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Causality in Psychology and Law

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The study of causality and related terms has its roots in philosophy, and the concept is considered important in many contemporary fields of research. Despite its pervasiveness, there is little agreement in psychology and law about causality's definition, underlying conceptual basis, and implications for legal actions in which psychology is at issue. A comprehensive account of causality and related terms, which can help both fields navigate the difficulties that these concepts present, is direly needed, and this book has been written to fill this void. In the first section of this chapter, we address the area of legal issues and causality, such as evidence law, torts, and how causality is treated in law. Then, in the second section, we turn to more psychological considerations, such as forensic mental health assessment (FMHA), disability, and catastrophic impairment. At the end of the chapter, we present in an appendix the concepts of reliability and validity in psychological assessment.

Legal Issues and Causality

In this section of the chapter, we explain the basic rules and regulations that govern expert psychological evidence presented to the court, concentrating on the American judicial system, with its *Daubert* trilogy and associated Federal Rules of Evidence. Most criteria presently applicable to forensic psychological evaluations and testimony derive from the U.S. legislation and appellate court cases. Other jurisdictions, such as Canada, share many of the same requirements of admissibility of evidence as the American approach. Their shared origin in British common law explains much of the similarity. The next section examines the tort system, in which plaintiffs lodge civil suits against defendants for negligence, personal injury, and so forth. Various legal tests are described. It is noted that cases of psychological harm present challenges to the court. Psychologists often are called upon to offer evidence in such cases, and they face challenges in their own right. The third section examines the concepts of causality and causation in psychological

evidence proffered to court. We emphasize that there are no universally accepted conceptualizations, that psychologists must be aware that causality and causation are multiple in origin, and that, in individual cases, a careful application from population-level research to the case at hand is critical. In psychological assessment, complicating factors relate to preevent psychological vulnerabilities (in legal parlance, “thin” and “crumbling” skulls), to postevent individual effort, to partial or full malingering, and so forth.

Rules of Evidence

Forensic assessments by psychologists are undertaken in order to formulate a “scientific opinion” that will assist the judge or jury (the trier of fact) in its deliberations (Van Dorsten, 2002). In the U.S. federal legal ruling, *Frye v. United States* (1923), expert evidence was considered admissible by the court if it had been formulated on principles that had gained “general acceptance” in the field, considering the limits in the discipline involved. The 1962 ruling in *Jenkins v. United States* specifically addressed expert psychological evidence, accepting it when it “probably” could aid the trier of fact in making a determination. The Federal Rules of Evidence (FRE, 2004) now govern the standards of expert testimony and their admissibility. For example, rule 702 indicates that testimony of experts whose evidence would assist the trier of fact in understanding relevant scientific information is admissible.

The U.S. Supreme Court ruling in *Daubert v. Merrell Dow Pharmaceuticals, Inc.* (1993) served as a landmark of contemporary requirements on admitting expert evidence. Along with the subsequent Supreme Court rulings in *Joiner* and in *Kumho* (*General Electric Co. v. Joiner*, 1997; *Kumho Tire Co. v. Carmichael*, 1999; respectively), they are commonly called “the *Daubert* trilogy.” (In Chapter 10, Kane specifies the admissibility requirements of the *Daubert* trilogy and the Federal Rules of Evidence in the United States for presenting evidence in court, and their impact on admissibility of psychological evidence).

Daubert underscored that scientific testimony must meet accepted standards of legal reliability (trustworthiness), which, for psychology, means that it must be valid, sound, or grounded in appropriate scientific methods and standards. *Daubert* also specified that scientific testimony must be relevant, that is, applicable to the particular case to which it has been addressed, aiding the trier of fact in evaluating the case. In this regard, any science used in testimony will ideally meet standards for falsifiability (being empirically testable), for having been published after peer review, for having considered error rate (false positives and false negatives), and for following standardized procedures. It has been noted that various social sciences differ in how they define the concepts of scientific reliability and validity, complicating the confusion between the different uses of the terms in legal and psychological fields (Saxe & Ben-Shakhar, 1999).

Joiner added that the standard for appellate review is abuse of discretion, and *Kumho* expanded its application to nonscientific, but nevertheless technical, specialized knowledge. Slovenko (2002a, 2002b, 2002c) noted that a psychologist

providing evidence about a particular individual might be considered a technical expert more than a scientific one. Federal Rule of Evidence 702 does not deny admissibility of expert opinion based on appropriate professional knowledge and experience (Brodsky, Caputo, & Domino, 2002; Kane, Chapter 10, this volume). Van Dorsten (2002) noted that, on the one hand, psychologists have been cautioned that the scientific knowledge in psychology is not sufficient to allow them to address certain issues in court and on the other hand, they have been cautioned to arrive at conclusions based on sufficient scientific evidence (See, for example, Melton, Petrilla, Poythress, & Slobogin, 1997).

