hanson & Anderson, 2021). Research investigating the construct validity of the Static-99R items (Brouillette-Alarie et

al., 2016) lead researchers to not use violent recidivism rate tables for Static-99R. Instead, they suggested the use of Brief Assessment of Recidivism Risk-2002R (BARR-2002R; Babchishin et al., 2016) for evaluating the violent and general recidivism.

In one article, examining the latent construct of Static-99, Brouillette-Alarie et al. (2016) investigated the link between the historical risk factors of the Static-99R to the psychological characteristics of offender. They found that the Static-99R has three broad factors. These constructs included persistence/paraphilia related to sexual crime specific factors, youthful stranger aggression related to young age and offence seriousness, and general criminality relate to diversity and significance of criminal history. In Brouillette-Alarie et al.'s study, the general criminality construct was construed as antisocial behaviour and/or psychopathy. This finding was also consistent with previous research findings (Allen & Pflugradt, 2014; Barbaree et al., 2009; Barbaree et al., 2006; Doren, 2004). A general antisocial orientation is associated with characteristics such as unstable lifestyle and history of rule violation (Hanson & Morton-Bourgon, 2004). An APD is also associated with psychological characteristics such as socially deviant behaviours, lack of impulse control, and lack of concern for others (Borchard et al., 2003; Hare, 2003; Patrick et al., 2009). Highlighting these antisocial characteristics, it is not surprising how different researchers found antisocial orientation as one of the largest predictors of sexual recidivism (Hanson & Bussiere, 1998; Quinsey et al., 1995).

Theoretical Framework

There are several theoretical frameworks that aim to explain why sexual offenders commit sexual offences. The theories of sexual offence include, but not limited to, psychodynamic theories, behavioural theories, neurohormonal disturbances theories, maladaptive interpersonal functioning theories, attachment theories, general-criminogenic theory,

psychoanalytic theory, object relation theory, cognitive distortion theory, and social cognition theory. A review of the literature showed that there is a paucity of empirical research to develop an integrating theoretical framework that could explain the nature of sex offenders' distorted thinking and maladaptive beliefs (Johnston & Ward, 1996). However, several researchers and clinicians have emphasized the importance of these distorted thinking and maladaptive beliefs in justifying and enabling sexual offences (Abel et al., 1984; Marshall & Barbaree, 1990; Murphy & Stalgaitis, 1987). Among the theories mentioned above, the social cognition theory was proposed by some authors. In the following paragraphs, I explain this theory as one relevant theoretical framework to the present study.

Johnston and Ward stressed the social cognition theory as a significant theoretical framework in the area of sexual offending. The social cognition theory can be defined as the study of social knowledge, i.e., its structure and contents, and cognitive processes, i.e., the acquisition, representation, and retrieval of information, which facilitate understanding of individual's social behaviours and the contributing factors that may lead to those behaviours (Johnston & Ward, 1996). Johnston and Ward emphasized that the cognitive processes involved in the initiation, maintenance, and justification of sexual offending are critical in understanding sexual offenders. In assessing the tendency of some men committing a sexual offence, these researchers highlighted the most important cognitive processes that could be the main contributing factors in the act of sexual offence. These contributing factors include social information processing, mental control (or employing heuristics), suppression of unwanted thoughts, and affective and motivational influences.

According to Fiske & Taylor (1984), adopting a social cognition perspective has led researchers and psychologists to focus more on process analysis. Thus, it is specifically

important to recognize the critical stages of social information processing and highlight the particular stages that could be impacted by cognitive distortion. Based on the literature review of sex offenders, the process analysis could be considered as sex offenders' nature of beliefs about their sexual offence behaviours and the target of these behaviours, and the ways that these beliefs could be different from those of nonoffenders (Johnston & Ward, 1996). Johnston and Ward discussed the information processing across the sexual offence chain (i.e., the planning, execution, and justification of sexual offences). In the following section, I draw information from Johnston and Ward's discussion of social cognition theory, particularly their investigation of social information processing.

Social Information Processing

According to Johnston and Ward (1996), one of the predominant perspectives in the social cognition literature is the discussion of the social perceiver, highlighting the social perceivers as individuals who have limited capacity to process information and lack sufficient processing resources to assess the social information processing rigorously. As a result, as Fiske and Taylor (1984) discussed, the social perceivers could be regarded as cognitive misers; that is, the social perceivers attempt to simplify complex problems, to utilize the short-cut processing strategies wherever possible, and to hold on to their limited processing resources.

The discussion of social information processing highlights the effect of mental shortcuts strategies on the processing of information. It also highlights the situations under which individuals are most likely to use such processing strategies (Johnston & Ward, 1996). There are different kinds of shortcut strategies. However, the main focus of my discussion on shortcut strategies is on stereotyping literature. Hamilton and Sherman (1994) define stereotypes as the cognitive structures indicating the expectation, belief, and attitudes that an individual carries

about a particular social group and as a mental shortcut strategy accessible to the social perceivers. Additionally, I briefly present the concept of the well-learned sexual behavior pattern and its relevant factors as another mental shortcut strategy.

Johnston and Ward (1996) argued that the impact of stereotypes on information processing is not limited to sex offenders. This can be evident in studies that examine stereotyping and sexual offending. For instance, Check and Malamuth (1983) showed that the high-stereotyping nonoffending males and rapists had similar sexual arousal patterns when the researcher presented them with some kinds of rape depictions. This study showed that the impacts of stereotypes on information processing were not different between the high-stereotyping nonoffenders and the rapists. However, sex offenders could be considered as social perceivers who employ stereotypes as a mental shortcut strategy.

Social perceivers' limited capacity to store information and their tendency to use mental shortcut strategies could impact all facets of social information processing, from the interpretations of information to the inferences and judgments made based on that information (Johnston & Ward, 1996). Stereotypes direct information processing once they are activated. As a result, the perceivers sought to make any judgments or inferences in an expectancy-consistent manner (Bodenhausen, 1988; Bodenhausen & Lichtenstein, 1987; Bodenhausen & Wyer, 1985). This process is considered selective information processing and it is further broken down to selective interpretation, selective attention, and selective exposure (Johnston & Ward, 1996). Each of these selective processing facets will be explained in the paragraphs below, respectively.

Stereotype activation may cause behavioural information to be interpreted in a stereotype-consistent manner. This is especially true if the behavioural information is vague (Johnston & Ward, 1996). In one study, Scully (1988) showed that rapists would struggle to see

the situation from their victim's viewpoints. For instance, rapists would see their victims' provocative dressing as an invitation to a sexual act. Scully also stated that child molesters could interpret ambiguous behaviors which are innocent in nature, such as a child inappropriate sitting that exposes his or her underwear, as an illustration of sexual intent. Johnston and Ward argued that as the degree of ambiguity for the situation or the behaviour increases, it is more likely for the perceivers to misinterpret that situation or behaviour. This is an example of selective, or biased, interpretation of information. As it was shown in the above study by Scully (1988), it can be argued that selective interpretation is a social information processing facet that is likely to be used by the perceivers, such as sex offenders, to confirm their expectancies of rapes or sexual intents.

