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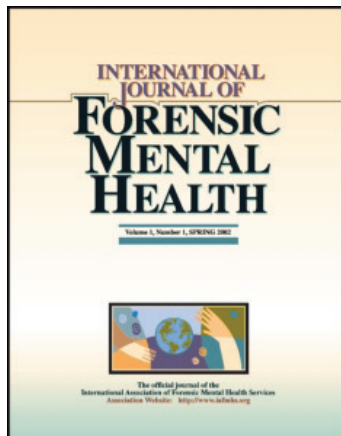
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Forensic Case Formulation

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Forensic Case Formulation

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Formulation is the process or product of gathering and integrating diverse information to develop a concise account of the nature and etiology of the problems affecting a person's mental health to guide idiographic treatment design and other decision-making. Formulation is a core competency in mental health practice, including forensic mental health; however, there is no agreement concerning the details of how it should be done or how to evaluate it, either generally or more specifically with respect to forensic mental health. The purpose of this paper is to raise specific issues in the practice and evaluation of forensic case formulation, and so enhance the profile of this important area of work. In this paper, we (1) define case formulation and describe its key features, (2) specify criteria for evaluating case formulation, and (3) address challenges in forensic practice, with suggestions for advancing practice through research. We conclude with a proposed research agenda that we hope will encourage and promote activity in this important area.

Keywords: forensic assessment, forensic treatment, formulation

Formulation is the preparation of an evidence-based explanation of a person's difficulties – their form, their origins, and their development and maintenance over time (Johnstone & Dallos, 2006; Tarrier, 2006). Drawing on either one or many theories and practices, the process of formulation is intended to generate an idiographic treatment plan that will provide a response to the difficulties presented that is both effective and proportionate—more so than a generic treatment plan, such as one based on diagnosis or practice guidelines. Formulation is thought to be especially important when standard treatment fails, or with complex clients where diagnosis may

not strongly predict effective treatment (Davidson, 2006), and its use is strongly recommended in the field of risk assessment (Hart & Logan, in press). Despite its widespread use across most treatment settings, there are problems with its reliable and valid application. In this paper, we propose to identify what these problems are and to offer practitioners and researchers explanations for their occurrence, options for their resolution, and directions for future research and practice, not only in clinical case formulation generally, but in forensic case formulation specifically.

PRINCIPLES OF FORMULATION

We begin with a general but selective outline of formulation to set the foundation for subsequent discussion. Readers are directed to a range of excellent reviews of case formulation

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(Eells, 2007a, b; Persons, 2008; Sturmey, 2007, 2009; Tarrier, 2006) and forensic case formulation (Sturmey & McMurran, 2011) for more extended treatments of the topic.

Formulation has two distinct but related meanings: It refers to the *process* of preparing or developing something in a precise, systematic manner and also to the *product* of that process. In both cases, the product could be physical in nature, such as a mixture of substances, or it could be linguistic or conceptual in nature, such as a statement, account, or explanation. Formulation is something that is part of the daily activity in many different areas of science, technology, and professional practice. The common theme is that formulation must be abstracted, precise, and systematic.

Formulation in Mental Health

Formulation is an important concept in mental health (Eels, 2007a,b; Sturmey, 2007, 2009). Here, it is the process or product of gathering and integrating diverse clinical information to develop a concise account of the relevant variables affecting a person's mental health to guide decision-making. Psychologists' and psychiatrists' professional bodies worldwide specify formulation as a core competency in mental health practice (Allon, Gauthier, Doyle, & Hutcheon, 2005; American Board of Psychiatry and Neurology, 2010; American Psychological Association Task Force on the Assessment of Competence in Professional Psychology, 2006; Australian Psychological Society, 2006; British Psychological Society Professional Practice Board, 2008; Fouad et al., 2009; New Zealand Psychologists Board, 2010; Royal College of Physicians and Surgeons of Canada, 2009; Royal College of Psychiatrists, 2009). It is also discussed in the statements of core competencies of other mental health professions, such as nursing, social work, and occupational therapy.

Although there is consensus in mental health professions that formulation is a core competence and a critical aspect of daily practice, there is no agreement concerning how practitioners should conduct or evaluate it, which perhaps reflects the diversity of the kinds of problems that mental health professionals deal with on a daily basis, the settings in which those problems arise, the type of professional services being provided, and the training and orientation of the professional providing services. The situation is somewhat brighter if we ignore the details and focus on generalities, sourced from the literature on case formulation supplemented with more general discussions of explanatory reasoning, some of which are from outside the field of mental health. Based on these sources, we have developed a list of the common features of formulation in mental health. These features are discussed below.

Inferential. Some approaches to formulation go beyond mere description, statement of facts, or classification to make predictions—which may be in the form of speculations about possible futures, rather than precise or quantitative forecasts—and provide an explanation or justification

for those predictions. We are convinced by arguments that formulation in mental health is best conceptualized as a form of *abductive inference* (Haig, 2008; Ward, Vertue, & Haig, 1999). Abduction is a form of inductive reasoning that involves generating rules from cases and results, in contrast to deductive reasoning, which involves generating results from rules and cases. Put simply, abduction uses observations to develop potential explanations that in turn can be used to make predictions, whereas deduction uses lawful explanations to make predictions. Deductive reasoning is much stronger logically but unfortunately impossible in mental health at present given the absence of natural laws (or even strong theories). We simply cannot, with precision, predict what will happen to patients in the future or, with certainty, calculate which treatments will be most effective for them. Abduction takes the following form (adapted Niiniluoto, 1999, p. S439): (1) The surprising or noteworthy facts, F, are observed; (2) But if explanation, E, were true, F would be a matter of course; (3) Hence, there is reason to suspect that E is true. Abduction is sometimes referred to as *inference to the best explanation* (Harman, 1965). This characterization highlights two important aspects of abduction: First, the best explanation is only one of many possible explanations of a given set of observations; and, second, it may be superior to others, yet may not be completely, ultimately, or fundamentally correct.

