

**THE INTERPRETATION AND EXPLOITATION OF INFORMATION IN CRIMINAL  
INVESTIGATIONS**

**by**

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## ABSTRACT

This thesis explores psychological mechanisms underlying the acquisition, interpretation and exploitation of information in complex criminal enquiries. Detective work is conceptualised as problem-solving and the importance of sense-making is highlighted. A model of investigative sense-making is presented, grounded in social-cognitive psychological and criminological research and bringing together several theoretical concepts within one coherent framework. Two studies explored aspects of this framework. First, 42 UK police officers gave written responses to four crime-related vignettes. Content analysis of the answers showed how sense-making about what had occurred varied according to the vignettes and between participants. Building on this pilot, a simulated investigation method was developed and tested with 22 UK detectives. Content analysis of 'think aloud' transcripts (using the qualitative analysis package N-Vivo) focused on how participants made sense of the victim's story, the characteristics of the offender and the plausibility of potential suspects. Participants spontaneously generated and tested multiple hypotheses about investigative information using mental simulation, tolerating high levels of uncertainty throughout the 'investigation' and paying particular attention to investigative opportunities. This research suggests that successful detectives need the ability to imagine multiple potential explanations for investigative data and the knowledge to identify the opportunities for action such data affords.

## PUBLICATIONS

The following book chapters were written and published during the period of study and cover issues relevant to the thesis topic:

1) Alison, L., & Barrett, E. C. (2004). The Interpretation and Utilization of Offender Profiles: A critical review of "traditional" approaches to profiling. In J. Adler (Ed.), *Forensic Psychology: Concepts, Debates and practice* (pp. 58-77). Cullompton, England: Willan Publishing.

- Note: Pages 58-66 were written by Laurence Alison. Pages 66-69 were written by Emma Barrett. Pages 70-72 were written jointly by Laurence Alison and Emma Barrett.

2) Barrett, E. C. (2005). Psychological research and police investigations: does the research meet the needs? In L. Alison (Ed.), *The Forensic Psychologist's casebook: Psychological profiling and criminal investigation* (pp. 47-67). Cullompton: Willan Publishing.

3) Alison, L., Barrett, E. C., & Crego, J. (2007). Criminal investigative decision making: Context and Process. In R. R. Hoffman (Ed.), *Expertise Out of Context* (Proceedings of the Sixth International Conference on Naturalistic Decision Making) (pp. 79-95). New York, NY: Lawrence Erlbaum Associates.

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4) Ormerod, T. C., Barrett, E. C., & Taylor, P. J. (2008). *Investigative sense-making in criminal contexts*. In J.M.C. Schraagen, L. Militello, T. Ormerod, and R. Lipshitz (Eds.). *Naturalistic Decision Making and Macrocognition*. Aldershot : Ashgate Publishing

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## DEFINITIONS OF KEY TERMS USED IN THIS THESIS

*See also Appendix A for a list of abbreviations and glossary*

**Abductive reasoning** Inference to the best explanation. Abduction takes the following logical form:

*D is a collection of data.*

*[...Hypothesis] H would, if true, explain D.*

*No other hypothesis explains D as well as H.*

*Therefore H is probably true.* (Josephson, 1996, p.1).

**Confirmation bias** The tendency to seek, attend to and interpret information in a way that is consistent with our preconceptions, including expectations and pre-existing theories (Nickerson, 1998).

**Frames** A generalised cognitive structure in long-term memory in which knowledge is represented (Klein, Phillips, Rall, & Paluso, 2007).

**Legal argument** The elements forming the basis of a charge (or charges) against a defendant:

1. *Identity*: the defendant is the person who carried out the alleged criminal act;
2. *Actus reus*: the defendant committed the particular act with which they have been charged;
3. *Mens rea*: the defendant carried out the act with criminal intent.

In most cases, to find the defendant guilty, a jury must be convinced that the prosecution has proven all three elements of the charge (Wagenaar, van Koppen, & Crombag, 1993).

<b>Mental models</b>	Internal representations of how particular external events and situations come about, including causes and consequences of states of affairs and potential courses of action afforded or limited by particular circumstances. Mental models facilitate cognitive tasks such as explaining and predicting (Fischhoff, Bostrom, & Quadrel, 1999; Gentner, 2001).
<b>Narrative</b>	“[T]he description of a series of actions and events that unfold over time according to causal principles ... [that] demand that events occur in a constrained, logically coherent order” (Mar, 2004, p.1415)
<b>Schema</b>	A generic knowledge structure in long-term memory, based on past experiences, providing a framework for the automatic interpretation of new information (Bartlett, 1932; Carlston & Mae, 2001).
<b>Script</b>	A type of schema referring specifically to events (Schank & Abelson, 1977).
<b>Sense-making</b>	The purposeful application of cognitive effort to perceiving, interpreting, understanding and exploiting information in complex and/or ambiguous situations (Klein et al., 2007).
<b>Situation model</b>	A temporary mental representation of a particular situation that may explain how that situation came about and what opportunities for action that state of affairs affords (Endsley, 2000a; Zwaan, 1999).
<b>TBI situation</b>	To-be-investigated situation. A term used within this thesis to describe the situation facing a detective responding to a reported crime.
<b>Tunnel vision</b>	A form of confirmation bias in which detectives concentrate on a single line of enquiry and neglect other plausible lines of enquiry (Findley & Scott, 2006).

## THESIS OVERVIEW

### THE INTERPRETATION AND EXPLOITATION OF INFORMATION IN CRIMINAL INVESTIGATIONS

In this thesis the aim is to explore the psychological mechanisms underlying investigative sense-making: the acquisition, interpretation and exploitation of information in complex criminal enquiries. Within the UK police service there is considerable concern that too little support is being given to understanding and training the key skills involved in conducting competent and effective criminal investigations. However, there is as yet only a partial understanding of the ways in which detectives develop lines of enquiry, implement strategies and make sound decisions in the course of an investigation. Relevant research in this area is limited and little attention has been paid to the psychological processes underlying detective work. The purpose of this thesis was to begin to address this lack of attention.

The studies presented were exploratory and largely qualitative, examining the ways in which detectives assess, interpret and act on a range of investigative data during serious criminal investigations. A theoretical framework was developed that draws on established psychological research on how individuals make sense of ambiguous situations, using their experience to select, comprehend and interpret information to solve problems. The empirical studies concentrated on how detectives make sense of investigative information, including developing lines of enquiry with respect to victims, offenders and suspects.

#### **Chapter 1. Detective cognition: a sense-making perspective**

This chapter outlines the theoretical and practical value of studying the cognitive processes underpinning criminal investigative work. The context in which UK police officers



currently operate is described, showing how a better understanding of the factors impinging on investigative work is important from a policy perspective as forces seek to enhance the expertise of a relatively inexperienced pool of detectives. A brief review of existing research on detective work indicates how the focus of study has been largely organisational and criminological, and how the topic has been relatively neglected within the psychological literature.

The core problems a detective faced with a '*to-be-investigated*' (TBI) situation must solve are: (1) to establish what crime (if any) has been committed; (2) to identify and apprehend the offender; and (3) to collect and preserve evidence in such a way that it satisfies the needs of a prosecution. Criminal investigations are often highly ambiguous situations, so effective sense-making, defined here as deliberate effort by detectives to understand a TBI situation, is crucial to solving these problems. Active sense-making involves developing an understanding both of the situation and of the prospects for action afforded by that situation. The study of detective cognition thus has particular theoretical relevance, as it offers an opportunity to explore how knowledgeable individuals interpret and integrate large amounts of ambiguous information in dynamic scenarios.

Drawing on research on problem-solving, comprehension, explanation and situation assessment a theoretical framework for understanding investigative sense-making was developed, based on four key arguments:

1. *Investigative sense-making is goal-directed*, focused on determining which, if any, crime has been committed, identifying and arresting the true offender and gathering sufficient evidence to mount a prosecution. Sense-making effort is focused on the most ambiguous aspects of a TBI scenario relevant to those core goals.

2. *Investigative sense-making involves recognition of new information and recall of existing knowledge.* Recognition of potentially diagnostic cues relating to the nature of the offence and the identity of the offender is guided by domain-specific cognitive frames relating to criminal behaviour, investigative opportunities and legal arguments, and by general knowledge including an understanding of social behaviour.
3. *Investigative sense-making involves generating, elaborating and testing multiple story-like hypotheses* about the crime and the offender.
4. *Investigative sense-making drives investigative actions* and, where action choices are unclear, *detectives mentally simulate the consequences of taking particular actions.*

Because this framework represents a new approach to an under-researched area, the empirical studies presented in the remainder of this thesis are exploratory, qualitative analyses designed to examine aspects of detective sense-making in the light of the framework above.

## **Chapter 2: Detectives' hypotheses in criminal investigations: an exploratory study**

This chapter presents a pilot study in which 44 police officers from an English police force gave written interpretations of four crime vignettes. The analysis explores what elements of TBI situations are most salient to detectives, what knowledge is used to interpret ambiguous TBI events, and the degree to which officers share such interpretations. The analysis highlights features that potentially influence a detective's interpretation and exploitation of investigative information. However, the task did not capture the dynamic nature of the investigative process. For subsequent studies a new technique that better reflected the changing nature and context of investigative information was devised.

### **Chapter 3: A dynamic simulated investigation method for researching investigative sense-making**

This chapter deals with some of the challenges in studying investigative sense-making, namely: (1) representing the complexity of criminal investigations; (2) studying an individual's mental representations; and (3) negotiating access to appropriate participants. To address these challenges, a novel method for studying investigative sense-making is proposed: a dynamic simulation in which detectives are interviewed as they process material as if carrying out an investigation. A detailed account is presented of how this method was employed with a new sample of 22 detective officers from a second English police force, using a simulated investigation of an attempted rape. The role of the researcher is also reflected on, highlighting the advantages of an 'outside insider' role and the way in which the researcher's perspective may threaten the validity of the research.

Chapters 4 to 6 present the qualitative analysis of interview data generated using this method, focusing on the key actors within the investigation: the victim, the offender and potential suspects.

### **Chapter 4. A means to an end? How detectives perceive the victim during a simulated investigation of attempted rape**

This chapter's focus is participants' interpretation of information given by and relating to the victim in the simulated investigation. Themes in the way that participants treated the victim and her evidence are identified, showing how detectives made judgements about whether a crime has been committed based on perceptions of the victim's credibility.

**Chapter 5. The development of a detective's mental representation of an unknown offender**

This chapter examines the process by which participants made sense of ambiguous, incomplete and dynamic information relating to the offender during their simulated investigation. The analysis demonstrates how participants built a mental representation of the offender by developing inferences about his actions and identity, and how they made predictions about where evidence relating to him might be found.

**Chapter 6. Tracing, implicating and eliminating suspects in a simulated investigation of an allegation of rape**

Where the offender's identity is not immediately apparent, potential suspects take on particular importance and must be evaluated, investigated and eliminated from the enquiry. The analysis illustrates how participants' perception of potential suspects developed over time and how they proposed resolving their suspicions.

**Chapter 7: Reflections on the nature of detective sense-making**

The theoretical framework developed in Chapter 1 is re-examined in the light of the results of the empirical studies, highlighting key findings and practical implications. Particular attention is given to individual differences in sense-making. The strengths and weaknesses of the simulation method are evaluated and suggestions for further research put forward.

**Appendices**

Appended to this thesis are a glossary of terms and materials from the studies described in Chapters 2 to 6.

## CHAPTER 1. DETECTIVE COGNITION: A SENSE-MAKING PERSPECTIVE

*“I originally said we are in crisis, but now we are in meltdown. Everybody is struggling for experienced detectives.” – Quote from a police representative (Bebbington, 2007).*

The aim of this thesis was to explore how detectives make sense of investigative information. In its broadest sense, ‘detective work’ is the investigation of crime. More precisely, a detective faced with a ‘to-be-investigated’ situation must solve three inter-related problems: establishing what crime (if any) has been committed; identifying and apprehending the offender; and collecting and preserving evidence in such a way that it satisfies the needs of a prosecution (Stelfox & Pease, 2005). Solving these problems effectively depends upon selecting, interpreting, organising and exploiting a range of inherently ambiguous investigative information and thus involves a number of sense-making operations that are as yet poorly understood in an investigative context. The empirical studies presented in this thesis provide an opportunity to explore the cognitive processes involved in investigative sense-making, potentially providing a route to an enhanced understanding of factors that may promote or undermine effective detective work.

In this chapter theoretical, practical and policy-related reasons for studying detective work are outlined. A preliminary model of investigative sense-making is developed, based on previous social-cognitive psychological and criminological research. This model then provides a framework for the studies presented in Chapters 2 to 6.

*Why study detective work?*

Detective work has traditionally been considered a craft or art practiced by experienced detectives who use a combination of skills learnt on the job, trusted instincts and clever hunches to solve challenging investigations (Hobbs, 1988; Innes, 2007; Tong & Bowling, 2006). In the last decade, however, UK police and policy makers have increasingly focused on the need to ‘professionalise’ detective work (Flanagan, 2008; Savage & Milne, 2007; Stelfox, 2007).

The professionalisation agenda has several drivers (Stelfox, 2007). First is the development of legislation<sup>1</sup>, in particular the Police and Criminal Evidence Act (PACE, 1984), the Criminal Procedure And Investigations Act (CPIA, 1996), the Human Rights Act (HRA, 1998) and the Regulation Of Investigatory Powers Act (RIPA, 2000). Taken as a whole, this legislation defines investigatory processes, police powers and the rights of individuals who come to police attention (e.g., suspects) within a statutory framework (Stelfox, 2009). Together with the growing professionalisation of defence solicitors (Jones, Grieve, & Milne, 2008) and increased scrutiny of prosecution cases by the courts, these measures serve to raise the standard of evidence-gathering required of detectives.

Another driver of professionalisation is the growing range of tools and techniques that investigators can now apply (Stelfox, 2007). Detectives must understand how to take advantage of new opportunities offered by technological and forensic advances, which will often involve engaging, managing and, where appropriate, challenging a range of specialists (Smith & Flanagan, 2000; Stelfox, 2007). Modern detective work thus requires a higher degree of specialist training encompassing a wide range of techniques than previously.

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<sup>1</sup> Where relevant, discussion in this thesis of legislation or police systems refers to England and Wales. (Scotland and Northern Ireland have their own legislative framework and policing systems.)

A further driver is Government and public concern about police effectiveness. High-profile cases which involve, at some level, a failure of detective work result in high-profile inquiries (e.g., Bichard, 2004; Byford, 1981; Laming, 2003; Macpherson, 1999; Smith, 2005) leading to public and political pressure to improve the quality of investigations (Jones et al., 2008; Savage & Milne, 2007; Stelfox, 2007; Tong & Bowling, 2006). Miscarriages of justice occur both when innocent individuals are wrongfully convicted and when guilty individuals are acquitted or never brought to trial. Much of the legislation referred to above was introduced in the wake of a series of historic high-profile wrongful convictions: cases in which the police were shown to have ignored, mislaid or manufactured evidence to ensure a conviction (for further detail see Jones et al., 2008 and Savage & Milne, 2007). These convictions were eventually overturned on appeal, but not before innocent individuals had spent many years in prison (Savage & Milne, 2007). The purpose of introducing legislation was to ensure a balance between the powers of the police and the rights of individuals who came to notice in an investigation, and failure by investigators to comply with the legislation and associated codes of practice can lead to some evidence obtained during investigation to become inadmissible in court (Stelfox, 2009). As a result, it is more likely that present-day miscarriages of justice will involve wrongful acquittals of guilty individuals than wrongful convictions of the innocent. This carries immediate and obvious dangers if innocent individuals are convicted or guilty individuals walk free. However, a failure to bring true offenders to justice also weakens public faith in the criminal justice system and ultimately undermines its effectiveness if witnesses and victims who feel let down by the system once may be less inclined to co-operate in the future (Carson, 2007).

Compared to their police forebears, then, the work of present day British detectives is carried out within a tighter legal framework and with greater public and Government scrutiny but

with more investigative tools at their disposal. The net effect is to increase the complexity of criminal investigations and the challenges that current-day detectives face. At the same time the number of experienced detectives is falling, leaving Criminal Investigation Departments (CIDs) ill-prepared to deal with a rising and challenging workload (Bebbington, 2007; Chatterton, 2008).

One of the consequences of these developments is a pressing need to understand the practice of criminal investigation and the means by which it can be enhanced (Chatterton, 2008; Evans, 2001; Stelfox & Pease, 2005). Recent policy initiatives include the establishment of the National Policing Improvement Agency (NPIA), the launch of the Professionalising Investigation Programme, which aims to enhance detective skills through a system of training and accreditation (Home Office, 2004; Stelfox, 2007), and efforts by the Association of Chief Police Officers (ACPO) to develop manuals of investigation (e.g. the Murder Investigation Manual, ACPO, 2000) and Core Investigative Doctrine (ACPO, 2005). These are important practical steps. However, practice and guidance should be underpinned by empirical research, yet relevant research on police investigations is scarce (Barrett, 2005; Innes, 2003; Stelfox, 2007, 2009).

Until relatively recently, most research on police work was almost exclusively carried out by criminologists and sociologists. Moreover, within these disciplines researchers have tended to focus on a relatively narrow set of topics relating to activities of uniformed police officers, such as community policing and 'stop and search' decisions (see, for instance, recent reviews of the trends in police literature: Beckman, Gibbs, Beatty, & Canigiani, 2005; Beckman, Lum, Wyckoff, & Larsen-Vander Wall, 2003; Beckman, Wyckoff, Groff, & Beatty, 2004; Gibbs, Beckman, Miggans, & Hart, 2006; Telep, Varriale, Gibbs, Na, & Bartholomew, 2008). However, although research interest specifically in detective work is rare (Brandl, 1993a; Newburn, 2007; Puckett & Lundman, 2003; Stelfox, 2007), it is not new, as evidenced by academic research on



the work of detectives in the US (e.g., Brandl, 1993a; Brandl, 1993b; Brandl & Frank, 1994; Eck, 1983; Ericson, 1981; Greenwood, Chaiken, & Petersilia, 1977; Sanders, 1977) and, to a lesser extent, the UK (e.g., Hobbs, 1988; Innes, 2003; Stelfox, 2006). However, with the important exception of research that seeks to improve detective practice in specific areas such as investigative interviewing (Milne & Bull, 1999; Williamson, 2005b), eyewitness performance (e.g., Fahsing, Ask, & Granhag, 2004) and deception detection (Vrij, 2008), psychologists have made a relatively limited contribution to the literature on detective work (Barrett, 2005; Snook, Doan, Cullen, Kavanagh, & Eastwood, 2009). In sum, understanding how detectives can be more effective investigators is thus of policy and practical importance, but policy makers and practitioners have been poorly supported by empirical research.

*Psychological perspectives on the nature of detective work*

In this section, the nature of the cognitive challenges facing detectives, and the research that may help to shed light on these challenges, is examined in more detail.

*How cognitively complex is criminal investigation?*

Detective work is diverse. It ranges from investigation of so-called ‘volume crimes’, such as burglaries, robberies or vehicle thefts, that form much of the caseload of a Detective Constable or Detective Sergeant (DS)<sup>2</sup> often working alone or with a few others, to major crime inquiries, involving more serious crimes (rape or murder, for instance) and run by a team of detectives, led by a Senior Investigating Officer (SIO). An SIO, who may be a DS or Detective Inspector or even, for complex, serious, high-profile cases, a Detective Chief Inspector or Detective Superintendent, has wide responsibilities in a criminal enquiry, encompassing people management (for example, police officers and staff, victims, witnesses, suspects, the press and

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<sup>2</sup> An explanation of police ranks in the United Kingdom is provided in Appendix A

general public); the physical management of crime scenes; the management of information, intelligence and evidence; and resource management (Smith & Flanagan, 2000). The problems he or she must address range from somewhat routine practical problems that can be solved through the application of tried and tested strategies (e.g. how to ensure that a crime scene remains sealed until forensic examination has been completed) to more complex decisions (e.g. whether and when to effect an arrest). Strategic challenges include those relating to the deployment of resources, the handling of the media, and the prioritisation of suspects for investigation. Influences on these decisions include elements both external and internal to the investigation, from case-specific issues to organisational factors (Mullins, Alison, & Crego, 2008).

A consistent finding from the existing literature on detective work is that cases detectives are called upon to solve do not often involve cognitively-demanding investigative strategies and complex problem-solving, but rather a series of relatively straightforward procedures. Such cases, which include less serious (e.g., burglary) and more serious (e.g., homicide) crimes, have been termed ‘dunkers’ (Sanders, 1977), ‘self-solvers’ (Innes, 2003) or ‘walk-throughs’ (Simon, 2001). The most significant studies are part of a body of US criminological research from the late 1970s onwards which examined the activities of detectives assigned to solve robberies, burglaries and similar crimes. Research sponsored by the Rand Corporation and conducted by Greenwood and colleagues (Greenwood, 1979; Greenwood et al., 1977) found that almost all crimes were solved with relatively little investigative effort. 22% of solved crimes were cleared when a patrol officer arrested the offender at the scene or soon afterwards and in 44% of cases the perpetrator was not at the scene but was nevertheless known, so the detectives’ job was to locate the perpetrator (Greenwood et al., 1977). The remaining solved cases were almost all cleared by the application of straightforward, routine actions, with just 3% of solved cases the result of special action by

detectives (Greenwood et al., 1977). Greenwood and colleagues argued, therefore, that the solvability of crimes depended almost entirely on the circumstances in which the crime was committed and the actions of patrol officers who were first to the scene (Greenwood et al., 1977). 'Detective work' played a negligible role in solving crimes.

The Rand Study has been criticised for failing adequately to measure exactly what detectives did during investigations and for over-generalising from exploratory research (Eck, 1999). Eck attempted to address some of the Rand Study deficits by studying detective work in more detail, through the analysis of thousands of US detective activity logs, crime records and ethnographic observation (Eck, 1983). He concluded that cases could be classified in a kind of 'triage' system: some cases were not solvable even with a reasonable amount of detective effort while other cases were easily solved through information provided at the scene of the crime or soon after. However, between these two extremes were cases that could be solved through the application of detective effort. Eck's 'Effort-Result hypothesis' was partially supported by a similar study a decade later, when Brandl & Frank (1994) analysed records of robbery and burglary offences referred to detectives for investigation and found that detective effort helped to solve cases where there was already strong or moderate evidence of the offender's identity at the scene (for instance, through victim or witness identification). Where there was weak evidence, however, it was rare for officers to identify or arrest the perpetrator.

British research two decades later indicated that these findings were not unique to the US. For instance, the results of Burrows, Hopkins, Hubbard, Robinson, Speed and Tilley's (2005) empirical analysis of volume crime detections in England and Wales largely followed the Eck 'Effort-Result' pattern. Similar results were reported by Innes (2003) and Stelfox (2006) in the investigation of UK homicide. Innes, who followed the progress of 20 police investigations

during observational research with an English police force, classified ten of these investigations as ‘self-solvers’: cases “where the suspect was identified comparatively easily and thus police investigative activities were more focused and directed towards substantiating their involvement in ‘causing’ the fatal interaction” (Innes, 2003, p.197). Stelfox (2006) scrutinised the records of 44 homicide investigations between 1998 and 1999 in Greater Manchester and found that suspects who were eventually tried for the offence were identified at the time of the initial response in 29 of these cases. The work of detectives in such circumstances needs to be thorough but, as Stelfox (2006) notes, such activities are not necessarily particularly complex. A further 11 cases were detected as a result of more extensive investigation by homicide detectives, although in four of these, information allowing the suspect to be identified was received at an early stage of the investigation (Stelfox, 2006). The remaining four homicides were unsolved at the end of that year, despite extensive investigation judged in official reviews to be appropriate and adequate (Stelfox, 2006).

The research discussed above suggests that, contrary to popular perception, most detective work is routine case-building against an already identified suspect; indeed Maguire (2003) argues that such ‘suspect-centred’ investigations make up the majority of UK detective investigations. However, even where case-building is relatively routine, the evidential case against a suspect must satisfy prosecutors (and, eventually, a jury) that the individual charged did indeed commit the offence. In this, detectives must be effective searchers for and receivers of information (Innes, 2003; Stelfox, 2006).

The criminological literature discussed so far hints at but does not shed much light on the cognitive processes underlying detective work (c.f., Maguire, 2003). For instance, the research suggests a case is hard to solve if the offender is not found at the scene or named by witnesses, or

if evidence proving his or her guilt is not easily identified. But how does a detective recognise vital clues, judge what evidence might prove guilt, know where that information might be located and make sense of it in the context of other information when it is found? Even in 'self-solvers', successful detective work depends upon selecting, interpreting and marshalling of a range of data. Investigative information takes many forms including physical evidence (e.g., forensic traces or a murder weapon), statements provided (truthfully, mistakenly or deceptively) by witnesses, victims or suspects, and data that exist in police or other records. By its nature such information may be ambiguous, incomplete, contradictory or irrelevant and must be interpreted and evaluated in the context of detectives' general, domain-specific and case-specific knowledge. Making sense of investigative scenarios thus involves generating and evaluating explanations for perceived states of affairs, establishing what other relevant information is potentially available and inferring where it is likely to be found. The studies described above may help us understand detective work at an organisational and social level, but add little to our understanding of detective cognition at an individual level.

*What makes an effective detective?*

One study that did focus explicitly on individual detectives working as SIOs is an influential Home Office report on the skills required of an 'Effective Detective' (Smith & Flanagan, 2000). Ostensibly normative rather than descriptive, Smith and Flanagan's research involved interviewing 40 experienced detectives using a combination of the Critical Incident Technique (CIT, Flanagan, 1954), repertory grids and semi-structured interviews to identify the 'core skills' of an effective SIO. These skills were organised into three clusters, described as:

- **investigative ability:** this includes the skills associated with the assimilation and assessment of incoming information into an enquiry and the process by which lines of enquiry are generated and prioritised;
- **knowledge levels** [sic]: this relates to the different types of underpinning knowledge an SIO should possess; and,
- **management skills:** these encompass a broad range of skill types... further sub-divided between ‘people management’, ‘general management’ and ‘investigative management’ (Smith & Flanagan, 2000, p.v).

The Smith and Flanagan research is an important step forward, compared to previous limited research on detective skills. In particular, the specification of a group of skills related to investigative ability is a helpful foundation for future research into the way in which those skills are deployed in investigations and how they might be trained. However, the set of ‘core skills’ identified by Smith and Flanagan are defined broadly and thus offer only limited insight to the cognitive challenges of detective work (c.f., Carson, 2007). Under the general heading of ‘investigative ability’, for instance, Smith and Flanagan include “investigative competence”, “appraisal of incoming information” and “strategic awareness” (Smith & Flanagan, 2000, p.38). Each of these elements is further broken down, so, for example, “investigative competence” in “selecting appropriate lines of enquiry” includes: “to remain appropriately focused; to develop and test investigative hypotheses; to prioritise lines of enquiry” (Smith & Flanagan, 2000, p.35). But what, exactly, does it mean to “develop and test investigative hypotheses”, on what basis are lines of enquiry prioritised, and what factors might undermine such activity? There remains scant understanding of the cognitive processes underpinning these high-level concepts. Addressing this

research gap is an essential step toward more precise definitions of the cognitive abilities required of high-performing investigators and the conditions under which such abilities might be degraded.

Further limitations of the Smith and Flanagan findings are methodological: the results are based on self-reports of detectives selected for interview. For instance, the CIT involves an interviewee choosing a single incident they were involved in and reporting details that they remember of their behaviour at the time. The success of the method thus depends on the interviewee's accurate memory, yet decades of research on human memory shows remembered accounts to be prone to omission and distortion (Milne & Bull, 1999) and recall to be potentially subject to hindsight bias (Hertwig, Fenselow, & Hoffrage, 2003; c.f., Nisbett & Wilson, 1977). Whilst Smith and Flanagan rightly note that their triangulation strategy allows for confidence in their findings, a more eclectic set of methods that also included evaluation of actual performance and/or a review of archival material would have strengthened their conclusions still further (Smith & Flanagan, 2000).

#### *Detective work as decision-making*

Where they exist, the focus of psychological studies of detective work is often investigative *decision-making* (e.g., Alison, Barrett, & Crego, 2007; Almond, Alison, Eyre, Crego, & Goodwill, 2008; Bennell, 2005; Brandl, 1993a; Hall, 2005; Mullins et al., 2008; O'Keefe, 2002; Rossmo, 2008b). According to Markman and Medin: "decision situations are generally defined as those in which the decision maker has some unsatisfied goal and a set of options that might satisfy the goal" (2002, p.413). One way of exploring decisions in investigative contexts is via analysis of archival data (e.g., Brandl, 1993b; Brandl & Frank, 1994; Burrows et al., 2005; Cross, Finkelhor, & Ormrod, 2005; Feist, Ashe, Lawrence, McPhee, &

Wilson, 2007; Hall, 2005; Puckett & Lundman, 2003; Stelfox, 2006). In such studies, case files are scrutinised for factors that researchers consider may be relevant, such as socio-demographic characteristics of victims and offenders, aspects of the environment in which the crimes took place and organisational features of the police force charged with the investigation. These factors are coded and the resulting data may be subjected to a statistical analysis (e.g., regression analysis, with the dependent variable being the outcome of the investigation) to explore which factors contribute to particular outcomes.

Controlled experimental studies, where officers make judgments on the basis of case materials and vignettes, offer another means of studying individual detective decisions. Compared to archival analysis, experimental studies have the advantage of greater control over factors that may impact on detectives' decisions. By systematically varying features of the stimuli, for instance, manipulating the salience of suspects (Ask & Granhag, 2005) or victim behaviour (Waaland & Keeley, 1985) in a scenario, conclusions can be drawn about the impact of such features on decision-making (further examples include Ask & Granhag, 2007a; Ask & Granhag, 2007b; Phillips & Varano, 2008; Portwood, Grady, & Dutton, 2000). Such studies are relatively rare and, unless the selection of independent variables is driven by prior observational work (which was the case in, for example, Brandl, 1993a, but not in the studies described in Ask, 2006), there is the risk that the factors identified and tested do not include all those relevant to detective decision-making.

Whilst they are not without value, such models have further important limitations. In both experimental and archival studies there is an underlying assumption that effective detective decision-making, and thus success in solving a case, derives from the simultaneous but separate consideration of weighted factors (Brandl, 1993a). Such an assumption reflects a 'rational choice'



approach to detective decision-making in which all factors are potentially influential in decisions and the object of the analysis is to determine the weights these factors should be given (Rohrbaugh & Shanteau, 1999). However, this may not reflect real-life decision-making, particularly scenarios in which decision-makers are expert and knowledgeable. Research, including that on problem-solving in complex environments and on decision-making in real-world situations of high ambiguity and intense pressure, indicates that 'weighted factors' models do not adequately describe the cognitive processes that underlie such decision-making (Klein, 1999; Payne, Bettman, & Johnson, 1993; Simon, 1990). In a detective context, Brandl (1993a) argued instead that:

It appears as though meaning is ascribed to cases only after individual pieces of information are considered together to form complex, multifaceted constructs... these processes reflected a 'gestalt' of sorts (Brandl, 1993a, p.29).

A further important limitation of 'weighted factors' models relates to what can be coded from a police file. Case files can provide valuable insights to criminal investigations, but they are always incomplete and often contain inaccuracies (Alison, Snook, & Stein, 2001; Canter & Alison, 2003; Horvath & Brown, 2006). In particular, case files do not generally reflect the case-specific, domain-specific and general knowledge that detectives bring to an investigation and on which they may, consciously or unconsciously, base their decisions. As Feist et al. (2007) noted:

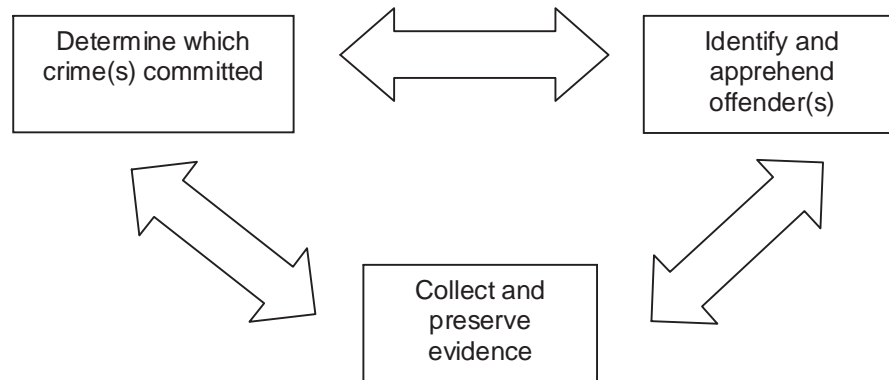
There are important aspects of the investigation which are likely to be 'unobservable' from the information in the file. Issues around the quality of investigative actions (as opposed to simply identifying whether or not action A did or did not take place) or the way in which an investigator related to the victim, are not things that can be readily identified

from the case file and coded systematically.... ‘Unobservable’ elements ... may nonetheless constitute important influences on whether or not an offence reaches a successful criminal justice outcome (p. 5).

### *Detective work as problem-solving*

Studies which treat detective work as decision-making on the basis of weighted factors and which focus solely on decisions and decision outcomes cannot, it is argued, fully capture the complex cognition that underpins detective work. A more fruitful approach to developing a framework for understanding the cognitive processes underlying detective work may be to approach the issue from a *problem-solving* rather than a decision-making perspective (Barrett, 2002). Solving problems of course involves making decisions. But problem-solving also involves several other cognitive operations which, it is argued, are important in an investigative context.

Problem-solving is cyclical, beginning with the recognition that a problem exists (Pretz, Naples, & Sternberg, 2003). Next, the problem situation must be defined and represented mentally with a view to the end goal (Pretz et al., 2003). Then the problem-solver develops and implements strategies: sequences of actions that allow the various sub-goals to be achieved (Pretz et al., 2003). Finally, results of these actions are evaluated in relation to the end goal, strategies are refined and further actions initiated as required (Hinsley, Hayes, & Simon, 1977; Pretz et al., 2003). In any investigation, complex or straightforward, detective work involves solving three inter-related problems, as shown in Figure 1.1: establishing what crime has been committed; the identification and apprehension of the offender; and collecting and preserving evidence to satisfy prosecution needs (Stelfox & Pease, 2005). Further examination of these core problems highlights the range and nature of the cognitive processes involved in solving them.



**Figure 1.1: Core tasks for a detective faced with a ‘to-be-investigated’ scenario**

Solving a crime requires that a detective establishes an offence has indeed been committed, and, if so, what exactly (in legal terms) that offence is. Even in cases that are apparently clear (e.g., an individual caught in the act of killing another) the actual offence may still be open to dispute (is this a murder or manslaughter?). Second, if a crime has been committed, the detective’s task is to identify the true offender, eliminating all other plausible but innocent suspects. This may be simple, if the perpetrator is present at the scene of the crime or readily identified, for instance, by witnesses. But that task may become complex, for example, in cases involving multiple plausible suspects and ambiguous or limited evidence to point to the true offender, or a dearth of evidence pointing to any potential suspects (the ‘whodunits’, Innes, 2003). Third, from the earliest stages of an investigation an officer will consider prosecution, and collection and preservation of evidence is thus critical. A successful prosecution depends on evidence that will convince a jury that the defendant is the person who carried out the crime (*identity*), that they carried out the act for which they are charged (*actus rea*) and that they did so

with *mens rea*: purposefully or with reckless disregard to the consequences of their actions (Owens, 1995; Wagenaar et al., 1993).

These problems are not independent nor necessarily tackled sequentially. Indeed, they are mutually supportive and interdependent. A detective may use collected evidence, whether physical (e.g., forensic traces, fingerprints) or from the statements of others (e.g., witnesses, victims), to eliminate plausible suspects or identify the true offender, or to decide on the nature of the crime being investigated. Knowing what crime has been committed influences decisions about where to direct a search for an offender or for evidence. For instance, if a rape has been reported, a detective should request the physical examination of the victim in order to recover forensic evidence including physical traces left by the rapist (e.g., semen) that may yield DNA that may be matched to a known offender. Knowing or believing that the crime is rape might also help to direct other actions, including investigating current or previous acquaintances or comparing the *modus operandi* with other similar crimes. Identifying and apprehending a perpetrator can generate physical evidence via a search or taking of samples; this evidence can then be used to support a prosecution. Identifying the perpetrator can in some cases allow the detective to judge what crime if any has been committed. For instance, if a burglary is reported but the detective discovers the home-owner is the perpetrator then the crime is not burglary, but perhaps intent to defraud an insurance company. More controversially, a detective may judge a victim's acquaintance accused of rape to be an innocent individual who had consensual sex with their accuser.

Defining detective work as problem-solving and breaking it down into core problems brings into focus two important cognitive operations: *making sense* of the information available to determine what crime may have been committed, who the likely offender is and where

evidence may be found; and *deciding what actions to take* to collect and preserve further information and evidence. The cycle of sense-making and action-taking continues until the crime has been ‘solved’, that is, until either the incident can be proven not to have been a crime, or the offender has been identified and located and enough evidence exists to charge him or her with a specific crime and to convince a jury of their guilt.

*A model of investigative sense-making*

‘Sense-making’ is the “deliberate effort to understand events” (Klein et al., 2007, p.114) and a model of investigative sense-making should thus describe the cognitive processes underpinning a detective’s effort to find meaning in an investigative situation. Investigative sense-making activity includes explaining events that caused the data, speculating about what other events might have been associated with the situation and inferring what investigative opportunities are latent in the situation. Despite the paucity of empirical research examining how sense-making occurs in detective work, the psychological processes by which individuals use expertise to make sense of ambiguous information has been studied more extensively. This body of research provides a foundation for studying detectives’ sense-making.

Developing a model of investigative sense-making is an ambitious goal. A comprehensive model needs to explain how a detective integrates perceived investigative information with existing general, domain-specific and case-specific information to develop one or more plausible investigative hypotheses; what concepts and data are included in such hypotheses and in what form; how hypotheses are elaborated, refined and tested, and particular lines of enquiry chosen or rejected; and how this sense-making drives the choice of investigative actions. Despite the lack of research specifically addressing detective sense-making, a rich body of research on problem-

solving, comprehension, explanation and situation assessment exists with which to develop a model for understanding investigative sense-making (Figure 1.2). The model is based on four key assertions:

1. Investigative sense-making is goal-directed.
2. Investigative sense-making involves recognition of new information and recall of existing knowledge.
3. Investigative sense-making involves generating, elaborating and testing multiple story-like hypotheses about the crime and the offender.
4. Investigative sense-making drives investigative actions.

In the remainder of this chapter these assertions and the research evidence supporting them are reviewed in detail.

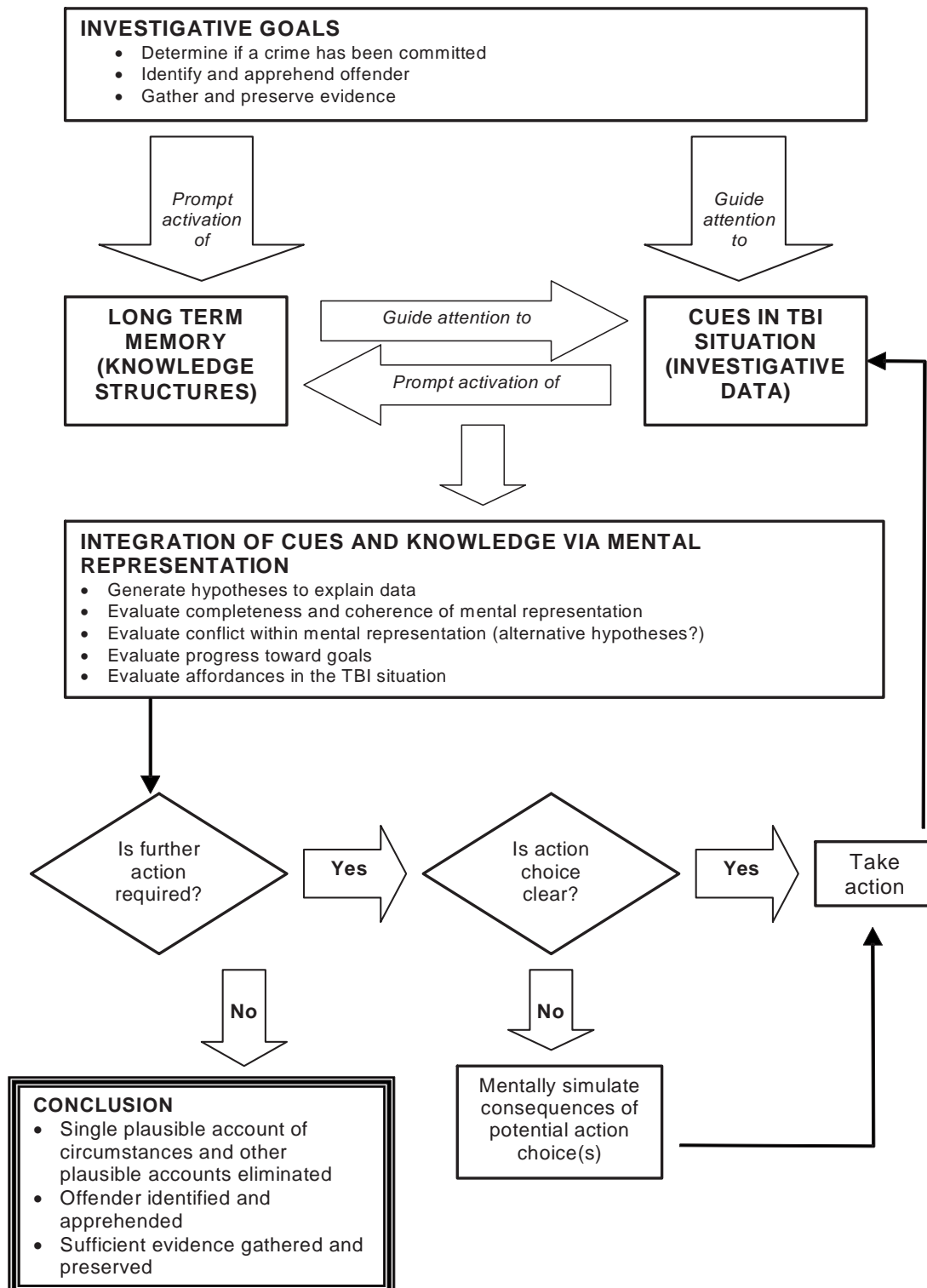


Figure 1.2: Model of investigative sense-making processes

### *1. Investigative sense-making is goal-directed*

Earlier it was argued that a detective's goals are to establish what crime (if any) has been committed, to identify and apprehend the offender; and to collect evidence for a prosecution. It is suggested that investigative sense-making is likely to focus on the most uncertain of the three core problems. That is, if, in a 'to-be-investigated' (TBI) scenario it is unclear whether a crime has been committed (e.g. reported injuries to a child) then investigative effort is focused on establishing whether or not there is a criminal explanation for the situation. If it is clear a crime has been committed but the offender is unknown, sense-making effort is focused on identifying, tracing and eliminating plausible suspects until only the true offender is left. If an offender is known and the crime is clear, then effort is focused mainly on identifying, collecting and preserving evidence. The most troublesome cases occur when a detective is faced with challenges in all three tasks: an ambiguous scenario, multiple or no potential suspects and difficulties in gathering evidence.

**Proposition 1:** Sense-making by detectives is shaped and driven by investigative goals, and is thus focused on determining which, if any, crime has been committed, identifying and arresting the true offender and gathering sufficient evidence to mount a prosecution.

**Proposition 2:** Sense-making effort will be focused on the most ambiguous aspects of a TBI scenario that are relevant to core investigative goals.

Although the overall goal of an investigation is to bring a true offender to justice, investigative sub-goals can conflict with each other and with the goals of other actors in the investigation. For instance, a balance must be struck between the needs of a victim, who may require practical and emotional support, with the needs of the investigation, which may require a detective to keep an open mind about whether or not the 'victim' was indeed subjected to a



crime. Furthermore, investigations are dynamic situations in which key actors (including offenders, victims, witnesses, the press, police management) may take actions that may force a change to the goal or sub-goals. For example, a media leak about the progress of an enquiry may force detectives to focus on damage control or change strategy. To give another example, a child abuse investigation may provide strong grounds for suspicion but not enough evidence to convict an abuser, and the police may instead work with social services to remove the child from future harm. Thus, investigative goals, as well as progress towards them, must constantly be re-evaluated (see also Endsley, 2000b).

*2. Investigative sense-making involves recognition of new information and recall of existing knowledge.*

The quality of a solution to a problem is dependent on recognising and defining the problem, both initially and as the problem-solving cycle repeats. Research in related areas, including comprehension (Kintsch, 1997), explanation-building (Keil, 2006) and expertise (Einhorn, 1974), indicates that the process of sense-making is both ‘bottom-up’, in that it relies on identification of key cues within a mass of available data, and ‘top-down’, in that the identification of such data and the sense that is made of the TBI situation is guided by the sense-maker’s existing knowledge (Endsley, 2000b; Feltovich, Prietula, & Ericsson, 2006; Klein et al., 2007; Murphy & Medin, 1985; Ormerod, Barrett, & Taylor, 2008).

*Top-down processes.* The study of the knowledge structures that guide and shape our perception and understanding has a long history (Baddeley, 1997). Various constructs have been developed to describe how knowledge is stored in long-term memory (see Table 1.1 for a summary). The common feature of such constructs is that they are “explanatory [cognitive] structure[s] that define entities by describing their relationship to other entities” (Klein et al., 2007, p.118). For

clarity, following Klein et al.'s lead, the term 'frame' is used here to denote a generalised cognitive structure in which knowledge is represented, although reference will also be made to more specific types of structure where appropriate.

Term	Definition
Frame	A generalised cognitive structure in long-term memory in which knowledge is represented (e.g., Baddeley, 1997; Bartlett, 1932; Goffman, 1974; Klein et al., 2007; Schank & Abelson, 1977)..
Mental model	An internal representation of how particular external events and situations come about, including causes and consequences of states of affairs and potential courses of action afforded or limited by particular circumstances. Mental models facilitate cognitive tasks such as explaining and predicting (Fischhoff et al., 1999; Markman & Gentner, 2001).
Situation model	A temporary mental representation of a particular situation that may explain how that situation came about and what opportunities for action that state of affairs affords (Endsley, 2000a; Zwaan, 1999).
Schema	A generic knowledge structure in long-term memory, representing expectations about how things co-occur and how properties are related (Murphy & Medin, 1985). Schemas are based on past experiences and provide a framework for the automatic interpretation of new information (Carlston & Mae, 2001).
Scripts	A type of schema referring specifically to events (Schank & Abelson, 1977).
Prototype	A long-term memory representation of a particular category as an abstracted list of typical features of members of that category (Kunda, 1999).
Exemplar	A long-term memory representation of a previously encountered representative member of a particular category (Kunda, 1999).

**Table 1. 1: Types of knowledge representations**

The cognitive frames that underpin detective work will, it is proposed, include both *general knowledge* about how the world works and *domain-specific knowledge* relevant to detective work. A diverse range of general knowledge is relevant to investigative problem-solving but especially important is that which relates to social behaviour. An important task for a detective is to reach an understanding of the activities of other people, not only the offender, but also witnesses and victims, who may be truthful or deceptive; law enforcement colleagues who may have relevant information or be called on to assist; lawyers who must decide whether enough evidence exists to prosecute a suspect; members of other agencies (e.g., social services in the case of a child abuse investigation); and journalists who may help or hinder an investigation (Alison & Barrett, 2004; Ormerod et al., 2008). Understanding the behaviour of complex and often unpredictable human beings in a dynamic situation is inherently challenging (Alison & Barrett, 2004), but added to this, a central dilemma for a detective is that individuals who provide information may not just be vague or mistaken in their contribution, but may actively be trying to deceive the police and/or pursuing their own agenda (Ormerod et al., 2008). Further, actions that detectives take to gather additional information can influence the behaviour of actors within the investigation (e.g., putting out a media appeal for information may tip off an offender as to the direction of the police enquiry). In sum, unlike domains in which most research on problem-solving has been developed, a detective's understanding of the situation they are called upon to investigate must incorporate sophisticated understanding of and inference about human actions and reactions (Alison & Barrett, 2004).

Investigative sense-making is also shaped by domain-specific knowledge relating to the behaviour of individuals in forensic contexts. Experienced detectives will have a rich repository

of knowledge about the ways in which criminals, victims and witnesses may behave in criminal situations, based on previous cases they and colleagues have been involved in (c.f., Devine & Kozlowski, 1995; Farrington-Darby & Wilson, 2006; see also Smith & Flanagan, 2000). Furthermore, the domain-specific knowledge detectives employ during investigative sense-making is likely also to include knowledge of investigative opportunities that are afforded by a TBI situation (c.f., Greeno, 1994; Norman, 1998). Thus, they will have expectancies about what evidence and information might be available, where it might be found, how credible or reliable it might be, what investigative techniques might usefully be deployed to generate further information and evidence and what resources might be required to deploy them. A further important aspect of domain-specific knowledge is an understanding of the various *legal schemas* that can be applied to a TBI situation, and which shape and constrain detective sense-making, specifically, the need to prove that a particular defendant has committed a particular crime (Innes, 2007).

**Proposition 3:** Investigative sense-making is guided by general and domain-specific cognitive frames. Domain-specific knowledge relates to criminal behaviour, investigative processes and opportunities, and the law. General knowledge includes, in particular, the understanding of social behaviour.

Finally, as an investigation progresses, new case-specific information is generated and becomes an increasingly important part of the knowledge that detectives use to guide sense-making in a particular investigation.

*Bottom-up processes.* Existing knowledge is clearly important to sense-making, but the selection and application of potentially relevant frames is triggered by perceived information. According to Mumford, Reiter-Palmon, Redmond and Runco's (1994) model of problem construction, relevant

cues in a problem situation prompt the activation of existing frames in long-term memory. These triggers may include particularly salient cues or incongruous cues that violate expectancies about the situation (Klein et al., 2007; Mumford, Baughman, Threlfall, Supinski, & Costanza, 1996; Reiter-Palmon, Mumford, O'Connor Boes, & Runco, 1997). Activated frames are screened and remaining elements reorganised if necessary to construct a core framework for interpreting the TBI situation. Proficiency in problem-solving depends on being able to perceive and interpret correctly the important cues, and on having a large stock of problem representations (or a variety of frames, according to the definition above) in long term memory, which can be drawn upon when constructing a representation of the problem at hand (Rohrbaugh & Shanteau, 1999; Runco, 1994).

In straightforward cases, the recognition of key cues and the evocation of relevant frames is enough to classify a problem appropriately without the need for more elaborate or effortful sense-making activity. Klein coined the phrase 'recognition-primed decision-making' (RPDM) to describe decision-making in such straightforward situations (Klein & Calderwood, 1996). A problem situation is classified according to key contextual cues identifying it as typical of a particular type of situation (stored as a prototype in long term memory) and the most appropriate action for that particular type of situation is retrieved from a repertoire of potential actions (Klein, 1999). Because experienced decision makers encounter the same sorts of situations on a regular basis, this process of pattern recognition and action retrieval can become intuitive. For example, in one study, experienced neonatal nurses were able rapidly to identify critically ill babies with a high degree of accuracy, apparently just by looking at the children (Crandall & Getchell-Reiter, 1993; Klein, 1999). Further analysis revealed that these seemingly intuitive identifications were

in fact made on the basis of a pattern of diagnostic cues, only about half of which were listed in the medical literature, that had become salient to the nurses through years of experience of caring for vulnerable neonates (Crandall & Getchell-Reiter, 1993).

