

Chapter 3

The interpretation and utilisation of offender profiles: a critical review of 'traditional' approaches to profiling*

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In this chapter, one of the most prominent approaches to constructing 'offender profiles' is reviewed and the social psychological reasons for its continued but, we argue, largely unwarranted popularity are explored. It is important to emphasise at the outset that this review considers the type of profiling that has been most prominent in the past decade and has attracted the most media attention. The profiling we review involves the extrapolation of lists of characteristics of offenders, based upon an evaluation of a 'type' of offender as derived from a profiler visiting a crime scene. Hereafter, we refer to this as the 'traditionalist' perspective. Other recent papers consider the many positive steps forward in behavioural investigative advice (Almond *et al.* 2007; Alison *et al.* 2004; Bennell and Canter 2002; Fritzon and Ridgway 2001; Hanfland *et al.* 1997) but we do not concentrate on this activity here. The interested reader will find that these and a number of other papers highlight different approaches to the provision of advice, recognising the need for systematic research, justification of the claims made and the requisite ethical standards. Indeed, ACPO (Association of Chief Police Officers) requirements in the UK (ACPO 2000) have resulted in significant restrictions on the way in which advice is provided to and employed by the police, thereby making traditional profiling methods more and more difficult to apply in

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practice. Why then is it important to review a form of profiling that is probably in 'recession'?

Firstly, in the mind of the public, and indeed many practitioners, profiling is typically associated with an approach in which typologies of offenders are derived from observations of a crime scene (Douglas *et al.* 1986). Yet there is, as we show, a lack of evidence for the utility of this type of advice, as well as a host of theoretical reasons why it is likely to prove unproductive (Alison *et al.* 2002). In this chapter, we consider why such profiles nevertheless hold so much appeal for police and public alike. Canter and Youngs (2003) have termed this the 'Hollywood Effect' and it is clear that its seduction extends to students who are eager to learn about profiling. We therefore hope that this chapter will serve as a 'reality check' for students who might otherwise hold unrealistic views both of the present state of profiling and of what is taught on forensic and investigative psychology courses.

Secondly, we suggest that much of the advice contained within traditional perspectives is ambiguous, unverifiable and contains many erroneous 'lay' beliefs about the consistency of human behaviour and the ability to classify individuals into discrete 'types' (Alison *et al.* 2003a). As such, it affords us the opportunity to highlight some interesting psychological phenomena that relate to the way in which individuals perceive human behaviour.

Finally, enquiries in which profiles are sought are, by definition, serious and complicated cases. When faced with complex and ambiguous investigative data, investigators tend to engage in the generation of one or more narratives to make sense of the data (Innes 2002). We suggest that profiles, by offering plausible 'explanations' of an offender's actions by reference to the supposed psychological aetiology of such behaviour, and by providing otherwise elusive hints as to an offender's characteristics, help to fill important gaps in these narratives. Furthermore, these explanations and hints are particularly compelling because they tend to be consistent with generally held beliefs about behavioural consistency and the lay perception that behaviour can be explained by reference to types, despite the empirical evidence that context has a strong impact upon behaviour (Cervone 1999). The creative interpretation of a profile may thus lead to a more favourable assessment of ambiguous, unverifiable and potentially erroneous accounts than is warranted by the evidence (Alison *et al.* 2003b). We further suggest that lay beliefs concerning the 'types' of offenders, their motivations and behaviours, may be highly influential in many other decisions in criminal investigations.

The content and structure of such beliefs is therefore an appropriate and important area for further psychological enquiry.

The plausibility of traditional approaches to offender profiling

Offender/behavioural/investigative/criminal profiling has variously been referred to as 'a technique for identifying the major personality and behavioural characteristics of an individual based upon an analysis of the crimes he or she has committed' (Douglas *et al.* 1986: 405); the 'process of inferring distinctive personality characteristics of individuals responsible for committing criminal acts' (Turvey 1999: 1) where, according to Pinizzotto and Finkel (1990), an offender profile 'focuses attention on individuals with personality traits that parallel traits of others who have committed similar offences' (p. 216) and where the 'interpretation of crime scene evidence can indicate the personality type of the individual(s) who committed the offence' (Rossmo (2000: 68). According to Douglas *et al.* (1992), 'The crime scene is presumed to reflect the murderer's behavior and personality in much the same way as furnishings reveal the homeowner's character' (p. 21).