Action-oriented. The purpose of formulation is to assist the mental health professional to develop an overall understanding of a patient's problems, prioritize treatment issues and problems, plan general treatment strategies and select specific interventions, anticipate the patient's responses to strategies and interventions, evaluate treatment progress, and enhance the therapeutic relationship (Corrie & Lane, 2010; Logan, Nathan, & Brown, 2011). Formulation may be particularly important when working with patients or offenders who fail to respond to diagnosis-based treatment, whose presenting problems are complex, or who may pose a risk of harm toward themselves or others (Davidson, 2006; Logan & Johnstone, 2010). In such cases, formulation provides an opportunity for practitioners, clients, and other interested parties, including courts, tribunals, and review boards, to reach a consensus or collaborative engagement regarding how best to proceed (Tarrier, 2006).

Theory-driven. Formulation is necessarily guided by or embedded in a particular theory of problem cause or solution. Determining which facts are noteworthy or identifying which explanations are legitimate requires some *a priori* guidance; the world is simply too complex for a human being to pay attention to everything or identify all potential explanations. Each different theoretical approach predetermines which target behaviors, variables, and treatments are legitimate, as well what constitutes a valid explanation (Sturmey, 2009; Tarrier, 2006). Other approaches to formulation are not explicitly tied to a particular theory, and may be characterized as eclectic (Weerasekera, 1996, in press).

Individualized. Although formulation is driven by theory, it is also driven by each person's data, that is, the details of their life history. A formulation that is not individualized is merely a restatement of the nature, etiology, and solution of the problems experienced by the (nonexistent) average patient or offender. The relevant question for professionals is not, "What usually works best for people with this sort of problem?" but rather, "What will work best for this particular person with this particular problem in light of the person's unique history, current situation, and possible futures?"

Narrative. Formulation does not rely exclusively, and in many approaches not primarily or even at all, on formulas or calculations or numbers. The information (theoretical framework, case history data) used in formulation is encoded in natural language, and the process of abduction itself involves operations performed in natural language. What this means is that formulation requires what Bruner (1985) called *narrative cognition*, as opposed to *paradigmatic cognition* (Corrie & Lane, 2010; Hart, 2003). Paradigmatic cognition is the traditional scientific, deductive, nomological approach to understanding. Narrative cognition, in contrast, "configures the diverse elements of a particular action in a unified whole in which each element is connected to the central purpose of the action" (Polkinghorne, 1995, p. 11). Narrative cognition apparently defies quantification; it is an inherently qualitative approach to understanding the world, and is especially suited to the analysis of human behaviour, being "uniquely suited for displaying human existence as situated action. . . the linguistic form that preserves the complexity of human action with its interrelationships of temporal sequence, human motivation, chance happenings, and changing interpersonal and environmental contexts" (Polkinghorne, 1995, pp. 5–7).

Narrative cognition also has its own characteristic rules and operations. For example, a good narrative has at least two important features. First, it contains critical elements of information that help to make clear the emotional and motivational meaning of behaviour. Second, it has a plot. Plots structure a narrative by establishing its temporal parameters (the beginning and end), guiding the selection of information for inclusion, guiding the order in which information is presented, and clarifying the meaning of information. One can think of information elements as "anchors" for the plot. So, a formulation can be considered a type of "anchored narrative," a narrative that is anchored both in terms of a theoretical framework and the facts of the case at hand (Hart, 2003).

It is important to emphasize that some approaches to formulation explicitly incorporate paradigmatic or quantitative reasoning. For example, experimental functional analyses may collect data to examine the association between the presence or absence of a variable or even a parametric analysis of systematically manipulated different values of an independent variables. Haynes and O'Brien's (2000) approach to formulation is highly quantitative and involves estimating magnitudes of effects, ease of manipulation of variables, and the effects of moderator variables. Mumma's (2001, 2004,

in press; Mumma, & Mooney, 2007a) work also involves estimating individual parameters that predict target behaviors of interest and is driven by psychometric considerations of measurement.

Diachronic. Formulation spans time and, like all good forms of planning and decision-making, typically is anchored in information about the past, the present, and possible futures. Problems arise when it is synchronic, that is, based on information from a specific time period. For example, a common problem is when planning and decision-making is overfocused on the past. Although knowledge of the past may be critical, it is naïve to assume that history always repeats itself and to ignore the fact that people and the world they live in grow, mature, evolve, and change over time, as well as the fact that the current environment may be different from the past environment: What might have been true in the past may not hold true in the present or future. This is one reason why point predictions of the future (extrapolations from historical trends) are often so inaccurate in fields such as economics, medicine, and climatology (e.g., Makridakis & Taleb, 2009; Orrell, 2007).

Testable. Formulation may be characterized as a process of developing an explanatory theory regarding an individual's problems, which is in turn based on more general theory and the facts of the case at hand. Importantly, because this individual theory is action-oriented, it is by design both testable and intended to be tested. Tarrier (2006) has characterized the testable nature of the formulation as its "essential characteristic" (p. 6). A good clinician should be able to predict.

