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Behavioural Consistency and Offender Characteristics: Investigating Modus Operandi Patterns in Serial Stranger Sex Offences

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BEHAVIOURAL CONSISTENCY AND OFFENDER CHARACTERISTICS:
INVESTIGATING MODUS OPERANDI PATTERNS IN SERIAL STRANGER SEX
OFFENCES

by

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Bachelor of Arts in Psychology and Criminology, York University, August 2007

A thesis presented to Ryerson University

in partial fulfillment of the requirements for the degree of Master of Arts in the

Program of Psychology

Toronto, Ontario, Canada, 2012

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Abstract

Behavioural consistency and offender characteristics: Investigating modus operandi patterns in serial stranger sex offences

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Master of Arts in the Program of Psychology, 2012

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Case linkage is a statistical technique which connects multiple sexual assault cases to a single perpetrator and holds promise for informing criminal investigations. Further, examining the behaviours executed most consistently across serial offences committed by a given offender is crucial to linking offences. The current study investigated behavioural consistency in a sample of 49 male serial stranger sexual offenders responsible for 147 offences. For each offence, four crime aspects were identified: 1) pre-crime facilitators, 2) victim selection and characteristics, 3) approach and attack methods, and 4) crime scene characteristics. Consistency between and within each crime series and across offender types based on background characteristics was examined. Results indicated a high degree of behavioural consistency across all crime aspects. Behaviours occurring prior to the offence were particularly useful in establishing consistent offending patterns. The implications of these findings in the context of police investigations and their utility for clinical practice are discussed.

Dedication

I would like to dedicate this thesis to my parents and grandparents; I know they will be proud.

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Introduction

There is substantial pressure on law enforcement personnel to apprehend sexual offenders, regardless of time and resource restrictions (Canter, 1996; Scott et al., 2006). One avenue for improving police investigations entails focusing efforts on selected risks such as repeat offending (Innes, Fielding, & Cope, 2007). Serial sexual offending is defined as two or more incidents of unwanted sexual activity perpetrated by a single offender (Brennan & Taylor-Butts, 2008). According to official records, although sexual offenders generally reoffend sexually at a relatively low rate of 10-20%, the impact on victims and society is considerable (Hanson & Bussiere, 1998; Prentky, Lee, Knight, & Cerce, 1997).

In circumstances where a lack of physical evidence is left behind and the identity of the offender remains unknown, police may be required to rely on behavioural evidence provided by offender profilers. As such, the present study focused on serial sexual offending, and aimed to examine behavioural offence patterns across a series of crimes. Identifying consistent offence behaviours among repeat offenders provides a foundation for police investigations operating under the premise that a string of crimes are likely perpetrated by the same offender. Moreover, empirically determining consistency and attending to pertinent and 'profilable' features of an offence will inform law enforcement personnel, who may be relying primarily on their intuitive judgements (Alison, Goodwill, Almond, Heuvel, & Winter, 2010; Goodwill & Alison, 2007).

The current study applies to the context of stranger offenders, as defined by the absence of a relationship with the victim prior to the offence. Examining offender patterns that are specific to stranger victims poses an additional challenge to law enforcement personnel. These patterns are also relevant to investigative research because it involves an unidentified offender (Alison et al., 2010). Further, official reports reveal that among sexual re-offenders, those who

commit offences against stranger victims tend to offend repeatedly at a rate of approximately

35%. Therefore, although sexual reoffending occurs infrequently, rates are relatively high among

stranger sexual offenders, making them crucial subset of individuals to examine from an

investigative perspective (Brennan & Butts, 2008; Hood, Shute, Feilzer & Wilcox, 2002; Innes et

al., 2005).

The consistency in offending among repeat offenders was evaluated in two parts: First,

consistency was explored across behaviours occurring prior to and during the offence, with the

aim of utilizing this information to link offences to a common perpetrator, also referred to as

case linkage. The second study objective aimed to link consistency in offending behaviour to the

offender's background characteristics to create an offender profile. Ultimately, creating a portrait

of a probable perpetrator will aid in the process of prioritizing and apprehending suspects (Alison

et al., 2010).

Study Aim 1: Behavioural Consistency

Offender Profiling and Case Linkage

Law enforcement personnel often depend on behavioural information gathered from other

offenders who have been convicted of similar crimes as a starting point for the investigation

(Beauregard, 2010). Failure to link an offence to a common perpetrator can be detrimental to the

investigation and delay arrest, which may be associated with reoffending (Jackson & Bekerian,

1997). As such, investigators must concentrate on the most salient offence behaviours during the

preliminary stages of the investigation in order to capture the perpetrator earlier, and thus limit

such opportunities for reoffending.

An effective preliminary solution for addressing serial offending is offender profiling,

also referred to as Behavioural Investigative Advice (BIA) (Alison et al., 2010). Offender

profilers typically provide predictions about offender behaviour and characteristics in cases that lack physical or forensic evidence such as DNA or fingerprints (Grubin, Kelly, & Brunsdon, 2001). However, profilers can only provide suggestions and guidance, not a definite solution. This leaves the onus on police investigators to determine what information is relevant for identifying a suspect (Jackson & Bekerian, 1997).

A common tool used in offending profiling is case linkage analysis, a technique that predicts the likelihood that multiple offences are committed by the same perpetrator (Woodhams, Hollin & Bull, 2008). Generally, the methodological approach for conducting case linkage is Receiver Operating Characteristics (ROC) analysis, which statistically determines optimal decision thresholds to link two offences (Bennell, 2005; Bennell & Canter, 2002; Bennell & Jones, 2005). Santilla (2010) noted two circumstances in which case linkage analysis may be applied. The first condition occurs when numerous offences are identified and linked to the same offender, and the objective is to ascertain if a recently committed offence can be attributed to the same crime series. The second condition involves connecting a number of unsolved offences where the perpetrator is unidentified. Although the goal of case linkage is to use a cut-off score of two *solved* offences to predict the connection between two *unsolved* offences, little is known about which aspects of the crime are most relevant for effective linking.

Assumptions of profiling procedures. There are two central principles of offender profiling; the consistency assumption and the homology assumption. Both assumptions coincide with the two aims of the current study and directly relate to case linkage analysis. Consistency is a necessary condition for ensuring the validity of an offender profile, whereas the homology assumption increases the value of a profile, but is not a requirement for producing an effective

offender profile (Alison, Bennell, Mokros, & Ormerod, 2002). The homology assumption will be discussed in a later section of the thesis.

Consistency in offending behaviour is defined as *recurring behaviours* displayed by an offender committing the same type of offence (Canter, 1995). The consistency assumption is comprised of two components: behavioural similarity and behavioural distinctiveness. Behavioural similarity, also known as intra-individual consistency, involves the presentation of similar behaviours at each offence *within* an individual's series of crimes (Salfati, 2008). Behavioural distinctiveness, or inter-individual consistency, determines whether offending behaviour varies from behaviours displayed by other offenders (Alison et al., 2002).

Establishing consistency between behaviours requires an analysis of the frequency of the behaviour. Behaviours that occur at a high or low frequency within a sample are arguably less suitable for linking offences (Canter & Youngs, 2003). For example, an offender may be consistent in committing vaginal penetration during a sexual offence, but this behaviour would lead to little distinction between offenders as it will likely be present in most sexual offences (Grubin et al., 2001). Thus, failing to account for behavioural distinctness may result in an overestimation of consistency and will not reflect true rates of consistency present in real life offence series (Markson, Woodhams, & Bond, 2010). Likewise, the evaluation of unique behaviours may be useful in differentiating between offenders, but may occur too infrequently to be practical in an investigative context (Grubin et al., 2001).

In summary, case linkage analysis assumes that individuals have the tendency to behave in a consistent manner and that practical utility can be achieved only if behavioural distinctiveness is considered (Woodhams & Toye, 2008).

Consistency in Non-Offending Behaviour

        A rationale for why individuals behave consistently has been extensively addressed in the literature. The routine activity theory (Cohen & Felson, 1979) suggests that the behaviour displayed during a sexual offence is merely another type of behaviour. As such, it is expected that sexual offenders are no more or less consistent than an individual performing any other type of behaviour. The routine activity theory (Cohen & Felson, 1979) is a criminological theory that asserts that a motivated individual who encounters the appropriate opportunity will exhibit offending behaviours that are comparable to their daily routine patterns of interaction. Accordingly, individuals are deliberate in both offending and non-offending behaviours in circumstances for which they have control (Beauregard & LeClerc, 2007). To further this point, Canter (1989) asserted that offenders perform behaviours that directly represent the kind of transactions they have with other people in regular circumstances.

        While a variety of factors (both criminal and non-criminal) have been identified in the literature as contributing to behavioural consistency; perceived situational similarity, high levels of self-control and the presence of deviant sexual fantasies will be examined in detail.

        Situational similarity. The field of personality psychology has provided valuable insight into how behavioural consistency is displayed across non-offending situations and activities. Personality psychologists suggest that individuals display consistency with regard to how they perceive and interact with their environment (Mischel & Shoda, 1995). More specifically, two situations that are perceived to be psychologically congruent by the individual (an agreement between the meanings an individual assigns to two contexts) will result in greater behavioural consistency (Shoda, Mischel, & Wright, 1994). As such, the assigned meaning of the

situation may have a greater bearing on whether behaviour is consistent than the physical characteristics of the situation.

Additionally, the demands of the situation also affect behavioural consistency. If an individual perceives a situation as strenuous or difficult, the individual will resort to automatic behaviours that tend to be performed in a consistent manner (Furr & Funder, 2003). Likewise, offending against stranger victims results in a new partner at each offence which may place differing strains and demands on the individual. Consequently, offending against different unknown victims may lead to the perception of dissimilar situations and greater behavioural inconsistency across multiple offenses (Woodhams, Hollin, & Bull, 2008). As such, offenders may display greater consistency for behaviours over which they perceive they have control, compared to behaviours that are dependent on external stimuli which are present on a variable basis.

Self-control and sexual fantasy. Behavioural consistency has also been attributed to self-control and difficulties with self-regulation (Ward & Hudson, 1998). Specifically, low levels of self-control may result in greater reactivity and sensitivity to environmental opportunities and lead to behavioural diversity across offences (Lussier, Leclerc, Healey, & Proulx, 2007). Conversely, individuals possessing higher levels of self-control have been shown to exhibit better behavioural regulation and display greater consistency (Lussier et al., 2007).

In addition, deviant sexual fantasies have been suggested as a contributor to behavioural consistency in offending patterns (Gee & Belofastove, 2007). Specifically, behaviour that is initially fantasized and premeditated may become a part of an individual's behavioural script (the organization of information used to perform routine activities), resulting in similar behavioural

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patterns across offenses. Deviant sexual fantasies and behavioural scripts are thought to be activated with ease upon repeated use (Tedeschi & Felson, 1994). Thus, an individual's inability to self-regulate or a preoccupation with certain thoughts may mediate the relationship between behaviour and context, and consequently impact the degree of consistency displayed.