Selective attention is another facet of selective information processing. For instance, stereotype-consistent information may be attended more than stereotype-inconsistent information (Olson & Zanna, 1979). This selective attention may bias the judgments and inferences in a stereotype-consistent manner, and this may have led the stereotype-consistent information to be more accessible in the perceiver's memory. Such information processing was evident in sex offenders' post-offence statements; that is, the victims enjoyed and learned from the sexual act (Johnston & Ward, 1996). Johnston and Ward argued that sex offenders' focus on expectancy-consistent information could result in preferential memory of this information, which preserved the offenders' pre-existing beliefs and increased the possibilities of recidivism. It is significantly important to pay attention to this preferential processing of information, particularly with respect to sex offenders' treatments, because the change in offenders' behaviour will only be possible if they are trained to attend and recall inconsistent information. Thus, selective attention is the attention to expectancy-consistent information that could lead to sex offenders' biased judgments

and inferences. These biased judgments and inferences could, in return, result in the perpetuation of the offenders' sex offending behaviour.

The last facet of selective information processing is selective exposure, which occurs as the perceivers sought expectancy-consistent information in the social world, which is influenced and directed by their pre-existing beliefs. Perceivers seemed to have a bias toward expectancy-consistent information (Johnston, 1996). In other words, perceivers would select information that confirms their pre-existing beliefs. This selection process would also occur as they are forming an impression about certain target groups (Johnston, 1996; Johnston & Macrae, 1994). The biased processing of information could result in perpetuation of pre-existing beliefs (Johnston, 1996) and increase the likelihood of offending behaviours. To conclude, the findings from social cognition literature highlighted the importance of stereotypes as a mental shortcut strategy, or a heuristic, in social information processing (e.g., Fiske & Neuberg, 1990). These findings also suggested that sex offenders, as capacity limited social perceivers, are likely to employ the stereotype-consistent information processing throughout the offense chain. Another notable shortcut strategy, relevant to sexual offence literature, is the well-learned sexual behavior pattern which will be discussed in the following paragraphs.

The concept of a well-learned sexual behavior pattern, as a shortcut strategy, is consistent with the nature of some sex offenders' behaviour, that is its compulsivity and spontaneity (Pithers, 1990). As has been noted, sex offenders would actively search for information to plan their offences and target their victims. These confirmatory biases were evident throughout the sexual offence chain. For instance, sex offenders may target a vulnerable child (e.g., a lonely child) to confirm their preexisting belief, that is to say, the child needed love and support. Therefore, they offered this love and support to the child through their act of sexual offence

(Johnston & Ward, 1996).

Confirmatory biases at the post-offending stage were also significant in the maintenance of sex offenders' behavior. At this stage, the offenders would scan their memories to find information consistent with their beliefs about the gratifying nature of the sexual offence for their victims. For instance, in one study by Stermac and Segal (1989), sex offenders were asked to respond to several questions after presenting them with some descriptions of sexual contact between an adult and a child. These descriptions were categorized and varied based on the degree of sexual intrusiveness and the amount of distress that the child experienced. The findings of this study showed that child molesters were more likely to perceive that the child was responsible for sexual contact than the other groups. Child molesters also indicated that the child was likely to benefit from this experience. In this regard, Johnston and Ward (1996) argued that sex offenders' rationalizations and justifications about their sexual offence behaviours might be the representations of their faulty interpretations of circumstances rather than their efforts to prevent social disapprovals or to avoid negative self-appraisals. Therefore, they suggested that a significant part of therapy with this population is to confront these faulty interpretations about their victims' behaviour and to challenge their viewpoints about the incident. In this regard, the clinical evidence has shown that offenders had a traumatic experience when they eventually come to accept the damage and distress they had done to their victims (Hildebran & Pithers, 1989; Marshall et al., 1995). Given these points, sex offenders could have the capacity to empathize with their victims. However, their lack of empathy may come from their unconscious collection of confirmatory biases to support their distorted beliefs and attitudes (Marshall et al., 1995). Sex offenders were likely to employ normal information-processing biases to support their sexually deviant behaviour (Johnston & Ward, 1996).

Literature on social cognition theory highlighted the critical stages of social information processing and the particular stages that could be impacted by cognitive distortion. These cognitive distortions could include sex offenders' difficulties to see the situation from the victims' perspectives, misinterpreting the situation, searching for information that confirm their expectancies of sexual offending behaviours, using selective attention that biases their judgement, having preferential memory of sex offending behaviours, selecting information that confirms their pre-existing beliefs, and faulty interpretation of their victims' behaviours. Johnston and Ward (1996) argued some of these faults in the cognitive and information processing could increase the likelihood of offending behaviours. Social cognition theory helps us to understand that cognitive distortion as one important category of risk factor can successfully predict the higher likelihood of sexual offence recidivism. In one study Mann et al. (2010) found several psychologically meaningful risk factors that strongly predict sexual recidivism, two of which were offence supportive attitudes and poor cognitive problem solving. Mann et al.'s findings can be considered as replication and extension of Johnson and Ward's findings that offence supportive attitudes and poor cognitive problem solving as two cognitive distortions predict sexual offence recidivism.

The social cognition theory as one of the relevant theoretical frameworks in sexual offending literature that could raise awareness of how sex offenders, as social perceivers with limited capacity processors, function in everyday life. In addition, understanding the sexual offenders' everyday life will help us understand how and why they engage in sexual offence behaviours. This theoretical framework highlights the role of cognition in the onset, maintenance, and recurrence of sexual offending. As a result, this framework could increase our understanding of the effects of mental short-cut strategies (i.e., stereotypes and well-learned

sexual behavior patterns) on social information processing and the situations under which sex offenders are most likely to use such processing strategies.

Purpose of the Study, Research Question, and Hypothesis

The purpose of this study is to determine, through archival data analysis, whether sex offenders' psychological characteristic can predict risk of sexual offence recidivism.

The underlying research question in the present study is as follows: Are the high risk sex offenders going to show higher scores on the specific MMPI-2 clinical scales than low risk sex offenders? In addition, I want to ask whether the strength of the relationship between the scales 4 and 9 of MMPI-2 and the Static-99 risk scores are stronger than the strength of the relationship between the scale 8 of MMPI-2 and the Static-99 risk scores. In other words, I am asking whether there is a stronger effect of the scales 4 and 9 in their relationship with Static-99 risk scores when compared with the scale 8 in relationship to Static-99 risk scores.