Shuman (2002, 2003a) discussed whether medical/clinical opinion evidence is admissible in court in light of the *Daubert* trilogy and related Federal Rules of Evidence. Apparently, the federal courts have been divided in their opinion, with some decisions in toxic tort cases arguing that the *Daubert* criteria permit an expert to testify based on clinical experience involving sound application of “clinical medical methodology,” whereas other decisions only permit evidence grounded in “hard science.” Shuman noted that by following their ethical obligations, psychologists and psychiatrists will stay current in their relevant scientific knowledge and not stray from research-supported opinions, thereby satisfying evidentiary requirements, as well.

Slovenko (2002a, 2002b, 2002c) showed that post-*Daubert* hearings on the admissibility of behavioral and social science evidence have not significantly altered the course of decisions, in that few experts have been prevented from offering evidence. He concluded that it is quite likely that the negative publicity about “junk science” has better prevented it from entering the court system than has *Daubert*.

Similarly, Shuman and Sales (2003) asked whether *Daubert* and its progeny have significantly affected standards of admissibility of scientific evidence in federal courts. They concluded that, overall, there has been little impact on the nature of behavioral and social science evidence admitted to court. They asked whether expert testimony that is clinical rather than scientific, *per se*, needs contextual consideration and less rigorous gatekeeping scrutiny by judges. For example, reliable scientific information evaluates the error rate in normative population research, but individual, clinically based evidence, by definition, cannot examine such an error rate, though it can take into account normative and base-rate data. Moreover, *Daubert* does not specify what error rates are acceptable in court. Indeed, for each aspect of its criteria for admissible science, imprecisions arise. Judicial decisions have not yet led to operationalization of *Daubert*'s criteria. Further, scientific criteria are relative, not absolute, whereas legal needs require definitive decisions and seek hard evidence in support of them.

Relevant scientific support for a clinician's particular testimony may not even exist. Normally, *Daubert* factors require that the scientific basis (reasoning, methodology) underlying evidence is reliable (valid) and relevant; however, it could happen that for a particular testimony there is no research directly on the topic, or “the inferential leap from the research to the issue in the case is significant” (Shuman, 2002, p. 39). However, the *Daubert* criterion of general acceptability may provide support for some clinical testimony.

Nevertheless, one must be prudent in offering testimony, whether scientific or clinical. Shuman and Sales (2003) concluded, “Unfortunately, lawyers are typically happy to have their experts reach conclusions on the witness stand that support their client’s position, even if it goes beyond the bounds of the witness’s expertise” (p. 178).

Note that in the Canadian context, *Daubert* has been cited in a Supreme Court of Canada case (*R. v. J.-L.J.*, 2000 SCC 51) and in some provincial cases. *Daubert*’s expectations of scientific rigor both in proffered evidence of expert witnesses and in the gatekeeping function of judges match the similar requirements of *R. v. Mohan* (Gold, 2003).

In the United Kingdom, reforms have had the same objectives as *Daubert* (Woolf, 1996), to improve the quality of scientific evidence proffered in court, but the manner in accomplishing them has been to assign “neutral” court experts to cases (Faigman, 2003). Trimble (2004) criticized the implementation of this new system in the United Kingdom.

Van Dorsten (2002) noted that “the primary objective of expert witness testimony is to educate about both a specific area of science, and its relevant application to specific circumstance” (p. 7). This quote illustrates the two-tiered function that psychologists usually engage in when offering evidence. That is, when performing assessments for legal purposes, psychologists examine the population-level science applicable to the legal question at hand and then determine its relevance to the particular case at issue. When expert testimony involves only presentation of research relevant to a case, without attempting to link it to the case, it is considered “standard” expert testimony, and when an attempt is made to link a psychological explanation grounded in research to a case at hand, it is considered “concrete” expert testimony (Brodsky et al., 2002). Van Dorsten and James (2002) point out that the pathway in forensic psychological assessment is not from the scientific research to the individual being assessed, but from the individual to the research, in that each individual in a forensic assessment constitutes a “single case study design” to which the applicability of the scientific research varies and thus is at issue.

To conclude, the various gatekeeping rules and regulations concerning the admissibility of evidence to court demand that the highest standards of science be applied to both the psychological research on populations related to court purposes and the psychological assessments of individuals presented to court. At the same time, the court’s criteria of good science leaves gaps, and the gray area of clinical testimony about individuals, where both scientific and clinical procedures are used, presents issues that need better resolution.

