

Predicting the Behaviour of Offenders with Personality Disorder: Issues for Investigative Psychology

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Abstract

This paper explores the extent to which the diagnosis of personality disorder is valid and reliable, whether such a diagnosis conveys useful information of predictive value to forensic psychology, and thus, the extent to which such a diagnosis may be of use in investigative psychology. It argues that the diagnostic criteria are of questionable reliability, validity, and utility. Using a recently developed model of the psychological underpinnings of the problematic thoughts, emotions, and behaviours encompassed by the term 'personality disorder', it argues that such problems emerge from psychological processes that are part of the 'normal' architecture of cognition rather than from an 'abnormal' psychology particular to personality disorder. Great caution is therefore urged before investigative psychology adopts such terminology and associated methodologies from clinical psychology or psychiatry. Copyright © 2008 John Wiley & Sons, Ltd.

Key words: personality disorder; interlock; non-discriminative processing

INTRODUCTION

The issues that this paper will address are whether it is possible reliably to infer the presence of 'personality disorder' from offending behaviour and to what extent the identification of personality disorder might be of practical utility to the investigation of an offence. As such, it is concerned with what Alison (2005) refers to as a 'molecular analysis' of criminal behaviour—will the psychological underpinnings of personality disorder lead to behavioural consistency in the commission of repeated offence types, and also the 'homology problem' (Alison, 2005)—will individuals who meet the criteria for a diagnoses of personality disorder behave more similarly in the commission of an offence than those who do not meet the criteria for such a diagnosis. Basically then, does the way in which clinical psychology can envisage personality disorder have anything to offer investigative psychology?

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Even considering whether personality disorder is an area worthy of concern for investigative psychology hinges on two potentially contentious issues. The first is to what extent the behaviour of individuals is useful for investigative psychology. The second is whether we are able to differentiate meaningfully between those who do and those who do not meet the criteria for a diagnosis of personality disorder.

HOW PREDICTIVE IS BEHAVIOUR?

Investigative psychology is based on the premise that if we are able to accurately identify behaviour that has been involved in the commission of a crime, it will, at the very least, allow us to decide if crimes are linked (carried out by the same person; for examples, see the work of Canter and Heritage (1990), Canter and Larkin (1993) and Canter and Fritzon (1998) and possibly provide us with extra information about that person (where they may live or work, e.g. Brantingham and Brantingham (1984); or other demographic characteristics of the individuals, e.g. Farrington and Lambert (2008). Canter (2000) has identified four areas where investigative psychology may impact upon police investigations: (i) identifying the perpetrator, based on the salience of the behavioural features of the crime; (ii) differentiating between crimes and offenders; (iii) inferring other characteristics of a perpetrator that might assist in identifying that person; and (iv) identifying what, if any, crimes are likely to have been carried out by the same individual. Canter strongly emphasises that in attempting to perform these roles, investigative psychology is building upon the basic traditions of personality theory because, as other authors have suggested, 'personality is a dynamic organisation, inside the person, of psychophysical systems that create a person's characteristic patterns of behaviour, thoughts, and feelings' (Carver & Scheier, 2000, p. 5). This being the case, investigative psychology has broadened its scope to cover all aspects of the investigative process, including interviewing suspects. For example, recent work (Arnold, Gozna, & Brown, 2007) has examined the compliance of suspected offenders during police interviews and how this relates to individuals' behavioural characteristics. Investigative psychology also covers a wide range of criminal activities including sexual crimes, arson, burglary, and fraud (see Canter, 2004). It is assumed, therefore, that investigative psychology can aid the investigative process in all of these areas, independently of forensic evidence such as DNA, repeated use of a particular gun, etc because behaviour is restricted and biased by the limits imposed by an individual's cognition, their physical abilities, and the environment (e.g. Glenberg, 1997). Evidence within the investigative psychology literature provides examples where this approach has been of practical utility in investigations (e.g. Canter, 1995) in addition to the wealth of research literature (e.g. Canter & Fritzon, 1998; Canter & Heritage, 1990) suggesting that it is plausible to link offence-related behaviours to produce typologies of, for example, both arsonists and rapists, and to potentially provide investigative input for homicide investigations (e.g. see Salfatti, 2000).