However, as Alison *et al.* (2002) have pointed out, the concept that reliable 'personality traits' of an offender(s) are based on observations of a crime scene is at odds with contemporary conceptualisations of personality and behaviour, where, in contrast, behaviour is explained in terms of conditional patterns that depend on the individual and his or her specific situation (Shoda *et al.* 1994).

Assumptions underlying traditional approaches to profiling

Some of the most widely recognised and oft-employed experts in the USA, the UK and several other European countries have previously made claims that clusters of behaviours can be derived from crime scenes and converted into some taxonomic framework. Further, from this classification, background characteristics may be derived (Åsgard 1998; Boon 1997; Douglas *et al.* 1992; Douglas *et al.* 1986; Britton 1992). It has been argued that the inferential process can be represented in the question series, 'What to Why to Who?' (Pinizzotto and Finkel 1990). Based on the crime scene material (What), a particular motivation for the offence behaviour is attributed to the perpetrator (Why). This, in turn, leads to the description of the

perpetrator's likely characteristics (Who). This simple 'What to Why to Who' inference assumes that the supposed specific motivations that drive the initiation of the offence are consistently associated with specific types of background characteristics of the offender (e.g., '... if motivation X then characteristics A, B, C and D').

The idea of inferring background characteristics from crime scene actions relies on two central assumptions about offence behaviour. The first is the assumption of *behavioural consistency*: the variance in the crimes of serial offenders must be smaller than the variance occurring in a random comparison of different offenders. This is exemplified in the definitions of profiling outlined at the outset of this chapter and in statements such as 'profiling rests on the assumption that at least certain offenders have consistent behavioural traits. This consistency is thought to persist from crime to crime and also to affect various non-criminal aspects of their personality and lifestyle, thus making them, to some extent, identifiable' (Homant and Kennedy 1998: 328). Similarly, the traditional view of personality dispositions leads to the assumption that 'individuals are characterised by stable and broadly generalised dispositions that endure over long periods of time and that generate consistencies in their social behaviour across a wide range of situations' (Mischel 1990: 112).

However, as Mischel (1968) points out, there is little evidence to support this notion. As long ago as 1928, a number of studies examining behavioural consistency (tested by observing people's social behaviour as it occurred across a variety of natural settings) demonstrated that inter-correlations among behaviours comprising a particular trait concept tend to be low (Dudycha 1936; Hartshorne and May 1928; Newcomb 1929). This led many theorists to question not only popular trait theories (e.g., Mischel 1968; Peterson 1968; Vernon 1964), but the concept of personality itself (Epstein 1979). More recently, studies such as the often-cited Carleton College study also failed to allow predictions of behaviour across specific situations (Mischel and Peake 1982).

In terms of consistency in offence behaviour, a number of studies have revealed some evidence, albeit rather weak in most cases, that offenders are somewhat consistent. Most of this research has been conducted on samples of rapists (Bennell 1998; Grubin *et al.* 1997; Mokros 2000) although there is also some evidence of behavioural consistency in other offences such as domestic burglary (Goodwill 2000). What is most revealing about these studies though is the finding that individual behaviours are subject to some fluctuation from crime to crime, due perhaps, as many of the authors argue,

to situational influences and the dynamic features of re-offending. The most significant aspect of behavioural consistency appears to relate to location, with proximity being the most effective element for linking and the actual behaviours occurring within the crime, the least effective.

The second assumption is the *homology assumption* (Mokros and Alison 2000). In its most basic form, the assumption is that the more similar two offenders are in terms of characteristics, the more similar their behavioural style during the commission of the offence. Thus, two rapists who are, for example, both married, have pre-convictions for robbery and a history of alcohol abuse should be more likely to commit an offence in the same way than if their offence style was compared with an offender who is unmarried, has no pre-convictions and no history of alcohol abuse.

