

CONSISTENCY IN THE BEHAVIORAL PATTERNS OF SERIAL RAPISTS

by

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Abstract

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There have been few studies that fully address the question of whether serial rapists remain behaviorally consistent throughout their multiple crimes. Based on crime-scene behaviors, the present study aimed to differentiate behavioral patterns of rape, determine the degree of consistency of each of the behavioral patterns, and establish the link between behavioral patterns and offender background characteristics. A total of 795 offenses perpetrated by 254 male rapists committed to the Massachusetts Treatment Center (MTC) for Sexually Dangerous Persons were analyzed. By conducting weighted smallest space analysis, sixteen variables detailing behaviors at rape crime scenes were differentiated into four behavioral patterns: hostility, interpersonal involvement, control, and sadism. Examining behavioral patterns displayed across offenses by using item response theory analyses, the present study showed that serial rapists may not necessarily remain behaviorally consistent throughout their multiple crimes. The results from Ordinary Least Squares regression analysis revealed that each of the behavioral patterns was associated with certain offender background characteristics. Finally, practical implications of the results were discussed.

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Consistency in the Behavioral Patterns of Serial Rapists

Rape invokes tremendous public fear (Hanson & Morton-Bourgon, 2005). The physical and psychological harm that rape inflicts on the victims as well as the financial cost of rape investigations are immense, calling for more research on rapists that have practical implications (Graney & Arrigo, 2002; Ward, Hudson, Johnston, & Marshall, 1997).

Serial rapists who commit a series of offenses exacerbate the public's fear of rape. For instance, Hazelwood, Reboussin, and Warren (1989) reported that the 41 serial rapists in their sample were found to be responsible for at least 837 rapes. A serial rapist is defined as someone who has perpetrated a sexual assault on at least two separate occasions and has assaulted two or more different victims (Graney & Arrigo, 2002; Park, Schlesinger, Pinizzotto, & Davis, 2008).

To date, few studies exist in the rape or serial offender research which fully addresses the question of whether behaviors of serial offenders remain consistent throughout a series of crimes. Serial rapists may not always display a consistent pattern of behavior. They may demonstrate considerable behavioral changes when committing a series of offenses.

The debate that has dominated personality psychology over several decades with regard to consistency and change in human behavior may provide valuable insight into understanding consistency in the serial rapist's behavior. The question of whether people show consistency in their behavior across situations has been the focus of research in personality psychology for many years. Beginning from several studies in the 1920s and 1930s which tested the degree of consistency in behavior (e.g., Allport & Vernon, 1933;

Hartshorne & May, 1928; Newcomb, 1929), there has been a half-century-long theoretical debate with regard to whether human behavior results from stable personality traits (*dispositionism*) or situations (*situationism*).

Dispositionists believe that human behavior is determined by stable traits. Traits are defined as certain attributes causing people to display consistent behavioral patterns over time and on various occasions (Allport, 1937). Focusing on enduring traits, dispositionists have attempted to identify the major attributes of people that determine their behavior in general (Ross & Nisbett, 1991).

However, several researchers have pointed out that people tend to overestimate the effect of stable traits on human behavior and underestimate that of situational factors (e.g., Bem & Allen, 1974; Jones & Nisbett, 1972; Kelley, 1967). Situationists believe that human behavior changes considerably across situations. Mischel (1968) argued that behavior is highly situation-specific. Mischel (1968) claimed, "...it is evident that the behaviors which are often construed as stable personality trait indicators actually are highly specific and depend on the details of the evoking situations" (p. 37). Reviewing the literature on behavioral consistency, Mischel and Peake (1982) noted that "cross-situational consistencies remain elusive" (p. 735).

Gottfredson and Hirschi (1990) suggested that principles that govern everyday behavior can apply to criminal behavior. Therefore, the debate on the consistency in human behavior can be applied to explaining criminal behavior, i.e. whether the offender's behavior during the assault is consistent over time, or does it change considerably depending on various situations.

Gottfredson and Hirschi (1990) argued that crimes are not committed by a

specified group of people (i.e. *criminals*, as opposed to *noncriminals*): they argued that criminal behavior is likely to be response to the circumstance of the moment by individuals lacking self-control who are inclined to pursue immediate gratification. Gottfredson and Hirschi (1990) claimed that offenders do not have a “strong inclination to pursue a specific criminal act or a pattern of criminal acts” (p. 91). In other words, as criminal behavior is assumed to be reaction to the immediate circumstance, there is no specialization in criminal behavior (Gottfredson & Hirschi, 1990). If this notion is correct, then it is unlikely that there would be any distinguished tendency or consistency in the criminal acts committed by the same offender over time.

Bem and Allen (1974) pointed out that there is a “discrepancy between our intuitions, which tell us that individuals do in fact display pervasive cross-situational consistencies in their behavior, and the vast empirical literature, which tells us that they do not.” (pp. 507-508). Based on the various behaviors that rapists commit during the assault across a series of offenses, the present study aimed to differentiate behavioral patterns of rape, determine the degree of consistency of each of the behavioral patterns, and establish the link between consistent behavioral patterns and offender background characteristics.

Rape – Definition, Incidence, Prevalence, and Victims

Ranging from verbal threats to the multiple forms of penetration, sexual assaults involve various levels of offending behavior. The definition of what constitutes the act of rape is determined by several factors, including the sexual activity committed, the age and gender of the victim, the age of the offender, and a lack of consent (Groth &

Birnbaum, 1979; Polaschek, Ward, & Hudson, 1997). Accordingly, legal definitions of rape differ widely between jurisdictions. According to the Uniform Crime Report (U.S. Justice Department, 2005), forcible rape is “the carnal knowledge of a female forcibly and against her will. Assaults or attempts to commit rape by force or threat of force are also included; however statutory rape (without force) and other sex offenses are excluded” (p. 27). However, this definition of rape, which contains ambiguous criteria (*the carnal knowledge*) and does not recognize male victims, has been considered too restrictive (Burgess, 2001).

Recently, statutes are employing more gender-neutral terminology in order to encompass rape with male victims (Polaschek et al., 1997). In addition, moving away from using rigid criteria (i.e. the occurrence of sexual intercourse), the statutes are employing broader terminology as an attempt to recognize rape with various forms of sexual activities committed during an offense (Polaschek et al., 1997). Groth and Birnbaum (1979) argued that rape, whether it involves sexual intercourse or not, should be regarded as “*any* form of forcible sexual assault” (p. 3), because of the similarity in the underlying psychological meaning in various forms of forcible sexual activities as well as its influence on the victim. Considering these elements, Groth and Birnbaum (1979) suggested that rape can be best described as an offense “in which an unwilling individual is either pressured or forced into sexual activity by a person in a position of power or dominance” (p. 3).

There were 94,635 forcible rapes reported to the FBI Uniform Crime Report in 2004 (U.S. Justice Department, 2005), a figure that yielded a rate of 32.2 offenses per 100,000 inhabitants and 63.5 offenses per 100,000 females. The clearance data revealed

that 41.8% of forcible rapes were cleared by the nation's law enforcement agencies in 2004 (U.S. Justice Department, 2005). As discussed earlier, the UCR recognizes female victims only; therefore, the true offense rate will be higher when offenses against male victims are included. As to the lifetime prevalence rates of rape, Kilpatrick, Edmunds, and Seymour (1992) found 13% of adult women who they surveyed through telephone interviews to have been victims of one or more rape. However, this study included adult women only (i.e. age 18 and older); therefore, the actual prevalence rate is expected to be higher when male and younger victims are included.

In addition to the problems of not recognizing male and young victims, another problem in estimating the incidence/prevalence of rape is underreporting (Burgess, 2001). For example, Kilpatrick et al. (1992) found that only 16% of the rape victims in their study reported their offense to police. Koss (1985) defined a *hidden rape victim* as "one who has never reported her experience to a rape crisis center or to police" (p. 193). Most rapes are not reported to police (Bureau of Justice Statistics, 1996; Burgess, 2001; Furby, Weinrott, & Blackshaw, 1989; Koss, 1985), because of various reasons such as shame or guilt (Burgess, 2001; Terry, 2006). As Burgess (2001) stated, rape may be "the only serious crime in which victims may be held responsible for their own assaults" (p. 5). Moreover, Koss (1985) revealed how offender-victim relationships affect the reporting rates: victims who had been raped by someone they knew were less likely to report the crime to police (Koss, 1985; Terry, 2006). Also, only a small proportion of male rape victims report the offense to police (Scarce, 1997).

Rape inflicts physical, psychological, and emotional harm on the victim, including anxiety, depression, and self-blame (Burgess & Hazelwood, 2001; Terry, 2006).

Some victims may experience a set of symptoms called rape trauma syndrome (Burgess & Hazelwood, 2001), which is defined as “a clustering of biopsychological and behavioral symptoms exhibited in varying degrees by a victim following a rape” (p. 50). Rape trauma syndrome includes symptoms such as sleep pattern disturbances, intrusive thoughts of the assault, and feelings of anger, fear, and guilt (Burgess & Hazelwood, 2001).

There has been some controversy in courts regarding the scientific validity of expert evidence on rape trauma syndrome (Frazier & Borgida, 1992). Because rape trauma syndrome includes a wide range of symptoms, specific symptoms resulting from rape may not be distinguishable from those resulting from another traumatic event (Dwyer, 1988). For example, in *State v. Black* (1987) the validity of the syndrome was questioned: “because the symptoms associated with ‘rape trauma syndrome’ embrace such a broad spectrum of human behavior, the syndrome provides a highly questionable means of identifying victims of rape” (p. 16). Therefore, more scientifically valid research identifying symptoms that are unique to rape victims is required to provide more reliable and helpful evidence with courts (Frazier & Borgida, 1992).

In addition to the rape victim, rape often affects individuals around the victim, including family, romantic intimates, neighbors, and acquaintances (Cwik, 1996; Terry, 2006). Because the pain that these individuals around the victim experience may be immense, Terry (2006) suggested that they may need assistance themselves.

Sex offenders form a notably heterogeneous group (Barbaree, Seto, Serin, Amos, & Preston, 1994; Canter, Bennell, Alison, & Reddy, 2003; Fossi, Clarke, & Lawrence, 2005; Groth & Birnbaum, 1979; Hazelwood et al., 1989; Knight, Warren, Reboussin, &

Soley, 1998; Park et al., 2008; Prentky & Knight, 1991; Sturidsson et al., 2006; Terry, 2006). Schlesinger (2004) stated, “the first and most basic step in understanding any form of human behavior, including criminal behavior, is classification” (p. 77). In order to understand the behavior of sex offenders, researchers have developed various classification systems (e.g., Cohen, Garofalo, Boucher, & Seghorn, 1971; Cohen, Seghorn, & Calmas, 1969; Groth & Birnbaum, 1979; Groth, Burgess, & Holmstrom, 1977; Knight & Prentky, 1990a; Prentky, Cohen, & Seghorn, 1985).

Differentiating Behaviors of Rapists

Early attempts (e.g., Cohen et al., 1969; Groth & Birnbaum, 1979; Groth et al., 1977) at developing a classification system for rapists focused on their motivation. Typically using patients in clinical settings, these researchers developed typologies based on the motivational factors underlying rape. One of the primary aims of the rapist is to express hostility and anger (e.g., *rapist-displaced-aggression type* in Cohen et al., 1969; *anger rape* in Groth & Birnbaum, 1979; *anger-retaliatory rapists* in Groth et al., 1977). Achieving feelings of dominance, masculinity, and mastery is also one of the commonly found motivations of rapists (e.g., *power rape* in Groth & Birnbaum, 1979; *power-assertive rapists* in Groth et al., 1977). Some rapists aim to obtain pleasure from torturing, maltreating, and inflicting pain on the victim (e.g., *rapist-sex-aggression-defusion type* in Cohen et al., 1969; *sadistic rape* in Groth & Birnbaum, 1979; *anger-excitation rapists* in Groth et al., 1977). Other motivation includes gratifying sexual desires (e.g. *rapist-compensatory type* in Cohen et al., 1969) and committing another antisocial act (e.g. *rapist-impulse type* in Cohen et al., 1969).

These typologies, typically derived from observations of patients in the clinical settings, are “primarily descriptive and atheoretical” (Cohen et al., 1969, p. 251). Focusing on the offender’s motivation underlying the offense, these systems commonly lack specific criteria of classifying offenders into types. Indeed, Knight et al. (1998) addressed the limitations of Groth et al.’s (1977) typology and stated, “this typology has only global classification criteria, provides no estimates of interrater reliability, and has been subjected to limited validity assessment” (p. 49). Also, Heilbrun, Marczyk, and DeMatteo (2002) stated, “While intuitively appealing, Groth’s child molester and rapist taxonomy systems remained speculative, with no empirical support.” (p. 264). In addition, attempts have been rarely made to associate the underlying motivation of the offender with specific behavior committed during a sexual assault (Salfati & Taylor, 2006). Furthermore, previous studies have rarely examined differences in the background characteristics of the offenders across types.

As an attempt to overcome limitations of previous rapist typologies, several researchers have developed the Massachusetts Treatment Center Rapist Typologies (MTC:R1, Cohen et al., 1971; MTC:R2, Prentky et al., 1985; MTC:R3, Knight & Prentky, 1990a). The current MTC:R3 taxonomy is based on four primary motivational components of rape, *opportunity*, *pervasive anger*, *sexual gratification*, and *vindictiveness*, which are associated with distinct behavioral patterns that provide a basis for differentiating rapists (for further details see Knight & Prentky, 1990a). These four motivational categories are further divided into a total of nine types by an additional criterion of social competence of the rapist (Knight & Prentky, 1990a). In addition, Prentky and Knight (1991) identified several dimensions (i.e. *expressive aggression*,

sexualization, social competence, sadism, antisocial behavior, global or pervasive anger, offense planning, and hostility towards women) to be used for assigning each rapist to one of the subtypes.

Although specific criteria for assigning each offender to a type have been provided and the validity assessment has been made (Knight, 1999; Prentky & Knight, 1991; Prentky, Knight, & Rosenberg, 1991), the MTC:R3 has a few limitations. In understanding criminal behavior, Schlesinger (2004) claimed that rigid types can hardly be established because of the complexity of human behavior. Canter (2000) also noted that “assigning criminals or crimes to one of a limited number of types will always be a gross oversimplification” (p. 31). However, by assigning offenders into one of the types and treating them as a homogenous group, the MTC:R3 does not allow much for individual variations. Moreover, although developed with a sample of repetitive sex offenders who committed multiple offenses (Knight et al., 1998), the MTC:R3 typology has not provided explanations whether behavioral development and change of rapists across a series of offenses was considered when assigning these serial rapists to one of the types.

Beyond these motivationally-derived classification systems, an increasing number of studies have developed various ways of differentiating rapists focusing on the behaviors displayed at the crime scene (e.g., Alison & Stein, 2001; Canter & Heritage, 1990; Canter et al., 2003; Fossi et al., 2005; Kocsis, Cooksey, & Irwin, 2002; Grubin, Kelly, & Brunsdon, 2001; Park et al., 2008; Salfati & Taylor, 2006; Sturidsson et al., 2006). Sexual assault is an interpersonal crime and involves behavioral interaction between offender and victim (Canter & Youngs, 2003). Sexual offenses consist of a wide

range of behaviors, which can effectively reveal variations between offenders. Behaviors displayed during the offense can effectively indicate the offender's mode of interaction with other person, what the offender tries to achieve from committing rape, and the manner and the level of behaviors that satisfy the offender's need. Davies (1992) suggests that the behaviors of an offender during a sexual assault should be considered as the focus in the analysis of rape. Therefore, the style of behavioral interaction between offender and victim during a sexual assault can be a useful basis for differentiating offenders (Canter & Youngs, 2003). The existing literature on the rapist's behavior identifies a number of different modes of offender-victim interactions during a sexual assault (see Table 1).

First, the theme of hostility, characterized by excessive aggression used against the victim, is one of the most frequently found elements of rape (Alison & Stein, 2001; Canter, 1994; Kocsis et al., 2002; Park et al., 2008; Salfati & Taylor, 2006). Early studies focusing on the motivational factors underlying rape (e.g., Cohen et al., 1969; Groth & Birnbaum, 1979; Groth et al., 1977) suggested hostility to be one of the major motivational themes of rape. Expressing hostility and anger has consistently been cited as the primary aim of the rapist (*rapist-displaced-aggression type* in Cohen et al., 1969; *anger-retaliatory rapists* in Groth et al., 1977; *pervasive anger* and *vindictiveness* in Knight & Prentky, 1990a). Mercado and Scalora (2001) noted that the level of aggression has been predominantly used to differentiate between rapists. Groth and Birnbaum (1979) cited anger as a central motivating factor in some rapes and proposed a category of *anger rape*, which is characterized by excessive use of force against the victim. Knight and Prentky (1990b) noted that some offenders displayed extreme, nonsexualized violence

Table 1

Typologies of Rape

Studies	Hostility	Control	Interpersonal Involvement	Sadism	Opportunity
Cohen et al. (1969)	displaced-aggression		compensatory	sex-aggression-defusion	impulse
Groth et al. (1977)	anger-retaliatory	power-assertive power-reassurance		anger-excitation	
Groth & Birnbaum (1979)	anger rape	power rape		sadistic rape	
Knight & Prentky (1990a)	pervasive anger vindictiveness		non-sadistic sexual gratification	sadistic sexual gratification	opportunity
Canter (1994)	victim as a vehicle	victim as an object	victim as a person		
Alison & Stein (2001)	hostility	dominance	compliance-gaining		
Canter et al. (2003)	hostility	control	involvement		theft
Salfati & Taylor (2006)	violence	control	exploit		
Terry (2006)		power/control	exclusively sexual	sadistic	opportunistic
Park et al. (2008)	violence	criminal sophistication	interpersonal involvement		

beyond the level of achieving submission of the victim. Canter (1994) defined three general roles that victim might play for the offender during the rape attack and included a category of *the victim as a vehicle* which indicates that the act of rape in this case involved the use of extreme violence against the victim. Salfati and Taylor (2006) identified consistent styles of interaction between offender and victim, one of which is a thematic style of *violence*. This theme is distinguished by highly brutal attacks towards the victim, which resulted in serious injuries and bruises. Behaviors typical of this theme

include manual hitting and kicking, weapon use, and multiple physical acts of violence (Alison & Stein, 2001; Canter, 1994; Canter et al., 2003; Park et al., 2008; Salfati & Taylor, 2006).

A second behavioral style involves an intimate form of interaction between offender and victim. Cohen et al. (1969) suggested that gratifying sexual desires is one of the major motivational themes of rape. Marshall (1989) claimed that rape is often an attempt for individuals frustrated with their failure to establish intimate relations at developing intimacy in wrongful ways. Canter (1994) included a category of *the victim as a person* which indicates that the offender in this case attempted to develop a personal relationship with the victim. Alison and Stein (2001), who investigated variations in offending behavior, identified an interpersonal style called *compliance-gaining*, which is closely related to this theme. Terry (2006) described *exclusively sexual* rapes, which are committed because of unfulfilled sexual desires of offenders who suffer from their inability to develop meaningful relationships. Behaviors typical of this theme include kissing, caressing, fondling, and various forms of sexual behaviors (Alison & Stein, 2001; Canter & Heritage, 1990; Canter et al., 2003; Park et al., 2008).

A third style of crime-scene behavior involves various forms of controlling activities the offender uses during the assault in order to dominate the victim. Scully and Marolla (1985) stated that many rapists experience a feeling of power and dominance through rape and that some offenders enjoy controlling women by asserting physical dominance during the offense. Feminist theorists (e.g., Lottes, 1988; Russell, 1975) hold that rape, learned through and encouraged by social gender inequality, is an act for some men to gain power and control over women. Hall and Barongan (1997) argued that rape

is “a product of cultures in which sexual aggression is tolerated, accepted, or often rewarded” (p. 5). For example, Robertiello and Terry (2007) stated that many marital and date rapes involve the offender’s dominance over the victim. In addition, Brownmiller (1975) noted that rape during time of war is seldom motivated by sexual preoccupation or anger: Terry (2006) stated that rape in this case is “an expression of power over the enemy” (pp. 71-72). Early studies focusing on the rapist’s motivation suggested achieving feelings of dominance, masculinity, and mastery to be one of the major motivational themes of rape (e.g., *power-assertive* and *power-reassurance rapists* in Groth et al., 1977; *power rape* in Groth & Birnbaum, 1979). Analyzing the level of force displayed at the crime scene by serial rapists, Warren, Hazelwood, and Reboussin (1991) reported that most of serial rapists in their sample used minimal force (e.g. slapping) rather than brutal attacks to gain control over the victim. Canter (1994) proposed a category of *the victim as an object* in which the offender objectified or dehumanized the victim by using a moderate level of force. Alison and Stein (2001) identified an interpersonal style they labeled *dominance*, in which the offender displays controlling behaviors over the victim. Salfati and Taylor (2006) identified a thematic style of *control*, which involved behaviors indicating pre-planned, controlled attacks on the victim. Behaviors typical of this theme include planning the offense in advance, blindfolding and/or gagging the victim, displaying weapon, and deterring the victim’s resistance (Alison & Stein, 2001; Canter, 1994; Canter et al., 2003; Park et al., 2008; Salfati & Taylor, 2006; Warren et al., 1991).

Fourth, the theme of sadism is characterized by the offender’s obtaining pleasure from torturing and inflicting pain on the victim (e.g., *rapist-sex-aggression-defusion type*

in Cohen et al., 1969; *sadistic rape* in Groth & Birnbaum, 1979; *anger-excitation rapists* in Groth et al., 1977; *sadistic* in Terry, 2006). The most recent edition of the *Diagnostic and statistical manual of mental disorders* (DSM-IV-TR; American Psychiatric Association, 2000) described that sexual sadism involves “recurrent intense sexually arousing fantasies, sexual urges, or behaviors involving acts (real, not simulated) in which the psychological or physical suffering (including humiliation) of the victim is sexually exciting to the person” (p. 574). Sadistic rapists experience sexual excitement when sexual acts are accompanied with the victim’s suffering (Brittain, 1970; Knight et al., 1998): in other words, when “there is a synergetic relation between sex and aggression” (Knight, 1999, p. 312). These offenders typically display behaviors such as foreign object insertion, biting, anal penetration, and paraphilic behaviors such as fetishism and voyeurism (Brittain, 1970; Dietz, Hazelwood, & Warren, 1990; Groth et al., 1977). What distinguishes these sadistic rapists from hostile ones is that physical violence which hostile offenders commit is mostly unsexualized (Knight & Prentky, 1990b), whereas the victim’s suffering resulting from aggression is sexually exciting to sadistic rapists (Groth & Birnbaum, 1979).

As shown in Table 1, the theme of sadism has disappeared in most of behavioral typologies of rape (e.g., Alison & Stein, 2001; Canter, 1994; Canter et al., 2003; Park et al., 2008; Salfati & Taylor, 2006), mainly for the following reasons. First, behavioral typologies focus on the occurrences of overt behaviors at the crime scene (Canter & Youngs, 2003), rather than their underlying psychological meaning. Therefore, sadistic behaviors such as foreign object insertion or biting, without considering the underlying motivation beneath the manifest behaviors, have mostly been classified as violent

behaviors (see Alison & Stein, 2001; Canter et al., 2003; Park et al., 2008). In addition, behavioral typologies often do not include the theme of sadism simply because of the low frequencies of sadistic behaviors: sadistic behaviors are known to be scarce, being committed less than 10% of cases in general (Knight et al., 1998; MacCulloch, Snowden, Wood, & Mills, 1983; Warren et al., 1991).

