Homicide Detectives' Intuition

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Abstract

Little is known about the decision making processes of homicide detectives; this study is a first step towards understanding the inferential processes they engage in during the initial stages of an investigation. A card sorting exercise consisting of twenty crime scene photographs showing homicide victims in-situ was designed to examine how detectives categorise and conceptualise homicide crime scenes. Forty homicide detectives were asked to 'think aloud' whilst categorising the crime scenes. Qualitative content analysis of the 'think aloud' accounts revealed detectives' intuitive ability to automatically make detailed inferences regarding the circumstances surrounding each homicide based on available crime scene information (victim sex, location and method of death). A cycle of cognition was evident whereby detectives drew upon the contextual information available to generate hypotheses regarding homicide type (domestic, male brawl and crime related) and derive inferences about victim-offender relationship, offender behaviour, motive and whether the offence was spontaneous or planned. The detectives made 594 inferences of which 67% (N=398) were accurate. The sorting exercise proved to be ecologically valid, with detectives reporting that they assessed and interpreted the homicide crime scenes as they would in an actual investigation. The implications for police training and 'offender profiling' research are discussed.

Key words: Intuition, Inferences, Decision Making, Homicide Investigation

INTRODUCTION

Research on police decision making to date has tended to focus on decision biases (Ask and Granhag, 2007; Rossmo, 2006; Stelfox and Pease, 2005). Drawing upon the Naturalistic Decision Making (NDM) paradigm developed to examine the way people use their experience to make decisions in field settings (Zsambok, 1997), it is argued that there is a need to understand how the skills, knowledge and experience of homicide detectives shapes and influences their decision making processes.

With a national annual detection rate of 85-90%, the police are clearly effective at investigating homicide. Innes (2003) estimates that around 70% of homicide cases are 'self-solvers' with a suspect identified within 24 to 48 hours of a victim's body being discovered. The remaining 30% of cases referred to as 'whodunits' are more complex. 'Whodunit' investigations are characterised by a lack of an identifiable suspect and no apparent relationship between the victim and offender. The type of decisions made in 'self-solver' and 'whodunit' investigations are not explored by Innes (2003). It is therefore hypothesised that the emphasis on information capture in 'self-solver' investigations will result in detectives making more procedural decisions which focus on building the case against a suspect. Intuitive decision making is more likely in 'whodunit' investigations as detectives carry out a search for information to identity possible suspects.

Procedural decisions

There are standard procedures that need to be followed during a homicide investigation. These are taught during detective training and detailed in investigative guidance (ACPO, 2006). During the initial stages of an investigation fast track actions aimed at preserving evidence and establishing facts to quickly detect the crime will be carried out. These include securing the scene for forensic examination and conducting an immediate trawl for witnesses. Although examining the types of procedural decisions made by detectives would provide an insight into what investigations entail, they would provide little information about the cognitive processes detectives engage in. This is because procedural decisions comprise of routine actions that must be carried out and therefore require less cognitive effort and skill.

Intuitive decisions

Intuitive decisions are the most psychologically interesting. Intuition is defined here as the ability to automatically go beyond the information available to develop hypotheses and make inferences. Regarded as a mystical phenomenon commonly expressed in terms such as 'hunches', 'gut feelings' and 'sixth sense', intuition has received little research attention (Hogarth, 2001). The mystique surrounding intuition can, however, be dismissed by viewing it as a form of thinking based on tacit information processing (Perkins, 1977; Hogarth, 2001), which is a form of rapid cognition (Gladwell, 2005) resulting from experience (Klein, 2003; Perkins, 1977).

Intuition tends to be ascribed to individuals with a high level of knowledge and experience within a specific domain (Hogarth, 2001; Klein, 2003). Individuals with a greater knowledge base are better equipped to make intuitive decisions. Although commonly believed that intuition cannot be articulated, a study by Crandall and Getchell-Reiter (1993) showed that intuitive processes could be elicited by asking experienced nurses to recall specific incidents of the identification of sepsis in neonatal intensive care units. A list of cues to aid the detection of sepsis was identified which proved useful for training less experienced nurses. Abernathy and Hamm (1995) also used 'think aloud' accounts to capture the expertise of surgeons to develop the intuitive skills of medical students.

In relation to policing, Pinizzotto et al (2004) advocate that police officers can be trained to become alert to their intuitions. Investigative experience provides detectives with a knowledge base from which intuition can develop. The ability to derive inferences and form hypotheses is vital during the early stages of an investigation when the Senior Investigating Officer (SIO) has to swiftly determine the nature of the offence and set lines of enquiry. Police in the UK use the term 'golden hour' to emphasise the significance of the decisions made during the initial stages as being crucial to the success of an investigation. It is this period of time, which commences when police are notified of a death, which is the focus of this study. The study aims to examine the thought processes detectives engage in when first notified of a murder; how they categorise and conceptualise different homicide crime scenes and whether the cognitive processes of experienced detectives differ from those less experienced.

METHOD

Design

A card sorting procedure was used to explore how detectives categorise and conceptualise homicide crime scenes. Sorting procedures provide a methodology for understanding the conceptual systems through which individuals interpret, understand and arrange information (Canter et al, 1985). Participants are asked to sort material into categories based on perceived similarities. The advantage of card sorting exercises is that they permit an examination of individual's knowledge structures whilst enabling comparisons to be made between individuals and groups. Examining qualitative as well as quantitative aspects of individuals' conceptual systems is considered important (Wilson and Canter, 1993). This can be achieved by asking participants carrying out the sorting task to 'think aloud' as they are categorising the material.

