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Classification of Planning and Violent Behaviours in Serial Homicide: A Cross-National Comparison Between South Africa and the US

MARINA SOROCHINSKI[1], C. GABRIELLE SALFATI[2,*] and GERARD N. LABUSCHAGNE[3,4]

[1]*John Jay College of Criminal Justice & The Graduate Center, City University of New York, New York City, USA*
[2]*Department of Psychology, John Jay College of Criminal Justice, City University of New York, New York City, USA*
[3]*Forensic Services Division, South African Police Service, Pretoria, South Africa*
[4]*Division of Forensic Medicine and Pathology, University of the Witwatersrand, Johannesburg, South Africa*

Abstract

Recent literature suggests that different 'styles' of homicide will most appropriately be reflected in the different types of behaviours committed by offenders during the crime. In the last few years, there has been a move to standardise classification systems of single homicides and establish their cross-national generalisability. Literature on serial homicide to date has mostly centred on homicides occurring in the US. However, national differences due to factors such as culture, national identity, political, and socio-economic circumstances may decrease the applicability of these models or certain aspects thereof in other countries and thus must be evaluated. The present study tested the applicability in the South African context of a recently developed US-based serial homicide crime scene classification framework. Specifically, this study compared the thematic differentiation in planning and violent behaviours that the offenders engage in and how this differentiation compares with that in the US. The sample consisted of 25 homicides that were in total responsible for the murder of 267 victims. Results indicated that overall, the framework is useful and applicable in the South African sample, but important environmental and contextual constraints must be taken into account. Copyright © 2014 John Wiley & Sons, Ltd.

Key words: serial homicide; classification; crime scene behaviour; cross-national; cross-cultural

INTRODUCTION

Recent literature suggests that different 'styles' of homicide will most appropriately be reflected in the different types of behaviours committed by offenders during a crime

*Correspondence to: C. Gabrielle Salfati, Department of Psychology, John Jay College of Criminal Justice, City University of New York, 524 West 59th Street, Psychology-10th floor, New York, NY 10019, USA.
E-mail: gsalfati@jjay.cuny.edu

(Salfati & Canter, 1999; Salfati, 2000; Salfati, 2003). A number of authors have stressed the need to standardise classification systems as they are applied to homicide. In particular, Flewelling and Williams (1999) stated that the application of common classification systems across studies would greatly enhance our ability to compare and interpret findings from multiple studies and thereby advance our knowledge regarding the causes and correlates of homicide. The same can be said of findings from different countries. In the last few years, there has been a move to standardise classification systems across studies of single homicide, testing a single classification framework (expressive/instrumental) using homicide samples from various countries, such as the US (Salfati & Bateman, 2005; Sorochinski & Salfati, 2010), the UK (Salfati & Canter, 1999; Salfati, 2000; Salfati, 2003), Greece (Salfati & Haratsis, 2001), Canada (Salfati & Dupont, 2006), Finland (Santtila, Canter, Elfgren, & Häkkänen, 2001), and Korea (Salfati & Park, 2007). Although these studies showed that a single framework can be applicable to homicides in different countries, they also highlight the importance of the awareness of national differences and the need to further explore how these differences may be manifested in the behaviours offenders engage in at crime scenes.

Literature on serial homicide to date has mostly centred on homicides occurring in the US. However, national differences due to factors such as culture, national identity, political, and socio-economic circumstances may decrease the applicability of these models or certain aspects thereof in other countries and thus must be evaluated. Cross-national comparisons can help us identify the common features of serial homicide in general and the distinct features that are influenced by the country in which the homicides occur, and by so doing increase our understanding of the phenomenon both from a theoretical standpoint and in terms of the practical application of the models in the investigative process (Lafree, 1999). Cross-national research enables us to explore local contextual differences in two domains: (1) tool availability and physical environment and (2) psychological factors (Salfati, Labuschagne, Horning, Sorochinski, & De Wet, 2015a). The first domain may impact how the offender plans to commit his or her crimes and what means he or she chooses to accomplish them. For example, certain weapons may be more accessible in some local contexts than others (e.g. a high rate and easy availability of illegal firearms), making it the weapon of choice for the offender. Additionally, the physical environment in which the crime is being committed may influence the offender's decision making in where to procure their victims or how to dispose of the body (e.g. the easily availability of deserted open spaces). The second domain, psychological factors, relates to differences in the socio-economic and national/local customs, attitudes, and practices and may impact the way an offender interacts with their victim.