Consistency and Behavioural Domains

There is debate in the literature concerning whether offenders are consistent in the strategies they implement to commit their crime, also referred to as an offender's modus operandi (MO) (Douglas & Munn, 1992). Consistent modus operandi patterns appear to vary based on the specific behaviour being performed and depend on the type of offence committed. In particular, robbery, burglary, homicide and sexual offences have demonstrated varying levels of consistency with respect to certain behavioural themes, or clusters of behaviours.

Robbery and burglary offences. The environmental features of robbery and burglary offences have been established as consistent aspects of a crime. These features include: the distance between the offender's home base and offence location (journey to crime), distance between offence locations (intercrime distance) and time between offences (temporal proximity) (Bennell & Jones, 2005; Bennell & Canter, 2002; Goodwill & Alison, 2006; Woodhams & Toye, 2007). Conversely, other crime aspects were identified as inconsistent behaviours across robbery and burglary offences. These aspects include: the type of premise targeted (target selection), the method used to gain entry into the premise (entry behaviour) and the type of property appropriated (stolen property). This reliable finding suggests that these traditionally examined behaviours may be more inconsistent, situationally-dependent and thus less effective for linking cases (Bennell & Jones, 2005).

Homicide and sexual offences. Planning behaviours and behaviours executed to avoid detection from law enforcement personnel (escape behaviours) have been demonstrated to be most consistent among interpersonal offences such as homicide and sexual offences (Grubin et al., 2001; Sorochinski & Salfati, 2010).

Most notably, Grubin and colleagues (2001) investigated consistency in sexual offending by assigning crime behaviours to a domain using cluster analysis and compared all reported behaviours to all other offences across domains. A ranking was produced for each offence and rendered the top ranked offences as most similar to other offences that were a part of the same series, on a greater than chance basis. Results within the offence series showed that 35 out of 36 serial sexual offenders were consistent across their offences in at least one of the four identified crime domains: control, escape, sex and style. Furthermore, these findings indicate that behaviours in the escape and control crime domains, characterized by avoiding apprehension, were performed most consistently.

Conversely, the behaviours committed at the crime scene including sexual contact and the physical treatment of the victim (such as wounding), appear to be less consistent (Park, 2009; Sorochinski & Salfati, 2010). Park (2009) examined behaviours occurring exclusively at the scene of the crime to establish patterns in sexual offending. The results demonstrated that behaviours such as squeezing, punching, or biting the victim were inconsistent across the offender's crime series. These findings may suggest that restricting an investigation to behaviours that rely on the victim-offender interaction can have limited utility in linking two offences.

Taken together, behaviours occurring prior to the offence were the most accurate components for linking cases across all examine offence types (Santilla, 2010). Further, different

offence behaviours may be carried with greater or less consistency (e.g., due to victim involvement) and may vary in the extent to which the behaviour or crime aspect is conducive to case linkage analysis (Canter, 1989; Funder & Colvin, 1991; McClelland, 1984).

Limitations of previous research. Although the case linkage literature appears promising with respect to the presence of intra-crime consistency, some methodological issues are apparent. For example, when calculating the level of consistency across offences committed by all other offenders (inter-series consistency), Lundrigan, Czarnomski and Wilson (2010) selected a single offence committed by another offender at random, rather than considering all other offences to contrast with intra-series consistency (Lundrigan, et al., 2010; Mokros & Alison, 2002; Woodhams & Toye, 2007). Failing to incorporate all accounts of inter-series consistency may produce an unreliable measure of inter-series consistency, resulting in a poor account of differentiation between offence series (Goodwill & Alison, 2006).

In other studies, small sample sizes have been used, which tend to limit the generalizability of the results (Santilla, Junkkila, & Sandnabba, 2005; Woodhams & Labuschagne, 2012). Further, the findings of other studies have been limited because they incorporated offence series containing varying numbers of offences (Santilla et al., 2005). If the number of offences used for each series is not standardized, more prolific offenders may appear to exhibit an increase or decrease in consistency across their crimes as a function of the *number* of crimes committed. Moreover, the lack of standardization can affect mean values and introduce a potential confound (Bennell & Canter, 2002).

Another limitation of case linkage studies involves the use of large numbers of crime scene variables without providing a justification for their inclusion, or the use of too few variables to allow for a complete representation of the offence (Lundrigan et al., 2010; Park,

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2009; Santilla et al., 2005; Woodhams & Labuschagne, 2012). Few studies have adopted a comprehensive and theoretically-driven approach to incorporating crime variables. A study conducted by Santilla and colleagues (2005) offered valuable information regarding behaviours occurring before the offence, during the offence, surrounding circumstances and offender characteristics. Their findings also revealed that offences belonging to the same series were more closely associated, in comparison to offences committed by other offenders. Conversely, arbitrarily grouping crime variables by behavioural themes or domains such as control, escape, sex and style (Grubin et al., 2001), may provide limited practical utility. Behavioural themes or domains may not be as useful as a temporal approach, which groups behaviours according to the time in which they occurred.

An MO Approach to Defining the Sexual Offence

To date, varying degrees of breadth and focus on offence behaviours have been employed by researchers to identify key features of the crime to produce effective crime scene analyses (Goodwill, Alison & Beech, 2009; Sorochinski & Salfati, 2010; Grubin et al., 2001). Considering the limitations of case linkage literature, the current study aimed to examine the most salient features of a crime to improve current case linkage. The literature suggests that subdividing an offender's MO into aspects based on temporal sequence of behaviours, rather than behavioural themes or domains, allows for a nuanced understanding of what is occurring at various stages of the offense and where situational factors are expected to intervene most (Canter & Heritage, 1990). If some behaviours are reliably inconsistent across a crime series, it may imply that they are ineffective for producing an offender profile and may be deemed 'unprofilable' (Goodwill & Alison, 2007).

The Criminal Events Perspective. To establish a comprehensive picture of crime, the criminal events perspective (CEP) suggests that it is necessary to attend to the broader context in which the offence occurs (Meir, Kennedy, & Sacco, 2001). Conceptualizing crime as a dynamic process rather than a discrete occurrence involves examining behaviours occurring prior to, during, and following the crime (Meier et al. 2001; Leclerc, Proulx, Lussier, & Allaire, 2009). Therefore, to determine whether an individual is consistent in their offending behaviour requires assessing the criminal event in its entirety and should not be limited to the behaviours only occurring at the scene of the crime.

In accordance with the CEP framework, a major component of the current study was to construct a comprehensive perspective of the sexual offence (Meir et al., 2001). Behaviours were grouped into four crime aspects on the basis of temporal relevance (when behaviours occurred within the crime) (Santilla et al., 2005). These crime aspects are independent yet interrelated variable groupings (as opposed to distinct categories) and have been identified as: 1) pre-crime facilitators, 2) victim selection and characteristics, 3) approach and attack methods and 4) crime scene behaviour.

Pre-crime facilitators. Pre-crime facilitators can be described as the activities performed prior to the offence which suggests that the offender engaged in premeditation and planning. For instance, offenders may bring various tools and equipment to the scene of the crime to aid in the commission of the offence**.** A study by Salfati and Bateman (2007) investigated the consistency of various MO behaviours in serial homicide offenders by investigating the tools brought to the offence. The results of this study revealed that planning behaviours such as bringing a rape-kit (e.g., the supplies used by the offender to control the victim or apparatus used to act out sexual fantasies) to the crime were consistent across crime series. These findings suggest that the

behaviours most consistent during homicide occurred prior to the actual event during the planning stage.

Other consistent pre-crime behaviours have been identified in the literature. Beauregard and colleagues (2008) examined the role of alcohol and negative feelings occurring prior to the crime. The study revealed that individuals who consumed alcohol and experienced a negative mood state prior to the sexual offence were three times more likely to injure their victim and display expressive violence, defined as excessive amounts of violence beyond what is necessary to control the victim. Thus, cognitive/affective (e.g., sexual fantasies) and behavioural (e.g., alcohol consumption) components that occur prior to the onset of the sexual offence are likely stable and pertinent aspects to consider in defining the MO of an offender.

Victim selection and characteristics. Victim characteristics such as age, gender and the perceived vulnerability of the victim being targeted by the offender comprise another important aspect of the crime. For example, Soothill and colleagues (2000) suggested that sexual offenders are diverse in their overall criminal behaviour but are stable in their victim choices.

Similarly, a study conducted by Guay and colleagues (2001) revealed that sexual offenders who alternated between male and female victims were a minority and that the sex of the victim was consistently selected. Additionally, offenders were shown to be consistent in the age of the victim they targeted. Guay and colleagues (2001) suggested that offenders who demonstrate greater instability in the type of victim they target may do so when their preferred victim type is deemed inaccessible.

In some instances, offenders select victims based on other features such as perceived vulnerability. In a sample of sexual offenders, Stevens (1994) reported that the leading reason provided by sexual offenders for targeting a certain victim was that they perceived them as "easy

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prey," opposed to targeting the victim based on their physical attributes. Taken together, the victim selection process appears to be consistent across many offenders and occurs prior to committing the offence. However, victims may also be targeted more inconsistently and opportunistically if the ideal victim is inaccessible. Therefore, the characteristics of the selected victim are likely an essential feature of a sexual offender's MO and may demonstrate marked consistency across an offence series.

   Approach and attack methods. The approach and attack strategies used by the offender to target the victim have been identified as salient features of an offender's MO. The offender's approach and attack methods are reliant on the selected target and the geographical surroundings of the crime scene. Rossmo (1997) theorized four geo-spatial patterns describing how offenders hunt for their victims: the hunter, poacher, trapper, and troller (see Appendix A for a description). Further, studies have identified attack methods for encountering and subduing targets in sexual offences. The literature refers to these methods as the surprise attack, blitz assault, and the con/confidence approach (Hazelwood &Warren, 1990; Smith, 2003). However, little is known about the consistency of these approaches.

   Among a sample of sexual offenders, Beauregard et al. (2007) found that 57% searched for their victims in the same geographic locations. Similarly, Davies and Dale (1995) found that most victims of sexual assault were approached near the offender's home. Therefore, environmental familiarity may determine where an offender targets their victims and the locations they select to commit their crime. These locations are expected to be consistent once a suitable area is located (Lundrigan et al., 2010). As such, the approach and attack strategies employed by the offender may demonstrate consistency across the offence series.

Crime scene characteristics. Crime scene characteristics comprise of a wide range of behaviours exhibited at the scene of the crime and are amongst the most widely discussed features of an offender's MO. Such features include forensic awareness, the risk of apprehension, violence inflicted on the victim and sexual acts committed at the offence.

Beauregard and Bouchard (2010) examined sexual offenders and their capacity for forensic awareness (the concealment of evidence such as semen to avoid detection) at the scene of the crime. The findings revealed that forensic awareness was associated with greater offence planning and selecting a victim prior to the offence. Further, offenders who used alcohol or drugs were unlikely to display forensic awareness due a diminished ability for monitoring their actions. As such, forensic awareness displayed at the scene of the crime may be variable based on a number of pre-crime factors as well as learning from previous offences.

