



An action phase approach to offender profiling

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Purpose. Continued debate surrounds whether or not offender profiling is a valid practice. Critics have mainly contended that few studies have produced clear, quantifiable, evidence of a link between crime scene *actions* (A) and offender *characteristics* (C). Arguing that this is due to a failure to study offender *actions* as part of a dynamic decision-making process, this study sought to identify *action phases* that are representative of the general decisions an offender must make during the commission of a sexual offence, and relate these decisions to known characteristics of the offender (C).

Methods. Two-step cluster analyses were performed on data from 347 stranger sexual offences, committed by 69 serial sexual offenders, by action phase: (1) *search*; (2) *selection*; (3) *approach*; (4) *assault*; and also for an offender's (5) *characteristics*. Multiple correspondence analysis (MCA) was then utilized to investigate the inter-relationship of action phase clusters and offender characteristics.

Results. The MCA results indicated that specific behavioural macro-clusters formed across the various actions phase and offender characteristic clusters in a meaningful way. Additionally, the macro-clusters themselves corresponded to the extant literature on sexual assault, revealing several points of congruence between offender crime scene actions and offender characteristics.

Conclusion. The results of the study demonstrate that when crime scene behaviours are interpreted within a dynamic decision-making process (i.e., utilizing action phases), reliable and valid empirical links may potentially be drawn between an offenders behavioural actions and their characteristics.

The use of crime scene analysis in police investigations has increased in various countries (Rainbow, 2008; Snook, Haines, Taylor, & Bennell, 2007). Offender profiling, an aspect of what is now commonly known as *Behavioural or Criminal Investigative Advice* (Alison, Goodwill, Almond, van den Heuvel, & Winter, 2010), attempts to infer or predict offender characteristics, such as age (Goodwill & Alison, 2007) and prior criminal antecedents (Goodwill, Alison, & Beech, 2009), from crime scene information (e.g., offender behaviour). The relationship between crime scene information or actions (A) and an offender's characteristics (C) is colloquially known as the 'A to C, or canonical, relationship' (Canter, 1995). The theoretical relationship between A and C is often

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referred to as *homology*¹ (e.g., Mokros & Alison, 2002; Woodhams & Toye, 2007): the way in which a person commits a crime (e.g., their behaviour or *actions*) should be homologous (or congruent) with who they are in general (e.g., their *characteristics*). Although there is some evidence that certain actions may relate to certain characteristics, the ability to reliably demonstrate a link between offenders' actions and their characteristics is still in question (Snook, Cullen, Bennell, Taylor, & Gendreau, 2008).

Criticism of offender profiling has mainly focused on two issues: (1) the contention that there has been little empirical or practical evidence of homology (Snook, Eastwood, Gendreau, Goggin, & Cullen, 2007) and that (2) behaviour is so profoundly influenced by the situation that it is near impossible to determine reliable links between actions and characteristics (Alison, Bennell, Mokros, & Ormerod, 2002). The first issue is difficult to prove or disprove as evidence is often in the eye of the beholder (see Dern, Dern, Horn, & Horn, 2009) and in fast-developing areas of research the extent of the evidence is often difficult to distil (see Alison *et al.*, 2010). As for the second issue, behavioural investigative research has shown that offence behaviour, although influenced by *Situation* $\times$ *Person* interactions, is still relatively stable across crimes (Harbers, Deslauriers-Varin, Beauregard, & Kemp, 2012; Oziel, Goodwill, & Beauregard, 2015). However, the various situations within an offence confront an offender with a multitude of decisions to be considered (e.g., Beauregard & Leclerc, 2007). Precisely what decisions an offender makes across the situations he or she encounters may suggest something specific to that offender, which makes them differentiable from others.

Conceptualization of the offender profiling paradigm

During the commission of a crime, each offender *action* (i.e., behaviour) is a decision, often, but not always, in response to situational determinants (e.g., the victim's resistance, the availability of a preferred victim, the offence location). However, the majority of situational determinants are not static in an offence, and accordingly an offender's decisions and behaviours will also necessarily change and develop. Despite this, the majority of offender profiling studies in the past have defined the criminal offence as one contiguous event – the crime scene – largely ignoring the temporal sequencing of the interaction between offender and victim. This may be likened to analysing the behaviours of an overall 'snapshot' of the crime in its entirety, while ignoring the context of the behaviour(s) that created the snapshot.

Meier, Kennedy, and Sacco (2001) argued that 'a comprehensive model of crime must be attentive to offenders and victims as well as to the contexts within which they interact' (p. 1). For example, on approaching a victim an offender may put his hands around the throat to control them *prior* to a sexual assault. Another offender may put his hands around the throat of the victim *during* the sexual assault for deviant sexual pleasure, while a third may hold the victim's throat *after* the assault to injure or kill the victim. Although the offending behaviour *choking the victim* is consistent across all three offences, the context of the behaviour may reveal quite disparate offender motivations (e.g., power, anger, sadism), and, in turn, different offender characteristics. We argue here, then, that a crime should be investigated as *temporal phases* of an overall *decision-making process*, and that these actions will be reflective of how the offender typically chooses from

¹ Although the term 'homology' is a biological term used to describe similarity in structure or DNA derived from the same ancestor, it has been adopted in the offender profiling literature to indicate a similarity between offender behaviour and characteristics.

alternative options and strategies in their 'everyday life'. Such a conceptualization should give rise to more accurate A to C predictions.

The offending process

A sexual assault is a dynamic event with regards to cognitive, behavioural, emotional, and motivational aspects of the offender (Polaschek, Hudson, Ward, & Siegert, 2001). Beauregard, Rossmo, and Proulx (2007) suggest that the decision making surrounding the offence process fluctuates according to an offenders' strategies, type of victim, victim reaction, situational context of the crime, and the environment. This corresponds to the dynamic target selection model of Brantingham and Brantingham (1993a, 1993b) which depicts crime as complex, but with discernible patterns at both general and specific levels of analysis. The Brantinghams have posited that crimes do not occur randomly or uniformly in time, space, or society, but rather as a result of interactions among a set of ever-changing sociocultural, legal, economic, and physical variables.