Considering such potential differences, when a classification model is developed on the basis of the serial homicide that occurs in the US, one cannot be certain that it is generalisable to the way serial homicide offenders behave in other countries, and similar behaviours would have different meanings and implications in other countries. Sorochinski and Salfati (2010), after a review of previous empirical studies on serial homicide classification systems, including the original classification of expressive and instrumental classification system mentioned earlier, aimed to refine this classification work, by looking at specific subgroups of behaviours that other empirical studies had found to be useful (e.g. Bateman & Salfati, 2007; Grubin, Kelly, & Brunsdon, 2001; Salfati & Bateman, 2005). The results from their study provided support for a thematic differentiation within subgroups of offenders' behaviours based on the sequence of cognitive decisions that entail the achievement of the offenders' ultimate goal (i.e. the successful completion of the homicide act). Using this model to test consistency levels gave rise to much higher consistency levels in series, as compared with those of previous studies. The current paper presents the first part of a cross-national replication of Sorochinski

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and Salfati's (2010) study, specifically looking at the applicability of the framework for classifying crime scenes using a sample of South African homicide series in order to establish the generalisability of this approach.

Thematic differentiation within behavioural subgroups

It is argued within the social-cognitive literature (e.g. Carver & Scheier, 2002; Showers & Cantor, 1985) that in achieving a higher goal, people often set smaller, more concrete goals, which would allow them to better adjust to the situation. In line with this argument, whilst the ultimate goal of the serial homicide offender may be the successful commission of multiple homicides, the behaviours that comprise each homicide can be divided into distinct subgroups, each of which has a specific underlying goal and involves making specific cognitive decisions in order to reach that goal. The two main components (behavioural subgroups) of a homicide are the planning of *where* and *how* it will be committed and the actual violence that is involved. The first component, *planning*, is composed of behaviours related to the timing and location of the homicide as well as subsequent efforts to delay or avoid arrest. The level of organisation in the commission of the crime has been an important issue in the literature on serial homicide (Ressler, Burgess, & Douglas, 1986). One of the earliest classification models for serial homicide—the FBI's organised/disorganised dichotomy (Ressler *et al*., 1986)—suggested that offenders who are organised commit crimes that are highly planned, whereas the disorganised offenders' offences lack any sort of planning. In a subsequent empirical test of the model (Canter, Alison, Alison, & Wentink, 2004), it was discovered, however, that planning behaviours are at the core of serial homicide and the vast majority of offenders engage in such behaviours at least to some degree. Planning behaviours can be differentiated on the basis of two cognitive strategies: planning of actions to avoid detection done prior to the offence versus planning cover up actions that take place after the offence has already been committed (i.e. to avoid detection). Here, it can be said that the offender's goals are to facilitate the completion of the homicide and to avoid subsequent detection.

The second group of behaviours is related to the *violence* (as evidenced by wounding patterns) necessary for the actual murder. Direct physical violence as such is a necessary part of most homicides and is often the result of a habitual aggressive response to situational factors by an individual that is based on their previously encoded violent cognitive scripts (Hirschi & Gottfredson, 1994; Huesmann & Eron, 1984). That is, when habitually aggressive individuals encounter situations with similar psychological features, distinctive cognitive and affective states are experienced by the person, resulting in similar (violent) behaviour being exhibited. In addition, in serial homicide, Hickey (2006) proposed that offenders often use the act of homicide as a way of regaining control in their own lives or attempting to restore an equilibrium, and their perceived loss of control may result in increased amounts of violence exhibited by the offender. The ultimate goal of violence or wounding behaviours during a homicide crime scene is the 'successful' infliction of death upon the victim. Offenders may engage in a substantial amount of violence that does not result in a rapid death (i.e. process-oriented, such as sadistic acts) or, to the contrary, use methods that result in a speedy death (i.e. goal-oriented). Each may present a different type of control.