Also, the level of risk for apprehension and offence duration has been investigated as central aspects of the crime scene. Beauregard et al. (2008) found an association between a longer offence length and a greater risk for apprehension. Moreover, sexual offenders who committed their crime with a high risk of apprehension were more likely to engage in violence than those who offended in lower risk situations. These findings may suggest that individuals who commit their crime in riskier situations are more impulsive and lack awareness of environmental cues, rendering them unconcerned with the possibility of detection. As such, these factors may be associated with diminished consistency over an offence series.

Numerous studies have demonstrated that sexual offenders inflict varying levels of violence and force upon their victims (LeClerc et al., in press). Beauregard et al. (2007) found that in almost half of the sample of sexual offenders that were investigated, the level of aggression and violence increased as their offence series progressed. Also, greater victim

resistance was found to result in increased violence inflicted by the offender and more verbal

aggression displayed by the offender (Beauregard et al., 2008; Davies, 1991)

In addition to varying levels of force imposed on the victim, the level of sexual

intrusiveness (the sexual nature of the offence ranging from hands-off behaviour to vaginal and

anal penetration) has proven to be a relatively inconsistent crime scene behaviour. LeClerc et al.

(in press) revealed that the majority of offenders escalated in their level of violence and the level

of sexual intrusiveness as their offence series progressed. The authors also concluded that sexual

behaviour occurring at the crime scene was largely variable according to the victim's behaviour,

and that victim resistance was a strong indicator in determining the offender's level of force and

sexual intrusiveness.

Although crime scene characteristics are a central component of an offender's MO

pattern, they have been shown to change over time due to situational factors such as the victim's

response and learning from the commission of previous offences. Consequently, crime scene

behaviours may be displayed in an unstable manner in comparison to other crime features which

are more controllable by the offender. In summary, the consistency of an offender's MO may

vary depending on the aspect of the crime being investigated.

Study Aim 2: Relating Behaviour to Offender Characteristics

There is a wealth of research that examines sexual offending behaviour in the profiling

literature. Researchers have developed various offender classification systems to differentiate

offenders on the basis of crime scene actions (Douglas, Burgess, Burgess, & Ressler, 1992;

Groth, Burgess, & Holstrom, 1977; Hazelwood, 1987; Kocsis, Cooksey and Irwin, 2002).

Specifically, inferring offender characteristics from offence behaviours is referred to as the

homology assumption, and is the second profiling principle (Canter, 2011). However, effectively linking offender characteristics to crime scene actions has proven to be a challenge (Mokros & Alison, 2002). To date, there have been a couple of notable studies successfully demonstrating the homology assumption (Ter Beek, Van den Eshof, & Mali, 2010; Santilla, Hakkanen, Canter & Elfgren, 2003).

Two common offender characteristics have received considerable exposure due to an increase in requests by law enforcement personnel during investigations. These characteristics are 1) the offender's history of pre-convictions, and 2) an offender's lifestyle features (Jackson & Beckerian, 1997).

Previous convictions. Hakkanen, Lindlof, and Santtila (2004) examined whether the characteristics of an offender could be deduced from the behaviours executed during a crime. The findings revealed that a previous history of property crimes was associated with stealing property from the victim during the sexual offense. Similarly, Davies and colleagues (1998) examined the likelihood of committing various crime scene behaviours based on the occurrence and category of previous convictions. They found that offenders who exhibited extreme violence at the scene of the crime tended to have a previous violent conviction. Additionally, individuals who stole from their victims or forced entry into their victim's home during the sexual assault had a greater likelihood of a theft or burglary conviction (Davies et al., 1998). As such, there is some evidence that previous convictions are reliably related to the behaviour exhibited at the offence. However, limitations of the aforementioned studies include their use of offence behaviours to predict *single* offender characteristics. Hence, the current study will examine configurations of offender characteristics in addition to offence history.

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Lifestyle characteristics. Using a variety of socio-demographic background characteristics such as age, employment situation, education, and marital status, Mokros and Alison (2002) examined whether offenders with equivalent characteristics engaged in comparable offence behaviours. Although the results of this study suggest that there is a lack of support for the homology assumption, the authors offered a valuable template for developing a comprehensive account of offender characteristics based on information gathered from police files. A notable limitation of this study was that analyses were strictly based on behaviours exhibited at the scene of the crime, whereas behaviours leading up to the offence were disregarded.

Thus, perhaps a more holistic view of offender characteristics, in addition to offence behaviours occurring prior to and during the offence (as noted to be influential in establishing an offender's MO), may result in an identifiable association between offence behaviours and offender characteristics. Ultimately, attributing consistency in offending behaviours to certain offender types would have important implications for the prioritization of suspects during a police investigation.

The Current Study

Based on a review of the literature, it remains unclear which aspects of an offence are pertinent and reliable for drawing links and ultimately predicting offender characteristics (Alison et al., 2010). The current study was conducted to attain two primary objectives. The first aim was to examine behavioural similarity and distinctiveness across a sexual offence series. For the current study, the sexual offence was conceptualized as an event comprised of behavioural components occurring prior to and during the crime scene offence, which were derived from convicted offender self-reports. Groups of modus operandi variables were divided into four

crime aspects based on the extant literature: pre-crime facilitators, victim selection characteristics, approach and attack methods, and crime scene characteristics to determine which aspect of an offence was committed most consistently.

The second objective was to utilize consistency scores to determine differences in offender characteristics. An offender typology was developed based on previous convictions, personality traits and lifestyle features to determine if these groups of offender characteristics were associated with consistency in offending behaviour. Three hypotheses were tested:

Hypotheses

1. The behavioural profiles of crimes will possess greater intra-series consistency (similarity within a series of offences) than inter-series consistency (distinctiveness across all offences committed by other offenders).

2. Various offending behaviours will be more or less affected by the situation producing variations in consistency.
   a. More situationally-affected crime aspects such as crime scene characteristics will be less consistent across a crime series than pre-crime facilitators, victim selection characteristics, and approach and attack methods.

3. Variation in consistency will also be affected by an offender's characteristics; offenders that demonstrate "lifestyle stability" will display greater consistency than offenders that exhibit "lifestyle instability."

Method

Participants

The data were drawn from a sample of adult male sexual offenders who were incarcerated for two or more years at a maximum security federal penitentiary in the province of

Quebec, Canada, for offences occurring between 1995 and 2004. All participants provided

consent to participate in the study and did not receive compensation for their involvement in the

study, a practice in accordance with the research guidelines of Correctional Services of Canada.

All data used for the present study were compiled by Dr. Eric Beauregard through the

department of Criminology at University of Montreal and Correctional Services of Canada, with

ethical approval.

Serial sexual offending was defined in the current project as two or more incidents of

unwanted sexual activity perpetrated by a single offender (Brennan & Taylor-Butts, 2007). An

initial sample of 1,000 males was condensed down to 49 participants based on the inclusion

criteria of the study (individuals who committed multiple sexual offences against unknown

victims). A balance between capturing the serial nature of sexual offending and maintaining a

sufficient sample size was achieved by utilizing three offences committed by each offender. As a

result, 49 offenders who committed a total of 147 offences were included in the study. A total of

72 offenders committed at least 2 offences, whereas a total of 27 offenders committed at least 4

offences. Thus, the use of the first 3 offences resulted in an adequate sample size for the current

analyses.

Participants included in the present study spanned from 3 to 37 in their number of sexual

offence convictions. However, since it is standard practice in case linkage research to include a

constant number of offences for each individual, only the first 3 offences for each offender was

used. The purpose of this was to control for prolific offenders who may have committed a

disproportionate number of offences compared to other offenders (Bennell & Canter, 2002).

Prolific offenders with very high or low consistency scores may present as outliers.

There was a mixture in victim preference type, with 33 offences committed against males (22.4%) and 114 committed against female victims (77.6%). Of those victims, 66 were children under the age of 16 (44.9%) and 81(55.1%) were adults 16 years and older, with an overall range of 4 to 68 years (*M*=18.3, *SD*=10.3). The average offender age at the time of their first offence was 29.9 years old (*SD*=8.9) and the average offender age at the time of the study was 40.5 years old (*SD*=11.5). In terms of offender ethnicity, the majority where white (93.8%, *n*=45), married or in a relationship (50.0%, *n*=24) and employed (66.7%, *n*=32) at the time they committed the last offence of their crime series.

Regarding their criminal history prior to index offence, 89.4% of the offenders (*n*=42) had a previous criminal record before the start of their series of sexual offences. Individuals with a prior criminal record had an average of 1.0 charge (*SD*=2.9) for sexual nonviolent crimes, 3.8 charges (*SD*=7.4) for sexual violent crimes, 11.1 charges (*SD*=14.2) for nonsexual nonviolent crimes, 2.3 charges (*SD*=4.1) for nonsexual violent crimes and 1.0 charges (*SD*=1.8) for break-in crimes. Offenders had an average of 19.2 (*SD*=30.5) charges in total, not including the index offence series being investigated in the current study.

Measures

Semi-structured interview. Detailed interviews, information from the offender's file records, and court reports were used to gather the data about offenders and their offences. A semi-structured interview was developed to collect information about each participant's sexual offending behaviour. The interview covered five areas related to offending behaviour: demographic information, pre-crime factors, hunting patterns, modus operandi, post-crime factors and geographical information. The length of the interviews varied from 2 to 12 hours, based on the offender's willingness to offer information and the number of crimes they committed.

Not all variables collected in the interview were included in the present analyses. Behaviours occurring at high frequency (e.g., lack of victim humiliation) were removed, as they failed to distinguish between offenders and their use resulted in a limited range of consistency scores or ceiling effect. Likewise, behaviours occurring at low frequency behaviours (e.g., kidnap style attack) were removed, as they are too unique and lack generalizability, resulting in a floor effect. Taken together, neither added valuable information for case linkage purposes. Accordingly, the current approach aimed to identify widespread patterns of behaviour rather than idiosyncratic behaviours displayed among a few. Thus, variables with high incidence (e.g., present in more than 80% of cases) or low incidence (e.g., present in less than 10% of cases) were eliminated, as suggested by Grubin and colleagues (2001).

Crime variables. Earlier studies examining the consistency of offence behaviours determined that grouping variables was effective for assessing behavioural consistency (Bateman & Salfati, 2007, Salfati & Bateman, 2005; Sorochinski & Salfati, 2010). As such, crime behaviours were divided into four crime aspects using a rational approach, based on the linear, temporal sequence for which the behaviours occurred (Meir et al., 2001). The four crime aspects included; pre-facilitators, victim selection characteristics, approach and attack methods, and crime scene characteristics.

Based on the complexity of the data used, all variables were coded dichotomously. Variables were dichotomized by collapsing response items based on the literature, as well as using a median split approach (see Table 1) (Canter, Bennell, Alison, & Reddy, 2003). A total of 35 modus operandi variables were included in the current study and accounted for the four crime aspects (see Appendix A for a full description).

Table 1

Outline of the Frequencies of the Sample by Crime Aspect.