Fossi, Clarke, and Lawrence (2005) take this argument further and propose four overlapping and related *action phases*²: (1) *Search*, (2) *Selection*, (3) *Approach*, and (4) *Assault*. They argue that an offender's decisions in each of these phases will reveal his or her criminal propensities manifested by his cognitions, his expectations, his personality – in other words, his *character*. Moreover, the decisions made within each of these action phases may be interdependent, supporting the notion of a dynamic decision-making process.

In relation to action phases, Rossmo (2000) suggests an offender will have preferential *search* strategies for locating a victim, termed the *hunting process*. The search for a victim will inevitably lead to a *victim selection process* and once the victim is selected the offender must *approach* the victim to initiate the assault. At this point in the offence, the offender will have found, selected, and approached a victim and will now make the decision of if, how, and when to initiate the sexual *assault*. At each of the four action phases the offender must make decisions. His decisions (e.g., to use violence or not) are in no doubt highly influenced by the situational context (e.g., victim resistance) but will also depend on the offender's personality and character (e.g., his general propensity to use violence to get what he wants). According to the theory of homology, these decisions, manifested as behaviour (e.g., use of violence in face of resistance) should correspond to the offender's propensities (e.g., use of violence to solve problems) and be reflected in their background characteristics (e.g., criminal history for violence).

Action phase 1: Search

In order for an offender to *select* and *approach* a victim they must first find a potential victim (Cohen & Felson, 1979). In perhaps the most useful classification, Rossmo (2000) delineated several geo-spatial *hunting patterns* that consider both geo-spatial movement and behavioural characteristics of offenders (Beauregard, Rebocho, & Rossmo, 2010): hunter, poacher, troller, and trapper. *Hunters* are offenders who actively seek out their victim, using their place of residence as a psychological anchor point. They offend around this anchor with a relatively even distribution (Goodwill & Alison, 2005). *Poachers* are also actively engaged in pursuing victims, but they tend to travel further distances, even to

² The term 'phases', as opposed to 'stages' or 'events', is used to signify that action phases are not discrete temporal stages with clearly defined boundaries. One phase may be related to and temporally 'overlap' another in both a pragmatic and statistical sense.

other cities, to locate potential victims. *Trollers* are less actively engaged in pursuing victims and, therefore, offend more opportunistically, coming across their victims while they are engaged in 'regular' non-predatory activities. *Trappers* choose to situate themselves in positions (e.g., professionally) or areas (e.g., parks, amusement arcades) that provide them with the greatest accessibility to a particular victim type (e.g., children, teenagers, boys) and/or find means to lure victims into their homes.

Action phase 2: Selection

The offence process necessarily involves identifying a potential target (e.g., through a hunting pattern) and rationalizing the choice of whether to commit the crime (Cornish & Clark, 1986). According to rational choice theory, victim selection may be both based on the victim's attractiveness (i.e., high reward) and vulnerability (i.e., low risk). In routine activities theory the concepts of attractiveness and vulnerability are expanded by the presence of a motivated offender (Cohen & Felson, 1979). Since target suitability reflects such things as desirability of the victim (e.g., attractiveness), a basic distinction can be drawn between offenders attracted to children and adolescents (e.g., paedophile, hebephile) and those attracted to adults (e.g., teliophile; cf. Robertiello & Terry, 2007). In addition, the absence of a suitable guardian to protect the victim enhances the vulnerability and accessibility of the victim.

Action phase 3: Approach

Once the offender has selected their victim, they must engage in a strategy to approach the victim. In their analysis of serial sexual offenders, Beauregard, Proulx, Rossmo, Leclerc, and Allaire (2007) identified three decision-making 'scripts' that relate to approaching a victim, with two of them presenting more than one track: (1) the *coercive* (home intrusion and outdoor tracks); (2) the *manipulative* (sophisticated and family-infiltrator tracks); and the (3) *non-persuasive* (direct action track). Each script and track is related to differences in the offender's levels of experience, motivation, attack method, and choice of hunting pattern – information that could potentially reveal A to C relationships. For example, Beauregard and colleagues found that offenders using the sophisticated rape track tend to *troll* areas to locate victims, or they use already existing opportunities (e.g., prostitution market). Alternatively, the family-infiltrator often exploits their occupation to *trap* victims or to infiltrate families. Both these tracks suggest different approaches that likely reveal different motivations (e.g., trickery and subterfuge) and offender characteristics (e.g., levels of social competence).

The decision to approach a victim and in what way may also be influenced by the affect and motivation of the offender. The most commonly cited motives for sex offences are those of power, anger, and sex (Amir, 1971; Cohen, Garofalo, Boucher, & Seghorn, 1971; Groth, 1979). For example, an angry offender would be less concerned by the setting of the offence, often attacking victims with immediate gratuitous violence, whereas a power-motivated offender might surprise a sleeping victim in their residence using violence only to control the victim.

Action phase 4: Assault

The majority of research in offender profiling has investigated the behaviours (e.g., actions) exhibited or inferred during the assault phase for significant associations to

offender characteristics (Alison *et al.*, 2010). Although this research commonly uses Multidimensional Scaling (Canter, Bennell, Alison, & Reddy, 2003; Lehmann, Goodwill, Gallasch-Nemitz, Biedermann, & Dahle, 2013), it has also used other methodologies (e.g., cluster analysis, Beauregard & Proulx, 2002; regression, Goodwill *et al.*, 2009; multiple correspondence analysis, Beauregard, Proulx, *et al.*, 2007). Overall, the existing research on sexual offenders has found from three to five main behavioural themes: *hostility* (e.g., offender uses violence), *involvement* (e.g., offender extends time spend with the victim), *criminality* (e.g., offender is forensically aware), *sexuality* (e.g., fellatio, offender ejaculates), and *control* (e.g., offender uses weapon to control the victim).