Thematic differentiation within these two subgroups of behaviours was tested as part of a recent study of serial homicides (Sorochinski & Salfati, 2010).[1] The results of the study

[1]A third behavioural subgroup—victim–offender interaction—was also examined in the Sorochinski and Salfati (2010) study. This behavioural subgroup was not included in the present study as it was dealt with in much greater detail in a separate paper, also part of this special issue.

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showed that over 75% of offences could be classified into one of the distinguishing themes within each behavioural subgroup (i.e. pre-offence planning versus post-offence planning and goal-oriented wounding versus process-oriented wounding). In addition, it was found that nearly 60% of offenders were consistent in their behavioural theme within at least one of the subgroups.[2] The authors concluded that the framework was useful for classifying offenders' crime scenes into appropriate themes and provided the first step towards differentiating between series based on a dominant theme.

Aims of present study

As has been mentioned earlier, establishing the cross-national generalisability of frameworks developed in the US as well as other Western countries is an important next step for validating these frameworks (Salfati, 2001). In South Africa, the rates of serial homicide have been on the rise in the recent years (Hodgskiss, 2004), with an average of five new series occurring every year (Salfati *et al.*, 2015a). In addition, the average number of homicides per series is nine—a much higher number than what is usually found in the US and other Western countries (Salfati *et al.*, 2015a). There is, therefore, a great need to better understand the phenomenon within the South African context and establish whether what we know to date about serial homicide in other countries can be applied and used in the investigative efforts of the South African Police Service. The present study thus aims to test how the factors of planning and type of violence, suggested by Sorochinski and Salfati (2010) as described earlier, are manifested in a sample of South African serial homicides.

METHOD

Sample

The present study used a subsample of South African serial homicides that is described in detail in Salfati *et al.* (2015a). The inclusion criteria used in the present study were that the series must consist of at least three crimes and that the order in which the victims were killed was known.[3] The final sample consisted of 25 homicide series committed by 25 solo-operating perpetrators who were in total responsible for the murder of 267 victims.

Consistent with Sorochinski and Salfati's (2010) methodology, for the purposes of this study, only the first three known offences were used for the analyses, bringing the final sample to 75 crime scenes. In six of these offences, there were multiple victims per incident. Horning, Salfati, and Labuschagne (2015) conducted an analysis exploring the inclusion of multiple victim incidents as well as incidents where the victim was left alive within homicide series. Their study tested the interpersonal model of classification in a sample of South African serial homicides with and without multiple and live victim incidents and found that the model remained unchanged regardless of whether the multiple and live victim incidents were included. The authors thus concluded that these various incidents are fundamentally similar and, thus, can be analysed together (Horning, Salfati, & Labuschagne, 2015). In order to avoid disproportionate weight being given to these cases in further

[2]Behavioural consistency using the present classification framework was also examined in the South African sample, and the results are presented in Salfati *et al.* (2015b) as part of this special issue.
[3]These criteria were used to conform to the criteria used in Sorochinski and Salfati (2010).

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analyses, the cases were reduced to a single offence in one of two ways. In four cases, it was determined that only one victim was the main target of the offender and the other one was incidental (e.g. the offender was targeting a female victim at her own residence but did not expect that the victim's brother would also be there at the time of the attack, and the offender thus killed the brother as well as the target victim). Thus, only the information about behaviours related to the target victim was used in the analyses. In two remaining cases, both victims were the intended targets of the offender; therefore, information from both victims was collapsed into one single case for analyses (i.e. if the offender used a knife to murder one victim and a blunt object to murder the other one; both stabbing and blunt force were coded as wounding types in the case).

Victim demographics are reported for the total number of victims ($n = 83$) before the multiple victim cases were collapsed into the 75 cases. Of those victims, 68.7% were women and 31.3% were men. The age was known for 68 of the victims and ranged from 1 to 73 years (M = 27.25, SD = 15.56). Of the victims, 79.5% were Black, 13.2% were coloured,[4] 6.1% were White, and 1.2% were Asian. All of the offenders were men. The age of offenders at the start of the series ranged from 18 to 42 years (M = 29.13, SD = 6.32). The ages of three of the offenders were not known. Of the offenders, according to the South African census classifications, 72% ($n = 18$) were Black, 16% ($n = 4$) were White, and 8% ($n = 2$) were coloured. These numbers are consistent with the demographics of the overall sample reported in Salfati *et al.* (2015a).