It should be noted that some of the previous studies (e.g., Cohen et al., 1969; Knight & Prentky, 1990a) reported another type of rapists: impulsive rapists who have an extensive history of antisocial acts (e.g., *theft* in Canter et al., 2003; *rapist-impulse type* in Cohen et al., 1969; *opportunistic type* in Knight & Prentky, 1990a). Their rape offenses are often opportunistic, such that the offender encounters a person while committing other type of crime and sexually assaults the victim (Alder, 1984; Cohel et al., 1969; Knight et al., 1998). However, rapists who have an extensive history of antisocial acts may not be a sub-type of rapists because rapists are known to be mostly generalists (Gottfredson & Hirschi, 1990; Polaschek et al., 1997; Simon, 2000; Weinrott & Saylor, 1991). Klein (1984), who coined the term of *cafeteria delinquency*, is one of the first group of researchers who claimed that offenders are extremely versatile in the offenses they commit. Gottfredson and Hirschi (1990) stated, “the evidence of offender versatility is overwhelming” (p. 91) and argued that persons with low self-control are likely to engage in all kinds of antisocial acts as the opportunity arises. Impulsive individuals often disregard the consequences of their action, which eventually leads to a wide range of criminal activities (Simon, 2000). Alder (1984) stated that for many rapists rape is “one violent action in a repertoire of other nonsexual criminal behavior” (p. 158). Indeed, many rapists commit a wide range of crime, including nonsexual offenses such as theft,

assault, robbery, and drug-related crime (Alder, 1984; Amir, 1971; Baxter, Marshall, Barbaree, Davidson, & Malcolm, 1984; Gottfredson & Hirschi, 1990; Smallbone & Wortley, 2004; Warren et al., 1991; Weinrott & Saylor, 1991). Also, sexual offenders are more likely to reoffend in nonsexual offenses than sexual offenses (Gottfredson & Hirschi, 1990; Hall & Proctor, 1987; Hanson & Bussière, 1998; Hanson & Morton-Bourgon, 2005). Therefore, in the present study these impulsive offenders are not considered as one of the sub-types of rape.

Four styles of offending behavior, which represent different modes of offender-victim interactions in rape, have been identified. Examining behaviors at the crime scene may reveal notable individual variations between rapists. However, a question arises when examining behaviors of serial rapists who commit multiple offenses: whether behaviors of serial rapists remain consistent throughout their series of offenses. For example, a serial rapist who displayed extremely hostile behaviors in the first offense may either continue to display the same hostile behaviors throughout the series of offenses or change and go on to display less hostile behaviors and more controlling behaviors in subsequent offenses.

Looking into differences between rapists with only one victim and multiple victims may give a valuable insight as to whether serial rapists develop or change over a series of offenses. There have been surprisingly few studies exploring similarities and differences between serial and single-victim rapists. A few researchers (e.g., LeBeau, 1987; Park et al., 2008) found some differences between serial and single-victim rapists (e.g., styles of attack, offender-victim relationships, and crime-scene behaviors). LeBeau (1987) reported that serial rapists were more likely to attack strangers (as opposed to

single-victim rapists who were more likely to attack someone they knew) and employ blitz-style methods when approaching the victim (as opposed to single-victim rapists who were more likely to use a confidence-style of approach). Examining the level of violence, interpersonal involvement, and criminal sophistication of rapists, Park et al. (2008) reported that serial and single-victim rapists did differ in the behavior they committed at the crime scene: single-victim rapists were more violent and interpersonally-involving than serial rapists, whereas serial rapists were more criminally-sophisticated than single-victim rapists in that they were more likely to plan the offense in advance and remove any evidence at the crime scene after the offense. These studies (LeBeau, 1987; Park et al., 2008) which report differences between serial and single-victim rapists suggest that rapists, over a series of offenses, may change and develop their behavior.

Previous studies (e.g., Bateman & Salfati, 2007; Grubin et al., 2001; Lundrigan & Canter, 2001; Woodhams & Toye, 2007) investigated consistency and change in the behaviors of serial offenders.

Consistency and Change in the Serial Rapist's Behavior

Canter (1995) noted, "the way an offender carries out a crime on one occasion will have some characteristic similarities to the way he or she carries out crimes on other occasions" (p. 347). Behavioral consistency is based on two conceptual assumptions. First, it is hypothesized that offending behaviors committed by the offender would remain consistent across the series of crimes (Canter, 1995). Second, it is hypothesized that there would be some variability between offending behaviors committed by different offenders (Canter, & Youngs, 2003), because a high level of consistency would not mean much if

all offenders display similar behavior in most of their offenses.

Previous studies (e.g., Bennell & Canter, 2002; Grubin et al., 2001; Salfati & Bateman, 2005; Woodhams & Toye, 2007) reported that there is some consistency in the way an offender commits crimes. Warren et al. (1991) suggested that one of the most important of insights into the rapist's behavior is "the idea of sameness" (p. 307). They reported that the majority of serial rapists they studied did not display notable change in many aspects of their behavior over a series of offenses. Bennell and Canter (2002) examined behaviors displayed in serial burglary offenses and reported that there was consistency in the entry behaviors. Exploring behavior of serial burglars, Yokota and Canter (2004) reported that a substantial number of burglars committed a particular type of burglary (commercial, industrial, public, and residential) consistently throughout the series. Using a sample of 69 serial homicides committed by 23 offenders, Salfati and Bateman (2005) reported that these offenders consistently committed the same types of offending behavior throughout their series of offenses.

Consistent behavior can be a useful basis for linking crimes (Davies, 1992; Woodhams, Hollin, & Bull, 2007). Traditionally, linking of a series of crimes to one offender has been based on forensic evidence such as DNA or fingerprints. However, there are many occasions in police investigation where the crime scene yields no forensic evidence (Davies, 1990). Moreover, forensic evidence from the crimes committed across several regions is hard to obtain (Egger, 1990).

Woodhams et al. (2007) suggested that identifying the degree of consistency in the serial rapist's behavior over a series of offenses can be useful for linking a series of offenses to one offender. Behavioral linking is defined as a process of identifying a series

of crimes committed by a common offender based on their behavioral consistency (Woodhams & Toye, 2007).

A number of previous studies (e.g., Bateman & Salfati, 2007; Bennell & Canter, 2002; Grubin et al., 2001; Lundrigan & Canter, 2001; Santtila, Junkkila, & Sandnabba, 2005; Woodhams & Toye, 2007) have shown the possibility of linking multiple offenses based on the consistency in the criminal's behaviors across a series of offenses. Grubin et al. (2001) suggested that some degree of consistency can be found in offending behavior across a series of crimes committed by the same offender. More recently, Bateman and Salfati (2007) reported that planning and controlling behaviors committed across a series of serial homicide offenses were consistent and hence determined to be useful for linkage analysis.

However, the offender consistency hypothesis does not consider complex factors which may influence the consistency of the offender's behavior. It would be impossible for any two crime scenes involving the same offender to be completely identical: there will always be distinguishing characteristics such as different locations, times, and reactions from different victims that may influence the consistency of behaviors.

One of the major factors influencing the consistency of an offender's behavior is an offender-victim interaction during an assault. Douglas and Munn (1992) suggested that the behaviors of the victim can influence the offender's behaviors. Hazelwood and Burgess (2001) also suggested that the victim can affect the behavior of the rapist during an assault.

The past experience of an offender may also influence the offender's consistency. Canter (1994) stated that offenders can learn from their mistakes. *Modus operandi* may

change as a result of maturation and experience of the offender (Douglas & Munn, 1992). Douglas and Munn (1992) stated that incarceration often influences the offender's behaviors in the subsequent offense.

Offender's behavioral changes over a series of offenses have been studied especially in the context of the offender's criminal sophistication. Canter (1994) suggested that novice offenders may be rather impulsive and somewhat amateurish in the commission of the crime. It would be unlikely for the novice offender to be familiar with police technology and to have forensic awareness (Hazelwood & Burgess, 2001). This can be interpreted as the offender's lack of criminal experience or sophistication. On the other hand, the experienced offender may exhibit more forensic awareness, involving activity such as removal of weapons and fingerprints. Hazelwood and Burgess (2001) stated, "it may be possible to conclude from the rapist's actions whether he is a novice or an accomplished offender" (p. 128). For example, more experienced offenders may make more effort to protect themselves from future prosecution, displaying behaviors such as concealing their identity during the offense, cutting electricity before entering, and forcing the victim to shower after the offense (Hazelwood & Burgess, 2001). In fact, Park et al. (2008) reported that compared to single-victim rapists, serial rapists displayed a higher degree of criminal sophistication in that they were more proficient at removing evidence and deterring the victim's resistance.

A number of previous studies (e.g., Dale, Davies, & Wei, 1997; Hazelwood et al., 1989) have shown that offenders change over a series of offenses. Exploring discourse strategies used by serial rapists, Dale et al. (1997) suggested that the behavior of a rapist over a series offenses changes considerably. They found that rape offenders choose and

change their speech depending on the situation in order to accommodate their victims. In addition, Hart et al. (2003) noted of the possibility that the sexual acts that serial rapists display may change over a series of offenses.

Furthermore, Hazelwood et al. (1989) reported that some serial offenders escalate in the level of aggression used against the victim (e.g. from grabbing to stabbing the victim) and/or in the severity of sexual violence committed (e.g. from kissing to vaginally penetrating the victim) over time. Investigating the interaction between force, victim resistance, and the duration of the rape, Hazelwood et al. (1989) identified a small group of offenders, *increasers*, who turned out to escalate in the use of violence from their first to final offense and raped more victims (40 victims for *increasers* versus 22 victims for *non-increasers*) over a shorter period of time (19 days in-between the offenses for *increasers* versus 55 days for *non-increasers*). They also reported that *increasers* displayed more sadistic behavior such as anal penetration and foreign object insertion in their last offense than the first one.

Escalation in the level of sadistic violence over time has been extensively studied, often in association with sexually sadistic fantasies that offenders report (Burgess, Hartman, Ressler, Douglas, & McCormack, 1986; Geberth & Turco, 1997; MacCulloch et al., 1983; Prentky et al., 1989a; Warren, Hazelwood, & Dietz, 1996). Deviant sexual fantasies involving forcible sexual activities are known to be rather common, even among men who do not have a history of committing sexual assault (Crepault & Couture, 1980; Grendliner & Byrne, 1987). Many sexually sadistic offenders develop various sadistic fantasies since their childhood, and sometimes act them out against animals or their peers (Burgess et al., 1986; Geberth & Turco, 1997). In addition, these offenders often

elaborate upon their deviant fantasies through repeated rehearsals in their mind, and gradually carry them out against the victim during a sexual assault, escalating the level of sadistic violence over time (MacCulloch et al., 1983; Prentky et al., 1989a).

Furthermore, Funder and Colvin (1991) claimed that behaviors differ in the degree of consistency in that some behaviors remain more consistent than others. For example, behaviors that are emitted by the person, as opposed to those that are elicited from the person, are found to be more consistent (Funder & Colvin, 1991).

Indeed, the degree of consistency differs between different types of offending behavior: behaviors in certain themes turned out to be more consistent than those in other themes (Bateman & Salfati, 2007; Bennell & Canter, 2002; Grubin et al., 2001; Woodhams & Toye, 2007). For example, of the 4 behavioral themes (*control*, *sex*, *escape*, and *personal style*), Grubin et al. (2001) reported that serial rape offenders showed the most consistency in the behavioral theme of control. In addition, among six thematic behavioral categories (*mutilation*, *stealing*, *sexual*, *planning/control*, *body disposal*, and *weapon behaviors*), Bateman and Salfati (2007) reported that behaviors in the thematic category of *planning/control* displayed greater consistency across the series than those in other categories.

However, previous studies (e.g., Bateman & Salfati, 2007; Grubin et al., 2001) have typically examined behavioral consistency of serial offenders by comparing the frequency occurrence of behaviors across a series offenses. In other words, the typical procedures employed in these studies involve: a) classifying offending behaviors into different themes; b) assigning each offense of the serial offender to a dominant theme based on the comparison of the mean of frequency occurrence of behaviors in each theme,

and c) reporting the proportion of offenses of each serial offender assigned to the same dominant theme as an index of consistency. For example, if seven out of ten offenses committed by a serial offender were assigned to a dominant theme of hostility, one offense to interpersonal involvement, and two offenses to control, the level of behavioral consistency of this offender would be 70%.

Previous studies investigating consistency across behavioral themes using these procedures, however, contain several limitations. First, these studies have often arbitrarily grouped behaviors into different themes, without a substantial theoretical basis; no validations have been made as to whether behaviors in each theme do represent the same aspects of rape (e.g. Grubin et al., 2001). They have rarely suggested a falsifiable theory or hypothesis empirically testing the theoretical distinctions and hardly reported an objective index of correspondence between conceptual differentiation and structural patterns reflected by the empirical data. Second, the loss of a tremendous amount of information occurs when converting continuous data (i.e. frequency occurrence of behaviors) into categorical data (i.e. dominant themes). Third, they compared the degrees of consistency only across behavioral themes, and not across offenders. Simply identifying that one behavioral pattern is more consistent than others does not provide any substantive help with identifying the characteristics of the likely suspect in police investigations.

What should be noted is that the degree of consistency may not only differ across behavioral patterns but also across offenders: some offenders may be more consistent in certain behavioral themes than other offenders (Woodhams et al., 2007; Woodhams, Hollin, & Bull, 2008). For example, Woodhams et al. (2008) showed that there was

considerable variation among serial juvenile sex offenders in the behavioral consistency, ranging from none to complete. There are as yet no studies which identify consistency of behavioral patterns and link the difference in behavioral consistency to offender background characteristics such as education level, criminal history, or personality traits which may be associated with that consistency. Investigating whether behavioral consistency is associated with certain background characteristics of the offender has practical implications. Without establishing the link between consistency of behavioral patterns and offender characteristics, the utility of identifying a relative consistency of behavioral patterns is minimal.

Linking Behavioral Patterns to Offender Background Characteristics

Under the assumption that an individual's behavior is reflection of his or her background characteristics, criminal profiling is defined as a process of inferring the offender's background characteristics from the examination of crime-scene behaviors (Douglas, Ressler, Burgess, & Hartman, 1986). An increasing number of studies have investigated the link between behaviors at the crime scene and offender characteristics (e.g., Davies, 1997; Mokros & Alison, 2002; Ressler, Burgess, Douglas, Hartman, & D'Agostino, 1986).

One of the early studies aiming to link crime-scene behaviors to offender background characteristics was conducted by Ressler et al. (1986). Through analyses of crime scenes, these authors differentiated sexual killers by using a dichotomy of *organized* and *disorganized* crime scenes and identified differences in their background characteristics such as intelligence, family history, and criminal history that correspond to

the type of crime scene they create.

Following early attempts, there have been an increasing number of studies investigating the possibility of establishing the link between crime-scene actions and offender background characteristics. For example, Davies (1997) suggested that the rapist's behavior during the offense results from the offender's previous criminal history. Examining behavior displayed in 210 rape crime scenes, she found that rapists who destroyed semen at the crime scene were more likely to have a criminal history of sexual assaults than those who did not. She also reported that offenders with a criminal record of sexual assaults were more likely than one-off offenders to take precautions at the crime scene so that the victim would not be able to see their face.

However, Salfati (2003) pointed out the limitations of these item-to-item comparison studies: comparing individual behaviors, without considering the co-occurrences with the other actions, does not take into account the several factors that may influence the offender's behavioral consistency. Therefore, a thematic approach may be more effective for taking account of inconsistencies in individual, specific behaviors across a series of crimes (Batemen & Salfati, 2007).

Establishing the link between behavioral patterns at the crime scene and offender background characteristics would be useful for identifying the likely characteristics of the suspects (Douglas et al., 1986). In addition, linking behavioral consistency to offender characteristics can provide a reliable framework for developing efficient strategies in police investigations. Previous studies (e.g., Huesmann, Eron, Lefkowitz, & Walder, 1984; Lisak, 1994; McCormack, Hudson, & Ward, 2002) have identified several offender background characteristics that may be associated with a behavioral pattern displayed at

the crime scene.

Hostility

Olweus (1979) argued that hostility, emerging rather early in life, persists as a way of solving interpersonal issues and remains consistent across situations. Huesmann et al. (1984) reported that hostility displayed in school may turn into severe physical aggression and criminal activities later. Indeed, many rapists have a history of being violent to people, committing aggravated assault or murder, or using physical violence toward women (Simon, 2000; Weinrott & Saylor, 1991). Seidman, Marshall, Hudson, and Robertson (1994) reported that compared to university students and community controls, rapists were more likely to display hostility toward females. In addition, rapists committing sexually violent behavior may have been hostile and impulsive for their entire life, lacking direction or long-term plans and disregarding consequences of their behavior (Lisak & Roth, 1988; Prentky & Knight, 1991; Schlesinger, 2004).

Interpersonal Involvement

Marshall (1989) noted that for many sexual offenders who suffer from emotional loneliness and intimacy deficits, rape is an attempt to gratify sexual desires and pursue intimacy. Many offenders who commit sexual assaults have had intimacy issues in their development, including various forms of abuse and parental neglect (Lisak, 1994; McCormack et al., 2002; Prentky & Knight, 1993; Warren et al., 1991). Prentky et al. (1989b) found that caregiver inconsistency was significantly related to sexual violence. Lack of stable relationships with caregivers in childhood often leads sexual offenders to

develop intimacy deficits in various aspects of their life (Marshall, 1989; Ward, Keenan, & Hudson, 2000). These offenders, typically lacking relationship skills, are often shy and timid, being socially isolated from other individuals with limited interpersonal interaction (McCormack et al., 2002; Ward et al., 2000). Their lack of relationship skills often leads them to display eccentric or socially inappropriate behavior, which may cause other people's rejection (McCormack et al., 2002). In fact, many sexual offenders do not have successful relationships with their peers and have few friends (Tingle, Barnard, Robbin, Newman, & Hutchinson, 1986). They eventually tend to avoid any opportunity to build intimate relations with other individuals and may attempt to gratify sexual desires in inappropriate ways (Marshall, 1989; McCormack et al., 2002).

Control

Some rapists, as an attempt to experience a feeling of power and dominance through rape, display controlling behavior during an offense by asserting physical dominance over the victim (Scully & Marolla, 1985). Schlesinger (2004) stated that some offenders have "the need to control and dominate others" (p. 326), a trait which developed early in their childhood. This need can be observed in various aspects of their life, such as trying to dominate their peers while playing games or demonstrating weapons to threaten others (Myers, Burgess, & Nelson, 1998; Schlesinger, 2004). In fact, Prentky and Knight (1991) suggested that social competence, which is assessed by the offender's achievements in various areas including education, employment, and social skills, is one of the most important discriminators between rapists.

Sadism

Schlesinger (2004) found that individuals who display malicious behavior toward people often have performed cruel acts upon animals. In other words, offenders who obtain pleasure from the victim's suffering tend to have a history of animal cruelty, often torturing and killing animals in an exceedingly cruel manner (Brittain, 1970; Gleyzer, Felthous, & Holzer, 2002; Schlesinger, 2004). These offenders, who are preoccupied with their own sexual satisfaction obtained from watching the victim experiencing pain, often disregard the victim's distress and have little interest in others' feelings or safety (Brittain, 1970; Terry, 2006; Ward et al., 2000). In fact, Brittain (1970) described the sadistic offender as "a vain, narcissistic, egocentric individual" (p. 199). In addition, Brittain (1970) noted that these sadistic individuals often have a history of paraphilic behavior, such as voyeurism and fetishism. Other researchers (e.g., MacCulloch et al, 1983; Prentky & Knight, 1991; Schlesinger & Revitch, 1999) have also reported the relationship between voyeurism/fetishism and sadistic sexual aggression.

However, Alison, Bennell, Mokros, and Ormerod (2002) noted that previous studies using offending behavior have "failed to discover any relationships between specific behavioral themes of rape behavior and subsets of offender background characteristics" (p. 123). The little success in establishing the link between behavioral patterns and offender characteristics may be attributed to the procedures typically employed in previous studies (e.g. Mokros & Alison, 2002): assigning offenders into one of the behavioral themes and then treating them as a homogenous group of people. Again, the loss of a tremendous amount of information occurs when comparing offenders based

on their assigned behavioral theme, and all the individual variations are ignored when treating offenders with the same behavioral theme as homogenous. Therefore, individual variations between offenders in each of the behavioral patterns must be considered in order to establish the link between behavioral patterns and offender background characteristics.

Aims

The present study has three aims:

(1) The present study will test thematic framework of offending patterns (hostility, interpersonal involvement, control, and sadism). It is hypothesized that the theoretical distinctions of behavioral patterns in rape can empirically differentiate offending behaviors displayed at crime scenes. Based on the four suggested styles of offender-victim interactions in rape, the present study will test whether there is an empirical correspondence between the conceptual differentiation of rape and the structure of offending behaviors reflected by the data.

(2) The present study will determine the degree of consistency of each of the behavioral patterns. It is hypothesized that serial rapists remain behaviorally consistent within each theme throughout their series of offenses. The present study will consider behavioral themes as continuous dimensions in which behavioral variations across offenders and offenses can be represented.

(3) The present study will test the link between behavioral patterns and offender background characteristics to determine if each of the behavioral patterns is associated with certain offender background characteristics. It is hypothesized that the same

underlying trait that led to displaying a behavioral pattern at the crime scene has consistently influenced the offender's characteristics throughout his or her life.

Method

Participants

An existing data set by Prentky and Knight (1994) obtained from the National Archive of Criminal Justice Data (NACJD) at the Inter-university Consortium for Political and Social Research (ICPSR) was used (ICPSR 9976). The sample in the original data source consists of 254 male offenders committed to the Massachusetts Treatment Center (MTC) for Sexually Dangerous Persons. MTC was established in 1959 in order to assess and treat repetitive and/or aggressive sexual offenders (Knight et al., 1998). The data set was originally used to classify rape offenders according to a typology developed at the MTC (MTC:R3) and to test the reliability and validity of the MTC:R3 typology (for further details see Prentky et al., 1991).

The original data were collected using multiple sources, such as “past institutionalization records, school and employment records, police reports, court testimony, parole summaries, probation records, and social service notes” (Prentky & Knight, 2000, p.5). Based on these records, extensive information on rape offenders was coded using a 1,592-variable code book in the original data source. The coded data include information on offender demographics, clinical symptoms, and criminal history. Inter-rater reliability estimates ranged from .80 to .98 (Knight, 1999; Knight et al., 1998).

In the section of criminal history, information on each of the serial rape offenses up to a maximum of ten offenses per offender is separately recorded. The number of rapes per offender included in the data set ranges from one to ten, with a mean of 3.13. A total of 795 offenses are recorded in the data set. The distribution of the number of rape offenses committed by each rapist is shown in Table 2.

Table 2

The Number of Offenses Committed by Each Rapist

Number of Offenses	Number of Offenders
1	43
2	67
3	60
4	37
5	24
6	6
7	8
8	6
9	0
10	3

Among a total of 254 offenders, 84.3% of the offenders were white and 15.7% were non-white. The IQ of the offender ranged 61-142, with a mean and mode of 100 and 97, respectively. The last grade level completed ranged from five to sixteen, with a mode of eight. A majority (59.7%) of the offenders completed ninth grade only. About the history of substance abuse, 59.8% of offenders had history of drug abuse, 31.1% of offenders had been diagnosed as alcoholic, and 29.5% of offenders had serious problems related to drinking. In terms of the marital status, 60.2% of the offenders had never been married, 32.7% had been married one time, and 6.7% had married more than once.

The penal records of offenders were also reviewed. Most of the offenders (94.5%) served time in a penal institution. More specifically, 88.1% of offenders committed at least one non-sexual offense against property (e.g., breaking and entering or burglary), 46.1% of offenders committed at least one non-sexual offense against people (e.g., assault or murder), 22.8% of offenders committed at least one nuisance sexual offense (e.g. indecent exposure), and 100% of offenders committed at least one serious

sexual offense.

The age of offenders at the time of the offense was examined. In a majority of cases (93%) offenders were less than 31 at the time of the offense, with a mean age of 22.1 years (range 11-48 years). Of the 789 cases in which the marital status of the offender at the time of the offense was known, 68.8% of the offenders were single, 17.5% were married, and 13.7% were separated/divorced/widowed.

As to the sex of the victim, 97.2% percent of the victims were female and 2.8% percent were male. Of the 752 cases in which the race of the victim was known, 95.9% percent of the victims were white and 4.1% were non- white. The age of the victim at the time of the offense ranged from two to eighty-eight years, with a mean of 22.6. Of the 565 cases in which marital status was known, 78.6% were single, 17.0% were married, and 4.5% were separated/divorced/widowed.

Of the 722 cases in which the relationship between offender and victim was known, the offender and victim were strangers in 73.5% of cases; in 19.8% of the cases, they were casual acquaintances; in 4.8% of the cases, they were close acquaintances, friends, or married; and in 1.8% of the cases, the victim was the offender's family member.

For Aim 1 (empirically testing the thematic framework of behavioral patterns of rape), the first offense committed by each of the 254 offenders, hence a total of 254 cases, were used. Only one offense of each offender was included because of the possibility that any potential similarity between offenses committed by the same offender might bias the structure of behavioral patterns. For Aims 2 and 3 (determining the degree of consistency of behavioral patterns and establishing a link between offending patterns and offender

characteristics), the present study used a total of 795 offenses, which were committed by 254 offenders.