This research highlights two important points. First, some cues are clearly seen as more diagnostic than others and in some situations a problem can be classified on the basis of a few, highly diagnostic cues (Dhami, 2003; Endsley, 2000b; Gigerenzer & Goldstein, 1996; Klein et al., 2007). In a similar vein, Innes (2003) noted that detectives were influenced by ‘investigative signifiers’: particularly salient details that caused them to activate particular explanatory frames and to reject others. Second, the meaning of individual cues depends on the context in which they are embedded, including the presence and/or absence of other important cues (Murphy & Medin, 1985). In the Crandall & Getchell-Reiter (1993) study, nurses relied on a limited number of cues when judging whether or not a baby was in danger of sepsis, but it was not a single worrying cue that prompted a nurse’s concern but the presence of multiple co-occurring cues (see also Endsley, 2000b). Furthermore, different patterns of cues will trigger the retrieval of different explanatory knowledge structures (Read, 1987). Thus, in an investigative scenario, a report of a man found in his flat with stab wounds may be investigated as an attempted murder. If however, it were known that the man had been concerned about his financial health, and there was no sign of forced entry, then with the benefit of these additional cues the situation might instead be classed as a suicide attempt.

**Proposition 4:** Investigative sense-making involves paying particular attention to potentially diagnostic cues relating to the nature of the offence (if any) and the identity of the offender.

To summarise, it is argued that recognition processes will be important in investigative problem-solving. The goal-directedness of investigative sense-making specifies and constrains the initial repertoire of frames that detectives may apply to a TBI scenario to those relevant to the nature of the offence (if any) and the identity of the offender. Viewed through those frames, certain cues or cue clusters are particularly salient. These cues, and detectives' interpretation of them, trigger the recall of further frames corresponding to the various ways in which a crime or crimes may or may not have been committed, and to potential opportunities for investigation. Dynamic sense-making is thus *simultaneously* bottom-up and top-down: frames are invoked by recognition of data and data recognition is guided by the application of frames (Endsley, 2000b; Klein et al., 2007). However, investigative sense-making is further complicated because available information is often incomplete, ambiguous, rapidly changing and cannot easily be matched to identical, previously-encountered scenarios. In such cases, whilst recognition processes may allow investigators to achieve an initial, perhaps tentative, categorisation of a particular problem scenario, making sense of what is going on is likely to require considerably more cognitive effort.

*3. Investigative sense-making involves generating, elaborating and testing multiple story-like hypotheses about the crime and the offender*

A framework for understanding investigative sense-making must explain not only how it is that perceived data are salient and existing knowledge is invoked, but how these two types of information are *integrated* to form coherent and plausible investigative hypotheses, and how such hypotheses are tested, accepted and rejected. It is proposed that central to this process is the construction and manipulation of a mental representation of the TBI situation.

*Mental models, situation models and investigative sense-making.* Various definitions of the term ‘mental model’ exist, although none is universally accepted (Gentner, 2001). For the purposes of this thesis mental models are knowledge structures that serve as internal representations of how ‘systems’ (in their broadest sense, including human behaviour) work (Endsley, 2000a; Lipshitz, Shaul, Zsombok, & Klein, 1997; Markman & Gentner, 2001). Mental models allow us to manipulate information and simulate potential courses of action, allowing us to carry out cognitive tasks such as, for instance, explaining and predicting events (Christensen & Schunn, 2009; Endsley, 2000a; Gentner, 2001).

A distinction is drawn between ‘mental models’ as mental representations of general states of affairs (e.g., ‘how robberies occur’), and ‘situation models’ as mental representations of particular circumstances or situations (e.g., how this particular robbery occurred, Barrett, 2002; Endsley, 2000a). The term situation model is borrowed from models of text comprehension, and describes the content of what Graesser, Mills and Zwaan (1997) refer to as the ‘mental microworld’ in which important aspects of what the text is about are encoded. Because criminal investigations are complex, ill-defined problems, multiple alternative mental representations can be constructed based on the same initial information. Because investigative sense-making includes sense-making about the alleged criminal act(s), the possible perpetrator(s) and potential investigative opportunities, these representations have multiple layers, and can include alternative hypotheses to explain the observed data. For instance, in a situation where a child presents injuries and the allegation is made that he or she has been the victim of abuse, the investigative hypotheses are likely to include the theory that the child suffered injuries accidentally (i.e., there is no crime), that the injuries were deliberate and inflicted by person A, that they were deliberate and inflicted by person B, and so on.



In this way, the detective's mental representation of an investigation may consist of a set of alternative situation models, each representing a different hypothesis, and each being composed of multi-link causal chains. As an investigation progresses, a detective refines their mental representation to discount implausible or incoherent situation models and, eventually, to strengthen the chosen explanation (c.f., Innes, 2003). In sum, it is argued that in investigations, situation models are central to determining detectives' lines of enquiry: by critically examining the models, detectives identify gaps in knowledge and unreliable assumptions that underlie inferences, and so direct the collection of further information that will help to refine or reject models (Cohen & Freeman, 1997; Thagard & Shelley, 1997).

The generation of multiple investigative hypotheses is not simply the cognitive consequence of the complexity and ambiguity of an investigative situation; it is a legal requirement that the police pursue all reasonable lines of enquiry (CPIA, 1995). Further, investigations are always undertaken with an eye to an eventual prosecution at which prosecutors must prove the defendant is the person who committed the crime with which they have been charged, whilst the defence must simply raise reasonable doubt in the minds of the jury on either count. A police investigation should, therefore, include effort to identify any other possible explanations and suspects and to show that these are not plausible or possible, leading to a fifth proposition:

**Proposition 5:** A detective's mental representation of an investigative scenario includes the possibility of multiple mental representations relating to different plausible explanations and suspects.

*Nature and construction of investigative situation models.* As discussed above, a key element of investigative sense-making is achieving an understanding of the activities, intentions and reactions of social actors. A large body of research indicates that in such situations, sense-making is most likely to have a narrative flavour (e.g., Mar, 2004; Read & Miller, 1995; Robinson & Hawpe, 1986; Wyer Jr. & Radvansky, 1999). A narrative is “the description of a series of actions and events that unfold over time, according to causal principles. These rules of causation demand that events occur in a constrained, logically coherent order” (Mar, 2004, p.1415). People construct narratives as a cognitive heuristic for making sense of ambiguous social situations in a range of everyday and forensic contexts (e.g., Alison & Barrett, 2004; Jackson, 1988; Pennington & Hastie, 1992; Robinson & Hawpe, 1986; Schank & Abelson, 1995; Wagenaar et al., 1993; Wiener, Richmond, Seib, Rauch, & Hackney, 2002). Given that crimes are fundamentally about human motivations, actions and reactions, and about causal links between particular events, it is proposed that a detective’s attempts to make sense of ambiguous, potentially criminal, scenarios are essentially attempts to construct and test narratives that explain social and causal aspects of a TBI situation (Alison & Barrett, 2004; Alison et al., 2007; Barrett, 2002; Mar, 2004; see also Stubbins & Stubbins, 2008).

The research cited thus far suggests that the people will use story generation as a cognitive heuristic for sense-making, including in forensic domains. It does not automatically follow, however, that detectives’ mental representations of investigative data are necessarily story-like nor that their sense-making is narrative. It is plausible that, for instance, a detective’s mental representation may be organised according to the legal charge(s) that could eventually be brought against a suspect, with evidence categorised accordingly (c.f., Pennington & Hastie,

1992). Nevertheless, some empirical research on detective work lends support to the argument that detectives engage in story-building to drive their investigation. For instance, in his ethnographic study of an English homicide squad, Innes describes how detectives attempt to reconstruct a narrative to explain the events surrounding the death of a victim (Innes, 2003, 2007). Innes observed that narratives are constructed not just at the point of preparing a case for court, but “as investigative heuristics to organise information [as it is] collected” (2003, p.164).

**Proposition 6:** Investigative sense-making involves constructing hypotheses in the form of narrative situation models that provide causal explanations for observed circumstances.

The construction of a plausible narrative may be an intuitive and valuable heuristic for organising and making sense of investigative data. However, narrative elaborations are not a substitute for evidence. The explanatory power of narrative could lead investigators to construct a story early on in the investigation that appears at face value sufficiently plausible and comprehensive to cause other potential narratives and additional (potentially disconfirming) evidence, to be neglected or ignored (Innes, 2007). This important potential source of investigative failure is considered further in Chapter 6.

*Evaluating hypotheses.* It has been suggested that detectives may generate several alternative hypotheses to account for perceived data. Hypotheses may relate, for instance, to the sequence of events, to whether a particular individual is a potential suspect, or to where evidence may be found. In ambiguous situations we tend to reason abductively to generate potential explanations (Josephson, 2001) and to make judgements about the likelihood of those explanations on the grounds of coherence, plausibility and breadth of explanation (Keil, 2006; Thagard & Shelley, 1997).

Kahnemann and Tversky (1982) proposed that we make rapid judgements about the likelihood of events (antecedents to a perceived state of affairs, predictions of their outcome or alternative explanations for their existence) through mental simulation, where the more easily a simulation can be ‘run’ the more likely we believe it is to occur. The deliberate construction and manipulation of alternative situation models in this way is a variation on the *availability heuristic* strategy (i.e., the more readily examples come to mind, the more common we judge them to be, Tversky & Kahneman, 1973). The suggestion that we use mental simulation to judge the plausibility of possible scenarios has received empirical support in a range of domains including military decision-making, social cognition and jury decision-making (e.g., Cohen, Freeman, & Thompson, 1998; Davies & Stone, 1995; Dougherty, Gettys, & Thomas, 1997; Green & McCloy, 2003; Klein, 1999) and tentative support for the use of mental simulation in criminal investigations was reported by Barrett in an exploratory analysis of decision-making in a detective training simulation (Barrett, 2002).

**Proposition 7:** Investigative sense-making involves the evaluation of hypotheses about what might have occurred through the use of mental simulation to assess plausibility.

#### *4. Investigative sense-making drives investigative actions*

Earlier it was suggested that restricting a study of detective work to discrete decisions could not capture the essence of such work, which is at its core a problem-solving process in which decisions play an important, but not unique, part. However, not all detective work involves detailed sense-making: some is essentially the application of a series of if-then rules in well-understood situations (Innes, 2003). Errors of decision-making in these types of situations are *procedural errors* and are distinguished from *situation assessment errors*, which involve the

failure to properly understand the problem situation (Endsley, 2000b; Reason, 1990, see Table 1.2). Say, for example, the first officer to the scene of a violent death fails to stop members of public walking through the scene and contaminating forensic material that might have been present. Because any suspicious death should be treated as a potential crime scene (ACPO, 2000), and it was obvious that the situation involved a potentially suspicious death, the attending officer's action choice (to allow the public access to the scene) was a procedural error. Such errors can be minimised when officers are well-trained and practiced in application of those straightforward if-then rules. In recent years, such rules have been codified in a series of official guidance documents, such as the Murder Investigation Manual (ACPO, 2000) and Core Investigative Doctrine (ACPO, 2005), which provide lists of actions to take in clearly defined circumstances.

		Situation assessment	
		Correct	Incorrect
<b>Action choice</b> (given the situation assessment)	<b>Correct</b>	Correct decision	Situation assessment error
	<b>Incorrect</b>	Procedural error	Error of understanding <i>and</i> action

**Table 1.2: Types of decision error (after Reason, 1990)**

This routine process of matching situations to frames and then applying 'if-then' rules is the essence of Klein's RPDM model (discussed above), which has been tested in a wide range of other applied domains where experienced professionals take decisions in high-stakes situations (Klein, 1999), including in police work (e.g., Zimmerman, 2008). However, Klein's model also takes account of the fact that even in well-understood situations action choices are not always

simple. For instance, an offender may have been firmly identified but not located. A detective has various options, including to issue a media appeal for information, but although a media appeal might lead to information that will help locate the offender it may also alert the offender to police interest and make them more difficult to find, and further could contribute to increased public fear of crime (Innes, 1999). Klein suggests that in such circumstances decision-makers mentally simulate the consequences of a particular action before committing to a course of action or inaction (Klein & Crandall, 1995). These processes are summarised in Table 1.3. Thus, actions may be straight-forward procedures that require little cognitive effort, or part of a more complex and creative problem-solving process that requires making sense of the situation and understanding both the outcome of taking a particular action and the consequences of failing to act.

		<b>Sense-making</b>	
		<b>Simple</b> (situation recognised as typical or straightforward)	<b>Complex</b> (situation not recognised)
<b>Action choice</b>	<b>Obvious</b> (one clear action choice given the situation)	'Simple match': match situation to frame, take prescribed action	Mental simulation and evaluation, match outcome to frame, take prescribed action
	<b>Not obvious</b> (multiple options or no clear options)	Match situation to frame, mentally simulate most promising action option	Mental simulation and evaluation, match outcome to frame, mentally simulate most promising action option

**Table 1.3: Investigative decisions types as a function of ease of sense-making (simple vs. complex) and action choice (obvious vs. not obvious), after Klein (1999)**

**Proposition 8:** Where action choices are unclear, detectives mentally simulate the consequences of taking particular actions to assess their probable impact on the investigation.

Actions are taken strategically to enhance the quality and quantity of information available, and to convert relevant information into evidence. As Innes puts it: “one of the primary objectives of investigative work is to effect a translation of the incident into a form appropriate to legal discourse” (2003, p.66). In serious cases where evidence is scarce Brandl (1993a) describes detectives as ‘cultivating’ potentially relevant information by using tried and tested strategies (e.g., neighbourhood enquiries, talking to informants). Thus investigative actions lead to the generation of new information, or the challenging or corroboration of existing information and thus prompt further sense-making. The cycle of investigative sense-making and action, the essence of detective work, continues until a coherent, plausible, unique, legally-framed explanation of the circumstances of the crime is reached. This explanation should, of course, also be as close to the truth as possible. However, there are circumstances under which detectives may construct explanations for a TBI situation which are coherent and plausible, but partially or wholly wrong, raising the danger of a miscarriage of justice (the prosecution of the innocent or the failure to apprehend the guilty).

#### *Summary and conclusions*

Detective work is a process of active problem-solving involving making sense of inherently ambiguous information. Investigative sense-making involves extracting relevant information from the mass of ambiguous data available in the course of a criminal investigation and the integration of this information with relevant case-specific, domain-specific and general

knowledge to develop and test hypotheses about what might have occurred. Mental representations of perceived and existing knowledge are constructed and manipulated, and these representations direct the search for new information, the development of lines of enquiry and the anticipation of future events (Barrett, 2002). The final result must be a complete and coherent narrative of the circumstances of the crime. Where they exist, alternative hypotheses should be shown to be implausible, incoherent or unreliable. The process of constructing of a single narrative is the process of investigation.

Earlier reference was made to the skills underpinning ‘investigative ability’ identified by Smith and Flanagan in their study of the ‘effective detective’ (Smith & Flanagan, 2000). It was noted that definitions of these core skills were too broad to allow a precise understanding of the cognitive abilities required of high-performing investigators and the conditions under which such abilities might be degraded. Similarly, other models of investigation, such as the Murder Investigation model (ACPO, 2000), Core Investigative Doctrine (ACPO, 2005) and the SARA model (‘Scanning, Assessment, Response, Assessment’, part of the ‘Problem Oriented Policing’ approach, see Clarke & Eck, 2003) simply describe the steps of investigation or investigative problem-solving in their most general and basic form without going into the detail of what processes underlie these steps. The investigative sense-making model derived in this chapter, which integrates a range of cognitive and social psychological research on sense-making and action, provides a more specific account of the likely processes underlying effective detective work and a set of theoretically grounded propositions that are open to empirical scrutiny. In particular, the framework presented raises the following research questions, which are explored in greater detail through the studies presented in subsequent chapters:



- How do detectives assimilate and organise investigative information from the earliest stages of an investigation? Do they, as suggested above, form initial impressions of ‘to-be-investigated’ situations by generating narratives to organise the data? If not, how is such information selected and represented mentally?
- Do detectives generate multiple hypotheses about the crime (if any), the individuals involved, the offender, and potential suspects, or do they show signs of ‘tunnel vision’, focusing on a single line of enquiry? Are hypotheses generated and tested serially until a satisfactory plausible explanation is found or are multiple hypotheses tested against each other, in parallel? If not, how do they assimilate and organise investigative information?
- How does the mental representation a detective builds of an investigation influence the actions that they are aware of and choose to take?
- How might a failure in investigative sense-making influence the overall outcome of an investigation and how might such failures be minimised or avoided?

In the remainder of this thesis these propositions regarding investigative sense-making are examined more closely in a series of studies exploring how detectives make sense of investigative information, starting with a pilot study which aimed to explore how detectives interpret the limited information available at the earliest stage of an investigation: the first report of a crime.

## CHAPTER 2. DETECTIVES' HYPOTHESES IN CRIMINAL INVESTIGATIONS: AN EXPLORATORY STUDY

### Introduction

In Chapter 1, the importance of sense-making to effective investigation was highlighted. Inadequate sense-making can lead to missed opportunities, wasted resources and, in extreme cases, further offences. The current study investigates propositions 1, 2, 3 and 4 from the theoretical framework established in Chapter 1 and is an exploratory attempt to shed light on the means by which detectives construct hypotheses based on the often confusing data typical of the early stages of a criminal investigation.

#### *Story construction to achieve investigative understanding*

At the start of a criminal investigation the information available to investigators, which may derive from crime scenes, witness and victim interviews and police databases, is often complex, ambiguous and contradictory, and thus subject to multiple interpretations. The detective must direct the investigation by formulating one or more explanations about what happened and looking for evidence that favours one explanation over another (Innes, 2003). In this sense, a criminal investigation is a process of hypothesis generation and testing. In Chapter 1 it was argued that this process involved the construction and manipulation of situation models: temporary mental representations of possible states of affairs.

#### *Content and structure of investigative situation models*

When investigating a crime, detectives must determine not only 'whodunnit', but also 'what' (exactly) they did and 'why' they did it. To achieve a conviction, the prosecution, relying on evidence gathered by the police, must show that the defendant is the person who carried out

the alleged crime (identity) and that they carried out the act for which they have been charged (*actus reus*). Furthermore, in most cases in English law (and in legal systems based on English law), the prosecution must also show that the defendant carried out the act with criminal intent (*mens rea*, Wagenaar et al., 1993). These three elements (identity, *actus reus* and *mens rea*) form the basis of the charge (or charges) against the defendant, and are sometimes referred to as the legal argument (Pennington and Hastie, 1986). The evidence gathered by the police, and presented by the prosecution, should pertain to each of these points (van Koppen, 1995; Wagenaar et al, 1993). It is plausible, therefore, that the structure of investigative situation models incorporates these three elements: the identity of a suspect and/or the likely characteristics of the offender, the offender's action(s), and the offender's intentions. In this sense legal arguments could be seen as providing a template, or prototypical script, for the detective's mental representation, and it might be expected that cues relating to the legal argument will be most salient to a officer when assessing a TBI situation.

However, it is also conceivable that, when seeking an understanding of crime-related events, a detective may construct more elaborate narrative situation models that go beyond the elements of the legal argument. In a 'mock trial' study exploring the strategies used by jurors to reach a verdict, Pennington and Hastie (1986) found that only one of their mock jurors deliberated about their verdict by considering the points in the charge against the defendant, and she "soon abandoned this... strategy as too confusing. She subsequently reverted to causal reasoning and narrative form to summarise her remarks" (1986, p.250). If detectives approach crime-related data in the same way as Pennington and Hastie's mock jurors, they might be expected to use a more elaborative narrative construction than would be necessary using a 'legal

argument' strategy, and cues that may be only peripherally relevant to the legal argument may nevertheless be salient.

If investigative situation models are guided by schemas based on legal arguments, then the degree to which elements of a perceived TBI situation map onto elements of the schema may influence the nature and construction of an investigative situation model. Where the correspondence is close, the amount of cognitive effort that a detective has to expend in order to construct a representation is relatively small, compared to the amount of effort required to comprehend a crime situation that does not obviously correspond to a legal schema. Furthermore, if these schemas are based on legal arguments, which will be familiar to officers who are trained in and conversant with the relevant criminal law, then the degree to which several officers agree on what is going on in a crime situation will be related to the correspondence between the perceived situation and the legal schema. As the points of correspondence reduce, the number of schemas that could plausibly apply to the situation increases, and we might therefore expect a greater divergence of opinion between officers as to what is going on in the situation.

Additionally, or perhaps alternatively, experience of investigating crimes may have an impact on officers' sense-making agreement. As detectives become more experienced, their repertoire of encountered TBI situations increases and individual repertoires increasingly overlap. Thus, it might be argued that a group of officers with greater investigative experience is more likely to agree on the interpretation of a TBI situation, as it is more likely that they will all have had previous experience of similar situations, compared to a group of novice detectives who may have encountered fewer TBI situations. The degree to which officers agree could therefore be related to the amount of experience they have in investigating serious crimes.

*Approach and aims of the current study*

In the current study, the nature and content of detectives' situation models are inferred from the way in which they interpret different crime-related vignettes dealing with: an alleged robbery; a possible attempted murder or suicide; a potential case of child abuse; and a possible theft or fraud. Because this area has been so little studied, the current approach is exploratory, with the aim of scoping the area and raising issues for further, more rigorous, examination. The first area of interest is the nature of the interpretations given by the officers, in particular, evidence for shared legal schemas or prototypical narratives that provide common structure to these interpretations. The second is the influence of vignette characteristics on the nature and content of the hypotheses.

## Method

*Participants*

Forty-two police officers from a single UK police force attending investigative skills training courses served as participants in this study. Forty already had experience of investigating serious crimes, with between 6 months and 17.8 years' experience in one or more specialist units ( $M=3.6$ ,  $SD=3.1$  years), although two had no such experience and had been given places on the basis of their potential for detective work<sup>3</sup>. Twenty-two officers were male and 20 were female officers, with ages ranging from 22.9 to 49.0 years ( $M=32.6$ ,  $SD=5.9$  years), and a mean 9.5 years ( $SD=6.5$  years) in police service. Most (86%) were constables<sup>4</sup>, with the remainder sergeants. Participants were tested in three groups as part of their course attendance, although the exercise was not part of their course assessment.

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<sup>3</sup> To meet the Force's requirements for participant confidentiality no further details were provided by the police of how this potential had been assessed.

<sup>4</sup> A description of police ranks is given in Appendix A.

### *Design and materials*

Participants were presented with four scenarios, each dealing with a different type of crime and victim and asked to explain what they believed was happening in each vignette. The written answers generated by officers when asked to explain what they thought was going on in each vignette were the dependent variables. Several factors could influence the content and nature of these answers, including the vignettes themselves. Also potentially relevant is a participant's expertise investigating serious crime and the degree to which they have been socialised into the police service. Thus, the vignettes, length of police service and years of experience of investigating serious crime were all treated as independent variables.

To ensure that the vignettes were as similar as possible to the sort of initial crime reports a detective might receive at the start of an investigation, the researcher (who had no experience of reactive investigation) asked two experienced police officers seconded to the force training department to prepare short but plausible scenarios. The officers based the vignettes on real cases and checked them for plausibility with other experienced police officers. The scenarios are summarised in Table 2.1 (complete vignettes are presented in Appendix B).

### *Procedure*

Participants were given a brief overview of the study and were given assurances about the confidentiality of their data. At this point, they were given the opportunity to withdraw from the study; all consented to continue. Each was given all four scenarios (with the order of scenarios randomised for each participant) and an answer booklet. Participants were asked to imagine that they had been asked to deal with each scenario and were asked to explain in writing, with

reasons, what they thought had happened or was happening in each scenario (complete instructions to participants are presented in Appendix B).

No time limit was set and participants could write as much as they wished. Most participants took between 60 and 90 minutes to complete the exercise and a demographic questionnaire, which asked for their background details (age, gender, qualifications, career history and experience of different types of investigation). Finally, participants were asked to rate the study, from 1 (very easy) to 5 (very difficult). The mean score was 1.79 ( $n=39$ , range 1 to 3,  $SD=0.73$ ).

Scenario	Summary of scenario	Length of scenario
SMITH	Susan Smith calls, reporting that a large amount of money has been stolen from her sister Christine's bank account. Christine is in a residential home and has paranoid schizophrenia and Parkinson's disease. The care home manager is John Adams.	253 words
WALSH	Richard Walsh, a taxi driver, reports that he has been robbed twice of his cash bag by a customer. The alleged robbery was carried out by a man whose voice the taxi controller recognised as Matthew Morgan.	268 words
KIMPTON	Jerry Kimpton is found alive but slumped in a chair in his flat, with multiple injuries to the neck and chest and a knife at his feet. His business partner Richard Elliot had called the police having seen, through the letterbox, blood in Kimpton's hallway. Elliott said that he and Kimpton had argued the previous evening about company profits.	241 words
JENKINS	Gwen Jenkins contacts the police asking for advice about her four year old grandson Luke who apparently has injuries to his buttocks and legs. Luke is currently staying overnight with Gwen, his paternal grandmother. He usually lives with his mother, who is currently in a new relationship with John Mills, a violent man who has convictions for assault.	248 words

**Table 2. 1: Summary of vignettes (see Appendix B for full materials)**

### *Coding procedure*

In all, 164 sets of answers were transcribed (38 participants completed all four scenarios, the remaining four participants completed three out of the four) and subjected to qualitative content analysis. A dictionary of *initial hypothesis* categories was developed by first identifying each participant's initial hypothesis and then grouping these hypotheses into categories<sup>5</sup>. Where possible, categories were collapsed into each other. Where a participant stated more than one initial hypothesis, the dominant hypothesis was chosen (e.g. the answer “*it could be hypothesis X or it could be hypothesis Y, but on balance I think it is hypothesis Y*” was coded as “Y”). In most cases it was possible to distinguish a dominant hypothesis although in the Kimpton scenario, a sizeable minority of participants gave the same two initial hypotheses (either attempted suicide or assault) without choosing a dominant one. This dual hypothesis was thus given its own hypothesis category. The coding dictionary is reproduced in Appendix B.

*Cues* and *inferences* were also coded: a ‘cue’ was defined as a single, stand-alone piece of information from the original vignette. Inferences were those parts of the answers in which participants went beyond the information given and inferred new information. As with the hypotheses, all possible cues and inferences were coded and were later combined where possible into broader categories.

### Results and discussion

Participants attended to relatively few cues in their answers (the median number of cues mentioned for each scenario was 3), but the nature of the cues and their interpretation varied

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<sup>5</sup> Participants were asked what they believed was going on in the hypothesis, but were also asked what alternative explanations there might be for the information in the vignettes. For reasons of space this analysis is not included in this thesis.



considerably between individuals. Both the characteristics of the vignettes and participants' individual differences appeared to influence the content and nature of the initial explanations proposed for the information in the vignettes. This section first highlights the range of hypotheses generated by participants and then explores in some detail aspects of participants' answers that may account for this variation. Specifically, participants appeared to make sense of the vignettes in terms of the nature of the crime (if any) that had been committed and the identity of the offender (if any).

*Individual and task-related differences in selection of initial hypotheses*

A summary of the initial and alternative hypotheses put forward by participants is presented in Table 2.2. Participants did not achieve complete agreement on either their initial or their alternative hypotheses in any of the scenarios and the degree of variation was clearly related to the individual scenarios. In the Smith scenario, for instance, over 90% of participants suggested that Smith's money had been stolen, and in the Jenkins scenario, a similar proportion (88%) agreed that the child had been abused. In both cases, however, there was disagreement about who was most likely responsible. In the Walsh and Kimpton scenarios, on the other hand, there was more marked disagreement about what had happened. For instance, although the modal response (64%) was that Kimpton had sustained his injuries during an assault, a sizeable minority (31%) of participants concluded that it was more or at least as likely that Kimpton had attempted suicide. In the Walsh vignette, 42% of participants believed that Walsh had been robbed, 29% suggested he was being blackmailed, and 5% proposed that Walsh had paid his fare for sex and was now fabricating a story about robbery to cover the missing money.

<b>Hypothesis</b>	<b>n</b>	<b>%</b>
<b><i>Walsh (n=41)</i></b>		
Walsh has been the victim of theft or robbery	17	42%
Walsh is being blackmailed	12	29%
Walsh has stolen the money himself	4	10%
States that Walsh is reporting theft/robbery	4	10%
Does not speculate or offer a hypothesis	4	10%
<b><i>Jenkins (n=40)</i></b>		
Luke has been abused by Mills	17	43%
Luke has been abused by Mills and Luke's mother	9	23%
Luke has been abused, no offender specified	6	15%
Luke has been abused, multiple potential offenders named	3	8%
Does not speculate or offer a hypothesis	3	8%
States that Gwen is reporting abuse	2	5%
<b><i>Kimpton (n=42)</i></b>		
Kimpton has been assaulted by Elliot	20	48%
Kimpton has been assaulted, no offender specified	7	17%
Equally likely that Kimpton has been assaulted OR has attempted suicide	7	17%
Kimpton's wounds have been self-inflicted	6	14%
Kimpton has been the victim of a burglary gone wrong	1	2%
Does not speculate or offer a hypothesis	1	2%
<b><i>Smith (n=41)</i></b>		
Adams has stolen from Christine	22	54%
Someone (unspecified) from the home has stolen from Christine	12	29%
Someone (unspecified) has stolen from Christine	4	10%
Someone fraudulently applied for cash card / cheque book	2	5%
States that Susan has reported suspected theft	1	2%

**Table 2. 2: Initial hypotheses for each scenario, showing numbers and percentages of participants suggesting each hypothesis (numbers may not add up to 100% because of rounding)**

Because, as discussed above, the hypothesis chosen (dependent variable) could depend on officers' investigative and police experience, a series of one-way ANOVAs for each of the scenarios was conducted. These indicated that neither length of police service nor length of

experience in specialist crime units had any significant impact on the hypothesis category chosen (total months in police service as the dependent variable, with different hypotheses in each scenario as the factors: Walsh:  $F(3,37)=0.68$ ;  $p=0.57$ ; Jenkins:  $F(2,37)=1.63$ ;  $p=0.21$ ; Kimpton:  $F(3,36)=1.57$ ;  $p=0.22$ ; Smith:  $F(2,35)=2.20$ ;  $p=0.13$ . With total months in specialist crime units as the dependent variable: Walsh:  $F(3,33)=0.25$ ;  $p=0.86$ ; Jenkins:  $F(2,34)=0.21$ ,  $p=0.80$ ; Kimpton:  $F(3,32)=0.91$ ,  $p=0.45$ ; Smith:  $F(2,32)=0.29$ ,  $p=0.72$ ).

In order to examine the sources of variability in participants' hypotheses, answers were subject to further quantitative and qualitative analysis, focussing on the cues used and inferences made by participants when developing their answers. Participants tended to mention only a relatively small number of cues when constructing their answers: in each vignette, the median number of cues mentioned was between 8% and 10% of all possible cues. However, there was considerable variability both in the nature of the cues cited and in the interpretation of these cues. This selection and interpretation process supported two key elements in participants' reasoning: in an effort to make sense of the vignettes, participants appeared to concentrate firstly on the nature of the crime (if any) that was being reported, and secondly on who might have committed the alleged crime.

*Search for meaning: the nature of the crime*

Different vignettes appeared to prompt different degrees of cognitive effort in establishing whether or not a crime had been committed and if so what the crime might be. For instance, the overwhelming majority of participants (90%) agreed that the loss of money from Christine Smith's bank account was the result of theft. This hypothesis seemed uncontroversial, with participants making little attempt to justify this interpretation. In the Jenkins scenario, on the other hand, although the agreement that the child had been the victim of abuse was high (80%),

participants' answers nevertheless indicated that they had made some effort to determine whether or not a crime had been committed, by focusing on cues that indicated that the injuries to Luke were non-accidental. Four of the ten most frequently mentioned cues concerned Luke's injuries, and second most frequently mentioned cue was the fact that Luke would not account for how he received his injuries (mentioned by 28% of participants).

Despite the high level of agreement in initial hypothesis in both of these scenarios, it appeared more important to participants to explain why the Jenkins case should be treated as one of potential child abuse than to justify treating the Smith case as potential theft. This may be because the consequences of investigating injuries to a child as potential abuse are more serious: suspicions of child abuse can have a huge impact on a family even if it is later proven that no abuse has occurred. In contrast, although investigating a potential theft that turns out to have an innocent explanation may be a waste of police time and may cause minor distress to those involved, it is unlikely to have the same lasting impact on the alleged victim or their relatives.

In the Kimpton vignette, there was a more conspicuous divergence of opinion regarding the crime. Although the modal response was that Kimpton had sustained his injuries during an assault by someone else (67%), a sizeable minority (31%) of participants concluded that it was more likely, or at least as likely that Kimpton had attempted suicide than had been the victim of assault. Here, the same cues were interpreted differently depending on the hypothesis. The argument about company profits was mentioned by 75% of participants who had implicated Elliott in an assault on Kimpton, and was interpreted as providing a motive for Elliot's hypothesised actions. A similar proportion of participants who suggested that Kimpton had attempted suicide also mentioned the argument (71%), but they argued that it indicated a problem with the company so serious as to drive Kimpton to take his own life. Interestingly, this cue was

not mentioned by any of the seven participants who suggested that Kimpton had been assaulted by an unknown offender. It seems, therefore, that when participants named someone who had caused the injuries (either Elliott or Kimpton himself), they tended also to suggest a motivation for this individual's action.

Relatively few (30%) of the 20 participants who hypothesised that Elliot had assaulted Kimpton mentioned the lack of disturbance within the flat; of those that did, half explicitly interpreted this cue to indicate that whoever assaulted Kimpton must have been known to him. Of the six participants who speculated that attempted suicide was most likely, five agreed that the absence of signs of a disturbance and the fact that the house was secure was good evidence that no one else was involved in the incident.

The two contrasting hypotheses, with their differing interpretations of the same cues, are illustrated in the following examples:

*Kimpton has attempted suicide. The house is secure. There is no sign of a struggle. The knife is at his feet (as if dropped following injuries). The argument about company profits suggests that there was a problem in Kimpton's life (work-related). Kimpton is the senior partner so has a lot of responsibility. (Participant 14)*

*It is possible that Elliot and Kimpton have had a big row / fight and within Kimpton's flat Elliot has stabbed Kimpton repeatedly believing that he has killed him. Elliot has staged this 'concern' call to try and cover his tracks, believing that Kimpton is dead and will never be able to say what happened. I believe this as Elliot and Kimpton have been rowing about company profits. Whoever stabbed Kimpton probably knew him as it appears to have occurred inside the flat with no signs of forced entry (offender let in?)*

*and no signs of disturbance. It appears Elliot has a motive and is at the address.*

(Participant 9)

Hypotheses in the Walsh vignette revealed an even greater divergence of opinion as to the nature of the crime that may have occurred. The modal initial hypothesis in the Walsh scenario was that money had been stolen from Walsh (42%, 17), although within this category there was considerable disagreement as to whether the crime was robbery, theft or simply fare evasion. The second most common hypothesis was that Walsh was being blackmailed (29%, 12). Four participants (10%) suggested that Walsh had stolen the money, perhaps by paying for sexual favours from his fare, and was trying to cover his tracks. The remainder (8 participants, 20%) either refused to speculate, or simply said that Walsh had reported an alleged robbery, without stating exactly what had happened.

As with the Kimpton scenario, different cues were selected, or the same cues interpreted differently, in order to establish the nature of the crime. The central cues for participants who suggested that money had been stolen were that Walsh had handed over money to the fare on the first and/or second occasions (mentioned by 53% and 41% of these participants respectively) and the fact that Walsh said that he was in fear on both occasions (24% and 29%). The most common inferences were that the fare believed that Walsh was homosexual or that Walsh was in fact homosexual (mentioned by 35% of participants in this hypothesis category), that the fare's actions were consistent with a sexual proposition to Walsh (41%) and that the fare's comments on the second occasion were homophobic (41%). These cues and inferences were knit together into a story in which the offender, believing Walsh to be gay, deliberately intimidated him (by making mock sexual advances on the first occasion, and making homophobic comments on the second

occasion). Walsh, fearing for his safety, handed over cash on both occasions. The following answer is typical:

*This is a homophobically aggravated robbery. The offender has used his knowledge of the sexual orientation of the taxi driver to threaten him and put him in fear of violence (ie possible exposure) to get the money. The offender has then gone on to reinforce this fear two weeks later when he again uses similar homophobic language and threats to gain money (Participant 19).*

Despite a few common elements, in comparison with participants in the robbery/theft hypothesis category, those suggesting blackmail used a much greater number of inferences in arguing for their hypothesis. Both hypotheses are predicated on the assumption that the offender used his knowledge of or belief in Walsh's homosexuality to extract money from Walsh. Overall, 21(50%) of all participants either stated explicitly that Walsh was gay, or implied that he had intended to have sex with the man. However, this proportion was 75% of those in the 'blackmail' hypothesis category, compared with just 35% in the 'money stolen' category. It may be that, for some, the assumption that Walsh was gay tended to trigger a blackmail schema which overrode the robbery/theft schema. The reasoning in these answers was dominated by inferences and reflected stereotypical assumptions about 'characteristic' homosexual behaviour and shame. A typical account is that given by Participant 15:

*Walsh has collected this fare two weeks ago and has had some form of sexual contact with him. He is now being threatened / blackmailed by the individual for money. This is probably on the basis that Walsh is gay and doesn't wish for this to be revealed. As he can't afford to pay he is taking the company's money and using it saying he is being robbed. He can't explain the money deficit so is saying he has been robbed but also*

*saying he has had no sexual contact with the male or anything to warrant blackmail / payment. The report is being made in an effort to cover this and get his employers to retain his services.*

Walsh reportedly handing over the cash bags to his passenger on either the first and/or the second occasion was mentioned by over half (54%) of the participants. This action was explained differently depending on the hypothesis chosen. When suggesting that money had been stolen from Walsh, participants explained the apparently voluntary handing over of the cash by constructing an argument in which Walsh had felt in fear because of the homophobic intimidation by the passenger. The next most common hypothesis, blackmail, was supported by the argument that Walsh was actively trying to conceal his sexuality; explicit force was neither used nor threatened, and it was instead the threat of exposure that caused Walsh to part with the money.

In order to prove robbery, the prosecution would have to show that the person committing the offence used, or threatened, immediate force to steal property from the victim. It is unsurprising therefore that indications that the victim was in fear of violence from the offender, or, conversely, handed over the money willingly, were particularly salient to a large number of the participants. What is surprising is, as mentioned above, the fact that almost a third of participants believed that it was more likely that Walsh had sexual contact with the male and was now being blackmailed than had genuinely been robbed and was telling the truth. This is suggestive of a readily available schema concerning illicit homosexual interactions, the recall of which is triggered by a few salient cues relating to the fare's apparent propositioning of Walsh and Walsh's apparent willingness to drive to a quiet location.

One explanation for participants' behaviour is that they are consciously or unconsciously homophobic (Bourne, 2002). However, empirical studies of police attitudes towards homosexuals



present a more mixed picture (e.g., Younglove, Kerr, & Vitello, 2002) and given the emphasis in police training on diversity issues (HMIC, 2003), it might be surprising to find overtly homophobic sentiments. An alternative explanation is that the vignette described a situation which did not easily fit a legal argument template. Although the report claimed to be one of a robbery, many of the elements in the scenario were inconsistent with this classification of the alleged crime (the lack of force used, the apparent willingness of Walsh to hand over his money, the failure of Walsh to report the crime at the earliest opportunity). Since the incident did not conform to a commonly-held, typical robbery schema, officers were forced to generate alternative explanations to account for the facts.

In sum, then, the different incidents seemed to prompt different levels of effort in determining what crime had been committed in each scenario. One factor influencing the level of effort may be the seriousness of the consequences of investigating as a crime an incident that has an innocent explanation, as in the Jenkins and Smith scenarios. Another factor may be the degree to which incidents match legal schemas. In the Kimpton case, the choice seemed to be between hypothesising an assault and an attempted suicide, and cues were interpreted so as to be consistent with the favoured hypothesis. In the Walsh vignette, key elements in the scenario violated participants' expectations about what a robbery should involve: the story told by the informant (Walsh) did not match a prototypical 'robbery story', and participants therefore appeared to struggle to make sense of the data in terms of what crime may have been committed.

*Search for meaning: the offender*

With the exception of the Walsh scenario, the modal hypothesis in each case was that an individual named in the vignette was responsible for committing the crime. In the Jenkins scenario, the most commonly implicated individual was John Mills, Luke's mother's new boyfriend. Those participants who argued that Mills was responsible for abusing Luke, with or without the support of Luke's mother, mentioned Mills' violent tendencies (40%), as evidenced by his previous convictions for assault (35%). A quarter (25%) of these participants also surmised that the abuse was relatively recent and the coincidence of injuries to Luke with the arrival of Mills led them to infer that Mills was responsible for the injuries.

In general, participants made few elaborated inferences about the motives and characteristics of the actors in the Jenkins scenario. Where elaborations were made, they tended to be about factors that might prompt Mills to strike Luke, indicating that for a small number of participants, Mills' violent tendencies were a necessary but not sufficient cause of him hitting the child. For instance, one participant suggested that, in addition to Mills' tendency to “*assault others more readily than statistical average*”, a reason why he might be prone to striking Luke in particular was that he was “*living with a boy he has probably little relationship/affinity with, given he is not father and has only been living with him for short time*” (Participant 4). Another participant developed the following story-like account:

*John Mills (known to be violent) is less than happy with the amount of attention that Hayley gives her son... time she could have spent on him! He now sees fit to punish the child in the only way he knows how and has struck the child with a stick or similar object. Hayley is scared of Mills and although concerned about what has happened is too scared to tell anyone about what's happened (Participant 30).*

The Kimpton vignette did not offer any potential suspects with clear motivation or characteristics that might predispose them towards assault. Nearly half (48%) of the participants nevertheless viewed Elliot, Kimpton's business partner and the man who had reported the crime to the police, as a potential suspect. This was in the absence of any cues, apart from the argument, to suggest he was a likely assailant. Indeed, the fact that he had contacted police to alert them to Kimpton's plight might suggest the opposite. These participants' answers tended to include a number of elaborated inferences about Elliot's possible motivation for the assault and his reasons for calling the police. A natural assumption is that people would not normally report a crime that they had committed. It is possible, therefore, that when suggesting that the person reporting a crime may in fact be responsible for it, participants felt the need develop a plausible explanation for why they would act in this way. Participants in this hypothesis category suggested that the argument became heated, resulting in one man stabbing the other. The cunning assailant then tried to hoodwink the police by pretending he was an innocent witness. This is suggestive of shared schemas in which offenders attempt to cover their tracks by deceiving the police, or in which arguments spiral out of control, resulting in attempted murder. In the Jenkins scenario, in contrast, the named offender (Mills) was already strongly representative, hence minimal additional information or explanations had to be inferred or developed.

In the Smith scenario, the modal response was that the manager of the home, John Adams, one of the only other named individuals in the scenario, was responsible for the theft of money from Christine Smith. This hypothesis was supported by numerous deductive inferences. For instance, participants stated that that whoever stole the money knew about the £10,000, and then deduced that because John Adams knew about the £10,000, he was a credible suspect. A second common deduction was that whoever stole the money had access to Christine's bank

details and cheque books; John Adams has access to Christine's bank details and cheque books; therefore, John Adams is a strong suspect. Participants supported this hypothesis with fewer inferences and more evidence compared to the Kimpton scenario. Participant 12's account was typical of these answers:

*John Adams, the manager of the care home, appears to be the person within the care home that has the greatest access to Christine's bank account. Her cheque-book is kept in his office and he is responsible for paying cash into her bank account. It therefore appears that the most likely hypothesis on the limited information I have is that John Adams may have applied cash cards for her account and thus begun withdrawing money. He then also forged her signature on the cheques* (Participant 12).

It may be that, as with the Kimpton scenario, participants focused on John Adams, a named individual within the scenario and proceeded to consider how and why that individual may have committed the offence. Yet in their justifications for suggesting Adams as responsible, participants focused exclusively on *how* Adams might have achieved the theft: none suggested a reason *why* he might have done so. Strong evidence of opportunity may have been sufficient for participants to conclude that Adams was a likely suspect. In contrast, participants tended to mention both motive and opportunity when justifying considering Elliot a suspect in the Kimpton scenario. Perhaps this was because there was no persuasive evidence pointing to how Elliot achieved the assault, nor his motive for doing so. This may also account for the greater tendency of participants in the Kimpton scenario to generate explanatory inferences to supplement the information given.

It is also possible that participants felt an explanation was not needed for why someone would steal money, perhaps because they felt committing an acquisitive crime might be

something that many people might do, given the opportunity. In contrast, doing violence to a child, or to one's business colleague is an act that requires further explanation. An interesting question for further research is what it is about some sorts of crime that prompts officers to seek out a motive; for instance, are crimes against the person always more likely to prompt a search for motive, or is this only the case for particular sorts of crimes against the person (e.g. child abuse, rather than, say, street brawls)?

As discussed above, in the Walsh case, the disagreement regarding the actual crime that had been committed was striking. Among those participants who hypothesised that Walsh had been the victim of a theft or robbery, a common assumption was that a man called Matthew Morgan was responsible (41%), an assumption based on an (unchallenged) voice identification by the taxi controller. Earwitness identifications are notoriously problematic (Yarmey, 2003) yet people seem to have an unwarranted faith in their ability to identify voices (Olsson, Juslin, & Winman, 1998). Contrary to the answers in the Jenkins and Kimpton scenarios, but in common with those in the Smith scenario, participants seemed to feel little need to justify why and how this named individual might have committed the robbery. Effort was devoted instead to establishing exactly what might have gone on.

In summary then, the characteristics of the scenarios appeared to influence the participants' answers. Where an individual was named in the scenario, many participants appeared tempted to speculate that this individual was somehow involved in the crime. Where there was strong evidence of opportunity or an apparently uncontroversial motive, as in the Smith scenario, there appeared to be little additional effort devoted to hypothesising a motive. Where, however, the crime was less mundane, as in a potential case of child abuse or attempted murder, participants endeavoured to understand the causal antecedents to the criminal acts. Finally, where

explaining the nature of the incident itself was complex and difficult, as in the Walsh scenario, the effort devoted to justifying why a particular individual might be the offender was reduced correspondingly.

*What accounts for variation in sense-making effort?*

The above analysis indicates that the characteristics of the vignettes seemed to have an impact on the nature and content of the hypotheses generated by participants, and it was suggested that several factors might account for this variation. The most important factor appeared to be the degree to which the events described matched legal schemas for particular crimes, the implication being that where the events described appeared typical of a particular crime, as defined by the legal argument, such events would be less effortful for participants to understand.

	<b>Kimpton</b> n=42	<b>Jenkins</b> n=40	<b>Smith</b> n=41	<b>Walsh</b> n=41
Mean	82.26	85.38	104.93	114.98
Median	85.50	68.00	99.00	104.00
Std. Deviation	50.38	80.34	67.06	87.93

**Table 2. 3: Descriptive statistics for number of words from each participant for each scenario.**  
(Participants who did not complete a particular scenario have been excluded from the analysis for that scenario.)

Because participants' cognitive processes cannot be observed, it is not possible to establish directly how much effort making sense of one scenario took compared to another. Proxy measures for effort are challenging to develop. One of the few possible approaches is to compare the lengths of participants' answers to each scenario. Overall, participants' answers were shortest in the Kimpton and Jenkins scenarios, with the Walsh scenario prompting the longest answers (Table 2.3). Outliers were excluded from subsequent analysis, together with the

four participants who did not complete all four scenarios. A within subjects ANOVA on the remaining 35 participants showed a significant main effect of scenario on the word counts [ $F(3,102)=4.75$ ,  $p<0.05$ ] and pair-wise Bonferroni  $t$  tests indicated that the number of words in the answers to the Jenkins scenario was significantly less than the number in the answers to the Smith ( $p<0.05$ ) and the Walsh ( $p<0.05$ ) vignettes.

These results could be seen as consistent with the assumption that the amount of interpretive effort required is related to the degree of correspondence between described events and the legal definition of a particular crime. By this line of reasoning, the Walsh scenario elicited the longest answers from participants because this scenario was the most ambiguous in that the events described by the informant (Walsh) did not correspond to a robbery schema, and participants seemed to find it hard to make sense of. This struggle was reflected in longer answers and more elaborate inferences and speculations, compared to the other three scenarios. The Jenkins scenario, on the other hand, provided a fairly clear indication of what had happened to the child and a plausible suspect. In conforming more closely to a 'child abuse' schema, it seems that this scenario required less interpretative effort by the participants.

The Smith scenario corresponded fairly closely to a theft schema, yet participants' answers in this case were significantly longer than the Jenkins answers. However, unlike the Jenkins case, concluding that someone at the residential home (or more specifically, Adams), was responsible for the theft required a series of converging inferences (some of which were described above).

The Kimpton scenario did not obviously fit into a single legal schema, although once a particular category (assault or suicide attempt) had been chosen, participants appeared to see little need to justify their choice in much depth. Even for those participants who thought it most likely

that Elliott was involved in an assault against Kimpton, whilst the mean number of words in their answer was greater than in the other hypothesis categories (92.65 words, as compared to an overall mean of 82.26 words), this difference was not significant [ $F(3,36)=0.429$ ,  $p>0.05$ ].

Using length of response as a proxy for effort has important limitations, however. The length of an answer may not give a true reflection of the amount of effort devoted to deciding on a hypothesis: it is possible that participants thought carefully about their answer but simply recorded the outcome of their deliberations without documenting their reasoning, either because it was not easily put into words, or because they were not motivated to do so. Equally, verbosity may simply be a reflection of the participants' writing ability or character and thus unrelated to degree of cognitive effort. Finally, no test of the correspondence between features of the vignettes and those of the legal arguments (e.g., by asking an independent group of participants to rate them) has been carried out, so all conclusions are necessarily tentative. Nevertheless, these results are consistent with and provide support for some of the conclusions derived from the qualitative analysis.

### *General discussion*

Notwithstanding the limitations of this exploratory approach, several interesting issues have emerged. When trying to make sense of the information presented, participants focused on two key aspects of the scenario: the nature of the crime, if any, that may have been committed, and the individual responsible. It appeared that participants may have been processing the cues presented in the vignettes in terms of schemas based on the legal arguments. Where the described events matched the legal argument closely, as in the Jenkins case, participants appeared to find them more easy to understand and were in closer agreement as to what had occurred. As the events described diverged from the legal argument, as in the Walsh scenario, participants found it



increasingly difficult to make sense of them and became less consistent as a group in their hypotheses. Similarly, in a situation that could be interpreted reasonably well in terms of more than one script (as in the Kimpton vignette), the same cues were interpreted differently according to the chosen script. There also appeared to be a trade-off in terms of effort expended on making sense of either the offender or the crime, so that, for instance, a high degree of effort in making sense of the crime was complemented by a relatively low degree of effort in justifying who the offender might be.

When an individual was named in a scenario, relatively few participants were able to resist the temptation to imagine how that individual might possibly be an offender. In some cases, most notably in the Kimpton scenario, this led participants to generate a number of inferences to support their hypothesis, rather than relying on cues in the scenario. This has potentially important implications in investigations if investigators focus on a particular individual simply because he or she happened to be present at a crime scene, or named in a witness statement, particularly if to the exclusion of other plausible suspects. Detectives are probably suspicious of individuals known to be associated with a crime scene because in most cases the offender is likely to be one of those individuals. Treating such people as suspects until they can be ruled out is thus a useful rule of thumb. However, as with all heuristic strategies, such assumptions can sometimes be wrong and there is the danger that early commitment to an apparently obvious suspect may lead a detective to ignore other potential suspects or to engage in narrative explanation building that confirms rather than tests the hypothesis that a particular individual is the offender.