PROCEDURE

Coding

The variables used in this study were coded using the Homicide Profiling Index version 4© (HPIv4©), which was specifically designed to be used with police case files. The HPIv4 consists of 217 variables, 147 of which are in a dichotomous or categorical form, 38 of which are measurements (e.g. age, distance, and number of arrests), and 32 are qualitative. The variables found in the HPIv4 account for behavioural indicators of crime scene actions, motivational factors, and detailed demographics of the offender and the victim. Variables are subdivided into sections (such as location, weapons, wounding type and wounding location, post-mortem behaviours, victim background, and offender background). Each variable has a detailed description and guidelines that coders follow in order to reliably code the presence of the variable. Most variables are constructed so that they must be measured according to a strict category of present (1), absent (0), or unknown (999). Such dichotomous coding allows for a more objective analysis (Salfati & Canter, 1999). At the end of each section, there is a descriptor variable where qualitative information pertaining to the section is recorded in order to capture the peculiar details of the crime.

In order to establish the inter-rater reliability for the present study, the four coders (who collected the full data sample) independently coded two serial homicide cases with a total of 12 victims. Analyses were conducted to determine how often raters agreed on the coding of each variable. The overall agreement was 79%. Errors most often occurred when raters

[4]In the South African context, the term 'coloured' refers to an ethnic group of people who possess some degree of sub-Saharan ancestry but not enough to be considered Black under South African law. They are technically mixed race and often possess substantial ancestry from Europe, Indonesia, India, Sri Lanka, Bangladesh, Maldives, Nepal, Madagascar, Mozambique, Mauritius, St. Helena, and Southern Africa.

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disagreed on whether the variable was absent (0) or unknown (999) in the file. These categories, however, are most commonly merged for the purposes of further analyses (Salfati, 2006). When the 'absent' and 'unknown' categories were collapsed, rater agreement increased to 89.5%. Errors were extensively reviewed and discussed to resolve questionable issues, and several variable definitions were clarified as a result. Throughout the coding process, the team would continue to discuss the coding to ensure agreement.

Variable selection

Variables were selected from the HPIv4 and categorised into behavioural groups. The behaviours were selected on the basis of Sorochinski and Salfati (2010) and included variables relating to planning and violence that the offender engaged in during the commission of the crimes. These variables are listed in Tables 1 and 2.

Group 1—planning

The offender's degree of success in reaching the overarching goal (i.e. the continued commission of homicides) is contingent upon their ability to choose the best strategy in planning each of their crimes that would enable them to not only complete the present homicide but also successfully evade capture (thus allowing them to commit subsequent crimes). Two themes were evident in this group of behaviours (Sorochinski & Salfati, 2010), each of which may be conceptualised as a distinct cognitive strategy, namely,

Table 1. Planning behaviours

Variable name (SSA abbreviation)	South African sample $N = 75$ (% total)	US sample $N = 57$ (% total)
Pre-offence planning		
Weapon brought to scene (weapto)	27 (36.0)	21 (36.8)
Crime occurred during the day (daystart)	17 (22.7)	14 (24.6)
Body found inside (inside)	8 (10.7)	23 (40.4)
Body found in victim's residence (vicres)	8 (10.7)	11 (19.3)
Evidence of forced entry (forceent)	4 (5.3)	2 (3.5)
Forensic evidence avoidance	4 (5.3) 69.3% unknown	6 (10.5)
Preparatory acts	1 (1.3)	8 (14.0)
Post-offence planning		
Body hidden post-mortem (hiddenpm)	11 (14.7)	6 (10.5)
Arson (arson)	5 (7.2)	N/A
Body found in a car (loc_car)	4 (5.3)	N/A
Body transported (transpm)	4 (5.3)	13 (22.8)
Revisited crime scene	5 (6.7) 81.3% unknown	12 (21.1)
Forensic evidence removal	2 (2.7) 70.7% unknown	9 (15.8)
Spent time at the crime scene	5 (6.7) 58.7% unknown	16 (28.1)
Body found in offender's residence	0 (0.0)	8 (14.0)
Staging crime scene	0 (0.0)	1 (1.8)