Ampliative. Like any good theory, plan, or narrative, formulation transcends the mere reportage or summary of existing information to generate new information: it produces new knowledge. Paradoxically, we may have more faith in the formulation and the new information it generates than the original information on which the formulation was based, a phenomenon called "emergent certainty" by Josephson (1996). The new knowledge or emergent certainty is limited, of course, but this does not detract from its uniqueness or potential utility.

EVALUATING FORMULATIONS

The process of formulation is usually covert or implicit. Thus, formulation is evaluated in terms of its product. We usually judge the adequacy of a particular formulation, rather than the process by which that formulation was developed. These judgments are necessarily comparative and contextual. They are comparative because, any decision regarding whether to accept or act on the formulation will be based on its adequacy relative to that of alternative formulations. This can be done through direct comparison of different formulations. Formulation is also contextual because the adequacy of a formulation will be based on the costs of decision errors. These costs can include acting on an incorrect formulation, failing

to act on a correct formulation, and deciding not to develop a formulation when one could improve case management. For example, making a formulation error by predicting a suboptimally effective treatment for social anxiety involves relatively small costs for few people. In contrast, making a formulation error resulting in iatrogenic treatment of violent offending will result in large costs for many people.

With these comments in mind, we derived a set of evaluative criteria for judging the adequacy of formulations in (forensic) mental health based on discussions of abductive inference, formulation, and narrative. They are related but do not correspond directly to the features of formulation discussed previously. The evaluative criteria are summarized below.

External coherence. This is the degree to which a formulation is consistent with theory. To the extent that the theory has verisimilitude and is generally accepted, it increases the plausibility and prior probability of a formulation based on it. In narrative terms, it means that the formulation has a plot that is familiar or of a type that is commonly encountered. This criterion is also referred to as *analogy* in the literature.

Factual foundation. This is the extent to which a formulation is based on information about the case that is adequate in terms of quantity and quality. In narrative terms, an abundance of information elements makes it easier to develop a good plot.

Internal coherence. This is the degree to which a formulation rests on propositions or makes assumptions that are compatible or noncontradictory. In narrative terms, this means the formulation has a plot that is cogent and consistent.

Explanatory breadth. This is the degree to which a formulation accounts for critical evidence. In narrative terms, explanatory breadth means the formulation has a plot that ties together as many information anchors as possible. This criterion is also referred to as *consilience* or *relevancy*.

Diachronicity. This is the extent to which the formulation ties together information about the past, present, and future of the case. This may be considered a special case of explanatory breadth.

Simplicity. This is the degree to which a formulation is free from unnecessary details, propositions, and assumptions. In narrative terms, this means the formulation has a plot that is not obscure or convoluted. All else being equal, simple formulations are to be preferred over complex ones. This criterion is also referred to *economy*, *minimality*, and *irredundancy*.

Reliability. This is the extent to which different professionals develop formulations that are similar or agree that a particular formulation is adequate. This criterion is also referred to as *agreement* and *consensus*.

Generativity. This is the extent to which the formulation yields useful knowledge, and in particular detailed and testable predictions. The key predictions are those about which strategies will be most effective in managing harmful

behavior—and violence risk. This criterion is also referred to as *testability* and *applicability*.

Accuracy. This is the extent to which the predictions generated by a formulation are accurate. By accurate, we mean both important predictions actually occur, and important occurrences were actually predicted. This criterion is also referred to as *predictive validity* and *treatment utility*.

Acceptability. This is the extent to which the formulation is accepted by consumers (e.g., patients or offenders, other professionals, courts and review boards) as useful. Acceptability increases the chances of collaborative action. This is similar to the criterion of external coherence, except it refers to consistency with folk concepts (conventional wisdom, common sense) rather than scientific theory.

In this section, we have provided a brief overview of the principles of forensic case formulation and listed the key elements of its evaluation in practice. But formulation is a challenge in forensic practice. The specific nature of those challenges is now explored, with suggestions for advancing practice through research.

SIX THEMES ON FORENSIC CASE FORMULATION

Theory Underpinning Formulation

One enduring issue in case formulation is whether clinicians should make formulations using one theory and, if so, which one. In correctional work, the dominant rehabilitation model is the Risk-Needs-Responsivity (RNR) model, which is based upon the theory known as the Psychology of Criminal Conduct or General Personality and Cognitive Social Learning (Andrews & Bonta, 2006). The RNR approach consists of three core principles: (1) the *risk principle*—the level of services delivered to offenders should be commensurate with the risks they pose to re-offend; (2) the *need principle*—offender assessment and management should focus on criminogenic needs, i.e., causal risk factors for antisocial behaviour that have been validated by empirical research; and (3) the *responsivity principle*—services should be delivered in ways that maximize their effectiveness, i.e., the focus of programs should be on skills acquisition and enhancement through prosocial modeling, the appropriate use of reinforcement and disapproval, and problem solving, and the delivery style of programs should match offenders' individual learning styles, motivations, abilities, and strengths. The dominance of the RNR model in correctional settings suggests to us that all forensic mental health professionals should have some basic competence in forensic case formulation that is compatible with the RNR model.

As the name implies, the General Personality and Cognitive Social Learning theory is a broad theory, and there exists a range of more specific theories, each of which place greater or lesser emphasis on the various personality,

cognitive, behavioral, and social factors incorporated within it. One important question that arises is, how do we reconcile or integrate formulations from different perspectives concerning the same person? Indeed, should we even try?