The basis of investigative psychology is that human behaviour is constrained and biased by a variety of different influences, both internal and external, and knowing what these constraining factors are should allow for making predictions regarding behaviour, for example, where an individual might live, how an individual might respond to certain kinds of interview techniques, etc. At the most basic level these constraints would include the different limits imposed by perceptual systems that determine the information we can

respond to, as evidenced by the use of high frequency tones to alter the behaviour of teenagers but not adults (The Mosquito; see Hirsch, 2007). Limits are also imposed by processing structures, as evidenced by work investigating Wegner's (1994) theory of mental control, which suggests that both intentional and counter-intentional effects arise from the same processes, for example, the ability to correctly recall the order of events can be reduced (as opposed to the events themselves) when one tries to suppress thoughts of these events (Wegner, Quillian, & Houston, 1996). Similarly, the limits imposed by the cognitive system by its tendency to default to restricting the amount of processing performed in order to, for example, assess situations, a tendency referred to as 'cognitive miserliness' (Fiske & Taylor, 1991). This kind of cognitive economy acts to minimise the use of cognitive resources, such as working memory, through the use of categories, heuristics, etc. (e.g. Gray, Sims, Fu, & Schoelles, 2006) and research looking at these constraints helps us to understand studies that deal with biases in, to take a classic example, decision making (e.g. Tversky & Kahneman, 1981).

Many of these constraints and biases have been explored empirically in other areas of human endeavour, and their predictive value in determining behaviour has been demonstrated and often used. Research concerned with the psychology of consumers has demonstrated that the addition of a third, poor quality product into a consumer market (for example, a washing powder) can influence the pattern of product selection between two previously available, higher quality options. This is known as the Decoy Effect (Doyle, O'Connor, Reynolds, & Bottomley, 1999) and demonstrates how subtle changes in the ways in which consumers make decisions about value, based on what information is made available to them, can be brought about. Within the financial services sector, data have been analysed to look at the patterns in which financial services are acquired (e.g. savings accounts), demonstrating that once an individual has made a decision to acquire financial services, there is a tendency to buy them in a predictable order (see Paas & Kuijlen, 2001). This behavioural bias is used to target advertising to clients. Similarly the variety-seeking behaviour of consumers (e.g. regarding the consumption of soft drink brands) has been modelled and found to be linked to demographic characteristics that can be used to target marketing (e.g. Kumar & Trivedi, 2006), suggesting that people are biased in the choices they make based on more than just, in the case of soft drinks, the taste of the drink. More generally, there is the concept of 'permeable barriers' (Rengert, 2004), whereby features in the environment, such as rivers, bridges, and motorways act to reduce the flow of movement, impacting upon the decisions that people make when accessing shopping, entertainment, etc., and how the urban environment can influence the patterns of people walking through it (see Hillier, Burdett, Peponis, & Penn, 1987) and the commission of crime (Greenberg, Rohe, & Williams, 1982; Newman & Franck, 1982). These findings have impacted upon decisions regarding the location of amenities, based upon predictions of the movement of people within the environment.

Research that has looked at the ways in which human behaviour is predictive of other aspects of individuals, outside of the investigative psychology literature, has focussed predominantly on the behaviour of what might be termed 'well' people. If we are going to consider the value of personality disorder within an investigative framework, we need some sense that there is evidence for psychiatric diagnoses having some kind of relationship with behavioural biases—that is, that there are recognised behavioural sequelae of diagnostic categories. A variety of research studies have claimed that when considering deinstitutionalised individuals with mental illness and controlling for possible confounding variables, there is an increased rate of violent acts carried out by these individuals (e.g.

Hodgins, Mednick, Brennan, Schulsinger, & Engberg, 1996; Torrey, 1994), and as such, one could make an association between mental illness and violence, such that the presence of a mental illness possibly predicts violence and possibly vice versa.