Davies *et al.* (1998) had some success in linking specific actions to particular characteristics. For example, they found that rapists who break into a victim's house are five times more likely to have a previous conviction for burglary than those who do not enter a victim's house by force. However, Davies *et al.*'s attempt to integrate sets of crime scene variables into logistic regression models in order to predict the characteristics of rapists was unsuccessful. Similarly, House (1997) generated four thematic foci (*aggression, criminality, pseudo-intimacy* and *sadism*) from a sample of 50 rapists and, while achieving some success in linking particular behaviours to particular actions, was unable to develop lists of probable characteristics (specifically pre-convictions) of offenders based on the thematic foci. Neither study tested whether particular configurations of crime scene actions are associated with particular configurations of characteristics other than pre-convictions.

In Knight *et al.*'s (1998) clinically oriented classification scheme (the Massachusetts Treatment Center Rapist Typology Version 3; MTC: R3), typologies are derived on the basis of primary motivations. Motivations include *opportunity, pervasive anger, sexual gratification* and *vindictiveness*. These are further differentiated through the degree of social competence and the amount of sadism implicit in the offence. While these have been used productively for clinical interventions, Knight *et al.* concede that one of these data sets contains 'extensive coding of crime-scene information but minimal offender data', while the other one comprises 'extensive offender data but minimal crime-scene data' (Knight *et al.* 1998: 46). So, for clinical reasons and as a result of its focus on motivation, the taxonomy does not consider the types of characteristics commonly outlined in offender profiles. For

example, it does not link actions to age, socio-demographic status or previous convictions – all characteristics that are most likely to be of use in actual investigations (Annon 1995; Ault and Reese 1980; Grubin 1995; Homant and Kennedy 1998).

In an attempt to investigate the homology assumption Mokros and Alison (2002) conducted a study on a sample of rapists (N = 100), for whom they had access to details both of the behaviours in the offence and the background characteristics of offenders. In terms of support for the homology assumption, results were not encouraging: neither age, socio-demographic features, nor previous convictions could be reliably linked to themes within offence behaviour.

In summary, there seems to be little evidence for the consistency and homology assumptions. Why, then, does 'offender profiling' in this form appear to enjoy such public and investigative attention?

The evaluation of profiles

Evaluations of offender profiling have commonly focused on police officers' claims of satisfaction with the advice received (Britton 1992; Copson 1995; Douglas 1981; Goldblatt 1992; Jackson *et al.* 1993). These reviews concluded that there was some perceived utility in using such reports but that they rarely led to the identification of the offender.

In a US study, Pinizzotto (1984) examined 192 profiled cases, 88 of which had been solved. Of these, a profile was perceived to have helped in the identification of a suspect in 15 cases (17 per cent). In a number of other cases, the responding agencies reported that profiling helped to focus the investigation or to locate or prosecute a suspect. Over a decade later, Bartol (1996) conducted a survey of 152 police psychologists. In this study, 70 per cent of the police psychologists did not feel comfortable with profiling and seriously questioned its validity and usefulness. Another study examined UK police officers' perceptions of usefulness of profiles and found that fewer than a quarter were judged as being of any assistance in solving the case, and profiles were perceived as opening new lines of enquiry in fewer than one in five cases (Copson 1995). Despite this, in over 60 per cent of cases, profiles were perceived as furthering officers' understanding of the offender and in over half of the cases they reassured the officers' own judgements about the offender. There is, therefore, mixed evidence from these studies: while police officers may not regard profiling as crucial to their investigations, a high number appear to find the advice of profilers useful.

In order to investigate the validity and therefore accuracy of offender profiling, several studies have examined whether profilers produced qualitatively superior reports to those produced by other occupational groups, e.g. students or investigators. Kocsis and colleagues (see Kocsis 2003 for a review of validity studies) conducted several comparative studies; from these studies Kocsis identified four major conclusions important to the validity of profiling. First, he claimed that profilers made a greater number of correct predictions than any of the other occupation groups. Profilers were better at identifying psychological processes, physical characteristics, lifestyle characteristics, social history and offending behaviours than the other groups. However, psychologists were better at determining personality characteristics of the offender. Second, he argued that the poor performance of police officers fails to support the arguments that investigative experience is a key skill necessary for proficient profiling. Third, he states that logical reasoning is crucial to success in profiling. Fourth, he states that there is little support for the use of psychics and the intuition they represent. To summarise, Kocsis and his colleagues concluded that professional profilers can produce more accurate predictions about an unknown offender in comparison with police officers, psychologists, students and psychics.