Eells and Lombart (2004, in press) argue that formulating a case from more than one theoretical perspective is informative, as each theory, source of information, and formulation model has something to offer. These authors suggest multiple, independent formulations, rather than integrated formulations. Others have attempted to integrate different approaches. Weerasekera (1996, in press) developed a methodology to formulate the case many times from biological, psychodynamic, psychiatric, cognitive, and behavioral approaches, and then to integrate these alternative formulations into one single formulation and to select interventions from a range of perspectives. Weerasekera's view is that different approaches operate at different levels of analysis of an individual's behaviour and that each level has something to offer our understanding of predisposing factors, precipitating factors, perpetuating factors, protective factors, and coping styles. Each level of analysis implies a different level of intervention, including a range of individual-level (i.e., biological, behavioural, cognitive, and psychodynamic) and systemic-level (i.e., couple, family, occupational, and social) interventions.

In the absence of evidence of what is useful and effective specifically for forensic case formulation, the way forward in forensic work might be to learn from experiences with general case formulation and to establish consensus good practice guidelines and formulate a research agenda based on these.

Reliability and Validity of Formulation

The issues of reliability and validity have figured in the literature on case formulation for over 30 years. In a series of reviews and empirical studies, Kuyken (2006) has repeatedly pointed out that despite the recognition of case formulation as a core skill by many different professional organizations, and despite over two decades of research into case formulation, the evidence supporting its use remains sparse and contradictory.

There are many studies that have evaluated the reliability of a single aspect of case formulation, such as identifying the target behavior or the target behavior's function. For example, Daffern et al. (2007) assessed the reliability of the Assessment and Classification of Function (ACF), a questionnaire measure of the functions of aggression in psychiatric inpatients. They reported an intraclass correlation of .94 for all raters, but only .64 for individual raters, suggesting lower reliability for individual raters and perhaps significant variability between raters. Similarly, Mumma (in press) noted that evidence for the reliability of psychodynamic formulation is mixed ranging from "good to excellent" (i.e., weighted kappas > .75) in some studies to "poor" reliability in other

studies. Other studies have found adequate reliability on aspects of formulation, such as identifying some, but not all of the target behaviors, but did not obtain adequate reliability in identifying essential elements of the history (Kuyken et al., 2005). However, some reliability studies use a very limited range of clinical materials and/or raters. Some studies also constrain the clinician's behavior in a way that may be atypical of actual clinical practice, for example, by providing structured written case material or edited videotapes, and predetermined categories for clinicians to use. These strategies may inflate the reported reliability compared those in routine clinical practice.

Mumma has conducted a series of sophisticated empirical studies on case formulation (Mumma, 2001, 2004, in press; Mumma & Mooney, 2007a, b; Mumma & Smith, 2001). By incorporating psychometric concepts of construct and content validity, inter-formulator reliability, internal consistency, test-retest reliability, predictive validity, and construct validity, Mumma parses the problem of reliability and validity of case formulation into several focused questions. For example, content validity is studied by asking questions such as: Are important target problems covered in formulation? Are important causal or concomitant variables included? Are target and causal variables relevant to that person? Are the facets and elements of each variable selected the most relevant for that person?

Clearly, some fundamental research on some relatively simple questions is required in forensic case formulation. The consequences of getting formulation wrong could be very great indeed, even equal to having no formulation at all. Researchers should determine what constitutes adequate forensic case formulations, show that clinicians can write formulations that meet these criteria, and demonstrate the reliability and validity of forensic case formulations. This is an unexplored field and research into these topics would make a valuable contribution.

The Problem of the Criterion Variable

One issue in forensic case formulation is that the behavior to be addressed in treatment is usually not evident. The reasons for this are obvious: the behavior under assessment—such as extreme violence, murder, and sexual assault—cannot be elicited for examination, observation, or hypothesis testing for ethical and practical reasons. How does the forensic professional deal with this problem?

One approach is to focus upon intrapersonal variables that relate to risk, for example cognitive, affective, or physiological predictors of behavior. To the extent that offenders may accurately report what happened during the relevant behavior or a similar behavior that can be elicited in a forensic setting, this approach may be possible. Although these are mainstream targets for assessment and intervention, there is an issue regarding whether or not they actually relate to offending behavior. A different approach is to look at behaviors

that are apparently functionally similar to the offence and conduct an analysis and treatment of these behaviors, with the aim of changing the offending behavior. One approach to formulation that attempts to identify current observable and covert behaviors that may serve the same function as the index offense behavior is a focus on Offence Paralleling Behavior (OPB; Daffern, Jones, & Shine, 2011; Jones, 2004). The professional conducts a case formulation and designs a treatment plan targeting the OPB. If the OPB is indeed functionally similar to the offending behavior, then by assessing and treating the proxy behavior, the clinician may influence the offending behavior itself and thereby reduce the likelihood of re-offending. The use of OPB is, however, controversial. There is, as yet, no empirical evidence for the validity of OPB or outcome data demonstrating that it is an effective approach. These are serious issues because important forensic and clinical decisions may be made upon an individual's supposed OPB and its treatment. Thus, there is a need for research into the validity of formulations that explain offending and identify functionally similar OPBs as proxy treatment targets.

The Role of Formulation in Risk Assessment

Over the last 10 years or so, there has been increasing acknowledgment of the potential benefits of good formulation of violence risk (Doyle & Dolan, 2002; Hart & Logan, *in press*; Logan, Nathan, & Brown, 2011) and several distinct approaches to formulation of violence risk have been developed, each linked to a different theoretical framework for understanding violence (Lewis & Doyle, 2009). Current risk assessment procedures, influenced by the RNR model, focus in part on static and dynamic factors that are known to be predictive of offending (Andrews & Bonta, 2006). Dynamic risk factors are those that could be changed in treatment, and they include antisocial attitudes, criminal associates, poor family functioning low self-control, poor educational attainment, and unstable employment. However, these risk factors have been identified through group data, and they may not necessarily apply in individual cases (Cooke & Michie, 2010). Conversely, a dynamic risk factor might be of zero or negligible magnitude for a group, yet it might be highly predictive for a specific person. The key to identifying which known risk factors apply in individual cases is through case formulation.