It is important, however, to note that this relationship is not consistently found (e.g. Arango, Barba, Qonzález-Salvador, & Ordóñez, 1999; Monahan, 1992). Moreover, many researchers comment that there is not even a clear distinction in symptoms between individuals who receive a diagnosis, and those who do not (Brown & Barlow, 2005; Johns & van Os, 2001) highlight the fact that many individuals would attract different diagnostic labels with the same set of symptoms. In consequence, many authorities suggest that diagnoses should be avoided in favour of more detailed discussion of individual and specific problems (Bentall, 2003, Read, Mosher, & Bentall, 2004).

Clearly, it would be possible to argue that the symptoms of particular categories of mental illness could count as behavioural biases (for example, the compulsion to align objects perfectly, as sometimes found in individuals diagnosed with obsessive-compulsive disorder (symmetry subtype) (see Walkup & Schneider, 2007). Indeed, there is good reason to assume that such problems are likely to have predictable (if perhaps obscure) behavioural consequences; recent research has demonstrated that individuals diagnosed with schizophrenia show a preference for turning left and that this tendency correlates with the severity of the symptoms (Bracha, Livingston, Clothier, Lington, & Karson, 1993). Similarly, individuals who are undiagnosed but score highly on a measure of magical ideation (related to schizophrenia) also demonstrate this tendency (Mohr, Bracha, & Brugger, 2003).

Based on the literature concerned with non-offending behaviour, the limited work looking at behavioural biases correlated with mental illness and the research and practical successes from investigative psychology, there is evidence to suggest that, taking a nomothetic approach to prediction, it is possible to make certain predictions about either the kinds of people most likely to behave in a particular way or other behaviours that are likely to be demonstrated by people who behave in a particular way. Based on this, the contention that behaviour can help in identifying other aspects of an individual, which may assist in investigations, seems reasonable. In order to determine whether this is specifically true for personality disorder requires a greater understanding of how we conceptualise personality disorder.

WHAT IS 'PERSONALITY DISORDER'?

Personality disorder is routinely identified using the American Psychiatric Association's (APA) Diagnostic and Statistical Manual of Mental Disorders (DSM-IV) (APA, 1994), a classification system providing both a list of currently recognised mental disorders and the basis for diagnosing these disorders. It consists of 5 'axes' relating to different aspects of a disorder or disability. Axis I, for example, is concerned with clinical disorders, such as anxiety, depression, and psychotic disorders (e.g. schizophrenia), along with learning and developmental disorders. Axis II is concerned with personality disorder and 'mental retardation'. Personality disorder, according to DSM-IV (APA, 1994), is an enduring pattern of inner experience that deviates markedly from the expectations of the individual's culture in terms of cognition, affect (e.g. range, intensity, ability, appropriateness) interpersonal functioning, and impulse control. It is considered to be pervasive across a wide range of personal and social situations, is characterised by inflexibility (Millon &

Davis, 2000), and results in clinically significant stress or impairment for the individual. Diagnosis, by tools such as the International Personality Disorder Examination (IPDE; Loranger, Sartorius, Andreoli, Berger, Buchheim, Channabasavanna, Coid, Dahl, Diekstra, Ferguson, Jacobsberg, Mombour, Pull, Ono, & Regier, 1994), is performed through the use of a semi-structured interview and requires that the behaviour must have been present for at least 5 years and must have occurred before the age of 25. Blanchard and Brown (1998) report that the IPDE has good inter-rater reliability (median kappa, 0.73) and test-retest reliability (median kappa, 0.87). However, research has demonstrated that there are biases in the diagnosis of personality disorder by clinicians due to, for example, the race of a hypothetical client (e.g. Mikton & Grounds, 2007), indicating that there are cultural factors involved in the diagnosis of personality disorder. Despite these concerns and the recognition that currently there is no accepted gold standard for the diagnosis of personality disorder, the IPDE is considered one of the more reliable tools (Blanchard & Brown, 1998). It requires that the level of disturbance that an individual experiences is above what might be considered 'normal'. That is, the thoughts and behaviours considered pathognomic of personality disorder are present on continua, with personality disorder considered an extreme expression of normal psychology, as has also been suggested for various Axis I disorders (e.g. Bentall, 2003). For example, a bond between one person and another that is based on one's need for protection would, according to attachment theory (Bowlby, 1999), be considered an appropriate level of dependence. When that is expressed as a desperate need for other people, accompanied with indecisiveness, lack of self-confidence, and self-denigration in order to maintain such a bond, the dependence is at extreme levels, and according to DSM-IV, would be labelled as Dependent Personality Disorder. Research has demonstrated that individuals with a diagnosis of personality disorder are more likely to experience a range of social difficulties (Benjamin, 1996; Rutter, 1987) and to make frequent use of mental health services (e.g. Guthrie, Moorey, Margison, Barker, Palmer, McGrath, Tomenson, & Creed, 1999).