The sample which consisted of male rapists whose offenses were repetitive and aggressive may not be representative of all rapists (Barbaree et al., 1994; Knight et al., 1998). Therefore, discretion will be used when interpreting results from the present study and addressing generalizability of the findings.

Procedures

Aim 1: Empirically testing the thematic framework of behavioral patterns of rape

Based on the four suggested behavioral patterns of rape (hostility, interpersonal involvement, control, and sadism), the present study tested if there was an empirical correspondence between conceptual differentiations of rape and the structure of offending behaviors reflected by the data.

It is worth noting here again why the present study did not include another frequently suggested theme of rape: opportunistic rape. First, as discussed earlier, it is questionable whether impulsive rapists who commit diverse antisocial acts would be a sub-type of rapists because rapists are known to be mostly generalists (Simon, 2000; Weinrott & Saylor, 1991). Indeed, the examination of the penal records of offenders included in the present study confirmed this, as a vast majority of them committed at least one non-sexual offense (i.e. 88.1% of offenders committed at least one non-sexual offense against property, and 46.1% of offenders committed at least one non-sexual offense against people). In addition, the current data set does not contain any behavioral information as to whether the sexual assault was committed in the context of other crime

(e.g., whether the offender stole from the victim or whether the offender demanded goods). Therefore, the present study considered only four behavioral patterns of rape (hostility, interpersonal involvement, control, and sadism).

By conducting Weighted Smallest Space Analysis (WSSA1; Amar, 2005) which is one of the multidimensional scaling procedures (MDS; Guttman, 1968) which represent structural patterns among variables in a geometric space (Maslova, Marshall, & Alkin, 2001), the empirical correspondence was tested in a form of regional hypothesis (Borg & Shye, 1995): whether conceptual distinctions among behavioral patterns are reflected in a geometric space by partitioned regions based on co-occurrences of a set of behaviors. WSSA1 displays interrelationships between variables in a geometric space based on a matrix of input coefficients among a group of variables (Amar, 2005). The input coefficients in the matrix represent pairwise similarity (or dissimilarity) associations between variables. WSSA1 is called *weighted* SSA because it has an option of weighting input coefficients so that highly associated variables could be prioritized to improve the fit between the input matrix and the geometric representation (Amar, 2005). This option, however, was not used for the present analysis.

In the WSSA1 output, variables are represented as points in the space diagram, such that the greater the similarity between two variables, the closer together the points that represent them will appear in the geometric space. Based on the space diagram, the present study tested whether there was an empirical correspondence between conceptual differentiation of rape and structural patterns of offending behaviors reflected by the data.

Aim 2: Determining the degree of consistency of behavioral patterns

In order to determine the level of consistency of individual behaviors and behavioral patterns, first, the present study examined frequency occurrence of each of the behaviors committed by the same offender across a series of offenses. For example, if an offender punched the victim in seven out of ten offenses, the consistency level of this behavior for this offender was recorded as a 70%. Then for each behavior the mean of the consistency levels across offenders who committed the behavior in at least one of their offenses was calculated.

Although analyzing frequencies of behaviors across multiple offenses provides a very simple yet clear index of consistency, studies investigating consistency by using these procedures may have some limitations. For instance, by calculating average occurrence of behaviors belonging to the same theme, all the behaviors in the same theme are assumed to equally contribute to the behavioral themes and consistency. However, for instance, although the consistency values of two crime-scene behaviors are identical, one behavior, which is committed by only a very small number of offenders, may provide much more information than the other behavior with higher frequency when differentiating offenders or linking a series of offenses together.

Therefore, in addition to considering a behavioral theme as frequency aggregates of individual behaviors belonging to that theme, the present study considered behavioral themes as continuous dimensions in which behavioral variations across offenders and offenses could be represented. The four suggested behavioral patterns were hypothesized as representing four dimensions of the style of behavioral interaction between offender and victim. Based on these dimensions, the present study determined behavioral

consistency across offenders across a series of offenses using item response theory (IRT) analyses.

It is assumed in IRT that manifest responses or behaviors on a scale are associated with an individual's underlying trait or ability (Hulin, Drasgow, & Parsons, 1983). Based on observed responses, IRT is used to infer an individual's level on the latent trait, which is designated by the Greek letter theta (θ) and conceptualized to be distributed continuously (Hulin et al., 1983). Although item response theory models were initially developed to be employed for ability or aptitude tests, they are currently widely used for any type of psychological assessment, including personality or behavioral assessment (Caprara, Steca, Zelli, & Capanna, 2005; Harvey & Hammer, 1999).

IRT was used to estimate the offender's level on the four latent traits (θ s): hostility, interpersonal involvement, control and sadism. By considering each behavioral pattern as a latent trait which affects consistency of manifest behaviors belonging to the behavioral pattern, the present study determined the degree of consistency of each behavioral pattern. Based on these θ estimates obtained from each offense, the present study tested whether the offender behaved consistently within each behavioral pattern across offenses.

Aim 3: Linking behavioral patterns to offender background characteristics

The present study made a twofold attempt to establish a link between behavioral patterns and offender background characteristics. First, following traditional approaches to offender profiling, the present study tested if behavioral patterns could be linked to certain background characteristics of offenders. Second, beyond the limitations of the

previous studies which merely identified a relative consistency of behavioral patterns, the present study tested if behavioral consistency could be predicted from certain offender background characteristics.

First, in order to explore if behavioral patterns can be linked to certain background characteristics of offenders, the present study examined the contribution of the offender background variables to the prediction of behavioral patterns which is represented by the calculated mean for the θ estimates of across offenses for each behavioral pattern by using Ordinary Least Squares (OLS) regression. Second, in order to establish the link between behavioral patterns and background characteristics of the offender who displays the pattern consistently across multiple offenses, the present study examined the contribution of the offender background variables to the prediction of consistency in each behavioral pattern which is represented by the calculated standard deviation for the θ estimates across offenses by using OLS regression.

For each behavioral pattern the present study tested whether adding offender background characteristic variables to the model significantly improve the ability to predict the behavioral patterns and consistency of offenders. Linking consistency of behavioral patterns to offender background characteristics would be useful for identifying the characteristics of the most likely suspect in police investigations.

Variables

For Aims 1 and 2, the present study attempted to include at least two behaviors with somewhat meaningful frequency for each of the behavioral patterns, because low frequency behaviors that most of offenders did not commit within any of their offenses

might not form a robust behavioral pattern. However, this was not feasible for the behavioral pattern of sadism in which behaviors are known to be particularly infrequent (Knight et al., 1998; Warren et al., 1991). For the conceptual differentiation of behaviors, theoretical basis of behavioral patterns from previous research (e.g., Alison & Stein, 2001; Canter, 1994; Cohen et al., 1969; Groth & Birnbaum, 1979; Groth et al., 1977; Knight & Prentky, 1990a; Park et al., 2008; Salfati & Taylor, 2006; Terry, 2006) was considered.

In addition, behaviors that may be negatively correlated to each other demanded special consideration. IRT is based on the assumption of local independence: items become locally independent of one another once the latent trait is held constant (Hambleton & Swaminathan, 1985). For example, if the level of hostility of an offender increases over time, the probability of the offender committing behaviors that are assumed to be related to the latent trait of hostility all increases accordingly. Therefore, behaviors that can be used as alternatives for one another were combined together into a smaller number of variables based on the underlying psychological meaning.

As a result, the present study included a total of 16 variables detailing offending behavior in rape. Behavioral descriptions of the 16 variables are provided in Appendix, with previous uses of the variables in various typologies (e.g., Alison & Stein, 2001; Canter et al., 2003; Canter & Heritage, 1990; Grubin et al., 2001; Park et al., 2008; Salfati & Taylor, 2006). All variables are coded in dichotomous form: a one indicating that the variable is present within the offense and a zero representing that either the behavior is absent or it is unclear whether the behavior was present at the crime scene.

For aim 3, five background characteristic variables that are expected to be

associated with a particular behavioral pattern and its consistency, hence a total of 20 background characteristics, were used to predict behavioral patterns and their consistency. Definitions of 20 offender background characteristic variables are provided in Table 3. These variables came from the original database (Prentky & Knight, 1994); therefore, definitions used in the present study followed those in their code book.

First, the present study hypothesized that offenders who display hostile behaviors during the assault be generally aggressive in various aspects of their life. Based on the findings from previous literature that reported associations between rapists and physical aggression (e.g., Seidman et al., 1994; Simon, 2000; Weinrott & Saylor, 1991), five offender background variables reflecting expressive aggression in the course of life were selected to predict the behavioral pattern of hostility: *assault offenses*, *impulsivity*, *violent to people*, *homicide*, and *severe sexual aggression*. Second, based on the previous studies (e.g., Lisak, 1994; Marshall, 1989; McCormack et al., 2002; Ward et al., 2000) which examined various intimacy issues that sex offenders had in their development, the present study hypothesized that the behavioral pattern of interpersonal involvement and its consistency can be predicted from various events reflecting interpersonal intimacy and relationships in the course of life: *childhood neglect*, *isolated*, *no peer interaction*, *bizarre behavior*, and *seclusive*. Third, in relation to previous literature stating some rapists' need to achieve a feeling of dominance (Schlesinger, 2004; Scully & Marolla, 1985), the present study hypothesized that life events related to experiencing a feeling of power, dominance, and superiority would predict the behavioral pattern of control: *educational level*, *socially active*, *contact sports*, *weapon ownership*, and *stable employment*. Fourth, based on previous literature reporting background characteristics of sadistic offenders

Table 3

Variables for Linking Behavioral Patterns to Characteristics

Variables	Explanations
1. assault offenses	arrested for assault offenses
2. impulsivity	aimlessness or failure to settle down
3. violent to people	became violent as a result of drinking
4. homicide	contemplated, talked about, or carried through with homicide
5. sexual aggression	highly or severely physically abusive to sexual partner
6. childhood neglect	childhood neglect (physical or emotional neglect)
7. isolated	not involved with (physically removed from) people
8. no peer interaction	withdrawn from peer contact or minimal peer contact
9. bizarre behavior	often acted in odd, eccentric ways
10. seclusive	kept to himself much of the time
11. educational level	had some post-secondary school education
12. socially active	socially active, peer-oriented, rarely alone
13. contact sports	a member of a team playing contact sports (e.g. football)
14. weapon ownership	possessed a manufactured weapon
15. stable employment	unstable employment history
16. cruel	inflicted pain and suffering to others in an unmerciful way
17. narcissistic	showed egocentric behavior
18. apathy	showed chronic lack of interest in other people or in his everyday activities
19. fetishism	often used an abnormal sexual stimulus to obtain sexual gratification
20. voyeurism	sought excessive sexual stimulation by visual means

(e.g., Brittain, 1970; MacCulloch et al, 1983), the present study expected that the behavioral pattern of sadism would be predicted by five background variables reflecting cruelty and paraphilic behavior: *cruel*, *narcissistic*, *apathy*, *fetishism*, and *voyeurism*.

To summarize, the independent variables for Aim 1 are 16 crime-scene behaviors, and the dependent variables are four behavioral patterns (hostility, interpersonal involvement, control and sadism). For Aim 2, on the contrary, the four behavioral patterns are independent variables and the 16 observed behaviors are dependent variables, because it is assumed in IRT that manifest behaviors are determined

by underlying characteristics (Hulin et al., 1983). Finally, for Aim 3, independent variables are 20 offender background characteristics and dependent variables are four behavioral patterns and their consistency.

Results

Aim 1: Empirically testing the thematic framework of behavioral patterns of rape

The present study used a total of 16 variables detailing offending behaviors at the crime scene in order to differentiate a total of 254 rape cases (see Appendix). Compared to the ratio of cases to variables used in the previous models of rape behavior differentiation (e.g., 112 cases to 30 variables in Alison & Stein, 2001; 112 to 27 in Canter et al., 2003; 66 to 33 in Canter & Heritage, 1990; 74 to 17 in Salfati & Taylor, 2006), the present analysis involving 254 cases and 16 variables were expected to produce a relatively more reliable input matrix.

Among various kinds of association measures, Jaccard coefficients which consider only co-occurrences of variables and ignore joint non-occurrences (Canter, 2000) were used. Considering occurrences of variables, the Jaccard coefficient is sensitive to the frequencies of variables. Considering that high frequency behaviors that occur in most of rape offenses might not be useful for differentiating offenses and that less frequent behaviors might be more useful (Bateman & Salfati, 2007; Canter et al., 2003), the Jaccard coefficient which reflects frequencies as well as similarities of behavior would be most appropriate for the present analysis. In addition, the Jaccard coefficient is appropriate because of the possibility that occurrences of offending behaviors at the crime scene were not clear in the offense records and hence were coded as absent when they in fact occurred (Canter et al., 2003).

By using WSSA1, the present study tested whether there is an empirical correspondence between conceptual differentiations of rape and the structure of offending behaviors reflected by the data. WSSA1 enables the researcher to conduct constrained

analyses. WSSA1 produces a facet diagram, which enables a direct test of the regional hypothesis of whether the geometric distributions of the variables represent distinctions between elements of the facet specified by the researcher. Each of the four sets of variables corresponding to each of the four behavioral patterns was assigned an element identification number (i.e. 1 for hostility, 2 for interpersonal involvement, 3 for control, and 4 for sadism). Then, the present study tested if a set of variables representing the same behavioral pattern in rape appear together in the same region and hence if four regions corresponding to the four behavioral patterns are distinguished in the facet diagram.

The WSSA1 output of regional distributions of variables can be represented in a dimension-varying scatter plot. Starting with a one-dimensional model followed by a two-dimensional model and so forth, the present study sought the model that visualizes representation of the thematic structure of offending patterns best. The coefficient of alienation (Guttman, 1968) which represents the goodness of fit between the input matrix and the geometric configuration was examined. The coefficient of alienation ranges between zero and one, with zero indicating a perfect fit. Figure 1 shows changes of the coefficient of alienation across dimensions. For the selection of the best model, the present study considered changes of the goodness of fit across dimensions as well as the interpretability of the geometric structure of variables.

The four-dimensional solution was found to visualize representation of the thematic structure of offending patterns well and to have a coefficient of alienation of 0.09 in 20 iterations, which indicates an excellent fit for this data. Figure 2 shows the four-dimensional geometric representation of offense behaviors, with each point

corresponding to one of the 16 variables.

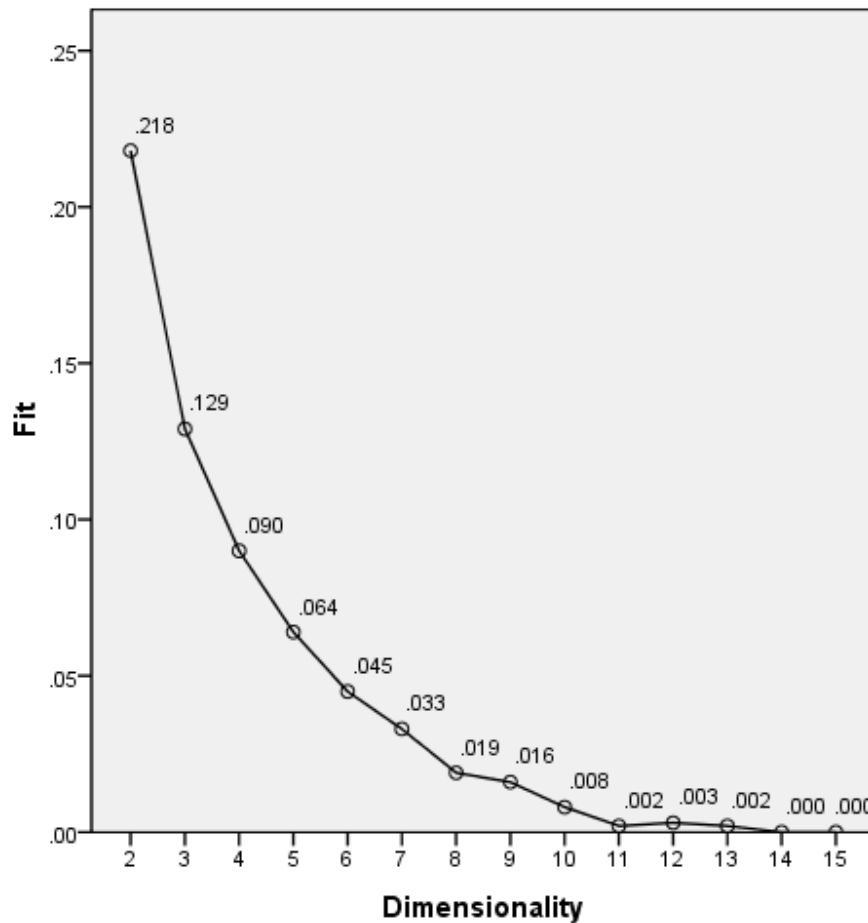


Figure 1. The Coefficient of Alienation across Dimensions

The behavioral pattern of hostility, which is characterized by excessive use of force against the victim and highly hostile attack towards the victim (Canter, 1994; Groth & Birnbaum, 1979), was revealed through variables representing excessive, degrading violence displayed against the victim: *victim resulting in cuts and bruises*, *offender punching the victim*, *offender using outright force*, and *victim physically injured by the weapon*.

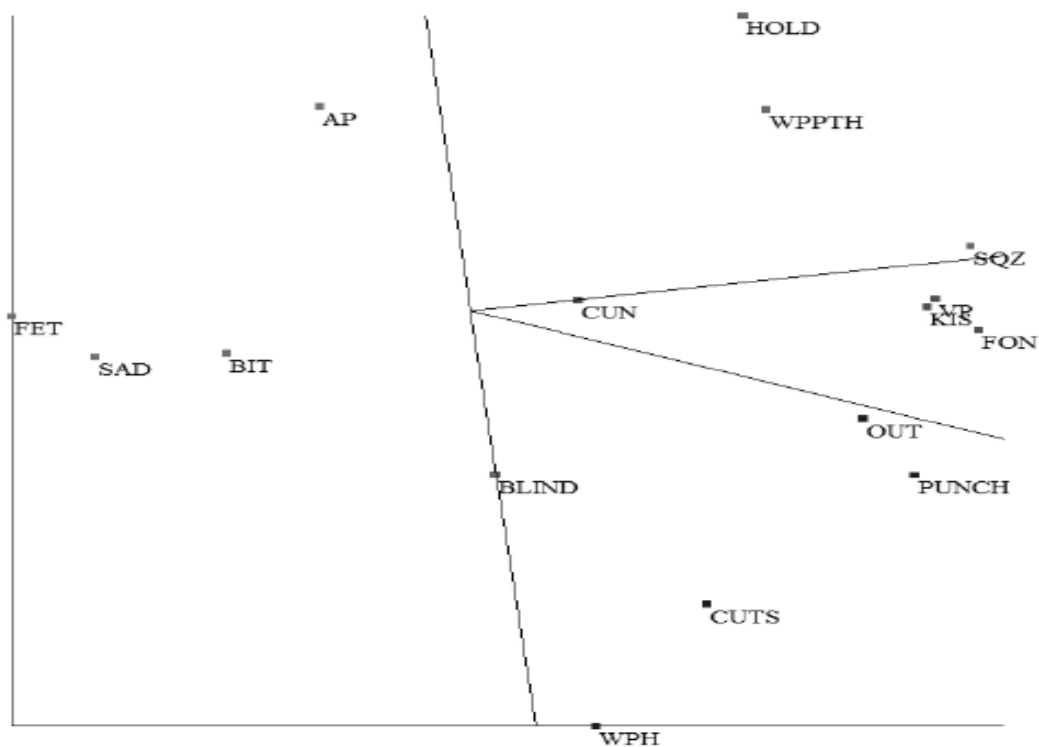


Figure 2. Weighted Smallest Space Analysis – Differentiation of Offense Behaviors

In line with the behavioral pattern of interpersonal involvement which indicates an interpersonally intimate form of interaction between offender and victim (Canter, 1994; Marshall, 1989), this behavioral pattern was identified through the co-occurrence of variables such as *kissing*, *fondling*, and sexual behaviors such as *vaginal penetration* and *cunnilingus*.

The behavioral pattern of control, which involves the offender displaying controlling behaviors over the victim to achieve the victim's submission (Groth & Birnbaum, 1979; Scully & Marolla, 1985), was identified through controlling, dominant behaviors: *offender blindfolding/gagging the victim to prevent the victim from seeing*

and/or screaming, offender displaying weapon to threaten the victim, offender squeezing/slapping the victim to prevent the victim from resisting, and offender using minimal physical aggression (e.g., holding or pushing) to subdue the victim.

Finally, the behavioral pattern of sadism which represents the offender's attempt at obtaining sexual gratification from inflicting pain upon the victim was identified through the following behaviors: *offender attacking the victim's genitals/breasts to purposely inflict pain, offender biting the victim, anal penetration, and offender using an object to enhance his stimulation.*

WSSA1 provides a regionalization solution for a given facet, which can effectively reveal whether the geometric distributions of the variables actually represent distinctions between elements of the facet specified by the researcher (Amar, 2005; Amar & Cohen, 2001). Amar and Cohen (2001) defined the regionality coefficient as "the fit between the hypothetical classification of the variables and the actual regionalization found" (p. 87; see Amar, 2001 for the details on the mathematical computation of the regionality coefficient). The regionality coefficient ranges from zero to one, and a perfect solution is represented by the value 1.00 (Amar, 2001).

In addition to the regionality coefficient, WSSA1 provides a random regionality coefficient, which indicates the fit between a random categorization of the variables and the empirical geometric partitioning of the variables (Amar & Cohen, 2001). The regionality coefficient, especially in comparison with the random coefficient, can be a useful index of how well the partitioning of the regions corresponds to the hypothesized structure of the facet (Amar & Cohen, 2001).

Figure 3 shows changes of the regionality coefficient as well as the random

coefficient across dimensions. The regionality coefficient for the four-dimensional geometric representation is 1.00, indicating a perfect fit. The random regionality coefficient is .42, which is much smaller than the regionality coefficient. The facet diagram shows that four regions corresponding to four behavioral patterns are clearly distinguished, indicating that behaviors in each behavioral pattern did represent the same aspects of rape.

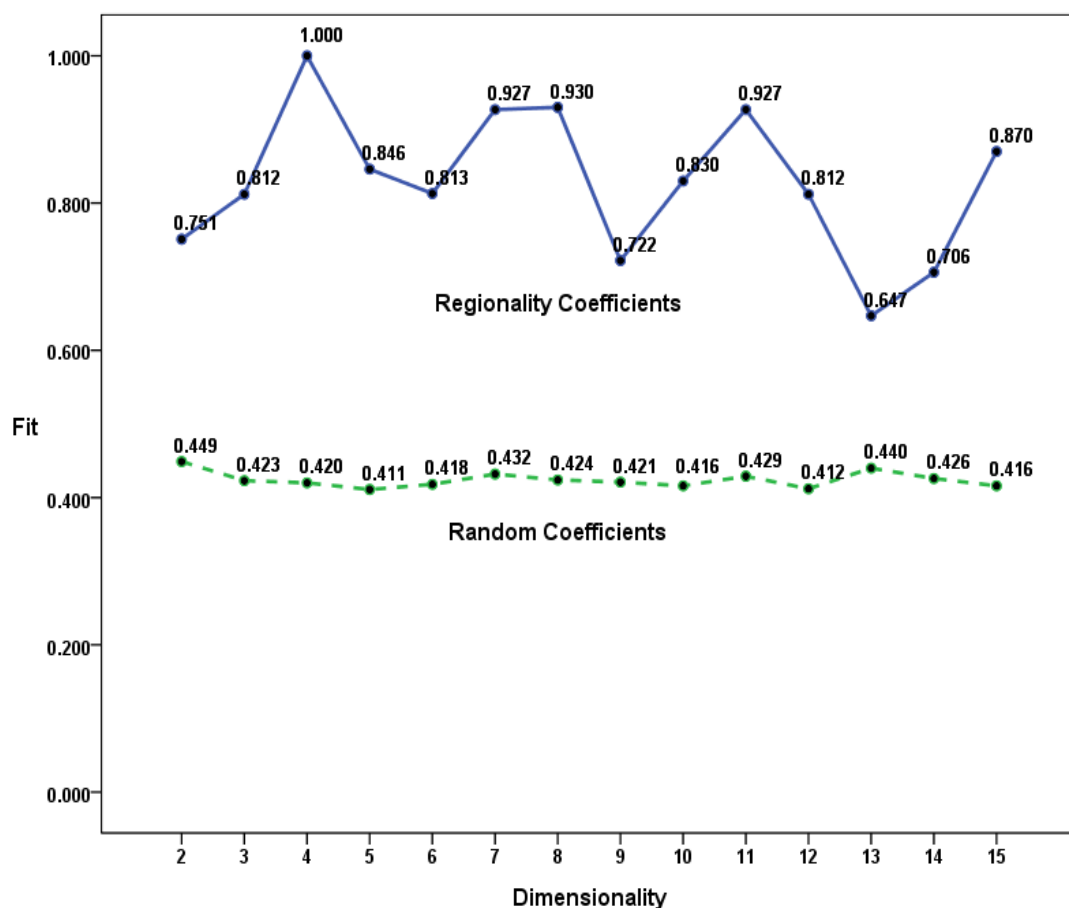


Figure 3. The Regionality Coefficient and the Random Coefficient across Dimensions

Based on the facet diagram and the objective index of regionality coefficient, the present WSSA1 analysis confirmed that there is empirical correspondence between

conceptual distinctions of behaviors that occur in rape and the structure of data reflected by the regional distribution of the variables.