A critical question that arises here is to what extent can or does case formulation improve risk assessment relative to existing procedures? If case formulation is to be adopted routinely in forensic settings, there should be some evidence that it helps either to improve the accuracy of forecasts (i.e., predictive validity) or the development of management plans (i.e., clinical utility). Unfortunately, no such evidence exists. This is clearly an area in which research is sorely needed.

The Effect of Formulation in Improving Treatment Outcomes

Another question is whether or not case formulations help forensic clinicians to develop treatment plans that are more effective than standard treatment plans or treatments based on diagnoses. Ghaderi (2006, *in press*), in a review of whether case formulation improves client outcomes, found mixed evidence. Some studies found that case formulation accurately predicted indicated and contraindicated treatments, as in McKnight, Nelson, Hayes, and Jarrett's (1984) study of depression. Ghaderi (2006) similarly found that formulation-based treatment of bulimia was superior to a standardized cognitive behavior therapy package, which was itself highly effective. In contrast, Schulte, Künzel, Pepping, and Schulte-Bahrenberg (1992) found that formulation-based treatment was less effective than flooding, perhaps because flooding is such a powerful treatment but also because of the use of relatively inexperienced therapists and insufficient training in clinical formulation. Thus, evidence for formulations predicting more effective treatments is mixed.

Thus, evidence for formulations predicting more effective treatments is mixed. This may be because treatments for some disorders are so highly effective that case formulation adds nothing. Indeed, Wilson (1996) queried the validity and utility of case formulation. In clinical case formulation, the therapist processes a vast quantity of complex information, and this is prone to bias based upon preferred theoretical approaches and personal perspectives. Wilson (1996) suggested that, because clinical judgment may be inaccurate, it could lead to inferior results compared with standard treatment. This points towards an actuarial approach to treatment decision-making, namely that the straightforward application of the most effective approach known for a particular problem has a good chance of being effective without the trouble of case formulation.

However, the argument against an actuarial approach to treatment decision-making in forensic practice is strong because there is no direct or clear link between the problem and treatment, as there is in, for example, simple phobias. Also, the complexity and diversity of the issues involved in risk assessment and management suggest a role for formulation as an essential coordinating and explaining process. The issues of efficiency and effectiveness of case formulation versus actuarial approaches to treatment do need to be addressed for a range of problems in forensic work. It is imperative that research is conducted to see whether and how case formulation adds value to simpler and cheaper forms of treatment allocation.

Formulation and Mentally Disordered Offenders

Case formulation for risk assessment and management needs to be considered as it applies to mentally disordered offenders. For example, how do symptoms of mental illness contribute to the individual's decision to offend? While risk

assessments for mentally ill offenders should arguably focus on the same issues as for non-mentally ill offenders (Bonta, Law, & Hanson, 1998), there are clearly specific issues relating to the disorder that need to be taken into account. There is research into the role of some symptoms in offending, particularly the role of delusions and hallucinations in violent (Bentall & Taylor, 2006) and sexual offending (Smith & Taylor, 1999); however this area of research could usefully be expanded.

With regard to the treatment of offenders with personality disorders, one issue that needs to be considered is whether there is a functional link between the personality disorder and the risk of violence. Unless there is, there is no rationale for treating personality disorder with the aim of reducing risk. Establishing this link, however, is not straightforward. The nature of the functional link has been explored in a review by Duggan and Howard (2009). Their thesis is that it is entirely reasonable to interpret the functional link as meaning a causal link, since only this interpretation gives the link sufficient clinical importance. They base their judgment of causality on Haynes's (1992) model, namely that for causality to be assumed the following relationships must be demonstrated: (1) co-variation between variables, (2) temporal precedence of the causal variable, (3) exclusion of an alternative explanation of the relationship, and (4) establishing a logical connection between the variables. These relationships can be examined in large-group, correlational, and longitudinal research; however, for any individual, the relationships between personality disorder and offending need to be explored through assessment and case formulation on a case-by-case basis (Logan & Johnstone, 2010).

One problem with elevating personality disorders to causes of behavior is that personality disorders are supposed to be relatively unchanging. If that is true, it is hard to show co-variation between personality disorder and risk, because where there is little or no variation in a variable, co-variation is not possible. Furthermore, as Duggan and Howard admitted, personality disorder is a high-level construct; that is, personality disorder is a diagnosis that consists of several lower-level variables and use of the high-level variable may mask causal relationships at lower levels. This is a major challenge in formulation with personality-disordered offenders: at what level of personality does one conduct the analysis—trait facets or superordinate domains? Clearly, guidelines for formulation the link between personality disorder and offending need to be established and evaluated.