MO Variables by Aspect		Frequency (%)
Pre-crime Facilitators		
Weapon	Absent	111 (75.5%)
	Present (Knife, firearm, etc.)	22 (24.5%)
Structured premeditation	No	87 (59.2%)
	Yes	60 (40.8%)
Alcohol use	No	101 (70.1%)
	Yes	43 (29.9%)
Drug use	No	89 (61.8%)
	Yes	55 (38.2%)
Deviant sexual fantasies	No	21 (14.6%)
	Yes	123 (85.4%)
Planning Tools	Absent	120 (81.6%)
	Present (disguise, restraints, bindings, rape-kit)	27 (18.4%)
Victim Selection Characteristics		
Selected previous victim	No	109 (75.7%)
	Yes	35 (24.3%)
Victim selected for vulnerability	No	68 (47.2%)
	Yes	76 (54.8%)
Victim alone	No	64 (44.4%)
	Yes	80 (55.6%)
Victim selected for physical characteristics	No	100 (69.4%)
	Yes	44 (30.6%)

Type of victim selection	Nonrandom and patterned	72 (50.0%)
	Random and nonpatterned	72(50.0%)
Victim sex	Female	111(77.1%)
	Male	33 (22.9%)
Victim age	Young (16 or less)	74 (50.3%)
	Old (17 or more)	73 (46.7%)
Victim under the influence	No	116 (80.6%)
	Yes	28 (19.4%)
Victim from a dysfunctional environment	No	111 (77.1%)
	Yes	33 (22.9%)
Approach and Attack Methods		
Kidnap style attack	No	130 (88.4%)
	Yes	17 (11.6%)
Confidence approach	No	39 (26.5%)
	Yes	108 (73.5%)
Surprise attack approach	No	118 (80.3%)
	Yes	29 (19.7%)
Blitz assault approach	No	137 (93.2%)
	Yes	10 (6.8%)
Hunting style hunter	No	81 (55.1%)
	Yes	66 (44.9%)
Hunting style poacher	No	136 (92.5%)
	Yes	11 (7.5%)
Hunting style troller	No	120 (81.6%)
	Yes	27 (18.4%)

Hunting style trapper	No	104 (70.7%)
	Yes	43 (29.3%)
Offender looks in specific location	No	53 (36.1%)
	Yes	94 (63.9%)

Crime Scene Characteristics

Level of clothing of offender	Not undressed	40 (27.2%)
	Partially/completely undressed	107 (72.8%)
Level of risk	Low	91 (61.9%)
	High	56 (38.1%)
Victim forced to commit sexual acts	No	70 (47.6%)
	Yes	77 (52.4%)
No force	No	78 (53.1%)
	Yes	69 (46.9%)
More force than necessary	No	115 (78.2%)
	Yes	32 (21.8%)
Forensic awareness	No	105 (71.4%)
	Yes	42 (28.6%)
Victim resistance	Absent	25 (17.0%)
	Present	122 (83.0%)
Offender reaction to victim resistance	No (stops, runs away)	57 (38.8%)
	Yes (insists, threats, forces)	90 (62.2%)
Time spent with victim (min)	Low (30 min/ less)	91 (61.9%)
	High (31 min/more)	53 (36.1%)
Sexual contact	Low	73 (49.7%)
	High	74 (50.3%)
Harm to victim	Absent	110 (74.8%)
	Present (harm or death)	37 (25.2%)

The variables *planning tools* and *sexual contact* were created based on the amalgamation of variables derived from the semi-structured interview responses. The *planning tools* variable is similar to the evidence of planning criteria proposed by Goodwill and Alison (2007). This variable consisted of four dichotomous variables signifying that some premeditation took place prior to the offence and included: a disguise, physical restraints, bindings and a rape-kit.

Each offender received a sum score across all variables for the first three offences in their series based on whether the behaviour was absent or present. A median split method was implemented, such that individuals who received a score below the median (Mdn= 1) were assigned a 0, indicating low level of planning, while individuals who received a score above the median were assigned a 1, indicating high level of planning, based on their frequency of planning behaviours.

The *sexual contact* variable was constructed based on LeClerc and colleagues (in press) scale entitled the Sexual Intrusiveness Scale. This variable was comprised of a number of dichotomous variables pertaining to the sexual acts performed between the offender and victim. This variable was comprised of the following variables: vaginal intercourse with fingers, sodomy with fingers, vaginal intercourse with penis, sodomy with penis, vaginal intercourse with objects, sodomy with objects, sexual contacts, caressing/rubbing, cunnilingus, fellatio, masturbation, and exhibitionism. All offences involving some form of insertion of a body part or object were assigned a 1, and labelled as high level of sexual contact. If the offence did not comprise of insertion such as touching, oral sex and exposing oneself, the offence received a 0, suggestive of relatively lower levels of sexual contact. If both low and high sexual contact behaviours were exhibited, the offence was classified as high sexual contact.

Self-control scale. The Self-Control Scale, developed by Grasmick and colleagues

(1993), was administered to the study participants following the semi-structured interview. The

Self-Control Scale is a self-reported questionnaire that assesses attitudinal perception of an

individual's overall level of self-control. It consist of a total of 96 items; 6 subscales with 4 items

on each subscale, rated on a 4-point Likert scale. The questions from this scale were asked

directly to the participants. Scores on the scale range from 24 to 96, and higher scores were

representative of lower levels of self-control. The original scale demonstrated good overall

reliability (Cronbach's α = .805), and Grasmick et al. (1993) identified six latent variables

directly relating to self-control: *impulsivity, simple tasks, risk seeking, physical activity, self-*

centered, and *temper* (see Grasmick et al., 1993 for a full description of this measure).

Plan of Analysis

1.)   Calculation of *Jaccard's Coefficient* - The consistency within a crime series (intra-series

consistency) and differentiation between series committed by different offenders (inter-series

consistency) was empirically analyzed using scores produced by Jaccard's coefficient (1908).

Jaccard's coefficient is a statistical measure used to obtain a similarity score for binary data and

is commonly applied in behavioural research to link cases (Bennell & Canter, 2002; Woodhams

& Toye, 2007). Jaccard's coefficient is calculated as; a/(a+b+c), where "a" refers to the overall

number of behaviours shared by two offences, "b" represents the number of behaviours present

that are exclusive to the first offence examined, and "c" represents the number of behaviours that

are exclusive to the second offence examined (Woodhams, Grant, & Price, 2007). Each offender

was assessed on the presence or absence of behavioural variables for the first three crimes of

their offence series. As a result, each offence was compared to every other offence independently, as depicted by the two-by-two contingency table below (see Figure 1).

Figure 1

Jaccard's Measure of Association Computation

Crime 2 / Crime 1	Behaviour occurs	Does not occur
Behaviour occurs	a	b
Does not occur	c	d

Jaccard's coefficient is ideal for case linkage analysis because it does not account for joint non-occurrences (d), meaning that if a particular behaviour was absent during two offences, the level of similarity present between the two offences would not increase (Bennell & Canter, 2002). Consequently, the absence of two behaviours does not contribute to the similarity between offences. This is particularly significant when investigating crime scene data because it is often unclear whether certain behaviours occurred or not. The behaviour may have been committed but not reported or a modification in the environment may result in the offender failing to commit the behaviour, whereas it would be performed in other circumstances. Jaccard scores range from 0 to 1; 0 indicates no similarity, and 1 indicates perfect similarity. Jaccard scores between all crimes were calculated using B-Link (Bennell, 1999).

The output of B-Link is composed of Jaccard scores for every individual offence compared to all other offences while retaining information on which offence belongs to an offence series. In total, the output comprised of 10,732 combinations; 147 were linked cases (49 offenders who each committed 3 offences) and 10,585 were unlinked. For each participant, their Jaccard score was averaged across their three offences to produce a "linked score." Next, for each participant, Jaccard scores were averaged across all offences committed by other offenders, 10,585 offences in total, to produce an "unlinked" score. Subsequently, all "linked" scores across the 49 participants were averaged, as were the 49 "unlinked" scores.

Since the "linked" scores only included offences committed by the individual across their own series, these scores were inflated and overestimated intra-series consistency, as they do not account for how each offender's "linked" score may differ from all other offender's "linked scores." As such, each offender's average "linked" score was subtracted from their average "unlinked" score to generate a final differentiation score or more precise value of consistency because it considered intra-series consistency in relation to inter-series consistency. Since differentiation scores subtracted unlinked from linked scores, if an individual's average unlinked score exceeded their average linked score, a negative score may have been computed. In such as case, this would suggest that the inter-series consistency exceeds intra-series consistency. This method was modelled after Goodwill and Alison's (2006) study examining behavioural patterns of burglary offenders.

Jaccard scores were computed five separate times for all variables and each crime aspect. First, analyses included all 35 behavioural variables, followed by four analyses that included variables specific to each individual crime aspect. The result of this process was an average differentiation score (linked minus unlinked scores) for all 35 behavioural variables and for each

crime aspect; pre-crime facilitators, victim selection characteristics, approach and attack methods and crime scene characteristics.

2.) *Cluster Analysis* - Cluster analysis was used to split the sample into homogenous groups based on offender characteristics (Norusis, 2005). In cluster analysis, variables grouped in the same cluster are more similar than those assigned to other clusters. Cluster analysis constructs mathematical groupings based on the correlation between a mixture of both categorical and continuous variables by plotting variables as coordinates in space. Each individual is represented by a coordinate and all neighbouring points are grouped into the same cluster (Norusis, 2005). A two-step cluster analysis was performed on offender characteristics without predefined groupings guiding the cluster membership for the variables investigated.

The objective of the cluster analysis was to conceptualize what an offender "looks like" in his everyday life, based on numerous static and dynamic variables such as pre-convictions, personality traits and lifestyle or demographic features. The notion is to get a rough snapshot of an offender's life and how this may relate to behavioural consistency. The offender characteristic variables utilized were based on the socio-demographic background variables identified by Mokros and Alison (2002) as pertinent to differentiating sexual offenders for investigative purposes.

3.) *T-tests* - A t-test was used to compare the differentiation score means (e.g. Jaccard scores) of intra-series offences (offences committed by the same offender) to the inter-series offences (offences committed by other offenders). Since the data violate the independence of observations assumption, as offenders' scores contributed to both the average overall linked and unlinked scores, a dependent samples t-test was utilized. In addition, multiple independent

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samples t-tests were conducted to compare the behavioural consistency means (Jaccard scores) of offender groups obtained from the cluster analysis across each crime aspect.

4.)   *Analysis of Variance (ANOVA)* - A repeated within-subjects ANOVA was computed to establish whether there were differences in consistency between the four crime aspects. In addition, a mixed design ANOVA was computed to establish differences between consistency scores by crime aspects for each offender type, as determined by the cluster analysis. In addition, simple contrasts were implemented to determine how each of the four crime aspects differed from crime scene characteristics.