Note: The numbers reported for the US sample are those reported in Sorochinski and Salfati (2010). Arson and body found in a car variables were not included in the original study but were included herein because they appeared to be important behaviours in the context of South African homicides, whereas it was not the case in the US context (e.g. in South Africa, offenders used arson as a way of cover up, whereas in the US, offenders used other ways to remove evidence).
SSA, smallest space analysis.

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Table 2. Wounding behaviours

Variable name (SSA abbreviation)	South African sample $N = 75$ (% total)	US sample $N = 57$ (% total)
Goal-oriented wounding		
Injury to face (face)	24 (32.0)	23 (40.4)
Injury to head (head)	29 (38.7)	19 (33.3)
Blunt instrument (bluntins)	26 (34.7)	9 (15.8)
Manual wounding (manual)	18 (24.0)	8 (14.0)
Shooting (shooting)	10 (13.3)	8 (14.0)
Asphyxia (asphyxia)	2 (2.7)	6 (10.5)
Process-oriented wounding		
Multiple wounds distributed (multdist)	31 (41.3)	29 (50.9)
Strangulation (strangul)	27 (36.0)	28 (49.1)
Injury to neck—strangulation (neck_strang)	20 (26.7)	28 (49.1)
Injury to torso (torso)	16 (24.5)	35 (61.4)
Stabbing (stabbing)	12 (16.0)	11 (19.3)
Injury to neck—stabbing (neck_stab)	9 (12.0)	9 (15.8)
Injury to pelvis (pelvis)	4 (5.3)	9 (15.8)

Note: The numbers reported for the US sample are those reported in Sorochinski and Salfati (2010).
SSA, smallest space analysis.

'pre-planning' (where the offender took steps prior to the crime [e.g. bringing a weapon to scene, scouting a suitable location beforehand, and avoidance of leaving forensic trace evidence]) and 'post-planning' (where the offender attempted to avoid discovery of the crime and possible identification and arrest [e.g. removing forensic evidence and transporting the body away from the scene after death]). In terms of risk for the offender associated with the planning behaviours (that may be part of the decision-making process in choosing the best strategy), there were also two distinct varieties. The pre-planning theme included behaviours associated with higher risk for the offender during the actual commission of the crime (e.g. committing the crime during the daylight and evidence of forced entry), whereas post-planning theme included behaviours that pose risk after the crime has already been committed (e.g. spending time at the crime scene and revisiting the crime scene).

Group 2—wounding

The offender's goal of killing the victim may be achieved using different strategies, some of which may be more efficient than others. Here, two distinct behavioural themes were evident, each of which reflects a different cognitive strategy (Sorochinski & Salfati, 2010). The first theme, 'process-oriented', included behaviours associated with a lengthy type of murder (e.g. multiple wounds, stabbing, strangulation, and wounding to the neck and pelvic region). These behaviours are also commonly associated in the clinical literature (e.g. Holmes & Holmes, 1998) with sexualised murder. The second theme, 'goal-oriented', included behaviours associated with a quick kill (e.g. shooting, bludgeoning, and wounding to the head and face). These behaviours are also associated with more control of the scene by the offender (i.e. shooting someone with a gun once is a much more controlled act with less possibility for unexpected events happening than stabbing someone multiple times).