Professional Training in Case Formulation

There is evidence that not all clinicians are competent at conducting case formulations. For example, Kuyken, Fothergill, Musa, and Chadwick (2005) evaluated the case formulation skills of 115 clinicians who participated in a continuing education workshop on case formulation. They found that, although there was generally good agreement in identifying the

target behavior accurately, there was much less agreement about identifying aspects of the case that required theory-driven inference. Indeed, the quality of case formulations ranged from "very poor" to "good," but the authors rated only 44% of case formulations as "at least good enough." Similarly, Dudley, Park, James and Dodson (2010) evaluated the accuracy of formulations relative to a benchmark formulation in a group of 85 mental health professionals, including psychiatric nurses (46%) and doctoral clinical psychology students (22%). They asked the participants to make a formulation of a case of psychosis based on a 30-minute video vignette and additional clinical material. Like Kuyken et al. (2005), Dudley and colleagues found widely varying levels of accuracy in case formulation. There was good agreement for overt behaviors, emotions, and some aspects of early experience; however, identification of theory-driven components such as core beliefs or assumptions was poorer.

Despite the need for empirically supported approaches to teaching case formulation skills, there are few studies on this topic. Kendjelic and Eells (2007) evaluated a two-hour training program in case formulation delivered to a group of 20 clinicians. They found that after training, compared to a control group, the clinicians' formulations were of better quality and they were more likely to identify the mechanisms behind the presenting problems. Clearly, more research is needed to develop effective training in case formulation skills. A research programme would require a reliable and valid measure of the quality of a formulation. It is possible to measure the quality of case formulations reliably using trained raters, as Kendjelic and Eells (2007) have shown; however research into forensic case formulation skills might require theory-specific measures. Additionally, measures of the appropriateness of treatment plans based on a formulation need to be developed.

One question is who needs to be trained in case formulation? Do all forensic staff need to be trained in case formulation, and do we need additional specific extensive training for psychologists, psychiatrists and other professionals in this area? The training needs of staff are likely to vary considerably. Most staff working directly with offenders may need some basic knowledge of the concepts behind formulation, and may benefit from training on data collection to assist functional assessment and treatment evaluation. They may also require skills to implement treatment plans, decide when to call for additional assistance from clinical professionals, and decide when to draw clinicians' attention to some significant event. Clinical staff themselves may have rather different training needs, with a focus on the skills for assessment, completing a case formulation, and writing a formulation-based intervention plan.

One observation on the limited training literature on case formulation is that it has not directly addressed the issue of the generalization of clinicians' formulation skills. Typically, these studies have evaluated participants' skills in writing a case formulation for only one vignette. The clinician has

a much more challenging task than writing one formulation. Formulations need to be revised when new information comes to light or when something unexpected occurs, such as a relapse or setback in therapeutic progress. Persons (2008) noted at least three kinds of problems with an initial formulation that might result in treatment failure: selecting a target behavior that is not functionally relevant, inadvertently omitting important variables in the initial formulation, and incorrectly identifying the function of the main presenting problem. In future, researchers should give more attention to the *process* of case formulation rather than the final formulation itself and provide clinicians with realistic models of how to develop a case formulation over time. More ecologically valid research is needed.

CONCLUSIONS

Our principal aim in this paper was to raise specific issues in the practice and evaluation of forensic case formulation, and so enhance the profile of this important area of work. We hope we have achieved this aim through defining case formulation and describing its key features, specifying criteria for evaluating case formulation, and addressing challenges in forensic practice. In particular, we hope that our suggestions for research will be taken up and contribute to the advancement of practice through research. A summary of the research agenda is as follows: (1) establish consensus good practice guidelines for forensic case formulation and prepare a research agenda based on these; (2) determine what constitutes reliable and valid forensic case formulations; (3) evaluate ways of integrating formulations from different perspectives in order to enhance treatment and risk management outcomes; (4) examine whether proxy behaviors are actually functionally similar to offending behaviors and if so, how they may usefully extend clinical risk assessment and management practice; (5) assess how and the extent to which forensic case formulation can improve the effectiveness of risk management; (6) identify whether case formulation adds value to simpler and cheaper forms of treatment allocation; (7) extend research into the role of mental illness symptoms in offending; (8) examine the link between personality disorder and offending; (9) develop and evaluate training in forensic case formulation; and (10) examine the *process* of forensic case formulation and how best to develop a formulation that remains useful and effective over time.