Materials

Twenty crime scene photographs of homicide victims in-situ, as originally discovered by police, were selected from an archive of case files. The case files were all over 20 years old and had been made available by different UK police forces. The scene photographs consisted of 10 male, 9 female and 1 child victim, discovered at either an indoor or outdoor location. The victims had either been beaten, stabbed, strangled or shot (see Appendix 1 for details).

The crime scene photographs were laminated onto separate cards and numbered from 1-20 for recording purposes. Each scene was accompanied by a short description detailing the sex and age of the victim, the location where the victim was discovered, method of death and any additional information that would have been apparent to detectives on arrival at the crime scene.

Participants

Forty detectives from three UK police forces participated in the study. All of the detectives worked within specialist units dedicated to investigating homicide. The ranks of the detectives ranged from Detective Constable (DC) to Detective Chief Superintendent (DCS). Thirty eight of the detectives were male. Age ranged from 36-59 years, with a mean of 46 years (SD=5.40). The number of years the detectives had worked for the police service ranged from 12-34 years, with an average of 24 years

service (SD=5.84). The detectives had worked within the Criminal Investigation Department (CID) for 4-28 years, with a mean of 18 years (SD=5.93). Twenty eight of the detectives had been an SIO, leading serious crime investigations for 6 months to 12 years, with an average of 5 years experience in this role (SD=3.16).

Procedure

The homicide crime scene sorting exercise was carried out with each detective individually at their place of work. The following instructions were read aloud:

> *"Look over the 20 crime scenes and then sort them into groups. You can put the crime scenes into as many groups as you like. I would like you to group them so that all the crime scenes in a group are similar to each other in some way but different from those in another group".*

Each detective was asked to 'think aloud' as they were looking at each crime scene and sorting them into groups, to capture their thought processes which were tape recorded. Once the crime scenes had been categorised, the detective was asked to describe each of their categories and explain how each category differed from the other categories. A coding matrix was used to record how each detective categorised the scenes. The sorting task took approximately 1½ hours to complete. On completion the detectives were debriefed and asked for their feedback on the exercise.

Analysis

To examine the key conceptual structures underlying how the detectives categorised the crime scenes, the sorting task data was analysed using Multidimensional Scalogram Analysis (MSA). MSA is a non-metric Multi Dimensional Scaling (MDS) procedure which provides a geometrical representation of categorical data. The results of the analysis are presented as points in geometric space, where distances between elements reflect empirical relationships (Lingoes, 1968). Points on the output plot (in this case representing each of the twenty crime scenes) appearing close together have been categorised together more frequently, with those further apart being categorised separately and therefore conceptualised differently.

'Think aloud' accounts

The 'think aloud' accounts totaling approximately 56 hours were transcribed from tape verbatim. The verbal protocol data was then coded in three stages: number of inferences, type of inferences and accuracy. An inference was defined as any instance whereby detectives went beyond the crime scene information presented and developed hypotheses regarding the circumstances surrounding the homicide. The coding of the number of inferences was dichotomous, each detective either made an inference for each of the twenty crime scenes or they did not. Inter-rater reliability was measured using Cohen's Kappa $\kappa = .93$; $p < 0.01$, which demonstrated a high level of coding agreement.

Where an inference was made, the type of inference was coded into eight categories: homicide type, victim offender relationship; motive; victim information; offender information; planned; spontaneous; dumpsite. The accuracy was determined by comparing the inferences made with the information contained within the homicide case files for each scene. Each inference was then coded according to the following categories: accurate; inaccurate; alternative/opposite; unable to prove.

An accurate/inaccurate inference indicated that the detective was correct/incorrect in terms of either: the type of crime (e.g. sexual, domestic, burglary); victim offender relationship (e.g. known or unknown); victim lifestyle (e.g. vulnerable, alcohol, mental health); offender (e.g. previous convictions, type of offender - sex offender); motive (e.g. sexual, theft, planned or spontaneous).

The alternative/opposite coding category referred to instances whereby detectives made an inference about the crime scene but then went on to state an alternative or opposite inference. The alternative/opposite category was similar to the multiple out category used by Alison et al (2003) in their analysis of claims made in offender profiles which covered: "Any example where the profile refers to a given characteristic and its opposite or an alternative" (pg 183). The accuracy of such claims could not be coded because where one inference could be confirmed the other could be refuted.

The unable to prove category covered those instances where a detective made an inference but the accuracy or inaccuracy could not be determined because the information was not available in the police case file. An example of this was an inference made for scene 16 by Detective 31 who deduced that the offender had knowledge of the area where he had dumped the victim. The case file did not contain

any detail about whether or not the offender knew the area where the victim was discovered, therefore, the accuracy or inaccuracy of this inference was unknown and coded as unable to be proved.

Inter-rater reliability for coding the accuracy of the inferences measured by Cohens Kappa was $\kappa = 0.70$, indicating a sufficient level of agreement between the two coders. The lower level of inter-rater agreement compared to the coding for the number of inferences is likely to be related to the wealth of information which had to be consulted from the case files whilst coding the accuracy/inaccuracy of the inferences.

RESULTS

The forty detectives created a total of 342 categories with the twenty crime scenes. To analyse whether there were any differences in the number of categories created by detectives of different ranks, the participants were divided into four groups: Detective Constables and Sergeants (DC/DS's N=10), Detective Inspectors (DI's N=10), Detective Chief Inspectors (DCI's N=10) and Detective Superintendents (D/Supts=10). There was variation in the number of categories created: DC/DS's created an average of 7 groups, DI's 9 groups, DCI's 8 groups and D/Supt's 8.5 groups. The differences in the number of groups created across the four ranks were not statistically significant $F(3, 36)=0.639$, $p > 0.05$.