These research questions can now be summarized as the statistical hypothesis. In the present study, I hypothesize that high risk sex offender shows significantly higher scores on the specific MMPI-2 clinical scales when compared with low risk sex offenders. The hypothesis for the differential research question stated above can be formulated as follows: I hypothesize that the effect sizes of the relationships between the scales 4 and 9 with the risk scores are larger than the effect size of the relationship between the scale 8 and the risk scores.

CHAPTER 3: RESEARCH METHOD

In Chapters 1 and 2, I provided a foundation of what is generally known about sex offenders. In this chapter, I focused on the methodological aspects of the current study. I covered an explanation of the research design and a description of the sex offenders' treatment program used in this research project. In addition, I included a discussion of the characteristics of participants, data collection procedure, measures, and analytical processes. I also discussed several ethical considerations with respect to the participants' privacy and access to archival data in the current study. In the last section, I provided a brief summary about the important aspects of this chapter.

Research Design

I used archival data of adult male sex offenders who attended the Phoenix Treatment Program for this study. The current study design is based on a correlational research design. This research design is a type of nonexperimental research. In correlational research, the researcher measures the variables and examines the correlation (or the statistical relationship) between the variables. I used the correlational research design in the current study because I believed that the statistical relationship between variables is not a causal relationship (Jhangiani & Chiang, 2015). In addition, in this correlational study, since none of the test scores (i.e., the Static-99 and the MMPI-2) is thought to cause the other, there was no independent variable to manipulate.

The current study made use of archival data to decide whether sex offenders' risk levels, which is determined from their Static-99 scores, are correlated with their scores on the specific MMPI-2 clinical scales. As part of this archival data, the static-99 assessment tool was used to determine the sex offenders' risk level. The offenders' risk level was one of the dependent variables of the study. The risk level on the Static-99 can be categorized into four different

levels: low risk, moderate-low risk, moderate-high risk, and high risk sex offenders. In this study, the other dependent variables are the three of the specific MMPI-2 clinical scales, which include scales 4/Pd (Psychopathic Deviate), 8/Sc (Schizophrenia), and 9/Ma (Hypomania).

Program Description

In this section, I intend to describe the Phoenix Treatment Program, a sex offender treatment program, from which the archival data used in the present study were collected. The Alberta Mental Health Board, Alberta Hospital Edmonton Site, operated the Phoenix Treatment Program, where adult sex offenders received inpatient treatment (see Clelland et al., 1998; Studer et al., 1996, for more information on the adult program). This program was developed to provide treatment to sex offenders and prepare them for a better transition into society after their sentencing period. The primary method of intervention in the program was group therapy. The program was set so that if the patients decided to withdraw from the program, they would be sent back to the prison system (Aylwin et al., 2000). During their time in the program, sex offenders filled out several questionnaires and various assessment tools were completed on the program participants. The data from these assessments was subsequently archived. I used archived scores from two of these assessment tools: the Static-99 and the MMPI-2.

Characteristics of Participants in the Archival Data

In this study, I used archival data of adult males who had been convicted of committing a sexual crime and who attended the Phoenix Treatment Program at the Alberta Hospital Edmonton from 1986 to 2016. As part of this program, anyone with any crime of sexual nature was eligible for treatment. These sexual crimes could indicate a broad range of sexual offences, from less severe offences such as voyeurism, or exhibitionism, to more severe offences such as rape. According to previous researchers, sex offenders in this program admitted to having

committed offences against more diverse victims and having committed many more offences than what they were convicted for (Studer & Aylwin, 2006; Studer et al., 2000). Therefore, the index (or referring) offence was not a reliable descriptor of the participants' sexual offence history. Also, as Aylwin (2010) previously showed, it can be expected that the sample of offenders consisted of child molesters, internet offenders, rape offenders, mixed-category offenders, and adult hands-off or rape offenders.

There were three exclusionary criteria for sex offenders looking for treatment at the Phoenix Treatment Program. First, it was necessary for sex offenders seeking treatment to have enough cognitive ability to engage in and take advantage of a verbal, group-therapy setting. According to Aylwin (2010), sex offenders with approximately less than 80 points full scale IQ would find this program setting challenging and frustrating. Second, it was crucial for sex offenders to have psychological stability. In this respect, those with a history of psychotic episodes or significant mental illness would have been eliminated from the program for most of the program's history. However, it was noted that depression and anxiety were common in these sex offenders and were not considered obstacles to effective treatment. For instance, previous researchers have shown that the intensity of this kind of treatment program and the resulting anxiety could lead these individuals to intensify their symptoms, which might have been inactive for many years (Aylwin, 2010). Third, if offenders completely denied their convicted crime, they could not participate in this treatment program. However, nearly any sort of admission for having committed the sexual offence and having a sexual deviancy was sufficient to participate in the program. Although complete denial or cognitive distortion resulted in participants' exclusion from the Phoenix Program, some degree of distortion seemed to be shared among the sex offender population. For instance, Aylwin stated that it was typical to see sex offenders start the

treatment program with several distorted beliefs that minimised a sense of responsibility for their offence.

The participants of this study were similar in certain aspects. One of these similarities was that sex offenders who participated in the Phoenix Program were transferred from correctional facilities in Western Canada. Another similarity among sex offenders was that the courts or mental health institutions did not obligate them to attend the Phoenix Program and their participation was entirely voluntary. Finally, all of these men were considered to be guilty and responsible for their offences in their court statements (Aylwin et al., 2000).

Participants in this study included 535 sex offenders who had received treatment at the Phoenix Treatment Program in Alberta. Participants were categorized by the researcher into four different groups of low risk (n = 201), moderate-low risk (n = 181), moderate-high risk (n = 110), and high risk (n = 43) sex offenders based on their risk categories' score in the Static-99 questionnaire.

In this study, we worked through two data sets: the raw data set and the analysis data set. I explain these two data sets in more detail under the data clean up section of this chapter. The demographic breakdown of these two data sets were displayed in Table A1. Since we have conducted this study using archival data, the data on background variables were not available for all participants. The age range of sex offenders in the raw data set ranged from 18 to 71, and the age range of sex offenders in the analysis data set ranged from 19 to 71. For additional information on participants' backgrounds, please refer to Table A1 in the Appendix.

Data Collection and Accessing Archival Data

In this study, the data came from an archival data set. Due to the nature of archival data, the data have been collected and prepared by previous scholars. These archival data include

various psychological tests previously filled by convicted adult male sex offenders who had voluntarily participated in the Phoenix Treatment Program. Two of these psychological tests were the MMPI-2 and the Static-99. To study the research question in the present study, I used the archival data from these two assessment tools in the analysis procedure.

To study this research question, the first step in accessing archival data involved gaining approval from the University of Alberta Research Department. These archival data were originally stored as hard copies securely at Alberta Hospital Edmonton. The data were coded in Edmonton from the paper files into an SPSS (Statistical Package for the Social Sciences) dataset. I was able to gain access to the archival data through encrypted electronic files.