Aim 2: Determining the degree of consistency of behavioral patterns

Descriptive Statistics of 16 Behaviors and Four Behavioral Patterns

First, the present study computed descriptive statistics of 16 behaviors. The sum of behaviors committed in each offense for each behavioral pattern was computed (see *Sum* in Table 4). On average, offenders committed only one or less behavior for each behavioral pattern in each offense, and especially a majority of offenders did not commit any of the behaviors in the behavioral pattern of sadism ($M = .17$).

Second, a series of offenses committed by each offender were aggregated, and the average of behaviors across offenses for each behavioral pattern was computed. The descriptive statistics and frequencies of these behaviors in the aggregated data set are also shown in Table 4. On average behaviors belonging to the behavioral pattern of interpersonal involvement were most frequent ($M = 1.16$; see *Average* in Table 4), whereas a majority of offenders did not commit any of the behaviors in the behavioral pattern of sadism across their offenses ($M = .19$).

Standard deviations (see *Standard Deviations* in Table 4) represent dispersion in the number of behaviors across offenses committed by the same offender within each behavioral pattern. It should be noted that there are 43 offenders who are known to have committed only one offense, therefore information of only 211 offenders was included for the calculation of standard deviations. The behavioral pattern of interpersonal involvement displayed the largest standard deviation of all ($M = .78$) and the behavioral

Table 4

Descriptive Statistics and Frequencies of Four Behavioral Patterns

Computation	Behavioral Pattern	<i>N</i>	<i>M</i>	<i>SD</i>	Minimum	Maximum
Sum ^a	Hostility	795	.80	.90	0	4
	Involvement	795	1.09	1.01	0	4
	Control	795	.83	.93	0	4
	Sadism	795	.17	.50	0	3
Average ^b	Hostility	254	.98	.76	0	3
	Involvement	254	1.16	.74	0	4
	Control	254	.82	.71	0	3
	Sadism	254	.19	.43	0	3
Standard Deviation ^c	Hostility	211	.59	.50	0	2.83
	Involvement	211	.78	.50	0	2.31
	Control	211	.64	.47	0	2.12
	Sadism	211	.24	.40	0	2.12
Minimum ^d	Hostility	254	.59	.81	0	3
	Involvement	254	.60	.81	0	4
	Control	254	.35	.68	0	3
	Sadism	254	.06	.34	0	3
Maximum ^e	Hostility	254	1.49	.94	0	4
	Involvement	254	1.86	1.00	0	4
	Control	254	1.35	.97	0	4
	Sadism	254	.42	.75	0	3

Note. *N* indicates 795 offenses for *Sum*, 254 offenders for *Average*, *Minimum*, and *Maximum*, and 211 serial offenders for *Standard Deviation*.

^asum of behaviors committed in each offense for each behavioral pattern. ^baverage of behaviors across offenses committed by offender for each behavioral pattern. ^cstandard deviations of behaviors across offenses committed by offender for each behavioral pattern. ^dminimum number of behaviors committed across offenses in each theme. ^emaximum number of behaviors committed across offenses in each theme.

pattern of sadism the smallest ($M = .24$), which indicates that the number of behaviors committed across a series of offenses by the same offender was most variant in the

behavioral pattern of interpersonal involvement and most constant in the behavioral pattern of sadism.

The minimum and maximum number of behaviors in each behavioral pattern that offenders committed across offenses (see *Minimum* and *Maximum* in Table 4) again indicates that behaviors belonging to the behavioral pattern of interpersonal involvement were most frequent and variant at the same time, whereas those belonging to the behavioral pattern of sadism were most infrequent and constant.

Consistency Percentages of Behaviors across a Series of Offenses

To determine the level of consistency of individual behaviors and behavioral patterns, the present study examined frequency occurrence of behaviors across a series of offenses (see Table 5). Forty-three offenders who were known to have committed only one offense, and hence their 43 offenses, were excluded from this analysis.

First, the present study calculated percentages of offenders who committed the behavior in at least one of their series of offenses among 211 offenders. More than half of the serial rapists committed interpersonally-involving behaviors in at least one of their series of offenses, with the two behaviors of *vaginal penetration* and *fondling* being committed by a vast majority of offenders (83.4% and 69.7%, respectively). In contrast, only a very small number of offenders displayed behaviors belonging to the behavioral pattern of sadism, with an average of 11.7%.

Second, the present study calculated the frequency percentages of behaviors committed across a total of 752 offenses. Behaviors in the behavioral pattern of interpersonal involvement had higher frequencies than those in other behavioral patterns,

Table 5

Frequency Occurrences and Consistency Levels of Individual Behaviors

Pattern	Behavior	Offender(%) ^a	Behavior(%) ^b	Consistency(%) ^c
Hostility	Outright force	60.2	32.8	57.1
	Punching	51.2	19.4	46.0
	Cuts	34.6	13.6	45.4
	Weapon hurt	28.4	10.1	43.3
	Average	43.6	19.0	47.9
Involvement	Vaginal Penetration	83.4	50.1	63.7
	Fondling	69.7	31.6	46.4
	Kissing	44.1	18.5	43.8
	Cunnilingus	19.4	7.3	38.9
	Average	54.2	26.9	48.2
Control	Weapon Threat	43.6	23.7	51.0
	Squeezing/Slapping	68.7	33.1	50.2
	Blindfolding/Gagging	20.4	9.7	45.0
	Minimal Physical	37.4	17.0	43.3
	Average	42.5	20.9	47.4
Sadism	Fetishism	7.1	3.5	46.6
	Anal Penetration	20.9	6.9	37.6
	Sadistic Assaults	10.4	3.5	32.8
	Biting	8.5	2.8	30.5
	Average	11.7	4.2	36.9

^a percentages of offenders who committed the behavior in at least one of their series of offenses among 211 offenders. ^b frequency percentages of behaviors committed across a total of 752 offenses. ^c mean of the consistency values of behaviors across a series of offenses among offenders who committed the behavior in at least one of their offenses.

with an average of 26.9% of frequency occurrence as opposed to an average of 19% (hostility), 20.9% (control), and 4.2% (sadism).

Third, the present study examined the consistency levels of each of the behaviors across a series of offenses for each of the offenders who committed the behavior in at least one of their offenses. For example, if an offender punched the victim in seven out of ten offenses, the consistency level of this behavior for this offender was recorded as a

70%. Offenders who were recorded to have never displayed the behavior throughout the series were excluded from consistency calculations.

As a result, two behavioral variables (*vaginal penetration* and *outright force*) displayed the highest consistency values (63.7% and 57.1%, respectively). The consistency values of most of the behaviors did not exceed 50%. The average consistency values of behaviors in each behavioral pattern were less than 50%, with the smallest consistency values for the behavioral pattern of sadism (36%). These consistency values, which are not that different from the probability of getting a head by toss of a coin, demonstrate that offenders do not necessarily remain consistent in their behavior across a series of offenses.

However, investigating behavioral consistency using these procedures contains several limitations. First, current results demonstrate that the level of consistency is highest for the behavioral pattern of interpersonal involvement ($M = 48.2\%$) and lowest for sadism ($M = 36.9\%$). However, close examination of Table 5 reveals that the order in the level of consistency (i.e. from interpersonal involvement the highest to sadism the lowest) actually reflects the order in the level of frequencies: the behavioral pattern of interpersonal involvement with the behaviors of high frequencies was deemed to be most consistent, whereas the behavioral pattern of sadism with behaviors of low frequencies was deemed to be least consistent. In other words, using frequency occurrence of behaviors for calculating consistency values may have led the frequencies of behaviors to functionally determine the level of consistency, which may not be fair for a behavioral pattern consisting of behaviors of which the base rate is low. Second, by calculating the average occurrence of behaviors belonging to the same behavioral pattern, all the

behaviors in the same behavioral pattern were assumed to equally contribute to the behavioral pattern and consistency. However, although the consistency values of *blindfolding/gagging* and *squeezing/slapping*, for instance, are similar (45% and 50.2%, respectively), the variable of blindfolding/gagging may provide much more information than the variable of squeezing/slapping when differentiating offenders or linking a series of offenses together, because only one fifth of offenders (20.4%) were recorded to blindfold/gag their victims whereas a majority of offenders (68.7%) were recorded to squeeze/slap their victims, and also because the behavior of blindfolding/gagging the victim was much more rarely committed compared to the behavior of squeezing/slapping the victim (9.7% and 33.1% across 752 cases, respectively).

The description of Oishi (2006) about difference between classical test theory (CTT) and item response theory (IRT) can be effectively used to understand the limitation of determining behavioral consistency by calculating the average frequency occurrence of behaviors and explain why IRT would be more appropriate for determining behavioral consistency:

In CTT, if two individuals answered the same number of items “correctly” (or gave the same number of “yes” responses), these two individuals would have the same total score. In contrast, in IRT, even if two individuals answered the same number of items “correctly” (or gave the same number of “yes” responses), the person who correctly answered more difficult items (or those who said “yes” to the items less frequently endorsed) would receive a higher total score than the other who correctly answered less difficult items in IRT. (p. 413)

In other words, even though two offenders consistently committed one of the behaviors in the behavioral pattern of control, an offender who consistently blindfolded/gagged his victims may be regarded as more controlling than the other offender who consistently squeezed/slapped his victims, because the behavior of squeezing/slapping is more frequently and commonly committed by a majority of offenders.

Determining Behavioral Consistency by Using IRT Analyses

IRT analyses are used to reveal how manifest behaviors are associated with an individual's underlying trait and infer an individual's standing on the latent trait (Hulin et al., 1983). Instead of considering behavioral patterns as simple frequency aggregates of behaviors belonging to that behavioral pattern, the present study further examined behavioral consistency by using IRT analyses based on the assumption that a behavioral pattern is a latent trait that influences the consistency of the behaviors in the same behavioral pattern.

A critical assumption of IRT is unidimensionality: the item pool measures a single latent trait (Hulin et al., 1983). Although several researchers (e.g., Ackerman, 1994; Reckase, 1997) have developed multidimensional item response theory (MIRT) analysis which enables estimating multiple latent variables by using different sets of indicators at the same time, a large sample size is needed for MIRT in order to obtain stable parameter estimates, such as over 1,000 (Reckase, 1997) or 2,000 (Ackerman, 1994). In order to meet the assumption of unidimensionality and to avoid estimating a

large number of parameters at the same time, four behavioral patterns suggested were treated as four different latent traits (θ s) and analyzed as four separate unidimensional models.

The present study conducted a two-level IRT analysis¹, which consists of a within and between offender level, for each of the four latent variables with four categorical variables (offending behaviors) to estimate the offender's level on four latent traits (θ s): hostility, interpersonal involvement, control, and sadism. Based on these θ estimates obtained from each offense, the present study tested whether the offender behaved consistently within each behavioral pattern across offenses. First, the within offender level of a latent trait (θ_w) represents the level of θ estimated based on behaviors committed within each offense. Second, the between offender level of a latent trait (θ_B) refers to the level of θ within each offender estimated by behaviors committed across a series of offenses.

IRT analyses were performed using the program *Mplus* (Muthén & Muthén, 2007), which allows estimating latent variables based on manifest variables. *Mplus* is chosen for the present analysis, especially because it can take account of non-independence of observations resulting from including a series of offenses committed by the same offender.

Parameters of IRT models were estimated using a maximum likelihood procedure which requires a numerical integration algorithm (MLR; for further details see Muthén & Muthén, 2007). Hambleton and Swaminathan (1985) stated, “the maximum likelihood estimator of θ can be interpreted as that value of the examinees' ability that

¹ It should be noted that it is functionally a three-level analysis with *behaviors* displayed during *offenses* committed by *offenders*; in IRT, variables (*behaviors*) are assumed to be nested within *offenses*.

generates the greatest probability for the observed response pattern” (p. 77). Numerical integration used for the MLR procedure requires complex computations (Baker, 2001); therefore, an option of Monte Carlo integration that Mplus provides (see Muthén & Muthén, 2007) which is known to reduce the heavy computational demands was chosen for the present analysis. To set the metric of each of the four latent traits, the mean of four latent traits was fixed to zero and the item discrimination parameter (loading) of one of the indicators (observed behaviors) was fixed at 1.0 (see Glockner-Rist & Hoijsink, 2003; Muthén & Muthén, 2007).

The probability of giving a correct item response is assumed to be determined by a latent trait and the characteristics of items (item parameters) on a test scale (Caprara et al., 2005; Hulin et al., 1983). Commonly used IRT models require a different number of parameters in order to depict the item responses (Harvey & Hammer, 1999; Hulin et al., 1983). For example, a two-parameter logistic model is represented by a function of a latent trait and two item parameters: the item discrimination and difficulty parameters. The item discrimination parameter indicates the degree as to how effectively an item differentiates among individuals (Baker, 2001). The bigger the item discrimination parameter, the more strongly the item is associated with the latent trait because the item yields much more information about the latent trait than items with small discrimination parameters (Harvey & Hammer, 1999). Harvey and Hammer (1999) defined the item difficulty parameter as “the score on θ that is associated with a 50% likelihood of a correct/endorsed item response” (p. 359). If an item is endorsed by only a small number of people with high standings on the latent trait, the item is deemed to be difficult (Fraley, Waller, & Brennan, 2000).

The two-parameter logistic model was used for the present analysis. A one-parameter logistic model in which the item discrimination parameter is equal for all items is not appropriate for the present analysis as it is unlikely that all the items (behaviors) would be same in their effectiveness to differentiate between individuals. Also, a three-parameter logistic model is not appropriate for the present analysis as it includes the guessing parameter which represents the probability of getting the correct answer by guessing (Harvey & Hammer, 1999). The two-parameter logistic model is one of the most commonly used IRT models for binary responses. Item parameters estimated from four separate two-level IRT models are shown in Table 6. In terms of residuals which refer to the discrepancy between the location of the observed data and the estimated data, all four latent traits turn out to have a good fit. None of the univariate and bivariate residuals exceeded .05, which indicates a good fit between observed and estimated responses.

Item discrimination parameter estimates at the within offender level

First, all the behaviors except outright force (*out* in Table 6) were statistically significantly associated with the latent trait (θ_w) of hostility at the within offender level. The item discrimination parameter of *wph* (victim hurt by the weapon) was the largest, indicating that this behavior most effectively represented variations among offenses on the latent trait of hostility. On the other hand, the item discrimination parameters of punching (*punch*) and outright force (*out*) were relatively small, meaning that the probability of offender displaying these behaviors in the offense involving extreme hostility was nearly the same as that in the offense which was only moderately hostile.

Table 6

IRT Model Results (Parameter Estimates)

Within Offender Level	Estimate	S.E.	Est./S.E.	<i>p</i>	Between Offender Level	Estimate	S.E.	Est./S.E.	<i>p</i>
Hostile					Hostile				
cuts	1*	---	---	---	cuts	1*	---	---	---
punch	0.253	0.118	2.14	0.032	punch	0.246	0.22	1.117	0.264
out	-0.069	0.144	-0.483	0.629	out	1.993	0.622	3.203	0.001
wph	1.599	0.776	2.062	0.039	wph	1.104	0.501	2.204	0.027
Involve					Involve				
cun	1*	---	---	---	cun	1*	---	---	---
fon	0.826	0.255	3.236	0.001	fon	0.176	0.239	0.734	0.463
kis	1.085	0.455	2.383	0.017	kis	0.528	0.681	0.776	0.438
vp	0.487	0.215	2.265	0.023	vp	2.117	0.884	2.394	0.017
Control					Control				
blind	1*	---	---	---	blind	1*	---	---	---
wpthreat	16.44	3.906	4.209	0	wpthreat	1.28	0.31	4.122	0
squeeze	1.386	1.156	1.199	0.231	squeeze	0.091	0.112	0.812	0.417
mpa	3.105	1.201	2.585	0.01	mpa	0.477	0.152	3.139	0.002
Sadism					Sadism				
analp	1*	---	---	---	analp	1*	---	---	---
bit	4.297	2.024	2.123	0.034	bit	0.468	0.699	0.67	0.503
sadist	85.677	26.421	3.243	0.001	sadist	64.86	22.256	2.914	0.004
fetish	1.011	0.501	2.017	0.044	fetish	4.543	2.01	2.261	0.024

Note. Asterisks (*) indicate that the item discrimination parameter of the indicator (behavior) was fixed at one to set the metric of each of the four latent traits.

Especially, the behavior of outright force (*out*) was not strongly associated with the latent trait of hostility, indicating that whether the offender used outright force did not yield much information about hostility at the within offender level.

Second, all the behaviors were statistically significantly associated with

interpersonal involvement at the within offender level. The item discrimination parameter of vaginal penetration (*vp*) was the smallest, which indicates that this behavior was the least effective in differentiating between offenses on the latent trait of interpersonal involvement.

About the behavioral pattern of control, all the behaviors except squeezing/slapping the victim (*squeeze*) were statistically significantly associated with this latent trait at the within offender level. The behavior of displaying the weapon (*wpthreat*) turned out to most effectively represent variations among offenses on the latent trait of control, whereas whether the offender squeezed/slapped the victim or not did not yield much information about control at the within offender level.

Finally, all the behaviors were statistically significantly associated with sadism at the within offender level. Especially, the behavior of sadistic assaults (*sadist*) was most effective for differentiating between offenses.

Item discrimination parameter estimates at the between offender level

First, all the behaviors except punching (*punch*) were statistically significantly associated with the latent trait (θ_B) of hostility at the between offender level. Interestingly, the item discrimination parameter of outright force (*out*) was the largest, indicating that this behavior, which was not effective for differentiating between offenses, was most effective for differentiating between offenders. The item discrimination parameter of punching (*punch*) was the smallest, meaning that this behavior did not do well in differentiating between offenders and provided little information about individual differences in hostility.

Second, the behaviors of fondling (*fon*) and kissing (*kis*) were not statistically significantly associated with interpersonal involvement at the between offender level: these did not yield much information about variation between offenders. On the other hand, whether the offender vaginally penetrated the victim or not (*vp*) was statistically significantly related to interpersonal involvement and most effective for differentiating between offenders.

Third, the behavior of displaying the weapon (*wpthreat*), which was most effective at the within offender level, turned out to be most effective for differentiating between offenders as well. On the other hand, the behavior of squeezing/slapping the victim (*squeeze*), which was not informative at the offense level, was again not useful for demonstrating variation between offenders.

Finally, all the behaviors except biting (*bit*) were statistically significantly associated with the latent trait of sadism at the between offender level. Whether the offender bit the victim did not yield much information about variation between offenders, whereas sadistic assaults (*sadist*) and fetishism (*fetish*) most effectively differentiated between offenders.

Item characteristic curve

The item discrimination parameter can also be observed through the slope of an item characteristic curve (ICC; see Figures 4-7). ICC represents the association between a response to an item and an individual's standing on a latent trait (Baker, 2001). The x-axis indicates an individual's level on the latent trait (θ) which is distributed continuously, and the y-axis represents the probability of endorsing an item of individuals with the

latent trait (Hulin et al., 1983). For example, the probability of an offender with an average level of hostility (zero on the x-axis) using outright force is approximately 0.5 (see Figure 4). Offenders who are very hostile (three or more on the x-axis) have a high probability (almost one) of committing this behavior, whereas offenders with low hostility (-2 or less on the x-axis) are unlikely to commit this behavior (with a probability of zero). Items which effectively differentiate between offenses or offenders are represented by steep ICCs.

First, for the behavioral pattern of hostility, the behavior of *wph* at the within offender level had the biggest item discrimination parameter value and hence the steepest slope, which indicates that this behavior most effectively represented variations among offenses on the latent trait of hostility. On the other hand, the behavior of outright force (*out*) at the within offender level had a negative item discrimination parameter value: the higher the level of hostility, the less likely the offense involved outright force. This phenomenon is called *negative discrimination* (Baker, 2001), which indicates that either the item is poor at discriminating between offenses and therefore should be discarded (Hambleton & Swaminathan, 1985), or there is a possibility that the behavior was not accurately recorded among offenses with high standings on the latent trait (Baker, 2001). At the between offender level, on the other hand, the behavior of outright force (*out*) had a largest item discrimination parameter value and hence the steepest slope, which indicates that the difference in the probability of displaying this behavior between very hostile and less than moderately hostile offenders was bigger than that of displaying other behaviors belonging to behavioral pattern of hostility. In contrast, the item characteristic curve of punching (*punch*) was relatively flat, which indicates that this behavior was not

very useful for demonstrating variation among offenders in the level of hostility.