In their influential series of jury studies, Pennington and Hastie effectively held stimulus materials constant, with materials relating to one particular mock trial being used throughout

(e.g., Pennington & Hastie, 1988, 1992). There are, of course, differences between the present study and Pennington and Hastie's work, including that the current participants were experienced legal decision-makers undertaking a written task based on a short vignette rather than a series of presentations in a simulated trial. Nevertheless, the current findings challenge Pennington and Hastie's research by raising the possibility that sense-making about crimes might be affected by particular case characteristics, e.g., what crime was alleged, the nature of the alleged offender and victim (c.f., Rohrbaugh & Shanteau, 1999).

A second interesting finding is that, despite the fact that police officers have traditionally been seen as a homogeneous group, with shared values and experiences (Waddington, 1999), participants displayed considerable variation in their interpretation of the same set of scenarios. From the limited amount of quantitative analysis possible with these results, it appeared that individual differences in hypothesis choice were not associated with individual differences in age, length of police service, gender or rank. A similar finding was reported by Paoline and his colleagues, who reported no association between cultural attitudes of police officers and their background characteristics such as gender, race or length of service (Paoline, 2003).

#### *Investigative heuristics for situation assessment*

According to bounded rationality theories, when searching for information, developing situation awareness, and decision-making, people use heuristics and strategies that are adapted to task constraints (Simon, 1990). When the problem under consideration involves social interaction, people use heuristics such as story generation to make sense of the problem situation (Robinson and Hawpe, 1986). Story strategies are well-suited to the understanding of social interaction because they offer a causal framework within which inferences about character and motivation of the actors involved can be easily accommodated (Schank and Abelson, 1995; Read

and Miller, 1995). Search strategies in such cases involve focusing on information that concerns the motives, goals and actions of the actors, and that enables sense to be made of event sequences. However, pragmatic considerations may influence which heuristics are deployed. In this study, participants' objectives were not simply to understand the described state of affairs, but more specifically to establish whether or not a crime had been committed and if so, what that crime was, and who had committed it. These participants tended to try to make sense of the presented information in terms of a particular type of story: that represented by the legal argument. Consequently, the heuristic for search in this case is to look for information or evidence that relates to the legal argument. This is, necessarily, a relatively restrictive search. To the extent that one of the key constraints on police decision-making in such scenarios is proving a crime, it is little surprise that participants in this study focused on information in the scenario that signified crimes may or may not have been committed.

Despite this, many participants nevertheless went beyond the legal argument and developed more elaborate explanations. A key role for explanations is to provide a way of vetting claims (Brem & Rips, 2000; Gaglio, 2004). If one can construct a plausible causal explanation then it increases our confidence that a claim might be true (Brem & Rips, 2000; Kahneman & Tversky, 1982). Thus if the initial strategy of detective officers is to attempt to construct a story from the facts, this does not necessarily mean that they are unaware that the story may not be the truth, or that they will adhere slavishly to an initial hypothesis in the face of alternative evidence, merely that a sensible first step in tackling such scenarios is to test the internal consistency of the presented sequence of events.

Brem and Rips (2000) showed that people understand the difference between explanation and evidence, but consciously invoke explanations when evidence is scarce. Story generation,

then, is also a useful strategy for identifying and sometimes filling the gaps in evidence.

However, as Brem and Rips also noted, there is often a strong ‘explanation effect’:

“Explanations are so influential that participants continue to give them weight even in the absence of supporting evidence or when the supporting evidence has been thoroughly discredited... This effect is aggravated by the tendency of explanations to blind participants to the existence of alternative explanations... Furthermore, participants frequently interpret available evidence, especially ambiguous evidence, in such a way as to be consistent with their theoretical commitments.” (Brem and Rips, 2000, p.576).

#### *Limitations of the current study*

The purpose of this study was to explore the cognitive processes involved when a detective attempts to make sense of an investigative scenario. This exploratory, as opposed to rigorously experimental, approach has several limitations. Participants in the study were an opportunity sample rather than a random selection of police officers, and it is not possible to draw more than tentative conclusions about the generalisability of these results to police officers in general. This sample included individuals of different ages, with differing degrees of experience and training. There were, therefore, numerous potential confounding variables. Furthermore, whilst vignettes were carefully chosen so as to cover a range of potential offences and types of victim, they do not even come close to being representative of the multiplicity of crimes, victims and offenders dealt with on a daily basis by the police (c.f., Ask & Granhag, 2005). In other words, vignette studies fail to situate detective problem-solving within a social context (O’Keefe, 2002).

The use of free, as opposed to structured, responses to the questions resulted in variation in answer length between and within participants, making it difficult to compare responses

quantitatively, although allowing participants a relatively free rein in their answers did result in rich qualitative data and some unexpected results. Nevertheless, the exercise was demanding, both cognitively, in that it forced participants to consider ambiguous and confusing information, and physically, because most participants had to write for over an hour to answer all four questions. The challenging nature of the study meant that, inevitably, participants will not have included in their answers a full account of all their thought processes. ‘Talk-aloud’ studies are less demanding for participants but generate richer protocols for analysis (Ericsson, 2006), and an interview-based study, though more challenging for the analyst, is likely to yield more robust results.

Finally, this study is descriptive. It does not attempt to establish how participants *ought* to interpret investigative information or set a standard against which performance can be measured.

### *Conclusion*

One of the key elements of decision-making in real world problem situations is achieving an accurate mental representation of the decision problem. This study has called attention to some of the many complexities inherent in sense-making about the ambiguous and uncertain scenarios typical of those that investigative officers deal with on a day-to-day basis and highlights features that potentially influence a detective’s interpretation and exploitation of investigative information. However, the task did not capture the dynamic nature of the investigative process. For subsequent studies a new technique that better reflected the changing nature and context of investigative information was devised. This is discussed in detail in the next chapter.

## CHAPTER 3: A DYNAMIC SIMULATED INVESTIGATION METHOD FOR RESEARCHING INVESTIGATIVE SENSE-MAKING

### The challenges of studying detective work

This chapter describes the development and implementation of a novel method for studying detective sense-making, with Chapters 4, 5 and 6 devoted to the results of analyses of data generated using this method.

Researching detective sense-making is inherently difficult. In this chapter the key methodological challenges are discussed, namely, studying the mental representations a detective constructs in the course of a criminal investigation, and the associated challenge of representing the complexity of real-world decision situations within an experimental framework; and negotiating access to police participants. The psychological study of detective work is an underdeveloped research area (Chapter 1) and exploratory, qualitative methods are thus most suitable for a research domain at this stage of maturity. The difficulties of accessing detective participants, and how such challenges can be overcome, are discussed. I<sup>6</sup> describe in detail the development and deployment of a novel dynamic simulated investigation method, designed to study detective cognition in circumstances that come closer to real world detective work than was possible with the method used in the pilot study (Chapter 2). Detectives ‘think aloud’ as they ‘solve’ a crime, resulting in rich qualitative data, the analysis of which forms the basis of Chapters 4 to 6. Finally, I discuss my own role as an ‘outside insider’ (Reiner & Newburn, 2007),

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<sup>6</sup> In line with usual practice in qualitative research, during this chapter the first person is used. In qualitative paradigms, reflexivity is a crucial part of the research, and such paradigms thus demand that researchers reflect on the degree to which the research method and results may be influenced by their own perspectives.

reflecting on the advantages of such status and the way in which it may threaten or limit the validity of my research.

*Studying mental representations of complex real-world situations*

In Chapter 1 sense-making was defined as the construction of mental representations of problem situations, the purpose of which is to integrate new information with existing case-specific, domain-specific and general knowledge to facilitate understanding of a problem situation. Mental representations are by definition unobservable, and thus difficult to operationalise and measure (e.g., Crandall, Klein, & Hoffman, 2006; Endsley, 2000b; Langan-Fox, Wirth, Code, Langfield-Smith, & Wirth, 2001; Lipshitz et al., 1997; Markman & Gentner, 2001; Robert & Lintern, 2006). Methods include laboratory studies in which features of a problem situation are manipulated, the effects on participants' responses scrutinised and the nature of mental representations inferred (Gentner, 2001; Pennington & Hastie, 1986, is an example of such a study). Alternatively, problem-solvers can be interviewed, as or after they solve problems (e.g. Hinsley et al., 1977; Ormerod & Ball, 2007) or about previously encountered problem situations (e.g., Flanagan, 1954; Klein, 1999). Finally, the behaviour of problem-solvers can be observed directly as they tackle real-life or simulated problem situations (Alison & Crego, 2008; Crandall et al., 2006; Crego & Harris, 2002; Flin, 1996).

In real-world decision environments, factors that impact on decision-making are usually interconnected and isolating single variables may be neither possible nor desirable (Rohrbaugh & Shanteau, 1999). Furthermore, investigative sense-making is a dynamic process: real investigations unfold over time, with a detective's understanding of the incident changing as new information comes to light or previous information proves unreliable. This shifting understanding may lead to different lines of enquiry being pursued or dropped, and the first impression an

officer has of a case may not be predictive of the end point of the investigation. Being able to capture the dynamic character of detective sense-making in a way that allows generalisations to be made about critical issues is a challenging task. The use of simulation methods is one way of doing this by creating what Gray (2002) refers to as “controlled complexity” in a simulated task environment. In a simulation study, the participant is asked to react to a series of probe stimuli as if they were dealing with them in real life. Information can be presented in the form of documents, video and audio material, computer displays or a combination of methods (Ehret, Gray, & Kirschenbaum, 2000; Gray, 2002; Ward, Williams, & Hancock, 2006). The role of the researcher can be simply to observe what goes on as the simulation unfolds, or to ask questions throughout the exercise (Gray, 2002).

As well as capturing some of the complexity of real decision situations, simulation methods allow for a degree of experimental control: a single scenario across different participants retains some of the control of a laboratory method and allows the exploration of different facets of the investigative experience. Although simulated task environments have been used with some success in decision-making research elsewhere (for instance, in studying physicians' diagnostic abilities, e.g. Barach, Satish, & Streufert, 2001; military commanders' decision-making, e.g., Cannon-Bowers & Salas, 2000; or managerial competence, e.g., Streufert, Pogash, & Piasecki, 1988), the use of simulations to explore police decision-making is rare and restricted to studies of critical incident management (see, e.g., Alison & Crego, 2008; Crego & Spinks, 1997). To my knowledge, no published study has yet featured simulation methods to explore detective sense-making in criminal investigations.

Simulation approaches have both practical and conceptual limitations, however. Simulation scenarios must be carefully designed and are thus time-consuming to develop. In



comparison with traditional laboratory studies they can also be lengthy to administer and yet in comparison with real-world events simulations are artificially time-bound (Barach et al., 2001; De Keyser & Nyssen, 2001). Although many people find participation in simulations to be highly realistic (Crego & Spinks, 1997), if a participant finds the simulation process artificial or difficult their behaviour in the study may bear little relation to their behaviour in real life, in which case their data may be misleading or unusable (Barach et al., 2001; Gray, 2002).

Although more realistic than pen-and-paper vignette studies, a simulation approach cannot replicate the complexity and scope of real investigations and the generalisability of results is consequently limited. In particular, for ethical and practical reasons simulations cannot replicate the potentially high stakes involved in a real criminal investigation of, say, a homicide or rape, where victims, public safety and officer careers are potentially at risk. A final limitation is that, as with other methods for studying sense-making, the existence, structure and content of mental models must be inferred from what participants do or say in the course of the incidents under observation. Any inferences about the internal cognitive processes of participants are thus subject to the researcher's interpretation (Graesser & Clark, 1985).

On balance, however, the limitations of simulation methods and verbal protocol analysis are outweighed by the advantages discussed above, particularly for exploratory research (Graesser & Clark, 1985). The sacrifice of 'laboratory' control is acceptable given that in return a simulation method generates rich, descriptive data that may give detailed insight to the poorly-understood phenomenon of investigative sense-making.

#### *Qualitative and quasi-ethnographic approaches to cognition*

The simulation approach to gathering data is quasi-experimental, in that it allows some control over variables, and quasi-ethnographic, in that it results in rich qualitative data. Applying

qualitative methods to understanding cognition (indeed, any study of cognition outside the laboratory) is relatively unusual (Kingstone, Smilek, & Eastwood, 2008). There is nevertheless a growing literature on ethnographic and naturalistic approaches to studying cognition in the real world (Christensen & Schunn, 2009; Hutchins, 1995; Kingstone et al., 2008; Ormerod & Ball, 2007; Zsombok & Klein, 1997). The underlying assumption of such approaches is that controlled laboratory studies cannot adequately account for the complexity of real-world problem-solving and that cognition in the laboratory is fundamentally different from ‘cognition in the wild’ (Hutchins, 1995; Kingstone et al., 2008). Unlike ‘traditional’ cognitive research, which generalises from laboratory studies to the real world, ‘cognitive ethnography’<sup>7</sup> involves collecting rich real-world data first, identifying key features of the cognitive processes employed, and only later testing such findings more rigorously in laboratory settings (see also, Fine & Elsbach, 2000; Kingstone et al., 2008; Mariani, Ormerod, Rodden, Morley, Lewis, Hitch, & Mathrick, 2004; Ormerod & Ball, 2007; Ormerod et al., 2008).

Before rigorous testing of the key features of the psychological mechanisms underpinning investigative sense-making can take place, those features must first be identified; qualitative methods are therefore appropriate as a prelude to generating testable hypotheses (Chi, 1997; Hunt & Joslyn, 2007). For this thesis, a simulation method was chosen because it allowed an opportunity to elicit rich data that may give insight to the nature of participants’ mental representations of investigative scenarios and to the complexities of detective problem-solving. Whilst the use of verbal report data as a source of evidence about psychological processes can be

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<sup>7</sup> Kingstone et al. (2008) use the term ‘cognitive ethology’, which is a precise term for the scientific study of cognitive behavioural patterns displayed by individuals in their physical environment. The broader term ‘cognitive ethnography’ is preferred here because it also includes the explicit consideration of how an individual’s social and cultural environment influences his or her cognition.

criticised on the basis that individuals have relatively little insight to their psychological processes and in any case may not be able to verbalise them (Nisbett & Wilson, 1977), the current focus is the product of those psychological processes, from which it may be possible to make inferences about the processes themselves (Chi, 1997; Graesser & Clark, 1985; Payne, 1994).

*The challenge of negotiating access*

A key challenge in criminal justice research is access to the domain (Jupp, 1989) and police work in particular has been difficult to study directly (Barrett, 2005; Horn, 1996). Where they exist, experimental studies of detective work often rely on students as proxy investigators (e.g., Kocsis & Middledorp, 2004; O'Brien & Ellsworth, 2007) or involve police trainees (Barrett, 2002; Eyre, Crego, & Alison, 2008b). Difficulties in negotiating access to more experienced police participants are caused in part by the intrinsic sensitivity of work and in part by an historic suspicion of outside researchers often perceived as pursuing naïve or anti-police agendas (Horn, 1996; Innes, 2003; Reiner & Newburn, 2007). However, UK policing has undergone a significant shift in the past decade, led by a number of progressive forces and individuals within them who have forged academic research partnerships to study specific techniques such as interviewing (e.g., Shawyer, Milne, & Bull, 2009) and deception detection (e.g., Vrij, Mann, Robbins, & Robinson, 2006) or specific crimes such as homicide (Innes, 2003) or rape (O'Keefe, 2002). Specialist academic centres for studying aspects of police work have proliferated (Brown, 2006; Reiner & Newburn, 2007) and the National Police Improvement Agency (NPIA) encourages academic collaborations, including publication of research findings via an in-house journal (NPIA, 2008).

The result is an increase in the numbers and willingness of ‘gatekeepers’ (individuals within organisations who can allow or deny access, Burgess, 1984). However, even if senior managers grant an academic researcher access to their force, actually securing access to and the co-operation of operational practitioners raises two further (pragmatic) challenges: conducting meaningful research that impacts as little as possible on busy professionals’ day-to-day work and establishing credibility in a complex and politically-charged domain.

*Impact on work.* Even detectives who are willing to participate in academic research often find it difficult to make time to do so. Detectives frequently struggle to keep up with day-to-day work and when involved in a major investigation may work overtime for extended periods to meet the demands of a complex case (Innes, 2003). Officers who agree in principle to participate may find themselves breaking commitments to researchers in order to carry out time-sensitive duties relating to current casework. Requests for participation in academic studies may thus be seen as unrealistic and, at worst, as unwelcome interruptions to more important duties. Although involvement in research should be voluntary, junior officers may find it difficult to refuse a senior officer’s request to participate in research studies, potentially leading to resentment of the additional demands on their time, particularly if they do not fully understand or care about the research topic. As Jupp (1989) points out, participants should also be treated as ‘gatekeepers’, as they have the (informal) power to block or constrain data gathering (see also Horn, 1996).

From a detective’s perspective, the least intrusive option is for the researcher to attempt somehow to integrate their data-gathering into a detective’s daily routine (e.g., via an observational study, c.f. Innes, 2003), planned debriefs (e.g., Crego & Alison, 2004) or training exercises (Alison & Crego, 2008; Barrett, 2002; Crego & Harris, 2002). However, even if data collection is part of a detective’s routine, knowing that someone else is observing or will study

recordings of their work may alter that participant's approach to it (Lee, 2000). An important aspect of designing research on detective cognition, then, is balancing the needs of busy detectives with the requirement to design a study that results in robust and valid data.

*Establishing credibility.* Reiner and Newburn (2007) discuss the advantages and limitations of different roles researchers can play in criminal justice research (see Table 3.1). Researchers who are 'outsiders' often appear (and sometimes are) naïve in their understanding of police work, which makes it difficult to establish credibility with potential participants. 'Insiders' thus clearly have an advantage, being already familiar with the system and potentially having existing relationships of trust with police hierarchy and potential participants. When interacting with participants, insiders' common understanding of police practices and jargon may make the research process smoother.

Type of researcher	Definition
Inside insiders	Police officers conducting research within the police service
Outside insiders	Researchers who have previously worked within the police service (e.g. retired officers)
Inside outsiders	Researchers, who have no background as police officers, working within the police service or criminal justice system
Outside outsiders	Researchers who have no police background and who are not employed by the police service (e.g., academics)

**Table 3. 1: Researchers and their relationship with the police service (after Reiner & Newburn, 2007)**

However, being an outsider can be advantageous: compared to an insider, whose current or future employment can depend on making a favourable impression on officers, an outsider may feel more comfortable reporting findings critical of the police (Reiner & Newburn, 2007). Insiders can become institutionalised and their familiarity with the domain may lead them to

make assumptions about what their participants are telling them. An outsider can thus bring a fresh pair of eyes, perhaps recognising as potentially contentious some issues that insiders view as uncontroversial. The benefits to research of being an outsider must be balanced against the challenges of establishing credibility, although outsiders can enhance officers' confidence in them by keeping up with the concerns and challenges of day-to-day policing (Barrett, 2005).

#### A dynamic simulation method for the study of detective sense-making

The study of detectives' responses during an investigative simulation offers a rare opportunity to study problem-solving and sense-making in situations that are somewhat analogous to real-life investigative scenarios. In designing the current study I drew on the strengths of different methods. I wanted to capture the richness of detectives' sense-making without constraining their responses within a highly structured interview format, and to see how their thoughts changed over time in response to new information. However, I wanted to avoid some of the ethical and practical issues inherent in the observation of live investigations. A further aspiration was to explore the influence of individual differences in the interpretation of investigative information<sup>8</sup>. To do this, I explored how officers responded during one specific investigation, using a simulation method in which I 'drip fed' the same material to several detectives. Officers' decision processes were elicited through a series of open-ended probe questions (e.g., "What are your thoughts?") which allowed them a relatively free rein to express their thoughts. In this way I hoped to shed light both on the dynamic nature of detectives'

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<sup>8</sup> In the event, a thorough analysis of individual differences proved to be beyond the scope of this thesis for reasons discussed in detail in Chapter 7.

thinking during an investigation and on variations in perception between different officers presented with the same material.

Before turning to a detailed description of the method, an important limitation of the current research should be mentioned. In real investigations the rank of the investigating officer varies according to the gravity of the case, as does the level of resources available to her or him. In the most serious cases, a Senior Investigating Officer (SIO) will take charge of a team of detectives, each of whom will make their own decisions in line with the overall strategies determined by the SIO (Innes, 2007; Stelfox, 2009). However, in this thesis the discussion is limited to sense-making by individual detectives. Several important social-psychological issues are thus neglected, including those relating to group decision-making and to leadership (see, for example, Alison, Crego, Whitfield, Caddick, & Cataudo, 2008; Whitfield, Alison, & Crego, 2008, for detailed discussions of these issues).

#### *Ethical issues*

When designing the study I discussed with my supervisor and with police officers involved in facilitating the research the potential ethical issues that might arise, in accordance with professional guidelines in effect at the time (British Psychological Society, 2004). Most issues were straightforward: participation was to be voluntary and confidential, no deception was involved, all participants would be fully debriefed afterwards and all given the option to withdraw their data at any point up to the submission of my thesis. One potentially contentious issue was the inclusion of explicit details in the materials. I was advised by the police officers that detectives were regularly exposed to such material in the course of their normal work and that the risk to them of psychological harm from participating in my study was minimal. Clearly,

this decision would need to be revisited were the study replicated with different participants (for instance, students).

### *Recruitment of participants*

An Assistant Chief Constable of a medium-sized police force in the South of England<sup>9</sup> facilitated access by introducing the study and encouraging volunteers via email to the (approximately) 150<sup>10</sup> Detective Constables, Sergeants and Inspectors undertaking major crime and specialist reactive investigations<sup>11</sup> in the Criminal Investigation Department (CID). Responses were handled through CID administrators, who also scheduled the interviews. Details of the responses were not shared with me, making it impossible to tell how many expressed interest but later changed their minds, how many ignored the ACC's email, and how many refused outright to participate.

In all, 34 officers volunteered to be interviewed. However, 12 officers dropped out on or immediately before the day of their interview and it proved impossible to reschedule these interviews or to gather further details of these individuals. Participants were, therefore, to a large extent self-selected and may have volunteered for a variety of reasons, including out of a desire to influence the research, to impress their ACC, out of duty or out of curiosity about the research. Those who volunteered but did not show up for their interviews may have been too busy but it is possible that some had second thoughts about participating. Questions about motivation and participation were not asked at the time and follow-up interviews with participants and drop-outs

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<sup>9</sup> A different force to that in the pilot study.

<sup>10</sup> Exact figures are not given to preserve the anonymity of the force.

<sup>11</sup> E.g., sexual offences, child abuse, homicide, fraud. CID officers involved in proactive investigations (e.g., drug trafficking) and Special Branch (national security investigations) were not invited.



were impossible to arrange because I had agreed with the force concerned that all responses would be confidential and would not be linked to identified individuals.

#### *Details of participants*

*Rank:* Participants were recruited from the police ranks most likely to take responsibility for the investigation of a sexual assault investigation: Constable, Sergeant and Inspector. More senior officers are sometimes called on to manage such investigations, but usually only if the crime was exceptionally serious, particularly high-profile (involving children, or a celebrity, for example) or part of a series of attacks. Moreover, the role of a more senior officer in such cases is largely the managerial and strategic oversight that such cases demand whereas the focus of the current study is sense-making in particular. In the present sample six participants were Inspectors, nine were Sergeants and seven were Constables.

*Gender:* Twenty officers interviewed for this study were male, with just two (9%) female.

Figures for the gender breakdown of CID officers in this force at the time data were collected are not available. The percentage of female officers in the entire force was around 17%<sup>12</sup>. However, CID work has traditionally been the preserve of male officers (Westmarland, 2001) and in this force the proportion of women in CID was lower (anecdotally I learned of one CID office with just one female detective out of more than 20). The ratio of female to male officers in the current study is thus probably representative.

*Expertise:* The way in which participants were recruited to the current study resulted in a relatively experienced pool of officers but the small numbers involved and the exploratory nature of the study design meant that there was little scope for conducting meaningful analyses of

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<sup>12</sup> Source: force performance figures for March 2004.

novice-expert differences<sup>13</sup>. However, even if sufficient numbers of participants had been studied to make a quantitative analysis possible, a key problem in this context is the operationalisation of ‘expertise’ (Barrett, 2002; Hoffman, Shadbolt, Burton, & Klein, 1995).

Possible proxy measures are police experience, age and rank. Participants in this study had an average of 20.9 years’ police experience ( $SD=8.1$ , range 8.2 to 33.0) in a variety of settings, including uniformed patrol and organised crime investigations as well as CID. The mean age of participants was 41.7 years ( $SD=6.7$ , range 28.9 to 49.2). Age varied somewhat with rank with Inspectors tending to be older and Constables younger but with no significant association between rank and age (Kruskall-Wallis  $H=1.69$ ,  $df=2$ ,  $p=0.43$ ). For instance, one participant was a 29-year-old officer who had achieved the rank of Inspector, whereas another was a 43-year-old Constable with 26 years of service. Officers sometimes remain ‘career Constables’, often developing specialist expertise beyond that of other officers of higher rank. Equally, many officers of all ranks have a generalist profile, moving between different specialist areas during their careers. Thus, neither age nor rank is a reliable indicator of expertise in detective work.

In this study I gathered an approximate measure of detective experience by asking officers to describe their police career, including their estimate of the length of time they had been involved in detective work. Overall officers estimated that they had been involved in investigating serious crimes for an average of approximately 13 years ( $SD=7$  years) with a range of two to 25 years. These figures included time spent as ‘aide to CID’, a uniformed role which involves being drafted in to support major investigations when needed.

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<sup>13</sup> One approach, of course, might be to compare detective participants with a matched sample of lay people to serve as ‘novices’, a step that was not taken here largely because of resource constraints.

### *Materials*

*Presentation:* A ‘low-tech’ paper-based approach was used. A ‘high-tech’ presentation (via a laptop or other technology) was judged to be impractical, given that interviews took place in a variety of locations throughout the force area, sometimes in offices where space and facilities were limited. Furthermore, paper-based methods were closest to the way in which information would be presented in a real-life investigation in that force at that time (March 2004) and the presentation also mimicked the format of several training and assessment exercises, meaning that participants were already familiar with this way of processing investigative paperwork.

*Factors influencing the choice of materials:* As demonstrated in the pilot study (Chapter 2), the choice of case used as a stimulus to study detective work may have an important impact on the strategies detectives use during the investigation. The case selected involved an allegation of attempted rape. Our concern is how a detective determines that a crime has taken place, but also how they then identify the offender and gather evidence. Rapes and sexual assaults are some of the most serious but ambiguous crimes that officers investigate. A sexual assault is usually an encounter between two individuals with no independent witnesses, in circumstances in which issues of consent and credibility are paramount (O’Keefe, 2002). In terms of a detective’s core tasks (Chapter 1), investigating a sexual assault requires establishing and then proving that a crime has been committed as well as identifying the offender. A scenario that involved a relatively straight-forward ‘self-solver’ would have afforded less opportunity to explore the issues outlined in Chapter 1, such as how officers make sense of diverse information about multiple potential suspects.

Although an ambiguous scenario raises interesting psychological issues, this choice must be balanced against research tractability. Ambiguous scenarios are challenging for participants

and result in data that is difficult to analyse. Detectives are busy professionals whose work must always take priority over the needs of researchers and a pragmatic approach must be taken if such participants are going to remain on side. If a simulation approach is to be used it is unrealistic to expect detectives to cooperate in a research exercise that takes longer than a couple of hours to complete. An ambiguous case of homicide where the perpetrator is unknown would be lengthy to complete and involve many actors, including one or more victims, suspects and witnesses. In sexual assault investigations the number of key actors is more manageable, so using a sexual assault allegation in the simulation narrows the focus without sacrificing too much realism.

Another consideration is for the study to have real-world relevance (Rohrbaugh & Shanteau, 1999). The issue of rape attrition has long been cause for concern. Several researchers have attempted to uncover reasons for attrition rates that may be over 90% (e.g., Brown, Hamilton, & O'Neill, 2007; Feist et al., 2007; Grace, Lloyd, & Smith, 1992; Gregory & Lees, 1996; Kelly, 2000; Lea, Lanvers, & Shaw, 2003; O'Keefe, 2002; Soulliere, 2005; Spohn & Holleran, 2001) but most studies have, thus far, failed to explore in depth the psychological mechanisms underpinning the investigation of rape and sexual assault investigations (O'Keefe, 2002, being an exception). Explanations for the high levels of attrition thus remain tentative.

These factors (importance, tractability and relevance) make the choice of a sexual assault investigation a good one for research purposes. However, the choice is not without problems: rape investigations are contentious. Previous research has indicated that, when deciding whether a sexual assault allegation is credible, people (including police, prosecutors and jurors) often employ stereotyped and prejudicial thinking, judging a reported allegation against a set of 'rape myths' (e.g., Brown et al., 2007; DuMont, Miller, & Myhr, 2003; Kelly, 2000; O'Keefe, 2002; Soulliere, 2005). An ambiguous scenario in which it was unclear if a rape or sexual assault had

been committed might be more common and how detectives decide whether a crime has occurred in such circumstances is important. But so too is their sense-making about the offender and potential suspects. I felt therefore that it was important to make it clear to participants from an early stage that a crime had indeed been committed so that these aspects of sense-making could be fully explored. I also judged that it would be unhelpful if participants thought I was trying to trick them into making contentious statements by presenting them with an ambiguous allegation. I thus chose a case that did not include features that this research suggests may reduce the credibility of an allegation. Thus, in the scenario chosen:

- The attack was reported to have taken place in daytime rather than late at night
- The victim had no reported mental health issues, had not made previous allegations of rape and had no criminal history
- The victim had not been under the influence of drugs or alcohol
- The victim reported the crime immediately
- Most elements of the victim's story were corroborated by independent witnesses

*Preparation of materials:* Selection of materials for the 'case file' requires a series of trade-offs between fidelity and manageability. The case materials should be as comprehensive as possible in order to maximise ecological validity. However, real investigations last days or weeks and can generate hundreds of documents (Innes, 2003) and it was necessary to compromise fidelity in order to ensure participation from busy detectives.

A further consideration is pragmatic: how can a researcher access realistic case materials without access to confidential material? The compromise in this study was to choose a scenario based on an historic training exercise used by a different police force, which itself was based on a

real case. I was offered two training ‘case files’ on which to base the materials. For the reasons discussed above (particularly relevance and tractability) , I chose the sexual assault rather than the robbery investigation scenario. The materials had already been substantially rewritten by trainers to anonymise aspects of the real case and to reduce the volume of materials to a manageable number for a training exercise<sup>14</sup>. For the current study, materials were filtered once again to create a ‘case file’ that could be read by interviewees within the limited time available for their interviews. The materials remaining in the ‘file’ included key documents, such as statements from the victim, her immediate family and witnesses who came to light during the ‘investigation’; police records for individuals involved; messages from the public and law enforcement colleagues; results of house-to-house enquiries; and reports from forensic examinations of the victim and of the scene where she was attacked. These materials included relevant and irrelevant material, as in a real investigation. Information was arranged in chronological order and grouped into sets of one, two or three documents. These ‘sets’ thus represented discrete *phases* of the ‘investigation’ (the initial report was Phase 1, the victim’s account was Phase 2, and so on), and were presented in order to participants. A summary is presented in Table 3.2 and the complete materials are included in Appendix C.

I rewrote documents so that the events described took place in Midshire Police, a fictional force, in a fictional county, ensuring that officers were all equally disadvantaged by a lack of geographical information. Participants were provided with the following background (see document 1a, Appendix C):

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<sup>14</sup> Because access to the original case papers was denied it is impossible to say exactly how the documents were weeded and edited by police trainers. Discussion with trainers suggested that apart from editing the victim’s statement for length, the documents were largely untouched, to enhance the realism of the exercise.

You are an officer of Midshire Police, on duty at force headquarters, Sutton Road, Stanhope. With a population of 180,000, Stanhope is the largest city in Midshire. It is a major centre for business, financial, consultancy and professional services. The area is also a location for high technology employment on surrounding business parks. The city covers around 6 square miles, and is surrounded by countryside with orchards, farms and rolling downlands.

Maps were created for the study, including a detailed Ordnance Survey-style map of the area where the attack took place to help participants follow the descriptions of the routes taken by various actors in the scenario (see Appendix C, documents 1a, 2a and 3a).

Phase	Document	Details of documents presented
1	1a 1b	Brief orientation to the fictional force area, including maps. Initial report of the telephone call reporting the attack.
2	2a	Statement of the victim; map showing her route.
3	3a 3b 3c	Statement from a man who interrupted the attack; map showing his route. Statement from victim's boyfriend. Statement from the doctor who examined the victim.
Verbal update		There has been a media release, which states: "There has been an indecent assault on a young woman in the orchards at Summersby. Police are worried that the offender will strike again. Anyone with information is urged to call."
4	4a  4b	Messages received: report of stolen vehicle; eyewitness report of running man near the scene; report from a police officer about historic indecent exposure in the area; call from historic rape victim. Results of forensic examination of the crime scene, including diagram.
5	5a  5b	Results of local enquiries: eyewitness reporting blue van driving at speed; statement from local farm owner reporting the recovery of a car from outside his property; statement from eyewitness from phase 4; statement from a second farmer (William Samuels). Further details of the indecent exposure mentioned in phase 4.
6	6a  6b	Second statement from the victim giving details of an ex-boyfriend and of being sent abusive letters some months previously. Report from the owner of the stolen car mentioned in phase 4.
7	7a	Criminal record details for victim's ex-boyfriend, for the rapist mentioned in phase 4 and for William Samuels (mentioned in phase 5).
8	8a 8b	Statement from a man who had broken down near the scene of the crime Statement from victim's ex-boyfriend denying involvement in attempted rape.
9	9a  9b	Statement from Samuels' daughter mentioning John Simmons, an ex-boyfriend. Details of Simmons' criminal record. Statement from one of Simmons' previous employers.
10	10a  10b 10c	Messages received: anonymous denunciation of an individual named Smithers; three eyewitness reports relating to blue vehicles in the area. Statement from Simmons denying involvement in the assault. Second statement from Samuels' daughter, identifying belt found at the scene of the crime as one she had given Simmons.
11	11a	Report that Simmons has been arrested and his house searched with incriminating objects found. Request to for advice on how to proceed.

**Table 3. 2: Summary of materials presented in the simulated investigation**



*The simulated investigation.* The investigation followed a claim by a woman that she had been subjected to an attempted rape. The victim and her boyfriend had been taking a Sunday lunchtime walk in an orchard in a farming area on the outskirts of a medium-sized town, but after an argument the woman continued on the walk alone. She reported that she was subsequently attacked by a male stranger. The officers received statements from the victim, her boyfriend and a local man who had disturbed the would-be rapist. As time went on, officers received information from members of the public and other officers. These included details of an unsolved indecent exposure in the area and of a recently released rapist who used similar modus operandi to the man who attacked the current victim. House-to-house enquiries also yielded sightings of a running man and a van driving away at speed, and a 'scenes of crime' report detailed items found near the crime scene. The victim later revealed that she suspected her ex-boyfriend, who had a record of petty criminality, of previously sending her abusive letters. Further enquiries provided more information from the public about vehicles and suspicious individuals. The final document reported that a man had been arrested for the crime.

#### *Procedure*

*Introduction and informed consent:* I interviewed all participants individually in quiet rooms on police force premises. I introduced each participant to the background and purpose of the study, and told them that they would be answering questions about a fictional scenario that involved an allegation of attempted rape. They were warned that some of the details in the materials were explicit, and advised that they could withdraw at any point, without explanation, for any reason. I explained that the session would be audio-recorded and gave assurances about confidentiality and handling of their details, transcripts and recordings. Each participant consented to stay and complete the exercise and I began recording the session.

*Orientation:* Participants were asked to imagine that they were an SIO in charge of investigating an attempted rape. I explained that they would receive information throughout the simulated ‘investigation’, although they would not receive all the information that they might expect in a real case.

*Simulation:* The first document given to participants provided details about the Midshire Police force area and a map, followed by a brief account of the reported incident (document 1a, Appendix A). Participants were given subsequent documents from the investigation in sets of one, two or three, as set out in Table 3.2 and were given as long as needed to read the document(s). In each phase, once participants indicated they had finished reading, I asked them about the following issues:

1. What are your thoughts about this incident at this point?
2. What do you think has happened?
3. What are your thoughts about the offender, if any?
4. What would your actions be, as SIO?

Participants were encouraged to talk freely and given as long as they needed to do so. I interrupted as little as possible, but asked for clarification of any jargon or acronyms used and why particular actions were specified, if this was unclear. If participants asked about information that had not (yet) been provided, I answered “I do not have that information for you”. If they asked for clarification about information that had already been provided, I endeavoured to provide it, without revealing any information that would be presented later in the study.

The interview was stopped when the participant finished the final phase, or when they had to leave for other commitments. The study design, in particular, allowing open-ended responses, meant considerable variation in the length of the interviews, which ranged from 72 minutes to 2.5

hours (see Table 3.3). Although 15 participants completed the entire study, seven ran out of time or were called away on operational business. Participants who failed to complete the entire study often spent as long or longer than the completers (point biserial correlation,  $x=1$  for completed,  $x=0$  for uncompleted,  $y=\text{minutes taken}$ ,  $r_{pb}=0.03$ ,  $p_t=0.89$ ).

	All Participants (n=22)	Completers (n=15)	Non-completers (n=7)
Mean	108.4	108.9	107.6
Standard deviation	19.3	17.3	24.5
Range	72 – 152	90 – 149	72 – 152

**Table 3.3: Time taken in minutes by participants to process ‘case files’: descriptive statistics**

This pattern of non-completion and temporal variation poses some challenges for analysis. The answer from a participant who spent more than 30 minutes discussing the first set of documents (e.g., Participant 7) cannot easily be compared to that of an officer who spoke for under six minutes about the same material (e.g., Participant 12), although the variation in response length may of course tell us something interesting about the detectives’ approach to investigation. However, if a qualitative approach is taken to the analysis, the richness of and variation between the answers can be seen as a source of strength rather than a limitation when trying to understand detective sense-making (see below).

At the end of the study participants were asked a series of demographic and background questions, which included a brief career history. The recording was stopped, participants were debriefed thoroughly about the study, and their questions answered.

*Preparing transcripts*

Interview data can be understood on several levels, from the fine detail of the interaction between interviewer and interviewee, including intonation, pauses and other paraverbal behaviour (Jefferson, 2004), to a high-level view of the interview process itself, which informs the meta-understanding of the research process and allows for reflexive consideration of the context in which participants' views are constructed (Elliott, 2005). Depending on the type of analysis, different levels of detail are required in transcripts. For the studies reported in Chapters 4, 5 and 6, my focus was on the way in which detectives talk about investigative data and thus on the interviewees' words that related directly to the investigative simulation. I thus prepared set of transcripts amenable to such analysis (Miles & Huberman, 1994).

Interviews were initially transcribed in full, including pauses, false starts and repetitions (but not at the detailed level of Jefferson notation). I transcribed six interviews using the Transana transcription program (Fassnacht & Woods, 2006) and an independent professional transcriber transcribed the remaining 14 interviews. I checked each audio recording against the transcript for accuracy.

Next, each transcript was edited to remove extraneous comments, for instance, about how much time remained or ensuring my comfort. My introductory remarks and procedural comments for each set of materials were also removed. Next, where the interviewee had requested help interpreting the maps in phases 1, 2 and 3 (or, sensing that the interviewee was confused, I offered such help), this was edited down to single phrases such as "participant asks about map, interviewer clarifies" unless the interviewee's comments and questions included substantive comment on their interpretation of data. Where the interviewee asked for clarification of particular points the interviewee's questions were retained in full in the edited transcript but my

response was edited to “interviewer clarifies”. Where the interviewee repeated the answer given by the interviewer, my answer was edited out. My questions were also edited to as few words as possible whilst retaining their meaning. Further examples are given in Table 3.4.

Full transcript	Edited version
Interviewer: The first bit of information I have for you is a bit of orientation as to your role and the first report of an allegation. There's a couple of maps there as well to orientate you.	Set 1
Interviewer: So I'm clear in my mind, can you just explain what your priority actions would be from all of those?	Priority actions?
Interviewer: Okay, so if you're, if this was given to you and you're in charge of the investigation what would your initial thoughts be?	What would your initial thoughts be?
Participant: The actual orchard itself, I don't know how big that is. <participant referring back to documentation> It doesn't actually... Interviewer: (overtalking) Right, at the moment.. Participant: ...give an idea... Interviewer: No, you haven't got the scene marked at the moment but here is Pickwell Avenue and then all this with green round, these are all orchards here... Participant: Okay Interviewer: So... Participant: I mean there's substantial house to house inquiries to be conducted (Participant 14, phase 1)	Participant: The actual orchard itself, I don't know how big that is. <participant referring back to documentation> It doesn't actually give an idea. [Interviewer indicates on map] I mean there's substantial house to house inquiries to be conducted

**Table 3. 4: Examples of transcript edits made when preparing data for analysis**

Although my analytical focus was the edited set, the unedited transcripts, which included my full interactions with participants, were re-read many times in the course of the research and shed light on the extent to which I as an interviewer was involved in helping my participants find

and construct meaning from the information presented. I also returned to the unedited transcripts as issues and themes emerged from the data that required me to reflect not just on the content of participants' speech but on the context in which particular comments were made. For example, in Chapter 4 I discuss comments by some detectives about false rape allegations. The topic is contentious and participants were well aware that their views might be controversial. However, their comments were made in the context of an interview where rapport had been developed to the point where such views could apparently be relatively freely expressed.

Another example of where I had to be aware of my influence on participants' reasoning is with Participant 6, a Detective Inspector, who tried to engage me in helping him 'investigate' the crime:

Participant: *I'm just looking for inconsistencies between the two statements. Are there any, without me wasting time...?*

Interviewer: <laughs> ... *I don't really want to tell you, though I can do if you want? No, they are broadly the same. Timing-wise.*

Participant: *One of the things I would be looking for is inconsistencies between the two.*

Interviewer: *OK.*

Participant: [continues reading document] *that's where the car is?* [indicates on map]

Interviewer: *that's right*

Participant: *and that is Oakham road?*

Interviewer: *yes*

Participant: [continues reading document] *I think he's saying that she walked off, and she's saying he walked off - is that right?*

Interviewer: *yes*

Participant: “*turned back and walked in the direction of Oakham Road*” *so that would be right then?*

Interviewer: *Yes*

Participant: [continues reading document] *So he carries on walking through the orchard, where does that take us?*

Interviewer: [indicates on map]

### *Analysis*

Several alternatives exist for the analysis of qualitative data and researchers must choose methods appropriate to their data and research questions (Chenail, 1995; Miles & Huberman, 1994). The research questions derived in Chapter 1 are grounded in the assumption that cognitive processes underlying investigative sense-making (ISM) exist and can be inferred from the study of the product of this sense-making, i.e., the way that detectives talk about their understanding of investigative data. In this sense, the approach taken in this research, in common with most cognitive psychological research, is broadly realist. However, although the cognitive processes themselves are assumed to be real, the products of those processes are constructed: the outcome of sense-making is the detective’s mental representation of an investigative scenario, which is influenced by individual and social factors (e.g., prior experience; anticipation of peer evaluation) and social context (e.g., organisational culture). Thus, the current approach has both realist and social constructionist elements. Although realism and social constructionism are often seen as in opposition to each other (Potter & Wetherell, 1994), it is argued that the two are not irreconcilable (see also, for instance, Ball & Ormerod, 2008; O’Keefe, 2002) and that it is possible as a researcher to take a realist approach to the *process* of sense-making whilst accepting the socially constructed nature of the *product* of sense-making.

The prepared transcripts produced in the current research totalled over 193,000 words. Any approach to the analysis of qualitative data first involves the reduction of a large, loosely-structured corpus of material to a more focused set of data that is amenable to detailed analysis (Miles & Huberman, 1994). In the current research, a content analysis approach was employed to select passages from the text that related specifically to issues relating to sense-making. An initial high-level coding ‘template’ was derived *a priori*, covering key themes relevant to the issues identified in the theoretical Investigative Sense Making framework in Chapter 1 (see below for more details). Second, transcripts were coded according to these high-level codes. Third, the coded segments were scrutinised and additional finer-grained codes derived inductively within each theme as points of interest were noticed. Where possible these lower-level codes were grouped together in ‘sub-themes’ (for further descriptions of this approach see also, Chi, 1997; King, 2004). The two key features of this approach are (1) that, in line with a realist epistemological orientation, it focuses on the manifest content of the transcripts, that is, what participants said about the material they had read in the course of the simulation, rather than the (inferred) latent content; and (2) that it results in hierarchical coding structure which attempts to capture key features of participants’ sense-making at a range of levels, from a broad higher-level overview of common features to more fine-grained, lower levels that may allow fine distinctions to be made between and within transcript data (King, 2004).

This method of iterative coding shares some features with Grounded Theory, but whereas the aim of the latter is to generate theory grounded entirely within the data (Dey, 2007), the current method has more in common with a General Inductive Approach, which, Thomas (2006) explains, is a broad approach applied when a theoretical framework has been derived but the details of the framework remain unclear. Analysis from such an approach can also throw up



unexpected findings that may shed new light on the theoretical framework or contradict some of its propositions (Thomas, 2006). The application of the method in the current research is now described in further detail. High-level, main and sub-themes and significant coding categories are summarised in Table 3.5 below.

*Stage 1: Identification of high level themes.* In the early stages of this research, listening to the interviews and successive readings of the text revealed an almost overwhelming range of different ways in which participants interpreted and suggested ways of exploiting the information presented. Participants talked, often at length and in great detail, about their reactions to the stimuli, with discussion ranging from inferences that could be drawn from the materials to observations about the strategic management of investigations. All were potentially relevant to the ISM framework derived in Chapter 1 and a particular challenge at this stage of the research was thus to decide which topics to select for further detailed analysis. A crucial element in the ISM framework was the construction of narrative hypotheses to account for perceived data. It was argued in Chapter 1 that central to this activity, and something that sets ISM apart from sense-making in many other domains, was the understanding and interpretation of human behaviours (Alison & Barrett, 2004; Ormerod et al., 2008). It was appropriate, therefore, that the high-level themes selected for this study were those that related to the human actors within the TBI situation. The analysis in Chapter 4 thus focuses on participants' perception of the victim; in Chapter 5, the offender; and in Chapter 6, potential suspects.

*Stage 2: High-level coding.* The next stage of coding involved identifying all passages within the transcripts that related to each of the high-level themes (i.e., victim; offender; suspects). NVivo qualitative data analysis software (version 7, QSR International Ltd, 2006) was used to facilitate coding and retrieval of coded text. Coding was not exclusive (i.e., more than one code could be

assigned to the same passage of text) and passages were coded if they were, or potentially were, relevant to the victim, offender or potential suspects, resulting in large amounts of data within each high-level theme.

*Stage 3: Fine-grained coding.* In this stage, interesting aspects of the ways in which the victim, the offender and suspects were discussed were captured through inductive coding of text within the high-level themes identified in Stages 1 and 2. Codes were initially created ‘in vivo’ (i.e., free codes created as interesting aspects of the text were noted; Richards, 2005), but as these proliferated it was possible to combine some within higher-order categories, and to break down others further into meaningful elements. For example, initial coding of text concerned with proposed actions relating to the victim (‘victim-actions’) was subsequently broken down into actions that were concerned with asking the victim for information (e.g., taking a statement), taking information from the victim (e.g., forensic examination) and relating to the victim’s welfare.

At this point in the analysis I began switching between computer-aided coding, pen and paper ‘concept-mapping’ methods to summarise and link codes (Crandall et al., 2006), and tabulation of coded data within Excel or Word documents to facilitate inspection and interpretation of the text (Miles & Huberman, 1994). The latter approach was particularly valuable during the analysis of data relating to suspects, when tabulation of coded information enabled easier identification of participants’ opinions on incriminating versus exculpatory information than had been the case in NVivo (see Chapter 6). Concept-mapping, on the other hand, helped to link codes, for example, describing actions related to the victim, through which it became clear that the participants were seeking methods of corroboration of the victim’s information and this was related to their perceptions of her credibility. Returning to NVivo,

further instances of corroboration-seeking were identified, and part of the coding dictionary for this theme thus evolved into a more sophisticated set of categories relating to the credibility of the victim.

After many iterations, and via the ‘Tree Nodes’ function in NVivo (Richards, 2005), a final coding dictionary was developed, which sets out each of the most significant codes within a hierarchical structure. These are summarised in Table 3.5 below, and the whole dictionary reproduced in Appendix D (for ease of reference the dictionary has been split according to each high-level theme (victim, offender and suspects)).

High level theme	Main theme	Sub-theme	Coding categories
<b>Victim</b>	Victim as source of information	Genuineness	Clarify and corroborate Scepticism Pragmatic investigation Rape exemplars
		Victim as forensic source	
	Victim welfare	Impact of victim welfare on the investigation	Victim well-being Someone to support her
		Balancing act	
<b>OFFENDER</b>	Inferences about offender characteristics	Criminal history	Uses distinctive modus operandi Has history of crime with the police Offences building up over a period of time Responsible for similar incidents
		Other characteristics	Dangerous man Smoker Lives / works locally Handedness Occupation

Table 3.5 cont'd/

	Reconstructing the attack	Inferences about intentions	Intended to conceal identity Opportunist Intended to carry out a rape
		Inferences about behaviour before attack	Preparation
		Actions before attack	
		Inferences about behaviour during the attack	
		Inferences about behaviour after the attack	Leaving the scene Leaving the area
		Inferences about future behaviour	
<b>SUSPECTS</b>	Geographical framework	Offender local knowledge Routes taken	
	Phase 1: Broad coding of suspect categories	Named individuals Unnamed individuals Persons unknown	
	Phase 2: Detailed coding of named individuals	Consistency with evidence Motive	
		Past behaviour and character Opportunity	

**Table 3.5. Summary of high level themes, main themes, sub-themes and key coding categories**

*My role as an ‘outside insider’*

My role during this research is best described as that of an ‘outside insider’. Although I have never worked as a police officer, by the time I began recruiting participants for these studies I had worked alongside detectives in investigations for nearly a decade. This experience was invaluable in the early stages of negotiating access, as I could explain to ‘gatekeepers’ the practical value of proposed research. Later, years of working with detectives allowed me to develop rapport quickly with my participants and to anticipate potential concerns. Most importantly, my experience gave me credibility with often sceptical officers.

At the design stage, my experience helped me, together with officers from a detective training section, put together a realistic set of materials for my study. When it came to the analysis of data, my knowledge of investigative methods allowed me to recognise the techniques described by participants as they discussed what they might do during the ‘investigation’ and to translate police jargon. The value of my prior experience was brought home when I piloted the simulation with someone who had never worked for a law enforcement agency. Despite having supported several high profile police investigations as a psychologist, this individual struggled to understand why some documents were relevant to the investigation and frequently became bogged down in trying to understand the meaning and context of particular details, whereas for me, and more so for my participants, inferences about what had led up to a particular report (the result of a doctor’s examination of the victim, for instance), were natural and automatic. This forced me to reflect on the amount of tacit, and previously unacknowledged, knowledge I brought to this situation.