Measures

This section discusses how I measured each variable in the present study. However, to better explain these measures, I restate the main research hypothesis in this section. The hypothesis states that high risk sex offender shows significantly higher scores on the specific MMPI-2 clinical scales when compared to low risk sex offenders. In this study, one of the dependent variables is the offenders' risk level, a polytomous variable with four risk categories: low risk, moderate-low risk, moderate-high risk, and high risk levels. The other dependent variables include the three MMPI-2 clinical scales of Psychopathic Deviate, Schizophrenia, and Hypomania. Even though there are several questionnaires available in the Phoenix Program sex offenders' archival data, in this study, I used the information from the following questionnaires: the MMPI-2, for measuring Psychopathic Deviate, Schizophrenia, and Hypomania, and the Static-99, for measuring the offenders' risk level. I described these two instruments in more details in Chapter 2.

Analytical Process

This section presents important information about the data analysis processes I used in the present study. These data analytical processes consist of the following topics: the hypothesis, the statistics employed, the data clean-up, the population who was studied, the effect size and power analysis, the descriptive statistics, the primary statistical analysis procedure and its assumptions. Each of these topics will be addressed in the following paragraphs, respectively.

Hypothesis

The hypothesis states that high risk sex offender shows significantly higher scores on the specific MMPI-2 clinical scales when compared to low risk sex offenders. The differential hypothesis states that the effect sizes of the relationship between the scales 4 and 9 with the risk scores are larger than the effect size of the relationship between the scale 8 and the risk scores.

Statistics Employed

A statistical procedure employed in this study was a multivariate analysis of variance (MANOVA). A MANOVA is an appropriate statistical test when considering multiple continuous dependent variables. In this study, alpha value was set at the $p < .05$ for an inferential test. In the current study, the group of sex offenders is large enough that, at an alpha level of .05 and an assumed large effect size of greater than .14 (Lakens, 2013) which was examined using η^2, an acceptable power level for this inferential test was achieved (.80 or greater).

Data Clean-Up

Data clean-up was conducted in multiple steps. As was mentioned earlier, the data in the current study were drawn from archival information from a large majority of adult male sex offenders who participated in the Phoenix Treatment Program. These data originally existed in the paper format. The principal investigator, Andy Haag, and his researchers helped to enter the

data into SPSS files. As the first step, the principal investigator and his research team made sure that the cases in the raw data set were anonymous. In other words, since the data set was archival, they separated the identifying information from the rest of the data by assigning an identifier variable to each case before I gained access to the data set. In the second step, since the data entry was done at the principal investigator's home office, they assessed the data entry process to ensure data accuracy and integrity. Access to these files was then granted to me electronically.

As the third step, after I gained access to the raw data set, I assessed the data structure and coding patterns and traced how the data was organized. In the fourth step of data clean-up, I assessed the raw data set for any inconsistencies, omission, coding, or typographical errors. Two of the strategies that I used for this part of data clean up were visual scanning of the raw data set and an inspection of simple descriptive statistics for all variables in the data set. This process has helped to prepare an analysis data set from the raw data set. The raw data set included archival data on 866 male sex offenders and contained data on these offenders' demographic variables, background variables, and various assessment tools, two of which were the MMPI-2 and the Static-99. After examining data, I noticed that there was some missing data on sex offenders' background variables and the main variables of the study (i.e., Psychopathic Deviate, Schizophrenia, and Hypomania clinical scales of MMPI-2 and the Static-99). The participants who had missing data on the main variables of the study were deleted from the raw data set.

Further assessment of the raw data set revealed that each participant had four different sets of variables for the MMPI-2 scales. In other words, there were four different administrations of MMPI-2 for each participant which revealed four different scores for each scale of the MMPI-2. Among these four MMPI-2 administrations, only two MMPI-2 administrations had scores

available for the most participants. Therefore, after consultation with the principal investigator, a decision was made to calculate the mean scores between these two MMPI-2 administrations for each of the specific scales of the MMPI-2. If there was any participant who had only one score on a specific scale of the MMPI-2, we kept that score as the final score for that specific scale. These combined scores reflecting two administrations were used as the final data points for the MMPI-2 clinical scales in the data analysis process.

Assessing the raw data set further, it appeared that the data on the Static-99 total scores were drawn from two different versions of the Static-99 assessment tools (i.e., the Static-99R and the Static-99). The problem with having data from two different versions of the Static-99 is that the Static-99 total scores from each version correspond to different risk categories. For this reason, we had to come up with strategies to achieve a consistent risk category for all participants. It is important to note that the only difference between the Static-99 and the Static-99R version was the age score, which could result in different Static-99 total scores. After consulting with the principal investigator and other researchers, a decision was made to keep or modify each data point in such a way so that it corresponds to the Static-99 version. Therefore, we came up with the following strategies for coding static-99 scores for data analysis.

First, we created a new variable and labeled it the modified Static-99 total scores. Second, we changed any negative integer to zero since the negative value could only come from the Static-99R version. Third, I was able to verify the total Static-99 scores for many of the participants with another partial record of Static-99 scores (the Static-99 version). After this process was complete, 170 scores could not be verified.

To address those 170 scores in a fourth step, I checked a variable that indicated the participant's date of birth and their time of admission to the Phoenix Treatment Program to

calculate the participant's age for 112 of people. Alternatively, for the remaining participants, the age of participants was known from other variables in the data set. After obtaining the age of the participants, I looked at the age score variable of the Static-99 on the raw data set and I compared the Static-99 age score with the age variable to verify the Static-99 version that was scored. There were few cases that the data came from the Static-99R version. The data points on these cases were then recoded as Static-99 scores. After going through all these steps, there were 15 cases that I was not able to verify the Static-99 version that was scored. To avoid ambiguity in the Static-99 scores, it was decided to delete these cases from the data set. This fourth step finalized all scores as coded to the static-99 formula.

After going through all the above steps, we had refined and confirmed the data set for analysis. The raw data set contained archival data on 866 male sex offenders. The refined analysis data set contained archival data on 535 male sex offenders with no missing data points on the MMPI-2 clinical scales or the Static-99. The analysis was then carried out using the analysis data set.

The Population Who Was Studied

In this study, I used archival data derived from a large majority of adult males who had been convicted of committing a sexual crime and who attended the Phoenix Treatment Program at the Alberta Hospital Edmonton from 1986 to 2016. Therefore, the participants of this study included all persons who went through the Phoenix Treatment Program and who had available data on the MMPI-2 and the Static-99. The data gathered during the implementation of the Phoenix Treatment Program was generously made available for research purposes.

Effect Size

In addition to the test for statistical significance, the effect size, an important statistic,

was assessed as part of the multivariate analysis. The effect size can be measured in a variety of ways. In this study, I examined the effect size using η^2. The η^2 is an appropriate way for describing the effect size for a MANOVA analysis as used in this study (Steyn & Ellis, 2009). According to Cohen (1988, Chapter 8), the benchmark for small effect size is .01, medium effect size is .06, and large effect size is .14. In this study, the effect size was measured using eta squared formula (for more information refer to Cohen, 1988, Chapter 8).