Torts

According to McLearn, Pietz, and Denney (2004), a tort is a private or civil wrong or injury, such as in negligence or intentional tortious conduct, which a fact finder may decide merits damages. The process of proving a tort must meet four criteria, often referred to as the “4 Ds”: duty, dereliction, direct causation, and

damages. For a plaintiff to receive damages in a tort case, it must be shown that the defendant committed a derelict act or omission, where a duty was owed to the plaintiff. For example, in negligence, the standard to be met is generally the “reasonable-person test”; in the circumstances in which the defendant found herself or himself, would a reasonable person have engaged in the same behavior (or its lack thereof)? If dereliction of duty is established, then the causal question is broached: Is the dereliction of duty, or the lack thereof, the “proximate cause” of the injury, factually and logically preceding the harm incurred? Again, the reasonable person test is applied—would another individual in the same circumstance have reasonably predicted that the act or the lack thereof would have caused the harm? Citing Daller (2000), McLearn et al. (2004) underscore that proximate cause is defined differently in different jurisdictions. Legal standards are governed by case law that indicates which harms involve a legally protected right or interest that can be pursued for damages.

Gabbay and Alonso (2004) indicate that tort action for mental harm caused by negligent acts derives from three to four rules used by the courts, depending on the jurisdiction involved: the physical contact rule (e.g., loss of limb), the physical consequences rule (e.g., ulcers from mental distress, rather than pathogens), the zone of danger rule (e.g., potential for physical harm), and, sometimes, the bystander rule (witnessing a traumatic event, usually for a close relative).

Campbell and Montigny (2004) elaborate upon the zone of danger and bystander rules, specifying both the common law tests used and their limits with respect to claims and damages. They suggest that the courts have adopted “control mechanisms” to limit flooding the courts with claims of psychological damage. In the “zone of danger” test, the plaintiff must be clearly a participant in the negligent event in question, fearing for her or his safety, because there had been a physical injury or a near miss. Normally, being a passive observer is not sufficient grounds for a legitimate claim. As for the “bystander” test, in many jurisdictions it applies only when a close relative of a victim witnesses a tragedy, realizes the harm occasioned, and reacts with “severe emotional impact.” Campbell and Montigny criticize the zone of danger and bystander tests for being too restrictive, thereby denying legitimate claims.

Another important test considered in tort cases involving psychological harm concerns “foreseeability.” Given the negligent conduct of the defendant, the legal threshold is whether the psychological harm that had been purportedly caused by the conduct had been reasonably foreseeable. Could the harm have been readily anticipated; for example, had the negligent party foreseen any possible collateral psychological injury from her or his negligent conduct? The test allows that each case is considered for its facts and merits, and can be readily evaluated by the laypersons serving as jurors. The test has been criticized for not being stringent enough and for being open to subjective influence (Campbell & Montigny, 2004).

The “combination” test seeks to determine whether psychological injuries had been both foreseeable and severe enough to permit diagnosis of a recognizable psychiatric disorder. Campbell and Montigny query whether the latter part of the test, “having a recognizable psychiatric illness,” is reasonable, given that science

may be in the middle of an ongoing debate about the “characterization” of a particular disorder. The debate in the literature about the validity of “Rape Trauma Syndrome” provides one example. Another area of contention about the combination test concerns its requirement that the illness be “serious” enough. The test does not specify what seriousness means in terms of intensity, permanence, and so on.

Finally, Campbell and Montigny proposed a “neutral observer” test, in which if one witnesses a traumatic event involving a person who is a relative, and the resultant psychological injuries are greater than what a neutral observer would be expected to objectively experience, then these injuries would constitute a sufficient basis for legitimate claims of psychological trauma. This test “restricts the scope of psychological harm to those cases which are so serious they eclipse what a person of normal fortitude would be expected to handle” (p. 155). This approach harkens to the hypothetical “reasonable person,” often considered as a standard of comparison in court. At the same time, from the psychological point of view, it suffers from imprecision in defining “seriousness” of the injury and “reasonable fortitude” of the nonrelative normative observer. It also disregards the substantial case law regarding “thin skulls” and “eggshell personalities.”

The difficulties posed in defining legally relevant terms, such as in the example just considered, constitute a major reason why, traditionally, case law had not accepted strictly psychological damages as an adequate basis for tort claims (Gabbay & Alonso, 2004; McLearn et al., 2004; Shuman & Hardy, Chapter 20, this book). Initially, the courts had found the issue so difficult to resolve that there had been a “physical contact or impact” rule that excluded cases of psychological harm alone. However, the past century witnessed advances in which the presence of physical injury was not necessary for a plaintiff to pursue a defendant for tortious conduct. The zone of danger and bystander or physical proximity rules broadened the range of tort cases. In particular, the California Supreme Court case of *Dillon v. Legg* (1968) allowed greater pragmatic consideration of “all the circumstances” in a claim for psychological harm in arriving at conclusions about cause (Shuman & Hardy, Chapter 20). Nevertheless, strict psychological damages typically are “much more difficult” to ascertain (McLearn et al., 2004), and courts are opting to treat mental harms more stringently than physical harms, and difficult to prove (Gabbay & Alonso, 2004). This is especially true where there are preexisting mental conditions that are involved or are exacerbated.