A variety of theoretical approaches have attempted to provide an explanation for the development of personality disorder, resulting in debates about the usefulness of categorical and dimensional models, the origins of personality disorder, and explanations for how the behaviours are expressed (for examples, see Beck & Freeman, 1990; Kernberg, 1996) and Millon, Meagher, and Grossman, 2001). According to Blackburn (2000), categorical classification systems for the diagnosis of personality disorder are neither reliable nor psychometrically valid, and Tyrer (1994) has suggested that some subcategories of personality disorders are not best thought of as distinct categorical entities. The dimensional solution to these issues is no less problematic, as research has demonstrated that the scales that are thought to measure these dimensions are not independent of one another (e.g. Blackburn, Renwick, Donnelly, & Logan, 2004). One consequence of these ongoing theoretical debates is the uncertainty regarding the diagnosis of particular 'types' of personality disorder as evidenced by the removal of sadistic personality disorder from the Diagnostic and Statistical Manual, the debate as to whether borderline personality disorder and bipolar disorder are in fact expressions of the same underlying disorder (e.g. Mackinnon & Pies, 2006), and the high levels of co-morbidity between schizotypal personality disorder and avoidant personality disorder (McGlashan, Grilo, Skodol, Gunderson, Shea, Morey, Zanarini, & Stout, 2000). Thus, the idea that personality disorder might be symptom-specific, either within its own Axis or in comparison with Axis I disorders, is as yet undetermined. However, as Tyrer (1988) summarised, clinical experience and historical evidence have maintained personality disorder as an important concept, as it describes

behaviour that at its extreme will be maladaptive cross-culturally and is not otherwise defined within diagnostic systems.

From the viewpoint of clinical and forensic psychology, these are important and useful debates as they inform issues such as diagnosis and treatment; however, they are perhaps of less practical application within the realm of investigative psychology. Interestingly, they mirror debates within investigative psychology concerning aspects of typology, as evidenced by the debate concerning the usefulness of the organised/disorganised typology commonly found in descriptions of serial murder cases (see Canter, Alison, Alison, & Wentink, 2004). Both debates hinge on the ability of behaviour to define aspects of an individual that will be psychologically useful for further understanding that individual and making predictions about them. To some extent, this has been addressed by the introduction of 'themes' (for example, see Yokota & Canter, 2004) that allow for the identification of criminal specialisation (e.g. commercial as opposed to residential burglary). Yokota and Canter (2004) suggest that a change in an individual's theme indicates a change in the underlying psychology. However, as with personality disorder, it is not clear how the identification of a theme for a particular individual will provide further relevant and practical psychological clarity regarding that individual. By their definition (Yokota & Canter, 2004, p. 156) are not independent of one another, it is not clear that the thematic level of description is a parsimonious way in which to differentiate between offenders or offences, and themes are not based on psychological theory. This is as we have suggested is the case for personality disorder. What is of potential use to investigative psychology, with reference to personality disorder, is whether an understanding of personality disorder offers anything to investigators. To address this question, we will consider a recently developed model of personality disorder (Duff & Kinderman, 2006) that considers the underlying general mechanisms of personality disorder (i.e. not specific to a subtype but considering the diagnostic category of 'personality disorder'), making use of an explanatory framework of general psychology that then allows us to address some of the more practical questions regarding personality disorder from an investigatory perspective.