Although being an ‘outside-insider’ is undoubtedly a helpful position for the type of research I carried out, it also brings dangers, in particular in terms of threats to the validity of the research. A researcher is not, and can never be, a completely detached and objective observer of their participants (Lee, 2000). This is particularly the case in interview research, where interviewee and interviewer together construct a representation of the interviewee’s knowledge (Elliott, 2005). Although I tried to give minimal answers to their questions, some participants tried to treat me as part of their investigative ‘team’ as they worked through the ‘investigation’ (see the example of Participant 6, above). I found myself sometimes stepping out of the role of ‘objective’ interviewer and relinquishing ‘control’ in favour of, for instance, defusing a participant’s frustration as they struggled to follow a particularly complex description of a route

walked. In other cases, participants light-heartedly demanded additional information from me which I, equally light-heartedly, refused them:

Interviewer: *any thoughts on the SOCO [Scenes of Crime Officer] report?*

Participant 4 (male DI, 31 years' police experience): ... *One condom, doesn't say used, unused. Used or unused?*

Interviewer: *I don't know!*

Participant 4: *<laughter>*

Interviewer: *<laughs> You'll have to ask SOCO!*

I enjoyed the interviews more than I had expected and participants' interest and engagement was also palpable, with most keen to follow the investigation to its conclusion. For instance:

Participant 10 (male DC, 26 years' police experience): *I still want more information!... give us the next bit! go on, give us more! ... I want to know, you are going to let me know how this thing ends aren't you?.*

And:

Interviewer: [at 1hr 25min] *Happy to continue?*

Participant 11 (male DC, 20 years' police experience): *Yeah! You will tell me if I've missed the offender?*

Interviewer: *We'll talk about it at the end.*

Participant 11: *I shall go home and just cry! <laughs>*

I often questioned the degree to which my assessment may be coloured by my experience, and as I analysed my data, I found myself hoping that the officers would acquit themselves well

in the investigation. At one point during the analysis for an article based on Chapter 4, I wrote in my research diary:

*I'm becoming slightly anxious about being perceived as 'police bashing' – I don't want the data to reveal that they are doing a bad job. Awareness of bias! (20/09/06).*

Reviewers' comments on that article illuminated aspects of my data that others might interpret differently, causing me to re-evaluate my perspective. Discussing some of my results with a colleague with several decades of detective experience but who was prepared to be critical of other officers gave me confidence to report details elsewhere that reflect less well on my participants as well as those which showed them in a positive light.

### *Conclusion*

A key requirement when reporting qualitative analysis is that data-gathering and analytical methods are clearly articulated and transparent (Miles & Huberman, 1994). In this chapter I have set out in detail the rationale for the choice of a simulation method, the way in which the novel simulated investigation method was developed and the means by which it was implemented in the studies reported in the rest of this thesis. I have also discussed potential methodological limitations and the ways in which I tried to address these. Threats to validity, such as biased and incomplete sampling of participants, must be understood in the context of the challenges of negotiating access to a sensitive domain that is usually closed to researchers. One of the challenges in conducting qualitative research is recognising where and how the researcher's perspective affects the validity of the research. Honest discussion of such issues is essential to setting the scene for interpreting the results reported later: my position as an 'outside insider' is as important to understanding my later analysis as the details of the rank, age and gender of my interviewees.

## CHAPTER 4. A MEANS TO AN END? HOW DETECTIVES PERCEIVE THE VICTIM DURING A SIMULATED INVESTIGATION OF ATTEMPTED RAPE

### Introduction

In this and subsequent chapters, analyses of data generated during the simulated investigation method described in Chapter 3 are presented. In Chapters 5 and 6, analyses relating to detectives' thoughts about the offender and about suspects are described. In the current chapter, the focus is on detective sense-making in respect of the victim of the crime.

#### *The impact of police investigation behaviour on attrition rates*

The investigation and prosecution of allegations of rape and sexual assault is a particularly complex and controversial area of police work. Recent figures for England and Wales reveal that only a quarter of reported rapes are 'detected' (i.e., the investigation has proved the allegation was authentic and a suspect has been identified and charged), compared to a 81% detection rate for homicide (2005/06 figures, Walker, Kershaw, & Nicholas, 2006). Of cases that come to court, recent studies indicate that around 6% result in a rape conviction, although some suspects are eventually convicted for lesser crimes, raising the overall conviction rate to an estimated 12% (2003/04 figures, Feist et al., 2007). The high rate of attrition at the police investigation stage has been a consistent finding for many years in the UK, North America and Australasia (Grace et al., 1992; Gregory & Lees, 1996; Jordan, 2004; Kelly, Lovett, & Regan, 2005; Kerstetter & Van Winkle, 1990; Lafree, 1981; Lea et al., 2003). In recent years, reforms to the way sexual assaults have been investigated have been instituted in several countries, along with ongoing research to monitor their success (Clay-Warner & Burt, 2005; HMIC/HMCPSI, 2007; Jordan, 2004; Temkin, 1999).



Recent data on British rape investigations is presented in two official reports, prepared independently in the mid-2000s in a climate of rising concern about the attrition rate in rape investigations. The first is a review of the investigation and prosecution of rape cases by Her Majesty's Inspectorate of Constabulary and Her Majesty's Crown Prosecution Service Inspectorate (HMIC/HMCPSI) in 2007; the second is a Home Office study of the investigation of rape (Feist et al., 2007). In both studies, the aim was to examine variations in the detection and conviction rates for rape between forces. Feist et al. (2007) analysed the investigation of more than 600 rape reports in a sample of eight force areas, whereas HMIC/HMCPSI (2007) sampled more than 750 reports over seven force areas<sup>15</sup>. Both studies revealed that rates of attrition throughout the progress of cases varied across force areas, from differences in decisions about whether to 'no crime' an allegation (i.e., to record that no offence had taken place), to differences in detection rates and charging decisions.

Feist et al. (2007) found 70% of cases were lost between the victims' allegation being recorded and a suspect being charged, yet in nearly 90% of cases suspects had been named by victims. The most common reasons for attrition at the investigation stage were the victim withdrawing her<sup>16</sup> complaint (35% of cases in which an offence was recorded as taking place) or the police finding insufficient evidence to charge a suspect (40%). However, this analysis also revealed regional variations in the number of cases in which a victim withdrew her complaint and found that low rates of victim withdrawal were associated with higher conviction rates (Feist et al., 2007). The variation could not be accounted for by regional differences in the characteristics of reported rapes, suggesting that the conduct of the police investigation may have a measurable

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<sup>15</sup> Although the force areas studied in the HMIC/HMCPSI (2007) report were identified, Feist et al. (2007) anonymised their data, meaning that it is not possible to judge the degree to which the two samples overlapped.

<sup>16</sup> In the studies described, and in the present study, the focus is female victims.

impact on both the number of rapes that are detected and those that result in a conviction. This conclusion is supported by HMIC/HMCPSI's finding that an increase in detection rates in one force area "ran parallel to improvements in investigation standards... as well as to more robust management of cases and monitoring of performance" (2007, p.48). Both reports thus indicate that the manner in which police officers investigate crimes may have an critical impact on criminal justice outcomes. Their findings echo those of previous researchers in the UK and internationally (e.g., Frazier & Haney, 1996; Kelly et al., 2005; Kerstetter & Van Winkle, 1990; Soulliere, 2005).

*Police scepticism and false allegations*

Victim credibility is a recurring theme in the sexual assault literature. The 2007 HMIC/HMCPSI review found that around a third of rape allegations were categorised as 'no crime' (a figure that has remained stable for several years) but, of these, a third were incorrectly 'no crimed' based on assumptions detectives made about the victim's credibility and the veracity of the complaint. False allegations accounted for less than half of the correct 'no crimed' reports and around 10% of total reports (HMIC/HMCPSI, 2007). Similar false allegation figures have been reported in an international review (Lievore, 2003) and some have argued that the true figure is lower still (Kelly et al., 2005). Nevertheless, researchers continue to find that police officers persistently estimate the prevalence of false allegations to be much higher than research estimates and official figures (Brown et al., 2007; Burt, 1980; Campbell, 1995; DuMont et al., 2003; Jordan, 2004; Lafree, 1981; O'Keefe, 2002).

Scepticism towards sexual assault allegations can have a negative impact on attrition for a number of reasons (Kelly et al., 2005). Victims' anticipation of police scepticism can be an effective barrier to a victim reporting a crime in the first place (Gregory & Lees, 1996; Kelly,

2001; Kelly et al., 2005; Lievore, 2003). If a crime is reported, a victim may withdraw her allegation rather than persist in pursuing a complaint she senses the police do not believe (Temkin, 1999). Detective scepticism may cause them to ‘no crime’ an allegation, or conduct a substandard investigation in which potential evidence is lost (HMIC/HMCPSI, 2007; Kelly et al., 2005). Finally, sceptical officers may persuade a victim to withdraw her allegation (Kerstetter & Van Winkle, 1990).

In summary, despite reforms in the way in which victims are treated, attrition rates remain high and variable between forces. Organisational factors probably account for some variation, but a more detailed understanding of how organisational and cultural factors impact on and interact with individual detectives’ decision-making would provide a richer basis for understanding and addressing how such attrition occurs (O’Keefe, 2002). Key issues to be addressed are thus the factors that influence detectives’ assessments of victim credibility, the point at which they make such judgements, and how these views affect the investigation of a reported sexual assault.

#### *The current study*

The focus of the current study is how a detective’s perception of a victim influences the investigation of sexual assault. Using the simulation method described in Chapter 3, material relating to an investigation of an allegation of sexual assault was ‘drip fed’ to detectives. Guided by a lightly structured interview protocol, officers expressed their thoughts as they processed each document in the ‘investigation’. It was hoped that such a method would shed light on the way in which detectives formed judgements about the victim and her account. Specifically, the research questions to be explored are:

- From a detective’s perspective, what role does the victim of a sexual assault play in an investigation?

- How do detectives make sense of the information provided by a victim and what part does this information play in investigative sense-making throughout an investigation?
- To what extent do beliefs about false allegations influence investigative sense-making and action?

#### Method<sup>17</sup>

*Participants:* Participants were 22 officers, 20 of whom were male, ranging in age from 28.9 to 49.2 years ( $M=41.7$ ,  $SD=6.7$ ). Six were Inspectors, nine were Sergeants and seven were Constables, serving in a dozen different locations throughout the force area. On average they had 20.9 years' police experience ( $SD=8.1$ , range 8.2 to 33.0) and varying levels of experience of investigating serious crimes ( $M=13$  years' detective experience,  $SD=7$  years).

*Materials and procedure.* Participants were interviewed as they working through a 'case file' that presented information received during a simulated 'investigation' of an attempted rape. Documents were organised into sets of one, two or three and were presented in chronological order to participants, with the sets corresponding to 'phases' of the investigation, as described on pages 86-87 and summarised in Table 4.1 (full materials are reproduced in Appendix C).

Fifteen officers completed the entire study and seven had to leave before the end. Officers took 108 minutes on average to complete the study (range 72 to 152,  $SD=19$  minutes).

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<sup>17</sup> As full details of participants, materials and procedure are provided in Chapter 3, only a brief overview of the method is provided here.

Phase	Document	Details of documents presented
1	1a	Brief orientation to the fictional force area, including maps.
	1b	Initial report of the telephone call reporting the attack.
2	2a	Statement of the victim; map showing her route.
3	3a	Statement from a man who interrupted the attack; map showing his route.
	3b	Statement from victim's boyfriend.
	3c	Statement from the doctor who examined the victim.
Verbal update		There has been a media release, which states: "There has been an indecent assault on a young woman in the orchards at Summersby. Police are worried that the offender will strike again. Anyone with information is urged to call."
4	4a	Messages received: report of stolen vehicle; eyewitness report of running man near the scene; report from a police officer about historic indecent exposure in the area; call from historic rape victim.
	4b	Results of forensic examination of the crime scene, including diagram.
5	5a	Results of local enquiries: eyewitness reporting blue van driving at speed; statement from local farm owner reporting the recovery of a car from outside his property; statement from eyewitness from phase 4; statement from a second farmer (William Samuels).
	5b	Further details of the indecent exposure mentioned in phase 4.
6	6a	Second statement from the victim giving details of an ex-boyfriend and of being sent abusive letters some months previously.
	6b	Report from the owner of the stolen car mentioned in phase 4.
7	7a	Criminal record details for victim's ex-boyfriend, for the rapist mentioned in phase 4 and for William Samuels (mentioned in phase 5).
8	8a	Statement from a man who had broken down near the scene of the crime
	8b	Statement from victim's ex-boyfriend denying involvement in attempted rape.
9	9a	Statement from Samuels' daughter mentioning John Simmons, an ex-boyfriend. Details of Simmons' criminal record.
	9b	Statement from one of Simmons' previous employers.
10	10a	Messages received: anonymous denunciation of an individual named Smithers; three eyewitness reports relating to blue vehicles in the area.
	10b	Statement from Simmons denying involvement in the assault.
	10c	Second statement from Samuels' daughter, identifying belt found at the scene of the crime as one she had given Simmons.
11	11a	Report that Simmons has been arrested and his house searched with incriminating objects found. Request to for advice on how to proceed.

**Table 4. 1: Summary of materials used in simulation study**

### *Analysis*

Interviews were transcribed in full and analysed using the content analysis approach described in Chapter 3. For the present analysis, this began with the coding of all mentions of the victim. Text within this high level category was then scrutinised and codes developed as they emerged during successive readings of the text. These codes were then combined into meaningful higher level categories which formed the basis of the thematic analyses presented below. For example, the comment “I think the boyfriend might test her account to a degree and hopefully that will corroborate her story” (Participant 14) was coded as *Corroboration Boyfriend*, which was grouped with references to other potential corroborative information to create the category *Clarify and Corroborate*, which in turn was subsumed into the higher level category *Genuineness* (see coding dictionary at Appendix D).

### Results and discussion

The results of the coding and analysis are presented here by themes (see Table 4.2). Although the analysis covered the entire duration of the ‘investigation’, the victim was most relevant to the participants’ sense-making in the early stages when progress depended on eliciting detailed information about the alleged offence, either directly (via her statement) or indirectly (via forensic material). Participants focused in particular on the *genuineness* of the victim’s account, seeking to enhance its credibility by *clarifying* what she had said or seeking *corroboration* by others. For some participants, the possibility that the victim was making a *false allegation* was one of several hypotheses about what had happened but regardless of their views about false allegations, all took a *pragmatic approach* and ‘investigated’ as if the story was true. In this context *forensic information* was perceived as being particularly valuable. The *welfare needs* of the victim took second place to her role as a source of information, with participants

describing a *balancing act* between the welfare needs of the victim and the broader needs of the investigation. These themes and sub-themes are explored further below.

Main theme	Sub-themes
1. Victim as source of information	a. Genuineness: <ul style="list-style-type: none"> <li>i. Clarification and corroboration of the victim's account</li> <li>ii. False allegations</li> </ul> b. Pragmatic investigation <ul style="list-style-type: none"> <li>c. Victim as a source of forensic evidence</li> </ul>
2. Welfare and support	a. Welfare as secondary to the needs of the investigation <ul style="list-style-type: none"> <li>b. Balancing act</li> </ul>

**Table 4. 2: Main themes and sub-themes in participants' discussion of the victim**

#### *Victim as a source of information*

The victim's first account of any incident, particularly a reported sexual assault where witnesses to the crime are likely to be absent, is crucial to officers as it provides a framework for the initial investigation and a story to be corroborated or disproved. In evidence-gathering terms, a victim is likely to be able to provide details of what was done or not done during the incident. Crucially, she may be able to identify the offender, or provide descriptive, behavioural or linguistic details that indicate further lines of enquiry. Her identification of the scenes of the crime provides opportunities for forensic evidence-gathering and suggests where witnesses might be found.

When discussing the actions they would take in the initial stages of this simulated investigation, participants relied heavily on the victim's statement to develop lines of enquiry, for example:

**Extract 4.1:** *[We need] to get as many of the facts relating to the alleged incident as quickly as possible and... the alleged victim is the main direction we've gotta get the information from* (Participant 4).

*Clarification and corroboration of the victim's account*

Participants stressed the importance of clarifying the exact nature of the allegation. Incidents reported as crimes often turn out to have different explanations and an early task in any investigation is to establish whether a crime has actually occurred and, if so, exactly what that crime is. The initial report in this investigation was a telephone call from a retired army colonel on behalf of the victim and ten participants made explicit comments referring to the importance of hearing the account from the victim, rather than third hand; for example: *“We don't know who said what to who... has she told her boyfriend and then he told [the colonel]?... It's classic Chinese whispers scenario”* (Participant 14). Another explained: *“You can get all sorts of weird and wonderful situations... you really need to speak to the victim... because it might be a totally different story”* (Participant 16).

One possibility, alluded to by two participants, is that the offence might in fact be more serious than attempted rape: *“It may be that ... the victim doesn't want to say to them that she has been raped. It may be much more serious”* (Participant 18). Participant 3 commented:

**Extract 4.2:** *[It's] worded as ‘tried to rape her’ so I'd probably seek clarification as to how far that attempt has gone, because it may transpire that it's an indecent assault or ... that it is in fact a rape.*

All participants referred to the importance of opportunities to confirm the victim's story and their initial lines of enquiry focused on gathering information that would allow them to do so. Corroboration is important to satisfy investigating officers that they are dealing with a genuine offence and some officers had resource implications in mind: *“Before you start deploying ... these expensive resources you would want to be looking ... for verification”* (Participant 7). As with any crime, corroboration also helps ensure that investigators are not being misled because a



victim or witness has made a genuine mistake about a crucial detail. For example:

**Extract 4.3:** *Sometimes people can get descriptions very wrong when something traumatic has happened to them but the balaclava and green jacket had been confirmed by second person, I am now happy that those things are correct (Participant 9).*

The officers in this study actively sought corroborative evidence. Forensic examination (see below) was perceived as crucial, as was the evidence of witnesses who provided information to substantiate the victim's claims. For instance, Participant 7, reading from a witnesses statement, said:

**Extract 4.4:** *Then he 'saw the woman getting dressed and heard a woman call for help', so straightaway, big sigh of relief ... yeah this has definitely happened... he is corroborating her account quite nicely.*

Similarly, Participant 22 observed that the victim's boyfriend and the colonel were "excellent quality witnesses ... they've covered everything ... they both clearly corroborate... the incident...I don't see any major anomalies". Like Participant 7, other participants expressed satisfaction when corroborative information was provided:

**Extract 4.5:** *I'm glad ... from the victim's point of view that someone was in the forest at the time. Everything is really corroborating her recollection very accurately, her version of events. I'm pretty pleased (Participant 10).*

Participants also sought corroborative evidence in anticipation of later challenges from the prosecutors or in court. The issue of corroboration was thus bound up with the issue of establishing both whether the victim's allegation was true and whether others would view it as such:

**Extract 4.6:** *Sometimes, somewhere down the line there are discrepancies between the*

*account that she's given to the police and the account that she's given to other witnesses and that may be a cause for concern (Participant 3).*

For some, the corroborative information allowed participants to begin to eliminate the possibility that this was a false allegation, for instance:

**Extract 4.7:** *We have now considerably more than just the account of what the girl could tell us... we have some corroboration to what she's saying and therefore there is a clear indication that a serious offence... has taken place against this victim in the circumstances as she describes (Participant 13).*

**Extract 4.8:** *My view on the whole thing is you... gather what you can and then if information makes you sceptical about what's happened or calls anything into question you check it out before you jump in on one side or the other because you need to get a broad view and sometimes people are strange and things aren't as they seem.... if that's all you've got, you go with that until something says to you... 'hang on a minute, that isn't right'. But as I say, if you're questioning your victim's credibility at an early stage, that's not the right thing and sometimes people go with tunnel vision. Whereas you keep the angle broad, you try and collect everything you can and then you evaluate what you've got (Participant 15).*

#### *False allegations*

Beliefs about false allegations were rarely expressed explicitly, although they were implicit in several participants' comments. After reading the initial report of the incident (document 1a) three participants stated that they would entertain the hypothesis that this was a false allegation, alongside other hypotheses (e.g., that the complaint was genuine). Six other participants raised the general issue of false allegations at this stage, but without stating

suspicions about this specific incident, e.g., *“I’ve dealt with, must be over 100 over 13 years? I don’t know how many. The majority of those have been very grey, a large number of those haven’t happened”* (Participant 5). Another commented that *“it does happen, people do make false allegations and spark off huge investigations [then] they are found to be totally false and malicious for whatever reason”* (Participant 7).

Others reserved judgment on the incident until they had read the victim’s statement, which some participants then drew on to elaborate ‘false allegation’ hypotheses, in particular the following part of the victim’s account:

Colin asked me to move in with him. This was totally out of the blue and I wasn’t expecting it. I didn’t really know what to say so I just said no, jokingly. Colin became angry which annoyed me. He kept going on about it and eventually I said I wasn’t prepared to listen any more. I turned around and walked away from him (extract from document 2a, victim’s statement).

This information prompted the hypothesis that the victim had argued with her boyfriend and was now ‘attention seeking’, hinted at by two and stated explicitly by four participants. For example:

**Extract 4.9:** *This business of... the row with the boyfriend and him running off and then this incident occurs... that can happen ... people do seek attention after they’ve had a falling out with a boyfriend and then lo and behold. ... the cynics could say ‘oh it’s to do with this bust up’... (Participant 16).*

Comments from some participants suggested that such views might be prevalent in their force. Participant 15, one of the two female officers interviewed, remarked that: *“cynical people in my office would say she had a row with her boyfriend and she’s asking for attention ...”*. An Inspector (Participant 17) commented that he would keep any doubts to himself rather than sharing them with the investigative team and another Inspector commented similarly both on his

own prejudice and that of those he had to manage:

**Extract 4.10:** *The officers who are gonna be dealing with this, unfortunately they will jump to ‘has the girl made it up’... those prejudices are there a little bit in the back of my mind (Participant 21).*

The victim’s character also featured in comments relating to credibility. One concern was whether the victim had made previous complaints of rape. This was mentioned explicitly by four participants, of whom two linked the issue to mental health concerns, e.g.:

**Extract 4.11:** *I’m assuming we’re not dealing with someone who perhaps might have mental health issues? We need to check her on our databases to make sure she hasn’t made complaints before (Participant 7).*

Another asked “*what is this person like? I get the feeling that she’s sensible*” (Participant 4).

Although not widespread, comments about the victim’s character suggest that for some participants repeat allegations, ‘mental health issues’ and not being ‘sensible’ may signify an account with diminished credibility. Repeat complaints do not always signify false allegations, however:

**Extract 4.12:** *I would probably be looking at a victim profile ... to see if she’s got any history of previous complaints... if there’s any history of domestic violence between herself and her boyfriend, because it may transpire that the offender is the boyfriend, and she’s fearful of identifying [him]... especially if he’s physically present (Participant 3).*

In explaining why they were inclined to believe the victim in this case, some participants gave insight to beliefs about ‘real rapes’ and ‘grey areas’. The allegation that this particular victim made was different, some argued, to alleging rape after being “*very drunk in a bar*” or “*in the back of a taxi*”; “*making things up because of a breakdown in a relationship*”; having an

*“argument at a nightclub and then boyfriend goes off and then two hours later, you know, something unfortunate's happened”*; or *“classic... consent sex which is reported as rape”*.

Participants also made several comments that hinted at what they considered to be the cues to ‘genuine’ rapes, including having torn clothes and injuries and appearing distressed. However, participants were aware that they could be mistaken:

**Extract 4.13:** *I've had some that, you say to me 'has this happened?' and you go 'absolutely no way, it's so bizarre, so weird'... and they turn out to be genuine. And I've had other ones that look like absolutely genuine ones that turn out to be false and malicious (Participant 5).*

Few commented on what they would do if an allegation turned out to be false, although one who did indicated that even if a victim had lied about the circumstances it did not necessarily mean that the allegation was entirely fabricated:

**Extract 4.14:** *When you get to the stage where you can disprove it, that's when you go back to the victim, you don't beat them up over it - verbally beat them up over it - you say, you said this and we've discovered this. You say you don't know this person but we know that you were actually very drunk in the bar and in fact you had your top off and you were doing this – it doesn't make it right if it's happened, but you haven't been truthful with us, now please be truthful with us (Participant 5).*

Participants continued, throughout the ‘investigation’ to consider alternative hypotheses to account for the information they received and the evidence for or against each one. However, issues relating to the victim’s credibility only arose in the early stages of the investigation. Beyond the third phase of the ‘investigation’, comments about credibility were rare: after this point four officers made a few remarks but only two entertained the possibility that this might be

a false allegation.

### *Pragmatic investigation*

Regardless of the hypotheses they later considered, when asked ‘what are your thoughts?’ on reading the first report, almost all participants started by detailing the actions they would take to secure the scene of the attack and to ensure the victim and other witnesses were located and interviewed. When asked what they thought had happened, no participants suggested treating the allegation as false from the start, taking no action, or rejecting the complaint and two felt that the claim that the victim had endured an attempted rape was unequivocally true, for example: “*Right away I feel it is a genuine allegation... it's completely serious and something that we need to get to grips with*” (Participant 17). Of the rest, 16 participants either stated explicitly that they had an open mind about the circumstances of the incident and/ or claimed that they would investigate the report as if it were true until proven otherwise, e.g.:

**Extract 4.15:** *People don't say ‘an alleged house burglary’. People accept it as a reported house burglary. I hold the same terminology to do with sexual assault. This is a reported sexual assault. It's not alleged, it's a report and we will deal with it on that basis ... as being, at this stage, a true and accurate report.* (Participant 11)

A practical reason for treating the allegation as if true from the start is to ensure that any forensic evidence is gathered as soon as possible, both from the scene of the attack and from the victim herself: “*Initially with anything like this... It's the ‘what might we lose’ scenario*” (Participant 15). Every participant responded to the initial report by stipulating that places where forensic evidence might be found should immediately be identified, protected from ‘contamination’ and examined. Regardless of what participants felt might have happened, preservation of forensic material was clearly perceived as an essential task:

**Extract 4.16:** *The thoughts that you've got in your own mind, you keep them in your own mind, you still go through the process, because if you don't go through the process, you can't go back... you get one go at securing and preserving evidence in sex cases and if you don't take it you can't go back (Participant 5).*

Even from the initial stages of the investigation, participants also had an eye to an eventual prosecution:

**Extract 4.17:** *My experience shows that with this sort of thing the sooner you can nip it in the bud, identify the offender as soon as possible, then forensic evidence is stronger, it makes life much easier for securing a conviction (Participant 10).*

The preservation of forensic evidence was particularly crucial when the source of that evidence was the victim herself.

#### *Victim as source of forensic evidence*

Ten participants referred to the victim explicitly as a 'scene of crime' to be treated in the same way as the physical location that the attack took place, although one officer cautioned, "*the victim is a scene, although obviously I wouldn't want her to know that*" (Participant 22). The other participants stopped short of applying the label 'scene' to the victim, but nevertheless described how they would instruct forensic investigators to examine her. The description of the victim as a 'scene of crime' depersonalises her and highlights her functionality. A victim can refuse to volunteer forensic information by withholding her consent for an examination. However, once she has consented, as a 'scene' she becomes a thing that has to be 'preserved' and searched. Comments about the victim's ignorance of her forensic value emphasised her passivity, e.g.,: "*sometimes he could've ejaculated almost immediately and she's just not aware of that*" (Participant 21).

Unlike a statement, forensic evidence is not something the victim generates, but is provided by virtue of her contact with the offender. It includes particles from the offender's clothing or body, including the offender's semen (described euphemistically by Participant 10 as “DNA debris”) and such evidence can be found in many different places:

**Extract 4.18:** *We're still looking at... DNA potential on anything that he's touched which would certainly be all of her outer clothing and potentially her knickers too and certainly the shoes and depending on the shoes if they're patented or particularly clean you might even have a fingerprint potential there, so the correct preservation and packaging of her clothing is absolutely essential (Participant 7).*

Many of the actions to recover forensic evidence are routine and at first glance it appears as if participants were simply going through a ‘check list’ of actions to preserve a scene and gather evidence. Closer analysis revealed that when considering forensic evidence, most participants were applying extensive knowledge of the opportunities for collecting such information and the ways in which the integrity of that evidence could be threatened, as illustrated in Participant 3's comments:

**Extract 4.19:** *The forensics, we've got the victim, we've got her clothing she was wearing at the time, it may be that she's changed out of that clothing...but it would be foolish to make the assumption that the clothes that she's wearing when you first meet her are the clothes that were worn at the time, so identify the clothes that she was wearing at the time of the incident. Her person is a forensic scene so you've got the scenes of crime and the medical examination of her... preservation of... any other secondary scenes... so if the first thing that she did when she got home was to sit on the sofa, and has remained there since or has got up about walked about you may have a transfer of material onto there, so*



*you may have a second scene, or a third or a fourth. And that scene also may be a person, if the first thing she did when she came home was to give her mum a big hug, or her boyfriend, then I'll be seizing their respective clothing.*

Examination of a victim in a sexual assault investigation is a crucial part of the investigation and may be critical to achieving a successful prosecution (Feist et al., 2007). Forensic evidence provides corroboration for the victim's story and new leads to follow. If DNA material is present, this can lead to the rapid apprehension of the offender. Forensic material is delicate and easily lost so rapid preservation and examination of any places, including the victim, where such material might be present is crucial. In treating the victim as a scene the participants were thus following investigative good practice. Many demonstrated that they were not completely oblivious to the victim's feelings. For instance, Participant 5 commented: *"First scene is the victim... so she has to be preserved. Sounds a bit technical, clinical, that 'she has to be preserved'"* and Participant 11 maintained that *"I don't like to be sort of too 'police-y' when I speak, but clearly with forensic recovery from [the victim], that's a...very important crime scene"*. Participant 7 summed up the dilemma thus: *"The balancing act is the needs and the feelings of the victim against the need to recover... DNA evidence and that sort of thing."*

#### *Welfare and support*

The detectives' consideration of the victim's welfare and support needs took second place to their view of her as a source of information. Of the 22 interviewees, six (including the two female participants) did not raise issues relating to victim welfare at all (in contrast to all 22 participants who discussed her forensic potential, often at great length). Of those participants who did mention welfare, few paid more than cursory attention to the possibility that the victim might be traumatised and in need of emotional support. Explicit demonstrations of victim empathy were

rare: just four participants mentioned how the victim might actually be feeling and two others made a cursory reference to her likely distress. A striking comparison is between Participant 12, a DC, who described how he would “*take a quick statement from her... and then consider giving her, you know, the old forensic treatment at the [rape] suite*” and Participant 13, an Inspector, who explained:

**Extract 4.20:** *My first concerns are for... the victim, to make sure that she is accurately resourced by the Police service... I would hope that... the [Specialist Investigation Unit is] trained to have a compassionate approach to her needs.*

*Welfare as secondary to the needs of the investigation*

Of the sixteen participants who acknowledged, at some level, the need for welfare support, most mentioned the desirability of having specialist staff to perform this role. However, participants frequently linked victim welfare to the investigative possibilities afforded by such welfare support. Eleven participants said that they would require another officer to ‘take care’ of the victim, of whom three expressed a desire for the officer to be specially trained, while acknowledging that at the time (2004) it was rare to have such trained officers available. But for these detectives, the officer allocated to the victim was there also (perhaps, primarily) to ensure that mistakes in forensic capture were avoided and that a full account of the incident was obtained. For example, Participant 17 described how the rapport built up by the victim liaison officer would be helpful when it came to persuading the victim to identify the knife used in the attack, a task which might otherwise be too traumatic to attempt. Participant 9 explained that a priority action in the early stages of the investigation was to:

**Extract 4.21:** *Establish exactly where the scene [of the attack] is, so I would be asking the WPC [woman police constable] who took the statement and who has probably formed*

*a relationship now with the victim of this crime if she can persuade her to go back to the scene of the crime.*

That the participants did not all comment on the victim's emotional needs does not indicate that they were indifferent to her suffering. Indeed, many made reference to the brutality of the crime and the seriousness with which they intended to investigate it. But police officers are not usually directly tasked with responsibility for victim welfare, or at least not according to some interviewees:

**Extract 4.22:** *My staff ... albeit working with [the victim] in a very supportive role ... the focus of their role within this is one of being a police investigator ... there are many, many agencies outside who are much, much better equipped than we are within the police in terms of providing people with... proper professional... support and care.* (Participant 11).

#### *Balancing act*

Several participants mentioned explicitly the delicate balancing act between meeting the needs both of the victim and the investigation. For example, one explained that “*there's a balance to be held here between the needs of the police inquiry and the needs of the victim and that's something with which I personally can't lose sight of*” (Participant 11). Emerging from these and similar comments was a sense that the participants’ duty to the victim could best be discharged by conducting a thorough investigation, in particular, by ensuring the effective capture of relevant evidence. This aspect of the detectives’ duty to the victim is perhaps best expressed by an Inspector, Participant 13:

**Extract 4.23:** *I have a number of lines of inquiry ... and above and beyond all of this I have an ongoing interest in the victim in terms of her well-being and the ongoing support*

*she can receive from the investigating officers and hopefully to ensure that her and her family maintain confidence in my investigation.*

#### General discussion

These participants viewed the victim primarily as a source of information. The victim's first statement provided the initial framework around which participants made sense of what had occurred. Alert to the possibility that the victim might be mistaken or lying, or that others might think that she was, many participants were also concerned to ensure that her account stood up to scrutiny. Determining the credibility of her story was thus a crucial issue. Although a minority of participants revealed some underlying cynicism in their attitudes to rape allegations, the investigative approach that all took was pragmatic: to treat the account as true unless proven otherwise. Particularly important in this context was the issue of corroborating evidence, obtained through forensic examination of the victim and the scene of the crime and via the accounts of others. The second major theme was that of victim welfare, with some (but by no means all) participants reflecting on their duty of care to the victim and acknowledging her potential need for support in the aftermath of an attempted rape. For many participants, however, welfare was considered in the context of their attempts to secure information from the victim. Implicit in their comments, and made explicit by some participants, was the concept of a 'balancing act' between the needs of the victim and the needs of the investigation.

#### *Prejudice or pragmatism?*

As demonstrated in the current study, the issue of credibility is multi-faceted: Is the victim telling the truth, or is this a false or malicious allegation? Has the victim reported truthfully but been mistaken in her claim that a crime has taken place? Regardless of the veracity of the account, is it corroborated to a standard that would convince a jury that a crime has taken place in

the manner described? A further consideration, identified by O'Keefe (2002) in her qualitative study of police views of rape investigations, is that some officers may fear being 'taken in' by false allegations and the consequently losing face in front of their peers. Thus, when detectives make judgments about credibility, they are not only judging whether to believe a victim themselves, but also whether others will believe her.

A minority of participants interviewed expressed sceptical attitudes about sexual assault reports and of particular concern are the comments about the scale of false allegations. Several participants referred to unfounded allegations of rape being a regular event, with one officer, for instance, suggesting that "the majority" of rapes he had dealt with being "very grey" and "a large number" having not happened. Another stated that only 3% of rapes had actually happened in the way they were reported. Yet according to recent British research fewer than 10% of reported rapes are false allegations (Feist et al., 2007; HMIC/HMCPSI, 2007; Kelly et al., 2005). In a 2004/05 review of performance for these officers' police force the detection rate for rape was slightly higher than the England and Wales average of 31% that year (Summerfield & Gill, 2005). However, the force also reported a 'no crime' rate of more than 30%, which is noticeably higher than the 2005 average 24% 'no crime' rate cited in HMIC/HMCPSI (2007). One explanation could be that the characteristics of rapes in this force area differ significantly from those of rapes elsewhere in the country. However, another explanation could be a high number of incorrectly 'no crimed' sexual assault allegations this particular force area. Apart from administrative errors, reports should only be 'no crimed' if there is evidence that no crime has been committed. However, a recent national review revealed that some allegations were being 'no crimed' on the basis of detectives' judgments about victim credibility, or when a victim withdrew her co-operation, neither of which provides verifiable evidence that no crime occurred

(Feist et al., 2007). Erroneous ‘no criming’ may feed the perception among investigators that false allegations are more common than they actually are (Kelly et al., 2005; HMIC/HMCPSI 2007). That erroneous ‘no criming’ was occurring in the current force is a matter of conjecture, but it is a plausible explanation for some participants’ apparent misperceptions about false allegation rates.

Apart from comments about false allegations, participants’ approach to this ‘investigation’ can best be characterised as pragmatic and professional. Actions were taken as if the report were unequivocally true, despite some participants keeping an open mind about its veracity. Officers engaged in an active search for corroboration of the victim’s story and were pleased when they found it. The present findings are in line with Hoyle’s research on officers’ decision-making in domestic violence cases, which indicated that although many officers expressed exasperation when asked about ‘domestics’ generally, they nevertheless investigated diligently when responding to a specific incident (Hoyle, 2000; Hoyle & Sanders, 2000). Of course, the scenario presented here was a stranger sexual assault on a victim that included none of the characteristics traditionally associated in the research with beliefs about false allegations. Furthermore, although the scenario tended to fit the social stereotype of ‘real rape’, stranger rapes in daylight are relatively rare (Anderson, 2007), so detectives are unlikely to have much experience of investigating this sort of scenario. Future research using a similar methodology but with a more ambiguous scenario would test these findings.

*Indifference to the victim’s welfare?*

The participants’ apparent lack of attention to the victim’s welfare in this investigation is notable. In part, this finding might be an artefact of the method employed in this research and when an officer deals with a real victim they might be more alert to her welfare needs.

Nevertheless, research has consistently indicated sexual assault victim dissatisfaction with the sensitivity of the police (e.g., Jordan, 2004). However, although such findings may be a result of police prejudice, there are other reasons why a detective might not and, perhaps, cannot put the victim's welfare at the heart of his or her investigation. Legal strictures make it difficult for an investigating officer to put the victim's welfare needs above those of the investigation as this may put officers in conflict with the legal requirement to explore all reasonable lines of enquiry, including that the allegation is false (CPIA, 1996). Yet, as discussed earlier, the treatment victims receive can have a significant impact on the outcome of an investigation; in recognition of this, at the time of data gathering UK forces had just started to introduce 'Specially Trained Officers' (STOs) to rape investigations. These officers' role is that of victim chaperone, taking key statements (including from the victim) and remaining in touch with the victim until the conclusion of the case. If this means that victims feel that the police have a greater concern for their well-being, this may reduce the level of attrition in rape and sexual assault cases. However, if the STO becomes involved in actually leading and driving forward the investigation this could raise serious concerns about their ability to conduct an impartial (and legally compliant) investigation. The ideal situation is for STOs to remain linked to, but apart from, the actual investigation so that they can attend to victims' needs whilst the investigation remains CPIA-compliant.

A further reason why detectives might not put the victim's welfare first is that victims themselves may prefer to rely on someone independent of the police: "someone who was 'there for them', whose lack of involvement with evidence-gathering meant they had more freedom to respond to each individual's needs and concerns" (Lovett, Regan, & Kelly, 2004, p.42).

Government initiatives to increase the number of specialist Sexual Assault Referral Centres mean

that alternative arrangements increasingly exist to support victims (Lovett et al., 2004). Thus, it may be better for victims if investigating officers are not expected to act as victim chaperones. Nevertheless, as of 2009, only 29 SARCs have been established in England and Wales<sup>18</sup> (compared to 43 police force areas). There is clearly some way to go before a sufficient and consistent level of victim care can be provided.

A final point is that detectives may avoid emotionally connecting with victims as part of a coping strategy: Temkin has observed how those who act as victim chaperones are in danger of ‘burn out’ and may “emerge as secondary victims in the rape process” (Temkin, 1999, p.38). Linked to this is the possibility that detectives, who deal with a vast array of disturbing and potentially distressing criminal activity, may simply become desensitised to the suffering endured by sexual assault victims and thus not appreciate the gap between the needs of a victim and the level of support provided by the police. In sum, there are several explanations for the results observed in the current study, all suggesting that further improvements to policy and practice may be necessary.

#### *Validity of the results*

The method used to elicit detectives’ thoughts on the investigation of sexual assaults has limitations. Although more realistic than pen-and-paper vignette studies, this approach cannot replicate the complexity and scope of real investigations. This limits the transferability of results to a wider police context. Furthermore, in studying decisions made by individual officers some important social-psychological issues are neglected, including the way in which peers and managers might influence detectives’ decisions. It is considered nevertheless that this novel approach sheds new light on the way in which detectives manage the investigation of sexual

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<sup>18</sup> See <http://www.homeoffice.gov.uk/crime-victims/reducing-crime/sexual-offences/sexual-assault-referral-centres/>



assault.

A particular threat to validity is attempts by participants to manage the impression they made on the (female) interviewer. Police officers are aware that the investigation of rape is a controversial area and some participants made comments that indicated that they were trying to control what they revealed about their attitudes. For instance, one, having stated his opinion that 95% of reported rapes were false allegations, concluded “[I] wish I hadn’t started talking about my views”. Another officer talking about the offender’s actions said “...if this was an attempted rape ... there’s potential that next time will be a proper - that’s a slip of the tongue... a completed offence next time”. This officer’s rapid self-correction probably stems from an awareness of the controversy about designating reports as ‘proper rape’ versus ‘not really rape’ (DuMont et al., 2003). Others followed up comments about false allegations by excusing themselves as being an “old sceptical sort of police officer” or distanced themselves from such attitudes (“cynics would say...”). Such attempts at impression management suggest that beliefs about false allegations are probably more common than these detectives were prepared to admit. My position, as an ‘outside-insider’ (Reiner & Newburn, 2007) meant I was able quickly to develop rapport with the interviewees, creating an atmosphere of trust which may have mitigated some of the potential effects of impression management. However, this should be balanced against the possibility that this role made me more inclined to interpret participants’ statements favourably (see Chapter 3).

### *Conclusions*

In the Introduction, three key research questions were posed: From a detective’s perspective, what role does the victim of a sexual assault play in an investigation? How do detectives make sense of the information provided by a victim and what part does this information play in investigative sense-making throughout an investigation? And to what extent

do beliefs about false allegations influence investigative sense-making and action? In sum, this research has illustrated how participants viewed the victim almost exclusively as a source of information; how they actively sought clarification and corroboration of this information; and how, in this simulated investigation at least, mental representations of the investigation simultaneously included the possibilities that the report was true and false, though this did not appear to prevent them from ‘investigating’ thoroughly as if the report was completely true.

This analysis has enhanced understanding of police perceptions of victims in sexual assault investigations and plays an important part in bridging the gap between research on victim perceptions, police attitudes and detective sense-making. The results offer collateral for previous findings that victims feel they are neglected by the police after the initial stages of an investigation (Temkin, 1999), but also provide insight to the reasons why this might be the case. In particular, this research supports Martin’s argument that the role of the police as investigators makes it difficult or perhaps impossible for them to offer a high standard of victim care (Martin, 2005). Officers serving as participants in this study felt that the victim was best served by a thorough investigation. But Temkin wrote of the victims she interviewed for her 1999 study:

*[W]hat mattered most was to feel that they were believed, to feel that the police actually cared about them as individuals rather than seeing them as a means to an end, to retain some contact with the police and to be kept informed of developments (p.35).*

The current study indicates that the structural features of their role mean that detectives may not, and perhaps cannot, serve both the interests of the victim and conduct an effective investigation. If this is indeed the case, the introduction of specialist facilities is essential to ensure that victims feel that they are more than ‘a means to an end’.

CHAPTER 5. GOAL-DIRECTED SENSE-MAKING IN A SIMULATED INVESTIGATION:  
THE DEVELOPMENT AND NATURE OF A DETECTIVE'S MENTAL REPRESENTATION  
OF AN UNKNOWN OFFENDER

Introduction

In the model of investigative sense-making developed in Chapter 1 it was proposed that detectives construct mental representations of investigative situations in which perceived case information is integrated with inferences based on existing knowledge to form causal hypotheses about investigative data. This knowledge may be general, domain-specific and, in the later stages of an investigation, case-specific. These mental representations, or *situation models*, guide action towards the desired outcome: the identification of the correct offender and the construction of an adequate evidential case.

Understanding the generation and evaluation of inferences and explanations in criminal investigations may help to establish what underlies or undermines the success of particular investigative strategies for identifying offenders. Two such strategies are enshrined in UK police practice and training (Stelfox, 2009). The most direct and potentially fastest route to an unknown offender is via the collection of forensic material that yields DNA evidence; if the offender already has a DNA profile on record as a result of previous criminal activity, this strategy can lead directly to a particular individual (ACPO, 2005). Determining the places that forensic material might be found relies on accurate and comprehensive inferences about where the offender might have been and what he or she might have done.

The second route for identifying an unknown offender is via an elimination strategy. Potentially slower and more resource-intensive than the forensic route, this strategy involves

identifying pools of potential suspects who are assumed to share characteristics with the offender and eliminating them from consideration (e.g., because they have an alibi, or via DNA evidence) until only the offender is left. The success of this strategy depends heavily on how accurately and how specifically the parameters for the suspect pools describe the offender. Broader parameters (e.g., “all males in the local area”) are more likely to include the offender but eliminating individuals from this pool is highly resource-intensive. The more specific the parameter the better, provided it is accurate. Thus, two key strategies for locating an unknown offender can be assumed to depend on accurate and thorough inference generation and evaluation for their effectiveness.

Chapter 6 explores how participants in this study made judgments about potential suspects. Given that it is reasonable to assume that detectives judge the plausibility of potential suspects in the light of the mental representation they hold of the offender, the development and content of this mental representation is examined first.

### *Theoretical framework*

Little research exists that can shed light specifically on how detectives generate and evaluate inferences about unknown offenders. A handful of studies reviewed in Chapter 1 examine police investigative decision-making in general. Another potential source of directly relevant research is the offender profiling literature, but although this literature deals explicitly with the possibility of inferring offender characteristics on the basis of offender actions, it rarely examines *how* people construct profiles (Dowden, Bennell, & Bloomfield, 2007). Furthermore, where the practice of ‘offender profiling’ is researched, it is judgments by lay people or students rather than detectives that are more commonly studied: in a recent review of the profiling literature Snook, Eastwood, Gendreau, Goggin and Cullen (2007) located just four experimental

studies testing the accuracy of profiling activity in which participants had investigative experience.

One of the few studies to test detectives' abilities to make judgments about an unknown offender is reported in Kocsis, Hayes and Irwin (2002). In this study, 43 experienced detectives (among others) read case materials from a genuine solved murder investigation and then answered a series of multiple choice questions on the offender's likely physical, behavioural and psychological characteristics. Kocsis et al. (2002) found that experienced detectives were significantly *less* accurate at predicting most characteristics than inexperienced officers or control groups, which is an intriguing and potentially important finding. However, this study required detectives simply to judge the plausibility of multiple choice options rather than to generate information themselves. Clearly, the offender profiling research does not yet provide enough solid ground on which to be able to articulate what form a detective's mental representation of an offender might take.

#### *Explanation-building and abductive reasoning*

One promising approach to developing a theoretical framework for examining detectives' reasoning about offenders derives from the literature on how individuals generate hypotheses or explanations to account for perceived data in an effort to make sense of an ambiguous scenario. Cognitive theories about the process of explanation postulate that encountering data activates existing knowledge structures (e.g., schemas, scripts or exemplars) that include explanations to account for how the data might have arisen (Keil, 2006; Klein, Moon, & Hoffman, 2006; Krull & Anderson, 1997; Thomas, Dougherty, Sprenger, & Harbison, 2008, see also chapter 1).

In inherently uncertain scenarios, such as those involving human behaviour, perceived data may have many potential explanations and part of the sense-maker's task is to decide which

is most likely to be correct. The process by which this occurs can be described as abductive reasoning, or inference to the best explanation (Johnson & Krems, 2001; Josephson, 1996; Keil, 2006), which takes the following form: “*D* is a collection of data. [...Hypothesis] *H* would, if true, explain *D*. No other hypothesis explains *D* as well as *H*. Therefore *H* is probably true” (Josephson, 1996, p.1). Where the sense-maker is faced with multiple data points, a multiplicity of potential explanations may account for the particular set of observations and “the best explanation consists of a set of elementary hypotheses that together comprise the explanation for a set of observations” (Johnson & Krems, 2001, p.906).

Abductive reasoning is fallible (Josephson, 2001). How then do sense-makers ensure that the best explanation is chosen for the data perceived? Good explanations are those that are coherent (that do not contain contradictory arguments or significant gaps, Thagard, 2006) , plausible (a subjective judgment driven by the sense-maker’s familiarity with the domain, Keil, 2006) and comprehensive (explain all or most of the observed data, Kunda, 1999). Where there are multiple competing explanations, the best is that which accounts for the data better and is more plausible than any other explanation (Thagard & Kunda, 1998). In addition, decisions about whether a particular explanation is the best may also involve a judgment about the thoroughness of the search for alternatives (Josephson, 2001). In a legal context, this is particularly important: police and prosecutors must show not only that the defendant’s guilt is the best explanation for the evidence, but also that alternative explanations for the evidence (e.g., that the offender was someone else) are implausible (Carson, 2007).

Converging lines of research in laboratory (e.g., Dougherty et al., 1997; Green & McCloy, 2003; Kahneman & Tversky, 1982) and field (e.g., Cohen et al., 1998; Klein & Crandall, 1995; Lipshitz et al., 1997) settings suggest that in complex cases, evaluation of particular explanations

takes the form of mental simulation: if mentally ‘running’ the causal model shows that the observed outcome is plausible then the explanation is an adequate one (Brem & Rips, 2000; Einhorn & Hogarth, 1981; Gaglio, 2004; Kahneman & Tversky, 1982). However, the process by which individuals reach a decision about which is the ‘best’ of several adequate explanations is less clear.

In theory, judgments about the relative merits of different explanations result from either serial or parallel evaluation. In serial evaluation, a working explanation is activated on the basis of observations and elements within it are examined to see if the explanation adequately accounts for the data (Johnson & Krems, 2001). New data are tested against the working explanation and, if consistent, are incorporated into the model (Johnson & Krems, 2001). Only if the explanation is or becomes unsatisfactory (incoherent, incomplete or fails to explain all of the data) is it rejected and a new explanation generated (Gaglio, 2004; Johnson & Krems, 2001; Simon, 2004). This process can be cognitively efficient in straightforward scenarios where the working explanation is likely to be the correct one (Simon, 1990). Research findings in a range of settings indicates that this is a strategy used by expert operators in frequently encountered situations in diverse domains, from chess (Klein, Wold, Militello, & Zsombok, 1995) to fire-fighting (e.g., Klein, 1999), medicine (Klein & Calderwood, 1996; Weber, Bockenholt, Hilton, & Wallace, 1993), and military contexts (e.g., Cannon-Bowers & Salas, 2000; Cohen, Thompson, Adelman, Bresnick, Shastri, & Riedel, 2000). However, in highly complex and ambiguous scenarios a serial evaluation method can be problematic: if thorough, the process of generating and evaluating explanations serially is cognitively demanding and time-consuming (Brem & Rips, 2000; Cohen et al., 2000). In an effort to conserve cognitive resources and/or to save time the working explanation may not be rejected, confirmatory data is privileged, and neutral or potentially

contradictory new data is ignored or interpreted in such a way as to be consistent with the working hypothesis. This phenomenon, known as confirmation bias, is well-documented (see Nickerson, 1998 for a comprehensive review). In an investigation, the costs can be high, from wasted resources to miscarriages of justice (Rossmo, 2008b).

In parallel evaluation, however, the sense-maker entertains alternative explanations simultaneously and existing and new data are evaluated in relation to two or more explanations (Dougherty et al., 1997; Litchfield & Fan, 2007). Choice of the ‘best’ explanation, which may be considerably delayed, is based on the comparative evaluation of explanations (Green & McCloy, 2003)<sup>19</sup>. In Green and McCloy’s mock jury studies, participants evaluating the strength of evidential arguments constructed mental representations of trial evidence that included “conjectured alternative states of affairs” (2003, p.327). Similarly, in the analysis presented in Chapter 4, many detective participants ‘investigating’ a reported sexual assault in a simulated investigation took a parallel approach to assessing the credibility of the report, simultaneously holding several possibilities in mind (that the attack had occurred as described, that an attack had occurred in a different manner, and that the victim was making a false allegation) and comparing new evidence against all possibilities until one (that the report was genuine) clearly dominated. Previous research has indicated that considering multiple alternative hypotheses can reduce the effects of confirmation bias (Simon 2004) and thus it might be expected that a parallel evaluation strategy might reduce the chances of investigative ‘tunnel vision’.