Both forensic and treating psychologists are called upon to offer evidence in tort claims. The latter should be fact witnesses only, and not provide expert opinion on the ultimate issue facing the trier of fact, that is, whether the plaintiff’s alleged psychological harm had been proximally caused by the actions or inactions of the defendant. There are numerous problems when a treating psychologist attempts to be an expert witness (See Kane’s Chapter 10). Forensic psychologists should address ultimate issues in their conclusions only if permitted or required to do so by a court or statute. Psychological tests, by themselves, cannot provide data that can directly answer this type of question; a comprehensive assessment is needed (Butcher, 2002).

Causality

Van Dorsten and James (2002) comment on the confusion in legal circles about causality-related terms. “It is somewhat difficult to analyze causation issues, because courts often use the terms and concepts of causation in inconsistent and contradictory ways” (p. 259). For the most part, the approach of the authors of the present book has been to use the term “causality” when either of the terms “causation” or “causality” would fit. Our approach fits with Haynes (1992), whose influential book on psychopathology included the term “causality” rather than “causation” in its title and ensuing discussion.

Ackerman and Kane (1998) addressed the issue of causality in psychological assessment of Posttraumatic Stress Disorder (PTSD) and personal injury. They indicate that cause does not have to be unique or exclusive for liability to be attached to it. They point out that, after arriving at diagnoses, if any, and making recommendations, the psychological evaluator might need to consider causality. “The law of torts indicates that the tortfeasor is liable whether the stressor caused the injury or aggravated a preexisting condition” (p. 578).

With respect to causality assessments or determination, Schultz has presented a comprehensive work (Schultz, 2003a, 2003b; Schultz & Brady, 2003a, 2003b). Schultz (2003b) indicated that “to date, no standards or even guidelines for answering causality questions have been developed” (p. 102). According to her, causality assessment or determination needs to avoid personal belief or judgment, intuition, art, practicing beyond the realm of science, assessing without scientific validation, and so on. Moreover, in the causality determination process, the legal question of causality needs to be appropriately translated into a psychological question. Research in the area “overemphasizes the issues of malingering and secondary gain detection” (p. 104), and may minimize the interaction of preexisting, injury-related, and concurrent factors. Also, causality determination frequently encounters problems and confusion “when the existing literature does not provide a clear scientific basis for the causal connection” (p. 105). She argued that, until there is a uniform process in causality determination, there is too much room for bias and a lack of scientific substantiation of offered evidence.

For Schultz, psychological causation is multifactorial, multifaceted, interactive, and not simply binary (yes or no) or linear (A caused B), contrary to the approach that appears in the legal sphere. Legal causality determination addresses proximate causation, or the degree to which “the *cause of action* constitutes a substantial factor in causing or exacerbating impairment” (p. 106). Temporal sequence by itself is insufficient to imply causation; there must be evidence of a significant or material contribution of event A as part of the multiple factors jointly contributing to result B. Causal determinations are usually retrodictive (“it did”), but also can be potential and predictive.

Schultz (2003b) explains that for the “thin skull” victim, the individual has some “preexisting vulnerabilities, weaknesses, or susceptibilities, which become activated or aggravated” by the event at claim (p. 109). The response severity to a stressor may significantly exceed the expected response of an individual with a “normal

skull.” In a related concept in the Canadian context, in particular, when the preexisting condition is active beforehand, or when it is latent but degenerative and is accelerated by the event, the concept of “crumbling skull” applies. In the latter cases, the courts consider the defendant only partially responsible and might award damages that reflect only the effect of the event, that is, the degree to which the plaintiff’s condition had been worsened by the tortious act. (See the next chapter for a more complete discussion of thin and crumbling skulls.)

Psychological Issues and Causality

In this section, we provide an outline of forensic mental health assessment (FMHA) pertaining to causal determination, introduce the basic psychological injuries usually the subject of legal dispute (PTSD/distress, chronic pain and physical injury, TBI), including complicating factors in these areas such as malingering or the effect of participating in litigation, and address the issue of impairment and ability evaluation. The Canadian legal case of *Desbiens* (2004) has provided an interesting set of guidelines for the evaluation of catastrophic impairment, though, as a Canadian case rather than as an American appellate court case, it does not set a precedent for American cases. We emphasize that by using multifactorial, biopsychosocial models as guides in their assessments, psychologists improve chances for admissibility of the evidence that they offer to court.

Assessment

Heilbrun (2001), Heilbrun, Marczyk, and DeMatteo (2002), Heilbrun et al. (2003) and colleagues’ integrative approach to FMHA is important to consider. In particular, it deals with the difference between nomothetic (population level) and idiographic (individual) data, and the manner in which they can be applied to causality assessment. This section also looks at the assessment process and diagnosis. The *DSM-IV* (*Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition*) stands as the primary diagnostic manual, but is it accepted for court purposes, and how should the psychologist proceed in light of its shortcomings?