A 2 dimensional MSA plot for the crime scene categories created by all forty detectives is shown in Figure 1. The numbers on the plot correspond to each of the crime scenes. The extent to which MSA is able to represent each of the crime scenes as points in a geometric space is indicated by the coefficient of contiguity. The coefficient of contiguity is 0.92, with 12 iterations, 0.9 and above is deemed acceptable (Wilson and Mackenzie, 2000). The MSA output is interpreted by dividing the plot into regions based on the distances between crime scenes together with the descriptions the detectives gave for each of their categories. Regions are drawn onto the plot that best represent the categorisations used by the detectives.

[Insert Figure 1]

Regional analysis of the MSA plot in conjunction with the 'think aloud' accounts revealed three types of homicide: domestic, crime-related and male brawls. These

three types of homicide represented detectives' dominant conceptual structure which influenced how they categorised and interpreted the crime scenes. Within each of the three identified homicide types there was a distinction between the sex of the victim and discovery location (indoor/outdoor). The characteristics of the three homicide types were as follows:

Domestic Homicides

Nine crime scenes constitute the domestic homicide region of the MSA output (scenes 2, 3, 4, 7, 9, 10, 13, 14, 19). There are six females, two males and one child victim. All of the victims were discovered at their home address. The victims had either been stabbed, strangled, shot, or died as a result of multiple injuries inflicted by the offender. The detectives hypothesised that these killings were likely to have been committed by someone known to the victim and who had access to their home address. Scenes 4 and 7 which both involved male victims who had been strangled at their home address are located at the top right of the MSA plot, illustrating how these two scenes were categorised separately from the female victim scenes.

The 'think aloud' data for scenes 14 and 19 revealed that the majority of detectives perceived these two offences to be elderly victim artifice burglaries. These were the only two crime scenes that did not correspond with the regional interpretation of the MSA output according to the type of homicide inferred by detectives. The defining feature, however, of all the scenes within this region was the domestic nature of the location in which all of the victims had been discovered.

Crime-Related Homicides

Six homicide crime scenes formed the crime-related region (scenes 6, 8, 16, 17, 18, 20). There were three female and three male victims. Two of the scenes were indoors and four outdoors. The victims had either been shot, strangled or stabbed. This group is termed crime-related because detectives inferred that these homicides had taken place during the commission of another crime such as robbery (scenes 8 and 17), drug/gang related execution (scene 16) or a sexual assault (scenes 6, 18 and 20).

Male Brawls

The male brawl category consisted of five homicides (scenes 1, 5, 11, 12, 15) all involving male victims who had been stabbed, four outdoors and one indoors at a

disco. Detectives categorised these as spontaneous or planned revenge attacks carried out by another male, possibly known to the victim, which were likely to have occurred at the weekend in, or around social venues, where drink and/or drugs may have been consumed.

Detective Cycle of Cognition

The key finding to emerge from the study was the way in which the detectives when presented with the crime scene material began to form detailed narratives of the circumstances in which they thought the homicides had occurred. Analysis of detectives' 'think aloud' accounts revealed a cycle of cognition. Detectives began by assessing the homicide crime scene based upon the information available (sex and age of victim, method of death and location), generated hypotheses about the nature of the homicidal event and made inferences regarding homicide type (domestic, crime-related, male brawl), followed by the decisions they would make. To illustrate how the cycle of cognition was apparent in how the detectives interpreted and assessed the crime scenes, extracts from three detectives 'think aloud' accounts for a crime scene categorised as domestic, crime-related and male brawl are presented in Figures 2, 3 and 4.

[Insert Figure 2]

For scene 13 (Figure 2) the detective begins by focusing upon what they consider to be the salient features of the crime scene, a chair toppled over, cards and possible Christmas decorations, to generate the hypotheses that this is likely to be a domestic homicide due to the possible time of year and it appearing to be a contained assault within the victim's own home. The inferences drawn about this homicide lead the detective to conclude that they would start by looking at individuals known to the victim.

[Insert Figure 3]

A detective's conceptualisation of scene 6 (Figure 3) focuses on the stripping of the victim's clothes and the way her body has been displayed to generate the hypothesis that "this is likely to be a stranger rape". Once categorised as a stranger rape the

detective goes on to infer the offender's sexual motivation, control and possible planning of the offence. This is followed by the series of actions this detective would carry out.

[Insert Figure 4]

For crime scene 12 (Figure 4), one of the detectives noted the similarity of this scene with other "street murders" previously investigated and inferred a range of motives for these types of homicide. Based on the success of investigating previous similar cases, evidence gathering from CCTV surrounding the area where the victim was discovered would be a key line of enquiry.

The detective cycle of cognition illustrates how detectives drew upon the contextual features of each case (victim, location and method of death) and their own knowledge base/experience to derive inferences and make decisions about what course of action they would take to identify the offender. These cognitive processes are similar to Klein's (2003) Recognition Primed Decision (RPD) model. Klein's (2003) model starts with the decision maker identifying cues from a situation. These cues enable the decision maker to recognise patterns. Recognition of patterns activates action scripts based on mental models which influence how situations are assessed. Mental simulation involves the decision maker evaluating courses of action, which requires conscious processing of information. When a situation is recognised as typical the decision maker immediately knows what action to take and information processing is unconscious and automatic.

Detectives' intuitive ability to make inferences from crime scene material suggests that 'profiling' is an integral part of detective work. When faced with the body of a victim, detectives will begin to formulate a theory about the circumstances which could have led to the victim's death, based on their investigative experience. The following section examines the number and type of inferences the detectives made and the accuracy of these inferences.