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RESULTS

Variable inclusion and frequency comparison

In order to determine whether behaviours that were found to be useful in differentiating between crime scenes in the US sample (Sorochinski & Salfati, 2010) are also present and useful in the South African sample, a frequency analysis was conducted. Tables 1 and 2 show the behaviours that comprised the behavioural subgroups divided by theme based on the original findings from Sorochinski and Salfati (2010) and compare the frequencies from the two samples. Several behaviours that comprised the subgroups in the US sample had to be excluded from analysis in the South African sample. Notably, within the planning subgroup, behaviours such as forensic awareness, spending time at the crime scene, and preparatory actions had to be excluded because in the vast majority of cases (58.7–81.3%), it was unknown whether the behaviour occurred. Overall, the behavioural frequencies within this subgroup were lower than what were reported by Sorochinski and Salfati (2010) in the US sample. As seen in Table 1, only two behaviours in the South African sample occurred in the 20–50% frequency range (compared with six behaviours in this frequency range in the US sample), only three behaviours occurred in the 10–19% frequency range (compared with five in the US), and 11 behaviours appear in the 0–9% frequency range (compared with two in the US). Variables that were excluded from further analysis appear in italics in the tables. The implications of these differences between the two samples will be discussed later in this paper.

Identifying behavioural themes

The aim of the present study was to test whether the thematic differentiation within the behavioural subgroups of planning and violence found in the US sample is also evident in the South African sample of serial homicides. A smallest space analysis (SSA) (Shye, Elizur, & Hoffman, 1984) was conducted to identify thematic divisions within each behavioural subgroup. SSA is a multidimensional scaling procedure that allows for the analysis of behavioural co-occurrences within the dataset. SSA results in a visual representation of the data where each variable is represented as a dot in a three-dimensional geometrical space with variables that often co-occurred in the dataset appearing closer to each other and variables that do not co-occur often appearing farther from each other. This type of analysis permits the identification of clusters of behaviours with a common underlying theme that is most likely to occur together during a given crime. The use of SSA for crime classification analysis was first successfully implemented by Canter and Heritage (1990) and has been extensively used in the empirical research on wide array of crimes since then. An individual SSA was performed for each behavioural subgroup in order to identify the themes within each of the subgroups.

A coefficient of alienation gives the value of how well the spatial representation fits the data. The lower this coefficient is, the better the fit (i.e. the better the geometrical representation approximates the true relationship between the variables in the data). It is generally accepted that for this type of data, a coefficient of 0.2 is considered a good fit (Shye *et al*., 1984).

All SSAs were conducted using the full sample of 75 homicides.

Group 1—planning

Figure 1 shows the resulting SSA for the first behavioural subgroup that included nine behaviours associated with planning the crime. As can be seen from the plot, the variables associated with the pre-offence planning theme are clustered together, and the variables

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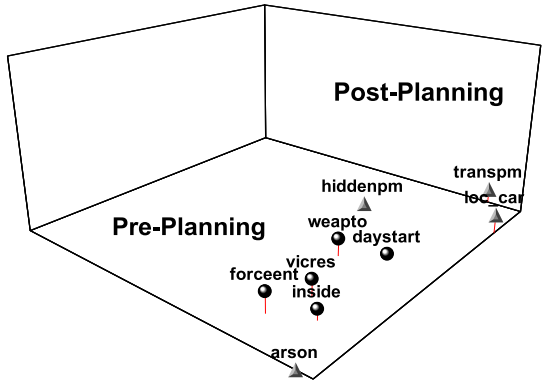


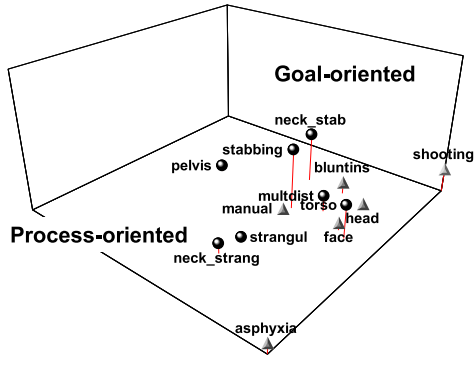
Note: Behaviors associated with the theme pre-planning appear as circles on the plot, and behaviors associated with the theme post-planning appear as triangles.
The Jaccard coefficient of alienation in this analysis was 0.070 signifying an excellent fit for the data.

Figure 1. Smallest space analysis plot of planning behaviours subgroup.

associated with the post-offence planning theme are scattered around them. Post-offence planning behaviours appear somewhat more scattered; however, this is probably because, as seen in Table 1, these behaviours were of low frequency in the South African sample. The lack of post-offence planning behaviours will be further discussed later. Overall, the thematic differentiation is present and clear.