The model is based on Barnard's (1987) Interacting Cognitive Subsystems (ICS) framework and suggests that the behaviour typically found in individuals diagnosed with personality disorder can be accounted for by two commonly occurring and normal processes, 'non-discriminative processing and 'interlock'. The behaviour that we are referring to is the tendency for individuals with personality disorder to repeat the same strategies for problem-solving, irrespective of the details of the situation, a feature of personality disorder that has been identified by Livesley (2001) and Millon and Davis (2000) amongst others: '... the alternative strategies and behaviors of personality disordered subjects are few in number and rigidly imposed on conditions for which they are poorly suited' (Millon & Davis, 2000, p. 13). An important corollary of this model is that it makes clear that personality disorder is at an extreme end of normal human behaviour and is a consequence of normal cognitive processes. Behaviour leading to a diagnosis of personality disorder is a consequence of both the content of the information available for processing and the frequency with which certain processes occur, but the processes themselves are not different. This parsimonious approach to understanding personality disorder makes clear the idea that there is no requirement for a separate psychology of individuals exhibiting personality disorder-like behaviours above diagnostic levels and another for those who do not.

The architectural details of ICS will not be considered further as they are available from a variety of sources (e.g. Barnard, 1987; Duff & Kinderman, 2006; Teasdale & Barnard,

1993). However, it is worthwhile briefly to consider both non-discriminative processing and interlock.

NON-DISCRIMINATIVE PROCESSING

In ICS, representations are built up based on co-occurrences, either those that exist in the environment or those that develop through the processing of information during cognition. When novel information is available to the system, and as such, might alter the currently available representations, it is discrepant—either because it is entirely new or because it is information that has seldom occurred in previous examples of the current situation. If this novel information is also discriminative, it will become incorporated into the representations circulating through the subsystems and can impact upon understanding, decision making, etc. However, if it is identified as having no predictive value, i.e. it is non-discriminative, it will play no further role in the development of an individual's representations of the situation and themselves. This is a normal function of ICS, as it allows for a faster movement of information through the system, thus modelling the rapid thinking and response times of human cognition. By ignoring information that objectively does have discriminative value, the resulting behaviours may appear rigid and inappropriate in certain circumstances. It is our contention that the learning experiences of some individuals will have an impact on what they perceive as discriminative. That is, specific personal learning experiences may lead a person to treat stimuli or patterns of information present in the environment (e.g. the presence or absence of particular individuals, or people's tone of voice, facial expression, etc.) as non-discriminative. The fact that non-discriminative processing, almost by definition, leads to no change in behavioural repertoire, means that this is likely to lead to a perception of rigidity or inflexibility. The fact that many observers may regard the novel stimuli or patterns of information as objectively discriminative, this may lead to a perception of abnormality. Such inflexible, maladaptive behaviour may well be labelled as personality disorder.

INTERLOCK

As implied above, the subsystems of ICS are constantly amalgamating and transforming information into new representations that, unless there is a sudden shift in the individual's state or environment, are more properly considered updates of pre-existing representations. Teasdale and Barnard (1993) have described a reciprocal process in ICS whereby any subsystem can effectively receive feedback as to the accuracy of its current representation from the contributing subsystems that have provided input to that higher order representation, allowing it to be updated when novel information is available. However, an inherent possibility of ICS is that, rather than this feedback containing new information, a subsystem or subsystems that could reflect the presence of this new information can 'settle' into simply reflecting back the representation that was sent to it (see Teasdale & Barnard, 1993, p. 221), reinforcing the current higher order representation, which will contain some material from previous (possibly dysfunctional) learning experiences and not represent the new situation as it exists. This 'settling' process is described as 'interlock' by Teasdale and Barnard (1993), and they have suggested that such a mechanism may maintain depressive mood states. Similarly, we suggest that it may lead to the production of what appears to be maladaptive and impulsive behaviour, which can then become reinforced.