In theory, the serial and parallel perspectives are not irreconcilable. If a working explanation is broad enough (e.g., a reported death is suspicious, or a sexual assault has been perpetrated by a person unknown) then within the sense-maker’s mental representation multiple

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<sup>19</sup> The Analysis of Competing Hypotheses (Heuer, 1998) is a formalised version of this strategy.



disjunctive hypotheses can coexist at least temporarily (Johnson and Krems, 2001). In the case of police work, however, the analysis presented in Chapter 4 suggests that many detectives appear able to tolerate a high degree of ambiguity even at the broadest level (whether a crime has occurred).

Finally, an important feature of a model of sense-making is the framework within which explanation-building and evaluation occur, which research shows is domain-specific (Keil, 2006; Murphy & Medin, 1985; Pennington & Hastie, 2000). Thus, diagnosing illness by a physician involves explanation-building within a biological framework, whereas the framework of an engineer seeking to understand the failure of a bridge will comply with the laws of physics and the properties of materials (c.f., Charlin, Tardif, & Boshuizen, 2000; Hegarty, 2004). Several lines of research indicate that when people are required to explain events involving human actions, the framework within which evidence and hypotheses are integrated and evaluated is a narrative one (Alison & Barrett, 2004; Robinson & Hawpe, 1986). Thus it might be expected that detective sense-making about investigative data would be supported by knowledge structures relating specifically to the antecedents and consequences of criminal behaviour, within a narrative framework.

#### *Inference and explanation in criminal investigation*

Theoretically, then, the processes of sense-making by detectives in relation to an unknown offender includes: (1) judgments about the pertinence of observed data and the recall of potentially relevant knowledge structures, guided by an overarching domain-relevant framework relating to criminal behaviour; (2) a mechanism for selecting which out of many explanations of perceived data are potentially plausible; (3) an abductive process by which inferences and explanations are integrated to form one or more plausible hypotheses about an offender's

characteristics and behaviour; and (4) a mental simulation process by which different hypotheses are tested, either serially or in parallel (see also Chapter 1).

The current analysis is an initial exploratory attempt to examine whether, in an unfolding criminal investigation, detectives' sense-making is consistent with the theoretical model outlined above, in an effort to understand the mechanisms underlying currently trained investigative strategies for identifying an unknown offender. Specifically:

- Do detectives' judgements about relevant and irrelevant investigative data reflect domain or general knowledge?
- Do detectives attempt to explain perceived data and if so, how do they decide which are plausible explanations?
- How are data and explanations integrated to form hypotheses and how are such hypotheses tested?
- And finally, does the way in which detectives generate and test hypotheses shed light on the sources of investigative success or failure?

#### Method<sup>20</sup>

*Participants.* 20 male and 2 female detective officers, ranging in age from 28.9 to 49.2 years ( $M=41.7$ ,  $SD=6.7$ ) participated in this study. Six were Inspectors, nine were Sergeants and seven were Constables, with an average of 20.9 years' police experience ( $SD=8.1$ , range 8.2 to 33.0) and varying levels of experience of investigating serious crimes ( $M=13$  years' detective experience,  $SD=7$  years).

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<sup>20</sup> A brief overview of the data collection method is provided here. Full details of participants, materials and procedure are provided in Chapter 3

*Materials and procedure.* Participants were interviewed as they completed the paper-based simulated ‘investigation’ of an attempted rape described in Chapter 3 (full materials are reproduced in Appendix C). Fifteen officers completed the entire study, with seven called away on operational business or to other commitments before the end. On average officers took 108 minutes to complete the simulation (range 72 to 152,  $SD=19$  minutes).

*Coding and analysis.* For this chapter, coding and analysis was restricted to passages in which participants discussed the identity, characteristics and actions of the offender. Every mention by participants of the offender and his activities was coded. These passages made up approximately 20% of all transcript material<sup>21</sup>. Within these passages, inferences and speculation about the offender’s identity, history, activities and whereabouts were coded whenever they occurred, even if participants mentioned them as unlikely possibilities. For example, the offender was described in the case materials as having “oily hands and dirty fingernails”, which prompted the following reasoning from Participant 21:

*Unless the offender is thinking about something to do with forensic awareness and fingerprints and covered his hand with oil and stuff, which is unlikely, he's probably... a labourer or he works with machinery and that's why he's got dirty fingernails and oily hands.*

Two explanatory inferences are present in this passage: (1) the offender has covered his hands with oil because he is forensically aware; and (2) the offender has oily hands because he is a manual worker. Even though the participant dismisses the first as unlikely, it nevertheless forms

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<sup>21</sup> Approximately 40,400 words were coded as relevant to the offender out of a total word count for all transcripts of about 193,300. These figures are very approximate and also include edited comments by the interviewer (see Chapter 3 for details of transcription conventions).

part of the knowledge structure activated by the case information and is therefore relevant to our analysis.

Successive readings of the transcripts and examination of these codes allowed some to be combined and themes and sub-themes were developed as patterns and anomalies emerged (see coding dictionary at Appendix D). Finally, returning to the transcripts allowed examination of whether and how participants considered multiple explanations for investigative data, how explanations were evaluated and any attempts to integrate the data and inferences to achieve a coherent understanding of the offender's identity and actions.

## Results

### *Overview of results*

The results are grouped by the themes and sub-themes identified during coding and inductive analysis (see Chapter 3). Overall, it was noted that participants engaged in extensive sense-making about the offender<sup>22</sup> on the basis of the offender actions described in the case materials (Table 5.1). Participants used general and domain-specific knowledge to generate explanatory inferences concerning a range of *characteristics of the offender* including *criminal history, physical description, and other characteristics* (such as handedness and employment). They also attempted mentally to *reconstruct the attack* by imagining how the offender prepared for and carried out the attack, and what he might have done afterwards. Also important was the *geographical framework* within which these activities took place. The most common inferences are presented in Table 5.2 and discussed in detail below.

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<sup>22</sup> Consideration of whether a crime had actually been committed was uppermost in many detectives' minds in the early stages of the simulation although by phase 3 almost all had established that the crime had indeed occurred (see Chapter 4 for further analysis).

Throughout, participants used mental simulation not only to generate and test possible explanations for the investigative data, but also to identify potential opportunities for investigative actions. Most explanations and inferences were thus goal-directed: in line with the assumption that detectives would use both forensic and elimination strategies, participants focused on characteristics of the offender that might help to narrow the parameters of any search and on locating potential sources of DNA.

<b>Physical description</b>	White male 5'10" tall, medium build Wore a balaclava Wore an army jacket Wore blue jeans and trainers Carried a knife Oily and dirty hands Smelt of cigarette smoke
<b>Behaviours during the attack</b>	Saw victim in the orchard Approached victim from behind Reached over victim's shoulder, holding the knife Threatened victim with knife Told victim not to look at him Walked with victim away from the footpath to a clearing in the orchard Told victim "I'm going to fuck you" Told victim to lie on her front Pulled victim's jeans down Told victim to lie on her back with her eyes closed Interrupted by dog walker Ran away

**Table 5. 1: Details of characteristics and behaviours of the offender given in the case materials (documents 1a, 2a and 3a)**

Inferences		Comments on possible basis of inferences
Inferences about characteristics		
Criminal history	Uses distinctive modus operandi*	Inferences about criminal history were grounded in the victim's description of her attack
	Has history of crime with the police	
	Offences building up over a period of time	
	Responsible for similar incidents*	
Other characteristics	Dangerous man*	
	Smoker*	Victim reported that her attacker smelt of smoke
	Lives / works locally*	
	Left handed	Victim described how her attacker held her and used the knife
	Right handed	
	Mechanic*	Victim reported that her attacker had oily, dirty hands
	Manual worker	
	Farm worker*	
Connection to army*		Victim and witnesses reported that the offender wore an army-style jacket
Inferences about intentions		
Intended to conceal identity		Victim and witnesses reported that the offender wore a full-face balaclava
Opportunist		
Intended to carry out a rape*		
Would have committed a full rape if not disturbed		

/ Table 5.2 cont'd on next page

<b>Inferences about behaviour before attack</b>		
<i>Preparation</i>	Dressed and prepared for attacking a woman	Victim and witnesses reported that the offender wore a full-face balaclava
	Balaclava carried in preparation for attack	
	Knife carried in preparation for attack	Victim reported that her attacker wielded a knife
	Carried a belt to restrain victim	A belt was found nearby but had not been mentioned by victim or witnesses
<i>Actions before attack</i>	Stole car that was found near scene*	An abandoned car was found nearby but had not been mentioned by victim or witnesses
	Watched / stalked victim	
	Was in a smoky environment (e.g. pub)	Victim reported that her attacker smelt of smoke
	Smoked cigarettes (whilst waiting / loitering)*	Victim reported that her attacker smelt of smoke
<b>Inferences about behaviour during the attack</b>		
	Used a condom*	A condom was found nearby but had not been mentioned by victim or witnesses
	Took victim's sock as a trophy	The victim and witnesses reported that victim only had one sock on after the attack
	Did not wear gloves	Presence or absence of gloves had not been mentioned by victim or witnesses
<b>Inferences about behaviour after the attack</b>		
<i>Leaving the scene</i>	Discarded knife as he ran away	No knife was found
	Discarded / hid unspecified property as he left	A balaclava was found near the scene
	Discarded balaclava as he ran away	
<i>Leaving the area</i>	Discarded sock as he ran away	A sock was found near the scene
	Left in a hurry (panic)	A witness described the offender running
	Remained at or near scene	
	Left area in car or van*	Several witnesses saw a blue van in the area at the time
<b>Inferences about future behaviour</b>		
	Likely to commit future crimes (may escalate)	

Table 5. 2: Inferences made by three or more participants (\*inferences made by 8 or more participants)

*Criminal history*

Most participants mentioned, at some point in the simulation, that the offender was likely to have a history of offending. Ten participants mentioned this as a possibility at the outset, with comments ranging from a passing reference, such as Participant 22's: "*I'd want to know whether... similar offences have been committed*", to more elaborate discussions of the likely criminal history of the offender, drawing on experience and expectancies, for instance:

**Extract 5.1:** *Is this the pinnacle of somebody else's sexual activity built up over a period of time? You're gonna get an intelligence team up and running quickly because if this is a spate of incidents that you're not aware of you wanna be aware of it... say you'd have an incident room set up and you'd get an intelligence team in, you'd suddenly get information in that you might have three or four incidents, not perhaps in your area but close by. Go back to that case this time last year, we had the guy who's traveling around the South East. All those forces involved and you're sort of picking them up... You'd be looking for identities, suggestions of who this person may be.* (Participant 4, phase 1)

The other participants raised the offender's potential criminal history only after reading the victim's statement (phase 2) and/or the statements of witnesses who could corroborate the victim's account (phase 3). At this point participants also began to speculate about whether the behaviours exhibited by the offender, including the words he used and his use of a knife, were part of his *modus operandi* (MO):

**Extract 5.2:** *Knife, balaclava, knife attack from the rear, placing of the knife, using of the knife in between the legs to threaten, that might be a distinctive MO so again that might come on the intelligence side.* (Participant 5, phase 2)

One participant suggested that *modus operandi* was the most important aspect to focus on:



**Extract 5.3:** *Probably the MO's the best thing that tells us what sort of person we've got here rather than the clothing, forget the clothing ... the MO's probably the thing to concentrate on, to tell us who we're looking for.* (Participant 16, phase 4)

In the early stages of the simulation the offender's MO provided a criterion for defining suspect pools, later becoming an important criterion against which potential suspects were judged (see Chapter 6).

Several participants hypothesised about the offender's awareness of forensic traces: if he demonstrated 'forensic awareness', this might increase the likelihood that he had a criminal history. For example, many participants speculated that a condom, which had been found nearby but which may have been unconnected (document 4b), could have been used by the offender. Participant 3 used mental simulation to reconcile the presence of a condom with the fact that the offender had not worn gloves:

**Extract 5.4:** *If the offender's intention was to commit the act of rape to the point of ejaculation and therefore leaving lots of DNA, the condom would reduce that, so if the person is forensically aware and they're trying to prevent themselves being detected... The fact that he isn't wearing gloves seems to be a slight contradiction ...[but] it may be that that offender was caught on seminal DNA but not on any other type of DNA so they thought "if I'm going to re-offend then I'll make sure I won't leave my semen behind I'll wear a condom", but they may not have thought the process through and thought "well, actually, they can also get my DNA from my hands".*

Previous offending history is important because of the avenues it opens up for identification. Most officers who raised the offender's criminal history did so in the context of searching existing police databases for individuals with a similar modus operandi, physical

description or geographic location. Although some limited their proposed search to “registered sexual offenders” and/or “potentially dangerous offenders” other participants stipulated that the search should be wider. For instance:

**Extract 5.5:** *I don't think that I have ever come across a rapist or a stranger murderer ... who has not come to the notice of the police at least once in the past. ... [He] is going to be in our system somewhere, even if he hasn't committed a rape... or indecent assault before, he will have a record of a something, an assault, or a theft or dishonesty, some disrespect for people's property, be it taking away from them, or violating them in some way ... when he is arrested he will have a criminal record* (Participant 9, phase 5).

*Future offending.* In documents 4a and 5b, information was introduced about an indecent exposure in the area two weeks prior to the current attack, which may or may not have been carried out by the offender. At this point some participants began speculating about the trajectory of offending (*“It might be part of an emerging series, it might be part of an historic series”*, Participant 13), and several expressed concern that the offender's behaviour might ‘escalate’ to more serious offences. Participant 15's description of him as *“someone who I would imagine will strike again if I don't catch him”* was typical, as is Participant 21's comment about the offender's dangerousness: *“we've got a very dangerous man on the loose who we need to get in custody as soon as possible”*. Such statements are indicative of a shared narrative or schema about offenders who progress from minor crimes to more serious ones, and highlights how information pointing to a recidivist offender is relevant not only to finding him but to the police duty to protect the public from future risk.

Interestingly, few participants mentioned seeking the support of the Serious Crime Analysis Section, part of the National Crime Faculty, which provides support regional forces by

analysing cross-force data and detecting individuals carrying out a series of offences. One of the few who did suggest this (Participant 3) commented he might try “*to get an analyst on board in terms of an offender profile, and also to use the various databases that are available [at] the National Crime Faculty, use whatever databases there are, because within this statement and his actions we’ve actually got quite a bit of information about our offender*”, showing that he not only knew what was available but also what information SCAS would need to provide useful support.

*Motive.* Discussion of the offender’s motive was rare, indicating that for these participants the reason why someone would sexually assault a woman was obvious or irrelevant. One of the few who addressed motive explicitly, an Inspector with 31 years’ police service, commented:

**Extract 5.6:** *Could be a loner... but there again he could be in a relationship where he's not getting any sex and this could be a way of him trying to do a bit of sex... he could be a Jekyll and Hyde character* (Participant 4, phase 2).

#### *Physical description*

At the start of the simulation the offender’s physical description was a potential route to his rapid capture and participants speculated about how that might occur:

**Extract 5.7:** *[G]et the description out. I want an area search... we're looking for a white male with an army jacket. ... it would go out to officers very quickly ... because someone might have given a parking ticket, someone might have spoken to someone about parking on a double yellow line and they'd go [snaps fingers] ‘I turned that bloke over!’*  
*Blindingly obvious, very simple, often forgotten, get it out, save you a lot of work.*  
(Participant 5, phase 2).

But some participants were mindful that this action might also lead to the investigative team being swamped, as this Inspector noted:

**Extract 5.8:** *The description... clearly I'd want that circulated, but to be quite honest, male and white, wearing an army style jacket, balaclava, oily hands, dirty fingernails, you know, that could probably fit so many different people ... What I don't want to do is to get bogged down with 20, 30 people being arrested because they've got an army jacket on... (Participant 6, phase 1).*

Two physical details in particular led to speculation about the offender's occupation: the offender's clothing and his oily, dirty hands. The information that the offender wore an army-style jacket led some to speculate that he might be connected with a local barracks, although this comment was usually accompanied by the observation that such jackets can be easily purchased. In contrast, the offender's blue jeans were barely commented on. Thus, participants were, as one might expect, allocating cognitive resources to aspects of the investigative information that were potentially diagnostic: blue jeans are common, army jackets much less so.

The description of the offender having oily hands appeared to be particularly salient, provoking elaboration and inference on the part of most participants who speculated about the offender's occupation (e.g., mechanic or farm labourer) or his behaviour prior to the attack (e.g., sleeping rough, fixing a car). However, participants also recognised that this was potentially a broad parameter and that there were multiple explanations for having oily hands:

**Extract 5.9:** *We've got orchards and an agricultural area as well, that might account for the oily hands and dirty fingernails, potentially someone who's a manual worker rather than an office worker, you've got your business, financial in the inner city centre, but*

*round the outside you've got the countryside so potentially it could be any farmhand, or farmer or someone to do with agriculture... you've got business parks so you may have mechanical, garages, mechanics and those sort, that might account for the oily hands* (Participant 3, phase 1).

**Extract 5.10:** *You would be looking more towards possibly a mechanic or a farm worker...Or somebody who's just fallen off his bike* (Participant 14, phase 1).

Later this characteristic became one that participants used to set parameters for a search for suspects (farm workers, mechanics) and against which potential suspects were judged (for instance, the victim's ex-boyfriend who reportedly worked in the motor trade).

#### *Other offender characteristics*

*Handedness.* Four participants commented on the handedness of the offender, with Participant 3 in particular going into great detail including trying to visualise the attack.

**Extract 5.11:** *I think she's quite clear that when the initial approach is made that the knife in the hand comes over her left shoulder. I think that would be quite difficult to do for a right handed person... unless you're doing that [demonstrates] and that would be the most natural position to be in, so the knife is coming is coming over her left shoulder... If that is correct, then you've got a person who is carrying the weapon in their left hand, so that might be their stronger side. If you're going to use a weapon it's probable that you're going to put it in your stronger arm. He might be ambidextrous, but we don't know. (Phase 2).*

Handedness is relevant as a parameter for ruling potential suspects in or out, but the result of this sense-making, for most, was an acknowledgement that the information given was not

enough to determine conclusively the offender's handedness. For example, Participant 7 commented that although the offender used his left hand to wield the knife *"that doesn't mean anything because he might be more comfortable using his right arm to do the controlling"*.

*Smoking.* On several occasions participants developed lengthy chains of inferences about the offender's characteristics and behaviour based on minimal case data. One of the most common examples was an inference chain that began with the victim's statement that the offender smelled of cigarette smoke, from which participants inferred that the offender may be a smoker. Several immediately developed the hypothesis that the offender may have loitered or waited somewhere prior to the attack, leading to the deposition of one or more cigarette butts:

**Extract 5.12:** *The offender smokes... if someone's a smoker and they've been standing, loitering, you might find some cigarette butts, so that would be one of the things you'd be looking at, you'd think right, ok, it depends on what you've got, if you go out there and you've got loads of cigarette ends it might not be viable, but you've got a fairly rural location here so I'd give the instructions, you're going to do the route, you're going to search, and any cigarette butts that you find along that route you will seize (Participant 5, phase 2)*

**Extract 5.13:** *If he smelt of cigarette smoke he probably smokes a lot... If he's out in that area he's smoking. If he's out in that area we're gonna find a butt ... we've got a stranger offender and that butt would prove he was there. (Participant 21, phase 2)*

Participant 3's sense-making included elaboration of the offender's likely intentions and demeanour:

**Extract 5.14:** *[If the offender is] a smoker, and ...he's been waiting in that area then the chances are that - it all depends on the psyche of the bloke, but most people would be slightly nervous about committing an act of this nature - it may be that to calm his nerves he's had a cigarette, [the victim] says that he smells of smoke, and if he is a smoker then potentially he might have cigarette butts discarded ... from which you get a DNA profile and that may lead to somebody who's already on the national database, so you may get an identification that way. (Participant 3, phase 3)*

Several other participants made similar inferences when they read a report detailing the discovery of four cigarette ends near to the scene, which may have been left by the offender or could be unconnected (document 4b). Cigarette butts are important as a potential source of DNA, which, if the offender is already in the DNA database, would lead to his rapid identification. They are also important because they allow a suspect to be linked forensically to a crime scene (extract 5.13).

#### *Reconstructing the attack*

Participants' inferences about what the offender had done or might have done prior to, during and after the attack gave clues to his intentions and potential identity, and helped direct the search for evidence. Inferences were based on two kinds of information in the case files: information that was explicitly linked to the offender (for instance, the victim's report that the offender was wearing a balaclava and wielding a knife), and information not explicitly linked to the offender that may or may not have been relevant to the investigation.

*Preparation and intent.* Participants paid considerable attention to behaviours that indicated intent, with three options in mind: (1) that the offender had targeted this victim in particular; (2) that the offender intended to commit a rape but the choice of victim was driven by opportunity;

and (3) that the offence was opportunist rather than premeditated. Most participants appeared to favour the second explanation, but frequently entertained the possibility of 1 and 3 simultaneously. One of the most common inferences, based on the report that the attacker wore a full-face balaclava, was that the offender had planned to conceal his identity and that the attack was thus premeditated. Participant 19's explanation highlights how common sense and domain-specific knowledge contributed to his conclusion that the attack was a stranger rape committed by an experienced offender, even at the earliest stage of the investigation when virtually no information was available:

**Extract 5.15:** *It would appear that someone unknown to the victim... it's someone who has prepared for this, so it's not an opportunist... I say that because he's got the full face balaclava which is an unusual piece of clothing to have with you, particularly during the day, September. Doesn't indicate that it's a cold day so... that's a part of his rape kit, if you like (phase 1).*

The additional data provided by the victim in her statement (document 2), which included the observation that the offender threatened her with a knife, prompted additional participants also to hypothesise that the attack was premeditated:

**Extract 5.16:** *You've got a knife... also you know, people don't walk round in balaclavas ... the attack is therefore more premeditated.* (Participant 15, phase 2)

Devoting cognitive effort to issues of preparation and intent resulted in detectives identifying additional opportunities for identifying the offender. If his behaviour suggested that he was known to the victim then the search for the offender could be narrowed to the victim's



acquaintances; if the attack was premeditated then this indicated that he may be a repeat offender and thus may be found in existing databases.

*Events before, during and after the attack.* Some participants began to reconstruct the events surrounding the attack from the first report of the crime, although most devoted effort to sense-making in earnest after reading the victim's statement. Explanations generated for reported behaviours appeared to draw (implicitly and explicitly) on participants' understanding and experience of criminal behaviour. For instance, a report from a scenes of crime officer (SOCO) detailed several items found near the attack scene including a beer can, a condom, a balaclava and a belt (document 4c). These items acted as prompts for sense-making in support of decision-making about which should be sent for forensic examination, with participants hypothesising how the items could plausibly be connected with the offender:

**Extract 5.17:** *The belt... may have been something either worn or taken by the offender with the intention of using it as a restraint, and of course he's been disturbed and he's leaving the scene and that's something he wouldn't normally have with him, perhaps that's why it's been discarded. Or it may be totally unconnected.* (Participant 3, phase 4)

**Extract 5.18:** *A condom... we suspect that ... the sexual act wasn't completed, but disgusting as it sounds... he could've already been wearing a condom because he's forensically aware in preparation for his attack.* (Participant 7, phase 4)

In some cases participants also speculated about how hypotheses could be tested, for example:

**Extract 5.19:** *Where are people likely to have got Kestrel lager? It's not one of the better-known lagers I wouldn't have thought. Is there a local shop that sells it? If it looks*

*like a brand new can, we could do inquiries there, see if they have CCTV, that type of thing.* (Participant 6, phase 4)

As well as explaining the possible causes of the offender's reported behaviour, participants also made predictions about what else he might have done. For instance, even before the finding of a balaclava near the scene some participants speculated that the offender may have dropped or hidden incriminating items as he fled. Participant 4, commenting in phase 2 on actions he would take, said:

**Extract 5.20:** *[I would] have searches made, because one of the prime things I will be looking for is the knife. ... Could our man have thrown it? ... You gotta be realistic, you know, it could be dropped over here in a drain... you're never gonna find that ... Chances are panic! - he's dropped it.*

This discussion suggests an elaborated narrative schema which explains not just what an offender does (discards his weapon), but why ("panic"), where he might have thrown it ("in a drain") and what the implications are for a search team ("be realistic").

#### *Geographical framework.*

Throughout the simulation participants devoted effort to trying to ascertain the routes taken by the offender before and after the attack. Establishing the means by which the offender reached the victim and where he went afterwards provided opportunities to focus the search for witnesses, for instance:

**Extract 5.21:** *House-to-house [enquiries]... to establish sightings of potentially man stalking a woman.* (Participant 7, phase 2)

The routes taken are also important parameters for searching for forensic or other (e.g., CCTV) evidence:

**Extract 5.22:** *If our offender has used a vehicle to get to or from the scene, possible routes they would have taken? ... See if there's any CCTV that would capture a vehicle going in or out of that area at the relevant time. Speed cameras would be another source potentially, if he's in a hurry to get away. (Participant 3, phase 1)*

Speculating about the offender's route also provided potential to discover where he might live, as the following from Participant 9 illustrates:

**Extract 5.23:** *I get the impression that he's running down [here]... which, if he does have a connection with the farm, would be the logical direction for him to run. He could go down there and then the path there, and over there, so this area is becoming more and more important in my mind. [Interviewer: that's the Mount farm area?] Yes. If he was running the other way, not to say that I still wouldn't be interested in that, but it's making Mount Farm more important in my mind as a possible location for the offender.*

(Participant 9, phase 3)

The geographical framework remained important as new information came in about potential sightings of relevant people or vehicles. Participants often speculated about whether the new information could be plausibly linked to the offender by mentally simulating a sequence of events that could have given rise to the information. For instance, a witness account of a blue van leaving the area prompted the following from Participant 12:

**Extract 5.24:** *This blue van that squealed away from here, so that seems to me to be fitting how this bloke has got away. So, the offence has happened up here and he's run*

*down here, discarded his stuff, run up here, seen by the witness in... Green Road, blue van ... off he goes that way. Okay, left or right? Don't know that. So that seems to be the get-away vehicle, so maybe looking at a few people up and down this street see if they've seen this, this vehicle parked here, got a registration number (phase 5).*

Another example of this was when information was presented about a stolen silver car found abandoned nearby an hour before the attack. Immediately it prompted several hypotheses about how it could be related, including the following from Participant 7, which also incorporated information about a nearby housing estate shown on the map (document 1a):

**Extract 5.25:** *The close proximity of that car, we need to... consider a scenario where man who's just dumped the silver car has committed an opportunist rape on his way back to the housing estate he may well live in (phase 4).*

The geographical framework underlay most participants' assumption that the offender came from the local area. For many participants this was implicit, reflected, for example, in the way that most specified the parameters for searching police databases for similar crimes in the area or for local registered sex offenders. Explicit reasons for focusing on the local area varied. Participant 16, for example, based his conclusions on general knowledge, prompted by the nature of the district where the attack took place:

**Extract 5.26:** *It's not in the centre of a town, looks like a sort of suburb area, a quiet area. That would seem to suggest it's someone local. Busy areas, centres of towns or sort of touristy places, those are where you tend, tend to get the strangers. I mean, unless there's something peculiar about the area, to have a stranger do that sort of thing in that particular area would be quite hard. So as a hunch I would say it's somebody local (phase 2).*

Participant 3 posited that the offender selected a specific area of the orchard to conduct his attack and then elaborated this hypothesis to include a scenario in which a local offender also anticipated the way in which the investigation might unfold:

**Extract 5.27:** *It may be that the person who's chosen it has got a working knowledge of that area, and a person who works on the orchards may have that requisite knowledge. That would also potentially account for why they'd gone on foot and parked the vehicle a distance away from the scene, because if the vehicle had been nearby, the victim may potentially have seen it, a witnesses may have seen it, but also the employer may have seen it, and that may have alerted to them a very early suspicion – “why was he there?”. That would probably have been at the forefront of their mind when the police visited them (phase 5).*

Participant 9, on the other hand, based his reasoning on a general theory that only clever criminals travel outside their area to offend:

**Extract 5.28:** *The offender has a connection with that area. I always think that if someone were going to commit a crime in a totally different area... the chances of you getting caught are pretty slim and I would think it would be a pretty clever criminal would go to another area to do it.*

### Discussion

Most participants developed hypotheses about the offender that included reasoning about his criminal history, his actions in the course of planning and executing the offence and his routine behaviours, all of which helped to shape the parameters of physical, forensic and database searches. Inferences were almost always linked to a reference to the implications for the investigation, indicating that how sense-making about what the offender did or might have done

was directed toward the goal of opening up new possibilities for investigation and evidence-gathering. The same goal-directedness was also evident as participants speculated about historical events, in particular previous offences by the same offender, which might provide clues to his identity. In sum, the goal of participants' sense-making was predominantly to establish where the offender could be found, both physically and 'virtually', in police databases.

Earlier in this chapter it was proposed that a model of detective sense-making in relation to an unknown offender should feature an overarching domain-relevant framework relating to criminal behaviour which guides the selection of potentially plausible explanations of observed data; abductive reasoning to integrate hypotheses and explanations; and mental simulation to test plausibility. This proposal is now revisited in light of the data presented above.

*Frameworks for investigative sense-making*

Although participants' sense-making was sometimes common-sense reasoning drawing on general knowledge (e.g., extracts 5.10, 5.15), the analysis presented above indicates that sense-making was also guided, implicitly and explicitly, by a framework that included a set of understandings about criminal careers and behaviours and a repertoire of knowledge about opportunities afforded by investigative data. Participants made numerous inferences about the offender's criminal career which highlighted opportunities to locate the offender within police databases. Such inferences were based on theories about the development of sexual offending (extracts 5.1, 5.5), how criminals learn from experience (extract 5.4) and about the diagnostic value of modus operandi (extracts 5.2, 5.3). They also accessed knowledge about a range of possible offender actions in a stranger sexual assault, which was used to explain observed data or to predict sources of additional evidence. Examples included preparing for an attack (extract

5.16); putting together a ‘rape kit’ (extract 5.15); waiting and stalking (extracts 5.12, 5.21); wearing a condom (extract 5.18); and restraining a victim (extract 5.17).

Participants clearly had a rich body of knowledge about forensic opportunities afforded by particular offender behaviours. They drew on generalised theories (e.g., extracts 5.4, 5.28) and personal experience (e.g., extracts 5.1, 5.5) to imagine causal antecedents and possible consequent behaviours, draw conclusions about opportunities for evidential capture. A common example is participants’ reasoning about the routes travelled by the offender. That he may have travelled to and from the scene of the attack is common sense and speculation about what mode this transport took (e.g., extract 5.22) is based on general knowledge. However, the evidential opportunities that sense-making about routes and modes open up are domain-specific (extracts 5.21-5.25, 5.27). Similarly, theories about what the offender might have been doing en route, for instance, “stalking a woman” (extract 5.21) or discarding incriminating items (extract 5.20), are also grounded in a set of domain-specific beliefs relating to typical offender behaviour.

Extract 5.6 is one of the few examples of a participant speculating about the offender’s motivation. The lack of consideration to motive is perhaps surprising, given its importance in popular understanding of crime and its potential contribution to narrative coherence (Alison & Barrett, 2004). However, if sense-making is, as argued above, goal-directed then this becomes less remarkable: knowing that an offender is motivated by, say, sex or power is not helpful in shaping search parameters or predicting where he could have left trace evidence or been seen by witnesses. This finding also suggests a possible interpretation for Kocsis and colleagues’ finding that experienced detectives performed worse than inexperienced officers or control groups when predicting, from crime scene data, the characteristics of an unknown offender, particularly those relating to ‘cognitive processes’ and ‘social history and habits’ (Kocsis et al., 2002). Kocsis et al

suggested that “the more experience you get investigating crime, the more that experience gets in the way of making sense of the data regarding a crime under investigation and so the worse you do at profiling” (2002, p.820). An alternative explanation is that these particular characteristics are of only marginal utility for identifying who the offender might be or where s/he might be found and thus have low salience to detectives. This suggestion is open to empirical examination.

One aspect of the offender’s disposition on which many participants did comment, however, was his potential for future offending including fear of escalation in violence. Such comments are indicative of a shared narrative or schema concerning offenders who progress from minor crimes to more serious ones, and highlights how information pointing to a recidivist offender is relevant not only to finding him but also to the police duty to protect the public from future risk.

Thus, the framework within which participants interpreted data was not simply a set of theories of criminal behaviour, but a set of theories about criminal behaviour from an *investigative perspective* (c.f., Murphy & Medin, 1985). We might expect others with forensic expertise, such as scenes of crime officers, forensic psychologists or lawyers, for example, to engage in sense-making within frameworks that share some features with detectives’ yet include different theories about what criminal behaviour means and what opportunities for action it affords. This is a potentially fruitful area for further research with practical implications for enhancing the mutual understanding of forensic professionals (see, for instance, Eyre, Alison, Crego, & McLean, 2008a).

#### *Integrating and testing: the importance of mental simulation*

The extracts reported above suggest that detectives’ explanations do not stand alone as simple cause-effect relationships. Instead causal explanations are embedded in narratives



(extracts 5.4, 5.14, 5.17, 5.22, 5.24, 5.27) and inferences and data are linked in causal chains (extracts 5.12-5.14). Moreover, in most cases sense-making includes conjectured alternative explanations for the observations (extracts 5.10, 5.11, 5.15).

Mental simulation played an important part in the generation and evaluation of hypotheses with participants ‘testing’ scenarios for plausibility (extracts 5.4, 5.11, 5.20, 5.24, 5.27). The importance of mental simulation to investigative sense-making was also apparent as participants anticipated potential outcomes of actions they proposed taking (extracts 5.12, 5.13, 5.20). This demonstrated participants’ familiarity not only with the repertoire of *opportunities* for action latent in an investigative environment but also with the repertoire of potential *outcomes* of taking those actions. This is important because many investigative actions have both benefits and costs (Barrett, 2005). For example, extracts 5.7 and 5.8 show how one action (circulating a partial description) could lead to the rapid apprehension of the offender or to the enquiry becoming “bogged down” with multiple suspects.

Some episodes of sense-making resulted in relatively firm conclusions (e.g., extract 5.13). More commonly the outcome of reasoning was a preferred explanation together with an acknowledgement that alternative explanations were possible (extract 5.10 is typical), or participants simply acknowledged that multiple potential explanations existed without expressing a preference (extract 5.11). Whilst this could be an example of decision avoidance by participants (Eyre et al., 2008a), given the context this possibility seems unlikely. Rather, such findings support the proposal that, as in Green and McCloy’s (2003) study, hypotheses are evaluated in parallel rather than serial and are in line with Innes’ observation that major investigations often involve multiple “lines of enquiry ... not just sequenced in a series but running in parallel also” (Innes, 2007, p.261).

*Conclusion: features of detectives' mental representations of the offender*

The research questions outlined at the end of this Chapter's Introduction asked whether detectives' judgements about relevant and irrelevant investigative data were grounded in domain or general knowledge; whether and how detectives generate, evaluate and test explanations and hypotheses; and what impact this could have on investigative success. The results suggest that both domain and general knowledge are important, but that domain knowledge is crucial, not only because it involves a detailed understanding of potential offender behaviours but also because it suggests avenues for action. When faced with an unknown offender it appears that detectives build a mental representation which includes potentially diagnostic characteristics that may serve as parameters for eliminating potential suspects, his known and inferred behaviours and their evidential potential, and the repertoire of actions that can be taken on the basis of known or inferred information. Furthermore, the representation has a spatial dimension, which influences search parameters, and a temporal dimension: behaviours are linked in episodes and include historical events and imagined future possibilities. Finally, detectives' mental representations include features that can remain uncertain for considerable time and multiple competing explanations for the same data, thus indicating high tolerance for uncertainty. This suggests that when it comes to thinking about the offender, the differences between effective and ineffective detectives may lie in the richness of their store of domain-relevant knowledge about human behaviour and investigative possibilities, their willingness and ability to generate and tolerate multiple possible explanations for the data.

It is possible, however, that a different pattern of inference generation and explanation emerges as known potential suspects are identified. In the following chapter detectives' sense-making regarding suspects is explored.

## CHAPTER 6. TRACING, IMPLICATING AND ELIMINATING SUSPECTS IN A SIMULATED INVESTIGATION OF AN ALLEGATION OF RAPE

### Introduction

Previous chapters have illuminated different aspects of investigative sense-making, including how detectives construct an initial understanding of a TBI situation (Chapter 2), how they assess the credibility of a victim's account (Chapter 4) and how they perceive an unknown offender (Chapter 5). This chapter explores the way in which detectives' sense-making supports the identification of suspects and the resolution of suspicion.

Reasoning about suspects is a particularly important aspect of detective sense-making. The overall goal of a criminal investigation is the conviction of the true offender. Identifying that individual can be a challenging task if the offender is not discovered at the outset of an investigation (Eck, 1983; Greenwood et al., 1977; Stelfox, 2006). Of particular concern is that poor judgements about potential suspects may result in miscarriages of justice, through charging innocent people or failing to apprehend guilty individuals (Savage & Milne, 2007). Some have accused detectives of a tendency toward '*tunnel vision*': the excessive focus on one suspect or investigative hypothesis and consequent neglect of other plausible lines of enquiry (e.g., Findley & Scott, 2006; Williamson, 2005a). Yet systematic, empirical investigation of confirmation bias in investigations is relatively rare, which has led Snook and Cullen to argue that tunnel vision may have been "wrongfully convicted" (2008, p.71). The degree to which tunnel vision and confirmation bias are exhibited in the investigation of serious crimes thus remains an issue for empirical examination. The qualitative analysis presented in this chapter of interview data

generated during a simulated investigation examines aspects of detective sense-making about suspects in an effort to explore the degree to which tunnel vision affects detective judgements.

### *Confirmation bias in investigations*

The dangers of confirmation bias have been recognised in law, official guidance, training and investigative procedures. Thus, the Criminal Procedure and Investigation Act (CPIA, 1996) places a legal obligation on investigators to “pursue all reasonable lines of inquiry, whether these point towards or away from the suspect” (Section 3.5, CPIA 1996 Code of Practice); ACPO Core Investigative Doctrine advises that “investigators must keep an open mind and be receptive to alternative views or explanations...” (ACPO, 2005, p.63); some detective training courses include specific instruction in multiple hypothesis testing (e.g., see Barrett, 2002); and investigations of unsolved serious crimes are subject to a case review by an independent senior officer after 28 days, during which overlooked but plausible lines of enquiry may be identified (Jones et al., 2008; Nicol, Innes, Gee, & Feist, 2004; Savage & Milne, 2007).

However, many argue that regardless of measures put in place hypothesis persistence, confirmation bias and poor judgments by investigators contribute to wrongful convictions (Canter & Alison, 1999; Findley & Scott, 2006; Mullins et al., 2008; Rossmo, 2008b; Stelfox & Pease, 2005; Stubbins & Stubbins, 2008; Taylor, 2005; Williamson, 2005a). This is a serious charge but systematic evidence supporting such assertions is relatively rare and usually based on case studies of investigative failure. For instance, Wagenaar and colleagues’ case study analysis of miscarriages of justice led them to suggest that detectives sometimes draw on incomplete and ambiguous evidence to develop explanatory narratives, and then allow a hypothetical narrative to take on the function of unchallenged fact (Wagenaar et al., 1993). More recently, Rossmo and colleagues presented theoretical discussions on the role of cognitive and organisational factors in

investigative failures, together with a set of case studies illustrating these factors (Rossmo, 2008b). Such analyses give reason to believe that in some cases faulty cognition and investigative failure co-occur. However, arguments based only on the study of investigative failures do not prove that faulty cognition is a *cause* of investigative failure. It is plausible that confirmation bias operates in all investigations to a greater or lesser extent and that ‘tunnel vision’ functions as a useful heuristic strategy (Snook & Cullen, 2008). In sum, the debate around investigative confirmation bias comes down to two questions. First, is tunnel vision a natural feature of all investigations, as Snook and Cullen (2008) suggest? Second, if so, under what circumstances does tunnel vision contribute to investigative failure?

Some empirical research addresses these questions by examining investigative confirmation bias in experimental settings. O’Brien and Ellsworth’s (2007) student participants who stated a hypothesis about a suspect at an early stage of reading a mock police case file tended subsequently to interpret ambiguous evidence as confirmatory of their initial hypotheses (O’Brien & Ellsworth, 2007). However, the use of student participants who have no experience in the complexities of criminal investigation suggests caution is needed in generalising results from student populations to police contexts. The dangers are highlighted in recent studies involving police participants in which the impact of investigative confirmation bias was explored using a motivated cognition framework (Ask, 2006; Ask & Granhag, 2005; Ask & Granhag, 2007b). In one study participants read versions of crime vignettes that either pointed to a particular suspect or suggested alternative suspects (Ask & Granhag, 2005). Although students showed confirmation bias effects when directed to a particular suspect, detectives did not. Indeed, both officers exposed to the obvious suspect and those in the ‘alternative suspects’ condition treated the prime suspect as guilty (Ask & Granhag, 2005). Ask and Granhag (2007b) explored this

finding further, testing experienced investigators' interpretation of information that either supported or contradicted an investigative hypothesis. Investigators were given a one-page vignette summarising the investigation of a homicide with one clear suspect. Having rated the suspect as likely to be guilty, participants were presented with a witness statement that was manipulated to support or undermine the suspect's guilt. Officers found the inconsistent witness less credible compared to the evidence of the consistent witness (Ask & Granhag, 2007b).

Although the studies discussed above offer some interesting findings related to confirmation bias, they are problematic. First, the generalisability of results from a vignette study to real investigations is limited. In particular, real investigations are dynamic, generating multiple potential suspects and new information that influences and may alter detectives' perceptions of the incident and those involved. Second, in all three studies experimental manipulations were predicated on the assumption that detectives form single investigative hypotheses. However, Ask and Granhag acknowledged that their police participants may have been unaffected by the initial hypothesis manipulation because they held more than one investigative hypothesis simultaneously (Ask & Granhag, 2007b). This suggestion is consistent with previous research on real-world investigations (e.g., Innes, 2003; Innes, 2007; Stelfox, 2006) and with the results presented in Chapters 4 and 5.

#### *Identifying, implicating and eliminating suspects*

The literature discussed earlier suggests that tunnel vision begins to have an impact on an investigation in particular once detectives begin to treat an individual as a suspect; Taylor (2001) argues that "the cultural attitude of the police is inherently inconsistent with the even-handed assessment of contradictory evidence from this point onwards" (p.120). Thus, understanding the point at which a suspect becomes, in the investigators' mind, the offender is of critical

importance, as it may be the point at which other lines of enquiry may be lost or neglected (Ask & Granhag, 2005; Savage & Milne, 2007). A further area of interest is the features that cause detectives to implicate or eliminate potential suspects. If detectives are influenced by confirmation bias, it would be expected that once a suspect has been identified in an investigation, information that indicates that that individual is indeed the offender will be prioritised and information that suggests otherwise will be neglected or explained away.

The above discussion is predicated on the assumption that detectives have a single suspect. But investigations frequently raise multiple suspects (Innes, 2007). Formally, suspects in investigations are “those individuals whom investigators believe could be the offender” (Stelfox, 2009, p.158). But between those who could not have committed the crime and/or are believed by detectives to be entirely innocent and those who are treated as formal suspects lie individuals about whom detectives may harbour suspicions or seek to eliminate from an enquiry. Such individuals include those who are mentioned or named by victims and witnesses, and those within categories of people whom investigators assess to share a common characteristic with the offender (Stelfox, 2009). For example, if an offender is reported to have oily hands, a detective might identify people with oily hands, or even specify ‘mechanics’, as a category of potential suspects. Identifying and pursuing individuals named by victims and witnesses is a *reactive* strategy: that is, detectives are reacting to individuals mentioned by the victim, witnesses or mentioned elsewhere. The identification of suspect categories is a *proactive* strategy, as it involves a recognition that the offender may not yet have been named in the enquiry.

#### *The current study*

The above discussion highlights tension between experimental paradigms, research based in real-world investigations, and investigative doctrine. Simulated investigation, positioned

between the ‘real world’ and the laboratory, provides a vehicle for exploring which factors are relevant as suspects are selected and examined, and which influence the decision to arrest an individual for the crime. Although this method cannot replicate the dynamic, complex and ambiguous nature of information in real investigations, compared to the experimental studies mentioned above it provides a more realistic context for studying detective sense-making about suspects.

The purpose of the current analysis was exploratory: to examine how participants identified potentially suspicious individuals and how these suspicions were developed and resolved. In the pilot study (Chapter 2) it was noted that when individuals were named in the vignettes, even if there was no strong evidence to implicate them in a crime, participants nevertheless speculated about how they might be linked to a criminal act. One possibility is that detectives use the following ‘rule of thumb’ to make judgements about suspect potential: “if someone has a link (even if apparently innocent) to the victim or scene, the possibility that they might be the offender should be considered”. Thus, one of the research questions addressed in the current analysis is to explore the basis on which named individuals are ruled in or out. A further research question is whether once someone has been designated a suspect detectives henceforward show signs of confirmation bias and tunnel vision (Taylor, 2001). If this is the case, participants would focus mainly or exclusively on a single suspect, selectively attend to incriminating over exculpatory evidence, and interpret ambiguous or neutral information as incriminatory.



Method<sup>23</sup>*Participants, materials and procedure*

Twenty two detectives (20 male and 2 female) participated in this study, six Inspectors, nine Sergeants and seven Constables, ranging in age from 28.9 to 49.2 years ( $M=41.7$ ,  $SD=6.7$ ) and with an average of 20.9 years' police experience ( $SD=8.1$ , range 8.2 to 33.0). Participants were interviewed as they completed the paper-based simulated 'investigation' of an attempted rape described in Chapter 3. Information was presented chronologically and in groups of documents, suggesting 'phases' of the investigation, and participants 'thought aloud' as they reacted to the materials (full materials are reproduced in Appendix C and a summary given in Table 6.1).

*Analysis*

As with the analyses in Chapters 4 and 5, the present analysis was conducted in several stages. First, a summary of all potential suspects featuring in the case materials was generated and used as a starting point for focused coding of the transcripts. Thus, transcripts were coded for any mentions of:

- *Named individuals* who were considered by participants as potential suspects, their characteristics and actions, and the degree to which they were implicated in or eliminated from the enquiry.
- *Unnamed individuals* who featured in the investigation and whom participants thought could be the offender, for instance, a man reported by witnesses to be driving a blue van at speed at the relevant time and place.

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<sup>23</sup> Full details of participants, materials and procedure are provided in Chapter 3

- Categories of '*persons unknown*': groups of individuals who shared known or inferred characteristics with the offender and may thus include the offender. The shared characteristics define the parameters of the suspect pool. For example, the offender was reported to be wearing an army-style coat, so some participants suggested he may have military connections and hence suggested enquiries at local army bases.

This initial coding included approximately 96,600 words out of a total word count of 193,300 words, or around 50% of all transcripts<sup>24</sup>. To address the question of how detectives reasoned about the suspect potential of individuals mentioned in the enquiry (as well as to make subsequent analysis manageable and for reasons of space), further analysis was restricted to the way in which participants reasoned about *named* individuals. Thus, although some discussion of the parameters of suspect pools is included in Chapter 5, participants' consideration of unnamed suspects is not explored in detail in this thesis.

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<sup>24</sup> The figure is approximate because transcripts include edited questions and comments by the interviewer as well as the participants' deliberations (see Chapter 3 for details of transcription conventions).

Phase	Document	Details of documents presented
1	1a	Brief orientation to the fictional force area, including maps.
	1b	Initial report of the telephone call reporting the attack.
2	2a	Statement of the victim, and a map showing her route.
3	3a	Statement from man who interrupted the attack, and a map.
	3b	Statement from victim's boyfriend.
	3c	Statement from the doctor who examined the victim.
Verbal update		A brief media release urging anyone with information to call.
4	4a	Summary of messages received: report of a stolen vehicle; eyewitness report of a running man; report about a local historic indecent exposure; a call from rape victim, her attacker was recently released from prison.
	4b	Results of the forensic examination of the scene of the crime.
5	5a	Results of local enquiries: eyewitness reporting a blue van driving away at speed; statement from a local farm owner reporting the recovery of a car from outside his property; detailed account from the eyewitness from phase 4; statement from a second farmer (William Samuels).
	5b	Further details of the indecent exposure mentioned in phase 4.
6	6a	Victim second statement, details of ex-boyfriend and abusive letters.
	6b	Report from the owner of the stolen car mentioned in phase 4.
7	7a	Criminal record details for victim's ex-boyfriend, the rapist mentioned in phase 4 and farmer William Samuels (mentioned in phase 5).
8	8a	Statement from a man who had broken down near the scene of the crime and who was working under his car at the time of the attack.
	8b	Statement from the victim's ex-boyfriend denying involvement.
9	9a	Statement from Samuels' daughter mentioning John Simmons, an ex-boyfriend. Details of Simmons' criminal record.
	9b	Statement from one of Simmons' previous employers.
10	10a	Messages received: anonymous denunciation of man named Smithers; three eyewitness reports relating to blue vehicles in the area.
	10b	Statement from Simmons denying involvement in the assault.
	10c	Second statement from Samuels' daughter, identifying a belt found at the scene of the crime as one she had given Simmons.
11	11a	Report that Simmons has been arrested and his house searched with incriminating objects found. Request to for advice on how to proceed.

**Table 6. 1: Summary of materials presented in simulated investigation**

Although 17 men were mentioned in the case materials, not all were considered as potential suspects: some were not paid any attention and others were mentioned only in passing by only one or two participants. Passages relating to named individuals considered as potential suspects by at least four participants were selected for further analysis. Further coding focused on participants' reasoning about including or excluding individuals from consideration and the actions they proposed to resolve their suspicions. Information discussed was coded as *incriminating* if participants thought it potentially linked an individual to the crime and as *exculpatory* if participants considered it lessened the likelihood of that individual being the offender. For instance, Participant 7 included reasons to link Roy Small (the victim's ex-boyfriend) to the crime and to eliminate him from consideration as a suspect:

*Small has previous convictions for ... theft of vehicle... which is interesting because we've got a stolen car in the area [incriminating] ... he doesn't immediately stand out as a sex offender by virtue of previous ... offending history, [exculpatory] although he was checked with a colleague who stated they were out queer bashing some years ago which may or may not be of interest [incriminating].*

### Results

First, the results of the initial coding stage are presented, which show that participants did not only consider named individuals as potential suspects but also proactively identified suspect pools. Next, the results of the analysis of detectives' judgements about named individuals are presented. Six individuals were considered as potential suspects by at least four or more participants and the way in which participants discussed them is analysed in detail. In particular, the results focus on the *type of information* that was considered (the suspect's consistency with the reported and inferred characteristics of the offender; their potential motive for carrying out

the attack; their past behaviour and character; and whether they had the opportunity to conduct the attack) and the way in which participants considered this information, which was both *incriminating* and *exculpatory*. The results then turn to the way in which participants' reasoning led them to *propose investigative actions*. Finally, participants' reactions to the report that an individual had been arrested for the crime are discussed.

*Initial coding: The scope of suspect consideration*

The initial coding stage revealed that participants' consideration of suspects was, as anticipated, both reactive and proactive. Proactively, they defined suspect pools by reasoning about the characteristics of the offender (including his criminal history, occupation, physical description and geographical location, see Chapter 5). Reactively, participants judged the plausibility of named and unnamed individuals in the enquiry as suspects by comparing them to reported and inferred characteristics and actions of the offender.