Group 2—wounding

Figure 2 shows the SSA plot for the second behavioural subgroup that included 13 behaviours associated with the way the offender chooses to wound the victim. Thematic differentiation of goal-oriented versus process-oriented wounding is evident in the South African sample. The goal-oriented wounding behaviours appear around the bottom right-hand side



Note: Behaviors associated with the theme process-oriented appear as circles on the plot, and behaviors associated with the theme goal-oriented appear as triangles.
The Jaccard coefficient of alienation in this analysis was 0.114 signifying an excellent fit for the data.

Figure 2. Smallest space analysis plot of wounding behaviours subgroup.

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of the plot, whereas the process-oriented wounding behaviours appear in the upper centre of the plot. Multiple wounds distributed—a variable that was found in Sorochinski and Salfati (2010) to be associated with process-oriented wounding—seems to be centred here between the two behavioural themes because of its higher frequency compared with other variables (as seen in Table 2).

In sum, thematic differentiation in planning and violence behaviours in the present South African sample, as a whole, was found to be consistent with what has previously been found in the US sample of serial homicides despite differences in the presence of some individual behaviours within the subgroups. The next step, therefore, was to examine whether each *individual* crime scene could be reliably classified into one dominant theme within each behavioural subgroup, prior to examining the consistency levels of the offender's use of these themes across their series (Salfati *et al.*, 2015b).

Classification of crime scenes

Salfati and Bateman (2005), in their study of serial homicide, reported that the most useful criteria for identifying the dominant theme included (1) semi-stringent criteria where the proportion (%) of behaviours from one theme was one and a half times greater than the proportion of behaviours from the second theme and (2) more stringent criteria where the proportion of behaviours from one theme had to be twice as large as the proportion of behaviours from the other theme. Trojan and Salfati (2008) did a thorough examination of cut-off criteria reported across different studies in the literature and concluded that these were the most appropriate cut-off point to determine consistency. The same cut-off criteria were therefore used in Sorochinski and Salfati (2010).

Table 3 shows the resulting classification for each of the behavioural subgroups. Consistent with Sorochinski and Salfati (2010), 72% of cases in the wounding subgroup and 76% of cases in the planning subgroup could be classified using the less stringent criterion. With the more stringent criterion, 61.4% of cases within the wounding subgroup and 70.7% of cases within the planning subgroup could be classified. Of note, however, is that within the planning subgroup, crime scenes were classified into either pre-offence planning (38.7–44%) or no planning (32%) rather than post-planning. This is related to the frequencies analysis reported earlier. It appears that South African offenders overall engage in little planning, and if they do, this planning mainly occurs prior to the crime rather

Table 3. Thematic dominance analysis

	×1.5 criterion (%)	×2 criterion (%)
Group 1—planning		
Total classified	76.0	70.7
Pre-planning	44.0	38.7
No planning	32.0	32.0
Post-planning	14.7	14.7
Hybrid	9.3	14.7
Group 2—wounding		
Total classified	72.0	61.4
Process-oriented	37.3	30.7
Goal-oriented	34.7	30.7
Hybrid	16.0	26.7
No behaviours present	12.0	12.0

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than planning to cover it up. Classification patterns in the wounding behavioural subgroup were generally consistent with the findings in the US sample. However, the split between the themes was more equally distributed in the South African sample. Sorochinski and Salfati (2010) found that in the US sample, process-oriented wounding was much more prevalent than the other theme, whereas in the South African sample, the thematic classification distribution is almost even between two themes.