Offender characteristics

The utility of offender profiling is underpinned by the notion that the manner in which a person commits a crime will be reflected in the character of that person (Alison *et al.*, 2010). Some research evidence has suggested a tentative link between certain actions and offender characteristics in relation to occupational and relationship problems (e.g., Beauregard & Proulx, 2002); previous convictions (e.g., Davies, Wittebrood, & Jackson, 1998; Goodwill *et al.*, 2009; Häkkänen, Puolakka, & Santtila, 2004); deviant sexual fantasies (e.g., Proulx, Perreault, & Ouimet, 1999); and demographic characteristics (Safarik, Jarvis, & Nussbaum, 2002). Accordingly, the current study included the areas of occupation (e.g., employment status), relationship (i.e., relationship status), previous convictions (e.g., sexual, violent, non-sexual non-violent), deviant sexual behaviour (i.e., voyeurism, compulsive masturbation, deviant, and non-deviant sexual fantasies), and psychology (e.g., anger problems, social isolation, poor self-image, and offender acting behavioural fantasy).

Current study

As suggested by Goodwill and Alison (2007), the changing *context* of a crime must be taken into account as it may force the offender to make proximate decisions. As discussed above, type of victim resistance, offence planning, and crime-site familiarity may cause an offender to adapt their behaviour to a situation, potentially changing the *expected* A to C associations from one offence (or indeed each phase) to the next. However, it is postulated that these proximate decisions are still invariably and strongly influenced by an offender's characteristics and as such, reflect a stable propensity for certain behaviour under certain situations.

In sum, given the dynamic and situational nature of sexual offending, it is unlikely that a simple 'if A, then C' methodology will be sufficient to model homology (Alison *et al.*, 2010). Indeed, the assumption that the relationship between actions and characteristics is a simple one has been challenged by several researchers (e.g., Canter & Youngs, 2009; Goodwill & Alison, 2007; Youngs, 2008). For example, Canter and Youngs (2009) argued that there are many reasons to expect the A to C relationship for the individual offender to change over time, due to learning, maturation, and other environmental developments. Therefore, it would seem that the relationship between crime scene behaviour and offender characteristics is far more complex than perhaps originally thought – with some suggesting its pursuit futile (Snook *et al.*, 2008). However, in our view, although the relationship is certainly complex, its pursuit is not without merit. Therefore, the present study will test the validity of the A to C relationship and, in turn homology, by modelling

the dynamic decision-making process of offenders by action phases (A) in relation to offender characteristics.

Method

Sample

The data were collected by the third author from a Correctional Service of Canada federal penitentiary (an institution that houses inmates serving a sentence of 2 years or more) located in the province of Quebec. The study sample consisted of 69 male offenders who committed between 2 and 37 sexual offences (*mode* = 3) involving a victim of any age and any gender with whom he had no personal relationship prior to the day the offence was committed. In total they were responsible for 347 stranger sexual offences, which took place between the years of 1994 and 2005. The offenders had sexually assaulted adult women ($n = 33$), children ($n = 17$), or both ($n = 19$). Basic demographic information suggests that 91% of these offenders are Caucasian, 90% had a previous criminal record, 46% were married, and the average age at the onset of the series of crime was 31 years of age ($SD = 9.4$).

The data were collected through in-depth semi-structured interviews with offenders and case file review by the third author. Interviews lasted between 2 and 12 hr in isolation from other inmates and correctional service staff. Data on crime scene characteristics, offender, and victim characteristics were obtained through Corrections Canada to verify information elicited from offender interviews. If there were discrepancies between interview data and police reports, the evidence contained in the police report was used.

These data sample appear in a number of publications to date (Beauregard, Proulx, *et al.*, 2007; Beauregard, Rossmo, *et al.*, 2007; Oziel *et al.*, 2015). Of particular note is the correspondence of the *approach* cluster structure found in the current study and that found in the script analysis study conducted by Beauregard, Proulx, *et al.* (2007) using the same data sample. However, the variables used in each study for clustering was not identical.

Plan of analyses

In this study, analysis was at the level of the crime event rather than the offender. Focusing on events was important for three reasons: (1) the behaviour in each event may change due to situational demands but arguably should still correspond to an offender's propensity to react to situations in a particular way (Alison *et al.*, 2002; Lehmann *et al.*, 2013); (2) the variation and maturation of serial offenders behaviour seems to relate to particular types of behaviours, rather than all types of behaviours, reasonably suggesting that serial crime events are somewhat independent (Knight, Warren, Reboussin, & Soley, 1998; Lundrigan, Czarnomski, & Wilson, 2010; Woodhams & Labuschagne, 2012); (3) using alternate methods, such as the aggregation of behavioural information for each offender across their known crime events, results in the loss of important criminal event specific detail in relation to each action phases under study.

The variables used in the statistical analysis were chosen based on a review of literature that encompasses both the information available at a crime scene and the information gleaned by offenders about their crimes under interview. The mixture of

purely investigative data (e.g., crime scene information) and information related to offender's strategies and cognitions was used to increase the content validity of the action phases of the offence process. The offence process was operationalized by using variables representative of each action phase: *search* (e.g., hunting pattern), *selection* (e.g., victim gender, age, characteristics), *approach* (e.g., violent, persuasive, offender affect), and *assault* (e.g., weapon used, fellatio, strategy). *Offender characteristics* (e.g., demographics, previous convictions, psychological histories) were selected based on available data and in accordance with the literature. Table 1 provides the variable frequencies by crime ($n = 347$) and by offender characteristics ($n = 69$).