Power Analysis

The power analysis reported in this study was a post-hoc power analysis, also known as posterior power analysis. I calculated this power analysis after the study was completed. In the present study, due to the nature of the archival database and the fact that participants' data have been gathered previously, it was appropriate to run a post-hoc analysis. G*Power software is a program that I used to conduct a power analysis (Erdfelder et al., 1996).

Descriptive Statistics

Descriptive statistics are any statistics calculated on a population. Therefore, I used descriptive statistics to gain an overall impression of the data set. I presented the details of descriptive statistics for this study under the result section of this paper.

Statistical Analysis Procedure

MANOVA is a statistical analysis procedure in this study. In circumstances in which there are several dependent variables, MANOVA could be considered as an appropriate statistical analysis procedure. Using MANOVA, we can assess if there are any interactions between dependent variables and if there are any group differences. Thus, MANOVA has the power to demonstrate whether groups differ on a combination of dimensions (Field, 2018). In the present study, the correlation between the Static-99 risk scores and three MMPI-2 clinical scales

of 4, 8, and 9 was investigated using a MANOVA. A MANOVA assesses the correlation between different groups of risk levels for the three MMPI variables. Also, a MANOVA operates under several assumptions. These assumptions include linearity, multivariate normality, multicollinearity, homogeneity of variance, homogeneity of covariance matrices, independence of observations, absence of univariate or multivariate outliers, and random sampling (Field, 2018). In this study, linearity was explored using a scatterplot matrix. The multicollinearity was assessed using the Pearson correlation coefficient among the variables. Homogeneity of variance was assessed using Levene's test of equality of error variances. The assumption of homogeneity of covariance matrices was assessed using Box's test. The presence of univariate outliers was assessed using boxplots, and the presence of multivariate outliers was assessed using the Mahalanobis distance (Field, 2018).

A discriminant analysis was conducted to examine the differential effect hypothesis. In this study, the discriminant analysis helped to compare the unique effect sizes of the relationships between scales 4 and 9 with risk scores and the unique effect size of the relationship between scales 8 with risk scores.

Rigour and Validation

The discussion of rigour and validity in the current study refers to the precision of a study in terms of data preparation and the measurements tools used in this study. The first point regarding the rigour and validity relates to the evaluation of data preparation procedures. The data preparation procedures were discussed in detail under the data clean-up section. Two other important factors that are relevant to the validity of the data set and are important to pay attention to during data clean-up: (a) to assess the data set for any inconsistencies, omissions, and coding or typographical errors (see details under data clean-up section for more details), and (b) to

verify the data integrity either from the manual or the principal investigator. Secondly, the other important factor in determining the accuracy of this study is the quality of the measurement tools in terms of their validity and reliability. I have explained the MMPI-2 and the Static-99 measurement tools in details in Chapter 2. I have also presented findings regarding the reliability and the validity of Static-99 in the same chapter. However, the discussion of MMPI-2 validity is presented in the following paragraphs.

MMPI-2

The MMPI-2 is one of the most widely used and researched personality inventories (Green, 2000). The MMPI was originally developed in 1942 by Hathaway and McKinley, and its original version had three validity indicators corresponding to the answers given by each test subject. These validity indicators are the Cannot Say score, L scale, and F scale. These validity indicators were used to assess if the test record was spoiled or if the test respondents failed to follow the test instruction properly (Butcher et al., 1989). A fourth validity indicator, K (correction) scale (Meehl & Hathaway, 1946; McKinley et al., 1948), was added to the list later.

A few studies, presented in Appendix D of the MMPI-2 manual (Butcher et al., 1989), assess the test-retest reliability and internal consistency of the basic scale in the profile. In one of these studies, the test-retest coefficients range from .58 to.91 for a sample of women, and from .67 to .92 for a sample of men. As part of the MMPI-2, a few basic scales had undergone revision and some items have been deleted from the item list of five of the basic scales. However, the reliability of these five basic scales (F, 1, 2, 5, and 0) remains comparable to that of other scales (Butcher et al., 1989). The reliability data in the Appendix D of the MMPI-2 manual (Butcher et al., 1989) indicate that the basic clinical scales have a typical standard error of measurement of two or three raw score points. This standard error of measurement indicates

that if test respondents were to take the MMPI-2 for a second time, and within a short period, "the scores on the basic scales would fall about two-thirds the time within the range of plus or minus one SE_{mean} of the original scores" (Butcher et al., 1989, p. 31). Therefore, it is important for test users to consider a range of one standard error of measurement above and below the actual raw score for each of the basic clinical scales to show the range of possible values on the profile within which the subject's true scores are most probable to be held. Finally, while interpreting the respondents' profile pattern, it is important to pay attention to these limits on the reliability of each of the basic clinical scores on the MMPI-2 inventory (Butcher et al., 1989).

Several studies emphasized the validity of the MMPI-2. In one study, researchers found that both the MMPI and MMPI-2 demonstrate a statistically reliable degree of relation with DSM-III-R-based categories of psychopathology and the overall index of emotional adjustment comprised of DSM-III-R symptoms. The predictive relationships were modest (Svanum & McGrew, 1996). The findings of another study examining how well the MMPI-2 scales could assess psychopathic personality traits, as measured by the Psychopathic Personality Inventory (PPI; Lilienfeld & Andrews, 1996), in a nonclinical sample, showed that MMPI-2 scales are effective predictors of scores on the PPI (i.e., a well-validated, self-report measure of psychopathy in a nonclinical sample). Specifically, the researchers found that the MMPI–2 Social Deviance scales (e.g., Clinical Scales 4 and 9) greatly endorsed PPI–II and trait-specific PPI subscales assessing poor planning, nonconformity, impulsivity, aggressiveness, antisocial behaviour, and the tendency to externalize blame. In addition, the MMPI-2 scales (negatively) related to sociability, fearfulness, and emotionality were the finest predictors of scores on the PPI Affective-Interpersonal factor and its constituent subscales. This factor shows social dominance and manipulativeness, low reactivity to stressful situations, and lack of anticipatory fear

(Sellbom et al., 2005).

Ethical Aspects of the Study

The access to the archival data involved gaining approval from the University of Alberta Research Department. I also received a Human Research Ethics Board approval from the Trinity Western University. The archival data used in this study was kept strictly confidential. Sex offenders' paper files were kept in a locked cabinet within the home office of the principal investigator at the University of Alberta. The information on these paper files was transferred to encrypted electronic files. Thus, access to these files was available to me, the research committee, and those selected to assist in this research project through an encrypted electronic file version. To further protect the participants' privacy, the identifying information was removed from the files and an ID number was assigned to each participant before I was able to gain access to these files. Since the archival data used in this study was gathered during the sex offenders' participation in the Phoenix Treatment Program and it was part of their treatment assessments, to my knowledge, there were no potential risks to participants in conducting this research.