More recently it has been argued that the conclusions reached by Kocsis and his colleagues are too premature. Bennell *et al.* (2006) conducted a critique of Kocsis and his colleagues' studies. First, they argued that Kocsis's measure of profile accuracy was unsound and highly dependent on the interpretation of the respondent. Second, they criticised Kocsis for not actually assessing his participant groups to ascertain whether they possessed the skills he attributed to them. Finally, Bennell *et al.* (2006) argued that Kocsis's data collection procedures and methods of analysis were biased. The number of profilers sampled by Kocsis across his studies was low and not representative of profilers in general and the participant groups were not tested under the same conditions.

The content of profiles has also received criticism. Alison *et al.* (2003a) applied Toulmin's (1958) philosophy of argument as an evaluation process to 21 profiles produced from 1997–2001. They found that 80 per cent of the approximately 4,000 claims made in the profiles they sampled were unsupported. The claims lacked appropriate *grounding* in psychological knowledge, contained no *warrants* (specific examples of supportive research), were provided with no estimation of their *veracity* (e.g. probability) and less than a third were *falsifiable*. However, a contemporary study conducted by

Almond *et al.* (2007) of behavioural investigative reports produced by the National Policing Improvements Agency (NPIA) found that there was a very large positive difference between this contemporary sample and previous non-NPIA expert advice in terms of the substantiveness of their arguments. They found that contemporary NPIA behavioural investigative advice has clearer boundaries around the claims made and they present material in a more coherent and evidence-based format than previous expert advice.

The interpretation of profiles

Alison *et al.* (2003b) have argued that a contributory factor in the perception of usefulness of traditional profiles, despite evidence to the contrary, concerns the psychological processes involved in interpreting the information. Even when the identity of an offender is unambiguously determined, there exists a distinctly subjective element in deciding how well any given person fits an offender profile. In a small sample of non-NPIA profiles, Alison *et al.* (2003a) demonstrated that 24 per cent of the profiling predictions were ambiguous and open to subjective interpretation (such as, 'the offender will have poor heterosocial skills'). This figure was 13 per cent for a sample of contemporary NPIA profiles (Almond *et al.* 2007). Further, 55 per cent of statements in non-NPIA profiles would be extremely difficult to verify, even if the offender was caught (for instance, 'the offender will have fantasised about the act in the weeks leading up to offence'). This figure was 21 per cent in the NPIA sample. Alison *et al.* (2003a) suggested that one of the possible dangers of such ambiguous and unverifiable information is that it facilitates 'creative interpretation' on the part of the investigator.

To explore this notion, Alison *et al.* (2003b) conducted two pilot studies. Participants included police officers, individuals involved in the legal profession and forensic clinicians. The participants in the first study were all police officers. A profile was constructed that contained ambiguous and unverifiable information and was provided to participants who were to imagine that they were investigating a murder. Participants were given details of an actual offence,¹ the constructed profile and a suspect. Two groups of participants each received the same profile but different suspects. In one group, participants received a brief outline of the actual offender (genuine suspect), while in the other group participants were given a hypothetical suspect constructed for the study (bogus). The bogus

suspect was constructed so as to be quite different on key demographic features while still enabling him to be a possible suspect (the suspect had to be male and of an age where it was physically possible to have committed the offence). Participants were asked to rate the accuracy of the profile based on the suspect that they were given. Despite being given quite different suspects (one was twice as old as the other, one had many pre-convictions, the other none, one had a history of psychiatric problems, the other did not, etc.), the mean accuracy rating for both groups was 5.3 (where 1 = very inaccurate and 7 = very accurate). The median for both groups was 6; the mode for the genuine suspect was 5, and for the bogus suspect it was 6. Over 40 per cent (9 of the 22) of the 'genuine' group rated the profile as a generally-very accurate fit, while just over 50 per cent (13 of the 24) in the 'bogus' group rated the profile as generally-very accurate. None of the participants rated the profile as either generally or very inaccurate. Alison *et al.* also examined the qualitative justifications for the scores given. One group (genuine offender) focused on relationship issues and the offender's sexuality (as mentioned in the profile), while relationship issues and the motivation of the offender appeared to justify scores given in the other group (bogus offender).