PERSONALITY DISORDER AND PREDICTABLE BEHAVIOUR

Both of the processes described above are considered to be features of normal cognition. Some individuals may intrinsically be more prone to exhibiting non-discriminative processing or (more likely) interlock, and it is highly likely that particular—especially abusive—learning experiences may lead to non-discriminative processing. As a consequence, some of their representations may be particularly disadvantageous for socially accepted patterns of thinking and behaviour. As such, however, personality disorder is conceptualised as lying at an extreme end of a continuum of behaviour and cognition, and it is more useful to think about the cognitive biases and constraints that are responsible for the characteristic limited and rigidly applied behaviour (see Millon & Davis, 2000) of these individuals. This reflects theoretical and empirical work concerned with Axis I disorders, which similarly suggests that mental illness is more accurately conceptualised as being on a continuum (e.g. Bentall, 2003; Johns & van Os, 2001). The theoretical modelling of these cognitive biases has allowed us to make and test predictions in constrained research contexts. One prediction based on this model that is currently under investigation by the authors is that individuals who meet diagnostic criteria for personality disorder will draw upon information that is neither present in an ongoing situation nor is it relevant for understanding that situation, and they will use this internally generated information in order to make attributions regarding the feelings, plans, and intentions of individuals in that situation. The consequence of this is that their comprehension and response to that situation will differ markedly from individuals who are not biased to such an extreme extent. Using the Projective Imagination Test (PIT, Blackshaw, Kinderman, Hare, & Hatton, 2001), developed to collect participants' interpretations of pictures of ambiguous social situations, participants are asked to describe first what they believe might be going on in a set of ambiguous pictures, and second, to provide an account of what they believe the person or people in the pictures might be thinking or feeling. Previous studies (e.g. Blackshaw *et al.*, 2001) have demonstrated a difference between individuals diagnosed with Asperger Syndrome and controls on both the number and range of attributions generated to the PIT. Our work comparing non-offending individuals without a prior diagnosis of personality disorder but who exceed the diagnostic criteria for personality disorder (based on interview using the IPDE) against those who do not reach criteria for personality disorder, indicates not only differences in the number of attributions made, but also differences in the quality of these attributions and the extent to which they deviate from the information available in the stimuli¹. Thus, the individuals who reach the criteria for personality disorder demonstrate differences in both how they understand the ways in which others react to a situation and the situation itself, and it is not unreasonable to infer that these differences would result in qualitative differences in behaviour as a direct consequence of these differing representations.

EXTREME BIASES IN COGNITION AND INVESTIGATIVE PSYCHOLOGY

As previously suggested, there is evidence that in both offending and non-offending situations, an individual's behaviour can be used to make predictions about other aspects of that individual. Based on our earlier model of personality disorder as being characterised

¹Duff S. C. & Kinderman, P. (in prep.). Attributions of men with personality disorder: Evaluating an interacting cognitive subsystems model.

by biases in normal cognitive processes as well as our subsequent research, we have begun to construct an explanation for the cognitive processes that underpin personality disorder and some of the consequences of those processes. These results indicate that individuals who reach criteria for a diagnosis of personality disorder do show the effects of non-discriminative processing and/or interlock through their verbal responses to ambiguous stimuli, as a consequence of their extreme levels of cognitive bias. What this model also highlights is that individuals who reach the criteria for personality disorder are not a different type of people but rather fall at an extreme end of a continuum of behaviour that is a product of the same processes that contribute to thinking and behaviour in everyone with a fully functional cognitive system.

With regard to investigative psychology, this conceptualisation of personality disorder as the consequence of normal processing, albeit extremely biased and constrained as opposed to qualitatively different 'abnormal' processes, has a number of consequences. Of most importance is that investigators will be unable to benefit from any possible behavioural effects of cognitive processes that are unique to individuals diagnosable with personality disorder because there are no cognitive processes unique to these individuals, it is the content of the material being processed that differs. However, this is not particularly surprising, although it goes against the popular media depiction of both the mentally ill and offenders as being incomprehensible monsters. Research has demonstrated that arsonists (Canter & Fritzon, 1998), rapists (Canter & Heritage, 1990), and murderers (Salfatti, 2000) are at least as constrained and biased as the consumer and that their behaviour shows similar kinds of regularities. The cognitive processes of offenders are not assumed to be different, but rather the content of those processes (e.g. cognitive distortions of men who offend against children, Howitt and Sheldon (2007).