The result of the initial coding stage is summarised in Table 6.2, which lists the named and unnamed individuals and suspect pools most commonly discussed by participants. Of the six named individuals, two (Richard Jenkins and Richard Smithers) were discussed briefly by relatively few participants, and rejected quickly as suspects because of lack of evidence. Four other individuals (Colin Moore, John Mann, Roy Small and John Simmons) were given greater consideration. Mann, Small and Simmons in particular were judged to be plausible suspects by all participants, often over several phases of the investigation. Most participants formed judgments about potential suspects by mentally simulating narratives which tested the plausibility of that individual being the offender. In doing so, participants generally favoured evidence that implicated individuals as suspects rather than evidence that exonerated them, although they also developed narratives which tested the plausibility of an innocent explanation of the information.

Participants went further to discuss actions they would take to resolve their suspicions and speculated, often extensively, about the potential outcome of these actions.

<b>Named individuals</b> mentioned in the case materials	<b>Unnamed individuals</b> mentioned in case materials	Defined <b>suspect pools</b>
<ul style="list-style-type: none"> <li>• Richard Jenkins (witnessed and reported attack)</li> <li>• Colin Moore (boyfriend of the victim)</li> <li>• John Mann (convicted rapist)</li> <li>• Roy Small (ex-boyfriend of victim)</li> <li>• John Simmons (ex-farm worker)</li> <li>• Richard Smithers (subject of anonymous denunciation)</li> </ul>	<ul style="list-style-type: none"> <li>• Man working under a white car near the scene (later identified as David Dawes)</li> <li>• Man seen running near local estate</li> <li>• Perpetrator of unsolved flashing incident two weeks previously</li> <li>• Individual who stole car found abandoned nearby</li> <li>• Driver of a blue van seen driving away from area at speed</li> </ul>	<ul style="list-style-type: none"> <li>• Known individuals on police databases, including Registered Sex Offenders, Persistent Dangerous Offenders.</li> <li>• Unknown individuals responsible for similar incidents in the local or regional area, for instance appearing in 'modus operandi' databases</li> <li>• Seasonal and farm workers from the local farms</li> <li>• Mechanics in the local area</li> <li>• Army personnel in the local area</li> <li>• Males living in the local area</li> </ul>

**Table 6. 2: Suspect pools defined by participants, and details of named and unnamed individuals discussed as potential suspects by at least four participants.**

### *Consideration of named suspects*

Participants' interest in named individuals was stimulated by their mention in case materials. However, of the 17 men named in the case materials, only six were considered as suspects by four or more participants and, of these, only three individuals were given serious consideration by all participants. One way of exploring the attention paid to potential suspects is by coding each mention of a particular individual as a potential suspect in each phase of the investigation. The proportion of participants who actively considered someone a suspect in each

phase indicates each suspect's relative importance in participants' sense-making and tracking this over time provides a sense of the way in which individuals become more or less important as the investigation progresses. Table 6.3 thus summarises the amount of attention each of these six individuals received during each phase of the investigation<sup>25</sup>. It shows, for instance, that whilst only 9% (2) of participants considered the victim's current boyfriend Colin Moore to be a potential suspect in phase 1, about a third (36%, or 8 participants) discussed his suspect potential in phase 3 (the point in the simulation where Moore's statement was introduced). In contrast, Roy Small (the victim's ex-boyfriend) was immediately salient to all participants as a potential suspect from the moment he was introduced via a second statement from the victim in phase 6, and continued to be given serious consideration by most until relatively late in the enquiry. John Simmons, the individual eventually shown to be the offender in phase 11, was also salient to all participants from the point at which he was introduced.

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<sup>25</sup> The measure of attention is shown as a *proportion* of participants, rather than *absolute numbers* of participants, considering that individual as a potential suspect. This is because not all participants reached the end of the simulation and an absolute number would thus be potentially misleading.

	Individual named (context)					
	Richard Jenkins (witnessed attack)	Colin Moore (boyfriend of the victim)	John Mann (convicted rapist)	Roy Small (ex-boyfriend of victim)	John Simmons (ex-farm worker)	Richard Smithers (subject of anonymous denunciation)
Phase of enquiry	1	0.09 <sup>a</sup>	0.09 <sup>a</sup>			
	2	0.09				
	3	0.14				
	4					
	5		<b>0.95<sup>a,b</sup></b>			
	6		0.55			
	7	0.09	0.23	<b>1.00<sup>a,b</sup></b>		
	8		<b>1.00<sup>b</sup></b>	<b>0.95<sup>b</sup></b>		
	9		<b>0.83<sup>b</sup></b>	<b>0.95<sup>b</sup></b>		
	10		0.56	0.56	<b>1.00<sup>a,b</sup></b>	
	11		0.47	0.33	<b>1.00<sup>b</sup></b>	0.53 <sup>a,b</sup>

**Table 6. 3: Proportion of participants mentioning each individual as a potential suspect (adjusted for number of participants who completed each phase).** Notes: <sup>a</sup> Point in the simulation that the individual was first mentioned. <sup>b</sup> Figures in bold indicate that the individual was mentioned in that phase as a potential suspect by more than 80% of participants.

Table 6.3 also indicates that rather than concentrating on single suspects, most participants considered multiple suspects simultaneously. However, the figures in Table 6.3 give little insight to the way in which participants considered different individuals. Further qualitative analysis is necessary to examine how participants integrated presented information with general and domain-relevant knowledge to make sense of individuals' suspect potential.



*Named individuals considered briefly as suspects*

Richard Jenkins, who interrupted the attack, and Richard Smithers, the subject of an anonymous denunciation towards the end of the simulation, were each considered and dismissed quickly as potential suspects by four or more<sup>26</sup> participants.

*Richard Jenkins*

Jenkins was mentioned as a potential suspect by four participants, of whom participants 16 and 21 considered Jenkins only in passing:

**Extract 6.1.** *I'm sure ...Jenkins is not the offender... If it was Jenkins he wouldn't be hanging around but just...belt and braces job really (Participant 21, phase 2).*

**Extract 6.2.** *Richard Jenkins ... who appears from behind the trees... is he in collusion with this guy, is he some sort of set up ... all these sort of, of fantasy ideas you have running around in your head... if there was anything dodgy about Mr Jenkins, I'm sure we'd come across it but ... you bear all these things in mind (Participant 16, phase 3).*

Participant 20 and Participant 12, on the other hand, gave more consideration to Jenkins as a suspect and over more than one phase of the simulation. For instance, Participant 12's reasoning developed over the first three phases:

**Extract 6.3.** *Potentially, [the offender] could be any one of these two blokes... It could be Mr Jenkins himself or her boyfriend Colin Moore. Keep an open mind (phase 1).*

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<sup>26</sup> Although some named individuals were mentioned in passing by one or two individuals, this was not in sufficient detail to permit detailed analysis of participants' judgements about them. Discussion of named individuals by a minimum of four participants was found to provide enough material for analysis.

*I've got a clearer explanation about Jenkins' role... he's very calm. He's not, maybe, how I would expect someone who's just been told by a woman, who's obviously in a state of undress and distress... Some people can be calm. ... [but] an Army Colonel, by definition would react like that...[but] Jenkins is niggling at me (phase 2).*

*Jenkins, his account is sort of dovetailing him to what Cartwright's saying in the sense of what he was doing there and some of the conversation corresponds, so he's become less of a suspect to my thinking (phase 3).*

Having designated Jenkins a potential suspect in the first phase, Participant 12 considered his 'calm' demeanour after having witnessed an attempted rape to be potentially suspicious, although explainable by Jenkins' past as an Army colonel who would "react like that". Participant 12's suspicions were only allayed when Jenkins' and the victim's accounts corroborated one another.

#### *Richard Smithers*

Smithers appeared towards the end of the investigation as the subject of an anonymous denunciation:

There is a bloke who lives in Cambridge Crescent, his name is Smithers. He is a right weirdo who regularly walks his dog up in the orchards. He is just the sort of weirdo who would attack a young woman (extract from document 10a, Appendix C).

A description of Smithers was attached, showing him to be black, whereas all previous accounts had indicated the offender was white, although only three participants noticed and dismissed Smithers on this basis. Seven further participants discussed him as a potential suspect but none considered him a priority for further action, with Participant 15 explaining why in the form of a scripted conversation:

**Extract 6.4.** *The first one is so classic of what we get: “There’s a right weirdo who lives up there.” “No but he looks nothing much like our person.” “Yeah but he’s a right weirdo” (phase 10).*

Her sentiment was echoed by Participant 12 (“*you get that kind of information come through... a red herring*”) and Participant 1:

**Extract 6.5** *We’re gonna get oddballs come up. People gonna produce... their own private weirdo as inevitably that happens in these sorts of enquiries” (phase 10).*

*Named individuals given detailed consideration as suspects*

Participants gave more detailed consideration to Moore, Mann, Small and Simmons being plausible suspects. A brief summary of information provided on each is given in Table 6.4 (see also Table 6.1). Participants devoted varying degrees of effort to considering whether these individuals could be the offender, by considering information that was incriminating and exculpatory. Broadly, this information fell into the following categories:

- a) **Consistency with evidence:** the degree to which a suspect’s behaviour or characteristics (e.g., physical description) corresponded with information about the offender;
- b) **Motive:** the suspect’s reasons to attack the victim;
- c) **Suspect’s past behaviour and character:** including aspects of his criminal history, which might be related to his capability to carry out the attack;
- d) **Opportunity:** factors which would have facilitated the crime, such as knowledge of the victim’s movements or of the attack location, or being in the area at the time.

Individual	Sources	Summary of information received
<b>Colin Moore</b> (33 year old boyfriend of victim)	Cartwright's statement (2a); Moore's statement (3b)	Cartwright and Moore argued midway through a Sunday walk together and had walked away in different directions. Cartwright said that she had been attacked after she and Moore had separated. She did not suggest that her attacker had been Moore or give any reason to indicate that it was him.
<b>John Mann</b> (28 year old convicted rapist)	Messages received (4a)	Message from Mann's victim that he was recently released from prison having served 3 years for rape. Now lived locally.
	Police record (7a)	Includes details of his offence: "Approached lone female on footpath from behind... punched her, produced knife, held it to her throat. Knife used to cut away her clothing".
<b>Roy Small</b> (34 year old ex-boyfriend of victim)	Second statement by Cartwright (6a)	Small was Cartwright's ex-boyfriend and had accompanied her on Sunday walks. Small became abusive when Cartwright refused to have sex. She said he was in the motor trade
	Police record (7a)	Cartwright had received three abusive letters, shortly before her attack. She believed the letters were from Small, but no proof. Police record included convictions for burglary, theft of vehicles, arson; reported rural areas late at night, claiming to be "queer bashing". Also reported drunk and being abusive to women.
	Statement by Small (8b)	Claimed that, on the day of the offence, he was at home all day playing video games with a friend; did not leave the house except to buy newspaper and cigarettes. Currently unemployed.
<b>John Simmons</b> (25 year old ex-farm worker)	Ann Samuels' statement (9a)	Samuels, daughter of local farmer, is Simmons' ex-girlfriend; she gave him a belt, Simmons declared he was in love with her, pressured her to have sex. She rebuffed him and he became angry; didn't speak to her again but used to stare at her when they were working in orchards.
	Brown's statement (9b)	Brown, local farmer, reported that Simmons was a mechanic who had serviced Brown's farm machinery.
	Simmons' statement (10b)	Simmons stated he was now a driver for an agricultural contractor. Claimed not to know Jane Cartwright and to have been resting at home alone all day on the day of the attack.
	Police record for Simmons (10b)	Police record includes allegation of juvenile indecent assault; suspected spying on a courting couple in local rural area late at night; cautioned for indecent exposure in local rural area.
	Samuels' 2nd statement (10c)	Samuels says the photograph of the belt found near the attack was identical to the belt she bought Simmons.
	Police report (11a)	Arrested; hunting knives, military and combat magazines and Army jacket found in his house. Admitted being in the orchards in Summersby on the day of the assault but denied being the offender.

**Table 6. 4: Summary of information received on four potential suspects (for full details, refer to Appendix C).**

*Colin Moore*

Colin Moore's suspect potential was discussed by 13 participants, although in five cases this was no more than a cursory mention, for instance:

**Extract 6.6.** *She's just had an argument with her boyfriend so I would be interested in finding out more about him and their relationship, just to rule him out more than anything else (Participant 8, phase 2).*

Seven participants gave story-like explanations for Moore's inclusion as a suspect that appeared to be based largely on scripts rather than on evidence provided in the case materials. Specifically, two stories, which could be summarised as 'consent sex now regretted' and 'boyfriend attacks victim but victim is fearful of identifying him' appeared to underlie their initial reasoning. For example, Participant 17's suspicions about Moore included elements of both stories:

**Extract 6.7.** *I might be thinking to myself... that her and Colin have got caught out in any sort of acting ... and it's all gone wrong or he's suddenly attacked her maybe... were they having sex before and/or they haven't and he's decided that he wants sex with her? Been going out with her for six weeks now and suddenly attacked her? (phase 3).*

Participant 7 also elaborated the 'boyfriend attacks victim' narrative and, based on the victim's report that her attacker had oily hands, included speculation about information that might help to strengthen the hypothesis that Moore was the offender:

**Extract 6.8.** *I take it he's not a grubby mechanic ... we need to make sure that he's not a suspect obviously who's gone back and tried to rape her because that's what he gets off*

*on, especially when she doesn't agree with moving in and all the rest of it, because there are strange people out there* (Participant 7, phase 2).

In contrast, reasons to exclude Moore tended to be based directly on information provided in the case materials, in particular:

- a) the fact that Moore's physical description did not match that of the offender (mentioned by five participants);
- b) corroboration of Moore's and/or the victim's accounts and/or absence of evidence to contradict their accounts (five participants);
- c) the absence of a different reaction by the victim if it were Moore (four participants), e.g., *"I don't think it's Colin ... because she'd recognise his voice"* Participant 12, phase 2).

For example, Participant 19 excluded Moore as a suspect on a combination of (a) and (b):

**Extract 6.9.** *That all corroborates what Jane is saying so I'm satisfied now that it's a ... confirmed stranger attack and Colin can't be a suspect now, so he's fine. [Jenkins] saw the man run past and Colin doesn't fit that description* (phase 3).

#### *John Mann*

In contrast, all participants considered Mann, a local convicted rapist, to be a plausible suspect for most of the simulation. At phase 4, all participants discussed researching him further as a potential suspect, although the degree to which they felt he was of particular interest varied. Seven said the initial report mentioning Mann (4a, Table 6.1) was particularly significant, but four described him as just one of many potential suspects whom a search of local intelligence databases for sex offenders and similar incidents should already have identified. Some suggested

that before considering him a suspect they needed to know more about the rape for which he had been convicted, for example:

**Extract 6.10.** *I would be interested to know the circumstances of that rape that he committed... so we'll be getting the file out... Is it "he was my boyfriend and one night he wanted to have sex and I didn't and it was a rape" or is it another stranger rape, outdoor stranger rape in daylight? (Participant 9, phase 4).*

It was, however, the details of Mann's previous offence (Table 6.4) that caused most to take him particularly seriously. All participants commented that his modus operandi (MO) was similar to the current offence and seven participants compared specific details of Mann's MO with the current offender's actions, noting similarities (the victim was a lone woman approached on a footpath, and the offender used a knife) and differences. Most notably, in the rape for which he was convicted, Mann had employed violence rather than simply threatened it and had used his knife to cut away the victim's clothing. Some participants attempted to resolve these differences by considering circumstances in which variations in MO could be explained, illustrated by the following:

**Extract 6.11.** *If it works, then [offenders] won't change the system, that's been my experience. If they found a pattern of attacking a woman and it works and they are able to immobilise them because of the threat of a knife, then they'll only do the threat, isn't it? I know we didn't get the cutaway of clothing, but we don't know, he could have asked that woman in 2002, "remove your clothing", "no", so he started to cut it (Participant 10, phase 7).*

**Extract 6.12.** *Things there that maybe would question [Mann being the current offender] but ... he's been in prison and there are a lot of offenders that go in, come out with slightly different ideas on what they're going to do, if they carry on offending that is* (Participant 15, phase 7).

Participant 3 speculated how John Mann might be linked to the current offence even if he was not the perpetrator:

**Extract 6.13.** *It may be that John Mann has either ... shared a cell with or has spoken openly about the offences he's committed and somebody has taken that information and thought "that might be a good method to use"* (Participant 3, phase 7).

Category	Incriminating factors	Exculpatory factors
<b>Consistency with evidence</b>	<ul style="list-style-type: none"> <li>• Right age (n<sup>a</sup>=7)</li> <li>• A stolen car was found nearby and Mann has a criminal record for stealing cars (n=5)</li> <li>• Description is similar (n=2)</li> </ul>	
<b>Motive</b>		
<b>Past behaviour (capability)</b>	<ul style="list-style-type: none"> <li>• Modus operandi of previous rape is almost identical to current attack (n=19)</li> </ul>	<ul style="list-style-type: none"> <li>• Modus operandi slightly different (knife used to cut away clothing) (n=7)</li> </ul>
<b>Opportunity</b>	<ul style="list-style-type: none"> <li>• Lives locally / has links to the area (n=7)</li> </ul>	<ul style="list-style-type: none"> <li>• Recent indecent exposure in the area<sup>b</sup> occurred when Mann was still in prison (n=7)</li> </ul>

**Table 6.5: Reasons given to include and exclude John Mann as a suspect.** Notes: <sup>a</sup> n = the numbers of participants who mentioned each factor at least once. (Three participants only completed phases 1-6 and did not receive details of Mann's modus operandi. Figures should be taken as indicative.) <sup>b</sup> In phases 4 and 5 participants received details of an indecent exposure, which many linked to the current attack.

As Table 6.5 illustrates, participants highlighted five factors as potential reasons to consider Mann a plausible suspect, including his description, age, geographical location and a



tenuous potential link to a stolen car near the scene of the attack (which had not been explicitly linked to the crime). However, in comparison to the incriminating nature of Mann's previous criminal behaviour, the evidence-related and opportunity factors were relatively trivial. A potential motive for Mann to attack Cartwright was not discussed by any participants.

*Roy Small*

Compared with Moore and Mann, Small, an ex-boyfriend of the victim, prompted extensive sense-making by participants. He was first introduced via the victim's second statement at phase 6 of the simulation. Until that point almost all participants had assumed that the attack was carried out by a stranger (see Chapter 5). Yet Small's salience as a potential suspect was so strong as to cause all participants to take him seriously initially and for more than 90% to continue to consider him a suspect until another more plausible suspect, in Simmons, was introduced.

Category	Incriminating factors	Exculpatory factors
<b>Consistency with evidence</b>	<ul style="list-style-type: none"> <li>• A stolen car was found nearby and he has a criminal record for stealing cars (n<sup>a</sup>=14)</li> <li>• The offender had oil on his hands and Small is connected with motor trade (n=11)</li> <li>• May have sent abusive / threatening letters recently (n=10)</li> <li>• Lives in Ashwell, where vehicle was stolen (n=5)</li> <li>• Victim knows him and balaclava would have disguised voice and appearance (n=5)</li> <li>• Has a bad alibi (n=4)</li> <li>• Matches or is consistent with description of the offender (n=3)</li> <li>• Smokes, and cigarettes ends were found near the scene (n=2)</li> </ul>	<ul style="list-style-type: none"> <li>• She ought to be able to recognise his voice / know that it is him (n=8)</li> <li>• Is too old for the individual described by witnesses (n=3)</li> <li>• Has got a potential alibi (n=2)</li> </ul>
<b>Motive</b>	<ul style="list-style-type: none"> <li>• Resentful towards / poor relationship with victim (includes: she rejected him, he had a fascination with her) (n=7)</li> <li>• Sexually frustrated, and the offender is sexually motivated (n=6)</li> </ul>	<ul style="list-style-type: none"> <li>• If the flashing is related, why would Roy attack Baker?<sup>b</sup> (n=2)</li> <li>• Quite a leap to go all the way from bad relationship to rape (n=1)</li> <li>• If he was targeting her he might want her to know it was him (n=1)</li> <li>• Just because he writes letters doesn't make him a rapist (n=1)</li> </ul>
<b>Past behaviour (capability)</b>	<ul style="list-style-type: none"> <li>• Criminal history (arson burglary) is not inconsistent with being sex offender (n=4)</li> <li>• Bad character (e.g., doesn't sound nice, immature) (n=3)</li> <li>• 'Queer bashing' in his history is a sexually-motivated offence (n=2)</li> <li>• History includes 'hanging around' (n=2)</li> <li>• History includes abusive towards women (n=2)</li> </ul>	<ul style="list-style-type: none"> <li>• No violence in criminal history (n=1)</li> <li>• Nothing sexual in criminal history (n=1)</li> <li>• Usually when 'hanging around' he is with an accomplice (n=1)</li> <li>• Plenty of women have dodgy boyfriends (n=1)</li> </ul>
<b>Opportunity</b>	<ul style="list-style-type: none"> <li>• Knows victim's Sunday routine (n=9)</li> <li>• Has been to victim's mother's house so knows the area (n=5)</li> </ul>	<ul style="list-style-type: none"> <li>• If he targeted her for her routine then usually she is with mum and/or boyfriend (n=2)</li> </ul>

**Table 6. 6: Reasons given to include and exclude Roy Small as a suspect.** Notes: <sup>a</sup> n = the numbers of participants who mentioned each factor at least once. (Four participants did not reach phase 8 when Small's statement and PDF were received. Figures should be taken as indicative.). <sup>b</sup> Baker was the victim of the indecent exposure introduced in phases 4 and 5, which many chose to link to the current attack.

Table 6.6 shows the reasons provided by participants to include or exclude Roy Small from the list of suspects, indicating that incriminating factors considerably outweighed exculpatory factors. In particular, participants tended to reason about Small's suspect potential based largely on the correspondence between existing evidence from the case materials and new information provided about Small. Two of the most common factors mentioned as significant by participants were Small's employment in the motor trade and his ability to steal cars (as evidenced by his conviction for car theft). Ten participants made the assumption that having worked in the motor trade made it likely that Small would have oily hands, despite the fact that according to the case materials, he was currently unemployed, for instance:

**Extract 6.14.** *He's connected with the motor trade, isn't he? ... which may account for the presence of oil* (Participant 3, phase 6).

That Small had been a car thief was important to participants because a stolen car had been found near the scene, despite the fact that the car was not linked to the attack except by the coincidence of being near the scene at a relevant time. Many also found reasons in Small's criminal history to strengthen their belief that he was a plausible suspect. Small's criminal history did not include sexual offending (a fact only acknowledged by Participant 8), although two suggested that his explanation of 'queer bashing' for being on a common at night indicated a sexual motivation. For instance:

**Extract 6.15.** *So we've got him wandering around the common, I suppose he's admitting that he is going there intending to commit sex crime, sexually motivated to an extent, 'bashing queers' ... looking at his previous convictions... certainly consistent... the type of record I've seen in the past* (Participant 9, phase 7).

Some participants argued that even though Small had no record for rape or sexual offences, his criminal history was not inconsistent with him being the offender in the case they were investigating. For instance:

**Extract 6.16.** *Arson. That's always interesting... just something that's always been told, that sexual offenders quite often are arsonists as well. You always have to bear that in mind. That doesn't make him any better a suspect but it's always interesting to see stuff like that (Participant 14, phase 7).*

Another common reason for considering Small a suspect was the victim's belief, which most assumed to be correct, that he had sent her abusive letters. This, coupled with a widespread belief that Small's rejection by the victim meant he had a motive to attack her, enhanced Small's suspect potential. The way in which participants built these factors into a narrative in which Small became a plausible suspect is illustrated by Participant 7:

**Extract 6.17.** *He's in the motor trade first and foremost. He has an axe to grind with his ex-girlfriend and the offender was not wanting to be recognised. Now that could be of course because generally they don't want to be recognised by anyone but there could be a more immediate link i.e. that they know that the victim will know who it is ... He's a suspect, based on the abusive nature of his contact with her since, which we're taking the victim's say so for this but it's a reasonable assumption to make... We need quickly to be able to implicate or eliminate him, so he's become a high priority action (phase 6).*

*Small has previous convictions for... theft of vehicle... which is interesting because we've got a stolen car in the area ... he doesn't immediately stand out as a sex offender by virtue of previous sex offending history, although he was checked with a colleague who stated*

*they were out queer bashing some years ago which may or may not be of interest (phase 7).*

Participants also mentally simulated events that might account for disparate information. For instance, Participant 21 incorporated information about Small, the stolen car, the geography of the location and the offence itself to generate a story in which Small was the attacker:

**Extract 6.18.** *He lives in Ashwell. Could he have stolen [the car] and come here?... He come here, he's parked the car up there... He knows she does this route. He's been waiting to capture, he's caught her, he's walked her up here, he's been disturbed and he's run that way. That is a possible version of events and that could've happened but I'm still not excited about it (phase 7).*

Such mental simulations often resulted, as did this one, with participants being unconvinced, suggesting that they were ‘trying out’ potential explanations to see if they were plausible.

#### *John Simmons*

All participants considered Simmons to be a plausible suspect from the point at which he was introduced (phase 9) and continued to view him as such until the end of the simulation, when he was reported to have been arrested for the offence. Participants’ judgments appeared most influenced by information about Simmons that was consistent with the evidence (Table 6.7) It is worth noting, however, that many participants were lukewarm about Simmons to begin with, perhaps because most were already actively considering Small and Mann as suspects by this time. Many became more interested in Simmons once his police record, indicating a potential history

of indecent behaviour, was presented in phase 10. For instance, Participant 7 was unenthusiastic about Simmons as a suspect in phase 9:

**Extract 6.19.** *I'm interested in him but not as much as Roy [Small] ... I don't want to be distracted by this guy. ... he's a weirdo and he's in the close proximity, he's known to frequent those orchards... I see the need to rule this guy out but I don't find him particularly interesting... if I'm having to put these into order of preference he's in the middle somewhere.*

However, receiving Simmons' police record and other information in phase 10, he became more interested:

**Extract 6.20.** *Indecent exposure. Intelligence that he was spying on a couple. So he's like rocketing up, up the top there isn't he all of a sudden... And Ann Samuels says that the belt we've recovered appears identical but... We've started to get quite a picture there based on his previous offending, his locality to the scene on the day based on the sighting of a vehicle. It's all suspicion of course, but I think you could justify an arrest.*

Category	Incriminating factors	Exculpatory factors
<b>Consistency with evidence</b>	<ul style="list-style-type: none"> <li>• A van similar to his was sighted nearby (n=12)</li> <li>• Belt found near the scene is/may be the one given to him by Ann Samuels (n=11)</li> <li>• Description is similar (n=10)</li> <li>• He is a mechanic and would have oily hands, consistent with description of offender (n=8)</li> <li>• He is a smoker, like the offender (n=4)</li> </ul>	<ul style="list-style-type: none"> <li>• Even if the belt is his, he could have dumped it in the area on another occasion (n=6)</li> <li>• His van's registration mark is not quite the same as reported by witnesses (n=5)</li> <li>• The cigarette butts found may be his but he could have dropped them on another occasion (n=2)</li> <li>• He is right-handed and the offender may have been left handed (n=2)</li> <li>• The fact he owns a van similar to the one sighted could be a red herring (n=1)</li> <li>• His description does not quite match the offender's (n=1)</li> </ul>
<b>Motive</b>		
<b>Past behaviour (capability)</b>	<ul style="list-style-type: none"> <li>• Police record indicates pattern of behaviour consistent with rapist (n=12)</li> <li>• Described as weird or odd (n=5)</li> </ul>	<ul style="list-style-type: none"> <li>• Just because he has indecency in his history doesn't make him a rapist (n=1)</li> </ul>
<b>Opportunity</b>	<ul style="list-style-type: none"> <li>• Lives locally / has links to the area (n=8)</li> <li>• Doesn't work at weekends, which is when the attack took place (n=1)</li> </ul>	<ul style="list-style-type: none"> <li>• Doesn't know the victim (n=1)</li> </ul>

**Table 6.7: Reasons given in phases 9 and 10 to include and exclude John Simmons as a suspect** (in phase 11 participants had been told that Simmons had been arrested for the offence). Note: n = the numbers of participants who mentioned each factor at least once. (By the time Simmons was first introduced, six participants had left the study; one further participant left after phase 9. Figures should be taken as indicative.)

Participants also considered information that might eliminate Simmons from consideration as a suspect. Six commented that the possibility that the belt found at the scene belonged to Simmons, although circumstantially incriminating, was not particularly strong evidence, for instance:

**Extract 6.21.** *The belt's interesting but it's in an area where he would work anyway and if he's had enough of her he could have disposed of it (Participant 20, phase 10).*

Similarly, despite the salience of his police record, some participants noted that it did not prove he was the offender:

**Extract 6.22.** *The fact that he has got 'perve' probably marked all over him doesn't necessarily mean that he is a person who might attack somebody. He's a possible suspect but... he hasn't come to notice for a couple of years (Participant 1, phase 10).*

#### *Actions proposed*

Moore was, as explained above, ruled out as a suspect relatively quickly on the basis of existing information. As the remaining potential suspects (Mann, Small and Simmons) were introduced, participants discussed actions they would take to gather information they would require to implicate or eliminate them from consideration (see Table 6.8) and several participants mentally simulated the potential outcome of actions they proposed. For instance:

**Extract 6.23.** *I need to eliminate [Mann by] going and seeing him, just saying "excuse me can you tell me where you were at ... twelve o'clock on Sunday?". He could say "I was in bed with Linda" or "I was out running", could say anything (Participant 4, phase 7).*



Actions proposed		Suspect considered		
		Mann (n=number of participants mentioning)	Small	Simmons <sup>a</sup>
<b>Consistency with evidence</b>	Check if physical description matches	14	13	7
	Check if clothing worn on the day of the offence is similar	-	3	3
	Check handedness	1	2	2
	Check what brand of cigarettes he smokes	-	2	-
	(Take DNA sample and) check DNA against results from current offence	6	-	4
	Search his house to look for incriminating objects (e.g. knife, coat)	3	6	2
	Check if belt found near scene is his		1	9
	Check what vehicle(s) he owns	4	2	
	Check number plates of his van	-	-	4
	Check stolen car for forensic traces that might link it to suspect	-	4	-
	Check letters received by victim for forensic traces	n/a	7	n/a
	Handwriting analysis on letters received by victim	n/a	10	n/a
	Ask victim if her attacker was Roy	n/a	9	n/a
<b>Motive</b>				
<b>Past behaviour (capability)</b>	Check if he has previous convictions	-	7	4
	Check MO of previous offences	12	-	-
<b>Opportunity</b>	Check alibi	8	14	7
	Check prison release date	9	n/a	n/a
	Check if he lives in / is familiar with local area	10	-	-

**Table 6.8: Actions suggested by participants to gather information that may incriminate or implicate suspects.** Notes: Only 15 participants completed the entire simulation, with three leaving after phase 6, one after phase 7, two after phase 8 and one after phase 9. Figures should be taken as indicative. <sup>a</sup>Actions proposed do not include actions mentioned in phase 11.

The most common suggested action, and also one of the least intrusive, was to compare a potential suspect's physical description with that given of the offender. Participants were, however, aware that descriptions can be fallible, for instance, Participant 15 compared Simmons' description with that given by witnesses:

**Extract 6.24.** *It says “hair cut short”, but again... people with long hair would describe other people's hair as short, do you know what I mean? Descriptions are so full of, many things are generic and if you ask two people to describe the same person they come up with very different things so I'm quite wary of the descriptions ruling people in and ruling people out (Participant 15, phase 9).*

A key question is whether the purpose of such actions was to implicate or eliminate suspects. For instance, were participants comparing a suspect's description with witness accounts in an effort to rule him in or eliminate him from the enquiry? Most participants talked in terms of eliminating individuals as a rapid way of narrowing their enquiry. Two participants (both Inspectors) also indicated that elimination was necessary to neutralise potential defence strategies in the event of a prosecution. Referring to the victim's allegations about Small, Participant 17 commented that if:

**Extract 6.25.** *...the defence get hold of something like this, this is just absolutely a minefield for material likely to undermine [the] prosecution case (phase 8).*

In some cases, although participants talked of eliminating suspects from the enquiry, the actions they went on to propose seemed to indicate that they would be seeking reasons to implicate them. One example is Participant 8 who in phase 10 stated:

**Extract 6.26.** *The two key people to eliminate are John Simmons and John Mann. I'm hoping that he [Mann] would have been ruled out of it by now either because he's still locked up or because he's completely alibi-ed out because he was doing something else. In which case I think you've certainly got enough to arrest John Simmons. If there's nothing that you can link him with forensically or through interview, you can certainly put him on an ID parade for the witness that saw the guy running down the street with the*

*balaclava off and do some more work on that house search – might discover the jacket or the knife or something in his vehicle.*

Participants did indicate, however, that they were alert to developing tunnel vision. For example, one Inspector commented that, “*the difficulty is that you actually make things fit because it suits our purpose to make things fit*” (Participant 17, phase 6). Another Inspector (Participant 21) also highlighted the dangers as he considered whether or not to arrest Simmons:

**Extract 6.27.** *There's reasonable grounds there... He fits the description vaguely, he knows the area and he's got a blue van and he's not communicating where he was ... Has he gone back [to the orchards] to rape our woman? Probably not, he's just being a sex pest, he knows the area, he's been masturbating there the week before. The problem with all this stuff, you can get carried away... because it all seems to fit and you get very, very excited and you go down a line which is quite appropriate but you just don't know...*  
(phase 10).

*The decision to arrest:* Differences between participants emerged with regards to arresting suspects. In all, 13 participants suggested at some point in the simulation arresting at least one suspect, with two (participants 9 and 12, both Constables) suggesting arresting Mann, Small *and* Simmons. Arrest provides the opportunity for officers to search a suspect and his property, and thus provides the best chance of rapidly recovering forensic or other evidence that might tie an individual to the crime:

**Extract 6.28.** *My personal view is arresting people is always the best option with the police, that's what the police do. Shouldn't be afraid of it... We wanna go and search [Roy Small's] house really don't we? We wanna go and look for the big knife. We wanna*

*go and find a khaki jacket. We wanna go and find all his clothing... fibre transfer goes very quickly... because it's a rape you got a dangerous guy on the loose. I don't mind getting it wrong, at all, in this situation. And also you've got the whole forensic issue which potentially you're losing stuff as time goes by* (Participant 21, phase 6).

Participant 18 (another Inspector) suggested that the seriousness of the crime and the offender's potential for future offending necessitated a swift arrest of someone he saw as a good suspect:

**Extract 6.29.** *I'd be looking to put together a strategy to arrest and interview Roy [Small]... [Interviewer: so you're treating him as a suspect?] Yeah. [Interviewer: Tell me why?] He's clearly got a motive... We've got someone who's potentially very dangerous out there. He's already nearly got there... the offender is not far off committing a full rape or a murder and I don't think we can risk losing evidence from him* (phase 6).

For some participants, an arrest was a method for potentially eliminating an individual from suspicion:

**Extract 6.30.** *Well John Mann's previous conviction... is very similar, his MO is very similar to the one we've got here with our victim and I think that on the basis of that, that he would have to be eliminated from the enquiry one way or the other and so he would be brought into custody. House would be searched and we'd be asking for samples from him to prove or disprove that he was involved in the incident. Obviously looking for knife, balaclava...* (Participant 1, phase 7).

However, the remaining participants did not advocate arresting any potential suspects and several advised delaying action until more information came in. For instance, Participant 17, an

Inspector, said he would “*wait for forensic results first before I made any moves*” to arrest Mann, although:

**Extract 6.31.** *...if I'm totally honest, ... a few years ago I would have had Mann in by now* (phase 8).

Another Inspector (Participant 13) explained the need for care in choosing to arrest someone:

**Extract 6.32.** *It's a serious allegation to go around arresting people for and we want to be fairly discreet in the way in which this inquiry was conducted. I would rather we had substantial reasonable grounds to suspect than whimsical reasonable grounds* (phase 6).

For Participant 5, an interview could be a precursor to an arrest if Mann's alibi was not sound:

**Extract 6.33.** *Brief to the officers would be: this is the bloke... his MO is very similar, he's about the right age, go and speak to him. If you're not happy arrest him, search his house... you don't send them out with instructions to arrest, because you could go and speak to him and he could go “yeah, I was at my probation meeting” or he could be totally alibi-ed out* (phase 7).

#### *Simmons' arrest*

In phase 11 participants were presented with a report stating that Simmons had been arrested for attempted rape and incriminating items found during a search of his home (document 11a, Appendix C). Of the fifteen participants still remaining in the study by this point, all but two specified that DNA evidence (e.g., Simmons' DNA found in the discarded balaclava and/or on the victim) would be necessary to charge him with the crime. Not finding such evidence could undermine the case against Simmons:

**Extract 6.34.** *What would be absolutely essential is what is the DNA results from the balaclava because it's extremely unlikely that you won't get a DNA hit on a balaclava, especially round the mouth area so if that balaclava didn't have this man's DNA on then that would be a significant hurdle (Participant 2).*

Nine participants said identity parades might identify Simmons as the man seen running near the scene, or the driver of a van seen speeding away, but most acknowledged that this would not prove him to be the offender, just show that he was in the area. Similarly, eight suggested that further interviews of Simmons might lead to more information or a confession, but most did not consider this would be enough to charge him. Participant 4, for example, specified that corroboration was necessary:

**Extract 6.35.** *If he makes a full frank confession, fine, if he turns around and says to the DS "you're too good for me Sergeant I did it and I did it this way", fine. If he makes a confession, describes exactly how it happened, which is corroborated by the witnesses, not a problem. Charge him.*

Only two participants indicated that they would still have other suspects under consideration at this point. The majority, whilst indicating that there was not yet enough to charge him, seemed to consider Simmons to be the offender. Many were confident that forensic evidence would prove this. Participant 17, an Inspector with 29 years' service, summed up by commenting that, in his experience, *"jobs never get weaker. They always gets stronger"*.

### Discussion

The Introduction identified 'tunnel vision' as a particular issue worthy of exploration in this analysis. In order to establish whether and how participants were influenced by confirmation bias (in this case, fixation on a particular suspect to the exclusion of others) it is necessary first to

examine how participants developed their understanding of who might be a suspect. The degree to which they made judgements about such individuals, and the degree to which they showed signs of ‘tunnel vision’ is then further explored.

Participants proactively defined suspect pools based on their reasoning about the offender (see Chapter 5), which included inferences about his criminal history, occupation, physical description and geographical location. Participants also reactively considered named and unnamed individuals who arose during the enquiry and judged their plausibility by comparing them to reported and inferred characteristics and actions of the offender. Participants elaborated on available information to test the plausibility of particular individuals being the offender (e.g. extracts 6.7, 6.8, 6.11, 6.17, 6.18, 6.20, 6.23, 6.27, 6.33) and mentally simulated potential alternative explanations for perceived states of affairs (e.g. extracts 6.1, 6.2, 6.8, 6.10, 6.17, 6.21, 6.27). Participants used a ‘trace, interview and eliminate’<sup>27</sup> (TIE) strategy with respect to potential named suspects (e.g., extract 6.26), but gave greater consideration to incriminating evidence than exculpatory evidence. The results indicate that a TIE strategy serves two purposes: focusing scarce resources on the most likely potential suspects and neutralising potential defence strategies in the event of a prosecution (extract 6.25).

#### *Rapid implication and elimination*

Participants’ sense-making about named individuals supported decisions about implicating and about eliminating them as suspects. A few participants made comments about the statements of two local farmers and the man whose car had been stolen and dumped near the scene to the effect that their alibis would be checked as a matter of routine. However, most of the

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<sup>27</sup> ‘TIE’ also stands for ‘trace, *implicate* or eliminate’ (Stelfox, 2009), a phrase that was sometimes used by participants in this study.

17 men mentioned in the case materials did not appear to merit consideration as potential suspects. A ‘quick test’ based on simple heuristics seemed to be used to rule people in or out. Examples of commonly-shared reasons that prompted further scrutiny of someone included physical proximity (being ‘in the right place at the right time’, e.g., extracts 6.2, 6.3, 6.19); past involvement in any crime, particularly sexual offences (e.g., extracts 6.10, 6.11, 6.15, 6.16, 6.20); denunciations by members of the public (Mann and Smithers, e.g., extracts 6.4, 6.5); and reports of potentially suspicious behaviour (Small and Simmons; e.g., extracts 6.17, 6.20). Reasons were also based on domain-relevant scripts (e.g., ‘boyfriend sexually assaults his girlfriend’, extracts 6.6, 6.7, 6.8), indicating that participants were employing domain-specific knowledge to test potential hidden meanings within perceived information.

A key means of rapidly exonerating someone was corroboration of their alibi (e.g., extracts 6.3, 6.9, 6.23, 6.26), which renders the hypothesis that they are the offender implausible. Several participants also quickly rejected an anonymous denunciation as a regularly-encountered example of the sort of information that can sometimes arise (e.g., extracts 6.4 and 6.5). These results suggest that rapid elimination of a potential suspect can be driven by expectancies about the kind of information yielded during investigation and shared rules about how seriously to take it, as well on the basis of case-specific information that undermines the plausibility of an individual being the offender.

#### *Effortful sense-making*

As Participant 13 pointed out, to consider someone a suspect, ‘reasonable’ rather than ‘whimsical’ grounds are needed (extract 6.32). Where there were initial reasons to implicate someone, this was a precursor to more effortful sense-making, which was particularly evident for Mann, Small and Simmons.



Mann was the only individual named in the materials who had a conviction for rape, but no specific evidence linked him to the crime participants were ‘investigating’. Yet even at the earliest stage, Mann’s criminal past and his proximity to the crime scene were enough for all participants to decide he warranted further research and for a sizeable minority to consider him a significant suspect (extracts 6.12, 6.26, 6.33). However, it was the emerging similarities between Mann’s *modus operandi* in the rape for which he was convicted and the offender’s behaviour in the current attack that elevated Mann to a high level of suspicion for most participants (e.g., extract 6.30). Thus it seems that evidence of past criminal behaviour is an important sign for detectives that an individual should be considered a suspect. As Wagenaar, van Koppen and Crombag note, when someone has previous convictions, “innocence is not the first thing that springs to mind” (1993, p.48). Similarly, Innes describes the power of “examples of past violence and deviance... indicators that this might be the sort of person who is likely to commit murder” (p. 172) to provide both explanation and justification for treating someone as a suspect.

Small prompted particularly elaborate sense-making by participants. Possible previous harassment of the victim (motive; extracts 6.17, 6.29), knowledge of her routine behaviour (opportunity; extract 6.18) and the potential for having oily hands (evidence; extract 6.14) on Small’s part led participants to generate hypotheses about how he might be the offender (extract 6.17) despite having previously assumed the victim had been attacked by a stranger (Chapter 4). Later, evidence of his previous criminal history was taken, as it was with Mann, as further incrimination (extracts 6.15, 6.16).

#### *Actions to resolve suspicion*

Participants proposed actions that would generate both incriminating and exculpatory information. They used mental simulation to explore actions that might provide evidence that an

innocent explanation was more plausible (e.g., extracts 6.23, 6.33). However, they also proposed actions that might yield evidence that would implicate a suspect in the crime, even if absence of that evidence would not rule them out (e.g. house search; extract 6.26, 6.28, 6.30). Such actions started with those that were most straightforward, for example, comparing a suspect's description with that given by witnesses or considering if he was familiar with the location (e.g., extract 6.8). If individuals could not be quickly eliminated then participants suggested more intrusive actions such as establishing his alibi or even arrest and search (extracts 6.3, 6.9, 6.20, 6.23, 6.26, 6.28-6.30, 6.33). Because of the margin of error in eyewitness descriptions, comparing a suspect with a physical description is not particularly diagnostic. Nor is knowledge of the location where the offence took place, because such knowledge could be held by many people who are not the offender. On the other hand, DNA linking a suspect to the scene is a strong incriminatory evidence, whereas a good alibi is a sound reason to eliminate someone from the enquiry. Participants often described what they expected or hoped to find by carrying out particular actions (e.g. extracts 6.23, 6.28, 6.30, 6.33) suggesting that mental simulation of potential outcomes supports decision-making about whether an action is worthwhile or justifiable.

*Summary: What makes a plausible suspect?*

Participants' comments were indicative of a shared understanding of the features that make someone a plausible suspect and suggest that detectives make decisions about suspects on the basis of the following types of information:

- a. **Past history of criminality:** this seems to strengthen the likelihood that someone is capable of committing the offence, but absence of previous criminality is not enough to eliminate someone.

- b. **Opportunity:** being in the right place at the right time is sufficient to consider someone a suspect but is weak grounds to implicate someone without a supporting script based on domain-specific knowledge or experience. People implicated by opportunity can be quickly eliminated via a corroborated alibi.
- c. **Evidence that links the potential suspect to the scene of the crime,** including forensic evidence, physical description and circumstantial evidence (extracts 6.20, 6.27, 6.34): clearly not all types of evidence have the same diagnostic weight, but some less diagnostic evidence may be weighted more heavily in the early stages of sense-making because of its potential to achieve a rapid elimination of an individual from consideration.

These features are relevant to two of the points that need to be proven in court: that the defendant is the true offender (evidence) and that he carried out the act for which he is charged (opportunity and capability). The third point to prove, that of *mens rea*, or intention (Owens, 1995), seemed of less importance to these participants. Perhaps the circumstances of the crime (attempted rape by a knife-wielding balaclava-wearing offender) provided little room for a suspect to claim that the act was consensual and therefore not criminal. Alternatively, it may be that with a stranger rape *mens rea* issues can only be resolved once a suspect is in custody. A final possibility is that evidence of previous similar behaviour (e.g., as with Mann) is for detectives evidence of latent motivation that needs no further consideration. Where discussion of motive did seem relevant was in participants' early consideration of the victim's boyfriends (extracts 6.7, 6.8, 6.17). This may be because if Moore or Small were tried for the offence a prosecution narrative would need to convince a jury that a current or former boyfriend might carry out the attack and to prove that sexual activity was non-consensual.

*Evidence of confirmation bias?*

Whilst this analysis indicates that participants were attending to and seeking evidence that would implicate individuals as potential suspects it does not follow that investigators necessarily fall victim to confirmation bias. As with their reasoning about the offender, participants showed a high tolerance of ambiguity. There was little evidence of fixation on single suspects: most entertained the possibility of multiple suspects until the last phases of the simulation. Similarly, Ask and Granhag (2005) suggested that detectives were more likely to acknowledge evidential inconsistencies against a potential perpetrator when they were alert to alternative suspects. The consideration of multiple suspects probably mitigates confirmation bias: previous research indicates that prompting individuals to consider alternative explanations reduces the likelihood of them making biased judgements (e.g., Hirt & Markman, 1995; Lord, Lepper, & Preston, 1984; Simon, 2004). Furthermore, the goal of such mental simulation was not, it appeared, to determine whether a particular individual was guilty, merely to test the plausibility of such a possibility, which would naturally involve considering all reasons why he might be the offender. Mental simulations allow us to make judgements about how seriously to take a claim by testing the internal consistency of an imagined sequence of events or state of affairs and can thus be considered an important preliminary to further investigation (Brem & Rips, 2000; Gaglio, 2004; Kahneman & Tversky, 1982; Klayman & Ha, 1987).

Participants' reactions to Simmons arrest in the final phase of the simulation did suggest that from this point they assumed he was the offender. In particular, although they argued that additional evidence was needed to prove Simmons' guilt, only few continued to suggest that other suspects should also be considered. At face value, this suggests that Taylor (2001) may be right to argue that the formal designation of an individual as a suspect is a turning point when

detectives think of him as the offender rather than merely as a potential suspect. This conclusion may be premature, however: first, participants specified forensic evidence (potentially strongly diagnostic) as critical to proving that Simmons was the offender. Had forensic results been inconclusive or negative, participants may have been forced to revise their beliefs about the offender's identity. Second, at this point in the simulation many officers had been participating for over two hours, and, aware that they were at the end, may have been unwilling to prolong the study with further discussion.

### *Conclusion*

Although confirmation bias effects may be demonstrated when students act as 'investigators' in laboratory settings (e.g., O'Brien & Ellsworth, 2007), this analysis indicates that detectives in more realistic conditions are less likely to show such effects (c.f., Ask & Granhag, 2007b; Snook & Cullen, 2008). Evidence of tunnel vision might be rarer still in a real investigation, where detectives experience higher stakes and greater accountability, which might reduce biased processing of investigative information (Tetlock, 1983), and have more time to consider the evidence. Furthermore, in real investigations investigators work with others who may generate more alternative investigative hypotheses. However, team situations also raise the possibility of 'groupthink' effects, in which a team collectively focuses on evidence-gathering against one suspect (Rossmo, 2008a). For instance, Kertsholt and Eikelboom (2007) showed that even experienced crime analysts, who should act as an 'independent' foil for the investigative team, were often biased in their sense-making toward the investigative team's hypotheses. The effects of detective team-working on tunnel vision is a further topic for examination in future research.

## CHAPTER 7: REFLECTIONS ON THE NATURE OF DETECTIVE SENSE-MAKING

*A police officer charged with an investigation cannot perform his professional duty unless he is able to... open his mind to the possibility that the incredible allegation might be true.* Paragraph 14.34, The Shipman Inquiry

## Introduction

This thesis makes theoretical, methodological and practical contributions to the understanding of detective sense-making, an essential part of investigative decision-making, problem-solving and action. In the absence of previous substantive research on this topic, the current thesis lays the groundwork for future research in this area, which has both theoretical significance and implications for detective training and practice. In this chapter, aspects of the theoretical framework developed in Chapter 1 are discussed in light of the results of the pilot and main studies and specific attention is paid to how the results of the studies presented in this thesis enhance our understanding of the factors that contribute to the success or failure of an investigation, and of what makes an ‘effective detective’. Finally, the advantages and limitations of the methods used in this research are discussed.

*Theoretical framework for understanding investigative sense-making*

The empirical studies presented here demonstrate the practical and cognitive complexity of the task facing detectives. According to the model developed in Chapter 1, at the start of a criminal investigation, detectives are faced with an indeterminate and inherently doubtful situation. Investigative information is often complex, ambiguous and contradictory, and thus subject to multiple interpretations. Detectives must direct the investigation by formulating

explanations about what happened and looking for evidence that favours one explanation over another. In this sense, a criminal investigation is a process of hypothesis generation and testing: each potential explanation of the facts is a hypothesis, and investigative actions test the validity of the hypotheses. Investigation can thus be viewed as using explanation-based reasoning to construct situation models (mental representations of possible states of affairs) that account for the investigative data. Furthermore, these investigative situation models are likely to be central in determining a detective's line of enquiry: by critically examining the models, the investigator identifies gaps in knowledge and unreliable assumptions that underlie inferences, and so directs the collection of further information that will help to refine or reject models (c.f., Cohen et al., 1998). Thus investigative sense-making identifies both possible explanations for perceived data and opportunities for action.

The four assumptions of the investigative sense-making model developed in Chapter 1 (Table 7.1) are now revisited in more detail, highlighting in particular the implications for understanding investigative success and failure.

<b>Assumption 1</b>	Investigative sense-making is goal-directed
<b>Assumption 2</b>	Investigative sense-making involves recognition and recall processes
<b>Assumption 3</b>	Investigative sense-making involves generating, elaborating and testing multiple hypotheses
<b>Assumption 4</b>	Investigative sense-making drives actions

**Table 7. 1: Assumptions underlying the investigative sense-making model**

*Assumption 1: Investigative sense-making is goal-directed*

The research presented in this thesis suggests that investigative sense-making is tightly focused on the core goals of detective work: to establish what crime (if any) has been committed, who the offender is and where evidence can be found, in other words, translating the messy realities of offences into “legally relevant forms” (Stelfox, 2006, p.19). This goal-directedness has the benefit of ensuring clarity about the purpose of investigative activity and the deployment of investigative resources. But it can also have negative consequences, in that some issues may be neglected because they are perceived by detectives to fall outside a narrow investigative focus. This is demonstrated in particular in Chapter 4, where the problem to be solved related to who sexually assaulted the victim. It appeared that the problem of who takes care of the victim was not one that falls within detectives’ ambit (Martin, 2005). Yet a sexual assault victim who feels that she is being believed and respected may be more willing to co-operate with an enquiry and may provide more and higher quality investigative information. Effective investigation may require taking a broad view of what constitutes an ‘investigative opportunity’.