Summary

In this study, I used a correlational research design to examine the correlation between the Static-99 risk scores and three MMPI-2 clinical scales of 4, 8, and 9 . The archival data used in this study included adult male sex offenders who have participated in the Phoenix Treatment Program in Alberta. The study participants are a large majority of sex offender population in the Phoenix Treatment Program for whom there was available data. A MANOVA was conducted to assess the hypothesis of this study and a discriminant analysis was performed to examine the differential effect hypothesis.

CHAPTER 4: RESULTS

In this chapter, I include an overview of the study, a brief discussion on descriptive statistics, and the summary of results. The summary of results section includes an explanation of the hypothesis, a discussion of a one-way MANOVA and its assumptions, and a discussion of the discriminant analysis. In the present study, a discriminant analysis was conducted to examine the differential effect hypothesis.

Overview

The purpose of this study was to determine whether sex offenders' psychological characteristic can predict risk of sexual offence recidivism. The psychological characteristics was assessed using the MMPI-2 clinical scales 4, 8, and 9 and the recidivism was examined using the Static-99 risk scores. To test the hypothesis of this study, a MANOVA was used. A differential hypothesis was examined with a discriminant analysis.

This study was conducted on sex offenders who participated in the Phoenix Treatment Program ($N = 535$). These offenders completed the MMPI-2 as part of their treatment participation and also had Static-99 scores recorded. The access to this archival data was made possible by an encrypted electronic file. This archival data included data on sex offenders' MMPI-2 clinical scales and Static-99 risk assessment tool. The data on the MMPI-2 and the Static-99 were used to assess the hypotheses of this study.

The participants in this study were classified into different risk levels based on their Static-99 scores. Participants who received a total score of 0 or 1 on the Static-99 were categorized as low risk sex offenders, participants who received a total score of 2 or 3 were categorized as moderate-low risk sex offenders, participants who received a total score of 4 or 5 were categorized as moderate-high risk sex offenders, and participants who received a total score

at or above 6 were categorized as high risk sex offenders.

Descriptive Statistics

This data set includes archival data on 535 male sex offenders. In this data set, the archival data of all participants include the scores of the MMPI-2 clinical scales and the Static-99. The participants were 19 years of age and older. In this study, each participant belongs to one of the four groups of different risk levels. Table 2 includes the descriptive statistics for the MMPI-2 variables disaggregated by risk levels.

Table 2

*MMPI-2 Variables Descriptive Statistics Disaggregated by Risk Levels(*N = *535)*

Risk level	Low (n = 201)		Low-moderate (n = 181)		Moderate-high (n = 110)		High (n = 43)	
MMPI-2 scales	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Psychopathic Deviate	70.00	13.22	72.08	13.51	73.11	12.13	78.27	11.93
Schizophrenia	65.76	16.90	68.41	17.32	70.15	17.54	73.64	15.70
Hypomania	53.26	11.04	58.28	13.72	57.55	12.59	60.90	14.51

Table 3 includes the means, skewness, standard deviations, and correlations between study variables. The intercorrelation among the four variables can not be used to distinguish the unique and shared variances among the various subsets of these variables.

Table 3

Means, Standard Deviations, Skewness, and Correlations of Variables

Variable	Mean	SD	Skewness	1	2	3
1. Psychopathic Deviate	72.00	13.16	.149			
2. Schizophrenia	68.19	17.19	.792	.613		
3. Hypomania	56.45	12.84	.668	.267	.437	
4. Static-99	2.45	1.98	.645	.153	.130	.183

Summary of Results

In this section, I restated the research hypothesis, a discussion of a one-way MANOVA and its assumptions, and a discussion of a discriminant analysis.

Research Hypothesis

The hypothesis in this study states that high risk sex offender shows significantly higher scores on the specific MMPI-2 clinical scales when compared with low risk sex offenders. The differential hypothesis indicates that the effect sizes of the relationships between the scales 4 and 9 with the risk scores are larger than the effect size of the relationship between the scale 8 and the risk scores.

Multivariate Analysis of Variance (MANOVA)

For the one-way MANOVA, preliminary assumptions testing was conducted. There were 27 univariate outliers, as assessed by the inspection of the boxplots. There were two multivariate outliers in the data, as assessed by the Mahalanobis distance; the critical value of 16.3 was

exceeded. A decision was made to keep the outliers in the data analysis process because the proportion of outliers in the group of sex offenders was negligible. Shapiro-Wilks test of normality was performed for the four risk levels for all three dependent variables and it showed that the assumption of normality was violated for Psychopathic Deviate at moderate-low risk level ($p < .05$), Schizophrenia at low, moderate-low, and moderate-high risk levels level ($p < .05$), and for Hypomania at all four risk levels ($p < .05$). However, MANOVA is reasonably robust to modest violations of normality when the sample size is at least 20 in each cell (Tabachnick & Fidell, 2007). The assumption of linearity was satisfactory; there was a linear relationship between Psychopathic Deviate, Schizophrenia, and Hypomania at each risk level, as shown by inspection of scatterplots and correlation coefficients. The correlation between Psychopathic Deviate and Schizophrenia was significant, $r(533 = .613$, $p < .001$. The correlation between Psychopathic Deviate and Hypomania was significant, $r(533) = .267$, $p < .001$. The correlation between Schizophrenia and Hypomania was significant, $r(533) = .437$, $p < .001$. The correlation coefficient was less than .9; therefore, multicollinearity was not a concern, as assessed by Pearson correlation (Field, 2018).

The assumption of homogeneity of variance-covariances is tenable, as assessed by Box's test $M = 29.14$, $F(18, 121588.43) = 1.59$, $p = .052$. The result of the Levene's test of equality of error variance indicated that the assumption of homogeneity of variance across groups is tenable for Psychopathic Deviate and Schizophrenia $F(3, 531) = 1.51$, $p = .210$, $F(3, 531) = .281$, $p = .838$, respectively. However, the assumption of homogeneity of variance across groups is not tenable for Hypomania, as assessed by Levene's test of homogeneity of variance $F(3, 531) = 5.14$, $p = .002$. Independence of observations was present, indicating that there was no relationship between participants in any of the groups. Independence of observations was

identified because there were different participants in each group and there was no participant in more than one group.

Results of the MANOVA indicated that there was significantly higher scores on the combined MMPI-2 clinical scales (i.e., Psychopathic Deviate, Schizophrenia, and Hypomania) for the high risk sex offender when compared to low risk sex offenders, Wilks' $\Lambda = .940$, $F(9, 1287.60) = 3.66$, $p < 0.001$, partial $\eta^2 = .020$, observed power = .97.. The effect size was small.