Results

Study Aim 1: Variation and Consistency of MO

The normality of the data was assessed and revealed a skewness value of +/- 2 and kurtosis value of +/- 7, indicating normally distributed data (West, Finch & Curran, 1995). To address the first hypothesis, consistency was calculated across all 35 behavioural variables for each offender's first three offences using Jaccard's coefficient scores. Jaccard scores ranged from .09 to .71 (*M*=.76, *SD*=.22) for all behavioural variables. By crime aspect, consistency scores for each offender's first three offences ranged for pre-crime facilitators from .06 to .80 (*M*=.84, *SD*=.20), victim selection characteristics ranged from -.07 to .85 (*M*=.74, *SD*=.25), approach and attack methods ranged from -.03 to .87 (*M*=.78, *SD*=.27), and crime scene characteristics ranged from -.05 to .71 (*M*=.76, *SD*=.24).

Computations of behavioural consistency for all linked cases (*n*=147) revealed an average Jaccard score of .76 (*SD*=.22). The behavioural consistency for all unlinked cases (*n*=10585) revealed an average Jaccard score of *.33* (*SD*=.04).

A dependent samples t-test revealed that the average of each offenders linked scores (M=.76, SE=.03) was significantly different than unlinked scores (M=.33, SE=.01), $t(48)$= 14.91, p<.001, r= .91, indicating a large effect. This suggests that an offender's offence series is notably different from offences carried out by other offenders, as anticipated by the first hypothesis.

Unlinked scores were subtracted from linked scores and an average differentiation score of .43 (SD=.20) was yielded. This result reflects how each offender displayed consistency across their crime series relative to the consistency displayed by other offenders in their crime series. Thus, the differentiation score takes into consideration the consistency performed by other offenders. As previously noted, determining consistency within an offender's crime series is not sufficient for profiling purposes without understanding how it differentiates from the consistency exhibited by offenders (Goodwill & Alison, 2006).

Canter and colleagues (1991) reported a general guideline for linking two offences using Jaccard's coefficient as a measure. Based on their study, the authors determined that a Jaccard score of .30 is an appropriate cut-off and indicates offences will be accurately linked 84.8% of the time (Canter et al., 1991). As such, the differentiation score, which accounted for both intra-series consistency and inter-series consistency, was well over the suggested cut-off. Generally, the findings revealed that offenders performed consistently across all behavioural variables.

Consistency across Crime Aspects

Groups of behavioural variables were examined using the four crime aspects. Differentiation scores were calculated using Jaccard scores for each of the four crime aspects independently by subtracting unlinked scores from linked scores for all participants (see Table 2). Pre-crime facilitators (M=.46, SD=.20) and victim selection characteristics (M=.46, SD=.27)

generated the highest differentiation scores in comparison to approach and attack methods (*M=*.41, *SD=*.23) and crime scene characteristics (*M=*.38, *SD=* .22).

Table 2

Average Jaccard's Coefficient Scores for all Behavioural Variables and Individual Crime Aspect

Variables by Aspect	Average linked score (linked cases)	Average unlinked score (unlinked cases)	Average differentiation score (linked minus unlinked cases)
All variables	.76	.33	.43
Pre-crime facilitators	.84	.38	.46
Victim selection characteristics	.74	.27	.47
Approach and attack methods	.78	.36	.42
Crime scene characteristics	.76	.38	.38

Note. Jaccard's coefficient scores range from .00 to 1.00, as suggested by Canter et al. (1991), scores above .30 denotes that two cases are assumed to be linked.

Since every offender received a differentiation score in each of the four crime aspects, a repeated-measures ANOVA was used for all participants (*n=*49). Mauchly's test was performed and revealed nonsignificant results χ^2 (5) =.921, *p=*.569, indicating that the assumption of sphericity was not violated. The results of the repeated ANOVA revealed that differentiation scores differed on the basis of the crime aspect *F*(3, 144)=3.46, *p=*.02, η^2 =.07. Contrasts were performed and identified that differentiation scores for pre-crime facilitators, *F* (1, 48) =7.166,

with a medium effect of $d = .38$, and victim selection characteristics, $F (1, 48) = 6.728$, with a medium effect of $d = .37$, were significantly greater than crime scene characteristics. Thus, offenders performed both pre-crime facilitators and victim selection characteristics with significantly greater consistency than crime scene characteristics, as posited in the second hypothesis (see Figure 2).

Figure 2

Differentiation Score Means by Crime Aspect
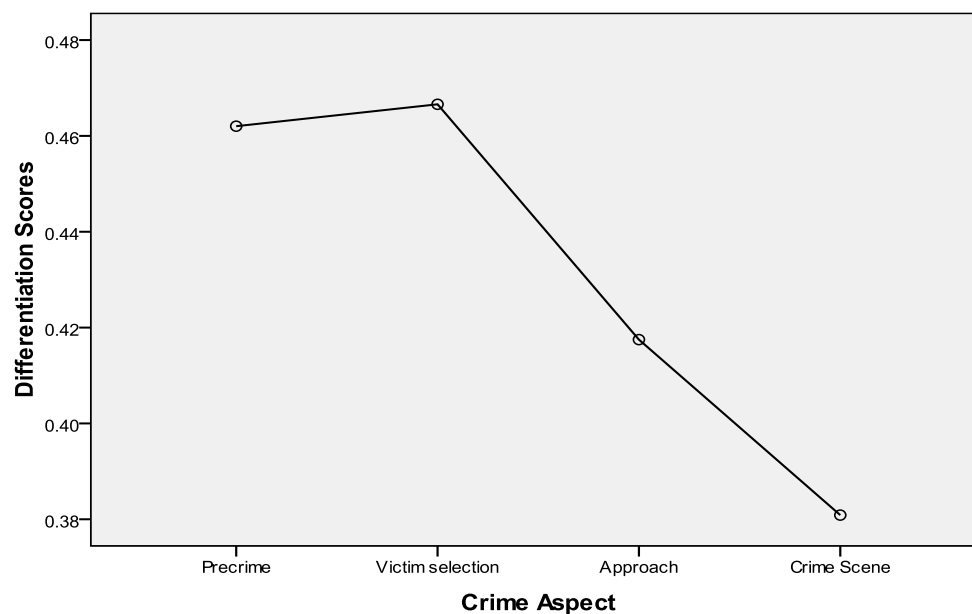
Study Aim 2: Offender Characteristics

Offender characteristics were inputted into a two-step cluster analysis to determine potential groupings of offenders based on the 12 selected offender characteristics (see Appendix B). Four participants were excluded from the cluster analysis (participant numbers 27, 40, 71, and 72) ($n = 45$) due to missing data.

The cluster analysis produced a two group solution of fair quality, as indicated by a silhouette score of .30. According to Kaufman and Rousseeuw (1990), a silhouette score greater than .20 represents fair cluster quality. The silhouette score represents a measure of fit, by evaluating the distance from the centroid of one cluster to another. Therefore the better the fit, the more differentiable each cluster is from one another. The cluster solution suggested that offender characteristics were grouped based on those offenders that were 'social conformists' and those that were 'social deviants.'

As illustrated in Table 3, offender characteristics for the total sample revealed that the majority of offenders were stable in their employment (68.9%, $n=31$) and relationship (53%, $n=24$) status. Overall, more offenders were convicted of a sexually violent offence ($n=32$) than a nonsexually violent offence ($n=22$), although the majority of participants had committed both types of crimes. Offenders commonly reported possessing deviant sexual fantasies ($n=37$), social isolation ($n=34$) and scored fairly high on the self-control scale ($M=60.91$, $SD=1.32$), indicating high levels of self-control.

Table 3

Frequencies (Percentage) and Means of Offender Characteristics by Individual Cluster and

Combined

	Social Conformists 31(68.9%)	Social Deviants 14 (31.1%)	Total [a] 45 (100%)
Employed	29 (93%)	2 (14.3%)	31 (68.9%)
Married or in couple	20 (64.5%)	4 (28.6%)	24 (53%)
Average self-control score [b]	M=57.81(SD=1.37)	M=67.79 (SD=8.97)	M=60.91(SD=1.32)
Sexually violent charges	19 (61.3%)	13 (92.9%)	32 (71.1%)
Deviant sexual fantasies	23 (74.2%)	14 (100%)	37 (82.2%)
Average age at first offence in years	M=31.42 (SD=9.34)	M=25.71 (SD=6.53)	M=29.64 (SD=8.90)
Socially isolated	21 (67.7%)	13 (92.9%)	34 (75.6%)
Sex with prostitutes in adulthood	15 (48.4%)	3 (21.4%)	18 (40.0%)
Nonsexual violent charges	13 (41.9%)	9 (64.3%)	22 (48.9%)
Compulsive masturbation in adulthood	10 (32.3%)	6 (42.9%)	16 (35.6%)
Previous psychological problems	5 (16.1%)	3 (21.4%)	8(17.8%)
Average number of city changes in past 5 years	M=1.03 (SD=1.64)	M=1.14 (SD=1.46)	M=1.07 (SD=1.57)

Note. Variables appear in descending order from most important for cluster discrimination to least important. [a] The total comprises of both clusters, n=45. [b] Scores from the Self-Control Scale, developed by Grasmick et al., (1993) ranged from 24 to 96, however no scoring procedure was offered to denote high vs. low scores.

Social Deviants and Social Conformists Offender Types

The employment status of the individual was primarily used to discriminate among

offenders, followed by their marital status, self-control score, and their number of sexually

violent charges. The offender characteristics that contributed to the first cluster seemed to represent social deviance, as characterized by lifestyle features and attributes that deviate from typical social norms and standards. Cluster one accounted for 31.1% of the sample (n=14). Individuals labeled as social deviants were more likely to be unemployed, not in a relationship, and were younger at the time of their first offence. Further, they possessed higher self-control scores (M=67.79, SD=8.97) signifying lower levels of self control, although their scores greatly varied within the group. Their offence history comprised of more sexually violent and nonsexually violent offences. Social deviants also reported more social isolation. All endorsed deviant sexual fantasies and approximately half engaged in compulsive masturbation during adulthood.

The second cluster was labeled social conformists because individuals within this cluster were characterized by stable lifestyles and general conformity to societal expectations (bar their offending behaviour), relative to cluster 1 offenders. Cluster two accounted for 68.9% of the sample (n=31). The majority of the social conformists were employed, either married or in a relationship, and possessed higher levels of self-control as indicated by their lower self-control scores. In addition, relative to those grouped within the first cluster, they were older at the time of their first offence, less socially isolated, and their conviction history comprised of less sexually violent and nonsexually violent charges. Interestingly, about half of individuals in this group reported engaging in sexual activity with a prostitute during adulthood.

Differences between Offender Types

A mixed design ANOVA was conducted to compare differentiation scores for each offender type by crime aspect. The within-subjects variables (crime aspects) were re-examined utilizing the majority of the participants in the sample (n=45). Mauchly's test was performed and

was calculated to be nonsignificant (χ^2 (5) =.901, p=.500), indicating that the assumption of sphericity was not violated. The within-subjects effect of differentiation scores for each crime aspect approached significance, F (3, 129) = 2.651, p= .052, η^2=.058. Similar to the contrasts performed in the within repeated-measures design, contrasts revealed that differentiation scores for pre-crime facilitators (F (1, 43) = 5.39, d=.33), and victim selection characteristics (F (1, 43) =5.63, d=.32), were significantly greater than crime scene characteristics.