Investigative sense-making takes place within an organisation whose purpose is to protect the public. An organisation's purpose inevitably gives rise to a culture within which certain actions and decisions are seen as proper, whilst others are inappropriate or beyond the organisation's remit (Innes, 2003), thus shaping the behaviours of individuals within it, including the orientation of sense-making (Keil, 2006). Three key ways in which organisational factors impact on investigative sense-making were identified in the current research. The first is via *legal frameworks*. The Criminal Procedure and Investigations Act (1996) requirement to consider all plausible lines of enquiry forces detectives to consider multiple plausible alternative hypotheses, and thus shapes the process and the outcome of sense-making. Furthermore, detectives must be alert to the possibility of a prosecution (e.g., extracts 4.6, 6.25). Research indicates that situations in which individuals are held accountable tend to promote effortful cognition and usually result in higher quality decisions, compared to low-accountability decision scenarios (Rieskamp & Hoffrage, 1999; Tetlock, 1983). New police officers begin learning about legal frameworks from the day they join the service, but it is likely that officers learn through personal and vicarious experience that neglect of plausible lines of enquiry or action can lead to investigative failure, with concomitant professional and personal embarrassment. Comments made by participants indicated they were well aware of this possibility (e.g., extract 4.8).

The tightness of the current legal framework means that detectives must be particularly alert to the dangers of making procedural errors: mistakes in the treatment of evidence which might lead to evidence becoming inadmissible in court, potentially causing a miscarriage of justice. But poor understanding of legal constraints can also negatively impact an investigation if a detective is over-cautious. A particular example of this was highlighted in an inquiry into why intelligence on convicted child murder Ian Huntley's previous sexual offences had not been

passed to police in Cambridgeshire when Huntley moved there from Humberside (Bichard, 2004). One reason may have been that Humberside police officers had misinterpreted the Data Protection Act and were nervous of breaching it (Bichard, 2004). Thus, a sound understanding of the ways in which legal frameworks constrain detective work must be accompanied by an understanding of the limits of those constraints and the flexibility within legal frameworks.

Organisational culture can also affect sense-making via *social evaluation* by peers, managers and, more broadly, the public. Participants made several comments about how their peers and managers might react to or tackle the ‘investigation’ (e.g., extract 4.10) indicating that social and interpersonal factors influence investigative sense-making (see also Crego & Alison, 2004). As outlined above, awareness of social evaluation heightens personal accountability and responsibility for decision-making, which may reduce ‘tunnel vision’ effects. However, fear of evaluation may also lead to rushed sense-making in an effort to reduce uncertainty and appear decisive; reluctance to admit to poor judgement; and attempts to ‘save face’ by minimising disconfirmatory evidence. Such effects might be noted in analysis of simulated investigations by groups or ethnographic studies of live investigations. The dangers of fear of evaluation may be mitigated by an organisational culture that focuses more on systemic sources of failure and less on individual blame, that tolerates ambiguity and ‘shades of grey’, and that values effective investigation above personal ambition.

This problem may be particularly acute in the case of sexual assault and rape allegations. In line with the findings of the current research, O’Keefe (2002) reported that concern with colleagues’ views impacted on the investigation of rape allegations for Irish detectives, particularly the fear of losing face by being ‘taken in’ by a false allegation. One possibility, then is that choosing to ‘no crime’ an ambiguous allegation may be a way of avoiding potential

embarrassment. Wrongful ‘no criming’ may feed the perception that false allegations are more common than they in fact are, creating a vicious circle in which detective beliefs about false allegations predispose them toward dismissing ambiguous but genuine allegations (Kelly et al., 2005). It should be noted that in the current research, detectives said that, regardless of their beliefs about the potential for the allegation in the simulated investigation, they would investigate it thoroughly unless and until it could be proven to be false. Nevertheless, the case used in the simulation was deliberately as unambiguous as possible and further research is necessary to establish whether detectives take a pragmatic ‘investigate regardless of personal beliefs’ approach in all sexual assault investigations. Meanwhile, deliberate efforts by police managers to address and counter myths about victims and offenders (e.g. misconceptions about false rape allegations) supported by firm information (e.g., official statistics; Feist et al., 2007) may be necessary to break this circle.

Finally, the *resources* police forces make available to CIDs also impacts on sense-making. Several participants commented about the way in which their evidence-gathering might be constrained by resources. The phrase “*just open another box of detectives*” featured several times across participants, suggesting wry humour that masked frustration with the lack of resources. Tight resources may promote more creative and efficient methods of investigation; an example is the use of rapid heuristic strategies to implicate or eliminate suspects observed in Chapter 6. However, tight resources may lead to an over-reliance on investigative ‘short cuts’, meaning that investigative opportunities are not exploited, evidence is missed and miscarriages of justice may occur. Where resources are scarce, therefore, effective detectives are likely to focus explicitly on gathering diagnostic evidence (i.e., that will allow detectives to differentiate

between alternative competing hypotheses) rather than taking a ‘laundry list’ approach in which actions are performed without proper thought as to what they are intended to achieve.

*Assumption 2: Investigative sense-making involves recognition and recall processes*

The results of the main and pilot studies showed that recall of general and domain-specific knowledge played a crucial part in the recognition of cues, inference generation and hypothesis development. Although the main study stimuli included a fraction of the detail of real investigations, participants nevertheless read and discussed up to 60 pages of information in between 72 and 152 minutes. They rapidly assimilated and processed large quantities of data as they worked through the simulation, distinguishing between relevant and irrelevant detail, and generating and evaluating inferences as they went.

*Investigative affordances:* The results of the main study suggest that experienced detectives are particularly alert to the multiple potential (and often hidden) meanings within investigative information, perceiving TBI situations through cognitive frames which focus on investigative opportunities. In this sense, investigative sense-making is *affordance-orientated* and consistent with the notion of affordances as first put forward by Gibson: “The affordances of the environment are what it offers the animal, what it provides or furnishes, for good or ill” (Gibson, 1979, p.127, cited in Chemero, 2003). The theory of affordances has much in common with bounded rationality theories, which suggest decision-making and problem-solving strategies are adapted to the environment in which they are deployed (Chase, Hertwig, & Gigerenzer, 1998; Gigerenzer & Goldstein, 1996; Simon, 1990). Cues in an investigative environment are salient, then, not just because of what they mean to a detective, but also for the opportunities they afford for action to achieve investigative goals. Meaning and affordance are thus intimately connected to an extent perhaps not fully reflected in the literature reviewed in Chapter 1.

Furthermore, inferences about affordances appeared effortless to detectives; when asked “what do you think is going on?” they frequently discussed actions as they discussed meaning, without obviously separating the two. Moreover, participants frequently went further, speculating (unprompted, and often at length) about the potential outcomes of actions (e.g., extracts 5.24, 6.23, 6.26). Expertise is believed to result from repeated exposure to similar problem situations, resulting in the gradual accumulation of structured and well-differentiated domain knowledge which can be readily retrieved and applied to new problems (e.g., Ball, Ormerod, & Morley, 2004; Dreyfus & Dreyfus, 2005; Feltovich et al., 2006). Similarly, the current results are suggestive of easily available and automatically activated knowledge about investigative possibilities.

Despite the amount of material that participants processed, it was often small details that suggested avenues of investigation (e.g., the offender smelling of smoke, extract 5.12). This is consistent with previous research indicating experts are better able than novices to discriminate between relevant and irrelevant detail (Feltovich et al., 2006; Shanteau, 1992b) as a result of frequent interactions with situations in which such details may be important (Murphy & Medin, 1985). This suggests that the elicitation and accurate recording of fine detail from witnesses may make a critical difference to an investigation, whereas leaving such a task to an inexperienced officer who may not recognise relevant detail may jeopardise an enquiry.

These findings have implications for detective training. Although information about the repertoire of actions at their disposal is important, trainee detectives would benefit from regular and repeated exposure to various investigative scenarios through case studies and training exercises that effectively simulate real investigations, so as to gain familiarity with investigative affordances (c.f., Cannon-Bowers & Salas, 2000; Cohen et al., 1998; Crego & Harris, 2002). This

should be followed by a period of ‘apprenticeship’ to a more experienced detective, although it is acknowledged that the critical lack of experience in the current UK detective cadre makes this a difficult aspiration to meet (Chatterton, 2008).

*Investigative theories:* Participants sometimes explicitly stated particular theories as they made sense of the data and their inferences suggested a diverse repertoire of implicit theories deriving from a combination of ‘police criminology’ and ‘folk psychology’. Examples include: ‘people leave traces’ (extract 4.18); ‘offenders don’t change MO’ (extract 5.3, 6.11); ‘criminals tend to offend in their local area’ (extract 5.28); ‘certain types of rape allegation are likely to be false’ (extract 4.9). Theory-based inferences can often be rapid and accurate, leading to more efficient and effective judgements by detectives, but mistaken theories and over-reliance on heuristic judgements may cause detectives to assume too much and make erroneous judgements in less common or clear-cut cases. A specific example is the judgement by detectives initially investigating the death of Dr Harold Shipman’s patients that the deaths were not suspicious and no crimes had occurred (Smith, 2005). The detectives’ ‘folk psychology’ assumption that doctors do not kill their patients meant that Shipman was able to kill three more patients before a new investigation uncovered the truth (Stelfox, 2009). Another generic example is the wide-spread acceptance by legal professionals of ‘rape myths’ (Brown et al., 2007), which may contribute toward attrition in genuine rape cases. Further research is necessary on the nature and accuracy of detectives’ criminological and folk psychological beliefs to identify systematic and persistent mistakes. Meanwhile, more could be done to promote detectives’ knowledge and understanding of relevant evidence-based criminological and psychological theories.

Detectives’ implicit theories also influence social judgement (Read, 1987). Participants in both the pilot and main studies often identified numerous potential suspects and appeared willing

to consider a wide range of individuals as potential criminals. This could be because of their legal obligation to consider all plausible lines of enquiry (CPIA, 1996). However, there is some evidence that experienced police officers are generally more suspicious of others than novice officers or individuals from a non-police background (Masip, Alonso, Garrido, & Antón, 2005). Thus, it is plausible that regular and repeated contact with criminals means that indicators of suspicion come readily to an experienced detective's mind (Innes, 2003). Additional research, perhaps comparing the reactions of non-police participants or police probationers might allow this tentative suggestion to be explored further.

In both the pilot and main studies detectives paid particular attention to individuals who had been named in the vignettes and case materials respectively, suggesting the application of the investigative heuristic: “anyone who comes to attention in an investigation could be a potential suspect”. In successful cases, by definition, the offender will have come to notice during the investigation so this is not an unreasonable rule of thumb to use. However, as with all heuristic strategies, it may sometimes lead detectives astray: a detective focused on a plausible and representative suspect who happens to have been named in the investigation risks ignoring other potential suspects who may not have yet come to notice. An effective detective will keep reminding themselves to keep an open mind about potential suspects.

*Assumption 3: Investigative sense-making involves generating, elaborating and testing multiple hypotheses*

Participants seemed able to develop several hypotheses to account for perceived information, suggesting the mental construction of multiple situation models. The richness of mental simulation and the ability spontaneously to generate multiple counterfactual explanations was a striking feature of the current research, and an aspect of detective cognition that previous

research has perhaps underappreciated. Experienced detectives with rich domain-relevant and general knowledge may be more effective at mentally simulating alternative explanations for perceived data. Novice detectives, on the other hand, may not have enough experience to generate multiple hypotheses, which could lead to premature commitment to an erroneous but plausible investigative hypothesis. However, even experienced detectives may also sometimes make poor judgements: in pressured situations a ‘satisficing’ strategy, where the first plausible explanation is taken as true without further consideration to alternatives, may be used (Simon, 1990). This suggests that even when a plausible explanation has been generated, effective detectives search for and remain open to other plausible explanations.

This further implies that detectives should be encouraged to generate multiple explanations for data, including where possible consulting with others about alternative hypotheses, and be prepared to suspend judgement about which is correct. Consideration could be given to recommending to detectives techniques that promote the generation of multiple hypotheses. One example is the ‘crystal ball’ method, where decision-makers are told that a crystal ball that can see into the future tells them their assessment turns out to be wrong (Cohen et al., 1998). Being forced to explain why the assessment could be wrong forces decision-makers to think of new explanations for what they have observed (Cohen et al., 1998).

*Content of situation models:* Features of investigative situation models included criminal and non-criminal explanations for a TBI situation (Chapters 2, 4), characteristics of offenders that might allow them be identified and/or apprehended (Chapter 5) and circumstances under which named and unnamed individuals might be the offender (Chapter 6), all within temporal and spatial frames. Three particular features of investigative situation models are suggested by the results of the current research. First, such models have a narrative structure. Second, information



relevant to the investigative goals is prioritised in investigative situation models. Third, such models pay scant attention to offender motivation. Each feature is now explored in more detail.

That detectives' mental representations of investigative situations have a narrative structure is in line with research reviewed in Chapter 1: narratives are effective ways of 'chunking' information that relates to human actions and events and thus allow large amounts of information to be assimilated rapidly and assessed holistically. However, there is a risk that plausible narratives generated to explain investigative can later be recalled as fact. Effective detectives need to take particular care to differentiate explicitly between facts and narrative elaboration.

Given the goal-directedness of investigative sense-making (see Assumption 1), it is unsurprising that mental representations of investigative situations prioritise information about the criminal or non-criminal nature of the situation, the characteristics and possible identity of the offender, and investigative affordances. However, other forensic professionals' mental representations of an investigative situation are likely to be influenced by their own perspectives and prioritise different types of information to detectives'. An interesting direction for future research is to compare detectives' situation models constructed during a simulated investigation with those of other forensic and non-forensic professionals completing the same simulation to draw out aspects of sense-making that may be related specifically to investigative expertise as opposed to general forensic knowledge or common sense. This, and similar comparison data from other professionals, including lawyers (both prosecution and defence), forensic scientists, psychologists and rape counsellors, would provide insight to where police sense-making deviates from the understanding of others with whom they might work. This would indicate where additional detective training might be of benefit and offer avenues for enhancing co-operation

through mutual understanding. It also suggests another way in which detectives might become more effective: Viewing a TBI situation from another professional's perspective may highlight additional pertinent information or suggest alternative hypotheses.

A particular example of where greater understanding of another's perspective might be valuable is the role of forensic science in detective work. Although forensic evidence provides effective opportunities for identifying unknown offenders and linking suspects to crime scenes, it has been suggested that police officers tend to have an over-confident view of the strength of forensic evidence (Roach & Pease, 2006). The danger is that relying too heavily on forensic evidence can mean that "effort is deflected from conscientious detection of the conventional kind" (Roach & Pease, 2006, p.7). Indeed, Roach and Pease warn against letting forensic science "overshadow the detection process as a whole" (2006, p.7). An experienced forensic scientist completed the initial phases of this study, and analysis of his data would provide a benchmark for good practice and realistic expectation in forensic search and capture in the early stages of the investigation of sexual assault, which could be compared with the comments of detective participants.

One surprising aspect of the investigative situation models constructed in the pilot and main studies was that consideration of offender motivation appeared to be rare. Establishing motive is often considered a critical part of an investigation (Innes, 2003) yet participants appeared to raise motive only when it was not immediately obvious why a particular suspect might be the offender. Thus, there was no requirement to speculate on a motive for why a man with a violent history might be abusive towards a child (the *Mills* scenario), whereas it was important to justify why someone might try to murder their business partner (the *Kimpton* scenario). Similarly, in the main study, there was no need to speculate why a convicted rapist

(Mann) might sexually assault a woman, whereas a motive is essential if one is to accuse her boyfriend of the attack (e.g., Moore, Small). One possibility, then, is that ‘motive’ has a role to play if a plausible narrative about an individual cannot be constructed without it (Alison & Barrett, 2004) but as it is of limited utility in identifying investigative opportunities it is not routinely considered by detectives. Alternatively, motive may not be stated explicitly because it forms part of a set of implicit and shared understandings about criminal behaviour (part of ‘police criminology and folk psychology’). However, failure to consider motive may in some cases lead to investigative mistakes: consideration of motive plays an important part in constructing hypotheses about “incredible allegations [that] might be true” (The Shipman Enquiry, paragraph 14.34 [Smith, 2005]). Thus, neglect or misunderstanding of motive might cause non-obvious suspects to be missed or evidence against them ignored, or may cause a crime to be wrongly classed as a non-crime. A more explicit consideration of motive may enhance the quality and quantity of mental simulations thereby mitigating the risk of investigative failure.

A final interesting issue is the way in which the nature of the TBI situation influences sense-making. More ambiguous TBI situations seemed to prompt more diversity of sense-making in the pilot study, suggested that sense-making may be heavily influenced by the degree to which a TBI situation can be matched to a legal schema. In particular, TBI scenarios which appear to align closely with a legal schema may prompt a reduction in effort devoted to sense-making. Whilst this may increase the efficiency of investigative sense-making, the surface features of some scenarios may appear to align with a legal schema yet further investigation may uncover a more complex situation. Assumptions about legal ‘fit’ and consequent failure to dig beneath the surface could thus result in investigative failure.

The relationship between scenario characteristics and sense-making could be explored in a series of more controlled studies in which aspects of vignettes (e.g., salience of suspect, presence of forensic material) are systematically varied in order to test whether increasing alignment between vignette characteristics with elements of a legal argument does indeed reduce the extent of sense-making.

*Confirmation bias and tolerance of uncertainty:* The current findings suggest that detectives can tolerate high levels of ambiguity and uncertainty about a TBI situation. For instance, in the main study, participants appeared to keep an open mind about crimes, characteristics of offenders and identities of suspects until a late stage of the ‘investigation’. Chapter 4 showed that most detectives simultaneously entertained the possibilities that the crime had and had not occurred as reported until corroboration of the victim’s account was received. Chapter 5 illustrated how, when attempting to establish the likely characteristics and identity of the offender, detectives considered multiple explanations for perceived data, rarely making definitive judgements about uncertain information. Chapter 6 demonstrated that detectives maintained an open-minded stance toward suspects until a very late stage in the ‘investigation’, with little evidence of ‘tunnel vision’ in relation to any one suspect.

Evidence that being forced to consider alternative explanations can be an effective defence against confirmation bias is reported by Simon (2004): instructions to participants tackling a legal decision task to “take some time to seriously consider the possibility that the opposite side has a better case” (p.544) resulted less evidence of confirmation bias compared to a simple instruction to “be unbiased” (see also Fischhoff, 1977; Hirt, Kardes, & Markman, 2004; Hirt & Markman, 1995; Lord et al., 1984). This literature, together with the current results, would seem to suggest that confirmation bias should be less prevalent in investigations than some

(Taylor, 2005, for example) might fear. However, although remaining ‘open-minded’ mitigates the effects of confirmation bias and thus reduces the risk of a miscarriage of justice, remaining ‘open minded’ can sometimes be a form of decision avoidance. Thus it is suggested that effective detectives remain open-minded about investigative hypotheses but take steps to test them and are prepared to reject hypotheses where strong disconfirmatory evidence can be found. A novice-expert paradigm might allow these tentative suggestions to be explored further in more rigorous conditions.

*Evaluation of hypotheses:* In the pilot study, and more obviously in the main study, participants elaborated, often at length, about the stimulus information, demonstrating two inter-connected types of thinking: mental simulation and generation of counterfactual explanations. Although much of the research on these phenomena is concerned with their automatic activation for emotional functions (e.g., processing or preparing for emotional events, regret, for reviews see Gaglio, 2004; Roese & Olson, 1995), both types of thinking can also be conscious and deliberative (Kahneman, 1995). Mental simulation can be a heuristic strategy for estimating causality and assessing plausible antecedents or consequences of perceived affairs (Kahneman & Tversky, 1982). Counterfactual thinking also supports judgements about causality because it allows sense-makers to estimate “what must change (and how) in order to cause a different outcome” (Gaglio, 2004, p.539), thus allowing detectives, for example, to anticipate the potential outcomes of different action choices. Expert problem solvers appear to engage in more spontaneous mental simulation and generate more counterfactual explanations, and at a deeper level, than novices (Gaglio, 2004). This raises the possibility that one of the differences between novice and expert detectives might be found in the degree to which they engage in such reasoning in the course of an investigation.

A specific type of investigative hypothesis is whether a particular person or type of person might be a plausible suspect. The way in which detectives made judgements about potential suspects in the main study is an interesting finding and worthy of further systematic exploration, in particular, examining the weighting of factors to include or exclude suspects. The identification in the current study of the key dimensions along which detectives assess different suspects (*opportunity*, correspondence with the *evidence* and *capability*) offers an important starting point for further investigation.

*Assumption 4: Investigative sense-making drives actions*

The finding that participants' search for meaning in a TBI situation was closely linked to their search for action opportunities indicates how intimately sense-making and action-taking are connected in a detectives' mental models of investigations. This strategy enhances the chances of identifying and collecting evidence that will support a case in court. However, if a detective has neglected to generate multiple hypotheses, this focus on investigative opportunities could be problematic as it may promote confirmation bias by directing the search exclusively toward evidence which supports the favoured hypothesis.

A further notable finding was that action-taking was pragmatic, starting with easier, less intrusive but less diagnostic actions to reduce uncertainty (e.g., Chapter 6). This suggests that detectives start with 'quick win' actions: low-cost decisions that may reduce uncertainty in an investigation. However, 'quick win' actions may produce information that is not diagnostic (i.e., does not help differentiate between different potential explanations) but which may appear to support a favoured hypothesis, leading to confirmation bias. This suggests that effective detectives may use pragmatic 'quick win' actions to reduce uncertainty and as part of a 'positive test' strategy (Klayman & Ha, 1987; c.f. Ormerod & Ball, 2007) but do so within a broader

investigative context in which multiple explanations are generated and diagnostic evidence sought.

Another way in which pragmatism appears to play a part in investigative sense-making and action is through the mental simulation by detectives of potential outcomes of investigative actions. This simulation allows effective detectives to judge the costs and benefits of particular courses of action, thus helping them decide between different options. Novice detectives may not have the experience to anticipate the likely or potential consequences of their actions. Case-study and simulation approaches to training together with ‘on the job’ mentoring are two approaches to facilitating the development of knowledge about potential outcomes of actions.

Finally, it was suggested by the results of the pilot study that detectives’ actions may be influenced by their perception of the consequences of investigating a crime. Detectives may balance the short-term benefits of investigating and arresting an individual against the longer term impacts of an investigation (e.g., in child protection cases, removing a potentially abusive parent from the family home without firm evidence that abuse has occurred) and this sort of strategic decision-making may be part of being an effective detective. A strategic decision to close a case or recommend a non-executive intervention is not the same as investigative decision avoidance, however. Anticipation of a long and difficult investigation may have conscious or unconscious effects on an investigation, leading to a reduction of investigative effort and premature closure of a case. Premature closure of difficult or time-consuming cases may be exacerbated by an organisational culture that facilitates quantity over quality (e.g., performance indicators focusing simply on numbers of crime reports resolved).

*Individual differences in sense-making*

The analysis presented in this thesis does not cover the way in which sense-making was affected by individual differences between detectives. This is primarily because the focus of this thesis has been on developing a broad theoretical framework within which such differences may be examined. However, in both the pilot and the main studies differences between individual participants were often noted. Chapter 2 highlighted the diversity of explanations generated for TBI situations but noted this was not related to differences in rank, gender or levels of police experience. In the main study, variation between individual participants was found in their early assessments of the veracity of the initial report, ranging from “*right away I feel it is a genuine allegation*” (Participant 17) to “*keep an open mind*” (Participant 1) to “*prejudices [about victim fabrication] are there a little bit in the back of my mind*” (Participant 21). Similar variations were noticed in the way in which participants discussed the offender and suspects (Chapters 5 and 6). However, although extensive examination and comparison of transcripts indicated variation between individual participants, as with Chapter 2, it was not clear that this variation was down to the individual difference measures that had been collected here.

As an example, additional analysis (not reported in Chapter 5) showed that whilst most participants generated explicit inferences about the offender and engaged in a degree of speculation, mental simulation and narrative elaboration, this was not a universal strategy. Some participants provided little or no explicit interpretation on the basis of existing or new information, restricting their discussion to stating what actions they would take. For example, Participant 1’s response to the SOCO report (document 4b) was simply: “*The discarded items of property, you know would probably wanna get the woollen ski mask, balaclava prioritised... off to the lab to see if there’s any retrievable [DNA] from there*”.





Participant	Years in police service	Police rank	Phases completed (time taken)	Number of inferences generated*
P1	26	Sergeant	11 (109 mins)	1
P6	27	Inspector	8 (108 mins)	2
P20	29	Constable	11 (94 mins)	3
P7	17	Sergeant	11 (149 mins)	19
P3	12	Constable	7 (152 mins)	21
P21	9	Inspector	11 (133 mins)	24

**Table 7. 2: Characteristics of six participants making the greatest and fewest number of the inferences included in Table 5.2**

Table 7.2 compares the characteristics of the three participants who made fewest explicit inferences about the offender with the three who made most. Out of the 36 inferences in Table 5.2, Participants 1, 6 and 20 made three or fewer, whilst Participants 3, 7 and 21 made 21, 19 and 24 inferences respectively. Participants making more inferences were those who also took longer to complete the exercise, which is perhaps unsurprising. Indeed, a significant correlation between number of inferences and time taken for the entire sample was found ( $r=0.52$ ,  $p=0.007$ ). However, there was apparently no association between police rank and number of inferences (also replicated through the sample: Kruskal-Wallis test of association,  $H=0.18$ ,  $df=2$ ,  $p=0.91$ ) and although the two groups differ in terms of their years in police service, with all three in the ‘low inference’ group having 26 or more years’ experience, this was not replicated through the sample (Spearman rank order correlation  $r= -0.21$ ).

There are several potential explanations for the individual variations noted during this analysis, although given the exploratory nature of these studies any conclusions about their source is highly tentative. One possibility is that individual differences in sense-making *are* related at least in part to rank (and thus to detective role, with more senior ranks being more likely to take on a strategic management role) or experience, but that the study design was not adequate to allow such differences to emerge more explicitly (for instance, all participants were asked to take the same SIO role). Alternatively, role-related differences may become apparent with larger sample sizes. Although relatively little evidence of variation between ranks was found in the main or pilot studies, one potential exception was identified in chapter 6. Although Inspectors were no more or less likely than Constables or Sergeants to suggest arresting one or more suspects, they did seem more alert to the strategic implications of doing so, as illustrated in extracts 6.28, 6.29 and 6.32.

The lack of clarity in the results of the main study in relation to individual differences may have been a consequence of the study design. The data presented was highly complex and the method of eliciting detective's comments relatively unstructured. Different analytical methods (for instance, more structured data collection together with content analysis and multivariate analysis c.f., Krippendorff, 2004) may reveal the nature and sources of individual differences more clearly. The use of a verbal protocol paradigm may also have influenced the results: such methods work best with participants who are both willing and able to verbalise their thought processes (Ericsson, 2006). Participants who gave little outward sign of sense-making may have been those who found introspection difficult, perhaps because inferences were being made automatically and were thus not consciously available. Such participants may be making sense of investigative data at a deeper level than can be examined with the current method.

Another possibility is that these participants approach all investigations with the mindset that speculation is a threat to the objectivity of an investigation, or perhaps wanted to give this impression to a researcher. Similarly, the requirement to give lengthy written answers to questions in the pilot study may have resulted in differences between participants' answers because of their writing, rather than sense-making, ability.

A further possibility is that the source of individual differences in sense-making is not wholly related to those aspects of police service (rank or years of service) collected here (c.f., Paoline, 2004). Instead, it may be found in more detailed examination of the nature of a detective's experience. Or it may be related to traits unconnected with police service and not measured in this study, such as need for cognitive closure (Ask & Granhag, 2005; Webster & Kruglanski, 1994), need for cognition (Cacioppo & Petty, 1982), emotional or social intelligence (e.g., Kihlstrom & Cantor, 2000) or ambiguity tolerance (Furnham & Ribchester, 1995).

Ultimately, however, the source of variation between individuals may be an inevitable consequence of the type of task that they were tackling. Shanteau (2001) noted that in field and laboratory studies experts are often found to disagree. However, he argued that agreement between experts is a function of the characteristics of tasks they are expert in rather than (or as much as) of individual differences (Shanteau, 1992a, 2001). Thus, tasks in which the characteristics are relatively predictable and stable yield greater agreement between experts than tasks in which characteristics are dynamic and unpredictable (Shanteau, 1992a, 2001). Criminal investigations are focused on understanding, predicting and influencing human behaviour, which is inherently unpredictable and dynamic (Alison & Barrett, 2004; Zimmerman, 2008), thus leading to sense-making and problem-solving variation between detectives.

However, the source of individual differences in sense-making remains open to further investigation. Whilst it is acknowledged that this could be considered a significant limitation of the current research, the perspective taken here is that detailed exploration of the factors that may account for individual differences cannot take place until the general features of the landscape of detective sense-making have been identified. It is argued that the research presented in this thesis has provided an important foundation for such work to continue and offered several potentially fruitful avenues for future studies focused on individual differences.

### Methodological issues

#### *Strengths of simulation method*

The dynamic simulation method developed for the main study in this thesis was a novel method that resulted in an abundance of rich data, allowing insight to detective problem-solving. In particular, this method demonstrated several advantages over other techniques, such as interviews or observations, for studying sense-making and investigative decision-making. For instance, O'Keefe (2002), in her study of detective decision-making in rape investigations, interviewed detectives about their experiences of rape investigations, yielding some interesting and important results, particularly in relation to the social context within which such investigations take place (see above). However, as with the Critical Incident Technique (Flanagan, 1954), which has also been used in studies of sense-making and decision-making in real-world situations (Butterfield, Borgen, Amundson, & Maglio, 2005; Klein, 1996), such an approach relies on retrospective accounts of individual experiences. Such accounts may be influenced by the limitations of memory, particularly biased recall, for instance, remembering only those aspects of an investigation that are consistent with one's own stereotyped attitudes or expectations (c.f., Cohen, 1996; Kunda, 1999; Milne & Bull, 1999). The current method, on the

other hand, allows capture of detectives' thoughts in 'real time'. The current method also revealed the unexpected finding, discussed above, that investigative sense-making involves a high reliance on identifying opportunities for action. Questions about situation understanding and questions about action choices tend to be separated in CIT interview protocols and other methods for Cognitive Task Analysis or elicitation of expert knowledge (see, for example, Crandall et al., 2006; Hoffman et al., 1995). This separation would obscure the intimate connection between action choice and situation understanding that was observed in the current study.

Recent research on detective decision-making taking place in a simulated training environment (e.g., HYDRA, Alison & Crego, 2008) highlights the value of observational studies of quasi-realistic investigative scenarios (Alison et al., 2008; Wright, 2008). However, these environments provide few opportunities for the researcher to intervene, for instance, to ask individual detectives about their thought processes (Alison et al., 2008). Furthermore, the focus of study tends to be on investigation as a group process meaning that many of the issues related to individual detectives' sense-making are unavailable for research scrutiny.

Compared to other methods, then, the dynamic simulation method used in this research is unique in providing insight to the cognitive processes underlying dynamic investigative sense-making by individual detectives.

#### *Limitations of the methods used*

The key limitations of the methods used in this research relate to practical issues for participants, analytical tractability and to threats to validity.

*Practical issues:* As mentioned in earlier chapters, both studies were demanding for participants, with the vignette study involving an hour's writing or more and some participants in the main study staying for over two hours. Despite this, participants did not find the studies intrinsically

difficult to complete (as measured by the ‘ease of completion’ ratings in the vignette study, and by participants’ comments during the debrief of the main study).

*Analytic tractability:* More significant than any practical issues were the analytical challenges of dealing with the resulting data. Both the main and pilot study methods yielded extensive amounts of rich data. The advantages of having such a large body of data to mine for aspects of detective sense-making must be offset against the particular challenges posed by such a dataset. The pilot study produced 164 sets of handwritten answers, some extending over several pages, and the main study resulted in nearly 40 hours of recorded interviews, yielding a total of over 193,000 words when transcribed. The main study in this thesis focused on key actors within a TBI situation, but there are other aspects of participant sense-making and problem-solving that could have been explored, including sense-making about unnamed suspects, judgements about linking of incidents, evaluation of witness evidence, quality of decision-making around forensic search and capture, and coping with strategic pressures such as resource management. A key challenge was, therefore, deciding what to focus on and what, regrettably, needed to be left to one side. Ultimately, however, the need to build a foundation for studying investigative sense-making via exploratory research makes an open-ended and flexible method of data collection arguably the most appropriate method, despite the challenges it raises.

*Threats to validity:* As discussed in Chapter 3, the methods used in the main study raise several potential threats to validity. The issues include ecological validity, the use of a verbal protocol method, generalisability, impression management by participants, and the potential for the researcher to have a biased perspective.

First, it is acknowledged that although more realistic than highly controlled laboratory studies, a simulated investigation and a set of vignettes are far from being perfectly ecologically

valid representations of investigative situations. The limited time available to detectives in the simulation, the absence of real people (witnesses, victims, suspects and colleagues) with whom to interact, the reliance on written material and the lack of opportunity to visit crime scenes were all highlighted by participants as factors that undermined the realism of the study.

A second concern may be the use of a verbal protocol method. The strengths and weaknesses of such techniques have been extensively discussed (see, for instance, Ericsson, 2006; Hamm, 2004; Nisbett & Wilson, 1977; Payne, 1994). However, no method of measuring cognition has perfect validity (Graesser & Clark, 1985) and the opportunities for understanding offered by rich data generated using verbal protocols offset the disadvantages.

The third challenge is the generalisability of the results. The present studies involved a small number of participants from two south of England forces. Although bound by the same laws and subject to oversight from the Home Office, Chief Constables have considerable autonomy. This, together with the fact that UK police forces have different histories, different strengths and different constituencies (from the urban focus of London's 32,000-strong Metropolitan Police, for instance, to the largely rural environment policed by 1700 police officers in Norfolk Constabulary, Mulchandani & Sigurdsson, 2009), mean that caution must be applied in generalising the results of research conducted in any single force. A further consideration relating to generalisability is whether the results of the main study reflect detective sense-making generally or whether they are specific to sense-making during the investigation of a relatively obvious stranger sexual assault. These are legitimate and important questions. However, the focus of the current thesis was on the cognitive processes involved in investigation and it might be argued that, at a cognitive level, the process of investigative sense-making is probably consistent across investigative domains, even if the constraints on and working practices in investigation



differ between forces and between crime types. This suggestion is, of course, open to empirical examination.

Another potential threat to the validity of the results in the present studies is the danger that participants monitored or altered their responses to manage the impression they made on the interviewer or fellow officers. For instance, some participants in the pilot study, which was administered during training courses, may have suspected that their data would play a part in their course assessment. Similarly, participants in the main study may have been affected by the knowledge that a senior officer had initially requested their participation and may have wondered whether he might have access to their interviews. However, three factors that probably reduced the likelihood of impression management bias. First, extensive assurances about confidentiality were provided by the researcher and the police staff involved in recruiting participants. Second, the researcher was able to establish good rapport with participants, particularly in the main study (see Chapter 3), creating an atmosphere in which potentially controversial views could be (and often were) aired. Third, it could be argued that in a real-life investigation, impression management is no less a factor than in this study; indeed, the pressures are probably greater, as detectives investigate in view of peers, superiors and, eventually, the court.

A final threat to validity is the potential bias of the researcher, discussed extensively in Chapter 3. Given that qualitative analysis is inherently subjective, this is a common problem (Seale, 2004). Strategies for minimising bias used during this study included discussing the results with others, exposing the analysis to peer review and extensive introspection and rechecking of the data to expose biased interpretations. Ultimately, however, providing a clear explanation of the research method, honesty about the researcher's perspective and letting the

data take ‘front stage’ all allow readers to judge for themselves the credibility of the analysis (Bowen, 2005; Chenail, 1995; Miles & Huberman, 1994; Parker, 2004).

### Conclusion

Four broad research questions were identified at the end of Chapter 1. The first concerned how detectives assimilate and organise investigative information from the earliest stages of an investigation. This research suggests that detectives use mental simulation of plausible narratives to generate initial and continuing mental representations of investigative scenarios. The second question was whether detectives might fall victim to ‘tunnel vision’ by focusing on a single line of enquiry. This research indicates that multiple mental representations (in this thesis described as investigative situation models) appear to be constructed spontaneously, held in mind simultaneously and evaluated in parallel. Consideration of plausible alternatives is likely to reduce the negative impact of ‘tunnel vision’ in an investigation. The third question asked how the mental representations detectives build influence the actions they are aware of and choose to take. This thesis indicates that awareness of the possibilities for action is an essential part of investigative sense-making and investigative affordances are an inextricable part of investigative situation models. This in part addresses the final question: How might a failure in investigative sense-making influence the overall outcome of an investigation and how might such failures be minimised or avoided? It has been argued that investigative sense-making is critical to generating and pursuing appropriate lines of enquiry. Investigative sense-making failure involves a failure to make appropriate inferences, a failure to recognise opportunities for action and a failure to take into account possible alternative explanations for investigative data. Miscarriages of justice are unlikely ever to be completely eliminated, but it is argued that they are likely to be reduced where

‘effective detectives’ have the knowledge, experience and training to make appropriate inferences and use hypothesis generation and testing strategies such as those observed during the current research. This suggests further that the skills of being an ‘effective detective’ are not necessarily innate gifts but acquired over time and with experience. Having said that, of course, traits such as ‘open-mindedness’ and ‘tolerance of ambiguity’ could be learned long before an individual joins the police or becomes a detective, and thus could be selected for in appointing officers to detective work.

Rohrbaugh and Shanteau argue that basic and applied research should not be isolated from each other and that *relevance* should be the central concern when seeking to integrate such approaches (1999). They, and others, argue that in order to advance our understanding of expert performance in real-world environments, rich description and analysis is needed of the ways in which experienced operators tackle complex real-world tasks (Hunt & Joslyn, 2007; Rohrbaugh & Shanteau, 1999). This thesis has attempted to rise to these challenges in relation to detective work. It makes a significant contribution in three ways. First, by conceptualising detective work as problem-solving, rather than decision-making per se this thesis highlights the role of sense-making as critical to investigative success. Second, the development of a theoretical framework for investigative sense-making, grounded in existing social and cognitive psychological and criminological research, brings together a range of theoretical concepts within one coherent model. Third, by developing a novel method which yielded data that supported the investigative sense-making model and also resulted in new insights to the complex and cognitively challenging process of detective work. By addressing a critical but previously neglected feature of detective work, the groundwork has been laid for further more controlled studies to examine the features of investigative sense-making.

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# APPENDICES

## APPENDIX A: EXPLANATORY MATERIAL

This Appendix includes a glossary of terms and an explanation of the rank structure of UK police forces.

## Glossary of terms

<b>ACPO</b>	<b>The Association of Chief Police Officers.</b> According to its statement of purpose ACPO is: "...an independent, professionally led strategic body. In the public interest and, in equal and active partnership with Government and the Association of Police Authorities, ACPO leads and coordinates the direction and development of the police service in England, Wales and Northern Ireland. In times of national need ACPO - on behalf of all chief officers - coordinates the strategic policing response" <sup>28</sup> . Scotland has a separate association: the Association of Chief Police Officers Scotland, or ACPO(S).
<b>CID</b>	<b>Criminal Investigation Division (or Department).</b> The term generally used to refer to plain-clothes detectives throughout the UK police.
<b>CSI</b>	<b>Crime Scene Investigator(s),</b> formerly Scenes of Crimes Officer(s) (SOCO). Police staff who search for, examine and preserve physical forensic evidence.
<b>CPIA</b>	<b>Criminal Procedure And Investigations Act (1996).</b> Together with associated Codes of Practice, this Act sets out the responsibilities of police and others regarding gathering, preservation and disclosure of information and evidence.
<b>DC</b>	<b>Detective Constable</b>
<b>DCI</b>	<b>Detective Chief Inspector</b>
<b>Detected crime</b>	Under Home Office rules, a crime is recorded as <b>detected</b> when the investigation has proved the allegation was authentic and a suspect has been identified and charged
<b>DI</b>	<b>Detective Inspector</b>
<b>DS</b>	<b>Detective Sergeant</b>

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<sup>28</sup> <http://www.acpo.police.uk>

<b>DSupt</b>	<b>Detective Superintendent</b>
<b>HMIC</b>	<b>Her Majesty's Inspectorate of Constabulary.</b> HMIC exists "to promote efficiency and effectiveness of policing in England, Wales and Northern Ireland" <sup>29</sup> and does this by conducting formal inspections of various aspects of policing functions and processes. Scotland has a separate inspectorate: Her Majesty's Inspectorate of Constabulary Scotland, or HMIC(S).
<b>HMCPsi</b>	<b>Her Majesty's Crown Prosecution Service Inspectorate.</b> Provides the same function as HMIC but for the Crown Prosecution Service.
<b>Home Office</b>	The government department responsible for, among other issues, UK police and policing policy.
<b>HRA</b>	<b>Human Rights Act (1998).</b> The Act that gives legal effect to the European Convention on Human Rights in England and Wales.
<b>IC (IC1, IC3)</b>	<b>Identity Code.</b> Shorthand term used by the police to describe perceived ethnicity of a subject. IC1 = White European; IC3 = African-Caribbean
<b>MIM</b>	<b>Murder Investigation Manual.</b> First published by ACPO in 1998, the MIM sets out policies and procedures to be followed during the investigation of homicide.
<b>'No criming'</b>	Under Home Office rules, a report is recorded as ' <b>no crime</b> ' if detectives can show that no offence has taken place (the practice is colloquially described as 'no criming')
<b>NPIA</b>	<b>National Policing Improvement Agency.</b> Established in 200?, the NPIA describes itself as "acting as a central resource to the police service, working for ACPO (Association of Chief Police Officers), APA (Association of Police Authorities) and the Home Office to improve the delivery of policing" <sup>30</sup> .
<b>PACE</b>	<b>Police and Criminal Evidence Act (1984).</b> Together with a set of Codes of Practice, PACE "provides the core framework of police

<sup>29</sup> <http://inspectors.homeoffice.gov.uk/hmic/>

<sup>30</sup> <http://www.npia.police.uk>

powers and safeguards around stop and search, arrest, detention, investigation, identification and interviewing detainees”<sup>31</sup>.

<b>PDF</b>	<b>Personal Description Form</b>
<b>PIP</b>	<b>Professionalising Investigation Programme</b> , launched in 2005 as part of the UK government’s police reform programme. “This programme is a jointly sponsored by ACPO/ NPJA, designed to improve the professional competence of all police officers and staff who are tasked with conducting investigations.” <sup>32</sup>
<b>RIPA</b>	<b>Regulation Of Investigatory Powers Act (2000)</b> . This Act makes “provision for and about the interception of communications, the acquisition and disclosure of data relating to communications, the carrying out of surveillance, [and] the use of covert human intelligence sources” <sup>33</sup> .
<b>SIO</b>	<b>Senior Investigating Officer</b> . The officer appointed to lead a criminal investigation. Their seniority depends on the seriousness of the investigation.
<b>SIU</b>	<b>Specialist Investigation Unit</b> . A unit existing in some police forces to carry out specialist investigations, for instance, of rape.
<b>SOCO</b>	<b>Scenes of Crime Officer(s)</b> . See CSI
<b>TBI</b>	<b>To-be-investigated</b> . A term used within this thesis to describe the initial situation facing a detective responding to a reported crime.

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<sup>31</sup> <http://police.homeoffice.gov.uk/operational-policing/powers-pace-codes/pace-code-intro/>

<sup>32</sup> <http://www.npia.police.uk/en/10093.htm>

<sup>33</sup> <http://www.statutelaw.gov.uk/content.aspx?activeTextDocId=1757378>

*Rank structure of UK police forces*

The rank structure of each UK police force is identical up to Chief Superintendent.

Starting with the most junior, the order of seniority is as follows:

- Constable
- Sergeant
- Inspector
- Chief Inspector
- Superintendent
- Chief Superintendent

Above Chief Superintendent the ranks in provincial forces continue:

- Assistant Chief Constable
- Deputy Chief Constable
- Chief Constable

The senior rank structures in the Metropolitan Police and City of London Police differ from the rest of the UK police service. For more detail see Mawby and Wright (2008).

## APPENDIX B: MATERIALS USED IN VIGNETTE STUDY (Chapter 2)

*Written instructions given to participants***Assessing initial reports**

In this study you are given four reports to evaluate. For each report, imagine that you are the officer in the case and are expected to deal with the report.

You will be asked four questions about each report:

**1. Explain what you think is going on here and why.**

In this answer, do not simply restate the information but give an account in your own words of what you think has happened / is happening and give the reasons why you think this.

**2. Are there any alternative explanations to account for this information? If so, please say what they might be, and why.**

Say here what alternative explanations there might be in this case. There is no upper or lower limit on the number of alternatives you can give.

**3. What is your initial line of enquiry and why?****4. What would your first actions be?**

Say here what you believe are the important things to do in the first few hours of the investigation. There is no upper or lower limit on the number of actions you can list.

Please answer the questions in the answer book provided and if you require additional paper, please ask.

Please think carefully about your answers. There is no time limit for this study but most people find that they finish within an hour and a half.



*Richard WALSH*

You receive a report from Richard WALSH a taxi driver that he has been robbed. Two weeks previously he was directed by control to pick up a fare outside WETHERSPOONS Public House. It was shortly after midnight. The male got in the front of the taxi and said he wanted to go to Queen's Road, which would have cost around £2.50.

On the way he took off his shirt and said, "do you fancy me?" He touched WALSH'S leg and suggested going for a drive 'somewhere quiet'. WALSH drove to a nearby car park and stopped the taxi. The male said, "If you want it you'll have to pay". WALSH said he was frightened and handed over his cash bag, which contained about £70. The male got out of the vehicle and walked off and said, "I'd keep quiet, you know what I mean". WALSH said he did not report the incident because he was too embarrassed.

WALSH said the same man got in his taxi today. He had been directed to collect a fare from 25 Queen's Road. He pulled up outside the address. The man ran out of the house and jumped into the front of the taxi. He told WALSH to take him to the Market and said, "You're frightened of me aren't you. You fucking queers are all the same!" WALSH said he thought he was going to be assaulted drove to the Market and handed over his cash bag. The man took it and walked off.

The duty controller told WALSH he recognized the man's voice as a regular called Matthew Morgan.

*Jerry KIMPTON*

At 1350 hours police receive a 999 call [emergency call] from Richard ELLIOTT asking for assistance at Flat 3, 36 Bradford Street. This is the home address of Jerry KIMPTON and is situated on the first of four floors. There are eight flats in all. Access to the upper floors is via stairs or a lift, which leads to the front door of each flat. Flat 3 has one entry/exit door.

ELLIOTT said that he is the junior partner at ELLIOTT and KIMPTON Insurance Brokers. He is concerned because his partner Jerry did not arrive at work today. This was extremely unusual. He had phoned several times earlier but there was no reply. He decided to call round during the lunch hour. ELLIOTT had looked through the letterbox and saw what appeared to be blood in the hallway at which point he called the police from his mobile phone.

Uniform officers attend the premises. The officers tried to raise KIMPTON but there is no reply and the front door was locked. They forced the front door and entered. There were no apparent signs of disturbance within and all the windows were closed. KIMPTON was found alive but slumped in a chair, with multiple injuries to the neck and chest. A bloodstained knife was at his feet. He was unconscious.

You arrive as paramedics are removing KIMPTON from the premises. ELLIOTT explains that he and KIMPTON had argued the previous evening about company profits.

*Luke JENKINS*

Gwen JENKINS contacts CID office asking for advice. Her grandson Luke JENKINS 4 years is staying at her address. This is the first evening of a pre planned weekend stay. Luke's father is her eldest son Christopher JENKINS, 23 years who still lives at the family home with his parents. Christopher is no longer in a relationship with the child's mother and access to his son in the form of the weekend visit are amicably arranged between Luke's parents. There are no court orders in place and Luke's mother is the only person to have parental responsibility.

At bath time she has noticed injuries to the child's buttocks and legs. JENKINS describes the marks as bright red and of a linear appearance as if he had been beaten with a stick. Luke will not say how he got the injuries. The only other concern is that he may have nits, which is an ongoing problem. Luke has now gone to bed and does not appear to be in any discomfort.

Luke's mother is Hayley DUVAL 19 years. Hayley is in a new relationship with John MILLS 27 years. MILLS has recently been released from prison and has moved into the council flat with Hayley. MILLS is a very violent man and has convictions for assault.

There is concern for Luke because Hayley is due to collect him the following morning. There are no SIU [specialist] officers available. It is 2130 hours and Luke has been asleep for a few hours.

*Susan SMITH*

You receive a call from Susan SMITH who believes that a large amount of money has been stolen from her sister Christine's Bank Account.

Christine is 50 years old, and lives in a secure residential care home. She is in the advanced stage of Parkinson's disease, wheelchair bound, and suffers from paranoid schizophrenia. Christine has been a resident at the home for six months. She pays her residency fees monthly by cheque from her Bank Account. Her cheque book is administered by the home and is kept secure within the managers office.

Christine receives disability and living allowances in the form of two pension books. Coupons from the books are signed by Christine then cashed by members of staff. John ADAMS the manager is responsible for paying this cash into Christine's bank account.

Susan explains that her father recently died and his estate has been divided between her sister and herself. An interim payment of £10,000 was made to Christine. This was in the form of a cheque, which was paid into Christine's bank account on 28th June 2002 by ADAMS.

Since this date 40 cash point withdrawals each being between £50 and £250 have been made. The last cash withdrawal was three weeks ago. There were no withdrawals prior to 28th June 2002. In addition four unusually large cheque payments of £1500 each have been made. Susan says her sister knows nothing about the cheques and has never had a cash card.

*Initial hypothesis coding dictionaries: WALSH, KIMPTON, JENKINS, SMITH,*

*Coding instructions:* Assign ONE code to each answer to question 1. If the participant has stated more than one hypothesis, choose the dominant hypothesis (e.g. “it could be hypothesis X or it could be hypothesis Y, but on balance I think it is hypothesis Y” should be coded as “Y”). If this is impossible, code as ‘XXX’

*Initial hypothesis coding dictionary: WALSH*

**HW1 Walsh has been the victim of robbery, theft or making off without payment**

Coded as present if participant states that Walsh has been the victim of either robbery, or theft, or making off without payment (MOWP) on both occasions.

*Examples: “It would appear that WALSH is saying he has been robbed on two separate occasions by the same individual”; “The second incident is a homophobic incident and again is a theft.”*

**HW2 Walsh is being blackmailed**

Coded as present if participant states that the fare is blackmailing WALSH, because WALSH and the fare have had sex and the fare is threatening to expose this, and/or WALSH’s (assumed) homosexuality.

*Example: “WALSH has collected this fare two weeks ago and has had some form of sexual contact with him. He is now being threatened / blackmailed by the individual for money. This is probably on the basis that WALSH is gay and doesn’t wish for this to be revealed.”*

**HW3 Walsh has stolen the money [and is now trying to cover this up]**

Coded as present if participant states that Walsh paid the fare for sex and is trying to cover up for the loss of the money, or that Walsh has stolen the money and is trying to blame someone else.

NB If participant states that the fare is threatening to expose Walsh’s sexuality, then the answer should be coded HW2.

*Example: “I think the offender and WALSH may have had sex / performed sexual acts and WALSH gave him money.”*

**HW4 Walsh has reported that he has been robbed**

Coded as present if participant simply states that Walsh has reported being robbed, without speculating on exactly what has occurred.