REFERENCES

- Allon, R., Gauthier, J., Doyle, A. B., & Hutcheon, D. (2004). A model curriculum for a Doctor of Psychology (Psy.D.) programme: A report to the Board of Directors of the Canadian Psychological Association. Retrieved July 15, 2010, from <http://www.cpa.ca/cpasite/userfiles/Documents/publications/Psy%20D%20Model%20Curriculum%20final%202...pdf>
- American Board of Psychiatry and Neurology Inc. (2010). *Psychiatry and neurology core competencies*. Downloaded July 15, 2010, from http://www.abpn.com/downloads/core_comp_outlines/core_psych_neuro_v4.1.pdf
- American Psychological Association Task Force on the Assessment of Competence in Professional Psychology. (2006). *APA Task Force on the Assessment of Competence in Professional Psychology: Final report*. Retrieved July 15, 2010, from <http://www.apa.org/ed/resources/competency-revised.pdf>
- Andrews, D. A., & Bonta, J. (2006). *The psychology of criminal conduct*, 4th ed. Cincinnati, OH: Anderson.
- Australian Psychological Society. (2006). *APS College of Clinical Psychologists course approval guidelines*. Retrieved July 15, 2010, from http://www.apac.psychology.org.au/Assets/Files/clinical_guidelines.2006.pdf
- Bentall, R. P., & Taylor, J. L. (2006). Psychological processes and paranoia: Implications for forensic behavioural science. *Behavioral Sciences and the Law*, 24, 277–294.
- Bonta, J., Law, M., & Hanson, K. (1998). The prediction of criminal and violent recidivism among mentally disordered offenders: A meta-analysis. *Psychological Bulletin*, 123, 123–142.
- British Psychological Society Professional Practice Board (2008). *Generic professional practice guidelines*, 2nd ed. Leicester: British Psychological Society.
- Bruner, J. S. (1985). *Actual minds, possible worlds*. Cambridge, MA: Harvard University Press.
- Cooke, D. J., & Michie, C. (2010). Limitations of diagnostic precision and predictive utility in the individual case: A challenge for forensic practice. *Law and Human Behavior*, 34, 259–274.
- Corrie, S., & Lane, D. A. (2010). *Constructing stories, telling tales: A guide to formulation in applied psychology*. London: Karnac Books.
- Daffern, M., Howells, K., & Ogloff, J. (2007). What's the point? Towards a methodology for assessing the function of psychiatric inpatient aggression. *Behaviour, Research and Therapy*, 45, 101–111.
- Daffern, M., Jones, L., & Shine, J. (2011). *Offence Paralleling Behaviour: A case formulation approach to offender assessment and intervention*. Chichester, UK: Wiley-Blackwell.
- Davidson, K. (2006). Cognitive formulation in personality disorder. In N. Tarrier (Ed.), *Case formulation in cognitive behaviour therapy: The treatment of challenging and complex cases* (pp. 216–237). London: Routledge.
- Doyle, M., & Dolan, M. (2002). Violence risk assessment: Combining actuarial and clinical information to structure clinical judgements for the formulation and management of risk. *Journal of Psychiatric and Mental Health Nursing*, 9, 649–657.
- Dudley, R., Park, I., James, I., & Dodgson, G. (2010). Rate of agreement between clinicians on the content of a cognitive formulation of delusional beliefs: The effect of quantifications and experience. *Behavioural and Cognitive Psychotherapy*, 38, 185–200.
- Duggan, C., & Howard, R. (2009). The functional link between personality disorder and violence: A critical appraisal. In M. McMurran and R. Howard (Eds.), *Personality, personality disorder, and violence* (pp. 19–37). Chichester, UK: Wiley-Blackwell.
- Eells, T. D. (Ed.). (2007a). *Handbook of psychotherapy case formulation*, 2nd ed. New York: Guilford.
- Eells, T. D. (2007b). History and current status of psychotherapy case formulation. In T. D. Eells (Ed.), *Handbook of psychotherapy case formulation*, 2nd ed. (pp. 3–32). New York: Guilford.
- Eells, T. D., & Lombart, K. G. (2004). Case formulation: Determining the focus in brief dynamic psychotherapy. In D. P. Charman (Ed.), *Core processes in brief psychodynamic psychotherapy* (pp. 119–144). Mahwah, NJ: Lawrence Erlbaum Associates.
- Eells, T. D., & Lombart, K. G. (in press). Theoretical and evidence-based approaches to case formulation. In P. Sturmey and M. McMurran (Eds.), *Forensic case formulation*. Chichester, UK: Wiley-Blackwell.