Number of inferences

The detectives made a total of 594 inferences. Figure 5 depicts the variation in the number of inferences made according to detective rank.

[Insert Figure 5]

The D/Supt's made significantly more inferences than the DC/DS's $t(18) = 10.33$, $p < .01$, as did the DCI's $t(18) = 6.79$, $p < .05$ and the DI's $t(18) = 5.96$, $p < .05$; providing empirical support for the role of experience according to rank increasing the ability to derive inferences from crime scene material.

Types of inferences

The most frequent inference made by detectives was regarding homicide type (see Table 1). This supports the regional analysis of the MSA output (Figure 1) and the identification of three distinct homicide types: domestic, crime-related and male brawl. Detectives made more inferences for the scenes categorised as crime-related (82% N=197 out of a possible 240) followed by the domestic homicides (77% N=278 out of a possible 360) then the male brawls (60% N=119 out of a possible 200). From the basic crime scene information presented, detectives also deduced the likely relationship between the victim and offender, which accounted for 20% (N=119) of all inferences made.

[Insert Table 1]

Inferences about motive were quite rare (9% N=53). This maybe because homicide type and motive are interlinked concepts. For example if a detective states that a homicide is crime-related they are not only making an inference about the type of homicide but the motive for the crime also. Inferences about the offender were also infrequently made (9% N=53). This finding has implications for the contribution of Behavioural Investigative Advisers (BIAs) because an essential part of their role is to provide SIOs with suggestions about the likely characteristics of an offender based upon an analysis of crime scene actions.

Accuracy of inferences

"There is a lot to be gained from looking at the scene. But you could get it horribly wrong at the same time" (Detective 8, DI).

The study did not originally set out to examine the accuracy of the inferences detectives made, this was carried out as a result of the detailed narratives the detectives developed. Out of the 594 inferences made, 67% (N=398) were coded as accurate, 23% were inaccurate (N=136), 9.5% (N=55) alternative/opposite and 0.5% (N=3) were unable to be proved.

For three of the scenes (scene 20, 19 and 16) the inferences made were overwhelmingly accurate: 94% (N=34) for scene 20, 89% (N=24) for scene 16 and 86% (N=31) for scene 19. None of the inferences made for scenes 10 and 6 were inaccurate, although a very small number of inferences were coded as opposite/alternative (6%, N=2 scene 10; 3%, N=1 scene 6).

Scenes 1 and 12 were the only scenes which had a similar percentage of accurate, inaccurate and opposite/alternative inferences made by detectives. Both were defined as male brawls in public settings. The victim in scene 1 had been stabbed by a stranger whilst visiting a funfair and the victim in scene 12 was stabbed by a friend following an altercation in the offender's house which had spilled out onto the street. Both of these crime scenes appear contextually similar but the actual circumstances surrounding them were different.

Inaccurate inferences were made by over half of the detectives for three of the crime scenes (scene 15, 17 and 18). For scene 15, 58% (N=11) of detectives inferred that this was a male brawl, defining it as an attack in a public premises probably fuelled by alcohol. This homicide was actually pre-meditated, the victim had been having an affair with the offender's wife and the offender went to the premises to confront the victim, taking a knife with him. 21% (N=4) of the detectives were accurate in their inference that the offence was committed by an offender known to the victim.

Scene 17 was defined by 26% (N=8) of detectives as a robbery related homicide and 23% (N=7) thought that the offence was likely to be related to the victim's business dealings. The circumstances surrounding the death of the victim in scene 17 were similar to those in scene 15 in that the offence was pre-meditated. In this case the offender had been having an affair with the victim's wife.

For scene 18, 63% (N=22) of detectives inferred that this was a stranger sexual murder. The victim had in fact been murdered by her nephew for financial gain. Specific features of scenes 15, 17 and 18 which the detectives focused on to interpret and conceptualise these homicides led them to make inferences which were

incorrect. In scene 15 the fact the victim was stabbed at a disco led detectives' to infer that this was a spontaneous male brawl which tend to occur in social situations. In scene 17 the fact the victim was wearing a suit appeared to anchor detectives' hypotheses that this killing was a robbery of a business man in his car or related to his business dealings. For scene 18 the fact that the victim's dress had been pulled up around her neck led detectives' to hypothesise that this was a sexually motivated murder of a vulnerable elderly female. While inaccurate inferences were made for these three scenes, the key finding of the study was the ability of detectives to develop detailed 'profile' like narratives from basic crime scene information.

DISCUSSION

The crime scene sorting exercise provided an insight into the cognitive processes of detectives when faced with the body of a homicide victim. The fact homicide detectives were able to articulate their inferential processes shows that detective intuition is not a mystical phenomenon. Like the definitions put forward by Hogarth (2001) and Klein (2003), intuition is used in this study to define the perceptual recognition processes detectives engage in to interpret and assess a crime scene based on their domain specific knowledge and experience. The fact that the higher ranking detectives made significantly more inferences than the lower ranking detectives suggests that the ability to derive inferences from crime scene information develops with investigative experience.

The detective cycle of cognition depicts the way in which the detectives drew upon contextual features of the offence (age and sex of victim, location and method of death) to generate hypotheses about the type of homicide from which they began to derive inferences about victim-offender relationship, characteristics of the offender, possible motive and whether the offence was spontaneous or planned.