*Example: "WALSH is making an allegation of two robberies."*

**HW5 Gives no hypothesis**

Coded as present if the participant refused to speculate, gives no hypothesis about what happened, or states that it is impossible to tell what happened without further evidence.

*Example: "No threats to substantiate a robbery. Theft at this stage is difficult to prove and would require further detailed information."*

*Initial hypothesis coding dictionary: KIMPTON*

**HK1 Kimpton's injuries have been inflicted by Elliott**

Coded as present if participant states that Elliott is responsible for the injuries to Kimpton. N.B. if participant mentions both that the injuries may have been caused by Elliott or self-inflicted, then the answer is coded as HK3.

*Example: "ELLIOT has raised the alarm but could be a suspect as said had argument previous evening."*

**HK2 Kimpton's injuries are self inflicted**

Coded as present if participant states that Kimpton has attempted suicide, or has received the injuries accidentally, without the involvement of another person. N.B. if participant mentions both that the injuries may have been caused by someone else or self-inflicted, then the answer is coded as HK3.

*Example: "Appears at first possible that K has tried to take his own life"*

**HK3 Either Kimpton has been assaulted or the injuries are self-inflicted**

Coded as present if participant gives two alternative initial hypotheses: that the injuries may have been caused by another person OR self-inflicted. NB: Both alternatives must be present in order to code as HK3.

*Example: "Kimpton has possibly been attacked by another person who did not appear to gain forced access to this flat. Either that or he has attempted an unusual degree of self-harm."*

**HK4 Kimpton's injuries have been inflicted by someone else (unspecified)**

Coded as present if participant states that a person or persons unknown have assaulted Kimpton.

N.B. if participant mentions both that the injuries may have been caused by someone else or self-inflicted, then the answer is coded as HK3.

*Example: "Kimpton has been assaulted / attacked by unknown offender and injured"*

**HK5 Kimpton was injured in the course of a robbery or burglary gone wrong**

Coded as present if participant states that Kimpton's injuries were sustained during a robbery or a burglary.

*Example: "It could be that K has been the subject of a burglary / robbery"*

**HK6 Gives no hypothesis**

Coded as present if the participant refused to speculate, gives no hypothesis about what happened, or states that it is impossible to tell what happened without further evidence.

*Example: "There is not enough info to ascertain what has happened at this time."*

*Initial hypothesis coding dictionary: JENKINS*

**HJ1 Luke being abused, but no one is specified as being the offender**

Coded as present if the participant states that Luke has been or is being abused (or that it appears that Luke has been or is being abused), but no individual is specified as the abuser.

*Example: "Luke Jenkins has been beaten by one or more persons as yet unidentified"*

**HJ2 Luke being abused, multiple potential offenders mentioned**

Coded as present if the participant states that Luke has been or is being abused (or that it appears that Luke has been or is being abused), and several individuals are named as potentially responsible for the abuse. NB If the hypothesis is that Luke is being abused by Mills and Duvall, code as HJ3.

*Example: "Luke is being subjected to assaults from any one of John Mills, Hayley, Christopher, Gwen."*

**HJ3 Luke being abused by MILLS, or jointly by Mills and Duvall**

Coded as present if the participant states that Luke has been or is being abused (or that it appears that Luke has been or is being abused) by John Mills, with or without Duvall.

*Example: "My initial thoughts are that Mills is responsible"*

**HJ4 Gwen has reported injuries to Luke**

Coded as present if participant simply states that Gwen has reported suspected abuse or injuries without saying how the abuse or injuries may have occurred

*Example: “it would appear that Gwen is concerned with the welfare and safety of her grandchild and due to the injury she has seen on the child.”*

**HJ5 Gives no hypothesis**

Coded as present if the participant refused to speculate or gives no hypothesis about what happened.

*Example: “There is not sufficient information to form a theory as to how Luke came by these injuries”*

*Initial hypothesis coding dictionary: SMITH*

**HS1 The manager of the home, John Adams, is responsible for the theft of money from Christine’s account**

Coded as present if the participant states that Adams is responsible for the theft of the money, either through fraudulently applying for a cheque book or cash card for Christine’s account, or by using Christine’s existing cheque book.

*Example: “I think Adams is stealing money, due to the fact that he has responsibility for the cheque book”*

**HS2 Someone (unspecified) from the home with access to the manager’s office is responsible for the theft of money from Christine’s account**

Coded as present if the participant states that an employee or resident at the home is responsible for the theft of the money. Also coded as present if the participant states that the offender has access to the manager’s office without explicitly stating that the offender is linked to the home. NB If the participant names the offender as Adams, the manager the response should be coded HS1.

*Example: “At this time it isn't clear who is taking the money, although early indications suggest it may be a member of the staff at the care home where Christine lives”*



**HS3 Someone (unspecified) has stolen non-specific for the theft of money from Christine's account**

Coded as present if the participant states that someone has stolen from Christine, but does not specify that the offender is linked in any way to the home.

*Example: "My first thought is that money is being taken from her account by persons unknown."*

**HS4 Christine is responsible for the money being removed from her bank account**

Coded as present if the participant states that Christine is responsible for the disappearance of the money.

*Example: "Christine has done this herself without remembering due to her Parkinson's disease"*

**HS5 Someone has fraudulently applied for a cheque book and/or cash card for Christine's account**

Coded as present if the participant states that Christine's money has been stolen by the offender fraudulently applying for or intercepting a cheque book or cash card for Christine's account. NB: If the participant names the offender as Adams, the manager, the response should be coded HS1. If the participant specifies that the offender is a resident or employee at the home, the answer should be coded HS2.

*Example: "someone has applied in Christina's name for a credit card and used it to make withdrawals at the cashpoint."*

**HS6 Susan has reported that she believes Christine's money has been stolen**

Coded as present if participant simply states that Susan has reported suspected theft without saying how the theft may have occurred

*Example: "Susan Smith, the sister of Christine, believes this money has been stolen"*

*Debrief sheet passed to participants after pilot study*

*Note: Not all of the analyses mentioned in this debrief have been included in the thesis for reasons for space.*

There has been quite a lot of research into decision-making and problem-solving by individuals in some professions where important decisions have to be made under conditions of high stress, with complicated and uncertain information, time pressure and high stakes. The research has covered army officers, pilots, fire-fighters and medical staff etc., but, surprisingly, there has been very little on police officers. One of the purposes of our research is to try and redress this balance.

The scenarios you were given were based on real cases and are typical of the complex, ambiguous problems that detectives often have to solve. At present we do not know very much about how officers tackle such problems, or the factors that may influence their effectiveness (like length or type of police experience, age, or even gender), or whether training can improve detective problem-solving. The purpose of this study is to explore how police officers with different background characteristics interpret the ambiguous information typically available in the early stages of a criminal investigation.

We will be exploring four key issues in your results.

*1. How did you classify the problem?*

Previous research into problem-solving has indicated that how people classify problems can have an important effect on how they then go about solving them. The same may be true in police work. To take a hypothetical example: two twelve-year-old girls are reported missing. If detectives classify this as a 'children off on an adventure' scenario rather than a 'child abduction' scenario, this may lead to potentially crucial delays in an investigation.

In the study you did, we asked you what you thought was going on in each scenario as a way of finding out how you would classify the problem situation. One of the most striking things about the results we have collected so far is the variation in how different officers classified the situation. For instance, in the ELLIOT and KIMPTON scenario, 70% of participants classified this as a potential attempted murder by either ELLIOT or a person unknown whereas 26% of

participants classified it as a potential suicide/self-harming attempt by KIMPTON. The greatest agreement was in the JENKINS scenario, where 91% of participants thought that this was potentially a child abuse situation. The least agreement was in the WALSH scenario where 42% classified the situation as potential theft/robbery, 24% as potential blackmail and 9% as WALSH potentially trying to cover up his own theft/loss of the money.

In this exercise there are no right or wrong answers. But in real life, how you classify the situation could be crucial. We hope to compare the answers from relatively inexperienced officers with answers from highly experienced officers to see if there are any differences in HOW they classify the scenarios. But another important issue is WHY you classified the situations as you did.

## *2. What cues did you use?*

Previous research has indicated that there are often certain crucial pieces of information in problem situations that people focus on. These can be thought of as ‘diagnostic cues’ and are the pieces of information that might prompt you to classify a situation in one particular way rather than another. In one study, researchers found that experienced nurses could usually classify a baby who had an infection on the basis of a pattern of diagnostic cues. Interestingly, about half of the cues they used were not listed in the medical literature. This suggests that the way that people with lots of experience learn to classify problems may not necessarily be the way that is taught to novices.

We are interested in what cues police officers think are particularly diagnostic in their enquiries. For instance, in the hypothetical ‘abduction’ mentioned above, the age of the girls and the fact that were two of them might lead detectives to classify the problem as a ‘runaway’ situation rather than an abduction. It may be that this is a reasonable classification to make under the circumstances, but it highlights an area where further research might be useful: what percentage of child abductions involve more than one child? What is the influence of age of child on likelihood of abduction? Are there other cues that would have been more diagnostic and therefore appropriate to use (e.g. previous history of absconding, gender of child)?

The results of our study so far have again thrown up some interesting differences in what participants focused on when deciding what was going on. For instance, in the WALSH scenario there was no explicit statement that WALSH was gay. Yet comments that WALSH alleged his

fare had made, combined with the fact that WALSH had delayed reporting the incidents and had apparently handed over his cash quite readily led many participants to assume that WALSH was gay. This assumption then influenced the classification (particularly for those who classified it as a blackmail scenario). In the JENKINS scenario, 52% of participants suggested that MILLS (Luke's mother's new boyfriend) was responsible for abusing Luke. The diagnostic cues here were that MILLS had a history of violence, and that the injuries to the child had only appeared after MILLS had moved in with the child's mother. In the ELLIOT/KIMPTON scenario, those who said that this was a potential attempted murder (70%) tended to justify this by stating that the injuries were so extensive that they could not have been self-inflicted. Those who suggested that this was an attempted suicide/self-harm (26%) justified this conclusion by pointing out that there was no sign of forced entry and mentioning the argument about company profits as evidence that KIMPTON had a motive for suicide. In other words, it seems that what participants thought were diagnostic cues influenced how they categorised the situation.

### *3. How many and what sort of alternatives did you generate?*

According to previous research, people with lots of experience in a particular area tend to be able to generate more alternative explanations for the facts. This is because as you encounter more and more of the same type of situations, the more you become aware of the different variations in this type of situation. For instance, someone who has a lot of experience in investigating fraud may be able to distinguish different types of fraud (e.g. 'amateur' vs. 'professional' vs. 'inside job' etc) better than someone with no experience.

We are still going through the results, but there does not seem to be a relationship between the length of police service of participants and the number of alternatives you came up with. The type of scenario does seem to have an effect on numbers (for instance the ELLIOT/KIMPTON scenario generated an average of 3.7 alternatives, SMITH an average of 4.1, WALSH an average of 2.8 and JENKINS an average of 6.7) and there may be some sort of interaction between experience and type of situation. We may also have to look at the quality of the alternatives suggested rather than the simple numbers – in the JENKINS scenario, for instance, participants could generate numerous alternative hypotheses by simply listing all the individuals mentioned in the scenario as being potentially responsible for abusing Luke.

We ran the same exercise with a group of students<sup>34</sup> who had no experience of police work. One interesting result that emerged was that police officers consistently came up with more hypotheses than the students. This was particularly striking in the SMITH case: police officers tended to be more aware of the possibilities for fraud than students, who tended to assume that the case was one of theft. This suggests that even a relatively short time in police service makes officers aware of the number of different alternative explanations that could exist in particular scenarios.

*4. How did your initial classification of the problem affect your initial actions?*

Finally, previous research has shown that how people classify a problem influences how they then go about trying to solve it. We asked you what your initial line of enquiry and initial actions would be so that we could see if there was any link between the initial hypothesis you had and the actions you specified.

Analysing the data to see if there are particular clusters of actions that go together and might match up to initial hypotheses is quite complicated and we are still working through it, but we have seen that once again, there was quite a variation in the sorts of actions proposed by participants. Taking the WALSH scenario as an example, 96% of participants said that they would need to interview WALSH fully, whereas only 58% suggested interviewing the controller at the taxi firm. 27% wanted to obtain documentary evidence to corroborate or disprove WALSH's story, and 36% proposed arresting MORGAN.

## **Overall**

The most striking thing about the data we have collected so far is the variation between officers in how they tackled the problems. This is not necessarily a bad thing: if you have a group of officers working together on a crime, they are likely to generate many different hypotheses, and therefore identify many (all?) reasonable lines of enquiry. It will be interesting to see how more experienced officers tackle the same scenarios and whether there are any key differences. In particular, we will be looking to see if there are lessons there that can be incorporated in future training exercises.

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<sup>34</sup> This was an MSc project conducted by another student at Liverpool University.

**Some of your questions**

**CONFIDENTIALITY:** Some participants asked about the confidentiality of their data. We want to explore whether things like length and type of experience had an influence on your answers. We asked you to put your names on the front sheets of the demographic questionnaire and the answer sheets so that we would know which questionnaire went with which answer sheet. Before we started looking at your data we gave you all a number and then detached the front sheets. Only the training team have access to details of which name goes with which number. Even though the results are kept in training section, they will not be used in any way in your assessment on training courses. The help you have given us is for research purposes only.

If you take part in future studies the training team will give you your number so that you don't have to fill in the demographic sheet again.

**ARTIFICIALITY:** Many participants who did this study pointed out this is a bit of an artificial exercise. In real life, your initial actions may well produce information that proves your initial hypothesis wrong and suggests a more fruitful line of enquiry. However, it is very difficult to set up a controlled real-life study. Despite the problems in this study, the results we have are extremely interesting and have already added to what is known about police decision-making. We will be carrying out different types of studies, including observing simulated investigations, interviewing officers and perhaps analysing archival data. If we use a variety of techniques but still get similar results this can give us more confidence that what we're seeing are genuine phenomena rather artefacts of our methodology.

**Further Information**

Although this document is rather long, we wanted to give you full details of what we were trying to do. If you have further questions, or if you would like more details once we have analysed more of the results, then do let us know via [police contact].

Thank you for taking part in this study.

APPENDIX C: MATERIALS USED IN INTERVIEW STUDY (Chapters 4-6)

## PROCEDURE FOR INTERVIEW STUDY

*Comment: the following structure was used for each participant*

### **1. Explain structure of study**

- Scenario based – will get a scenario, dealing with an allegation of attempted rape
- Will be given information to consider and will be asked questions about it
- At the end of the study will ask a few background questions
- Will alert you when 60 minutes have passed, you have the option of continuing if you wish
- At the end you will have time to ask questions and talk about the study

### **2. Explain confidentiality arrangements**

- Session will be audio-taped, transcribed personally by interviewer, discs will be stored securely and destroyed once no longer needed.
- Label on disc will be participant number only. Names will not be used.
- Access to transcripts will be limited to interviewer, supervisor and one other
- Results will be sent to force, but anonymous

### **3. Obtain consent**

- Mention that some materials will be disturbing
- Mention that participant can withdraw at any point without reasons

### **4. Main study**

- Provide with paper and pencil, to make notes if they feel it is necessary.
- You won't get all the information that you might get in a real investigation. This may be frustrating. Feel free to talk about what you might expect to have.

### **5. Turn microphone on**

### **6. Decision points**

- What are your thoughts about this incident at this point?
- What do you think has happened?"
- What actions, if any, would you request, and why?

### **7. Demographics and close**

- Fill in demographic questionnaire:
- Stop recording
- Debriefed about the study, and answer questions



*Order of information presentation*

**Serial 1a:** Introductory serial and maps

- **DECISION POINT 1**

**Serial 2a:** Jane's statement and map

- **DECISION POINT 2**

**Serial 3a:** Jenkins' statement, PDF and map

**Serial 3b:** Boyfriend's statement and PDF

**Serial 3c:** Doctor's statement

- **DECISION POINT 3**

**Verbal update:**

*MEDIA RELEASE: Indecent assault on a young woman in the orchards at Summersby. Police are worried that the offender will strike again. Anyone with information is urged to call.*

**Serial 4a:** Messages: stolen vehicle, Sharon Sutcliffe, SIU re flashing, rape victim

**Serial 4b:** CSI report and diagram of scene search

- **DECISION POINT 4**

**Serial 5a:** House to house results: Davina Hall (blue van), Francis Gordon (Mount Farm) and PDF, Sharon Sutcliffe, William Samuels (Boughton Farm) and PDF

**Serial 5b:** Theresa Baker (flashing) and e-fit

- **DECISION POINT 5**

**Serial 6a:** Jane's second statement

**Serial 6b:** Roger Little (stolen car) and PDF

- **DECISION POINT 6**

**Serial 7a:** Criminal record details for Small, Mann and Samuels

- **DECISION POINT 7**

**Serial 8a:** Statement David Dawes (white van) and PDF

**Serial 8b:** Statement Roy Small and PDF

- **DECISION POINT 8**

**Serial 9a:** Ann Samuels (Boughton Farm, ex-g/f Simmons) and criminal record

**Serial 9b:** Arthur Brown (Hill Farm, Simmons caravan)

- **DECISION POINT 9**

**Serial 10a:** Messages: Anon re Smithers, John Dacey (blue van driving slowly), Bormann (blue renault), Roger Constance (blue van), Smithers PDF

**Serial 10b:** John Simmons statement, PDF and record

**Serial 10c:** Ann Samuels, second statment

- **DECISION POINT 10**

**Serial 11a:** Search of Simmons' house

- **WHAT WOULD YOU DO NOW?**

*DOCUMENT 1A*

MATERIALS AVAILABLE FROM THE AUTHOR ON REQUEST

*Map of SE Stanhope, Midshire*

MATERIALS AVAILABLE FROM THE AUTHOR ON REQUEST

*Map of area where attack took place*

MATERIALS AVAILABLE FROM THE AUTHOR ON REQUEST

*DOCUMENT 2A*

*Witness statement: Jane Cartwright*

MATERIALS AVAILABLE FROM THE AUTHOR ON REQUEST

MATERIALS AVAILABLE FROM THE AUTHOR ON REQUEST

MATERIALS AVAILABLE FROM THE AUTHOR ON REQUEST

*Map showing Jane Cartwright's route (attached to document 2a)*

MATERIALS AVAILABLE FROM THE AUTHOR ON REQUEST



*DOCUMENT 3A*

*Witness statement: Richard Jenkins*

MATERIALS AVAILABLE FROM THE AUTHOR ON REQUEST

MATERIALS AVAILABLE FROM THE AUTHOR ON REQUEST

MATERIALS AVAILABLE FROM THE AUTHOR ON REQUEST

*Map showing Richard Jenkins' route (attached to document 3a)*

MATERIALS AVAILABLE FROM THE AUTHOR ON REQUEST

*DOCUMENT 3B*

*Witness statement: Colin Moore*

MATERIALS AVAILABLE FROM THE AUTHOR ON REQUEST

MATERIALS AVAILABLE FROM THE AUTHOR ON REQUEST

Personal Descriptive Form – Colin Moore

MATERIALS AVAILABLE FROM THE AUTHOR ON REQUEST

*DOCUMENT 3C*

*Witness statement: Susan Elizabeth Arnott*

MATERIALS AVAILABLE FROM THE AUTHOR ON REQUEST



*DOCUMENT 4A*

*Messages received: Sunday 1 – Monday 2 September*

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MATERIALS AVAILABLE FROM THE AUTHOR ON REQUEST

*DOCUMENT 4B*

*Witness statement: Donald Kitchener*

MATERIALS AVAILABLE FROM THE AUTHOR ON REQUEST

*Location of items found by Crime Scene Investigators (attached to document 4b)*

MATERIALS AVAILABLE FROM THE AUTHOR ON REQUEST

DOCUMENT 5A

*Results of house to house enquiries*

MATERIALS AVAILABLE FROM THE AUTHOR ON REQUEST

MATERIALS AVAILABLE FROM THE AUTHOR ON REQUEST

*Personal Descriptive Form – Francis Gordon (attached to document 5a)*

MATERIALS AVAILABLE FROM THE AUTHOR ON REQUEST

*Personal Descriptive Form – William Samuels (attached to document 5a)*

MATERIALS AVAILABLE FROM THE AUTHOR ON REQUEST

*DOCUMENT 5B*

*Witness statement: Theresa Baker*

MATERIALS AVAILABLE FROM THE AUTHOR ON REQUEST



*E-fit of suspect in flashing incident (attached to document 5b)*

MATERIALS AVAILABLE FROM THE AUTHOR ON REQUEST

*DOCUMENT 6A*

*Witness statement: Jane Cartwright*

MATERIALS AVAILABLE FROM THE AUTHOR ON REQUEST

MATERIALS AVAILABLE FROM THE AUTHOR ON REQUEST

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*Copies of letters received by Jane Cartwright (attached to document 6a)*

MATERIALS AVAILABLE FROM THE AUTHOR ON REQUEST

MATERIALS AVAILABLE FROM THE AUTHOR ON REQUEST

MATERIALS AVAILABLE FROM THE AUTHOR ON REQUEST

*DOCUMENT 6B*

*Witness statement: Roger Little*

MATERIALS AVAILABLE FROM THE AUTHOR ON REQUEST

*Personal Descriptive Form – Roger Little (attached to document 6b)*

MATERIALS AVAILABLE FROM THE AUTHOR ON REQUEST



*DOCUMENT 7A*

*Message re police checks*

MATERIALS AVAILABLE FROM THE AUTHOR ON REQUEST

*Police record: Roy Small*

MATERIALS AVAILABLE FROM THE AUTHOR ON REQUEST

*Police record: John Mann*

MATERIALS AVAILABLE FROM THE AUTHOR ON REQUEST

*Police record: William Samuels*

MATERIALS AVAILABLE FROM THE AUTHOR ON REQUEST

*DOCUMENT 8A*

*Witness statement: David Dawes*

MATERIALS AVAILABLE FROM THE AUTHOR ON REQUEST

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*Personal Descriptive Form – David Dawes (attached to document 8a)*

MATERIALS AVAILABLE FROM THE AUTHOR ON REQUEST

*DOCUMENT 8B*

*Witness statement – Roy Small*

MATERIALS AVAILABLE FROM THE AUTHOR ON REQUEST

*Personal Descriptive Form – Roy Small*

MATERIALS AVAILABLE FROM THE AUTHOR ON REQUEST



*DOCUMENT 9A*

*Witness statement: Ann Samuels*

MATERIALS AVAILABLE FROM THE AUTHOR ON REQUEST

*Police record: Ann Samuels (attached to document 9a)*

MATERIALS AVAILABLE FROM THE AUTHOR ON REQUEST

*DOCUMENT 9B*

*Witness statement: Arthur Brown*

MATERIALS AVAILABLE FROM THE AUTHOR ON REQUEST

*DOCUMENT 10A*

*Messages - Wednesday 4 September*

MATERIALS AVAILABLE FROM THE AUTHOR ON REQUEST

*Personal Descriptive Form – Richard Smithers (attached to document 10a)*

MATERIALS AVAILABLE FROM THE AUTHOR ON REQUEST

*DOCUMENT 10B*

*Witness statement John Simmons*

MATERIALS AVAILABLE FROM THE AUTHOR ON REQUEST

*Personal Descriptive Form – John Simmons*

MATERIALS AVAILABLE FROM THE AUTHOR ON REQUEST

*Police record: John Simmons*

MATERIALS AVAILABLE FROM THE AUTHOR ON REQUEST



*DOCUMENT 10C*

*Witness statement 2 Ann Samuels*

MATERIALS AVAILABLE FROM THE AUTHOR ON REQUEST

*DOCUMENT 11A*

*Report from DS Helen Evans*

MATERIALS AVAILABLE FROM THE AUTHOR ON REQUEST

APPENDIX D: CODING DICTIONARIES FOR ANALYSIS PRESENTED IN  
CHAPTERS 4 TO 6

*D1: Coding dictionary for analysis of how detectives perceive the victim (Chapter 4)*

*A. Theme: Victim as source of information*

**1) Sub-theme 1: Genuineness**

Passages in the text in which the credibility and truthfulness of the victim's account are discussed.

a) Clarify and corroborate

i) **Need for clarification:** Participant highlights need for the victim's account to be clarified.

- Example: *"Overall the statement lacks detail. You've got two and a half pages here of an attack that would have been sustained. Which ever way your gonna go with this you need far more detail about what's happened. There's lots and lots of key details missing from the actual offence."*

ii) **Need for corroboration:** Participant highlights need for the victim's account to be corroborated.

- Example: *"[We need] feedback from scenes of crime that her clothing was consistent with what she is saying, that she had been asked to lie face down, that she had had to remove her jeans, etc and if there was mud and dirt on her clothes. The reason for that is, it certainly helps police officers as soon as possible where you've got the sort of allegation, in my*

*experience, and in my opinion, you can corroborate the victim's account as soon as possible."*

iii) **Corroborate victim's story:** Participant discusses information which provides corroboration for the victim's account.

- Example: *"OK, so you've got an independent witness here who's corroborating what the victim is saying, so... we're now going in the direction of serious offender on the loose."*

iv) **Corroboration boyfriend:** Participant discusses information from or about the boyfriend which provides corroboration for the victim's account.

- Example: *"The boyfriend agrees with her about the white car parked in the same location... So I'm fairly happy about that."*

v) **Corroboration Jenkins:** Participant discusses information from or about the retired army colonel Richard Jenkins which provides corroboration for the victim's account.

- Example: *"I'm ... satisfied that Richard Jenkins's account knits quite well with the account given by Jane, and the fact that he has seen this chap running away, so in terms of our description, it is now corroborated to a better degree than simply one eyewitness, who is the victim, who is distressed, who this incident has happened to, you've got a person who is effectively a third party to the incident and he sees the chap prior to knowing what the circumstances are."*

- vi) **Corroboration police or doctor:** Participant discusses information from police officers attending the scene or the police doctor which provides corroboration for the victim's account.
- Examples: *“PC Brown, the officer that has taken her to the victim suite... their initial record of any accounts that were given when they first arrived, make sure that that's consistent with the more detailed account that she [victim] has given.”*
  - *“The doctor's statement ... talks about the injury mark to her, the bruising to her neck which ties in with what she says about the offender”*
- b) Scepticism
- i) **Doubtfulness:** Participant raises doubts about the victim's account in this particular crime.
- Example: *“As far as I'm concerned I've treated it as a genuine complaint. What I privately might fear is something that I'm keeping to myself for the moment.”*
- ii) **False allegations:** Participant discusses false allegations of rape or sexual assault in general.
- Example: *“I've managed a number of investigations in relation to rape, many of which have proved to be not rapes. The situation that we've discussed today is one where I would be more prone to suspect that the offences happened rather than somebody wanders into the police station the next day to say I was raped last night, which does happen frequently, unfortunately. Played into this statistic that people use, why only one in a hundred go to court, well, it's*

*because three in a hundred have actually happened, as they are reported, so, on that note, I think I better shut up.”*

iii) **“Cynics would say”**: Participant discusses the reaction of other police officers to allegations of rape or sexual assault.

- Example: *“Cynical people in my office would say she had a row with her boyfriend and she's asking for attention”*

c) Pragmatic investigation

Participant discusses investigating the allegation as if it were true, regardless of their own or others' views about whether or not it is true.

- Example: *“It wouldn't affect the way I'd deal with it ... I investigate it properly, thoroughly, knowing that at the end of the day the truth will out and I'll prove it or disprove it, but the thoughts that you've got in your own mind, you keep them in your own mind, you still go through the process, because if you don't go through the process, you can't go back.”*

d) Rape exemplars

Participant discusses characteristics of rape and sexual assault in general.

- Example: *“[I have] this image of rapists as being sort of, almost hiding behind a tree with a hard-on if you like and just sort of grabbing a woman and raping her.”*

2) **Sub-theme 2: Victim as forensic source**

Participant discusses the forensic opportunities provided by the victim, including treating her as a ‘scene’ to be forensically examined.

- Example: *“First scene is the victim, she is a scene in herself, so she has to be preserved, sounds a bit technical, clinical, that she has to be preserved... An officer would be given the task of taking control of the victim and taking the victim to a rape suite and looked after there with a view to gathering evidence.”*

*B. Theme: Victim welfare*

**1) Sub-theme 1: Impact of victim welfare on the investigation**

a) Victim well-being

- i) **Psychological well-being:** Participant discusses the victim’s psychological well-being in terms of her ability to support the investigation
  - Example: *“Maybe a little bit later, certainly not now, everything's so raw and the last thing I wanna do is traumatise the victim with a reconstruction with knives , but then you know the victim support person, once they've sort of built up a relationship, they're gonna start explaining how we need to go through all these processes.”*
- ii) **Physical well-being:** Participant discusses the victim’s physical well-being in terms of its impact on the investigation.
  - Example: *“I'm assuming, other than the examination she's going to require at the hands of a police surgeon because of the allegation, that she's not in any need of any hospitalisation?”*
- iii) **Victim choice:** Participant refers to deferring to the victim on a particular issue.

- Example: *“We will work at Jane’s pace, but ... I’d want her to be in the knowledge that if she won’t allow a medical examination or she won’t allow our forensic recovery it does harm our chances of a successful conclusion but it’s her choice.”*

b) Someone to support her

- i) **Specially trained officer:** Participant discusses the issues around using a police officer specially trained to support rape victims.
  - Example: *“I would hope that there would be some body else who could take her aside, because I’m not trained in doing that side of it.”*
- ii) **Female officer:** Participant discusses whether a female officer should support the victim.
  - Example: *“The old issue of ‘should you have female officers doing rape interviews’. Ask the victim really.”*

2) **Sub-theme 2: Balancing act**

Participant refers to balancing the needs of the victim against the needs of the investigation

- Example: *“The balancing act is the needs and the feelings of the victim against the need to recover if it’s an early stage complaint, DNA evidence and that sort of thing.”*



*D2: Coding dictionary for analysis of how detectives perceive the offender (Chapter 5)*

*A. Theme: Inferences about offender characteristics*

1) **Sub-theme: Criminal history**

- a) Uses distinctive modus operandi: Participant describes the offender as having an unusual modus operandi.
  - Example: *“Balaclava, knife, attack from the rear, placing of the knife, using of the knife in between the legs to threaten, that might be a distinctive MO.”*
- b) Has history of crime with the police: Participant infers that the offender will be in police records.
  - Example: *“I think the offender would be in the police system.”*
- c) Offences building up over a period of time: Participant infers that the offender’s pattern of offending is escalating.
  - Example: *“It’s just the sort of thing that would be progressive, you wouldn’t wake up one morning and think ‘...gotta go out and try and rape somebody with a knife and a balaclava on’... it’s an attack that will have progressed....”*
- d) Responsible for similar incidents: Participant infers that the offender has committed similar crimes in the past.
  - Example: *“In my experience somebody commits this sort of offence has done it before, or has certainly been in trouble before”*

2) **Sub-theme: Other characteristics**

- a) Dangerous man: Participant infers that the offender is a dangerous person.

- Example: *“If it's somebody that's prepared to strike in daylight like that what we're talking about is a very dangerous offender... a rapist... potential for murder.”*
- b) Smoker: Participant infers that the offender smokes.
- Example: *“If he smelt of cigarette smoke he probably smokes a lot.”*
- c) Lives / works locally: Participant infers that the offender lives or works locally.
- Example: *“Busy areas, centres of towns or sort of touristy places, those are where you tend, tend to get the strangers... So as a hunch I would say it's, it's somebody local.”*
- d) Handedness: Participant speculates about whether the offender is left-handed or right-handed.
- Example: *“I think he might be left handed from the way he's holding the knife.”*
- e) Occupation: Participant speculates about the offender's current or previous occupation, specifically:
- i) **Mechanic**
  - ii) **Manual worker**
  - iii) **Farm worker**
  - iv) **Connection to army**
- Example: *“He's a labourer or he works with machinery and that's why he's got dirty fingernails and oily hands.”*

*B. Theme: Reconstructing the attack*

**2) Sub-theme: Inferences about intentions**

- a) Intended to conceal identity: Participant infers that the offender deliberately concealed his identity.
  - Examples: *“He obviously wants his description to be not known: he's wearing a full-face balaclava”*
- b) Opportunist: Participant infers that the offender carried out the sexual assault opportunistically (i.e., not pre-planned) or that this particular victim was targeted opportunistically.
  - Example: *“I think that the fact that the three of them normally go on a walk together suggests that this is, to me, more of an opportunist [attack]... I think it tends to rule out the fact that it's pre-planned in terms of Jane.”*
- c) Intended to carry out a rape: Participant infers that the offender was prepared and intending to carry out a rape. Includes:
  - i) **Would have committed a full rape if not disturbed**: Participant infers that the offender would have raped the victim had he not been disturbed by a dog walker.
    - Example: *“It is likely that rape would have taken place but for the intervention, disturbance by the other witness.”*

**3) Sub-theme: Inferences about behaviour before attack**

- a) Preparation
  - i) **Dressed and prepared** for attacking a woman: Participant infers that the offender had taken steps to prepare for a rape or sexual assault, including:

(1) *Carried a balaclava in anticipation of an attack*

(2) *Carried a knife in preparation for attack*

(3) *Carried a belt to restrain victim*

- Example: *“The person’s come prepared They’ve got a balaclava, they’ve got a knife.”*

b) Actions before attack

ii) **Stole car that was found near scene:** Participant infers that the offender stole a silver car that was found nearby.

- Example: *“We need to eliminate the vehicle from the inquiry in as much that, you know, whoever stole it, was it our rapist or would be rapist?”*

iii) **Watched / stalked victim:** Participant infers that the offender had stalked the victim or had watched her for some time before attacking her.

- Example: *“She’s normally with her boyfriend, she’s seen without her boyfriend, you could say is there somebody there who’s watched her and has then attacked her when she’s on her own.”*

iv) **Was in a smoky environment** (e.g. pub) : Participant infers that the offender had spent time in a smoky place before carrying out his attack.

- Example: *“There’s potential that... they’ve been in the pub and they smell of smoke.”*

i) **Smoked cigarettes:** Participant infers that the offender smoked cigarettes whilst waiting for the victim or loitering with the intent of picking a victim.

- Example: *“The offender smokes, so therefore you'd be interested in any evidence of a smoker... standing, loitering, you might find some cigarette butts.”*

#### 4) **Sub-theme: Inferences about behaviour during the attack**

- a) **Used a condom**: Participant infers that the offender wore a condom during the attack.
  - Example: *“He could've already been wearing a condom because he's forensically aware in preparation for his attack.”*
- b) **Took victim's sock as a trophy**: Participant infers that the offender took the victim's sock as a trophy.
  - Example: *“The outstanding sock, obviously we've got to try and find that, it could be at the scene, if it's not at the scene it might be a trophy.”*
- c) **Did not wear gloves**: Participant infers that the offender did not wear any gloves.
  - Example: *“He wasn't wearing gloves, I think, ‘cause he had oily hands.”*

#### 5) **Sub-theme: Inferences about behaviour after the attack**

- a) **Leaving the scene**
  - i) **Discarded knife**: Participant infers that the offender dropped or discarded the knife as he fled the scene.
    - Example: *“you would probably, yeah, get those paths checked for any discarded knives as well.”*
  - ii) **Discarded / hid unspecified property**: Participant infers that the offender dropped or discarded other incriminating but unspecified items as he fled the scene.

- Example: *It seems a decent possibility that the man is shedding stuff as he flees so we've got every chance that we might recover yet more potential.*"

iii) **Discarded balaclava** as he ran away: Participant infers that the offender dropped or discarded his balaclava as he fled the scene

- Example: *"I'm quite interested in the balaclava. I'm trying to think, would the offender get rid of the balaclava as he's running along?"*

iv) **Discarded sock** as he ran away: Participant infers that the offender dropped or discarded the victim's sock as he fled the scene

- Example: *"So we prioritise the scene outwards from there but yeah and what we're looking for, well we're looking for ... this sock"*

b) Leaving the area

i) **Left in a hurry**: Participant infers that the offender fled the scene in a hurry or panic

- Example: *"[The running man] could still be him because he's panicked after the attack, he's gone home because he lives nearby, he's then gone back to get his car or whatever."*

ii) **Remained at or near scene**: Participant infers that the offender remained near the scene after being disturbed

- Example: *"Search of the area is another priority, 'cause the offender's sometimes at the scene, still there, waiting to look and see what the police are doing."*

iii) **Left area in car or van**: Participant infers that the offender left the area in a vehicle such as a car or van.

- Example: *“If the offender has used the Ford Mondeo that's abandoned, and he doesn't immediately come from this area, he's going to need transport to get back to where he does come from. So the van being stolen from Green Road could very well be him again, as stealing out.”*

#### 6) **Sub-theme: Inferences about future behaviour**

- a) **Likely to commit future crimes** (may escalate): Participant discusses the likelihood that the offender will continue to commit similar or more serious crimes in the future.
  - Example: *“The verbals ‘I'm gonna fuck you’, if you picked this one up, you'd immediately think ‘right, ok this is something that has potential to escalate’ and if she hadn't run away, you don't know that this one wouldn't have escalated.”*

### C. Theme: Geographical framework

#### 1) **Sub-theme: Offender local knowledge**

Participant comments on the offender's knowledge of the local area.

- Example: *“We know, we think we know because of the balaclava, assuming that it's linked, that he's gone down this road. [Interviewer: I can tell you that there's a fence along, along here. So actually the only place you can get in and out is...] Okay, well that's interesting because that explains why he's taken that route and implies quite a degree of local knowledge as well.”*

#### 2) **Sub-theme: Routes taken**

Participant discusses routes taken by the offender before or after the attack.

- Example: *“He’s then made his way up towards Wield Close/Canning Way/ Green Close, at some point discarding his balaclava. We know that was that was close to the Wield Close area so the sighting of the person in the green jacket running further up along the road is likely to be him. So really we’re looking for the continued journey of this khaki jacket-wearing stranger up around the Green Road/ Canning Way area.”*



*D3: Coding dictionary for analysis of how detectives make judgements about potential suspects (Chapter 6)*

Note: The coding for the analysis in Chapter 6 was conducted in two phases.

*Phase 1 Broad coding of suspect categories*

1) Named individuals

Participant comments on whether a man named in the materials could be a potential suspect. All discussion relating to his suspect potential is coded, including his characteristics and actions and the degree to which a participant thought he was implicated in or eliminated from the enquiry. Specific codes within this category are assigned to the following individuals named in the materials:

- a. Richard Jenkins (dog walker who interrupted the attack)
  - b. Colin Moore (current boyfriend of the victim)
  - c. Richard Smithers (subject of an anonymous denunciation)
  - d. John Mann (convicted rapist)
  - e. Frances Gordon (local resident)
  - f. William Samuels (local farmer)
  - g. Roy Small (ex-boyfriend of the victim)
  - h. Ray Little (owner of the stolen silver car found abandoned near the scene)
  - i. John Simmons (local mechanic, formerly a farm labourer)
- Example: “[Rawlings says:] ‘I was raped three years ago...his name was John Mann’. ... If John Mann hadn't been ruled in or ruled out you'd want further

*checks on him and obviously he's been inside, you, you'd have a photograph of him for PNC purposes and you'd also have a detailed description and his previous MO so it's something I'd want further work done on that you know, you're not gonna really say 'brilliant go and arrest John Mann', you know, you want your background checks and you want to make sure it's right"* should all be coded as:

**Named individual – John Mann**

2) Unnamed individuals

Participant comments on whether any of the unnamed men who featured in the materials could be the offender. All discussion relating to each individual's suspect potential is coded, his characteristics and actions and the degree to which a participant thought he was implicated in or eliminated from the enquiry. Specific codes within this category are assigned to the following unnamed men mentioned in the materials:

- a. White car man: A man whom witnesses saw underneath a broken-down white car near the scene of the attack.
- b. Running man: A man wearing an army-style jacket running near the scene of the attack, according to an eye-witness report.
- c. Flasher: A man who had indecently exposed himself to a woman in the local area two weeks prior to the attack on Jane Cartwright.
- d. Car thief: The person who stole the silver car found abandoned near the scene of the attack.

- e. Blue van driver: The driver of a blue van seen driving slowly near the scene prior to the attack, and seen speeding away from the scene soon after the attack.
- f. Recovery van driver: The driver of a recovery van seen in the area around the time of the attack.
- Example: *“I'm thinking of something like an AA recovery vehicle, but it could be that is recovering a white car, could be recovering any other vehicle in the area that may have broken down, or it could be again that has nothing to do with a recovery, it could be that the offender is the driver of that truck. So we want to find out what the vehicle was, who he was, and what he was doing in the area”* should all be coded as **Unnamed individual – Recovery van driver**

### 3) Persons unknown

Participant discusses proactively searching for the offender within defined groups of individuals sharing known or inferred characteristics with the offender. The shared characteristics define the parameters of the suspect pool. Specific codes within this category are assigned to the following categories:

- a. Known offenders on police databases, including Registered Sex Offenders, Persistent Dangerous Offenders.
- b. Similar incidents: Unknown individuals responsible for similar incidents in the local or regional area, for instance appearing in ‘modus operandi’ databases.
- c. Farm workers: Seasonal and farm workers from the local farms

- d. Mechanics in the local area
  - e. Army personnel in the local area
  - f. Residents: Males living in the local area
- Example: “*Going on behind the scenes there will be people starting to look into recent reports, intelligence to see if there's been similar incidences or whether that description matches any local, local suspect or, or local person who's known to us*” should be coded both as **Persons unknown – known offenders** and **Persons unknown – Similar incidents**

*Phase 2: Detailed coding of named individuals*

Note (1): Coding of information in this phase was repeated for each of four named individuals: John Mann, Roy Small, Colin Moore or John Simmons.

- a) Consistency with evidence
  - i) **Incriminating**: Participant mentions behaviour or characteristics of Mann/ Small/ Moore/ Simmons that are consistent with information about the offender provided in the materials.
  - ii) **Exculpatory**: Participant mentions behaviour or characteristics of Mann/ Small/ Moore/ Simmons that are inconsistent with information about the offender provided in the materials.
- b) Motive
  - i) **Incriminating**: Participant mentions reasons why Mann/ Small/ Moore/ Simmons might attack the victim.

- ii) **Exculpatory:** Participant mentions reasons why Mann/ Small/ Moore/ Simmons might not attack the victim.
- c) Past behaviour and character
  - i) **Incriminating:** Participant mentions aspects of Mann's/ Small's/ Moore's/ Simmons' character and/or aspects of his criminal history, which might be related to his capability or inclination to carry out the attack.
  - ii) **Exculpatory:** Participant mentions aspects of Mann's/ Small's/ Moore's/ Simmons' character and/or aspects of his criminal history, which are inconsistent with him having the capability or inclination to carry out the attack.
- d) Opportunity
  - i) **Incriminating:** Participant comments on factors which would have facilitated Mann/ Small/ Moore/ Simmons committing crime, such as knowledge of the victim's movements or of the attack location, or being in the area at the time.
  - ii) **Exculpatory:** Participant comments on factors which would have prevented Mann/ Small/ Moore/ Simmons committing crime, such as not knowing the victim, being unfamiliar with the attack location, or having an alibi.

Within each of the above categories, specific codes were developed for information relating to each named individual, as follows:

### 1) Colin Moore

- a) Consistency with evidence

- i) **Incriminating:** none.
- ii) **Exculpatory:**
  - (1) *Corroboration:* Moore's account is corroborated by other accounts.
  - (2) *Not named:* The victim has at no point named Moore as her attacker.
  - (3) *Description:* Moore does not fit the offender's description.
- b) Motive
  - i) **Incriminating:**
    - (1) *Consent sex now regretted:* Moore and the victim may have had sex but she now regrets this and has accused him of sexual assault.
    - (2) *Moore attacks victim and victim is fearful:* Moore is frustrated with the victim and has sexually assaulted her (either one-off or a history of abuse), but she is fearful of identifying him.
  - ii) **Exculpatory:**
    - (1) *Preparation:* if it was a sudden attack by Moore triggered by their argument why would he be carrying a knife and balaclava.
    - (2) *Relationship:* there is nothing to indicate that they have a poor or troubled relationship.
- c) Past behaviour and character
  - i) **Incriminating:** none.
  - ii) **Exculpatory:** none.
- d) Opportunity
  - i) **Incriminating:**
    - (1) *At the scene:* Moore was at the scene at the relevant time.

- ii) **Exculpatory:** none.

## 2) John Mann

### a) Consistency with evidence

#### i) **Incriminating:**

(1) *Right age:* Mann is a similar age to the offender.

(2) *Description:* Mann's description is similar to the offender.

(3) *Stolen car:* A stolen car was found nearby and Mann has a criminal record for stealing cars

#### ii) **Exculpatory:** none

### b) Motive

#### i) **Incriminating:** none

#### ii) **Exculpatory:** none

### c) Past behaviour and character

#### i) **Incriminating:**

(1) *MO same:* Modus operandi of Mann's previous rape is almost identical to current attack.

#### ii) **Exculpatory:**

(1) *MO different:* Modus operandi of Mann's previous crime is slightly different (knife used to cut away clothing).

### d) Opportunity

#### i) **Incriminating:**

(1) *Is local:* Mann lives locally and/or has links to the area

ii) **Exculpatory:** none.

- (1) *Flasher opportunity:* Recent indecent exposure in the area occurred when Mann was still in prison

### 3. Roy Small

a) Consistency with evidence

i) **Incriminating:**

- (1) *Stole car:* A stolen car was found nearby and he has a criminal record for stealing cars
- (2) *Motor trade:* The offender had oil on his hands and Small is connected with motor trade
- (3) *Abusive:* May have sent abusive / threatening letters recently
- (4) *Home address:* Lives in Ashwell, where vehicle was stolen
- (5) *Disguised to prevent victim identification:* Victim knows him and balaclava would have disguised voice and appearance
- (6) *Bad alibi:* Has a bad alibi
- (7) *Description same:* Matches or is consistent with description of the offender
- (8) *Smoker:* Smokes, and cigarettes ends were found near the scene

ii) **Exculpatory:**

- (1) *Victim should recognise:* She ought to be able to recognise his voice / know that it is him.
- (2) *Wrong age:* Is too old for the individual described by witnesses
- (3) *Has alibi:* Has got a potential alibi



b) Motivei) **Incriminating:**

(1) *Resentful*: Resentful towards / poor relationship with victim (includes: she rejected him, he had a fascination with her)

(2) *Sexual*: Sexually frustrated, and the offender is sexually motivated

ii) **Exculpatory:**

(1) *Linked flashing*: If the flashing is related, why would Roy attack Baker?

(2) *Bad relationship doesn't mean rapist*: Quite a leap to go all the way from bad relationship to rape

(3) *Her to know*: If he was targeting her he might want her to know it was him.

(4) *Writing doesn't mean rapist*: Just because he writes letters doesn't make him a rapist

c) Past behaviour and characteri) **Incriminating:**

(1) *Criminal history consistent*: Criminal history (arson burglary) is not inconsistent with being sex offender

(2) *Bad character*: Small doesn't sound nice, appears immature

(3) *'Queer bashing' is sexually motivated*: 'Queer bashing' in his history is a sexually-motivated offence

(4) *Lurking*: History includes 'hanging around'

(5) *Abusive history*: History includes abusive towards women

ii) **Exculpatory:**

- (1) *Not violent*: violence in criminal history
- (2) *Not sexual*: Nothing sexual in criminal history
- (3) *Not solo*: Usually when 'hanging around' he is with an accomplice
- (4) *Bad boyfriend not rapist*: Plenty of women have dodgy boyfriends

d) Opportunity

i) **Incriminating:**

- (1) *Knows routine*: Knows victim's Sunday routine
- (2) *Knows area*: Has been to victim's mother's house so knows the area

ii) **Exculpatory:**

- (1) *Should be with mum*: If he targeted her for her routine then usually she is with mum and/or boyfriend.

**John Simmons**

a) Consistency with evidence

i) **Incriminating:**

- (1) *Similar van*: A van similar to his was sighted nearby
- (2) *Similar belt*: Belt found near the scene is/may be the one given to him by Ann Samuels
- (3) *Description same*: Description is similar
- (4) *Occupation*: He is a mechanic and would have oily hands, consistent with description of offender
- (5) *Smoker*: He is a smoker, like the offender

ii) **Exculpatory:**

- (1) *Belt alternative*: Even if the belt is his, he could have dumped it in the area on another occasion
- (2) *Van not same*: His van's registration mark is not quite the same as reported by witnesses
- (3) *Cigarettes alternative*: The cigarette butts found may be his but he could have dropped them on another occasion
- (4) *Handedness*: He is right-handed and the offender may have been left handed
- (5) *Unrelated similar van*: The fact he owns a van similar to the one sighted could be a red herring
- (6) *Description different*: His description does not quite match the offender's.

b) Motive

- i) **Incriminating**: none
- ii) **Exculpatory**: none

c) Past behaviour and character

i) **Incriminating**:

- (1) *Consistent with rapist*: Police record indicates pattern of behaviour consistent with rapist
- (2) *Weird*: Described as weird or odd

ii) **Exculpatory**:

- (1) *Indecency doesn't mean rapist*: Just because he has indecency in his history doesn't make him a rapist.

d) Opportunityi) **Incriminating:**

(1) *Local*: Lives locally / has links to the area

(2) *Off at weekends*: Doesn't work at weekends, which is when the attack took place

ii) **Exculpatory:**

(1) *Victim stranger*: Doesn't know the victim.

*Examples:*

- *“There is an issue there where right at the back of my mind is...was it Colin? It doesn't fit the circumstances but is there more to this 'cause it's a bit of a coincidence on Sunday afternoon she gets raped as she falls out with boyfriend and just some, some issues there...This is a classic a consent sex which is reported as rape, classic.”*

Coded as:

- **Colin Moore – Motive – Incriminating – Consent sex now regretted**

- *“Well, it's a similar MO isn't it? Very similar, obviously... he's back in the area, the MO is very similar, albeit that there are variations in that, no actual violence used on this occasion whereas he punched her last time, produced a knife, which is very similar, used the knife to cut away clothing.”*

Coded as:

- **John Mann – Past behaviour and character – incriminating – MO same**
- **John Mann – Past behaviour and character – exculpatory – MO different**
- **John Mann – Opportunity – Incriminating – Is local**
- *“We’ve got the suspect in the sense of this guy Roy. Reason he’s a suspect is because he’s in the motor trade first and foremost. He has an axe, he has an axe to grind with his ex-girlfriend and the offender was not wanting to be recognised. Now that could be of course because generally they don’t want to be recognised by anyone but there could be a more immediate link ie that they know full well that the victim will rec., will know who’s, who it is that’s raping them, whatever. So for those reasons I think he’s a suspect and he becomes, based on the abusive nature of his contact with her since, which we’re taking the victim’s say so for this but it’s a reasonable one for., you know you gotta go with that and it’s a reasonable assumption to make in the circumstances.”*

Coded as :

- **Roy Small – Consistency with evidence – incriminating – Motor trade**
- **Roy Small – Consistency with evidence – incriminating – Abusive**
- **Roy Small – Consistency with evidence – incriminating – Disguised to prevent victim identification**
- **Roy Small – Motive – incriminating – Resentful**

- *“I have managed to ascertain that a belt found at the scene is the same belt that was given by an Ann Samuels to John Simmons as a result of some sort of liaison which wasn't a proper liaison. That he has knowledge of the area because he works as a fruit picker, whatever. He smokes, which also matches our offender and also the other bloke, who was it, Arthur Brown, he done work on his car for him which would explain that John Simmons also got a knowledge of mechanical stuff hence the oily stuff on his hands.”*

Coded as

- **John Simmons – Consistency with evidence – similar belt**
- **John Simmons – Consistency with evidence – smoker**
- **John Simmons – Consistency with evidence – occupation**
- **John Simmons – Opportunity – lives local**