The second consequence is that as the behaviour of individuals whose behaviour is extreme is also biased and constrained by those influences that affect us all by their unique life experiences, and the specific extremes of biased and constrained processing through non-discriminative processing and interlock, it is reasonable to assume that these individuals will be as predictable and detectable as any other kind of offender carrying out the same offence type. The caveat is that it would only be with extreme caution that one would assume from those behaviours the presence of a personality disorder and use that assumption to change the way in which one would predict other factors that might impact upon the investigative process (e.g. interviewing strategies, likely home location, excluding individuals with relationships, employment, etc.), or that the known presence of personality disorder would make the process of linking offences together any more reliable. The reasoning behind this is that according to Barnard's (1987) model, non-discriminative processing and interlock are aspects of cognitive processing that everyone can and does experience. This implies that, whilst human behaviour may be predictable (given appropriate data and appropriate models of processing), such predictability is neither limited to people with a diagnosis of personality disorder nor limited to people without such a diagnosis. The important issues are that although extremes of behaviour characterise individuals diagnosed with personality disorder, extremes of behaviour are not exclusive to these individuals, and additionally, that the underlying mechanisms determining these behaviours are the same. Thus, extremes of behaviour are not necessarily what Youngs (2007) refers to as 'criminally pertinent'. That is, extreme behaviour is not necessarily relevant to determining important and relevantly defining characteristics of either the offence or the offender. Similarly, extreme behaviours may not be 'criminally salient', which, as Youngs (2007) suggests, is what would allow an investigator to distinguish one

criminal style from another. This may be because the behaviour is performed by a large number of offenders, perhaps due to the very nature of the offence. Finally, as Youngs (2007) points out, extreme behaviour may result in 'contingency destabilisation', whereby the presence of an extreme behaviour may, unhelpfully, alter an investigator's view of what aspects of offence behaviour are pertinent and salient.

We are not yet at the stage of being able to identify the factors that may be responsible for triggering interlock, and we cannot specify whether specific experiences result in particular categories of information becoming non-discriminative. However, based on our earlier theoretical analysis of personality disorder (Duff & Kinderman, 2006), it is clear that at a certain level, it is possible to predict behaviour in individuals who score above threshold on diagnostic tools. We would be able to predict that they will find it difficult to restrict their decision-making behaviour to the currently relevant information that they have available to them, and as a consequence, their behaviour, at times, will be noticeably at odds with socially accepted norms. What we are unable to do at present is to predict under what circumstances this may happen, how the decision-making processes may be externalised through behaviour, and if this behaviour itself is both discriminating and discrepant, and as such, of use to investigators. These are important empirical questions for psychology that may have a direct impact on investigative psychology. It is, however, of use to clinical and forensic psychologists as of now because this conceptualisation of personality disorder makes clear predictions regarding the kinds of therapeutic approaches that will impact upon such individuals, both those who have offended and those who have not. It also provides an explanation as to why current practices are less successful.

CONCLUSION

There is a wealth of evidence supporting the basic premises of investigative psychology, i.e. that there are elements of human behaviour that are indicative of other features of an individual, and that a certain behaviour that an individual exhibits is predictive of other behaviour that the individual might engage in. We might expect that individuals who are categorised as deviating markedly from the expectations of their culture in terms of cognition, affect (e.g. range, intensity, ability, appropriateness) interpersonal functioning and impulse control (the APA's definition of personality disorder; APA, 1994) would allow for greater predictive power. Thus, personality disorder would be useful for linking crimes, and the nature of offence-related behaviour exhibited by such an individual that identify them and provide strong links to other identifying factors; it would be useful for the investigative psychologist. Based on our conceptualisation of personality disorder, this is not presently the case. Thus, including personality disorder in investigative thinking should only occur with caution. The fact that we now have a model of personality disorder that allows for empirically testable predictions means that this situation may change in the future and it also means that when traditional investigative methods do identify an individual who may exhibit personality disorder-like cognition, we are in a position to more accurately assess and treat such an individual.

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