Forensic Mental Health Assessment

The psychologist must engage in a comprehensive assessment before arriving at any conclusions (Groth-Marnat, 2003). Unlike psychiatrists and other mental health professionals who may undertake analogous assessments, psychologists generally utilize psychometric instruments in their assessments. These instruments include self-report questionnaires addressing mood and personality attributes, and tests addressing intellectual levels, neuropsychological functioning, malingering, and so on, with some of the latter instruments containing scales that evaluate positive or negative impression management or their equivalent, response

bias, and other threats to validity. Psychologists integrate the data from these instruments into their assessment formulations and conclusions.

Heilbrun (2001), Heilbrun et al. (2002), Heilbrun et al. (2003) and colleagues have elaborated principles of FMHA that consistently address causality (See also Chapter 10, this text, by Kane). Human behavior is considered multidimensional, and in FMHAs multiple sources of information should be used for each area assessed. Similarly, Schultz (2003b) espouses an integrative, multifactorial psychological causality determination process.

According to Heilbrun and colleagues (2002), in assessing clinical condition, functional abilities, and causal connection, FMHAs should use nomothetic evidence, defined as empirical evidence derived from populations similar to that of the individual being evaluated, using reliable and valid assessment instruments appropriate to the populations, and other appropriate sources of data. Nomothetic research provides scientific data, or an established empirical base, on (a) forensic measuring devices, such as tests and questionnaires, and on (b) base rates, outcomes, and so forth. It provides group norms on pertinent variables, allowing empirically supported bases for opinions about an individual's function or degree of impairment. In addition, research at the population level speaks to prediction of outcome, and how planned interventions can aid in management of symptom course.

In contrast to nomothetic evidence, idiographic evidence pertains to the information collected on a specific individual being assessed. The individual assessment should proceed like a scientific study, leading to the most parsimonious explanation after gathering all relevant data (including data on pre- and postevent capacities and functioning, and possible malingering and response styles such as symptom exaggeration or minimization). After the evaluation is completed and the data are gathered, the forensic assessor must continue to proceed in a scientific manner, considering all reasonably possible explanations in arriving at conclusions. The FMHA identifies the nature of the mental disorder, if any, the legally relevant functional abilities impacted in context, if any, and, just as important from a legal perspective, the strength of the causal connection between the two areas.

Legal standards may be overly broad and lacking in detail, not readily permitting the translation of legal criteria into defined forensic psychological capacities needing evaluation. For example, what exactly is meant by a work-related disability? In such cases, the operationalization of legal standards into psychological capacities to be evaluated should be based on the empirical literature. The use of scientific reasoning in idiographic formulation in an individual case informs the applicability of group level or nomothetic research to the case.

Along similar lines, Schultz (2003b) provides a list of best practice standards that should govern psychological causality determination. She advises (a) application of the biopsychosocial/contextual framework, (b) use of standardized methods, (c) use of multiple sources of information, including standardized instruments, (d) not only seeing the individual for her or his unique attributes, but also seeing population parameters such as base rates, (e) recognition of factors such as iatrogenic (medically generated) and litigation factors, and (f) evaluation of preevent (premorbid) levels.

Caution is advised in determining causality. “Some experts go to considerable lengths to dismiss the accident or event as a causal factor, and others to connect the two, whether warranted or not” (Faust & Heard, 2003b, p. 1729). Similarly, with respect to PTSD, in particular, Koch (2003) cautions against subscribing to myths or beliefs either inconsistent with the scientific literature or never investigated in it.

Greenberg (2003) indicated that the five basic tasks of a forensic psychologist in personal injury cases are to establish the baseline state before the harm occurred, the distress that may have been caused, the injuries and impairments that may result, the “likely psychological cause” of each one, and the treatment needed for each. There may be additional tasks related to liability—for example, whether the individual had reasonably attempted to reduce or mitigate the harm experienced. Is the stressor severe enough to significantly impair the average person, and is the reported impairment clinically consistent with what had been experienced? Greenberg added that a majority of individuals will “probably somewhat exaggerate” their impairments, and that this should not be interpreted as malingering of all claimed damages.

Diagnosis

Goldstein (2003) indicated that in personal injury cases, a *DSM-IV* diagnosis is not mandatory, but in practice Slovenko (2002a) indicated that a *DSM-IV* diagnosis normally is provided. There are primary compendia of psychiatric diagnostic categories: the American Psychiatric Association’s diagnostic manual *DSM-IV-TR* (*Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision*, 2000, with nearly all diagnoses identical to those in the *DSM-IV*, 1994) and the *ICD-10* (*International Statistical Classification of Diseases and Related Health Problems, Tenth Revision*, World Health Organization, WHO, 1992). The *DSM* is used in North American jurisdictions (although the *ICD-9-CM* is used for insurance billing purposes in the United States and the *ICD-10* in Canada). The *DSM* consists of a multi-axial system that allows for diagnosis of clinical disorders (Axis I), as well as personality disorders (or mental retardation) (Axis II). The third axis concerns associated medical factors. The remaining two axes permit identification of associated psychosocial and environmental problems and the individual’s general level of functioning, respectively (See the next section, by Kane).