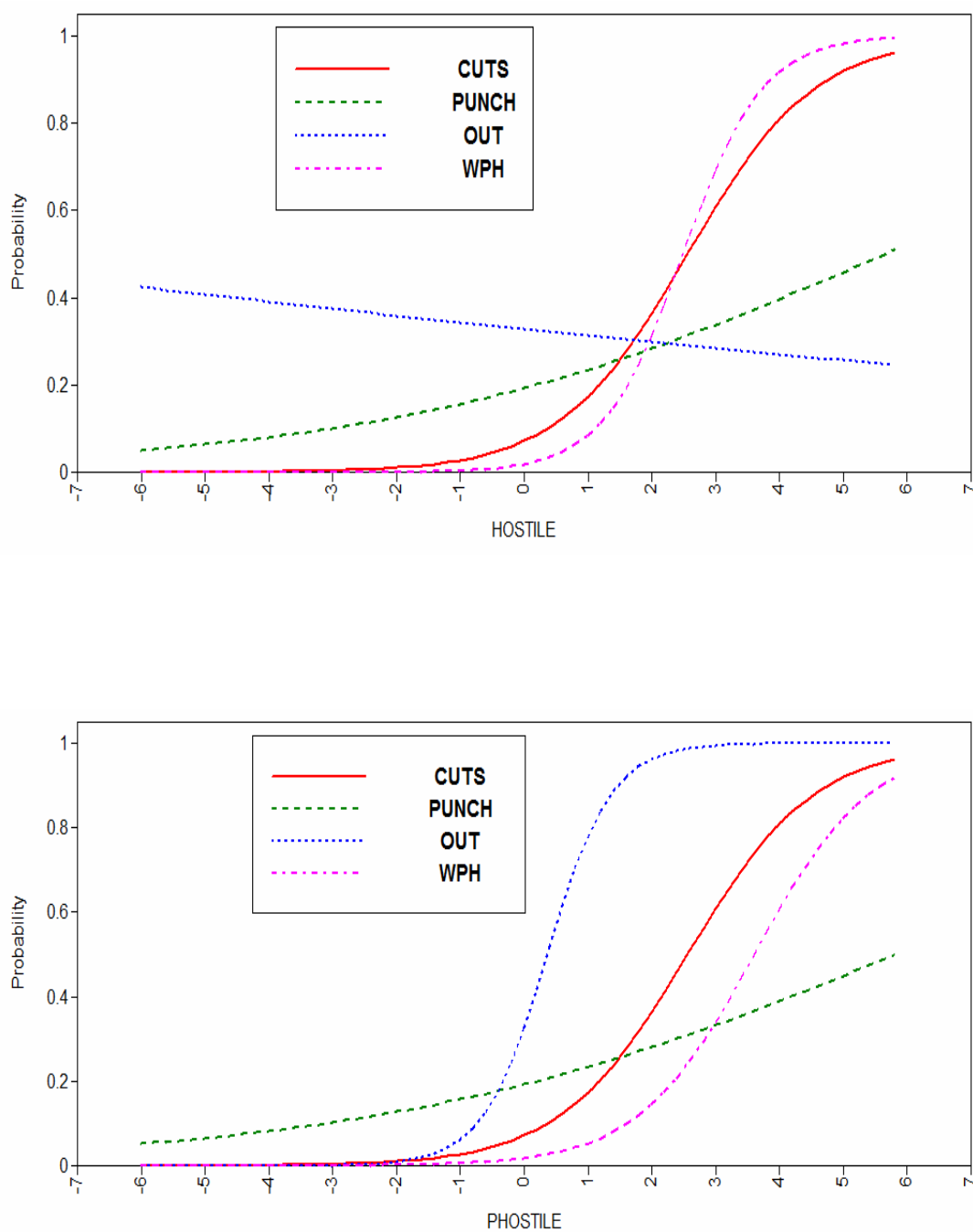


Figure 4. Item Characteristic Curves: Hostile (within level) and PHostile (between level)

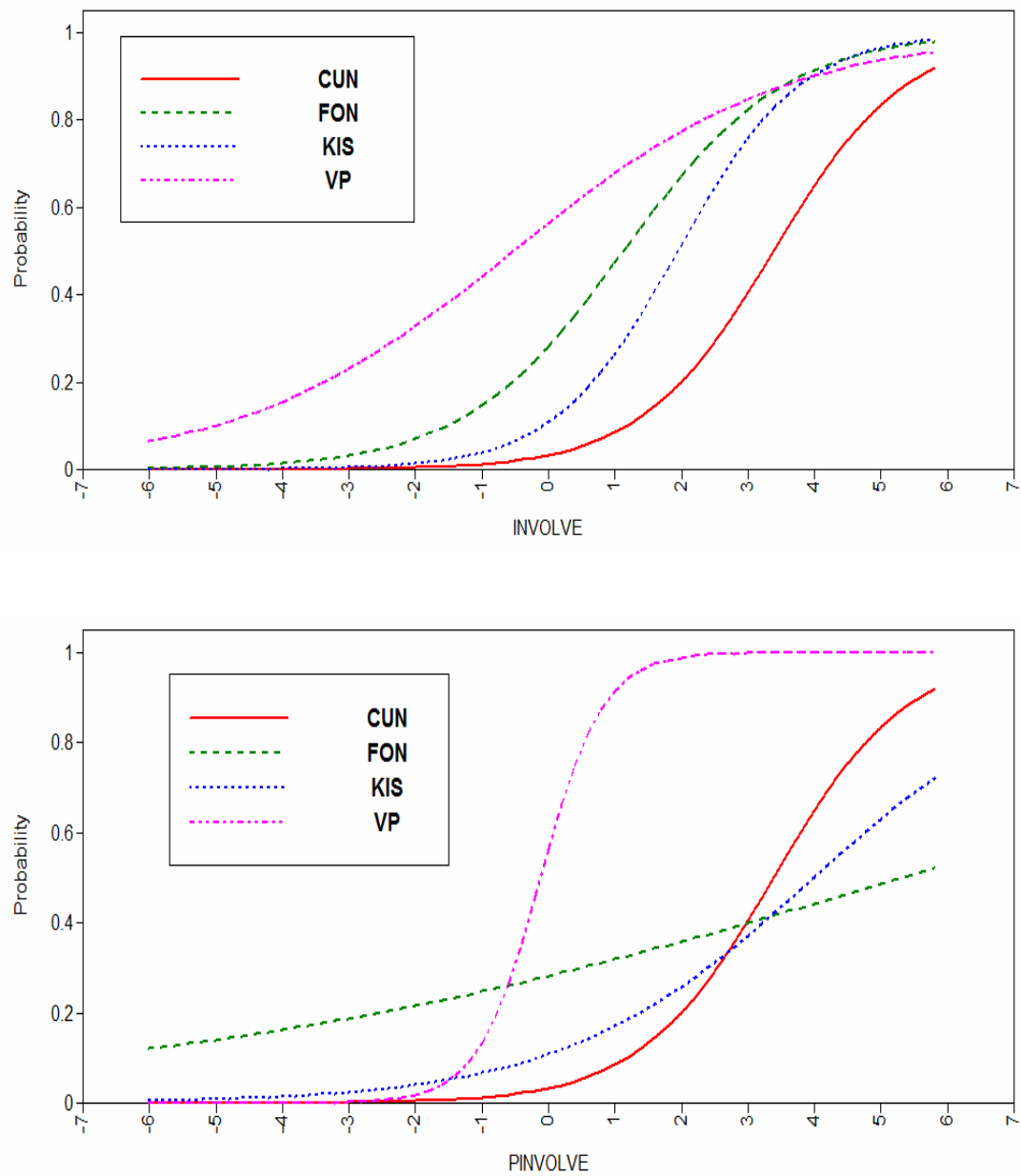


Figure 5. Item Characteristic Curves: Involve (within level) and PINvolve (between level)

Second, about the behavioral pattern of interpersonal involvement, whether the offender vaginally penetrated the victim or not at the within offender level may not be useful for differentiating between extremely and moderately interpersonally-involving

offenses, because offenses with a certain level of interpersonal involvement (1.0 or higher on the x-axis) would almost always include this behavior (with a probability of 1.0 on the y-axis). However, at the between offender level, the same behavior of *vp* was very useful for differentiating between offenders who are interpersonally-involving and those who are not. In contrast, the difference between offenders who are extremely interpersonally-involving and those who are not was relatively small in the probability of fondling the victim: this behavior was not effective for differentiating between offenders.

Third, about the behavioral pattern of control, all of the ICCs both at the within and between offender level were steep, except the behavior of squeezing/slapping the victim. In other words, although this behavior of squeezing/slapping the victim of which ICC was rather flat was not effective for discriminating between offenses and offenders, other behaviors belonging to the behavioral pattern of control effectively demonstrate variations in the level of control between offenses and offenders.

Finally, for the behavioral pattern of sadism, all the behaviors effectively demonstrate variations in the level of sadism between offenses. In addition, as one can see through the extremely steep ICCs at the between offender level, the difference between offenders who displayed sadistic assaults and fetishism and those who did not was dramatically huge, indicating that these behaviors are extremely informative at differentiating between offenders.

An item characteristic curve also shows item difficulty, which is the score on the latent trait relating to a .50 probability of displaying the behavior. For example, a behavior would be considered *difficult* if individuals with an extremely high level of the latent trait only would commit the behavior, whereas a behavior would be considered

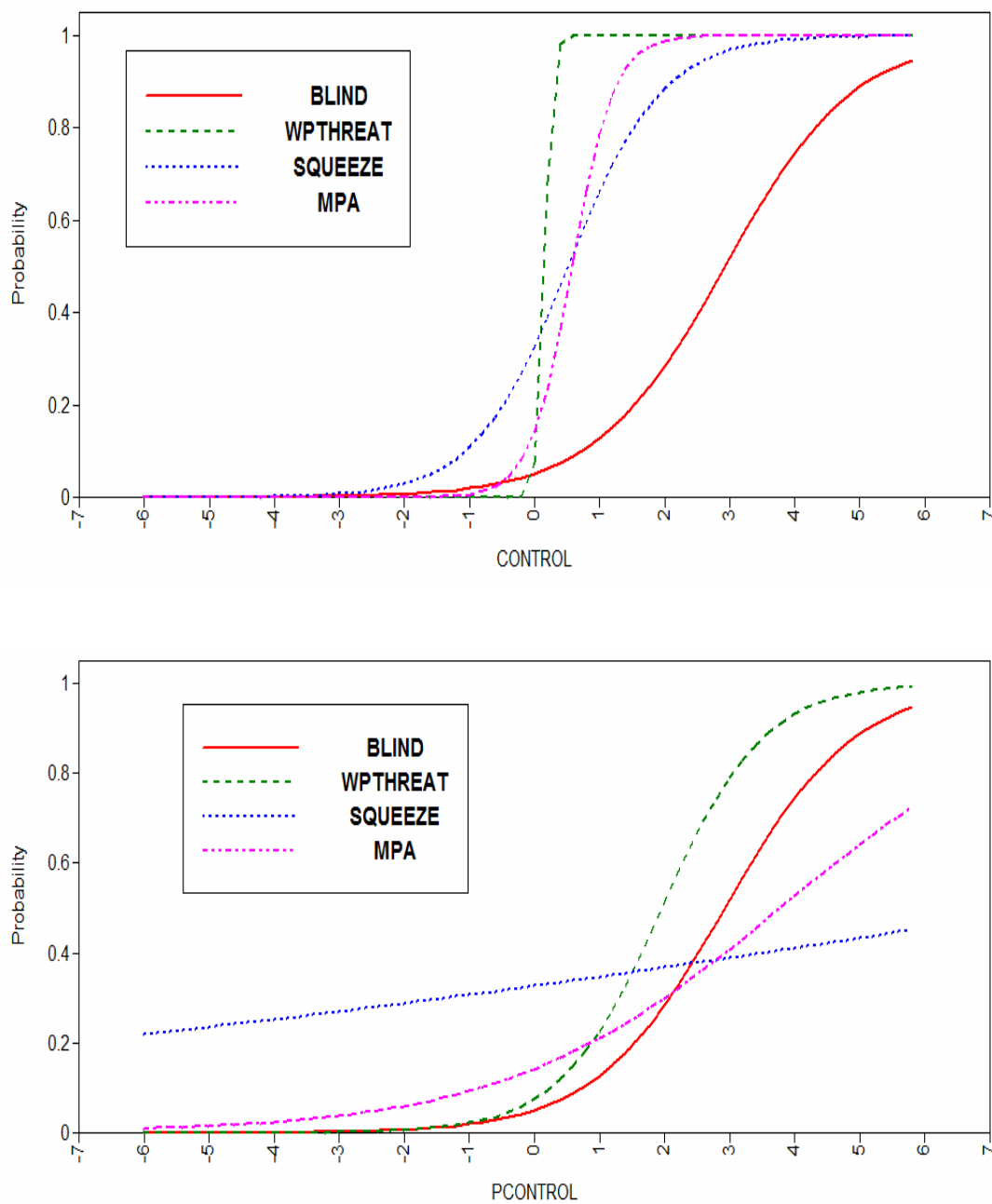


Figure 6. Item Characteristic Curves: Control (within level) and PControl (between level)

easy if individuals with even a low or moderate degree of the latent trait would also be able to commit the behavior.

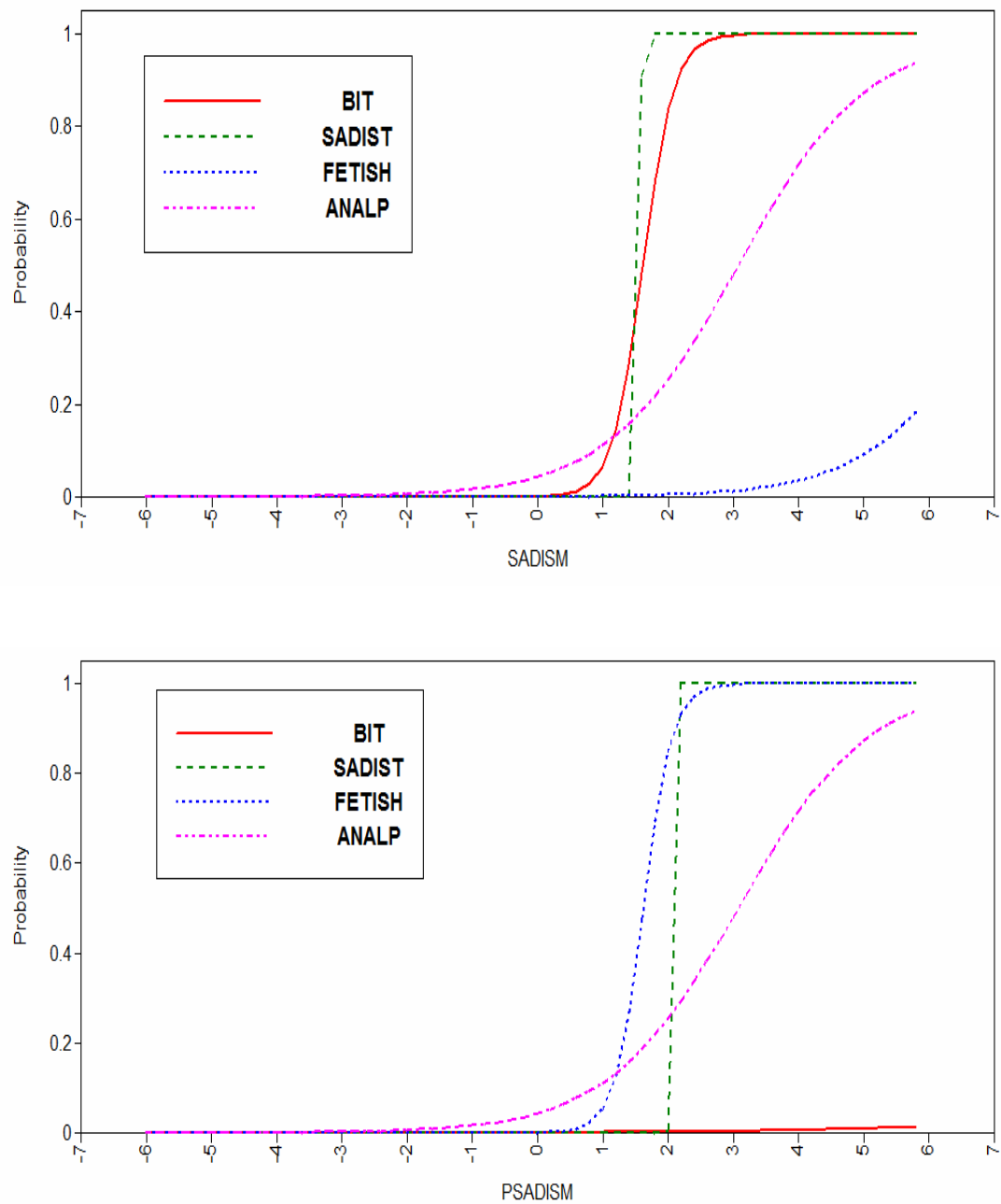


Figure 7. Item Characteristic Curves: Sadism (within level) and PSadism (between level)

First, for the behavioral pattern of hostility, the behavior of outright force (*out*) at the between offender level can be considered as an *easy* item because offenders with an

average level of hostility (zero on the x-axis) have a probability of approximately .50 for committing this behavior. On the other hand, only offenders with an extremely high level of hostility (six on the x-axis) would punch the victim (*punch*) with a probability of approximately .50. Second, the ICCs regarding the latent trait of interpersonal involvement suggest that offenders with an average level of interpersonal involvement (zero on the x-axis) have a probability of approximately .50 for committing vaginal penetration, whereas offenders with an extremely high level of interpersonal involvement have at best 50% of probability to kiss or fondle the victim. Third, about the behavioral pattern of control, a substantially high level of control is needed for the offender to use minimal aggression against the victim. Finally, the ICCs regarding the latent trait of sadism show that opposed to other behaviors (i.e. sadistic assaults and fetishism) in the behavioral pattern of sadism, offenders with a high level of sadism only would anally penetrate the victim.

Item information curve

The item information curve (IIC) represents “the relative precision of the scale across the different levels of trait continuum” (Caprara et al., 2005, p. 81). In other words, the item information curve indicates the level of precision with which an individual’s standing on the latent trait is measured (Baker, 2001). The IICs for sixteen behavior, both at the within and between offender level, hence a total of 32 IICs were produced (see Figures 8-11).

First, at the within offender level, whether the offender hurt the victim with a weapon (*wph* in Figure 8) and whether the victim resulted in cuts and bruises (*cuts*)

provided relatively precise information (0.6 and 0.2, respectively) among offenses which were moderately hostile (range 1-4). Although the level of precision of punching (*punch*) increased as the level of hostility increased, the highest level of precision was still very low (.016). In addition, the level of precision of outright force (*out*) was extremely low (.0012 at best), which indicates that outright force did not detect variations in the level of hostility in any offenses. At the between offender level, results were not very different from those at the offense level, except the behavior of outright force. This behavior well detected variations in the level of hostility with a relatively high level of precision, especially between offenders who were on an average level of hostility.

Second, at the within offender level, all the behaviors except vaginal penetration (*vp*) could detect variations among offenders who were moderately interpersonally-involving, although the level of precision was still quite low (around .2). The level of precision was even lower for vaginal penetration (.06 at best). On the other hand, at the offender level, variation among offenders in their level of interpersonal involvement was well detected by whether the offender vaginally penetrated the victim among offenders who were on an average level of interpersonal involvement. In line with the results obtained from item characteristic curves, kissing (*kis*) and fondling (*fon*), although the level of precision increased as the level of interpersonal involvement increased, again did not provide precise information about difference between offenders in their level of interpersonal involvement.

Third, at the within offender level, whether the offender displayed a weapon or not (*wpthreat*) could detect variation among offenses with an average level of control extremely well. The use of minimal physical aggression provides precise information

among offenses with an average level of control. Whether the offender blindfolded/gagged the victim or not (*blind*) detected variation among offenses which were moderately controlling, even though the level of precision was quite low (around .2). On the other hand, the level of precision dropped for the behavior of displaying the weapon (*wpthreat*) at the offender level, indicating that this behavior is much more useful for detecting variation among offenses than among offenders. The behavior of squeezing/slapping the victim (*squeeze*) provided very little information about variation between offenders, .002 at best, and the behavior of minimal physical aggression (*mpa*) was especially useful for detecting variation between offenders who were very controlling.

Finally, at the within offender level, whether the offender committed sadistic assaults or not (*sadist*) could detect variation among offenses with a slightly high level of sadism extremely well. The behavior of biting (*bit*) was also relatively useful for detecting variation among offenses with a slightly high level of sadism. Although the level of precision of fetishism (*fetish*) increased as the level of sadism increased, the highest level of precision was still very low (.016). At the between offender level, the behavior of sadistic assaults (*sadist*) again could detect variation among offenders with a slightly high level of sadism very well. In addition, fetishism (*fetish*) could also detect variation among offenders with a slightly high level of sadism very well. On the other hand, the level of precision provided by the other two behaviors, biting and anal penetration, was very low.

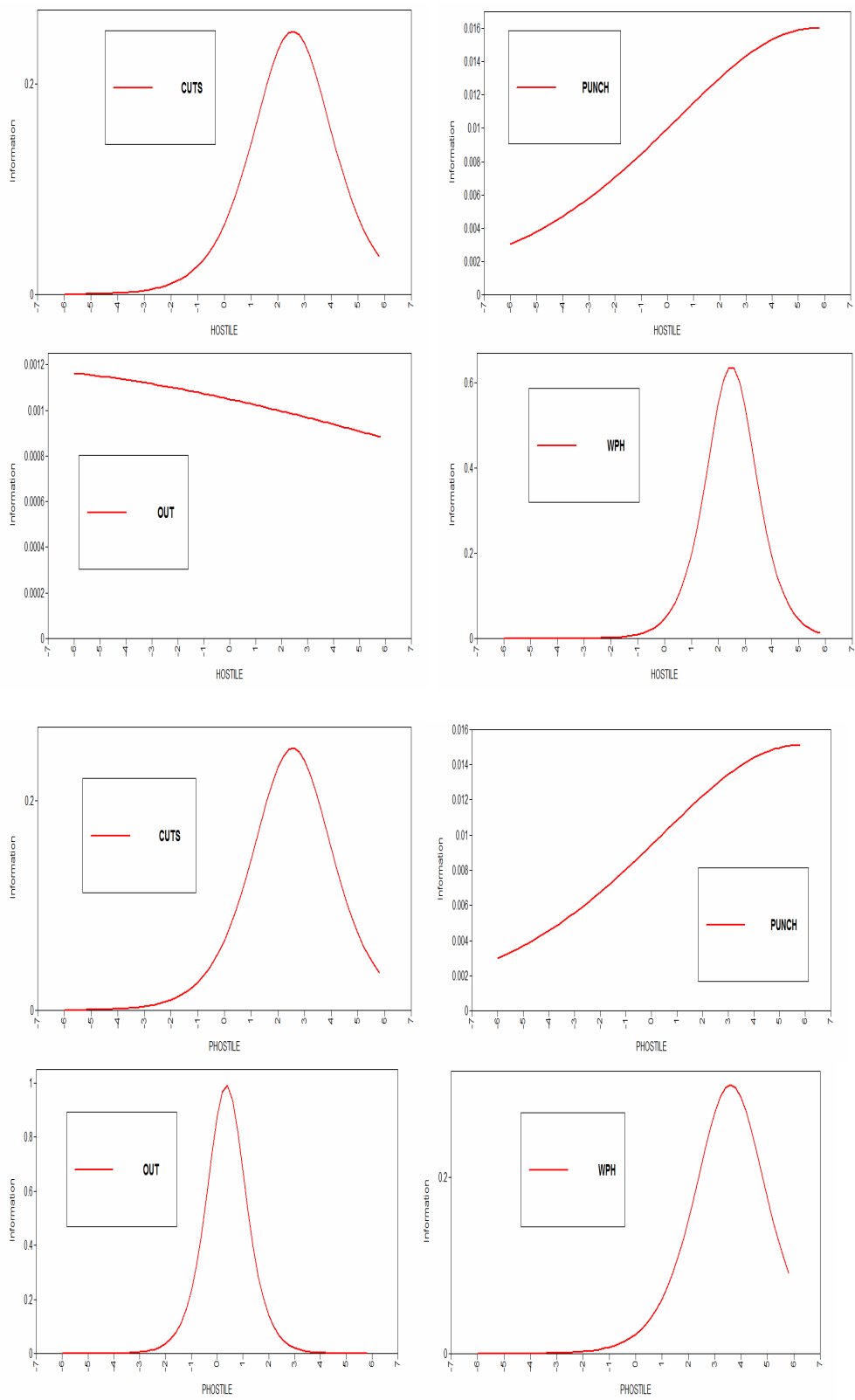


Figure 8. Item Information Curves – Hostile (within level) and PHostile (between level)

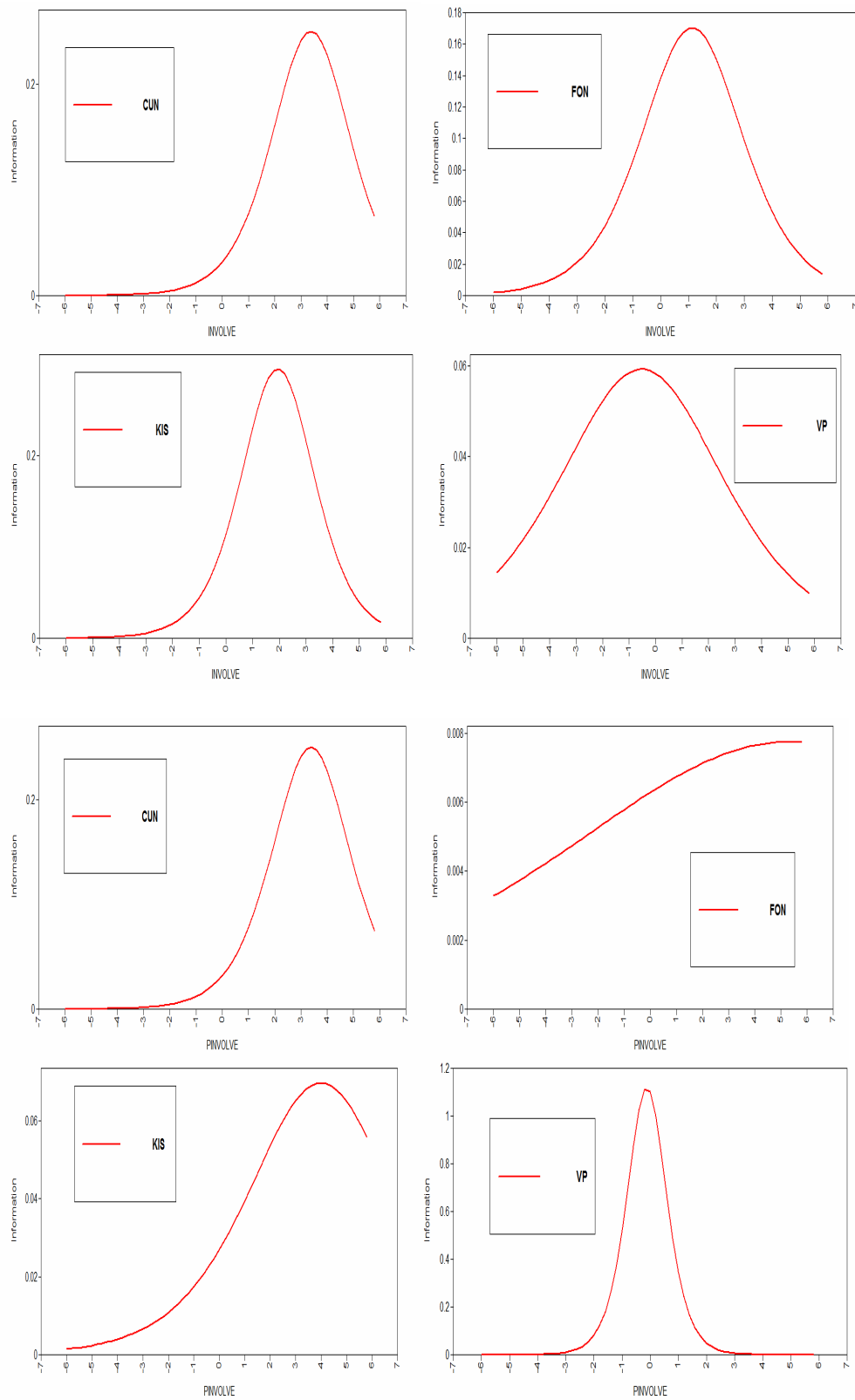


Figure 9. Item Information Curves – Involve (within level) and PINvolve (between level)