A two-step cluster analytical technique was used to cluster individual offences into groups for each of the action phases (with the exception of the *search* phase in which individual offences were categorized as most resembling one of the four hunting patterns) prior to MCA. Two-step cluster analysis is an exploratory tool designed to reveal the natural groupings (or clusters) within a data set that would otherwise not be apparent (IBM Corp, 2011). The two-step clustering algorithm is desirable over traditional clustering techniques due to its ability to handle categorical and continuous variables simultaneously and its ability to automatically determine the optimal number of clusters by comparing the values of a model-choice criterion across different clustering solutions. All two-step cluster analyses were performed using the software Statistical Package for Social Sciences (SPSS) version 20 (IBM Corp, 2011).

Multiple correspondence analysis was employed to investigate the relationship between all action phase (including hunting pattern types) and offender characteristics clusters simultaneously. Multiple correspondence analysis is a method of factoring categorical variables and displaying them in a low n -dimensional (e.g., typically two-dimensions) Euclidean space. The procedure is similar to conventional factor analysis, except the input matrix is a set of measures of associations (as the data are categorical) rather than a correlation matrix (Le Roux & Rouanet, 2010). Associations are visualized on a 'correspondence map' which plots the relationship between clusters along dimensional factor axes. The closer the clusters are to one another, the stronger the association between them.

Results

Search

All offences were classified into one of four hunting patterns proposed by Rossmo (2000) based on the offenders' self-report information (i.e., how they reported searching for victims) and by police data (e.g., offence locations, offender's permanent address, and/or place of work at the time of the offence). Only with both sources of information was it possible to classify the offenders. The majority of offences, 53.9% ($n = 187$) were of the *hunter* type, in which offender's actively sought their victims within a short radius of their home. *Poacher* offences, on the other hand, characterized 5.8% ($n = 20$) of the sample. These offences involved an offender travelling a long distance (e.g., over 10 km) to commit the sexual offence. The remainder of the offences were divided amongst *troller* offences (19%, $n = 66$), where an offender would encounter their victim during their regular routine activities and *trapper* offences (21.3%, $n = 74$), in which an offender would position themselves in a situation, context, or occupation where they would have access to their victims of preference.

Table 1. Crime scene variables, categories, raw counts, and percent frequencies in the sample

Variables	Type	Count	%	Variables	Type	Count	%
Search (hunting pattern)				Assault behaviours (cont'd)			
Poacher		20	5.8	Time spent with victim (min)	0-10	91	26.5
Troller		66	19.0		11-24	78	22.7
Trapper		74	21.3		25-40	89	25.9
Hunter		187	53.9		41 or more	85	24.8
Victim selection				Clothing removal	Not undressed	30	8.6
Sex of victim	Female	277	79.8		Partial undress/nude	223	64.3
Victim age (in years)	Pedophile (10 and under)	78	22.5		Complete undress/nude	94	27.1
	Hebephile (11-16)	100	28.8	Type of victim resistance	No resistance	66	19.0
	Teliophile (17 and over)	169	48.7		Verbal	128	36.9
Type of selection	Random/ non-patterned	176	50.7		Physical	153	44.1
	Non-random/ patterned	171	49.3		No force	143	41.2
Selected for physical chars		123	35.4		Minimum force	148	42.7
Selected for vulnerability		219	63.1		More than necessary	56	16.1
Victim was type searched for		172	49.6	Reaction to victim resistance	No resistance	57	16.4
Approach					Stops	74	21.3
Approach strategy	Persuasion (non-violent)	86	24.8		Threat	152	43.8
	Trick/con	140	40.3		Force	64	18.4
	Drug/alcohol	12	3.5	Masturbation		116	33.4
	Threat/violence	109	31.4	Offender ejaculated at the scene		230	66.3

Continued

Table 1. (Continued)

Variables	Type	Count	%	Variables	Type	Count	%
Crime pre-meditation	None	41	11.8	Weapon used		97	28.0
	Non-structured	144	41.5	Fellatio		61	17.6
	Structured	162	46.7	Offender characteristics			
Victim alone (when encountered)		203	58.5	Relationship status	Single	37	53.6
Victim's home		43	12.4		In a relationship	32	46.4
Encountered		115	33.1	Anger/temper problems		24	34.8
victim previously		211	60.8	Voyeurism in adulthood		24	34.8
Attack location	Inside	136	39.2	Compulsive masturbation		23	33.3
	Outside and/or vehicle	86	24.8	Offender acting out		28	40.6
Pre-crime affect	Anger/frustration	200	57.6	behavioural fantasy		51	73.9
	Sexual arousal	61	17.6	Poor self-image		55	79.7
	Other			Non-sexual, non-violent convictions			
Assault behaviours				Any sexual conviction		42	60.9
Strategy to commit the crime	Persuasion (non-violent)	49	14.1	Violent convictions		38	55.1
	Trick or con	1	0.3	Persistent non-deviant sexual fantasy		12	17.4
	Drug/alcohol	21	6.1	Persistent deviant sexual fantasy		26	37.7
	Threat and violence	276	79.5	Employed		41	59.4
Forensic awareness		141	40.6	Social isolation		53	76.8

Table 2. Victim selection phase

	Cluster 1: Telio specific (%)	Cluster 2: Pedo/hebe specific (%)	Cluster 3: Non-specific (%)
Variables	Within cluster percentages		
Victim type searched for	73	82	4
Selected for physical characteristics	75	71	0
Victim age	Teliophile 100	Hebephile 66	Teliophile 47
Type of selection (patterned)	93	70	19
Female victim	100	46	86
Selected for vulnerability	75	87	46

Selection

The manner in which an offender selected their victim clustered into three distinct clusters (see Table 2). The silhouette measure of cohesion and separation for the selection variables was 0.38, representing a 'fair' model. Cluster 1, termed *telio specific*, contained 24.5% ($n = 85$) of the offences in the sample. This group of offenders was actively (e.g., non-random) targeting vulnerable adult females with specific physical characteristics. Cluster 2, *pedo/hebe specific*, contained 23.9% ($n = 83$) of the offences and were defined by their specific targeting of child and adolescent victims with specific physical characteristics. Cluster 3, termed *non-specific*, contained 51.6% ($n = 179$) of the offences in the sample. In these offences the offender was reportedly not actively searching for any specific criteria of victim in relation to age, physical characteristics, or vulnerability. Non-specific offences were characterized primarily by the availability of the victim, rather than vulnerability.