In a second exploratory study, involving police officers and individuals involved in the legal profession, Alison *et al.* employed a profile used in an actual enquiry. In this study, they also asked whether the profile would be useful in an enquiry. Twenty-nine of the 33 participants in study two stated that the profile would be useful if they were investigating the crime, with the most common justification relating to the idea that the profile could narrow down a suspect search. Using a similar design (two suspects: one bogus, one genuine, different demographic features in each) overall mean accuracy scores were 5.4 for the genuine offender and 5.2 for the fabricated offender with no differences between ratings for the two contrasting suspects.

Both studies indicated that the majority of participants rated the profile as at least somewhat accurate despite the distinctly different suspects that they were given. Of course, there are many limitations of this type of study, including the questionable ecological validity of paper and pencil tests of this sort, the fact that there is a non difference between groups, the relatively low numbers in each group and so on. However, Alison *et al.* argue that these preliminary studies highlight the need to conduct further research to test more comprehensively the hypothesis that participants were selectively noting aspects of the profile that can be easily applied to the suspect, ignoring those aspects

that are not applicable, and constructing meaning from ambiguity. If this is the case, then such 'creative interpretation' of ambiguous information is reminiscent of the so-called 'Barnum Effect' in which people tend to accept vague and general personality descriptions as being specific to themselves (Forer 1949; Furnham and Schofield 1987; Meehl 1956).

Previous research has examined the role of the Barnum Effect in how individuals interpret feedback from psychometric tests, horoscopes, as well as handwriting analysis (Dickson and Kelly 1985; Fichter and Sunerton 1983; Snyder *et al.* 1976). The effect is particularly prominent when the information provided is ambiguous, vague, difficult to verify and comes from an authoritative source. This effect, and the closely related process of 'personal validation' in which individuals classify information that could be applied to anyone as being particularly descriptive of their own qualities, has much in common with processes of attribution theory (Ross 1977); the notion of scripts and schemas (Schank and Abelson 1977, 1995) and narrative approaches to personality (McAdams 1993). In each case, researchers argue that in attempting to make the world more predictable, individuals rely on pre-existing, case-based experiences when interpreting new information. Incoming information is thus structured according to familiar patterns and beliefs that have been informed by personal experiences, social cultural norms and the media, and which include beliefs about the regularity of human behaviour. Beyond the application of these processes to profiling, we believe that such issues may be of significance to the wider arena of investigative decision-making.

Marshall and Alison (2007) went on to explore how offender profiles might influence the way in which individuals interpret investigative information dependent on its congruence with the investigator's own beliefs. This study comprised an online questionnaire and involved participants receiving a profile which was either congruent or incongruent with an atypical or stereotypical suspect. In an additional condition, the participants were presented with the suspect details either before or after the profile. Participants appeared to use several different cognitive strategies when interpreting the investigative information. The two main strategies identified were *representativeness*, which refers to judgements based on the suspects' resemblance to a preconceived stereotype, and *cognitive elaboration*, which refers to a preference for generating causal links between chunks of information in order to justify the basis for a particular judgement.

Individuals relying on the representativeness strategy were more influenced by a profile challenging their views (incongruent) than one supporting them (congruent). Whilst individuals who invested more cognitive effort, i.e. cognitive elaborators, were more resistant to changing their views in light of an incongruent profile, this is tentative evidence to suggest a confirmation bias is occurring. Marshall and Alison (2007) also found that a profile was perceived as more influential when it was presented before the suspect description than after. They suggest that the risk of decision-making errors such as belief persistence and confirmation bias might be minimised by presenting an offender profile early in an investigation.