Shuman (2003b) points out the quandary faced by forensic practitioners who use the *DSM-IV* (1994, 2000) to render a diagnosis. Its descriptions of diagnoses were designed for clinical use, so there are risks of misunderstanding when it is transposed into the legal setting. Moreover, the deficiencies of the *DSM-IV* are readily challenged, including those concerning its reliability and validity. The dilemma for both psychologists and courts is that, despite its shortcomings, the *DSM-IV* represents the best diagnostic manual available to psychiatric and psychological practitioners.

Faust and Heard (2003a, 2003b) counsel prudence in forensic psychological assessments. Instead of using obtuse terms and language, forensic psychological

evaluations should translate any diagnosed disorder or incapacity into objective, observable, functional language, having real-life or external correlates, or specified, concrete outcomes or achievements, which can be tested and verified or disconfirmed.

Three Areas of Psychological Effects of Trauma and Stress

In this section, the three basic psychological conditions considered in this book are introduced in terms of legal concerns and issues (PTSD, chronic pain, TBI; see Chapters 5–7). The area of psychological injury involves “damage or dysfunction in one’s thinking, feeling, and behaving” causally related to an event at claim for damages (Schultz & Brady, 2003b). Koch, Douglas, Nicholls, and O’Neill (2006) add that the injury should “impair” both “function” and “well-being.” The precursors might be stress, trauma, or real or imagined injuries or threats of injury. The cause is deemed legally compensable, that is, as significantly contributory or materially involved, rather than too far removed or too remote, in the proximate induction of the psychological harm that had resulted. The harm reaches critical thresholds of disturbance of “mental” or “emotional” “tranquility,” that is, being put in a meaningfully worse condition requiring legally sanctioned restoration. The individual’s degree of preexisting psychological difficulties, in terms of either latent predisposition or symptomatic expression, presents a baseline in establishing whether a meaningful alteration of mental-emotional tranquility had been induced.

Koch et al. (2006) indicated that for thresholds to be met, the claimed psychological injury must be harmful or serious enough. In some jurisdictions, examples serve to define serious psychological injury, for example, the individual has developed a phobia. Other jurisdictions refer to broader principles, diagnoses, and significance level. Yet other jurisdictions seek out behavioral markers of genuineness, for example, being on the verge of tears. This does not refer to the expression “pain and suffering,” a manner of summarizing the effects of a tortious conduct for legal purposes but rather, refers to the typical person’s ability to cope while attempting to engage in functional activity after having experienced a purportedly negligent or otherwise tortious act. The resulting distress must be “highly unpleasant” or severe. Koch et al. concluded that the term “psychological injury” is still met with skepticism in law, requiring extra burdens of proof.

Koch et al. described three types of psychological injuries: (a) mental or physical-mental ones, such as PTSD or depression due to the loss of part of the body, (b) neuropsychological ones, and (c) pain-related ones. Craig (2005) presented a slightly different typology of psychological injuries, focusing on worker’s compensation claims: (a) physical-mental ones, in which there is an actual injury or disease compounded by psychological factors further disabling the individual; (b) mental-physical ones, in which a psychological factor such as excessive stress induces a physical problem; and (c) mental-mental ones, for example, a reaction to a trauma.

However, controversy abounds in the scientific literature in each of the three areas of psychological injury, complicating tort action. For example, PTSD has become a major focus in tort action yet, as a diagnosis, it is sometimes criticized. As for chronic pain, pain experience is not easily documented, nor is it necessarily correlated with known pathological effects. Finally, standardized neuropsychological evaluation does not necessarily address certain aspects of the effects of TBI, such as executive function. In the following, we only discuss some legal issues in the three areas, leaving a more detailed discussion for the literature review in Chapters 5–7.

PTSD

Slovenko (2002a, 2002b, 2003) indicated that the diagnosis of PTSD has spawned a growth industry in compensation and tort action. PTSD is a preferred diagnosis in tort litigation, relative to others like depression, because it is incident-specific, and simplifies the causation argument in the traumatic incident in question. Shuman (2002, 2003a) advised that, in diagnosing PTSD, the psychologist should avoid arguing that the presence of the PTSD “proves” the occurrence of the stressor that reportedly had functioned as its precipitating cause. Similarly, evidence of Rape Trauma Syndrome should not be used to support allegations of a rape having taken place. At the same time, Shuman cited court decisions where, contrary to this stance, evidence of PTSD has been admitted toward proving that a rape had occurred.