Approach

Table 3 reports the clustering of the approach variables. The first cluster, *opportunistic con/trickster*, characterized 52.7% ($n = 183$) of the offences. In these offences the offender used a *con* (e.g., trick or ruse) to approach the victim. Their approach behaviours were predominantly characterized as opportunistic, with offenders attacking outside or in a vehicle and using little to no pre-meditation. Their motivation was generally characterized by a mixture of *anger/frustration* and *sexual arousal*. Cluster 2, termed *home intruder*, refers to 13.0% of offences ($n = 45$) where the offender hunted through local visibility – most often by assaulting the victim in their *residence* (91%). They used *threats and physical violence* to approach the victim, were typically *angry and frustrated* and attacked victims that were *alone*. Cluster 3, termed *persuasion and familiarity*, constituted 34.3% ($n = 119$) of the sample. Victims were typically *familiar to the offender* (61%), not *alone* (93%), and *attacked inside* (91%) but not in the *victim's home*. These offenders typically used a *structured pre-meditated plan* (71%) and *non-violent persuasive* approach (51%) by, for example, offering the victim money or gifts. The primary motivation of these offenders was *sexual arousal* (87%).

Table 3. Approach phase

	Cluster 1: Opportunistic con/trickster (%)	Cluster 2: Home Intruder (%)	Cluster 3: Persuasion and familiarity (%)
Variables	Within cluster percentages		
Attack location: Victim's home	1	91	0
Victim alone	87	78	7
Encountered victim previously	4	78	61
Attack location (inside)	32	98	91
Approach strategy	Trick/con 45	Threat/violence 56	Persuasion (non-viol) 51
Structured pre-meditation	37	84	71
Pre-crime affect	Sexual arousal 46	Anger/frustration 62	Sexual arousal 87

Assault

As reported in Table 4, behaviours exhibited during the assault phase of the crime were classified into three clusters: *Violence and Control* (51%, $n = 175$); *Attempt* (19.5%, $n = 67$); and *Persuasion and Sexual* (29.4%, $n = 101$) offences. In offences classified as *violence and control* the offender typically employed *force*, used *verbal violence* (e.g., threats) and a *weapon* to control the victim. The strategy used was of *threat and violence* wherein *victim resistance* to the assault was met with further *threat and violence*. The majority of offenders *ejaculated* during the offence, even though penile-focused sexual behaviours, such as *fellatio* (1%) and *masturbation* (26%) were rare. In contrast, Cluster 2 *attempt* offences were characterized by very little sexual behaviour, little *force*, short *time with the victim* (0–10 min), and cessation of the attack on any *victim resistance* (75%). Even though their strategy to commit the crime was *threat and violence* they never used a

Table 4. Assault phase

	Cluster 1: Violence and control (%)	Cluster 2: Attempt (%)	Cluster 3: Persuasion and sexual (%)
Variables	Within cluster percentages		
Offender reaction to resistance	Threat 64	Stops 75	No resistance 45
Level of force used	Minimum 63	No force 52	No force 91
Strategy to commit the crime	Threat and violence 100	Threat and violence 97	Persuasion (non-viol.) 44
Fellatio	1	0	57
Time spent with victim	25–40 min 31	0–10 min 87	25–40 min 33
Forensic awareness	71	24	1
Type of victim resistance	Physical 67	Physical 54	Verbal 51
Offender ejaculation	87	9	67
Weapon used	55	0	0
Clothing removal	Partial undress/nude 59	Partial undress/nude 60	Partial undress/nude 75
Masturbation	26	0	66

weapon and typically only *verbally threatened* the victim. Cluster 3 offences involved the use of *persuasive strategies* with almost no *force* (91%) or *weapons* (0%) used to commit the offence. However, these offences were relatively more sexual than other offences with the offender generally *ejaculating* at the crime scene (67%), demanding *fellatio* (57%) as well as *masturbating* (66%).

Offender characteristics

Offenders grouped into three clusters based on their characteristics (see Table 5). Cluster 1, termed the *social competence* offender, made up 36% ($n = 25$) of the sample. The majority of these offenders were in *relationships* (72%), *employed* (92%), and had lesser *social isolation* (64%) compared to other offender subgroups. The *social competence* offender had little *anger and temper problems* (4%) but often had a *poor self-image* (64%), although still less-so than the other subgroups. Further, these offenders typically had *previous sexual convictions* (60%) but were relatively less likely to have *non-sexual non-violent* (68%) and *violent previous convictions* (40%). Cluster 2, termed *anti-social generalist*, characterized 43.6% ($n = 28$) of the sample and were typically *single* (93%),

Table 5. Offender characteristics

	Cluster 1: Social Competence Sexually non-deviant, non-violent, social competence (%)	Cluster 2: Anti-social Generalist Sexually non-deviant, violent, anti-social (%)	Cluster 3: Sexually Deviant Sexually deviant, social competence (%)
Key features:			
Variables	Within cluster percentages		
Persistent deviant sexual fantasies	0	39	94
Employed	92	21	75
Relationship status (single)	28	93	25
Voyeurism in adulthood	12	25	88
Anger/temper problems	4	61	37
Offender acting behavioural fantasy	24	36	75
Social isolation	64	75	100
Persistent non-deviant sexual fantasy	4	21	31
Violent previous convictions	40	71	50
Non-sexual non-violent previous convictions	68	93	75
Compulsive masturbation during adulthood	24	29	56
Poor self-image during adulthood	64	82	75
Any sexual previous convictions	60	68	50

unemployed (79%), had *occasional deviant* and *non-deviant sexual fantasies*, *anger problems*, and committed the most *sexual*, *violent*, and *non-sexual non-violent offences* of all three offender clusters. Cluster 3, termed the *sexually deviant*, constituted 23% ($n = 16$) of the sample and were typically in a *relationship* (75%) but felt *socially isolated* (100%). This offender characteristics cluster was defined by *persistent deviant sexual fantasies* (94%), trying to *act out fantasies* (75%) and moderate levels of previous *sexual* and *violent convictions* and *anger and temper problems*.