- Fouad, N. A., Grus, C. L., Hatcher, R. L., Kaslow, N. J., Hutchings, P. S., Madson, M., Collins, F. L., Jr., & Crossman, R. (2009). Competency benchmarks: A model for the understanding and measuring of competence in professional psychology across training levels. *Training and Education in Professional Psychology, 4*, S5–S26.
- Ghaderi, A. (2006). Does individualization matter? A randomized trial of standardized (focused) versus individualized (broad) cognitive behavior therapy for bulimia nervosa. *Behaviour Research and Therapy, 44*, 273–288.
- Ghaderi, A. (in press). Does case formulation make a difference to treatment outcome? In P. Sturmey and M. McMurrin (Eds.), *Forensic case formulation*. Chichester, UK: Wiley-Blackwell.
- Haig, B. D. (2008). Précis of “An Abductive Theory of Scientific Method.” *Journal of Clinical Psychology, 64*, 1019–1022.
- Harman, G. (1965). The inference to the best explanation. *Philosophical Review, 74*, 88–95.
- Hart, S. D. (2003). Violence risk assessment: An anchored narrative approach. In M. Vanderhallen, G. Vervaeke, P. J. Van Koppen, and J. Goethals (Eds.), *Much ado about crime: Chapters on psychology and law* (pp. 209–230). Brussels: Uitgeverij Politeia NV.
- Hart, S.D., & Logan, C. (in press). Formulation of violence risk using evidence-based assessments: The structured professional judgment approach. In P. Sturmey and M. McMurrin (Eds.), *Forensic case formulation*. Chichester, UK: Wiley-Blackwell.
- Haynes, S. N. (1992). *Models of causality in psychopathology*. New York: Macmillan.
- Haynes, S. N., & O'Brien, W. O. (2000). *Principles of behavioral assessment: A functional approach to psychological assessment*. New York: Plenum/Kluwer.
- Johnstone, L., & Dallos, R. (Eds.). (2006). *Formulation in psychology and psychotherapy: Making sense of people's problems*. London: Routledge.
- Jones, L. (2004). Offence Paralleling Behaviour (OPB) as a framework for assessment and interventions with offenders. In A. Needs and G. Towl (Eds.), *Applying psychology to forensic practice* (pp. 34–63). Oxford, UK: Blackwell.
- Josephson, J. R. (1996). Conceptual analysis of abduction. In J. R. Josephson and S. G. Josephson (Eds.), *Abductive inference: Computation, philosophy, technology* (pp. 5–30). Cambridge, UK: Cambridge University Press.
- Kendjelic, E. M., & Eells, T. D. (2007). Generic psychotherapy case formulation training improves formulation quality. *Psychotherapy, 44*, 66–77.
- Kuyken, W. (2006). Evidence-based case formulation: Is the emperor clothed? In N. Tarrier (Ed.), *Case formulation in cognitive behaviour therapy: The treatment of challenging and complex clinical cases* (pp. 12–35). London: Brunner-Routledge.
- Kuyken, W., Fothergill, M., Musa, C. D., & Chadwick, P. (2005). The reliability and quality of cognitive case formulation. *Behaviour Research and Therapy, 43*, 1187–1201.
- Lewis, G., & Doyle, M. (2009). Risk formulation: What are we doing and why? *International Journal of Forensic Mental Health, 8*, 286–292.
- Logan, C., & Johnstone, L. (2010). Personality disorder and violence: Making the link through risk formulation. *Journal of Personality Disorders, 24*, 610–633.
- Logan, C., Nathan, R., & Brown, A. (2011). Formulation in clinical risk assessment and management. In R. W. Whittington and C. Logan (Eds.), *Self-harm and violence: Towards best practice in managing risk*. Chichester, UK: Wiley-Blackwell.
- Makridakisa, S., & Taleb, N. (2009). Decision making and planning under low levels of predictability. *International Journal of Forecasting, 25*, 716–733.
- McKnight, E. L., Nelson, R. O., Hayes, S. C., & Jarrett, R. B. (1984). Importance of treating individually assessed response classes on the amelioration of depression. *Behavior Therapy, 15*, 315–335.
- Mumma, G. H. (2001). Increasing accuracy in clinical decision-making: Towards an integration of nomothetic-aggregate and intraindividual-idiographic approaches. *Behavior Therapist, 24*, 77–94.
- Mumma, G. H. (2004). Validation of idiosyncratic cognitive schema in cognitive case formulations: An intraindividual idiographic approach. *Psychological Assessment, 16*, 211–230.
- Mumma, G. H. (in press). Current issues in case formulation. In P. Sturmey and M. McMurrin (Eds.), *Forensic case formulation*. Chichester, UK: Wiley-Blackwell.
- Mumma, G. H., & Mooney, S. R. (2007a). Comparing the validity of alternative cognitive case formulations: A latent variable, multivariate time series approach. *Cognitive Therapy and Research, 31*, 451–481.
- Mumma, G. H., & Mooney, S. R. (2007b). Incremental validity of cognitions in a clinical case formulation: An intraindividual test in a case example. *Journal of Psychopathology and Behavioral Assessment, 29*, 17–28.
- Mumma, G. H., & Smith, J. L. (2001). Cognitive-behavioral interpersonal scenarios: Inter-formulator reliability and convergent validity. *Journal of Psychopathology and Behavioral Assessment, 23*, 203–221.
- New Zealand Psychologists Board. (2010). *Core competencies for the practice of psychology in New Zealand*. Wellington, NZ: Author.
- Niiniluoto, I. (1999). Defending abduction. *Philosophy of Science, 66*, S436–S451.
- Orrell, D. (2007). *The future of everything: The science of prediction*. New York: Thunder's Mouth Press.
- Persons, J. B. (2008). *The case formulation approach to cognitive-behavior therapy*. New York: Guilford.
- Polkinghorne, D. E. (1995). Narrative configuration in qualitative analysis. In J. A. Hatch and R. Wisniewski (Eds.), *Life history and narrative* (pp. 5–23). London: Flamer Press.
- Royal Australian and New Zealand College of Psychiatrists. (2002). *Curriculum basic training psychiatry*. Melbourne: Author.
- Royal College of Physicians and Surgeons of Canada. (2009). *Objectives of training in psychiatry*. Downloaded July 15, 2010, from http://rcpsc.medical.org/residency/certification/objectives/psychiatry_e.pdf
- Royal College of Psychiatrists. (2009). *A competency based curriculum for specialist training in psychiatry: Core module*. Downloaded July 15, 2010, from <http://www.rcpsych.ac.uk/PDF/Core.Feb09.pdf>
- Schulte, D., Künzel, R., Pepping, G., & Schulte-Bahrenberg, T. (1992). Tailor-made versus standardized therapy of phobic patients. *Advances in Behaviour Research and Therapy, 14*, 67–92.
- Smith, A. D., & Taylor, P. J. (1999). Serious sex offending against women by men with schizophrenia: Relationship of illness and psychotic symptoms to offending. *British Journal of Psychiatry, 174*, 233–237.
- Sturmey, P. (Ed.). (2007). *Functional analysis in clinical treatment*. New York: Academic Press.
- Sturmey, P. (2009). *Varieties of case formulation*. Chichester, UK: Wiley.
- Sturmey, P., & McMurrin, M. (Eds.). (2011). *Forensic case formulation*. Chichester, UK: Wiley-Blackwell.
- Tarrier, N. (Ed.). (2006). *Case formulation in cognitive behaviour therapy: The treatment of challenging and complex clinical cases*. London: Brunner Routledge.
- Ward, T., Vertue, F. M., & Haig, B. D. (1999). Abductive method and clinical assessment in practice. *Behaviour Change, 16*, 49–63.
- Weerasekera, P. (1996). *Multiperspective case formulation: A step towards treatment integration*. Malabar, FL: Krieger.
- Weerasekera, P. (in press). Multiperspective case formulation. In P. Sturmey (Ed.), *Clinical case formulation: Varieties of approaches*. Chichester, UK: Wiley.
- Wilson, G. T. (1996). Manual-based treatments: The clinical application of research findings. *Behaviour Research and Therapy, 34*, 295–314.