Generating and building hypotheses is a vital cognitive activity for SIOs. The creation of hypotheses directs lines of enquiry and determines what information is subsequently gathered during the course of an investigation. From the moment a detective receives notification to attend a crime scene the cycle of cognition will commence. From the information provided in the initial report of a victim's death, experienced homicide detectives are able to form a preliminary hypothesis about the type of homicide they are about to investigate.

The need to keep an open mind

The inferential processes detectives engage in are essential. Intuition provides investigative direction when detectives have little information available. There is, however, great pressure on detectives to gather as much information as possible before they begin to theorise and build hypotheses about the circumstances surrounding a death. This is reflected in the widely used police term 'keeping an open mind'. Whilst carrying out the sorting task the majority of detectives emphasised the need to keep an open mind when investigating a homicide. One of the detectives said:

"You can never afford to be completely channelled down one direction and close your mind but you can't help but start formulating an idea."(Detective 3, D/Supt).

There is, however, a difference in having an open mind and having an empty mind. Keeping an open mind refers to the ability to consider a range of hypotheses. The psychology of human inference demonstrates that keeping an open mind is simply not possible; in the absence of information individuals extrapolate.

During the debrief session detectives reported how they began thinking as they would at the start of an actual investigation, offering support for the ecological validity of the crime scene sorting exercise. One of the detectives explained:

"*I am not just looking at the scene I am reading a lot more into it. I am interpreting the entire thing and where I would take it from there*" (Detective 1, D/Supt).

And another detective stated:

"Where you have dealt with things in the past you will automatically think I have seen that before, it might be that" (Detective 21, DCI).

Limitations

It is acknowledged that the sorting task focused on a small, albeit important, element of a homicide investigation. Only basic descriptive information was purposefully provided to gain an insight into detectives' thought processes following the notification of a homicide and arrival at a crime scene. Some of the detectives commented how in 'real life' when they arrived at a crime scene more information

would be available than what was provided for each of the crime scenes. They would know for example whether there had been forced entry to a property and whether CCTV was available from areas surrounding a crime scene. Such information would influence their inferences regarding the type of homicide they were investigating.

The inferential processes detectives engaged in were a discovery resulting from the card sorting methodology utilised. Once the researcher became aware of detectives' ability to develop detailed 'profile' like narratives and derive inferences from the crime scene material, those who did not engage in such processes were not encouraged to do so. This is supported by the fact that not all detectives made inferences for each crime scene.

The basic crime scene information presented may have resulted in detectives making inferences they may not have done if more information had been available. Hogarth (2001) found that: "people are more likely to engage in intuitive processing when they can see (i.e. visualize) the phenomena in question" (pg 201). This is important in light of the sorting exercise because 'real life' crime scene material was used to depict what detectives would actually see when called out to attend a homicide crime scene. As the findings are drawn upon to purport that the ability to derive inferences from crime scene information is a core aspect of detective work, the key question should be whether the detectives drew more inferences than they would do in reality, rather than whether the inferences made were an artefact of the card sorting methodology. Further research needs to be carried out with a control group who have no experience of investigating homicide, to examine whether they engage in the same intuitive processes as homicide detectives.

PRACTICAL IMPLICATIONS

The need to refocus 'offender profiling' research

The discovery that detectives can develop hypotheses and make inferences from basic crime scene information suggests that 'offender profiling' offers nothing radically new, but is the start of the professionalisation of the inferential process experienced detectives routinely engage in. With the exception of the studies by Pinizzotto and Finkel (1990) and Kocsis et al (2000) which examined offender profiles created by both police and non-police 'profilers', research on 'offender profiling' since the work by the Federal Bureau of Investigation (Ressler et al, 1993) has neglected to examine detectives' inferential ability, instead focusing on how Forensic and Clinical

Psychologists can provide behavioural investigative advice to serious crime investigations.

The findings of the present study shine the spotlight back onto the ability of experienced detectives to make investigative inferences. Future research should seek to explore the contextual cues detectives draw upon to 'profile' homicide offences. By examining and understanding detectives' intuitive processes, BIAs will be able to provide more effective support and advice to SIOs.

SIO Training

The findings of this study make the first step at demystifying the notion of detective intuition. It is proposed that homicide detectives' intuition is a cognitive skill which stems from experience of investigating homicide. The ability to draw inferences and make decisions from crime scene information is an important skill for detectives to develop. It follows that problems are likely to ensue when detectives have limited experience and knowledge of a particular type of homicide or fixate too readily on a particular hypothesis. Detectives require training to increase their awareness of the factors which influence their decision making behaviour. The detective cycle of cognition provides a starting point for developing detectives understanding of their decision making processes.

Increased standardisation in how homicides are investigated has resulted in SIOs seeming to fall more into a managerial rather than investigator role. The findings of this study highlight the need for the police service not to lose sight of the importance of investigative experience nor dismiss the significance of intuitive decision making. If SIOs become further removed from investigative activities to manage a team of investigators and a range of external expert advisers, then the inferential processes which are of essential value, particularly during the 'golden hour' of a homicide investigation, may be left to less experienced detectives.

The ability of detectives to generate hypotheses, derive inferences and make decisions on the information available during the crucial 'golden hour' should be a key component of SIO training. The sorting task exercise could be used in police training to facilitate ways of thinking about homicidal events through the use of multiple case based scenarios. Such a training exercise would develop and enhance detectives' knowledge of different types of homicide through exposure to a wide

range of cases. This would also assist in developing detectives' hypotheses building and intuitive decision making skills.