Pain

Chronic pain is not simply related to peripheral pathology, is subjectively experienced, and might be dismissed by medical practitioners, psychologists, other mental health professionals, defense attorneys, and even family members when there is little objective evidence consistent with continuing pain complaints. Research indicates that up to 85% of back pain patients have no identifiable pain-producing pathology, and that about 30% of individuals without back pain have significant pathology on scan data that would be expected to induce pain (Cocchiarella & Andersson, 2001). In cases of low back pain after a motor vehicle accident (MVA), Van Dorsten and James (2002) concur that there usually is an absence of physical findings to justify continued pain complaints. They add that healthy asymptomatic adults might show evidence of disc degeneration or disc bulging. Moreover, diagnosis is confounded by comorbidity, for example, if there is concomitant depression or other psychoemotional problems. Craig and Hadjistavropoulos (2004) point out that, although pain is subjectively experienced, this is no reason to dismiss pain reports as having no basis in objective reality, nor to consider them as reflective of a self-serving bias. Nevertheless, forensic assessors need to be especially prudent in evaluating pain chronicity for such undue influences and motivations.

Van Dorsten and James (2002) argue that the research on individuals pursuing financial compensation for the effects of personal injury does not support the argument that compensation-seeking status influences physical complaints and

outcome. At the same time, plaintiffs may face disbelief about their complaints, which might act to increase the likelihood that they amplify their complaints in order to demonstrate that their injuries are “real.” Van Dorsten and James mention that, in a jurisdiction in which compensation for pain and suffering had been eliminated, a rapid decrease in the number of whiplash claims resulted, and treatment led to improved prognosis (Cassidy et al., 2000; but see Merskey, 2003, and Nicholson and Martelli, this volume, Section III, for a critique of this study). Van Dorsten and James conclude that, in their assessments, psychologists have the ethical responsibility to examine the scientific literature, giving it more weight than they give to clinical opinion when both types of data are available.

How is it possible that physical injury and tissue damage, when objectively measured, do not predict pain experience in a dose-response relationship? Contemporary study of pain provides some answers. Melzack and Katz (2004) describe the gate control theory, which emphasizes (a) not only modulating gating mechanisms in the spinal cord but, also, (b) central control processes, or downward inhibitory influences from the brain to the spinal cord, and thus a dynamic, integral role for psychology in the pain experience. Melzack’s work on phantom limb pain led to the “neuromatrix” model of pain, in which neural networks dynamically shape pain experience. Pain is multiply determined, including effects of stress on pain perception.

Mild Traumatic Brain Injury

Hartlage and Patch (2003) estimate that 1.5 million individuals each year in the United States experience brain injury residua, mostly from mild traumatic brain injury (mTBI). Van Dorsten and James (2002) note the difficulty in establishing valid base rates of premorbid neuropsychologically related abilities. At the same time, neuropsychological testing is limited in showing relations between specific test findings and postinjury behavioral abilities or inabilities (e.g., in self-care, child care, home care, socializing, and work aspects). Goodyear and Umetsu (2002) deal with the definition of mTBI, noting certain problems like the difficulty in evaluating retrospectively the duration of loss of consciousness and post-traumatic amnesia. [For a comprehensive discussion of definitional issues related to mTBI and related concepts such as postconcussive syndrome (PCS), see Barth, Ruff and Espe-Pfeifer (2006).]

For Goodyear and Umetsu (2002), when PCS is persistent, that is, when there is severe impairment after one year, psychosocial and related factors, including possible secondary gain, constitute the salient reason for that persistence. However, Hartlage and Patch (2003) argue that behavioral evidence indicates that there may be legitimate long-term residua due to effects of mTBI in a minority of victims. They suggest that the long-term damage in the brain is especially likely to be frontal in location, and involves progressive neuronal loss. Bigler (2003a) reviews the role of neuroimaging in forensic neuropsychological evaluation. New techniques are being developed that can trace objective, reproducible, and irrefutable evidence of lesions. These lesions can be related to neurobehavioral

data in individual cases so that structure and function can be evaluated simultaneously. Neuroimaging has been subject to *Daubert* challenges but according to Bigler, has been accepted into evidence. When an individual sustains a brain injury documented by neuroimaging, defense neuropsychologists will often dispute the relevance of neuroimaging evidence.

Our own view is that it may be impossible to isolate the significance of any neurobiological evidence associated with persistent PCS from complicating factors such as depression, headaches, and job loss, and that such evidence is still in the experimental stage at the population level. As with others in the field, we call for more research.

Note that some areas in neuropsychological assessment are difficult to evaluate by standardized instruments. In frontal lobe dysfunction, it is difficult to obtain standardized instrument scores on executive dysfunction, which includes planning deficits, behavioral disinhibition, and apathy (Williams, 2003). Therefore, when evaluating frontal lobe dysfunction, the use of behavioral decision rules based on observation, and supported by knowledge of the literature, may be more important than data from psychometric test results.