Multiple correspondence analysis

A two-dimensional MCA accounted for 96.3% of the variance ($\text{inertia} = .963$) between action phase and offender characteristic clusters with Dimension 1 contributing 60.6% and Dimension 2 contributing 35.7% of the model variance.

The correspondence map (Figure 1) reveals clear separation of clusters suggesting that the action phase clusters were strong discriminators between offences. For example, in relation to *victim selection*, the *pedo/hebo-specific* cluster is in the upper left quadrant (e.g., x, y coordinate of $-1.0, 0.8$), while *telio specific* is in the upper right quadrant (e.g., x, y coordinate of $1.0, 0.7$) and the *non-specific* cluster is located in the lower middle quadrant (e.g., x, y coordinate of $0, -0.7$). This suggests that *victim selection* clusters may differ substantially in relation to the latent x and y dimensions of the correspondence map.

The discriminating ability of each action phase and characteristic cluster solution ranges from 0.0 to 1.0 in both the x and y dimensions, with 0.0 being a non discriminator

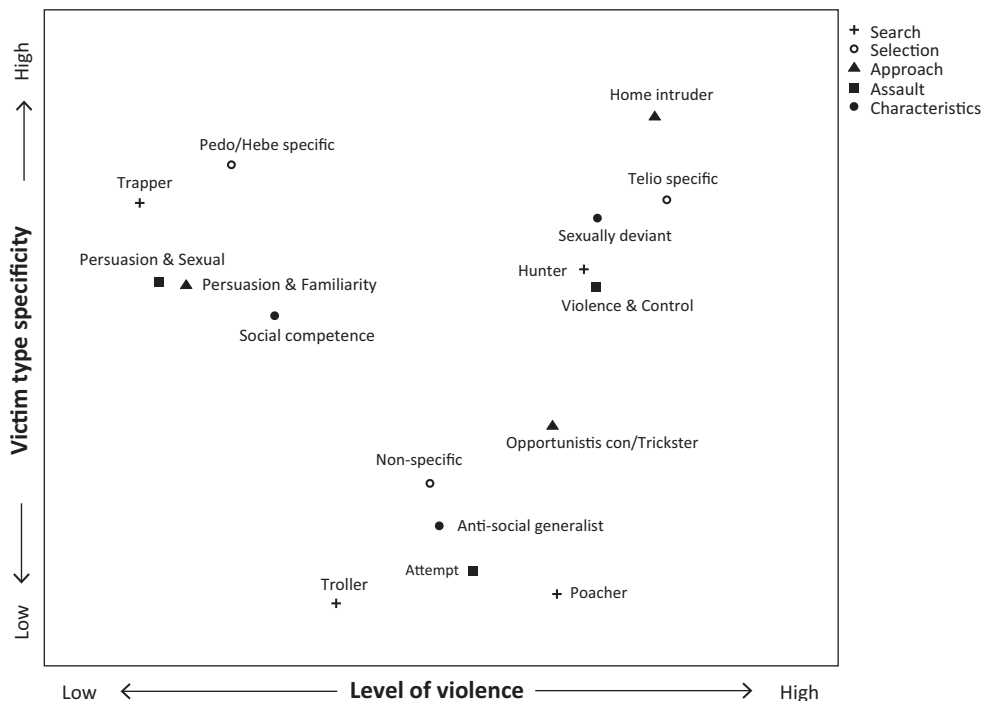


Figure 1. Multiple correspondence analysis plot of action phase and offender characteristics clusters.

and 1.0 being a perfect discriminator. All action phase and offender characteristics cluster solutions revealed adequate discrimination in both latent dimensions. An offender's *search* (0.68, 0.40), *selection* (0.49, 0.51), *approach* (0.68, 0.25), and *assault* (0.70, 0.28) were all adequate discriminators for both latent MCA dimensions. The *offender characteristics* cluster solution had relatively less discriminative ability (0.40, 0.38) than the action phases, but nonetheless revealed adequate discriminatory power across both dimensions.

Macro-clustering of action phase and offender characteristic clusters

Conceptual interpretation of the MCA correspondence map (see Figure 1), based on the proximity of action phase and offender characteristic clusters to one another, suggests that action phase clusters have grouped into three 'macro-clusters'. The term macro-cluster will be used to describe the visual and proximal grouping of specific action phase and offender characteristics clusters.

The upper left macro-cluster is characterized by the *specific targeting of children and adolescents* using non-violent *persuasive strategies* to approach victims. This is a relatively more *socially competent* offender that uses a *trapper* search strategy, placing themselves into an area where they have access to their preferred victim type (e.g., children) such as a junior school or by infiltrating into a family. Their sexual assaults are characterized by the use of persuasion, little force or threat, and highly sexualized behaviour.

The upper right macro-cluster is predominantly characterized by the use of *force, threat, and violence*. He is a *sexually deviant* offender who exclusively attacks *adult (telio)* victims with blitz-style violence and control. He searches for victims as a *hunter* eventually attacking them in their *home*.

The bottom-middle macro-cluster is characterized by action phase clusters that delineate *attempts* to complete a sexual offence on the victim, often stopping upon victim resistance. These offenders are relatively more sophisticated in their approach to the victim often using *trickery*. They are less likely to target a specific type of victim; instead they seem to attack based simply on the availability of a victim, using a *troller* (e.g., opportunistic) or *poacher* (e.g., travelling) search strategy. They are characterized by their *general criminality, anti-sociality, and limited social competence*.