CONCLUSION

The homicide crime scene sorting exercise proved a useful methodology for eliciting detectives' cognitive processes during the initial stage of a homicide investigation. Detectives were able to recognise different types of homicide from basic crime scene information based on their prior knowledge and experience, which enabled them to make detailed inferences. These intuitive processes which detectives engage in during the 'golden hour' are crucial to the success of an investigation. Intuition is regarded a cognitive skill vital for detection. Detective training should focus on developing rather than neglecting intuitive decision making. The way detectives automatically created 'profiles' from basic crime scene information also highlights the need for 'offender profiling' research to be refocused onto the skills and inferential abilities of experienced detectives. The findings lay the foundations for future research on how detectives utilise their experience to develop investigative inferences which can be used to advance SIO training and 'offender profiling' research.

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APPENDIX

Appendix A. Details of the 20 homicide crime scenes

Scene	Victim Sex	Victim Age	Location	Method of Death	Additional Information
1	Male	16	Funfair	Stabbed	
2	Female	38	Kitchen	Shot	
3	Female	29	Lounge	Stabbed	
4	Male	53	Bedroom	Asphyxiated	At hostel.
5	Male	26	Country lane	Stabbed	Front pocket of jeans pulled inside out.
6	Female	16	Woodland	Strangled	Displayed naked, victim had been sexually assaulted.
7	Male	45	Living room	Strangled	Fire damage, wrapped in bed cover.
8	Male	41	Office	Shot	At Insurance Brokers
9	Female (child)	2	Bedroom	Shot	
10	Female	20	Living room	Strangled	
11	Male	49	Housing estate	Stabbed	Suitcase containing victim's property at the scene.
12	Male	29	Street	Stabbed	
13	Female	19	Living room	Strangled and throat cut	Small sheet covering victims lower body.
14	Female	78	Hallway	Asphyxiated	Flat had been ransacked.
15	Male	24	Disco	Stabbed	
16	Male	40	Disused mineral site	Strangled	Buried in shallow grave, wire ligature around victims neck.
17	Male	38	Car	Stabbed	Parked at indoor car park.
18	Female	70	Field	Strangled	Dress pulled up, blanket covering victims face.
19	Female	83	Living room	Beaten	Contents of victims handbag missing.
20	Female	74	Bedroom	Stabbed	Victim's breasts and genitals exposed.

Table 1. Types of inferences made by detectives

Type of Inference	**%**	**N**
Type of Homicide	44%	261
Victim Offender Relationship	20%	119
Offender Information	9%	53
Motive	9%	53
Dumpsite	6%	36
Planned office	5%	30
Victim information	4%	24
Spontaneous offence	3%	18
Total	**100%**	**594**