Thus far, our studies have focused on the use of traditional profiles in isolation, as one particular source of information available to investigators engaged in a complex criminal investigation. However, we believe that similar processes are at work as investigators attempt to make sense of a whole range of complex, ambiguous and incomplete information in the course of their enquiries. In the following section, we present evidence from a range of psychological research dealing with the cognitive mechanisms by which individuals deal with complex information. This evidence indicates that the general mechanism by which individuals make sense of such information, in particular, social information, is one of story generation. The creative interpretation of offender profiles by investigators may be a specific application of a more general story generation mechanism, employed as a heuristic strategy for dealing with ambiguous and complex information.

The process of investigation

The idea that people use stories both to store and to explain information about the world has received much attention from researchers in a variety of fields, including cognition (e.g. Schank and Abelson 1995), social psychology (e.g. Read 1987; Wyer and Radvansky 1999) and personality psychology (e.g. McAdams 1993). The discussion here is largely confined to the notion of story generation as a cognitive heuristic employed when attempting to comprehend an otherwise confusing situation.

The suggestion that individuals construct stories as a means of understanding a situation has also received support from the study of Naturalistic Decision Making (NDM), an area of research concerned with the ways in which individuals and teams use their experience to make meaningful decisions in dynamic, uncertain and often time-

pressured situations (Zsombok 1997). According to one of the most prominent and widely tested NDM models, Klein's Recognition-Primed Decision Model, when tackling complex and ambiguous problems, a decision-maker engages in story building to create a mental representation of the problem situation, drawing on existing case-specific, domain-specific and general knowledge from long-term memory, and integrating it with perceived information (Klein 1999).

A number of researchers have argued that story generation is a particularly useful tool for understanding social information. For instance, in his approach to causal reasoning, Read argues that in order to comprehend the behaviours of others, individuals need to have an understanding of how conditions initiate particular goals and how people's actions are performed as part of plans to achieve those goals (Read 1987; Read and Miller 1993, 1995).

There is good reason to believe that people rely on story construction to help them understand complicated information, both in general and in the more specific case of information about crimes and criminals, because stories summarise important data about the development of other people's goals and the execution of their plans, and help us understand what underlies conflicts between individuals with differing goals and plans. As such, story generation can be thought of as an heuristic strategy by which we make sense of complex and ambiguous information. Despite the focus on 'biases' in Kahneman and Tversky's well-known 'heuristics and biases' programme (e.g. Kahneman *et al.* 1982), heuristic strategies should not be seen as inherently irrational (Gigerenzer and Todd 1999). Indeed, there is a significant body of work that suggests that the use of heuristic strategies is essentially adaptive. Story generation is a good example of an adaptive heuristic: in general, events follow one another in an understandable sequence, outcomes have causes, and, in a general sense, people often do predictable things in well-defined circumstances. Thus far, the evidence suggests that 'people's decisions based on heuristics are pretty good, pretty often' (Markman and Medin 2002: 424).

While heuristic use has important benefits, it can also have significant costs: stories may be helpful vehicles for understanding social information, but they are not necessarily always accurate. If the perception of new information is faulty, or if the existing knowledge with which it is combined is unsound or incomplete, flawed mental models of the situation will result. Equally, defective social situation models may result if the comprehender holds biased or erroneous views on the meanings of particular behaviours, or if they fail to

take account of important factors such as situational variables (e.g. Cervone 1999).

Stories and profiles

Our argument has important implications for our understanding of the cognitive processes that often lead investigators to hold a favourable view of traditional offender profiles, despite a lack of evidence for their utility. Firstly, the readiness to believe that psychologists, popularly believed to be 'experts' in the study of human behaviour, may have something to offer in a police investigation probably owes a lot to police officers' recognition that the understanding of the behaviour of others is crucial in an investigation. Believing a source of information to be both credible and useful is, of course, likely to predispose officers favourably towards the information itself.

Secondly, the use of a 'story generation' heuristic strategy may be an inevitable consequence of the complexity of the task at hand. Bringing coherence to the sort of intricate and ambiguous material available in a criminal investigation involves significant cognitive effort. Thus, it may be unsurprising that investigators will tend to fill gaps with assumption-based reasoning and to rely on the informed speculation of others, particularly those considered 'experts', to bring coherence to an otherwise confusing situation. These suggestions have some empirical support: for instance, Horowitz *et al.* (2001) report that when presented with trial-like information of increasing complexity, mock jurors appear less able to process such information systematically.