The between-subjects variable (offender type) was also assessed. Levene's Test of Equality of Error Variances revealed that the homogeneity of variance assumption was not violated for all levels of the crime aspect. There was a significant between-subjects effect for differentiation scores, F (1, 43) = 7.21, p=.01, η^2=.14, indicating that the differentiation scores of social conformists were significantly greater than the differentiation scores of the social deviants, and thus congruent with hypothesis three. Moreover, there was a nonsignificant interaction effect between the differentiation scores for offender type by crime aspect, F (3, 129) =.375, p=.77, η^2=.01. This suggests that the effect of differentiation scores by crime aspects did not differ based on whether the individual was a social deviant or social conformist (see Figure 3).

Figure 3

Differentiation Score Means for each Crime Aspect by Offender Type
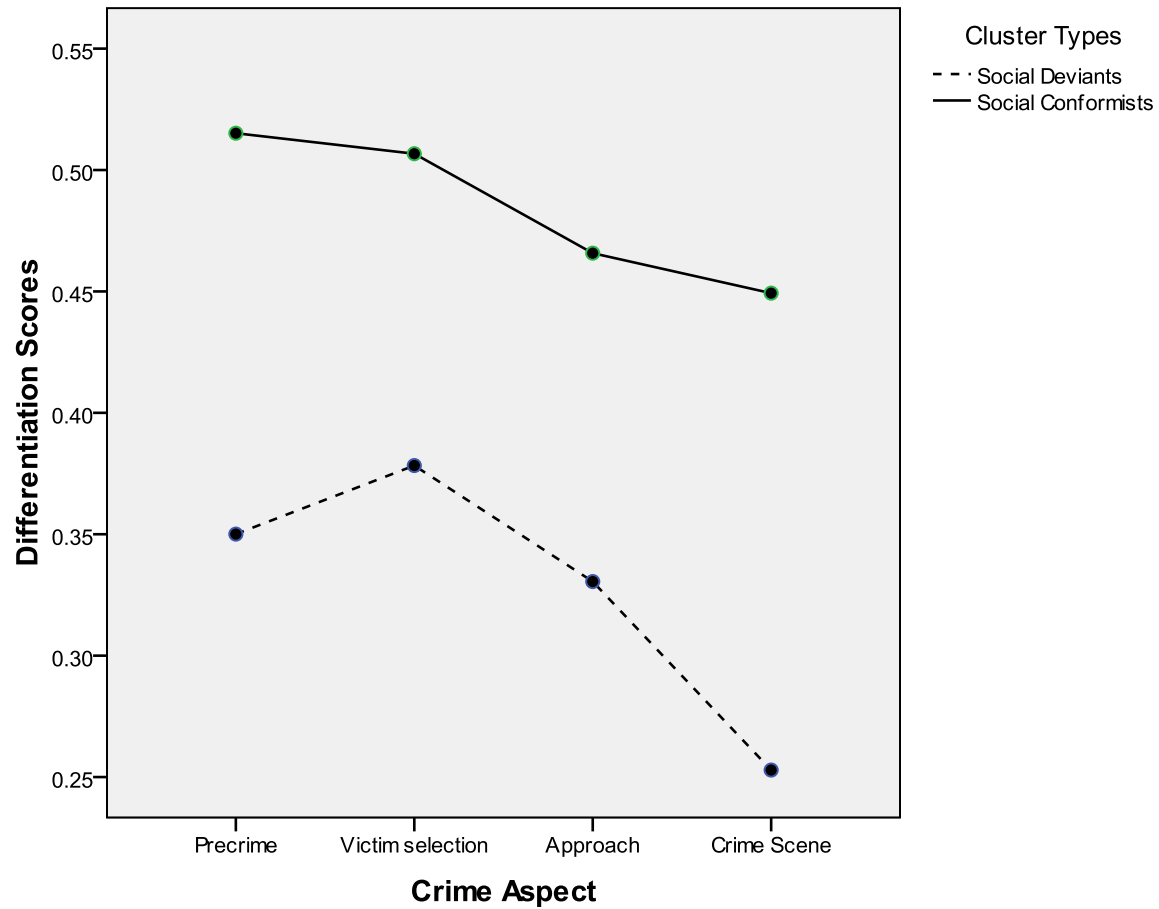
Multiple t-tests were conducted to compare the differentiation scores of two offender types across all 35 behavioural variables and four crime aspects (see Figure 4). Family-wise error was controlled for by adjusting the alpha by the number of comparisons conducted, alpha was deemed significant at the .0125 level.

Figure 4

Average Differentiation Score for each Crime Aspect and all Variables by Offender Type
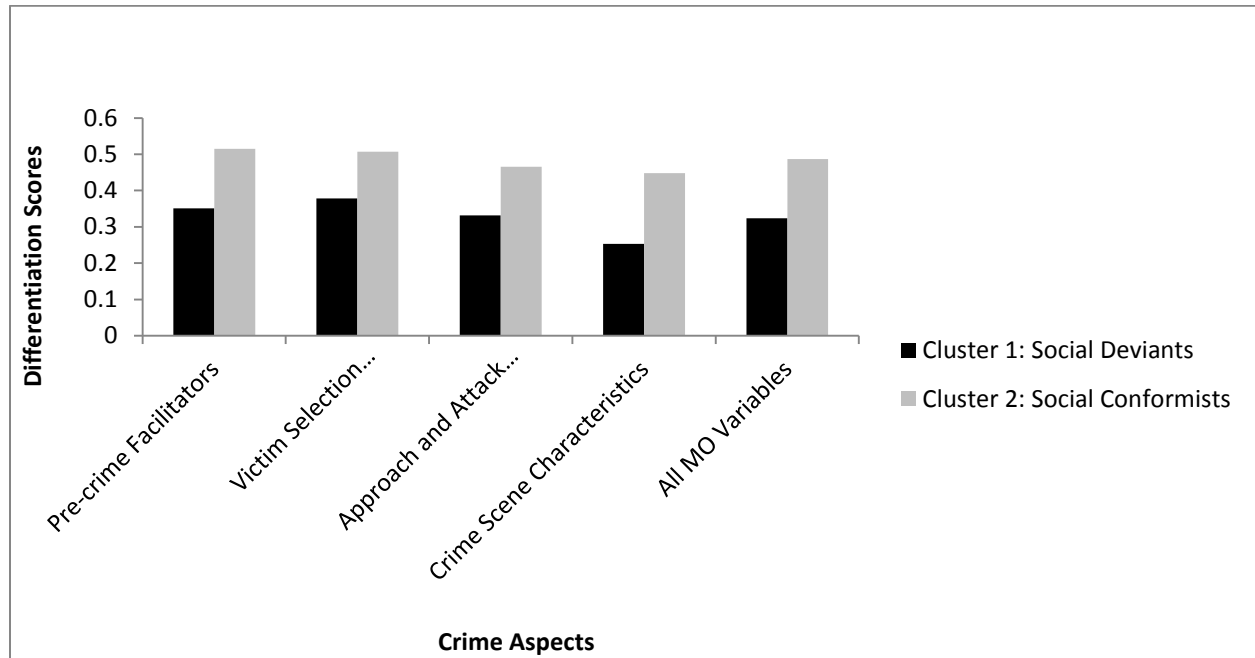
An independent samples t-test was conducted and revealed that social conformists (*M*=.49, *SE*=.03) were significantly more consistent in their offending behaviour for all 35 behavioural variables than the social deviants (*M*=.32, *SE*=.05), *t* (43) = -2.64, *p*=.01, indicating a large effect of *d*=.89. This finding lent support to hypothesis three; offenders demonstrating more lifestyle stability will display greater intra-series consistency.

With respect to individual crime aspects (see Figure 4), the social conformists (*M*=.52, *SE*=.035) displayed significantly greater consistency in their pre-crime facilitators than social deviants (*M*=.35, *SE*=.05), *t* (43) = -2.68, *p*=.01, indicating a large effect of *d*=.89. Thus, the results indicate a significant difference in the way offender groups performed behaviours prior to the offence.

Differences between groups for victim selection characteristics was examined and revealed that social conformists (M=.51, SE=.05) were more consistent than the social deviants (M=.38, SE=.07). However, this difference was not significant, t (43) = -1.48, p=.146, signifying a medium effect of d=.50. Likewise, differentiation scores for social conformists (M=.47, SE=.04) were greater for approach and attack methods compared to social deviants (M=.33, SE=.06). However, these group differences were not significant, t (43) =-1.82, p=.07, approaching a large effect of d=.60.

Lastly regarding crime scene characteristics, social conformists (M=.45, SE=.04) had greater differentiation scores compared to social deviants (M=.25, SE=.05). Group differences were statistically significant, t (43) = -2.95, p=.01, indicating a large effect of d=.95.

Discussion

The purpose of this thesis was to examine intra-series consistency in relation to inter-series consistency, and whether differences were evident based on offender characteristics. The present findings revealed that offences executed by the same offender were significantly different from offences committed by other offenders. Accordingly, differentiation scores (e.g. the offender's overall consistency in behaviours minus the average consistency of those behaviours in the sample population) significantly differed by crime aspect. Specifically, *pre-crime facilitators* and *victim selection characteristics* were performed more consistently than *crime scene characteristics*. Also, the results indicated that social conformists were more consistent in their overall offence behaviour than social deviants. In particular, social conformists were found to be more consistent than social deviants in how they executed behaviours prior to the offences (*pre-crime facilitators*) and at the scene of the crime (*crime scene characteristics*).

Consistency in Offending Behaviour

The first hypothesis tested whether offenders perpetrated crimes in a similar manner across their offence series. The results supported this postulation, as offenders maintained a level of consistency that exceeded the general threshold (a Jaccard's coefficient of .30) of what would be expected for two linked offences (Canter et al., 1991). However, an important consideration is that in reality, offender profilers would conduct ROC analyses to establish a specific threshold for police decision making and would not necessarily use this suggested cut-off. Since the current study was not concerned with predicting linked cases based on a threshold, the .30 cut-off was provided to give the scores reported in the current study some context. Moreover, the results from the dependent samples t-test determined a significant difference between linked and unlinked cases, confirming that behavioural consistency was distinct from offences carried out by other offenders.

Findings from other studies have also provided support for consistency in offending behaviour. Woodhams and Labuschagne (2012) contrasted linked crime pairs (.47) to unlinked crime pairs (.34) among sexual offences, finding significantly greater consistency in linked crime pairs. In addition, studies examining other offence types found similar results, reporting Jaccard's coefficient scores ranging from .39 to .41 for linked offences and .17 to .27 for unlinked offences (Bennell et al., 2009; Mokros & Alison, 2002; Woodhams et al., 2007). These figures are considerably lower than the reported Jaccard scores in the current study, which were .76 for the average linked score and .33 for the average unlinked score. As previously mentioned, one possible explanation for these differences is that some earlier studies strictly focussed on the consistency of crime scene behaviours, which are behaviours shown to result in lower levels of

consistency (Mokros & Alison, 2002). Overall, consistent with the findings across various offence types, the offender's MO appears to be consistent.