Figures

Figure 1. MSA output: Detectives' categorisation of 20 homicide crime scenes

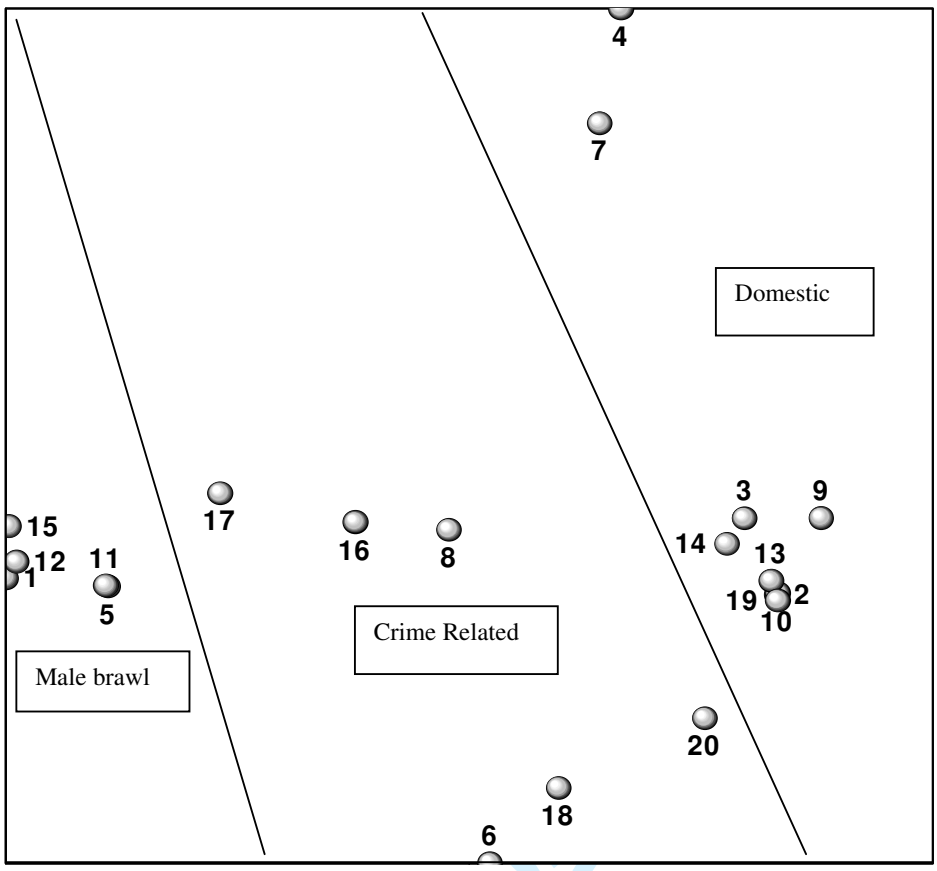

Figure 2. Detective cycle of cognition – Domestic homicide

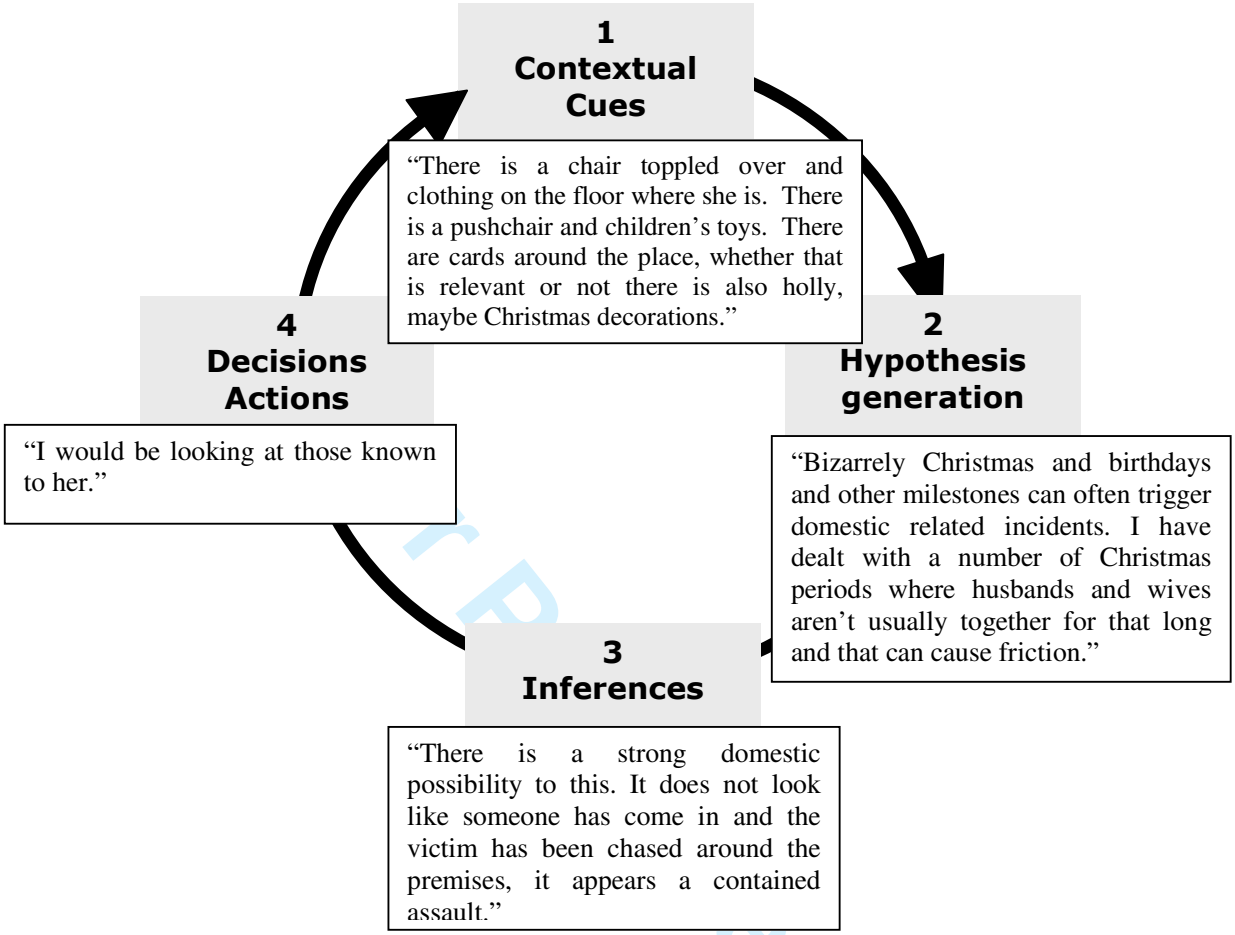