Thirdly, it is possible that the overly positive view individuals hold of the type of profiles and profilers frequently mentioned in the press is, in part, influenced by the use of 'technical' psychological terms in such profiles. Horowitz *et al.*'s participants seemed to find expert witnesses to be more credible when the language they used was more technical, probably because such language use conforms to lay expectations about the nature of expert testimony.

Fourthly, there is some evidence that highly stressful, highly ambiguous situations tend to promote superstitious beliefs and the readiness to invoke simplistic views of behaviour (Vyse 1997).

Finally, it should be acknowledged that there are pragmatic reasons why police might commission profiles even if they believe them to have little or no value. In the UK, the Criminal Procedure and Investigations Act 1996 imposes on the police a statutory responsibility to pursue 'all reasonable lines of enquiry'. Add to this

the public pressure that is so often brought to bear on the police in high-profile cases and it is perhaps understandable that the police often make significant efforts to be seen to have employed every possible investigative resource, no matter how sceptical they might be in private about the efficacy of a particular technique.

Case-based reasoning in criminal investigation: novice and expert

Thus far we have made no clear distinction between experienced and novice investigators when considering their interpretation of information from profiles, and, indeed, other investigative information. Further research is needed to determine whether and in what ways experienced investigators' greater store of domain-relevant information may facilitate effective processing of complex forensic information. For instance, the acquisition of experience may allow investigators to develop a richer and more diverse set of stereotypes upon which they rely heuristically when processing investigative material, thus reducing the need to rely on untested expert information when doing so. Equally, greater experience may lead to an increased ability to resist the temptation to interpret investigative material (including profiles) creatively, and to recognise flaws in assumption-based reasoning.

However, experience is not necessarily synonymous with expertise: as Yates points out, it is quite possible for an individual to achieve 'experienced incompetence' (2001: 24) by repetitive use of poor strategies. What, then, does it mean to be an expert in an investigative context? An increased ability to think critically about investigative material, including profiles, may not be a natural consequence of an increase in domain-relevant experience but may depend in part on the development of a particular set of meta-cognitive skills. Indeed, there is evidence from related fields that experts operating in highly pressured and ambiguous situations undergo a process of critiquing the stories that they generate to help them understand such situations (Cohen *et al.* 1998). By correcting unreliable assumptions and filling gaps with carefully considered evidence, as opposed to speculation, such experts construct more reliable and accurate stories, which allow them to take more effective action.

To summarise, we suggest that investigators attempt to generate a mental representation of an investigative problem situation, consisting of a coherent, convincing and evidentially sound story explaining the circumstances of the crime. Such a story consists of

a series of episodes in which are embedded arguments about the actors (offenders, victims and witnesses) and their motivations and plans, their actions and the cause-effect relationships between them. An investigator's mental model, the narrative of the crime, must be complete and coherent. Where arguments are based on assumptions, they must be valid, and robust enough to withstand the scrutiny of the court. Where they exist, alternative stories should be shown to be implausible, incoherent or unreliable. The process of constructing such a representation is the process of investigation.

The clearer the incoming investigative data, and the more skilled the investigator at interpreting such information, the more effective the process is likely to be. Returning to the principal topic of this chapter, ambiguous and unverifiable information is particularly dangerous when it masquerades as scientific fact. Therefore, the concerns that have arisen in the past few years with regard to clarity in profiles and the increasing recognition that offenders cannot be neatly fitted into types based on an analysis of the crime scene is a welcome development. Work is gradually emerging within the social sciences that will contribute to our understanding of criminal behaviour for the purpose of assisting investigations. This now burgeoning field, which has begun to embrace both experience and systematic research as a way forward, promises stronger links between practitioners and academics and a stronger footing upon which advice may be provided (Alison *et al.* 2004). However, it is important to articulate clearly the reasons why the type of profiles that have had a very lengthy media honeymoon have been so successful. Such knowledge may help inform subsequent research into investigative decision-making and into the guidelines for constructing investigative advice.

Note

- 1 The offence involved the abduction, sexual assault and murder of a male youth in the 1970s.

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