The current study differed from the aforementioned studies in terms of the formulation of a differentiation score. The scores were calculated by subtracting the average consistency of all unlinked cases from the average consistency of all linked cases for each offender in the sample. The differentiation score essentially prevented the inflation of intra-series consistency by taking potential inter-series consistency into account. In this case, the unlinked scores served as an estimation of the sample base-rate which can be used to generalize to the population. This information is critical for understanding the relative nature of behavioural consistency.

In contrast, other studies examining consistency failed to offer a comparison (Markson et al., 2010), or selected one or two offences committed by another offender at random to determine inter-series consistency (Lundrigan, Czarnomski, Wilson, 2010; Woodhams & Toye; 2007). The calculation of a differentiation score is an adaptation from the work of Goodwill and Alison (2006) for linking burglary offences. Further, the current study is the first known account of its use on serial sexual offenders and proved to be useful for this subset of offenders.

The second research question examined differences across the four crime aspects to establish which aspects were carried out most consistently by the entire sample of offenders. The study anticipated that pre-crime facilitators, victim selection characteristics and approach and attack methods would be performed most consistently across the crime series. Conversely, crime scene characteristics were hypothesized to be least consistent due to a reliance on situational factors. The repeated-measures ANOVA determined a significant difference between all four crime aspects, indicating that differences between crime aspects accounted for 7% of the total

variability in differentiation scores. Additionally, a simple contrast determined that behaviours occurring prior to the crime and targeting victims based on their characteristics were displayed more consistently than behaviours occurring at the scene of the crime.

These findings indicate that behaviours such as the amount of clothing on the offender, level of risk for apprehension, force inflicted on the victim, forensic awareness of the offender, victim resistance, offender's response to victim resistance and time spent with the victim during the sexual offence are likely to be less reliable for determining behavioural consistency across an offence series. Thus, a negative linear relationship appears to form between the four crime aspects; as offence behaviours progressively involve more interaction with situational factors, consistency decreases.

Grubin and colleagues' study (2001) supports this finding and showed that aspects of the crime easily controlled by the offender resulted in the greatest consistency. Grubin et al., (2001) created four offence domains; control, escape, sex and style. The control domain is analogous to the approach and attack methods, and consisted of behaviours used to achieve control over the victim during the initial encounter. The escape domain is comparable to pre-crime facilitators, comprised of behaviours displayed to avoid capture. The sex domain is most similarly related to the crime scene behaviours which involved the sexual behaviours occurring at the crime scene. The style domain reflected the behaviours performed that were gratuitous for the commission of the offence and believed to reflect the offender's personality. Overall, control and escape domains maintained better predictive accuracy than style and sex domains.

Similar to the findings of the current study, the control and escape domains are likely premeditated, under greater control by the offender and involved the least interference with situational factors. In relation to the present study, transporting a weapon or rape-kit to the

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offence and using drugs or alcohol entails premeditation and may be engaged in prior to the offence as a method of successfully facilitating the offence.

Additionally, behaviours occurring prior to the offence, as well as behaviours that are least reliant on the situation appear to be most consistent among burglary offences (Bennell & Canter, 2002; Bennell & Jones, 2005; Goodwill & Alison, 2006), robbery offences (Woodhams & Toye, 2007) and homicide (Bateman & Salfati, 2007). This suggests that regardless of the degree of interaction present for each offence type, behaviours preceding the offence will be carried out most consistently.

Alison and colleagues (2002) contend that the profiling literature is primarily 'nonsituationalist' in its approach when operating under the assumption that individuals will maintain consistency in their behaviour, regardless of environmental factors. The present study supports this notion and asserts that although no behaviour is purely autonomous from the situation, behaviours that are more dependent on situational influences are less predictable and should not be the central focus of criminal investigation. For instance, several studies reported that victim resistance influenced the severity and frequency of physical and verbal aggression during the offence (Beauregard et al., 2008; Davies, 1991; LeClerc et al., in press). As such, the literature suggests that behavioural consistency will diminish upon interaction with the victim.

When analyses involved the entire sample, approach and attack methods did not differ significantly from crime scene characteristics, although both revealed high differentiation scores. A possible explanation for this finding is that the method used by the offender to encounter and assault their victim was more situationally-based. In a recent study conducted by Beauregard, Rebocho and Rossmo (2010), Canadian and Portuguese sexual offenders displayed different target selection patterns based on the geographical surroundings of the area. As such,

environmental factors have been shown to affect the offender's approach in targeting their victim. Overall, differences between the four crime aspects suggest that situational factors may influence certain types or groups of behaviours more so than others.

Social Deviants and Social Conformists

The third hypothesis addressed the homology assumption, which posits that individuals with similar characteristics or backgrounds will demonstrate similar patterns of offending (Canter, 2000; Mokros & Alison, 2002). Specifically, the current study used stable personality traits, previous convictions and lifestyle features to define offender characteristics. Accordingly, social conformists were significantly more consistent than social deviants, which was unsurprising considering that there is theoretical support for an association between lifestyle and offending behaviour (Ressler, Burgess & Douglas, 1993).

In particular, the proposed two-cluster solution is analogous to Ressler, Burgess and Douglas's (1993) organized/disorganized offender types, utilized by the FBI. Ressler et al.'s (1993) classification of serial offenders suggests that the level of organization displayed during an offence corresponds with the lifestyle stability of the offender. Specifically, similarities between the social deviant and disorganized offender can be drawn. The disorganized offender commits their offence impulsively, is socially inadequate, and incapable of maintaining stable romantic relationships or consistent employment. Similarly, the social conformist is comparable to the organized offender. The organized offender is calculated in their offence behaviour, preoccupied with sexual fantasy, is socially adept, and capable of maintaining stable romantic relationships and employment. Canter, Alison, Alison and Wentink (2004) tested the organized/disorganized typology among serial murderers and found that the majority of offenders could be classified as the organized type.

Similarly, the current study classified the majority of offenders as social conformists (68.9%). Social conformists committed both sexually violent (61.3%) and nonsexually violent (41.9%) offences, as did social deviants. However, an overwhelming majority of social deviants previously committed a sexually violent offence (92.9%) and a nonsexually violent offence (64.3%), not including the offence series examined in the current study. Comparatively, this may indicate that in addition to lifestyle difficulties, social deviants have a sexually prolific criminal history. Therefore, although both groups committed violent sexual and nonsexual offences, a core characteristic of social deviance appears to be a history of sexually violent offending. As such, a history of sexually violent convictions may inform investigators of the level of consistency expected to be committed across a crime series.

On a related note, the level of consistency displayed by social conformists may be related to their offence history in general. In particular, social conformists had high levels of consistency and were less likely to have been convicted of both sexually and nonsexually violent offences, compared to social deviants. A potential explanation may be that social deviants have an offence history that is more versatile than social conformists, which is consistent with the generalist/ specialist literature.

There is an ongoing debate regarding whether offenders are consistent in the types of offences they commit or whether they randomly offend based on opportunity throughout their criminal career (Guay et al., 2001). As such, some offenders may become experts in specific criminal activities, such as sexual offending, and may develop a scripted method for perpetrating the crime in a consistent manner. However, without information about other types of offences committed, this relationship may be difficult to support (Guay, et al., 2001; Soothill, et al., 2000). Moreover, offender's age at their first offence may be accounting for the relationship

between consistency and offence type versatility. Social deviants were considerably younger (*M*=25.71), in relation to social conformists (*M*=31.42) at their first reported offence. Thus, perhaps the social deviants had a greater length of time to commit a greater number and versatility of offences.

Another key consideration is that the type of victim involved may potentially moderate levels of consistency. Specifically, there is research addressing the correspondence between behavioural consistency and the age, gender and relationship to the victim (Hanson, Lussier, LeBlanc & Proulx, 2005; Prentky et al., 1997). For instance, individuals that sexually offend against children tend to be specialists and better planners, whereas individuals that sexually offend against adults are typically generalists, exhibiting impulsivity and versatility in their offending patterns (Barbaree et al., 1994; Lusseir et al., 2005). Social conformists may have committed the majority of their sexual offences against children, whereas social deviants may have committed the bulk of their sexual offences against adults. Since the current study included offences perpetrated against all ages and genders, offender types were undifferentiated based on the victim targeted and as a result, this relationship may have potentially been left undetected.

Crime Aspect Differences by Offender Type

In accordance with the last hypothesis, the study identified differences between social conformists and social deviants with respect to their consistency across all behavioural variables and crime aspects. After subdividing offenders into groups, the association between consistent and situationally-driven behaviours became even clearer. Therefore, differences between pre-crime facilitators and crime scene characteristics by offender type revealed that one is more

consistent and the other is more affected by the environment, this relationship does not appear to change.

The current analyses also revealed that differences between offender types accounted for 14.4% of the total variability in differentiation scores. Thus, classifying an offender based on offender characteristics provided additional information about the level of consistency displayed at each crime aspect. Further, there is a possibility that situational factors minimally affect social conformists, leading to additional variation in consistency for social deviants. As such, social conformists may adopt a decision making script when committing their offences and that this script will govern their behaviour regardless of the context (Beauregard & Leclerc, 2007). However, it should be noted that both groups displayed relatively high levels of consistency and that group differences were a matter of degree.

The findings showed that offenders are generally consistent regardless of their type, although some diversity across offender types was apparent. Specifically, offender types differed in terms of all 35 behaviours across their series, pre-crime facilitators and crime scene characteristics, but were not differentiable with respect to victim selection characteristics and approach and attack methods. These nonsignificant findings were likely due to both offender groups displaying high levels of consistency across the aforementioned aspects. Moreover, variation within victim selection characteristics and approach and attack methods was high for both offender types, indicating that situational factors may have been generally more influential.

One possibility for this finding is that individuals may exhibit a preference towards certain victims, but act according to the availability of the victim (Guay et al., 2001). Additionally, Lussier and colleagues (2007) demonstrated that individuals with low self-control

exploited victims at random with the primary objective of obtaining immediate gratification. Thus, an offender possessing low levels of self-control may seek certain victims, but may also select a victim at random if their preference is unavailable. The random selection process may be true for both social deviants and conformists. As such, victim selection may be more situational and opportunity based than initially expected.

Similarly, approach and attack methods may be on par with victim selection characteristics in terms of being situationally-determined. As noted earlier, the mode in which the offender approaches the victim requires an interactional element that may be largely reliant on the geographical surroundings of the offence (Beauregard, Rebocho, & Rossmo, 2010). Relatedly, Rossmo (2000) suggested that the hunting strategies of an offender may be a function of premeditated opportunism. An offender may plan their offence but must wait until a suitable opportunity is present, which will result in an inconsistent approach or attack method.

These findings may suggest that not all offenders perform crime behaviours in the same manner and that sexual offenders are a heterogeneous group. As such, it is necessary to consider the role of offender characteristics on consistency across behavioural domains.

Limitations and Future Research Directions

The study encountered some methodological limitations. Data collection focused on offender reports, which have the potential for misrepresentation in a manner similar to victim statements. Moreover, there is a tendency for participants to provide a socially desirable response for self-report measures such as the self-control questionnaire administered during the study. The study made an effort to corroborate all information obtained from the semi-structured interview with case files in order to obtain an objective account of each reported offence.