DISCUSSION

The present study aimed to test whether the behavioural themes in planning and violence identified in the US sample of serial homicides were also present in a sample of South African serial homicides. The results showed that the overall thematic framework fits well with the South African sample despite differences in the presence and frequency of individual behaviours. The one major difference that was identified is related to the planning behaviours subgroup. Overall, South African offenders engaged in less planning behaviours (as seen from the comparison of behavioural frequencies across the two samples). Additionally, although the US offenders were found to engage in pre-offence planning or post-offence planning, South African offenders were found to either plan ahead or not plan at all. This difference may be associated with the differences in the environment in which the homicides are committed in these two countries. As discussed in Salfati *et al*. (2015a), in South Africa, the vast majority of the homicides were found to occur outside, in fields, and rural areas, whereas in the US, the majority of serial homicides occur in urban areas or inside a structure. Such difference in itself suggests that more planning to cover up a crime is necessary within the US environmental context, whereas in South Africa, the natural environment serves as a cover up of its own (i.e. finding a body in a maize or sugarcane field or a deserted open space is very difficult, and there is very little chance to collect forensic evidence such as fingerprints, and thus, if the crime occurred there, there is little need to undertake any further actions to cover up or avoid detection). What is of note is that planning in the US context differs significantly from planning in the South African context. In South Africa, serial murderers tend not to own or have access to vehicles; therefore, they must lure victims to accompany them to predetermined comfort zones where it is isolated and safe enough to commit their crime and subsequently leave their victim's body. Although a US serial murderer might divide this into three phases or locations (meeting the victim in one place, murdering them in another, and transporting their body to another), the South African offender collapses it into two phases or locations, one place where they meet the victim and one place where they murder and leave the body. Hence, transportation of the victim does take place, whilst the victim is alive as the offender lacks a means to take the victim to a third body disposal location. Furthermore, a body left in the open decomposes faster than a buried one, and in South Africa, predators (animals/insects) quickly scavenge a body. Murdering someone in their home (often associated with planning in the US), although not unheard of in South African series, is often not practical because in informal settlements many people live in one shack, and these shacks are usually built one on top of another, and in suburbs, people are very security conscious because of the high crime rate, which makes it difficult to get into someone's home. If a South African serial homicide offender had to do what US serial murderers do, it would most probably be an ineffective strategy for success.

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Overall, despite these differences, it was found that the thematic differentiation within planning and violence behavioural subgroups fits in both the US and South African samples of serial homicides, confirming its utility. Such results have important implications for future research, as they suggest that empirical studies of serial homicide that are being developed in Western countries, such as the US, can be used as a basis to study serial homicide in other non-Western countries as well. From a practical standpoint, as the rates of serial homicide in South Africa are very high whilst their resources for solving these crimes are stretched to capacity, knowing that current advances in research in countries such as the US can be applicable and useful in the South African context is very important. It suggests that possible training and other ways of disseminating the findings from other countries can be of use to the South African Police Service. The study also shows, however, that it is important to be aware of the environmental, socio-economic, and cultural specifics and make the necessary fine-tuning and adjustments to the models on the basis of the constraints presented by a particular country. This is particularly relevant when making assumptions about the same crime behaviours occurring in different contexts as mentioned earlier. Future research should therefore continue to test the framework within other countries and cultural settings, which will enable us to identify the factors that are more prone to instability because of cultural and environmental differences as well as those factors that remain stable and thus can be said to characterise serial homicide as a whole.

One crucial issue in the study of serial homicide that relates to the ability of the investigators to link several crimes into a single series is behavioural consistency (Labuschagne, 2010). The present study provides a view regarding the first part of this issue by showing that serial homicide offenders' crime scenes can be reliably classified using the cognitive strategy themes and behavioural subgroups approach. More importantly, this study shows that there may be some basis for using a similar behavioural model to understand patterns of offending in multiple national contexts, in this case, the US and South Africa.

The second part of the consistency question focuses on whether offenders remain consistent across their crimes in the dominant behavioural themes they exhibit. Sorochinski and Salfati (2010), in their study, conducted a consistency and change patterns analysis within the US sample and found that, although consistency within each individual behavioural subgroup ranged from 32% to 42% and only 10.5% of offenders were consistent across both behavioural subgroups, overall, around 60% of offenders were consistent in the dominant theme they exhibited in at least one of the behavioural subgroups, suggesting that it is useful to search for consistency in subgroups of behaviours rather than across all crime scene behaviours taken together. The comparative analysis of the behavioural consistency trends in the South African sample, which was the next step of examining serial homicide in the South African context, found comparable patterns, and the detailed results of this analysis are presented in Salfati, Horning, Sorochinski, and Labuschagne (2015a).

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