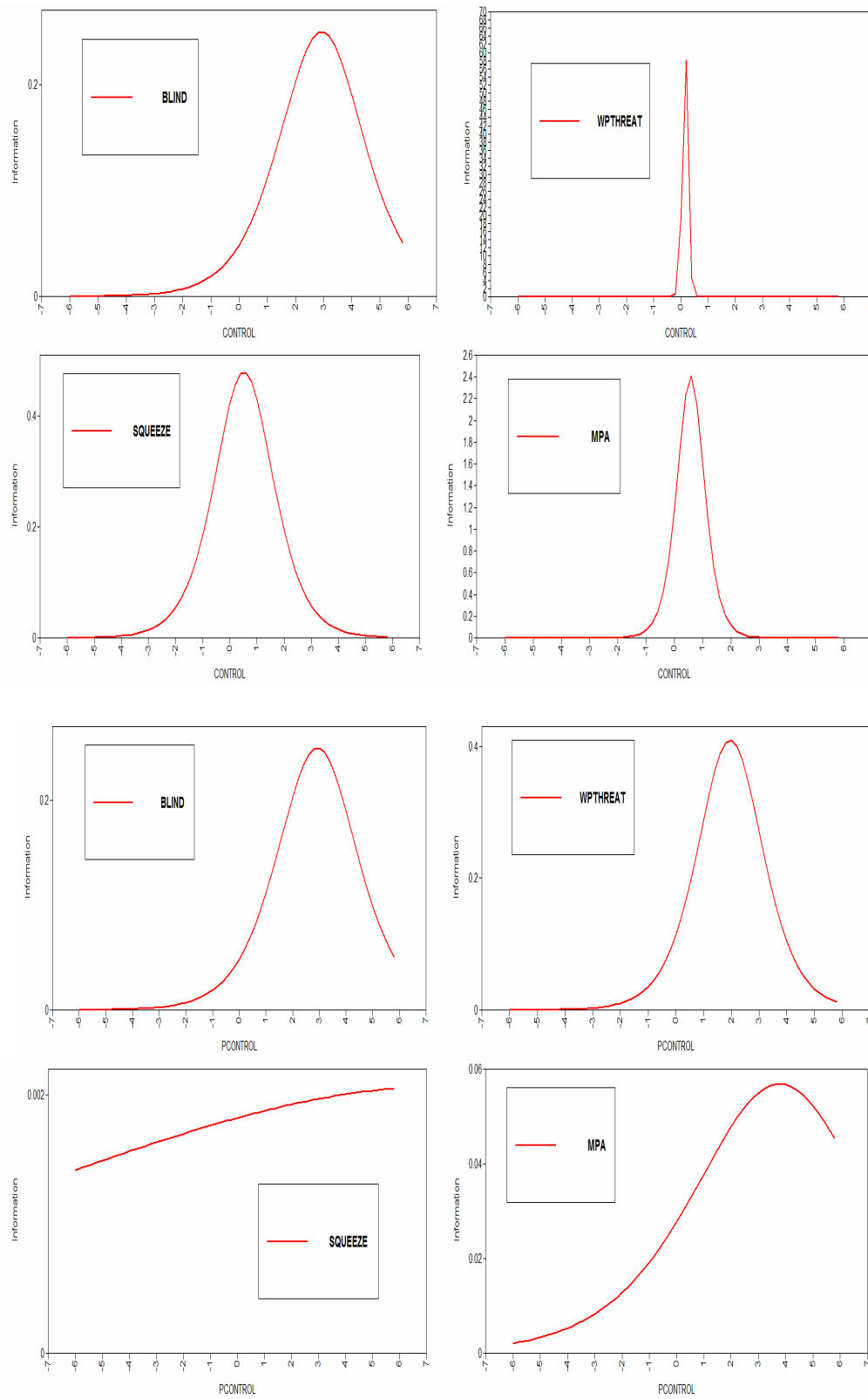


Figure 10. Item Information Curves –Control (within level) and PControl (between level)

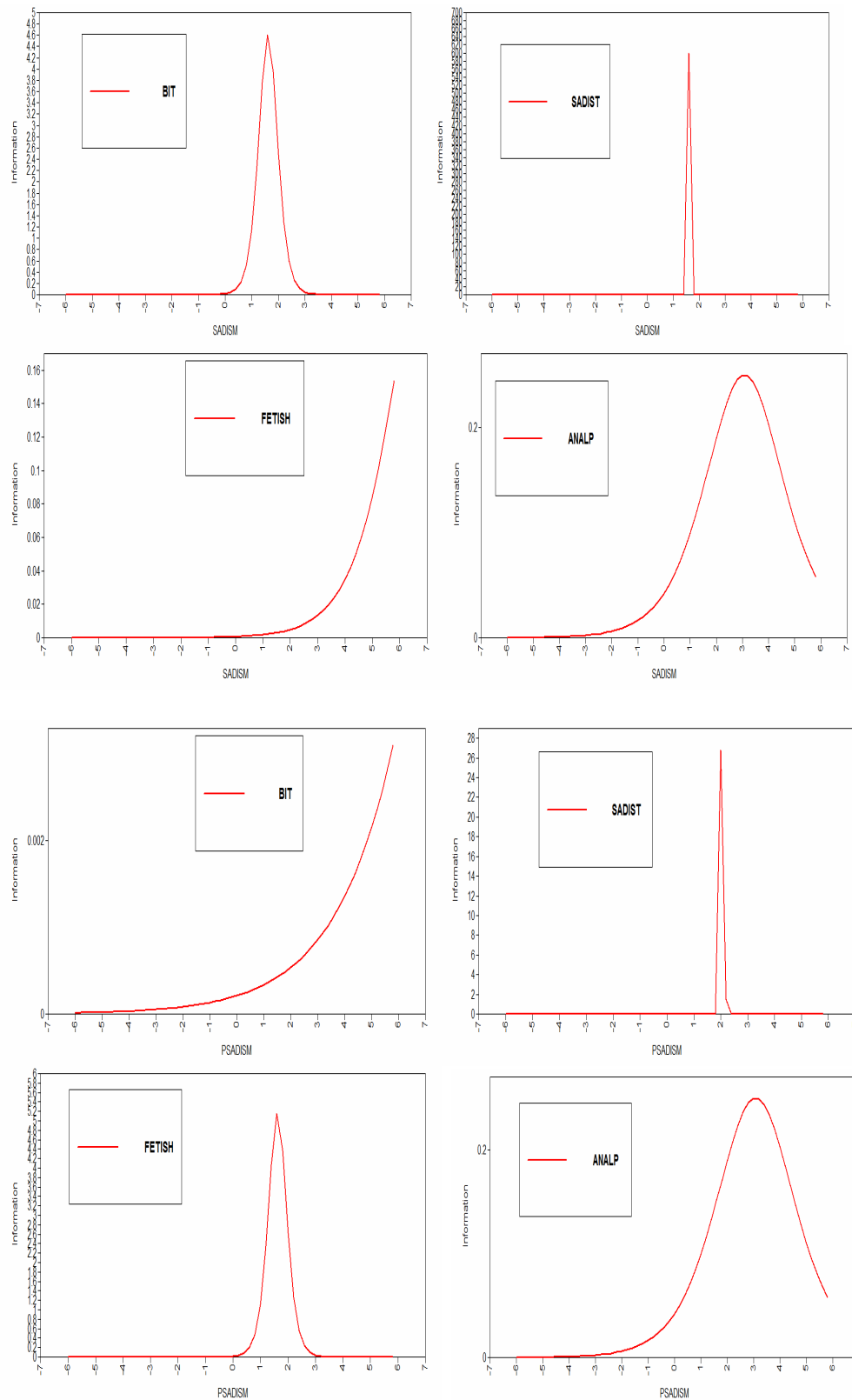


Figure 11. Item Information Curves – Sadism (within level) and PSadism (between level)

Behavioral consistency based on variance

By using θ_W estimates obtained from each offense, first, variance at the within offender level which represents behavioral inconsistency across a series of offenses committed by the same offender was examined for each behavioral pattern. As shown in Table 7, variances in the behavioral patterns of hostility, interpersonal involvement, and control were statistically significantly different from zero, suggesting that offenders may not be consistent across a series of offenses. For the behavioral pattern of sadism, however, serial rapists turned out to be consistent across offenses. It must be noted that the frequencies of the behaviors in this behavioral pattern were particularly low; therefore, the robustness of this behavioral pattern as a latent trait may be questionable because it might be difficult for these rare behaviors to form a behavioral pattern so that the standing of offenders on this latent trait could be well estimated.

Second, based on θ_B estimates obtained from each offender, variance at the between offender level which represent behavioral variability across offenders was also examined for each behavioral pattern. As shown in Table 7, variances in the behavioral patterns of hostility, interpersonal involvement, and sadism were not statistically significantly different from zero, suggesting that offenders were quite similar in their level of these latent traits. However, variance in the behavioral pattern of control was statistically significantly different from zero, which suggests that offenders were considerably different from each other in their level of displaying dominance over the victim.

Table 7

Variances

Level	Pattern	Estimate	S.E.	Est./S.E.	<i>p</i>
Within Offender	Hostility	2.72	1.12	2.43	0.015
	Involvement	2.13	0.93	2.30	0.021
	Control	0.02	0.01	2.73	0.006
	Sadism	0.54	0.33	1.61	0.107
Between Offender	Hostility	0.57	0.33	1.72	0.086
	Involvement	0.41	0.33	1.24	0.215
	Control	2.60	0.92	2.84	0.005
	Sadism	0.68	0.46	1.50	0.135

Further analysis: The effect of the total number of offenses on behavioral consistency

It might be reasonable to suspect that offenders who commit a large number of offenses may be more likely to be behaviorally inconsistent than offenders with a small number of offenses. Therefore, the present study tested if behavioral consistency decreased as the total number of offenses increased. Forty-three offenders who were known to commit only one rape were excluded from the current analysis.

The present study tested if there is a correlation between the total number of offenses committed and behavioral inconsistency, which is represented by the standard deviation for the θ_w estimates across offenses committed by the offender for each of the behavioral patterns. As a result, correlations were not statistically significant for all four behavioral patterns, although for the behavioral pattern of control the correlation was nearly statistically significant ($r = .131, p = .057$). In other words, serial rapists who committed a relatively large number of offenses were not necessarily more behaviorally inconsistent than those with a relatively small number of offenses.

Further analysis on the behavioral escalation: Earlier versus later offenses

To test whether offenders escalated or de-escalated in the level of each of the behavioral patterns across offenses, the present study compared θ_w estimates for each behavioral pattern between offenses committed in the beginning of the series and those committed later. Forty-three offenses committed by 43 offenders who were known to commit only one rape were excluded from the current analysis. The present study divided offenses which were committed by serial rapists with at least two victims into two groups: those that were committed first among a series (the earlier offenses; in total 211) and those committed later in a series (the later offenses; in total 541).

As a result, there was no statistically significant difference in the level of hostility or interpersonal involvement between the earlier and later offenses (see Table 8). However, the level of control and sadism turned out to be statistically significantly higher in the later offenses than the earlier offenses, suggesting that serial rapists may escalate in the level of control and sadism over time.

Table 8

Behavioral Escalation: Earlier versus Later Offenses

Behavioral Pattern	Earlier Offenses		Later Offenses		<i>t</i>	df	<i>p</i>
Hostility	-.09 ^a	(.92) ^b	-.01	(.99)	1.06	750	ns
Involvement	-.08	(.88)	.03	(.96)	1.43	750	ns
Control	-.01	(.07)	.01	(.08)	2.56	750	.01
Sadism	-.05	(.25)	.01	(.34)	2.58	750	.01

^a Mean. ^b Standard Deviation.

Summary of the results from Item Response Theory Analyses

The current findings suggest that offending behaviors can be differentiated into

four suggested behavioral patterns and that serial rapists may not remain behaviorally consistent throughout their multiple crimes. As discussed earlier, behavioral consistency is based on two conceptual assumptions: within-offender consistency and between-offender variability (Canter, 1995; Canter, & Youngs, 2003). However, current findings reject both of the two assumptions: offenders were not behaviorally consistent across multiple offenses they committed, and yet, there was not much behavioral variation between offenders, except in the controlling behaviors.

The behavioral pattern of sadism did not reveal any variance across offenses and offenders. As discussed earlier, the robustness of this behavioral pattern as a latent trait is questionable because of the considerably low frequencies of the behaviors in this behavioral pattern. This result is not completely unexpected, as previous studies mentioned difficulties when assessing infrequent sadistic acts (Knight et al., 1998; McCulloch et al., 1983). For future research, it would be worth testing if there are other indicators, or behavioral combinations, of sadism which can differentiate between offenses and offenders in their level of sadism.

Escalation in the behavioral pattern of sadism may appear to be contradictory to the findings of behavioral consistency based on variance that offenders were consistent in their sadistic behavior across offenses. However, considering that behaviors belonging to the sadism were particularly scarce --in that a majority of offenders did not commit any of the behaviors in the theme of sadism--, the present results suggest that although offenders were consistent in the behavioral pattern of sadism across offenses in that most of offenders consistently did not display sadistic behaviors, those who did commit sadistic behavior escalated over time, becoming more sadistic towards their victims in

their later offenses.

The between-offender variability was statistically significant only in the behavioral pattern of control. In addition, further analysis on escalation revealed that serial rapists may escalate in the level of control over time. Indeed, Park et al. (2008) reported that serial and single-victim offenders were considerably different from each other in their level of criminal sophistication which represents the offender's level of control over the victim and the offense. Hazelwood and Burgess (2001) stated that the experienced offender is more likely to have mastered control as they learn from their experience. In other words, in terms of control, the offender may change or evolve over time.

The finding that *vaginal penetration* was most effective for differentiating between offenders suggests that among serial rapists the distinction is rather clear between those who commit this behavior and those who do not. In fact, Park et al. (2008) reported that there is statistically significant difference between single-victim and serial rapists in committing vaginal penetration: almost all single-victim rapists (95.5%) committed this behavior whereas only 68.2% of serial rapists did. Over a series of offenses some of the serial rapists may learn and choose the most effective way of achieving interpersonal involvement for them, but not necessarily by committing vaginal penetration.

Park et al. (2008) reported that single-victim rapists were much more violent than serial rapists, displaying multiple forms of physical aggression. The current study showed that a substantially high level of control is needed for the offender to use *minimal physical aggression* against the victim. In relation to the finding that the level of control

was higher in the later offenses than the earlier offenses, it may be that over a series of offenses serial rapists learn how to control the victim, but not necessarily by using extreme violence.

Among the behaviors belonging to the behavioral pattern of sadism, *fetishism* demands particular attention. First, the frequency analysis in the previous section revealed that only 7.1% of serial rapists displayed this behavior, and among 752 serial rape offenses only 3.5% of cases involved this behavior. Second, item response theory analyses showed that there was a clear distinction between rapists who displayed this behavior and those who did not. These findings indicate that the presence of this behavior is extremely informative at differentiating between offenders.

The current findings suggest that behavioral consistency values obtained through merely averaging the frequency occurrences of individual behaviors belonging to the same behavioral pattern can be misleading. Oishi (2006) stated, “when estimating a latent trait score, the 2PL model takes into account item discrimination as well as item difficulty, and, therefore, the better items (those with higher item discrimination) have greater weight in estimating the latent trait score than do other items” (p. 413). By considering two parameters (item discrimination and difficulty) together when estimating an individual’s standing on a latent trait, IRT analyses provide information which is more effective in differentiating between offenders and determining the level of behavioral consistency than frequency analyses of behavior. Although item response theory models are currently widely used for various psychological assessments (Caprara et al., 2005; Harvey & Hammer, 1999), there is little research applying IRT models to explaining criminal behavior. The present study shows that IRT models can be effectively used to

examine criminal behavior.

Aim 3: Establishing a link between offending patterns and offender characteristics

Finally, the present study tested if behavioral patterns and consistency could be linked to certain background characteristics of offenders. The results from OLS regression analyses are shown in Tables 9 and 10. In terms of collinearity which refers to the correlations among the variables, all models turned out to be robust as none of the tolerance values was lower than .70.

It should be noted that in order to examine the contribution of the offender background variables to the prediction of consistency in each behavioral pattern, the standard deviations for the θ_w estimates across offenses were used; therefore, these standard deviations, representing thematic dispersion between offenses committed by offender, actually represent inconsistency (i.e. the bigger the standard deviation, the more inconsistent the behavioral pattern is across offenses).

Hostility

First, five offender background variables reflecting expressive aggression in the course of life turned out to statistically significantly contribute to the behavioral pattern of hostility ($R^2 = .369$): *assault offenses*, *impulsivity*, *violent to people*, *homicide*, and *severe sexual aggression*. In other words, about 37% of the variance in hostility was explained by these five offender background variables. Among these variables, whether the offender has a previous history of using severe or extreme sexual aggression towards their sexual partner (*severe sexual aggression*; $Beta = .584$) was especially related to the

Table 9

Linking Behavioral Patterns to Offender Background Characteristics

Pattern	Background	B	S.E.	Beta	R^2	F	df
Hostility	assault offenses	-.088	.099	-.047	.369	29.00	5
	impulsivity	-.031	.131	-.012			
	violent to people	.144	.100	.076			
	homicide	.087	.100	.046			
	sexual aggression	1.067	.097	.584***			
	Constant	-.426***	.090				
Involvement	childhood neglect	-.176	.094	-.118	.027	1.37	5
	isolated	-.048	.099	-.035			
	no peer interaction	-.023	.092	-.018			
	bizarre behavior	-.205	.123	-.109			
	seclusive	.045	.093	.034			
	Constant	.137	.078				
Control	educational level	.002	.007	.016	.086	4.69	5
	socially active	.002	.006	.020			
	contact sports	.002	.007	.023			
	weapon ownership	.021	.006	.202***			
	unstable employment	-.018	.006	-.180**			
	Constant	.000	.006				
Sadism	cruel	.047	.036	.082	.017	.86	5
	narcissistic	-.043	.030	-.091			
	apathy	.011	.048	.015			
	fetishism	.042	.060	.047			
	voyeurism	.024	.039	.041			
	Constant	.011	.024				

* $p \leq .05$; ** $p \leq .01$; *** $p \leq .001$

level of hostility at the crime scene.

Second, these background variables also turned out to statistically significantly contribute to the inconsistency of hostility ($R^2 = .353$). In other words, about 35% of the variance in the inconsistency of hostility was explained by these five background

variables. Among these variables, *severe sexual aggression* ($Beta = .579$) was again especially associated with the inconsistency of hostility. In other words, offenders who have a previous history of using severe or extreme sexual aggression towards their sexual partner tend to be inconsistent in the level of hostility across offenses.

Interpersonal Involvement

First, five offender background variables related to intimacy deficits and relationship issues in the course of life did not contribute to the behavioral pattern of interpersonal involvement: *childhood neglect*, *isolated*, *no peer interaction*, *bizarre behavior*, and *seclusive*. None of these background variables was statistically significantly associated with the level of interpersonal involvement displayed at the crime scene.

Second, these background variables, however, turned out to contribute to the consistency of interpersonal involvement ($R^2 = .088$). Among these variables, *bizarre behavior* ($Beta = -.182$) was especially related to the consistency of interpersonal involvement: offenders who often acted in odd, eccentric ways tended to be more consistent in their level of interpersonal involvement displayed through behaviors at the crime scene.

Control

First, five life events related to experiencing a feeling of power, dominance, and superiority all together did not predict the behavioral pattern of control at the crime scene: *educational level*, *socially active*, *contact sports*, *weapon ownership*, and *(un)stable employment*. However, among these variables, whether the offender owned a

Table 10

Linking Behavioral Inconsistency to Background Characteristics

Pattern	Background	B	S.E.	Beta	R ²	F	df
Hostility	assault offenses	.051	.078	.039	.353	22.41	5
	impulsivity	-.161	.102	-.091			
	violent to people	.103	.078	.076			
	homicide	-.013	.078	-.010			
	sexual aggression	.748	.076	.579***			
	Constant	.196**	.072				
Involvement	childhood neglect	-.125	.073	-.114	.088	3.98	5
	isolated	-.129	.079	-.128			
	no peer interaction	-.129	.073	-.133			
	bizarre behavior	-.251	.097	-.182**			
	seclusive	.139	.075	.145			
	Constant	.873***	.060				
Control	educational level	.001	.009	.010	.090	4.04	5
	socially active	.016	.008	.146*			
	contact sports	.005	.008	.039			
	weapon ownership	.028	.008	.236***			
	unstable employment	-.006	.008	-.057			
	Constant	.038***	.008				
Sadism	cruel	.140	.049	.194**	.068	3.00	5
	narcissistic	.022	.040	.038			
	apathy	.081	.064	.086			
	fetishism	.085	.080	.075			
	voyeurism	.068	.049	.098			
	Constant	.085**	.032				

* $p \leq .05$; ** $p \leq .01$; *** $p \leq .001$

manufactured weapon (*weapon ownership*; $Beta = .202$) and whether the offender unsuccessfully maintained employment (*unstable employment*; $Beta = -.180$) were statistically significantly related to control.

Second, these background variables, however, turned out to contribute to the

inconsistency of control ($R^2 = .090$). Among these variables, whether the offender was socially active ($Beta = .146$) and whether the offender owned a manufactured weapon (*weapon ownership*; $Beta = .236$) were especially related to the inconsistency of control. In other words, offenders who were socially active or owned a manufactured weapon tend to be inconsistent in the level of control.

Sadism

First, five background variables reflecting cruelty and paraphilic behavior did not predict the theme of sadism: *cruel*, *narcissistic*, *apathy*, *fetishism*, and *voyeurism*. None of the behaviors was statistically significantly related to sadism.

Second, these background variables turned out to contribute to the inconsistency of sadism, although the amount of variance explained was fairly small ($R^2 = .068$). Among these variables, whether the offender performed cruel acts upon family or animals ($Beta = .194$) was especially associated with the inconsistency of sadism. In other words, offenders who performed cruel, sadistic behaviors tend to be inconsistent when they displayed sadistic behaviors at the crime scene across offenses.

Summary

The present study aimed to determine if each of the behavioral patterns and consistency was associated with certain offender background characteristics. The current findings suggest that each of the behavioral patterns and consistency is associated with certain offender background characteristics, although the degree of association widely differs.

It is worth noting that the variable of *severe sexual aggression* was highly associated with the behavioral pattern of hostility. Indeed, previous studies (e.g., Seidman et al., 1994; Simon, 2000; Weinrott & Saylor, 1991) repeatedly reported relationships between sex offenders and hostility toward females. This variable also contributed to the inconsistency of hostility; in other words, the level of hostility displayed by offenders who have a history of using severe or extreme sexual aggression towards their sexual partner differed considerably across their series of offenses. For future research it would be interesting to investigate whether situational factors, especially those related to the victim's characteristics (e.g. offender-victim relationships), influenced the variation in the level of hostility displayed at the crime scene.

Except the behavioral pattern of hostility, however, only a small amount of variance (i.e. less than 10%) turned out to be explained by these offender background variables. It may be that offender background characteristics that previous studies found to be associated with sex offenders may not necessarily influence offending behaviors displayed at the crime scene. It may be also understandable in relation to the findings reported in the previous section (*Aim 2*) regarding offender variability: offenders were not that different from each other in their behaviors. Also, some of the offender background variables included in the present study (e.g., parental neglect, isolated) may be typical for all rapists (Lisak, 1994; McCormack et al., 2002; Ward et al., 2000), which may have made it difficult for these common characteristics to explain variances in behavioral patterns.