Figure 3. Detective cycle of cognition – Crime-related homicide

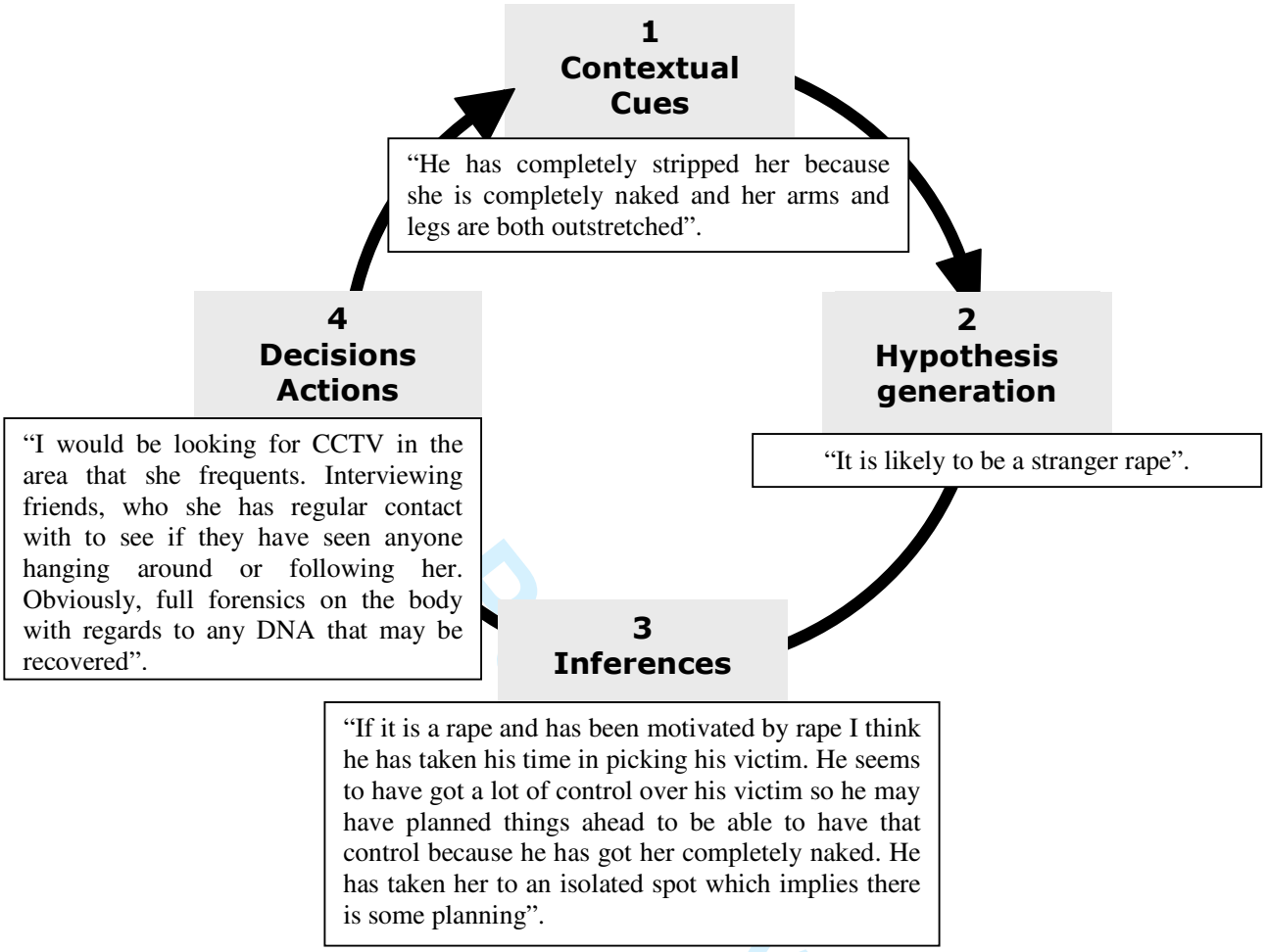

Figure 4. Detective cycle of cognition – Male brawl homicide

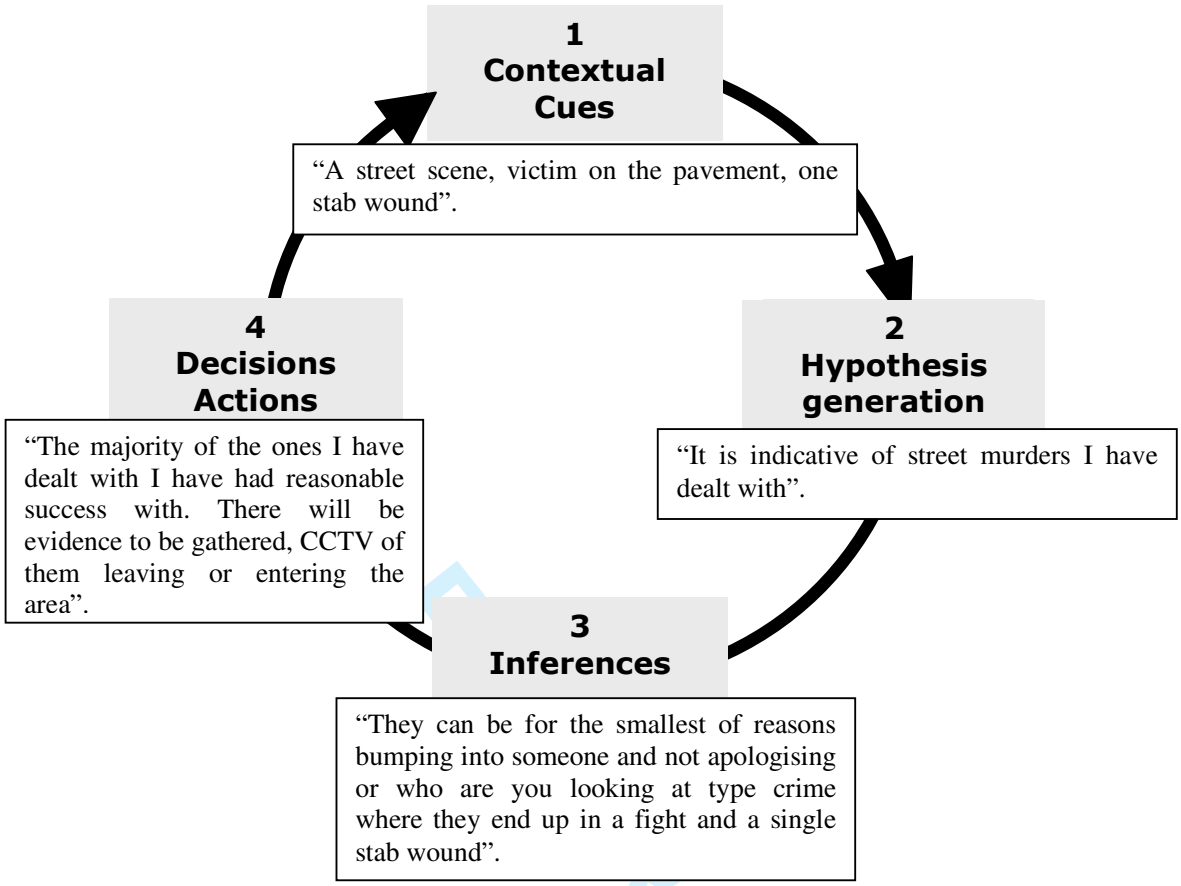

Figure 5. Number of inferences made according to detective rank