One potential benefit of obtaining crime information based on offender accounts is that the subjective meaning of certain crime behaviour may be divulged. As previously noted, behaviours may be displayed consistently if the individual perceived the situation to be similar (Shoda, Mischel, & Wright, 1994).Thus, utilizing offender accounts may contribute rich information regarding MO.

Nevertheless, there is a possibility that some offences remained undetected and unreported in the offender's case file. Further, another potential limitation of the current study is that offenders displaying high levels of consistency are likely to be detected or convicted. Thus, there is a possibility that the levels of consistency present in the current study may be an overrepresentation of the levels displayed in undetected or unsolved sexual offences.

Moreover, the current study was limited by dichotomizing crime variables as either absent or present. Consequently, collapsing crime information may have resulted in the lack of a nuanced picture of the sexual offence. However, due to the complexities of the data, it is unclear whether crime behaviours did or did not occur in certain instances. Thus, dichotomizing variables has become standard practice within the field of profiling (Bennell & Canter, 2002; Mokros & Alison, 2002). In addition, combining behaviours to produce a crime aspect does not provide information about how individual behaviours within the aspect are performed. To illustrate this point, if an offender endorses one aspect such as pre-crime facilitators with greater or reduced consistency, it is unclear which specific behaviours they performed consistently or inconsistently, because an overall Jaccard's value represents the amalgamation of behaviour within a crime aspect. Thus, the study assumes that all behaviours in each aspect possess an equal contribution, which may not be the case.

Further, the current findings are restricted with respect to its application to police investigation. Police investigators most likely do not have access to some pre-crime factors that were used in the current analyses, such as the use of alcohol or drugs prior to the offence. As such, it is suggested that crime scene information may be used as a proxy for pre-crime behaviours from victim accounts. For example, police may enquire about the detection of alcohol on the perpetrator's breath to establish the presence of alcohol consumption prior to the crime. As a result, while interviewing the victim, police can be advised to inquire about behaviours that may not be observable at the scene of the crime.

Another limitation and one for further examination is that offenders answered questions regarding crimes against stranger victims. There is a possibility that they also committed a sexual offence against a known victim. Since the current study exclusively examined serial stranger sexual offences, offenders were not questioned about crimes committed against known victims, limiting the applicability of the current findings. Further, this raises the question of whether stranger offenders generally begin by offending against known victims and then transition to stranger victims, or vice versa. Nevertheless, the crime behaviours and offender characteristics investigated in the current study may not be representative of offenders who commit crimes exclusively against stranger victims. Additionally, the current study did not utilize another offender group as a means of comparison. Thus, it is unknown how other offender groups compare in their consistency relative to serial stranger sexual offenders, further restricting the generalizability of the current findings.

A final limitation of the study involved examining the serial nature of offending only using the first three crimes committed in the offence series. Thus, a complete depiction of behavioural stability and change over the course of offending may not have been captured. For

the current study, it was necessary to include an equal number of offences for each offender to create equivalence between offenders and control for those who committed a disproportionate number of crimes. Conversely, controlling for the length of the offence series may not reflect the real challenges encountered in case linkage analysis. However, operating under the consistency assumption, regardless of which offences from the series were included, a consistent behavioural pattern will develop.

Investigative and Clinical Implications

From an investigative standpoint, aspects leading up to the scene of the crime (pre-crime, victim selection, approach and attack methods) should receive more focus, considering those may produce the greatest predictive accuracy in linking crimes. Likewise, less accurate predictors should be relied on sparingly to filter offences and suspects (Goodwill & Alison, 2006). Since the role of the victim may largely impact the offender's level of consistency displayed at the crime scene, it may be worthwhile for law enforcement personnel to investigate the victim's behaviour in greater detail (Beauregard & LeClerc, 2007).

When conducting case linkage, it may be necessary to weight aspects such as indicators of pre-crime behaviours that are accessible to the police, signifying their relative importance. Once pertinent offence behaviours are established, future research can focus more intently on predicting whether two offences are linked. Grubin and colleagues (2001) propose the standardized practice of inputting such information into a computerized database to serve as a supportive aid for law enforcement personnel.

From a clinical perspective, offenders who are classified as social deviants may differ in their treatment needs in comparison to social conformists. According to Andrew and Bonta's

(2010) risk needs responsivity model (RNR) for managing offenders, effective treatment must address criminogenic needs (factors that contribute to offending behaviour and have the potential to change overtime). Since social deviants were more likely to possess criminogenic characteristics making them vulnerable to reoffend (such as unstable employment and relationships), addressing these aspects during treatment will likely result in decreased rates of recidivism.

Moreover, the current study has implications for individualized relapse prevention initiatives for all sexual offenders. Relapse prevention focuses on the proximal factors triggering persistent and undesirable behaviours and has been used in the context of sexual offending (Ward & Hudson, 1998). Behaviours that are displayed consistently prior to the commission of the crime may be identified as an antecedent and signal a risk to reoffend (Beauregard & LeClerc, 2007). For example, if alcohol consumption has been identified as a behaviour that occurs prior to every offence, alcohol consumption may be further examined and targeted in treatment. Generally, a relapse prevention plan will be individualized and may incorporate consistent behaviours that serve to facilitate the crime. Implementing treatment that is tailored to the offender's unique needs and focussing on preventative efforts may also reduce future reoffending.

Conclusion

The current study advances the field of investigative psychology by providing information about the consistency of crime features across a sexual offence series. The present findings indicated high consistency and considerable differentiation using the selected variables in comparison to previous studies. Specifically, an offender's MO becomes progressively less

consistent as more situational variables are encountered. The current study also illustrated how consistency relates to different offender characteristics. The ultimate objective was to provide police investigators with an enhanced awareness of offence behaviours conducive to case linkage on a priori basis, opposed to relying on heuristics.

Appendix A

Crime Variables

Thirty-five crime characteristics were used to analyze each sexual offence. A description of each variable is provided below.

Pre-crime Facilitators

1. Weapon: The use of a weapon during the crime (knife/firearm/sharpened object/rope, wire or chain/ faked weapon or artcraft weapon/ other).

2. Structured premeditation: The offender engaged in premeditation that involved obvious intention to commit the offence and elaborate planning of specific components of the offence.

3. Alcohol use: Alcohol was consumed hours before the crime.

4. Drug use: Illicit drugs were used hours before the crime.

5. Deviant sexual fantasies: The offender had deviant sexual fantasies prior to the commission of the crime.

6. Planning tools scale: The offender brought or used tools to aid in the commission of the crime (disguise/ rape-kit/ restraints/ binding).

Victim Selection Characteristics

7. Selected previous victim: The offender selected another victim to offend against before targeting the index victim.

8. Victim selected for vulnerability: The victim was selected based on their perceived vulnerability.

9. Victim alone: The victim was alone upon contact with the offender.

10. Victim selected for physical characteristics: The victim was selected based on non-sexual physical characteristics.

11. Type of victim selection: The victim was targeted by the offender in either a non-random and patterned fashion or a random and nonpatterned fashion.

12. Victim sex: The sex of the victim (female/male).

13. Victim age: The age of the victim, measured in years. Younger victims were labelled as16 years or less, and older victims were labelled as 17 years or more.

14. Victim under the influence: The victim was under the influence of drugs or alcohol upon contact with the offender.

15. Victim from a dysfunctional environment: The victim was located in a criminogenic environment upon contact with the offender.

Approach and Attack Methods

16. Kidnap style attack: The offender attacked the victim using a kidnap style.
17. Confidence approach: The offender used deceptive tactics to coerce and control the victim upon contact.
18. Surprise attack approach: The offender waited for the victim to become available prior to contact.
19. Blitz assault approach: The offender used direct physical aggression to restrain the victim upon contact.
20. Hunting style hunter: The offender searched for the victim within close residential proximity.
21. Hunting style poacher: The offender traveled outside their residential area to search for the victim.
22. Hunting style troller: The offender searched for the victim opportunistically during their routine activities.
23. Hunting style trapper: The offender secure and an occupation or activity likely to result in contact with their preferred victim type.
24. Offender looked in specific location: The offender looked in specific geographic locations for the victim.

Crime Scene Characteristics

25. Level of clothing of offender: The amount of clothing on the offender during the crime, either not undressed or partially/completely undressed (put down pants and underwear/ took off pants and underwear/ undressed completely).
26. Level of risk: The offender's perceived riskiness of being caught or apprehended during the crime (high/low).
27. Victim forced to commit sexual acts: The offender forced victim to commit sexual acts during the crime.
28. No force: In accordance with the Avery-Clark & Laws Scale, there was a lack of force inflicted on the victim.

29. More force than necessary: In accordance with the Avery-Clark & Laws Scale, more force than necessary was inflicted on the victim.

30. Forensic awareness: The offender engaged in the concealment of evidence to avoid detection at the scene of the crime.

31. Victim resistance: The victim responded by displaying no resistance or the presence of resistance (passive/verbal/physical/verbal and physical).

32. Offender's response to victim resistance: The offender did not react to victim resistance (stopped, ran away) or reacted to victim resistance (insisted, threatened, used physical force).

33. Time spent with victim: The amount of time the offender spent with the victim at the scene of the crime, measured in minutes. Low level of time (30 minutes or less), high level of time spent with the victim (31 minutes or more).

34. Sexual contact: The level of sexual contact displayed at the scene of the crime. High levels of contact involve insertion of object or body part (vaginal intercourse with fingers/sodomy with fingers/vaginal intercourse with penis/sodomy with penis/vaginal intercourse with objects/sodomy with objects), lower levels of sexual contact did not involve insertion during sexual acts (sexual contacts/caress or rub/cunnilingus/fellatio/masturbation/exhibitionism).

35. Harm to victim: The victim was physically harmed during the offence (harm/death), or there was an absence of physical harm.

Appendix B

Offender Characteristics

1. Employment status: The occupational status of the offender at the moment of crime. Either employed or unemployed (unemployed/social welfare/ student/ retired/ homeless).

2. Marital status: The marital status of the offender at the time of the interview. Either married/ in a relationship or not in a relationship (single/separated/divorced/widowed).

3. Self-Control: The total self-control score on the Self-Control Scale (Grasmick et al., 1993).

4. Sexually violent charges: The offender had previous convictions for sexually violent offences.

5. Deviant sexual fantasies: The offender has deviant sexual fantasies (occasional/persistent) or does not have deviant sexual fantasies.

6. Age of first offence: The age of the offender at their first conviction, in years

7. Social isolation: The offender experienced social isolation during adulthood.

8. Sex with prostitutes: The offender engaged in sexual intercourse with prostitutes during adulthood.

9. Nonsexually violent charges: The offender had previous convictions for nonsexually violent offences.

10. Compulsive masturbation: The offender engaged in compulsive masturbation during adulthood.

11. Previous psychological problems: The offender experienced previous psychological or psychiatric problems.

12. City changes: The offender changed cities during the last five years preceding the index offence.

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