The statistically significant association between *bizarre behavior* and the consistency of interpersonal involvement supports the notion that a lack of relationship

skills plays an important role for rapists, as it may have led them to experience rejection from other people and eventually to consistently gratify sexual desires in inappropriate ways (Marshall, 1989; McCormack et al., 2002).

In relation to the result in the previous section (*Aim 2*) regarding escalation in the level of sadism over a series of offenses, the current finding that offenders who have a history of cruelty towards family members or animals tend to be inconsistent when they displayed sadistic behaviors at the crime scene across offenses raises an interesting question: whether offenders with a history of cruelty escalate in the level of sadism over time. It would be worth exploring if these offenders, through repeated rehearsals in their mind, elaborate upon their sadistic fantasies and gradually carry them out during a sexual assault, escalating the level of sadistic violence over time (MacCulloch et al., 1983; Prentky et al., 1989a).

Discussion

The present study aimed to address three research questions: 1) Can the conceptual differentiation of rape (the suggested behavioral patterns of rape) empirically differentiate offending behaviors that occur at the crime scene? 2) Do serial rapists remain behaviorally consistent throughout their multiple crimes? and 3) Do each of the behavioral patterns relate to certain aspects of the offender's background characteristics?. The current findings suggest that 1) the theoretical distinction of rape can be used to empirically differentiate offending behaviors, 2) serial rapists may not necessarily remain behaviorally consistent throughout their multiple crimes, and 3) each of the behavioral patterns is associated with certain offender background characteristics.

The present study investigated behavioral consistency of serial rapists by using different approaches from those methodologies used in previous studies on serial offender consistency in order to overcome some of their methodological limitations (e.g., Bateman & Salfati, 2007; Grubin et al., 2001; Woodhams et al., 2008). First, rather than arbitrarily grouping behaviors into different themes, the present study tested whether structural patterns, based on empirical evidence, reflected a conceptual differentiation of rape and provided an objective index of correspondence between theoretical distinctions and empirical findings. Second, in addition to examining behavioral consistency by exploring frequency of behaviors belonging to each behavioral pattern, the present study considered each behavioral pattern as a continuous dimension and explored behavioral consistency and variations across offenders and offenses on these dimensions. In other words, in contrast to some of the previous studies which assigned rapists into one of the types and treated them as a homogenous group, the present study effectively revealed individual

variations in each of the behavioral patterns, which enabled the investigation of behavioral development and change across a series of offenses on each behavioral pattern. Also, unlike the index of consistency obtained from calculating average occurrence of behaviors belonging to the same behavioral theme --which assumes that all the behaviors in the same theme equally contribute to the behavioral theme and consistency--, the present study showed differential contributions of behaviors in the same behavioral pattern to the behavioral patterns and consistency through item difficulty and discrimination parameters. Third, in addition to identifying consistency of behavioral patterns, the present study linked the difference among offenders in behavioral consistency to offender background characteristics. As opposed to previous studies which simply revealed that a certain behavioral pattern is more consistent than others (e.g., Bateman & Salfati, 2007; Grubin et al., 2001; Woodhams et al., 2008), the present study identified a number of offender background characteristics which are associated with behavioral consistency. Accordingly, the present study could be considered an effective starting point for investigating behavioral consistency of serial offenders using a different methodological approach.

Several researchers reported consistency in the behavior of serial offenders (e.g., serial burglary in Bennell & Canter, 2002; serial homicide in Salfati & Bateman, 2005; serial robbery in Woodhams & Toye, 2007). In fact, Warren et al. (1991) reported that the majority of serial rapists they studied did not display considerable change in many aspects of their behavior over a series of offenses. A close examination of these previous studies indicates a possible explanation for the different conclusion. First, many previous studies focused on a dominant behavioral theme or type in each of the offenses in a series

(e.g., *expressive or instrumental* homicide in Salfati & Bateman, 2005; *commercial, industrial, public, or residential* burglary in Yokota & Canter, 2004). Problems resulting from determining consistency based on a dominant behavioral theme were discussed earlier. Second, the selection of cases used in previous studies may involve problems. Most of previous research studying serial crimes used only a couple of offenses committed by each serial offender, not all offenses: the first three or five known offenses in each series (e.g., Bateman & Salfati, 2007; Salfati & Bateman, 2005); the two most recent offenses (e.g. Woodhams & Toye, 2007); the first, middle, and last sexual assaults committed by serial rapists (e.g. Warren et al., 1991); and two randomly selected cases per series (e.g. Santtila et al., 2005). The present study used all of the offenses committed by each serial rapist, and investigated individual variations in each of the behavioral patterns rather than focusing on a dominant theme for each offense only.

The present study shows that the behavioral pattern of control is important, as it effectively displays between-offender variability as well as behavioral escalation over time. In fact, previous studies (e.g., Bateman & Salfati, 2007; Grubin et al., 2001; Woodhams et al., 2008) suggested that the behavioral theme of control is one of the most useful themes for assessing serial offenders. In addition, Hazelwood and Burgess (2001) stated, “the more rapes a person commits, the more proficient he may become in eluding detection” (p. 128). The current study did not include behaviors directly related to the offender’s forensic awareness (e.g., planning the offense in advance, removing evidence at the crime scene) because of limitation of the data set. As Park et al. (2008) reported, the level of criminal sophistication is an important discriminator between serial and single-victim rapists (i.e. experienced and inexperienced rapists); therefore, future

research should include such variables in order to more effectively reveal differences between offenders.

The current results suggest that serial rapists escalate in the level of sadism over time. Based on the findings from previous studies on the relations between sadistic fantasies and the acting-out of sadistic violence (e.g., MacCulloch et al., 1983; Prentky et al., 1989a), it would be interesting to address the question if sadistic offenders indeed elaborate their deviant fantasies over time and gradually carry them out against the victim, escalating the level of sadistic violence across offenses.

The present findings suggest that serial rapists, as a group, are unlikely to escalate in the level of hostility or interpersonal involvement over time. Interestingly, investigating clergy offenders with a various number of sexual abuse allegations, Mercado, Tallon, and Terry (2008) reported that threatening and grooming behaviors displayed during the offense did not differ across offenders with a varying number of victims (i.e. ranging from one to ten or more), indicating that these offenders did not necessarily escalate in these aspects of the offense.

In relation to the debate in personality psychology between dispositionists and situationists, the current findings suggest that criminal behavior, which is apparently a kind of human behavior, tends to be influenced by situational factors, changing considerably over time. In line with Gottfredson and Hirschi's (1990) notion that there is no specialization in criminal behavior, the present study confirms that there is little consistency in the criminal acts committed by the same offender over time. Various factors may influence the consistency of the offender's behavior. For example, Dale et al. (1997) emphasized that the victim's reaction has considerable influence on the offender's

behavioral change. Hazelwood and Warren (2004) listed several factors causing the change of *modus operandi* in serial crimes: the offender's previous experience and maturation, victim accessibility, victim reactions, and circumstantial interruptions (e.g. a third party appearance).

Terry (2006) stated that "some particular traits are common to all sex offenders" (p. 72), listing examples such as negative emotions and cognitive distortions in terms of misinterpreting conversational cues. This may explain why only a small amount of variance (i.e. less than 10%) in offending behavior, except the behavioral pattern of hostility, was explained by the offender background variables.

In relation to the little success in previous studies (e.g. Mokros & Alison, 2002) which attempted to establish the link between behavioral patterns and offender characteristics, the present study tried to overcome previous methodological limitations (e.g. assigning offenders into one of the behavioral themes and then treating them as a homogenous group of people) by using a different methodological approach (i.e. considering individual variations between offenders in each of the behavioral patterns). However, the current findings indicating little consistency in the serial rapist's behavior suggest that there may be more fundamental issues related to the little success in establishing the link between behavioral patterns and offender characteristics: the basic assumption of offender profiling that behavior of a criminal at the crime scene is reflection of his or her background characteristics (Alison et al., 2002; Douglas et al., 1986; Ressler et al., 1986). The assumption of a correspondence between criminal behavior and the offender's personal attributes does not allow much for the role of situational factors in the commission of crime, which, however, turned out to influence

criminal behavior and consistency considerably. In line with Lewin's (1935) theoretical formulation that behavior is a function of both person and situation, the importance of situational factors on criminal behavior and consistency must be acknowledged for both offender profiling and linkage analysis (Alison et al., 2002).

The current findings which reject both assumptions of behavioral consistency (i.e. within-offender consistency and between-offender variability) raise questions regarding the usefulness of linkage analysis and offender profiling, especially for serial rapists. After all, if offenders are similar to each other and they considerably change their behavior across offenses, what would be the point of linking a series of offenses based on behavioral consistency which hardly exists and inferring characteristics of the offender based on crime scenes which could belong to any of the offenders? In fact, many researchers (e.g., Hodges & Jacquin, 2008; Mokros & Alison, 2002) have questioned the validity of this aspect of criminal profiling. Turco (2008) described the offender profile as a *paper tiger* because the offender profile "can be powerfully aggressive in helping forensic scientists focus on an investigation, or it can be destructive in leading investigators astray." (p. 246). However, it is premature, based only on current findings, to determine whether the whole process of offender profiling and linkage analysis is useful or not. The present study contained only a small number of offending behaviors in rape and limited aspects of offender background characteristics, and the generalizability of the current findings demands great caution because of the limited representativeness of the sample. In addition, in comparison to the typical procedure of offender profiling (see Pinizzotto & Finkel, 1990), the present study lacked substantial parts, including "an in-depth examination of the background and activities of the victim(s) and any known

suspect(s)” (p. 216). Moreover, it is serial rapists only which the current findings may be applicable to, not all offenders with various other types of crime (burglary, murder, and so forth).

The present study has a number of limitations. First, the sample from MTC which consisted of male rapists whose offenses were repetitive and/or aggressive may not be representative of all rapists (Barbaree et al., 1994; Knight et al., 1998). Therefore, the generalizability of the findings may be limited. Future efforts should be made to replicate the current findings with larger and different samples. Second, only a small number of observed behaviors were used to estimate the offender’s level on the behavioral patterns; therefore, future research is needed to obtain more stable estimates. Third, it is possible that behaviors were recorded as absent when they actually had occurred. Fourth, there may be other offenses committed by offenders in the current sample that remain undetected.

Practical Implications

Previous researchers (e.g., Canter, 2000; Robertiello & Terry, 2007; Schlesinger, 2004; Terry, 2006) argued that rigid classification systems may not be feasible for offenders because of the complex nature of their behavior. The current findings emphasize that the application of classification systems for rapists, especially serial ones, requires great discretion because it may be difficult to assign a serial rapist who change their behaviors over time to one of the types.

A number of serial crime cases in the courtroom (e.g., *California v. Kenneth Bogard*, 1996; *State of New Jersey v. Fortin*, 2000) involved legal debates about the

admissibility of expert testimony regarding linking multiple offenses to one offender based on behavioral similarity. In 2000, the Supreme Court of New Jersey ruled that evidence on behavioral linking lacked scientific reliability (*State of New Jersey v. Fortin*, 2000). The current findings confirm that it may be premature to admit expert evidence on behavioral linking in legal proceedings.

Bartol and Bartol (2008) stated that rape “is a complicated, often poorly understood, individualized behavior that appears to be precipitated by a variety of internal and external stimuli” (p. 405). Mercado et al. (2008) emphasized the importance of considering situational aspects of the sexual offense for an in-depth understanding of offenders and offenses. Indeed, Terry and Ackerman (2008) found that many child sexual abuse cases in Catholic Church involved victims of opportunity: the convenient access to the victim was the critical factor in selection of the victim. The current findings which suggest that offenders are neither behaviorally consistent across a series of offenses nor different in many aspects of offense behavior indicate that situational factors are important in understanding dynamics of the rape offense and possibly for prevention purposes. Previous studies (e.g., Terry & Ackerman, 2008; Wortley, 2001; Wortley & Smallbone, 2006) suggested that situational crime prevention (SCP) techniques can be effectively used for preventing or reducing various crimes, including sexual offenses. Wortley (2001) suggested specific techniques that could contribute to reducing opportunities for various crimes, many of which can be effectively applied to reducing sexual offenses. For example, in order to control *prompts* that may facilitate sexual offending, TV programs or pornography which contain a distorted view of women (e.g. women enjoy being raped) may be restricted (Wortley, 2001). Also, in order to reduce

permissibility for sexual offenses, offenders need to take responsibility for their own offenses, admit the wrongfulness of their act, and acknowledge the harmful consequences of their behavior to the victim (Terry & Ackerman, 2008; Wortley, 2001; Wortley & Smallbone, 2006). In addition, in order to reduce or prevent date rape in college, providing workshops to college students on what constitutes rape can be effective for increasing awareness of sexual violence.

Future Research

Offender-victim relationship may be an important factor for the offender's behavior and consistency. Serial offenders who repeatedly attack individuals whom they know may be more consistent in their behavior than those who attack strangers because of many possible circumstantial similarities, including the location of the offense. The fact that offender and victim were strangers in a majority of the cases (73.5%) may have influenced the current results. In addition, the present study did not include cases in which the offender sexually assaulted the same victim repeatedly, because the serial rapist was defined as someone who perpetrated two or more different victims. For future research, it would be valuable to investigate how offender-victim relationships affect behavioral consistency.

Previous studies (e.g., Hanson & Bussière, 1998; Mercado et al., 2008; Perillo, Mercado, & Terry, 2008; Piquero, Farrington, & Blumstein, 2003) suggested that the onset age of the offender's criminal acts may be an important factor related to recidivism rates: offenders who commit the first offense at an earlier age tend to have more victims (Mercado et al., 2008; Perillo et al., 2008; Zimring, Piquero, & Jennings, 2007). It would

be interesting to explore if rapists who have an early onset age commit more offenses over a longer period of time and display greater behavioral inconsistency than those who do not.

Previous researchers reported notable similarities and differences between rapists and child molesters (e.g., Bartosh, Garby, Lewis, & Gray, 2003; Lussier, LeBlanc, & Proulx, 2005; Prentky, Lee, Knight, & Cerce, 1997; Serin, Mailloux, & Malcolm, 2001). Mercado and Scalora (2001) noted that there may be differences between these two groups in the level of violence committed towards the victim: rapists tend to display higher level of physical aggression than child molesters. In addition, child molesters, as opposed to rapists who are known to be mostly generalists, are relatively more likely to be specialists in sexual offenses (Lussier et al., 2005; Miethe, Olson, & Mitchell, 2006; Simon, 2000). The current study did not differentiate between rapists based on the age of the victim: in future research, it would be worth testing if there is any difference between rapists and child molesters in their standings on each of the four behavioral patterns and consistency.

Appendix: Definitions of the 16 Crime-Scene Variables

Sixteen variables reflecting four behavioral patterns (hostility, interpersonal involvement, control, and sadism) were examined. These variables detailing behaviors of the offender during an offense came from the original database (Prentky & Knight, 1994), therefore definitions used in the present study mostly followed those in their code book. All variables were coded in dichotomous form: a 0 for absence and a 1 for the presence of that variable within the offense. The use of each variable in previous studies is presented in parentheses.

1. Cuts (CUTS): Victim resulting in cuts and bruises (*multiple violence* in *Hostility*, Alison & Stein, 2001; *multiple violence* in *Hostility*, Canter et al., 2003; using multiple types of violence in *Violence*, Park et al., 2008; *multiple wounds* in *Violence*, Salfati & Taylor, 2006)

2. Punching (PUNCH): Offender punching the victim (*single violence* in *Hostility*, Alison & Stein, 2001; *manual hitting and kicking* in *Violence*, Park et al., 2008; *non-controlled violence* in *Violence*, Salfati & Taylor, 2006)

3. Outright force (OUT): Offender using outright force (*blitz attack* in *Hostility*, Alison & Stein, 2001; *blitz-style attack* in *Violence*, Park et al., 2008)

4. Hurt by the weapon (WPH): Victim physically injured by the weapon the offender used (*weapon use* in *Violence*, Park et al., 2008; *weapon from scene* and *weapon to scene* in *Violence*, Salfati & Taylor, 2006).

5. Kissing (KIS): Offender kissing the victim (*kiss* in *Compliance-gaining*, Alison & Stein, 2001; *kisses victim* in *Involvement*, Canter et al., 2003; *kissing* in *Interpersonal Involvement*, Park et al., 2008).

6. Fondling (FON): Offender fondling the victim's breasts or genitals (*fondle* in *Compliance-gaining*, Alison & Stein, 2001; *breast sucked* in *Sex*, Grubin et al., 2001).

7. Cunnilingus (CUN): Offender performing cunnilingus on the victim (*cunnilingus* in *Compliance-gaining*, Alison & Stein, 2001; *cunnilingus* in *Involvement*, Canter et al., 2003; *cunnilingus* in *Sexual Behavior*, Canter & Heritage, 1990).

8. Vaginal penetration (VP): Vaginal penetration with the offender's fingers/hands and/or penis (*digital* and *vaginal penetration* in *Compliance-gaining*, Alison & Stein, 2001; *vaginal intercourse* in *Sexual Behavior*, Canter & Heritage, 1990; *sexual intercourse* in *Sex*, Grubin et al., 2001; *vaginal penetration* in *Violence*, Park et al., 2008; *vaginal penetration* in *Exploit*, Salfati & Taylor, 2006).

9. Blindfolding/Gagging the victim (BLIND): Offender blindfolding the victim to prevent the victim from seeing or offender covering the victim's mouth during the attack to prevent the victim from screaming or talking (*blind* and *gag* in *Dominance*, Alison & Stein, 2001; *blindfolds victim* and *gags victim* in *Control*, Canter et al., 2003; *the use of gagging* and *blindfolding the victim* in *Criminality*, Canter & Heritage, 1990; *gagging the victim* in *Criminal Sophistication*, Park et al., 2008; *blindfolded* in *Control*, Salfati & Taylor, 2006).

10. Displaying weapon (WPPTH): Offender displaying a weapon during the offense to threaten the victim (but not used to inflict physical harm upon the victim). (*weapon* in *Dominance*, Alison & Stein, 2001; *weapon use* in *Control*, Canter et al., 2003; *controlling the victim with a weapon* in *Criminality*, Canter & Heritage, 1990; *attacker had a weapon* in *Control*, Grubin et al., 2001; *exerting control using a weapon* in *Control*, Salfati & Taylor, 2006).

11. Squeezing/Slapping (SQZ): Offender squeezing/slapping the victim (*detering the victim's resistance in Criminal Sophistication*, Park et al., 2008)
12. Minimal physical aggression (HOLD): Offender using minimal physical aggression (holding or pushing) (*detering the victim's resistance in Criminal Sophistication*, Park et al., 2008)
13. Sadistic assaults (SAD): Offender attacking the victim's genitals or breasts to purposely inflict pain (*foreign object inserted in Exploit*, Salfati & Taylor, 2006).
14. Biting (BIT): Offender biting the victim
15. Anal penetration (AP): Offender penetrating the victim's anus (*anal penetration in Hostility*, Alison & Stein, 2001; *anal penetration in Hostility*, Canter et al., 2003; *anal intercourse in Sexual Behavior*, Canter & Heritage, 1990; *anal penetration in Violence*, Park et al., 2008; *anal penetration in Exploit*, Salfati & Taylor, 2006).
16. Fetish (FET): Offender using an object to enhance his stimulation (*arousal and announces intentions in Style*, Grubin et al., 2001).

References

- Ackerman, T. A. (1994). Using multidimensional item response theory to understand what items and tests are measuring. *Applied Measurement in Education*, 7, 255-278.
- Alder, C. (1984). The convicted rapist: A sexual or a violent offender? *Criminal Justice and Behavior*, 11, 157-177.
- Alison, L., Bennell, C., Mokros, A., & Ormerod, D. (2002). The personality paradox in offender profiling: A theoretical review of the processes involved in deriving background characteristics from crime scene actions. *Psychology, Public Policy, and Law*, 8, 115-135.
- Alison, L. J. & Stein, K. L. (2001). Vicious circles: Accounts of stranger sexual assault reflect abusive variants of conventional interactions. *Journal of Forensic Psychiatry*, 12, 515-538.
- Allport, G. W. (1937). *Personality: A Psychological Interpretation*. New York: Holt.
- Allport, G. W. & Vernon, P. E. (1933). *Studies in Expressive Movement*. New York: Macmillan.
- Amar, R. (2001). Mathematical formulation of regionality in SSA and POSAC/MPOSAC. In D. Elizur (Ed.), *Facet Theory: Integrating theory construction with data analysis* (pp. 63-74). Prague: Matfyz Press.
- Amar, R. (2005). *HUDAP manual*. Jerusalem: The Hebrew University of Jerusalem.
- Amar, R. & Cohen, E. H. (2001). Hypothesized vs. random regionality in SSA. In D. Elizur (Ed.), *Facet Theory: Integrating theory construction with data analysis* (pp. 87-93). Prague: Matfyz Press.
- American Psychiatric Association (2000). *Diagnostic and statistical manual of mental disorders* (4th ed., text rev.). Washington, DC: Author.
- Amir, M. (1971). *Patterns in Forcible Rape*. Chicago: University of Chicago.
- Baker, F. B. (2001). *The basics of item response theory* (2nd ed.). USA: ERIC Clearinghouse on Assessment and Evaluation.
- Barbaree, H. E., Seto, M. C., Serin, R. C. Amos, N. L., & Preston, D. L. (1994). Comparisons between sexual and nonsexual rapist subtypes: Sexual arousal to rape, offense precursors, and offense characteristics. *Criminal Justice and Behavior*, 21, 95-114.
- Bartol, C. R. & Bartol, A. M. (2008). *Criminal behavior: A psychosocial approach* (8th ed.). New Jersey: Pearson Prentice Hall.

- Bartosh, D. L., Garby, T., Lewis, D., & Gray, S. (2003). Differences in the predictive validity of actuarial risk assessments in relation to sex offender type. *International Journal of Offender Therapy and Comparative Criminology*, 47, 422-438.
- Bateman, A. L. & Salfati, C. G. (2007). An examination of behavioral consistency: Using individual behaviors or groups of behaviors in serial homicide. *Behavioral Sciences and the Law*, 25, 527-544.
- Baxter, D. J., Marshall, W. L., Barbaree, H. E., Davidson, P. R., & Malcolm, P. B. (1984). Deviant sexual behavior: Differentiating sex offenders by criminal and personal history, psychometric measures, and sexual response. *Criminal Justice and Behavior*, 11, 477-501.
- Bem, D. J. & Allen. A. (1974). On predicting some of the people some of the time: The search for cross-situational consistencies in behavior. *Psychological Review*, 81, 506-520.
- Bennell, C. & Canter, D. V. (2002). Linking commercial burglaries by modus operandi: Tests using regression and ROC analysis. *Science and Justice*, 42, 153-164.
- Borg, I & Shye, S. (1995). *Facet theory: Form and content*. Thousand Oaks, CA: Sage Publications, Inc.
- Brittain, R. P. (1970). The Sadistic Murderer. *Medicine, Science and the Law*, 10, 198-207.
- Brownmiller, S. (1975). *Against our will: Men, women, and rape*. New York: Simon and Schuster.
- Bureau of Justice Statistics (1996). *National Crime Victimization Study*. Washington DC: U. S. Department of Justice.
- Burgess, A. W. (2001). Contemporary issues. In R. R. Hazelwood & A. W. Burgess (Eds.), *Practical aspects of rape investigation: A multidisciplinary approach* (pp. 3-27). Boca Raton: CRC Press.
- Burgess, A. W., Hartman, C. R., Ressler, R. K., Douglas, J. E., & McCormack, A. (1986). Sexual homicide: A motivational model. *Journal of Interpersonal Violence*, 1, 251-272.
- Burgess, A. W. & Hazelwood, R. R. (2001). Victim care services and the Comprehensive Sexual Assault Assessment Tool (CSAAT). In R. R. Hazelwood & A. W. Burgess (Eds.), *Practical aspects of rape investigation: A multidisciplinary approach* (pp. 47-67). Boca Raton: CRC Press.
- California v. Kenneth Bogard* (1996, February). California Supreme Court Hearing in SanDiego, CA.