A discriminant analysis was performed to better understand the differential effect hypothesis. In other words, the discriminant analysis helped to compare the unique effect sizes of the relationship between scales 4 and 9 with risk scores and the unique effect sizes of the relationship between scales 8 with risk scores.

Discriminant Analysis

Results of the discriminant analysis revealed three discriminant functions. The first function yielded an eigenvalue of .055, a canonical $R^2 = .05$, Wilks' $\Lambda = .940$, $X^2 (9) = 32.58$, $p < .001$, and the other canonical R^2 were less than 1.0% and not significant. The first discriminant function significantly differentiated the risk groups, but the second and third discriminant functions did not. The standardized canonical discriminant function coefficient showed the distinctive contributions made by personality variables (Psychopathic deviate, .56, and Hypomania, .78) in distinguishing the risk groups. The standardized canonical discriminant function coefficient for schizophrenia was minimal. The correlation between the personality variables and the discriminant functions revealed that Hypomania correlated the most strongly ($r = .87$); Psychopathic Deviate correlated the second most strongly ($r = .69$); and Schizophrenia correlated the least strongly ($r = .56$). The Schizophrenia correlation with the discriminant function reflected overlap of the correlation of the other two MMPI-2 scales. The group

centroids revealed that the highest risk group is differentiated from the middle two risk groups and from the low risk group. Likewise, the low risk group is differentiated from the middle two risk groups.

CHAPTER 5: DISCUSSION

In this chapter, I discuss the results of the study and how these results relate to the previous research findings. I also include an explanation of the significance of the study. In the last section, I describe some of the limitations included in this study.

The purpose of this study was to determine, through archival data analysis, whether sex offenders' personality characteristics can predict risk of sexual offence recidivism. The participants' risk of recidivism was measured using the Static-99 and their personality characteristics were assessed using the MMPI-2.

The results of this study showed that the means across groups significantly increased from the low risk level to the two moderate risk levels, and from the two moderate risk levels to the high risk level, with high risk level having the highest mean scores for the Psychopathic Deviate, Schizophrenia, and Hypomania clinical scales on MMPI-2. In addition, the mean scores were the highest for Psychopathic Deviate, the second highest for Schizophrenia, and the least high for Hypomania across all four groups. The higher mean scores on these scales highlight personality characteristics such as impulsivity, anger, hostility, irritability, negative emotionality, poor judgement, low social intelligence, trouble with the law and authority, problems relating to others and forming meaningful relationships, hostility, irritability, and antisocial attitudes. These findings confirm previous research findings by Mann et al. (2010). The personality characteristics listed here have shown to be similar to the psychologically meaningful risk factors found by Mann and colleagues. These risk factors include lifestyle impulsivity, hostility, general self-regulation problems, poor cognitive problem-solving skills, resistance to rules and supervision, lack of emotionally intimate relationships with adults, deviant sexual interest, and negative social influences. Mann and colleagues also stated that these psychologically

meaningful risk factors predict sexual recidivism among sex offenders. In this study, the observation that high risk sex offenders had the highest mean scores on Psychopathic Deviate, Schizophrenia, and Hypomania MMPI-2 clinical scales replicate the association between the personality traits and risk of recidivism for sex offenders.

These findings further replicate previous literature that found high risk sex offenders had significantly higher scores on cognitive distortion than low-risk sex offenders (Coxe & Holmes, 2009). Under the discussion of theoretical framework in this study, I also highlighted that the social cognition theory indicates that cognitive distortion is one important category of risk factors which successfully predict the higher likelihood of sexual offence recidivism (Johnson & Ward, 1996). Mann et al.'s (2010) findings on psychologically meaningful risk factors also confirm these findings. Mann et al. stated that offence supportive attitudes and poor cognitive problem solving were two risk factors that strongly predict sexual recidivism.

Using a MANOVA analysis, we found significantly higher scores on the combined MMPI-2 clinical scales (i.e., Psychopathic Deviate, Schizophrenia, and Hypomania) for the high risk sex offender when compared to low risk sex offenders. A discriminant analysis addressed the differential hypothesis. That is, the unique effect sizes of the relationships between scales 4 and 9 with risk scores were substantial (standardized canonical discriminant function coefficients for Psychopathic deviate was .56 and Hypomania was .78) and the unique effect size of the relationship between scale 8 with risk scores was minimal. The discriminant analysis showed that only Hypomania and Psychopathy Deviate differentiated among risk levels. The discriminant analysis results also revealed that Hypomania correlated the most strongly, Psychopathic Deviate correlated the second most strongly, and Schizophrenia correlated the least strongly.

The findings of this study are consistent with previous research findings which found antisocial orientation, reflecting 49/94 MMPI profile, was a common factor among different groups of sex offenders (Borchard et al., 2003; Espelage et al., 2003). These results also agree with previous findings which indicate antisocial orientation is predictive of sexual recidivism (Doren, 2004; Hanson & Bussiere, 1998; Hanson & Morton-Bourgon, 2005; Quinsey et al., 1995). For instance, in their meta-analysis study, Quinsey et al. (1995) suggested that unstable and antisocial lifestyle was predictive of different kinds of sexual recidivism. Our study also confirms these findings. Moreover, the result of this study agrees with previous research findings that showed one of the most common scales in the MMPI profile of sex offenders is the Psychopathic Deviate scale elevation (Anderson et al., 1979; Armentrout & Hauer, 1978; Curnoe & Langevin, 2002; Herkov et al., 1996), regardless of whether it was alone or accompanied by another scale. It is notable that it is not unexpected to see the Psychopathic Deviate scale among the sex offender population since elevation on this scale indicates conflicts with the law and authority, difficulties obeying societal rules, an inability to delay gratification, and impulsive pleasure-oriented behaviours (Armentrout & Hauer, 1978). The result of this study can also extend the previous findings that the Psychopathic Deviate scale on MMPI-2 is predictive of sexual recidivism (Hanson & Morton-Bourgon, 2004), and the psychopathic offenders with elevated scores on the Psychopathy Checklist-Revised (Hare, 2003) are more likely to recidivate than those with less score elevation.

The results of this thesis also evaluate the construct validity of Static-99 risk tool. Brouillette-Alarie et al. (2016) previously found that Static-99R construct has three broad factors: antisocial orientation (or general criminality), youthful stranger aggression, and paraphilia (or sexual crime specific factors). The antisocial orientation in Brouillette-Alarie et

al.'s study is also a construct that is measured in the current study. Our results shows that the antisocial orientation, as measured by MMPI-2 scales 4 and 9, is positively correlated with Static-99 scores. Although antisocial orientation is not the only thing that Static-99 assesses, these results further support the findings that some of the variance in Static-99 scores is attributable to the variance in antisocial orientation. Therefore, our results further strengthen the importance of antisocial orientation as a sexual recidivism risk factor.