Dimensions of stranger sexual offending

Interpreting the three macro-clusters of offence phase clusters with respect to the underlying MCA dimensions, it is postulated that the *x* and *y* dimensions of the MCA represent scales of *level of violence* (left to right: low to high) and a scale of both *planning* and *victim-type specificity* (top to bottom: planned/specific to non-planned/non-specific). According to the MCA dimensional results, *level of violence* ($\alpha = .839$) and *planning* and *victim-type specificity* ($\alpha = .575$) had 'excellent' and 'fair' reliability, respectively, according to Kline (2000).

Discussion

By clearly defining and conceptualizing a sexual assault encounter in terms of the offender's *search, selection, approach, assault* behaviours, and *characteristics*, a

comprehensive model of the offending process has been created. The results reveal significant and homologous associations between offence phase clusters and offender characteristic clusters. In essence, the study provides tentative support for the A to C paradigm – inferring an offender's characteristics through behavioural crime scene analysis.

The current study sought to further develop our psychological understanding of how the decisions made at each phase of an offence (e.g., how to find a victim) relate to not only an offender's characteristics but also to the decisions made in other phases. The basis for the positive results found herein suggests an interplay of several methodological and theoretical factors, such as: (1) conceptualizing the offence as inter-related decisions based on temporal phases rather than one contiguous event; (2) the statistical treatment of the inter-relational aspects of behaviours and characteristics *separately* at the within-phase level using cluster analysis and *simultaneously* at the between-phase level using MCA; and (3) situating the results within the extant sex offender and investigative psychology literature simultaneously to provide concurrent content validity.

Implications of viewing the offence by action phases on the homology debate

In general, much of the debate surrounding the validity of offender profiling has been directed at examining research that has seemingly found support for homology (e.g., Häkkinen *et al.*, 2004) and those that did not (e.g., Doan & Snook, 2008). Doan and Snook critically reviewed a number of studies that purported finding support for homology and, in addition, conducted two separate studies investigating homology (on robbery and arson), concluding that the evidence supporting homology across virtually all studies was weak. However, these and other studies investigating homology have rarely or adequately accounted for the context or situation in which criminal behaviour is occurring. As Goodwill and Alison (2007) point out, simple A to C relationships, even if robust and seemingly homologous, may be moderated by situational and contextual parameters. This has lead researchers, such as Youngs (2008), to elucidate that the failure to account for the complexity of situational influences and contextual demands makes any test of homology less meaningful.

It is also notable that few studies have accounted for the direct influence of situational aspects on offender decision making, bar a handful of studies by Beauregard and colleagues (e.g., Leclerc, Beauregard, & Proulx, 2008). For example, the decision of what search strategy to use may relate to the decision of what type of victim to select which may relate to how the victim is approached. All of these decisions, and others, will not only influence each other, but will be moderated or mediated by the situational parameters surrounding the crime (Beauregard, Lussier, & Proulx, 2005). Thus, the debate as to whether evidence of homology exists, and subsequently then, whether profiling has a valid theoretical basis (see Snook *et al.*, 2008, for comprehensive coverage of the issue), may be somewhat pre-mature given the relative simplicity of previous attempts to model homology.

The integration of offence phase clusters to model differential sexual offending

Based on the associations of the clusters from each action phase of the offence process, two latent dimensions of (1) *violence* and (2) *victim-type specificity* were identified. In terms of content validity, the *violence* dimension corresponds well to major dimensional

themes found in the current sexual offender (e.g., Knight, 2010) and investigative literature (e.g., Canter *et al.*, 2003). The dimension of *victim-type specificity* differentiates between offenders attacking their victims opportunistically (e.g., non-specific victim type) and those that have attempted to match their victim (e.g., gender, age, physical characteristics) to their 'ideal' victim type (e.g., Goodwill & Alison, 2007; Hazelwood & Warren, 2000).

Macro-cluster support in the extant sex offender and investigative literature

The MCA correspondence map (Figure 1) revealed three distinct groupings of action phase clusters and offender characteristics, described as macro-clusters, corresponding to differences in the dimensions of *violence* and *victim-type specificity*.

Macro-cluster 1: High violence/high victim-type specificity

The macro-cluster in the upper right quadrant of the correspondence map corresponds to offenders high in violence (Dimension 1), planning, and the specific targeting of adult victims (Dimension 2). The temporal sequence of action phases included the offender using a *hunter* victim search style, selecting *tello-specific* victims, following a *home intrusion* approach track, and using *violence and control* during the assault. These offenders attacked vulnerable victims in their home, minimizing their risk of being apprehended, while maximizing chances of rape completion. This behavioural profile is consistent with the *home intrusion track* proposed by Beauregard, Proulx, *et al.* (2007) which is dependent on careful victim selection, offence planning, and a hunter search strategy. These offenders' pre-crime affect was typically of anger, which in turn, may have related to their approach strategy of predominantly threat and violence. During the assault these offenders often used a weapon and were forensically aware, again suggesting a relatively higher level of offence planning.

The most distinct offender characteristic of these offenders was their deviant paraphilic sexual interest. According to Rossmo (2000), deviant sexual fantasies play a key role in serial offending, because the reality of the fantasy can never quite live up to what is imagined, causing the rapist to re-attempt the fulfilment of the fantasy with another victim. The issue of sexual deviance within these offenders is also indicated by other background characteristics such as voyeurism in adulthood (*Diagnostic and Statistical Manual of Mental Disorders 4th edition [DSM-IV]* = 302.82), compulsive masturbation during adulthood (*DSM-IV* = 302.9), acting out fantasies (Beauregard *et al.*, 2005), and commission of previous sexual offences (e.g., Hanson & Bussière, 1998). In terms of general anti-sociality, half of these offenders had previous sexual and violent offences, and 75% had previous convictions for non-sexual, non-violent offences. Their characteristics and criminal history is thus homologous to the sexual deviance and violence evidenced in their assault behaviour.