- Canter, D. V. (1994). *Criminal shadows*. London: Harper Collins.
- Canter, D. V. (1995). Psychology of offender profiling. In R. Bull & D. Carson (eds.), *Handbook of psychology in legal contexts* (pp. 343-355). Chichester: Wiley.
- Canter, D. V. (2000). Offender profiling and criminal differentiation. *Legal and Criminological Psychology*, 5, 23-46.
- Canter, D. V., Bennell, C., Alison, L. J., & Reddy, S. (2003). Differentiating sex offences: A behaviorally based thematic classification of stranger rapes. *Behavioral Sciences and the Law*, 21, 157-174.
- Canter, D. V. & Heritage, R. (1990). A multivariate model of sexual offence behavior: Developments in 'offender profiling'. *The Journal of Forensic Psychiatry*, 1, 185-212.
- Canter, D. V. & Youngs, D. (2003). Beyond Offender Profiling: The need for an investigative psychology. In D. Carson & R. Bull (Eds.), *Handbook of Psychology in Legal Contexts* (2nd ed., pp. 171-205). Chichester: Wiley.
- Caprara, G. V., Steca, P., Zelli, A., & Capanna, C. (2005). A new scale for measuring adults' prosocialness. *European Journal of Psychological Assessment*, 21, 77-89.
- Cohen, M. L., Garofalo, R. F., Boucher, R., & Seghorn, T. (1971). The psychology of rapists. *Seminars in Psychiatry*, 3, 307-327.
- Cohen, M. L., Seghorn, T., & Calmas, W. (1969). Sociometric study of sex offenders. *Journal of Abnormal Psychology*, 74, 249-255.
- Crepault, C. & Couture, M. (1980). Mens' erotic fantasies. *Archives of Sexual Behavior*, 9, 565-581.
- Cwik, M. S. (1996). The many effects of rape: The victim, her family, and suggestions for family therapy. *Family Therapy*, 23, 95-116.
- Dale, A., Davies, A., & Wei, L. (1997). Developing a typology of rapists' speech. *Journal of Pragmatics*, 27, 653-669.
- Davies, A. (1990). The use of DNA profiling and behavioral science in the investigation of sexual offenses. *Medicine, Science, and the Law*, 31, 95-101.
- Davies, A. (1992). Rapists' behavior: A three aspect model as a basis for analysis and the identification of serial crime. *Forensic Science International*, 55, 173-194.
- Davies, A. (1997). Specific profile analysis: A data-based approach to offender profiling. In J. L. Jackson & D. A. Bekerian (Eds.), *Offender profiling: Theory, research and practice* (pp. 191-207). Chichester: John Wiley and Sons.

- Dietz, P. E., Hazelwood, R. R., & Warren, J. (1990). The sexually sadistic criminal and his offenses. *Bulletin of the American Academy of Psychiatry and Law*, 18, 163-178.
- Douglas, J. E., & Munn, C. (1992). Modus Operandi and the signature aspects of violent crime. In J. E. Douglas, A. W. Burgess, A. G. Burgess, & R. K. Ressler (Eds.), *Crime Classification Manual* (pp. 259-268). NY: Lexington Books.
- Douglas, J. E., Ressler, R. K., Burgess, A. W., & Hartman, C. R. (1986). Criminal profiling from crime scene analysis. *Behavioral Sciences and the Law*, 4, 401-421.
- Dwyer, D. (1988). Expert testimony on rape trauma syndrome: An argument for limited admissibility-State v. Black, 109 Wash. 2d 336, 745 P. 2d 12 (1987). *Washington Law Review*, 63, 1063-1086.
- Egger, S. (1990). *Serial Murder: An Elusive Phenomenon*. New York: Praeger Publishers.
- Fossi, J., Clarke, D., & Lawrence, C. (2005). Bedroom rape: Sequences of sexual behavior in stranger assaults. *Journal of Interpersonal Violence*, 20, 1444-1466.
- Fraley, R. C., Waller, N. G., & Brennan, K. A. (2000). An item response theory analysis of self-report measures of adult attachment. *Journal of Personality and Social Psychology*, 78, 350-365.
- Frazier, P. A. & Borgida, E. (1992). Rape trauma syndrome: A review of case law and psychological research. *Law and Human Behavior*, 16, 293-311.
- Funder, D. C. & Colvin, C. R. (1991). Explorations in behavioral consistency: Properties of persons, situations, and behaviors. *Journal of Personality and Social Psychology*, 60, 773-794.
- Furby, L., Weinrott, M. R., & Blackshaw, L. (1989). Sex offender recidivism: A review. *Psychological Bulletin*, 105, 3-30.
- Geberth, V. J. & Turco, R. N. (1997). Antisocial personality disorder, sexual sadism, malignant narcissism, and serial murder. *Journal of Forensic Sciences*, 42, 49-60.
- Gleyzer, R., Felthous, A. R., & Holzer, L. E. (2002). Animal cruelty and psychiatric disorder. *Journal of the American Academy of Psychiatry and Law*, 30, 257-265.
- Glockner-Rist, A. & Hoijtink, H. (2003). The best of both worlds: Factor analysis of dichotomous data using item response theory and structural equation modeling. *Structural Equation Modeling*, 10, 544-565.
- Gottfredson, M. R. & Hirschi, T. (1990). *A general theory of crime*. Stanford, CA: Stanford University Press.

- Graney, D. J. & Arrigo, B. A. (2002). *The power serial rapist: A criminology-victimology typology of female victim selection*. Springfield, IL: Charles C. Thomas Publishers.
- Grendliner, V. & Byrne, D. (1987). Coercive sexual fantasies of college men as predictors of self-reported likelihood to rape and overt sexual aggression. *Journal of Sex Research*, 23, 1-11.
- Groth, A. N. & Birnbaum, H. J. (1979). *Men who rape: The psychology of the offender*. New York: Plenum.
- Groth, A. N., Burgess, A., & Holmstrom, L. (1977). Rape: Power, anger and sexuality. *American Journal of Psychiatry*, 134, 1239-1243.
- Grubin, D. Kelly, P. & Brunsdon, C. (2001). *Linking serious sexual assaults through behavior*. London: Home Office.
- Guttman, L. (1968). A general nonmetric technique for finding the smallest coordinate space for a configuration of points. *Psychometrika*, 33, 469-506.
- Hall, G. C. N. & Barongan, C. (1997). Prevention of sexual aggression: Sociocultural risk and protective factors. *American Psychologist*, 52, 5-14.
- Hall, G. C. N. & Proctor, W. C. (1987). Criminological predictors of recidivism in a sexual offender population. *Journal of Consulting and Clinical Psychology*, 55, 111-112.
- Hambleton, R. K. & Swaminathan, H. (1985). *Item response theory: Principles and Applications*. Boston: Kluwer-Nijhoff.
- Hanson, R. K. & Bussière, M. T. (1998). Predicting relapse: A meta-analysis of sexual offender recidivism studies. *Journal of Consulting and Clinical Psychology*, 66, 348-362.
- Hanson, R. K. & Morton-Bourgon, K. E. (2005). The characteristics of persistent sexual offenders: A meta-analysis of recidivism studies. *Journal of Consulting and Clinical Psychology*, 73, 1154-1163.
- Hart, S. D., Kropp, P. R., Laws, D. R., Klaver, J., Logan, C., Watt, K. A. (2003). *The Risk for Sexual Violence Protocol (RSVP): Structured professional guidelines for assessing risk of sexual violence*. Vancouver, BC: The British Columbia Institute Against Family Violence.
- Hartshorne, H. & May, M. A. (1928). *Studies in the nature of character, 1: Studies in deceit*. New York: Macmillan.
- Harvey, R. J. & Hammer, A. L. (1999). Item response theory. *Counseling Psychologist*, 27, 353-383.

- Hazelwood, R. R. & Burgess, A. W. (2001). The behavioral oriented interview of rape victims: The key to profiling. In R. R. Hazelwood & A. W. Burgess (Eds.), *Practical aspects of rape investigation: A multidisciplinary approach* (pp. 115-131). Boca Raton: CRC Press.
- Hazelwood, R. R., Reboussin, R., & Warren, J. (1989). Serial rape: Correlates of increased aggression and the relationship of offender pleasure to victim resistance. *Journal of Interpersonal Violence*, 4, 65-78.
- Hazelwood, R. R. & Warren, J. I. (2004). Linkage analysis: modus operandi, ritual, and signature in serial sexual crime. *Aggression and Violent Behavior*, 9, 307-318.
- Heilbrun, K., Marczyk, G. R., & DeMatteo, D. (2002). *Forensic mental health assessment: A casebook*. NY: Oxford University Press.
- Hodges, E. P. & Jacquin, K. M. (2008). Psychological skills and criminal profile accuracy. In R. N. Kocsis (Ed.), *Serial murder and the psychology of violent crimes* (pp. 259-275). Totowa, NJ: Humana Press.
- Huesmann, L. R., Eron, L. D., Lefkowitz, M. M., & Walder, L. O. (1984). Stability of aggression over time and generations. *Developmental Psychology*, 20, 1120-1134.
- Hulin, C. L., Drasgow, F., & Parsons, C. K. (1983). *Item response theory: Application to psychological measurement*. Homewood, IL: Dow Jones-Irwin.
- Jones, E. E. & Nisbett, R. E. (1972). The actor and the observer: Divergent perceptions of the causes of behavior. In E. E. Jones, D. E. Kanouse, H. H. Kelley, R. E. Nisbett, S. Valins, & B. Weiner (Eds.), *Attribution: Perceiving the causes of behavior* (pp. 79 - 94). Morristown, NJ: General Learning Press.
- Kelley, H. H. (1967). Attribution theory in social psychology. *Nebraska Symposium on Motivation*, 15, 192-238.
- Kilpatrick, D. G., Edmunds, C. N., & Seymour, A. K. (1992). *Rape in America: A report to the nation*. Arlington, VA: National Victim Center and Medical University of South California.
- Klein, M. W. (1984). Offence specialisation and versatility among juveniles. *British Journal of Criminology*, 24, 185-193.
- Knight, R. A. (1999). Validation of a typology for rapists. *Journal of Interpersonal Violence*, 14, 303-330.
- Knight, R. A., & Prentky, R. A. (1990a). Classifying sexual offenders: The development and corroboration of taxonomic models. In W. L. Marshall, D. R. Laws, & H. E. Barbaree (Eds.), *The handbook of sexual assault: Issues, theories, and treatment of the offender* (pp. 27-52). New York: Plenum.

- Knight, R. A., & Prentky, R. A. (1990b). The developmental antecedents and adult adaptations of rapist subtypes. *Criminal Justice and Behavior*, 14, 403-426.
- Knight, R. A., Warren, J. I., Reboussin, R., & Soley, B. J. (1998). Predicting rapist type from crime-scene variables. *Criminal Justice and Behavior*, 25, 46-80.
- Kocsis, R. N., Cooksey, R. W., & Irwin, H. J. (2002). Psychological profiling of offender characteristics from crime behaviors in serial rape offences. *International Journal of Offender Therapy and Comparative Criminology*, 46, 144-169.
- Koss, M. P. (1985). The hidden rape victim: Personality, attitudinal, and situational characteristics. *Psychology of Women Quarterly*, 9, 193-212.
- LeBeau, J. L. (1987). The journey to rape: Geographic distance and the rapist's method of approaching the victim. *Journal of Police Science & Administration*, 15, 129-136.
- Lewin, K. (1935). *A dynamic theory of personality*. New York: McGraw-Hill.
- Lisak, D. (1994). Subjective assessment of relationships with parent by sexually aggressive and nonaggressive men. *Journal of Interpersonal Violence*, 9, 399-411.
- Lisak, D. & Roth, S. (1988). Motivational factors in nonincarcerated sexually aggressive men. *Journal of Personality and Social Psychology*, 55, 795-802.
- Lottes, I. L. (1988). Sexual socialization and attitudes toward rape. In A. W. Burgess (Ed.), *Rape and Sexual assault II* (pp. 193-220). New York: Garland Publishing Inc.
- Lundrigan, S. & Canter, D. (2001). A multivariate analysis of serial murderers' disposal site location choice. *Journal of Environmental Psychology*, 21, 423-432.
- Lussier, P., LeBlanc, M., & Proulx, J. (2005). The generality of criminal behavior: A confirmatory factor analysis of the criminal activity of sex offenders in adulthood. *Journal of Criminal Justice*, 33, 177-189.
- MacCulloch, M. J., Snowden, P. R., Wood, P. J. W., & Mills, H. E. (1983). Sadistic fantasy, sadistic behaviour and offending. *British Journal of Psychiatry*, 143, 20-29.
- Marshall, W. L. (1989). Intimacy, loneliness and sexual offenders. *Behavioral Research in Therapy*, 27, 491-503.
- Maslovaty, N., Marshall, A. E., & Alkin, M. C. (2001). Teachers' perceptions structured through facet theory: Smallest space analysis versus factor analysis. *Educational and Psychological Measurement*, 61, 71-84.
- McCormack, J., Hudson, S. M., & Ward, T. (2002). Sexual offenders' perceptions of their early interpersonal relationships: An attachment perspective. *The Journal of Sex*

Research, 39, 85-93.

- Mercado, C. C. & Scalora, M. J. (2001). Child molestation: Factors related to level of violence. *Journal of Threat Assessment*, 1, 21-34.
- Mercado, C. C., Tallon, J. A., & Terry, K. J. (2008). Persistent sexual abusers in the Catholic Church: An examination of characteristics and offense patterns. *Criminal Justice and Behavior*, 35, 629-642.
- Miethe, T. D., Olson, J., & Mitchell, O. (2006). Specialization and persistence in the arrest histories of sex offenders: A comparative analysis of alternative measures and offense types. *Journal of Research in Crime and Delinquency*, 43, 204-229.
- Mischel, W. (1968). *Personality and assessment*. New York: Wiley.
- Mischel, W. & Peake, P. K. (1982). Beyond déjà vu in the search for cross-situational consistency. *Psychological Review*, 89, 730-755.
- Mokros, A. & Alison, L. J. (2002). Is offender profiling possible? Testing the predicted homology of crime scene actions and background characteristics in a sample of rapists. *Legal and Criminological Psychology*, 7, 25-43.
- Muthén, L.K. & Muthén, B.O. (2007). *Mplus User's Guide. Fifth Edition*. Los Angeles, CA: Muthén & Muthén.
- Myers, W. C., Burgess, A. W., & Nelson, J. A. (1998). Criminal and behavioral aspects of juvenile sexual homicide. *Journal of Forensic Sciences*, 43, 340-347.
- Newcomb, T. M. (1929). *The consistency of certain extrovert-introvert behavior patterns in 51 problem boys*. New York: Columbia University, Teachers College, Bureau of Publications.
- Oishi, S. (2006). The concept of life satisfaction across cultures: An IRT analysis. *Journal of Research in Personality*, 40, 411-423.
- Olweus, D. (1979). Stability of aggressive reaction patterns in males; A review. *Psychological Bulletin*, 86, 852-875.
- Park, J., Schlesinger, L. B., Pinizzotto, A. J., & Davis, E. F. (2008). Serial and single-victim rapists: Differences in crime-scene violence, interpersonal involvement, and criminal sophistication. *Behavioral Sciences and the Law*, 26, 227-237.
- Perillo, A.D., Mercado, C. C., & Terry, K. J. (2008). Repeat offending, victim gender, and extent of victim relationship in Catholic Church sexual abusers. *Criminal Justice and Behavior*, 35, 600-614.
- Pinizzotto, A. J. & Finkel, N. J. (1990). Criminal personality profiling: An outcome and process study. *Law and Human Behavior*, 14, 215-233.

- Piquero, A. R., Farrington, D. P., & Blumstein, A. (2003). The criminal career paradigm. In M. Tonry (Ed.), *Crime and justice: A review of research* (Vol. 30, pp. 359-506). Chicago: University of Chicago Press.
- Polaschek, D. L. L., Ward, T., & Hudson, S. M. (1997). Rape and rapists: Theory and treatment. *Clinical Psychology Review, 17*, 117-144.
- Prentky, R. A., Burgess, A. W., Rokous, F., Lee, A., Hartman, C., Ressler, R., & Douglas, J. (1989a). The presumptive role of fantasy in serial sexual homicide. *American Journal of Psychiatry, 146*, 887-891.
- Prentky, R. A., Cohen, M. L., & Seghorn, T. K. (1985). Development of a rational taxonomy for the classification of sex offenders: Rapists. *Bulletin of the American Academy of Psychiatry and the Law, 13*, 39-70.
- Prentky, R. A. & Knight, R. A. (1991). Identifying critical dimensions for discriminating among rapists. *Journal of Consulting and Clinical Psychology, 59*, 643-661.
- Prentky, R. A. & Knight, R. A. (1993). Age of onset of sexual assault: Criminal and life history correlates. In G. C. N. Hall, R. Hirschman, J. R. Graham, & M. S. Zaragoza (Eds.), *Sexual aggression: Issues in etiology, assessment, and treatment* (pp. 43-62). Washington, DC: Taylor & Francis.
- Prentky, R. A. & Knight, R. A. (1994). *Classification of rapists in Massachusetts, 1980-1990 [Computer file]*. Compiled by the Massachusetts Treatment Center, Bridgewater, MA. ICPSR ed. Ann Arbor, MI: Inter-university Consortium for Political and Social Research [producer and distributor].
- Prentky, R. A. & Knight, R. A. (2000). *Classification of rapists in Massachusetts, 1980-1990: User guide to the machine-readable files and documentation with codebook*. Ann Arbor, MI: Inter-university Consortium for Political and Social Research.
- Prentky, R. A., Knight, R. A., & Rosenberg, R. (1991). *Classification of rapists: Implementation and validation (Final report)*. Washington, DC: National Institute of Justice.
- Prentky, R. A., Knight, R. A., Sims-Knight, J. E., Straus, H., Rokous, F., & Cerce, D. (1989b). Developmental antecedents of sexual aggression. *Development and Psychopathology, 1*, 153-169.
- Prentky, R. A., Lee, A. F. S., Knight, R. A., & Cerce, D. D. (1997). Recidivism rates among child molesters and rapists: A methodological analysis. *Law and Human Behavior, 21*, 635-659.
- Reckase, M. D. (1997). The past and future of multidimensional item response theory. *Applied Psychological Measurement, 21*, 25-36.

- Ressler, R. K., Burgess, A. W., Douglas, J. E., Hartman, C. R., & D'Agostino, R. (1986). Sexual killers and their victims: Identifying patterns through crime scene analysis. *Journal of Interpersonal Violence, 1*, 288-308.
- Robertiello, G. & Terry, K. J. (2007). Can we profile sex offenders? A review of sex offender typologies. *Aggression and Violent Behavior, 12*, 507-518.
- Ross, L. & Nisbett, R. E. (1991). *The person and the situation: Perspectives of social psychology*. Philadelphia: Temple University Press.
- Russell, D. (1975). *The politics of rape*. New York: Stein and Day.
- Salfati, C. G. (2003). Offender interaction with victims in homicide: A multidimensional analysis of frequencies in crime scene behaviors. *Journal of Interpersonal Violence, 18*, 490-512.
- Salfati, C. G. & Bateman, A. L. (2005). Serial homicide: An investigation of behavioral consistency. *Journal of Investigative Psychology and Offender Profiling, 2*, 121-144.
- Salfati, C. G. & Taylor, P. J. (2006). Differentiating sexual violence: A comparison of sexual homicide and rape. *Psychology, Crime & Law, 12*, 107-125.
- Santtila, P., Jukkila, J. & Sandnabba, N. K. (2005). Behavioural Linking of Stranger Rapes. *Journal of Investigative Psychology and Offender Profiling, 2*, 87-103.
- Scarce, M. (1997). *Male on male rape: The hidden toll of stigma and shame*. New York: Insight Books.
- Schlesinger, L. B. (2004). *Sexual murder: Catathymic and compulsive homicides*. Boca Raton, Florida: CRC Press.
- Schlesinger, L. B. & Revitch, E. (1999). Sexual burglaries and sexual homicide: Clinical, forensic, and investigative considerations. *Journal of the American Academy of Psychiatry and Law, 27*, 227-238.
- Scully, D. & Marolla, J. (1985). "Riding the bull at Gilley's": Convicted rapists describe the rewards of rape. *Social Problems, 23*, 251-263.
- Seidman, B. T., Marshall, W. L., Hudson, S. M., & Robertson, P. J. (1994). An examination of intimacy and loneliness in sex offenders. *Journal of Interpersonal Violence, 9*, 518-534.
- Serin, R. C., Mailloux, D. L., & Malcolm, P. B. (2001). Psychopathy, deviant sexual arousal and recidivism among sexual offenders: A psycho-culturally determined group defense. *Journal of Interpersonal Violence, 16*, 234-246.
- Simon, L. M. J. (2000). An examination of the assumptions of specialization, mental

- disorder, and dangerousness in sex offenders. *Behavioral Sciences and the Law*, 18, 275-308.
- Smallbone, S. W. & Wortley, R. K. (2004). Criminal Diversity and Paraphilic Interests Among Adult Males Convicted of Sexual Offenses Against Children. *International Journal of Offender Therapy and Comparative Criminology*, 48, 175-188.
- State v. Black*, 745 P. 2d 12 (1987).
- State of New Jersey v. Fortin* (2000). 745 A.2d 509 (N. J.).
- Sturidsson, K., Langstrom, N., Grann, M., Sjostedt, G., Asgard, U., & Aghede, E. M. (2006). Using multidimensional scaling for the analysis of sexual offence behaviour: A replication and some cautionary notes. *Psychology, Crime & Law*, 12, 221-230.
- Terry, K. J. (2006). *Sexual offenses and offenders*. California: Thomson Wadsworth.
- Terry, K. J. & Ackerman, A. (2008). Child sexual abuse in the Catholic Church: How situational crime prevention strategies can help create safe environments. *Criminal Justice and Behavior*, 35, 643-657.
- Tingle, D., Barnard, G. W., Robbin, L., Newman, G., & Hutchinson, D. (1986). Childhood and adolescent characteristics of pedophiles and rapists. *International Journal of Law and Psychiatry*, 9, 103-116.
- Turco, R. (2008). Criminal profile construction and investigative procedures: Study of the Westley Dodd serial sexual Murders. In R. N. Kocsis (Ed.), *Serial murder and the psychology of violent crimes* (pp. 245-257). Totowa, NJ: Humana Press.
- U.S. Department of Justice (2005). *Crime in the United States: Uniform crime reports*. Washington, DC: Federal Bureau of Investigation, U.S. Department of Justice.
- Ward, T., Hudson, S. M., Johnston, L., & Marshall, W. L. (1997). Cognitive distortions in sex offenders: An integrative review. *Clinical Psychology Review*, 17, 479-507.
- Ward, T., Keenan, T., & Hudson, S. M. (2000). Understanding cognitive, affective, and intimacy deficits in sexual offenders: A developmental perspective. *Aggression and violent behavior*, 5, 41-62.
- Warren, J. I., Hazelwood, R. R. & Dietz, P. E. (1996). The sexually sadistic serial killer. *Journal of Forensic Sciences*, 41, 970-974.
- Warren, J. I., Hazelwood, R. R. & Reboussin, R. (1991). Serial rape: The offender and his rape career. In A. W. Burgess (Ed.), *Rape and Sexual assault III: A research handbook* (pp. 275-311). New York: Garland Publishing Inc.

- Weinrott, M. R. & Saylor, M. (1991). Self-report of crimes committed by sex offenders. *Journal of Interpersonal Violence*, 6, 286-300.
- Woodhams, J., Hollin, C. R., & Bull, R. (2007). The psychology of linking crimes: A review of the evidence. *Legal and Criminological Psychology*, 12, 233-249.
- Woodhams, J., Hollin, C. R., & Bull, R. (2008). Serial juvenile sex offenders and their offenses. In R. N. Kocsis (Ed.), *Serial murder and the psychology of violent crimes* (pp. 35-50). Totowa, NJ: Humana Press.
- Woodhams, J. & Toye, K. (2007). An empirical test of the assumptions of case linkage and offender profiling with serial commercial robberies. *Psychology, Public Policy, and Law*, 13, 59-85.
- Wortley, R. K. (2001). A classification of techniques for controlling situational precipitators of crime. *Security Journal*, 14, 63-82.
- Wortley, R. K. & Smallbone, S. (2006). Applying situational principles to sexual offenses against children. In R. K. Wortley & S. Smallbone (Eds.), *Situational prevention of child sexual abuse* (Crime prevention studies Vol. 19, pp. 7-36). Monsey, NY: Criminal Justice Press.
- Yokota, K. & Canter, D. (2004). Burglars' specialisation: Development of a thematic approach in investigative psychology. *Behaviormetrika*, 31, 153-167.
- Zimring, F. E., Piquero, A. R., & Jennings, W. G. (2007). Sexual delinquency in Racine: Does early sex offending predict later sex offending in youth and young adulthood? *Criminology and Public Policy*, 6, 507-534.