The current study included one large sample identified as a routine/complete sample, that is, a relatively random sample from a correctional facility (Lee & Hanson, 2021). This sample included a large majority of sex offender population ($N = 535$) who participated in the Phoenix Treatment Program from 1986 to 2016. Therefore, this study was significant because having used a large majority of the sex offender population, we had a large sample size for generalizing the results of this study to the sex offenders' population in other treatment programs. In addition, the mean values were more accurate. Another importance of this study is that, due to the difficulties usually associated with studying high risk or incarcerated sex offenders, there is a paucity of forensic information pertaining to the links between personality characteristics' and sexual offence recidivism for sex offenders. However, archival data on incarcerated adult male sex offenders in the Phoenix Treatment Program made the study of this phenomenon possible.

The findings of this study also increase our understanding of the links between sex offenders' risk of recidivism and their personality characteristics. For instance, information on sex offenders' personality characteristics associated with their risk scores could help mental health professionals to consider more resources in sex offenders' risk assessments and achieve more accurate evaluations of their risk assessment results.

The results of this study also have implications with the use of MMPI-2. Based on these

findings, it is possible to suggest that sex offenders who have higher elevation on scales 4 and 9 (i.e., antisocial orientation) are more likely to have a higher likelihood of recidivism. However, future research may be conducted to assess if these specific MMPI-2 clinical scales add incrementally to the prediction of recidivism over and above the Static-99 risk assessment tool. These findings can also contribute to the provision of further insights for professionals in the criminal justice systems, correctional facilities, legal departments, and the prison system so that they can adequately and appropriately assess sex offenders' propensity to recidivate and make proper decisions concerning these offenders' conviction, imprisonment, and treatment program. Moreover, using these findings, a therapist or a professional dealing with these offenders will make sure that these offenders receive the required treatments and services to remain at low risk and are less likely to recidivate (Mirkof, 2013). Finally, the findings of this study can help sex offender treatment programs to have strategies in place to better deal with sex offenders who have higher likelihood of recidivism by targeting the specific personality characteristics found in this study.

The importance of research in this area underscores the need for additional research, especially for incarcerated and high risk sex offender populations. In particular, future research could examine whether high risk sex offenders have significantly higher scores on other MMPI-2 clinical scales when compared to low risk sex offenders. In future research, we could also examine the association between sex offenders personality characteristics using other personality assessment tools and risk of recidivism using sex offenders' court data.

Limitations

This study contains several limitations. The first limitation relates to the generalizability of the findings of this study. In this study, we studied a large percentage of the population of sex

offenders who participated in the Phoenix Treatment Program. This sample consists of convicted adult male sex offenders placed into the prison system and volunteered to receive treatment at the Phoenix Treatment Program. Therefore, the findings of this study may not be generalizable to sex offenders who have not received any treatment or are in other types of treatment programs. Also, it is hard to generalize these findings to young sex offenders, women sex offenders, or offenders who receive mandatory treatment. Second, it is important to be aware of the timing that the MMPI and the Static-99 tests were applied to these sex offenders during the program. For instance, if these tests have been applied at the onset of the treatment program, we can not generalize the study findings to other situations in which these psychological tests were applied at the time of discharge from the program or at some time after discharge to the community. Third, there were strict exclusionary criteria for admission of incarcerated adult male sex offenders to the Phoenix Treatment Program. Thus, the extent to which these findings are generalizable to all sex offenders is limited.

Some limitations of the study relate to the use of archival data. One limitation is that in the current study, I was not present at the time of data collection. Therefore, I had no control over data collection procedures. This lack of control could potentially influence the findings of this study. Another limitation in utilizing archival data is that there are usually no opportunities to review data collection procedures, make any required modifications, or obtain missing information from the participants. However, in this study, we verified most participants' data on the Static-99 assessment tool by accessing an encrypted pdf file containing participants' Static-99 assessments and their scores. Finally, the other limitation of archival studies is that due to their restrictive nature, the generalizability of the findings is limited. For instance, as mentioned in the previous paragraph, the present archival data came from adult male sex offenders who

participated in the Phoenix Treatment Program, making it difficult to generalize these findings to other populations of sex offenders. However, the use of archival data, made it possible to conduct research at a lower cost and in a shorter period compared to face-to-face interviews. We were also able to access data from a larger number of participants or access a considerable amount of data, all at once.

Another limitation of this study is that the data set from the Phoenix Treatment Program has not been thoroughly computerized yet. This computerized cleaned data set involved data from multiple MMPI-2 administration, the total scores of the Static-99/Static-99R risk assessment tools, and some other variables. However, there were missing data on the MMPI-2 validity scales for many participants in this data set. For this reason, we could not include the MMPI-2 validity scales in our analyses of this study. Consequently, the data set from the Phoenix Treatment Program need further refinement in future data analyses.

Other limitations of the present study relate to the assessments used in this study. First, it is important to highlight that due to the use of archival data, I did not have the opportunity to administer, measure, or score these assessment tools. Second, since MMPI-2 is a self-report instrument tool, it is hard to guarantee sex offenders' honesty on the responses. Furthermore, since the normative sample of MMPI-2 was derived from a clinical population (i.e., 1,462 females and 1,138 males between the ages of 18 and 84), it is not considered a specific assessment tool for assessing sex offenders' personality characteristics (i.e., forensic sample). However, although MMPI-2 was not specifically developed to use with forensic samples, research has shown that it is a valid and reliable assessment tool for measuring personality characteristics (Butcher et al., 1989).

Another limitation of the study relates to the data clean-up process that we have used for

this study. As mentioned previously, the scores for Static-99 risk assessment came from both the Static-99 and the Static-99R. As part of the recoding procedures, we changed all the negative Static-99R values to zero to ensure equivalence with Static-99 values. However, this part of the recoding procedures did not ensure equivalence with Static-99. Therefore, it is important to be aware that this estimation methods introduced a certain amount of random error in our study.

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Appendix

Table 1

Background Variables on Sex Offenders in the Raw and the Analysis Data Set

Background Characteristic	Raw data set (N = 866)		Analysis data set (N = 535)	
	n	%	*N*	%
Marital Status				
Married	170	19.6	136	24.7
Single	276	31.9	197	35.8
Common-law	70	8.1	59	10.7
Divorce	75	8.7	52	9.5
Separated	76	8.8	57	10.4
Widowed	4	.5	3	.5
Never Married	1	.1	1	.2
Treatment Completed				
Yes	296	34.2	252	45.8
No	251	29.0	188	34.2
By whom raised?				
Father alone	17	2.0	12	2.2
Mother alone	80	9.2	75	13.6
Both biological parent	287	33.1	248	45.1
Biological parent and step-parent	79	9.1	65	11.8
Adoptive parents	4	.5	4	.7
Foster parents/ Homes	1	.1	1	.2