Macro-cluster 2: Low violence/high victim-type specificity

The upper left macro-cluster is characterized by offenders low in violence (Dimension 1) and high in planning and the specific targeting of children and adolescents (Dimension 2). The cluster grouping suggests a temporal sequence of a *trapper* hunting pattern, selecting *pedo/hebe-specific* victims, approaching victims using a non-violent *persuasive* victim approach and using a *persuasive* strategy to commit the

assault. The key discriminator in this macro-cluster is the almost exclusive targeting of children and adolescents (i.e., pedophilic/hebephilic). Consistent with research into sexual-pressure (Burgess, Groth, & Holmstrom, 1978) and 'seductive' offences (Lanning, 2010), this offender attempts to persuade, manipulate, or entrap the child into sexual behaviour non-violently, mirroring the *family-infiltration rape* track proposed by Beauregard, Proulx, *et al.* (2007). Accordingly, the child victimizer was found to employ a trapper *search* style, infiltrating jobs or positions that gave them access to suitable targets. According to study results, the child victimizer *approach* was 'structured' with victim *selection* based on a combination of vulnerability and a match of 'ideal' characteristics. The *assault* phase of these offenders paralleled their approach to the victim wherein they were non-violent and persuasive. Interestingly, the child victimizer group had a relatively higher percentage of completed sexual acts, such as masturbation and fellatio, than other themes.

In accordance to previous research (Knight, Carter, & Prentky, 1989; Knight & King, 2012), the child victimizer's characteristics resembled an offender relatively high in social competence, as evidenced by their relatively higher frequencies of employment, relationships, social integration, and low anti-sociality. The social competence is evidenced in the offender choosing to use persuasive, rather than violent, strategies during the approach and assault phase.

Macro-cluster 3: Moderate violence/low victim-type specificity

The grouping of action phase clusters at the lower end of Dimension 2 and mid-way along Dimension 1 suggests an offender characterized by the opportunistic (i.e., non-specific) targeting of victims with moderate violence. The action phases indicate an offender using a *troller/poacher* victim search strategy, selecting available *non-specific* victims, using an *opportunistic* approach strategy and often discontinuing the offence after an *attempt* to assault the victim is met with resistance. Victim selection of these offenders was based primarily on the availability of victims, rather than any 'ideal' characteristics. Echoing the results of this study, previous research by Hazelwood and Warren (1995) and Groth (1979) suggest that vulnerability and accessibility often play a significant role in determining victim selection than physical attractiveness in sexual offences. The macro-cluster further suggests that opportunistic offenders typically utilize *tricks and cons* to approach their victim in a way similar to that of the *sophisticated rape track* approach described by Beauregard, Proulx, *et al.* (2007). Since their crime pre-meditation is non-structured, they may find their victims at locations where opportunities already exist (e.g., prostitution market), as evidenced by their predominantly *troller* search style. Their pre-crime affect is sexual arousal with sexual intercourse being the perceived goal. Opportunist's assaults are characterized by the initial use of *threats and violence* with cessation of the attack upon victim resistance. This may indicate an offender who is relatively less motivated by hostility towards women (i.e., misogyny), instead treating them as 'objects' for sexual gratification (e.g., Canter & Heritage, 1990; Gebhard, Gagnon, Pomeroy, & Christensen, 1965).

The characteristics of these offenders are general anti-sociality as evidenced by their greater violent, sexual, and non-sexual/non-violent previous convictions and anger problems in comparison to the other two macro-clusters. Further, this may suggest the emerging picture of an offender for whom rape is just another act of plunder of an altogether anti-social lifestyle (e.g., Guttmacher & Weihofen, 1952; Kopp, 1962). Accordingly, Seghorn and Cohen (1980) identify a sub-group of offenders that have a

general impairment of impulse control; offenders that are socially deviant, rather than sexually or psychologically deviant.

Limitations

Although from a research perspective it is important to illustrate empirically and conceptually that particular crime scene actions may be related to certain characteristics, it remains unclear, and untested, how pragmatically useful the current findings would be in the context of an investigation. In the light of this, one major limitation of the current study from an investigative perspective was the inclusion of a few variables and indeed even phases (e.g., search) that relate to information not available to the police prior to the detection of the likely offender. As such, the purely investigative contribution of this study is somewhat more heavily weighted to the overall utility of the methods. However, despite the pragmatic drawbacks of the methodology for investigators, it is argued that the modest evidence of homology found herein is a direct result of using a broader more comprehensive view of the offence, not often utilized in studies of a more purely profiling or investigative nature.

The introduction of variation in the number of crime events responsible by each offender created an additional level of heterogeneity in the sample that was not controlled for in the current study. As a result bias is introduced due to the non-independence of cases, particularly where an offender is responsible for a disproportional number of crime events within the data sample. Although certainly a limitation, recent research by Deslauriers-Varin and Beauregard (2014) using the current data sample, found that the consistency of offender behaviour was relatively high irrespective of differences in the number of crime events an offender was responsible for.

Towards the conceptualization of a decision-making framework in offender profiling

It becomes apparent that investigating an offence as a non-contiguous process, demarcated by a number of temporal decision-making action phases, allows us to simultaneously compare various methods and aspects of victimization to one another conjointly with offender characteristics as an integrated offence process. In particular, the combination of spatial, behavioural, offender, and situational data makes the integrated process optimal for offender profiling and more specifically, for suspect prioritization. For example, if the approach method is known (e.g., home intrusion), then the probability of particular offence process clusters increase, such as the probable hunting pattern (e.g., hunter strategy) and correspondingly, particular offenders characteristics (e.g., being sexual deviant).

In conclusion, the results of this study only provide a small step towards an operationally useful predictive model, but it does present tantalizing evidence that clear and strong relationships may well exist between the decisions an offender makes and his general nature (e.g., behavioural propensities) or characteristics. It is our vision that much more sophisticated models may be produced by further detailed specification of the various decision-making phases of an offence. This would enable ever-increasing reliable and comprehensive models of the offence process for the purpose of supporting and informing investigative decision making. Nonetheless, integrated process models, such as the one presented herein, may help provide police investigators with an evidence-based approach to validate lines of enquiry in sexual offence investigations.

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