Biopsychosocial Model

In all three areas under review, that of PTSD, chronic pain, and TBI, it is generally accepted that a multifactorial model of causality applies, whether it be in terms of considering preevent, event, and postevent factors, biological and environmental factors, vulnerabilities and stressors, and so on. Weissman and DeBow (2003) conclude that in psychology the biopsychosocial model is both conceptually grounded and empirically sound, so that it would qualify for admissibility under legal rules. The biopsychosocial model considers multiple interactive bases in causation at the biological, psychological, and social levels, rather than adopting a single factor approach. The framework is generally accepted, useful for elucidating specific causal factors, has acquired an acceptable scientific base, and thus is more likely to provide “reliable and probative bases” for opinions in psycholegal evidence. For example, it can help explain how acute low back pain can evolve into chronic back pain. This model is the one emphasized throughout this book.

Schultz and Gatchel (2005a, 2005b, 2005c) also adopt the biopsychosocial model in their handbook on disability, and even refer to “biopsychosocial disabilities” for injuries such as PTSD, chronic pain, and TBI, the areas most dealt with in our book. Schultz, Joy, Crook, and Fraser (2005) contrast the biopsychosocial model with the biomedical, psychiatric, labor relations, and insurance models of musculoskeletal pain-related disability. Each model has its advantages and limitations. As for the biopsychosocial model, despite its theoretical sophistication, Schultz and Gatchel maintain that it may be too complex to apply to simpler cases and may lead to a too broad scope of treatment. The needs of the individual must be determined on the basis of the specific parameters of her or his case.

Complicating Factors

The temporal course of a psychological injury that has been attributed to an index event may be influenced by the process of pursuing tort action. The litigation process might act to heighten felt symptoms. The complainant might engage in unconscious symptom amplification. The assessor might determine that there is outright conscious malingering. The litigation process functions as a double-edged sword, because it offers its own stresses beyond any induced by the index event in question, serving to exacerbate symptoms. Moreover, these stresses can relate to the inappropriate denial of claims as much as to self-induced symptom amplification for secondary financial gain.

Malingering

Halligan, Bass, and Oakley (2003a) have written an important book on malingering and illness deception. In their introductory chapter (Halligan, Bass, & Oakley, 2003b), they remind that standard psychiatric diagnostic classification systems do not consider malingering as a valid diagnostic disorder, only as an auxiliary code (in the *DSM-IV*, as a V-code). The authors define malingering as the intentional production of false or exaggerated symptoms by individuals motivated by external incentives. They present a sociological model of malingering in which malingering is considered as embedded in a broader phenomenon of willful deception in society. They provide the example of a disproportionate increase in work-related disability benefits in most countries with such systems available over the last 30 years, despite objective indicators that people's health has improved over the same time period. Because malingering cannot always be detected, psychological assessors need to consider the broader issue of illness deception, which may take place due to conscious choice and intent, through social deviance, through lack of morals, through subterfuge, or for monetary and other gain. Aylward (2003) indicates that the biopsychosocial model of disability does not sufficiently consider cases of conscious intent to deceive the system.

Rogers and Neumann (2003) concur that it is difficult to diagnose malingering, *per se*, and the behavior involved is quite similar to feigning, for example, in both one finds extremeness in presentation. Malingering appears to be part of a general adaptational stance to a difficult adversarial circumstance that includes a cost-benefit analysis. Faust (2003) argues that the search for an elusive "gold standard" in the assessment of malingering may be less fruitful than finding a less exact "silver standard." Sharpe (2003) advises to search for a range of inconsistencies in presentation to check for possible malingering and related motivations, although specification of intent to malingering remains "probably impossible." For example, the patient should be allowed to describe exhaustively her or his symptoms through open-ended questions rather than checklists. Main (2003) recommends that malingering should be determined by the court, not by the expert assessor. Exaggeration is not uncommon in pain patients and, therefore, interpretation is "particularly difficult." He distinguishes exaggeration with the intent to convince from the intent

to deceive. He reviews various terms associated with the detection of malingering; even ones such as “low effort” need to be used with caution because of its association with terms such as malingering.

Zasler and Martelli (2003) report that numerous studies show a high incidence of response bias in medicolegal evaluations, where response bias concerns not only malingering but any “less than fully truthful, accurate or valid symptom report and presentation, whether deliberate or unconscious” (p. 34). For example, an individual may express undue sensitization to distress from mild, subtle, negligible, or benign symptoms. In symptom magnification, an individual may consciously or unconsciously exaggerate symptoms, for example, for psychological needs, financial reward, or as a “cry for help.” Zasler and Martelli advise that, especially in medicolegal settings, assessment of response bias is critical.

Ferguson (2004) and Bordini, Chaknis, Ekman-Turner, and Perna (2002) have examined malingering in the context of neuropsychological evaluations. Malingering refers to the deliberate fabrication or gross exaggeration of symptoms, but it does not refer to adopting the sick role, nor does it refer to any nonintentional symptom/deficit production.

According to the *DSM-IV*, two or more of four features need to be present for malingering to be strongly suspected: referral by an attorney, marked discrepancies in test data and presentation, little effort/cooperation, and Antisocial Personality Disorder. Unfortunately, as they are presently described, the *DSM* criteria may lead the forensic assessor to attribute malingering to a client with legitimate reasons for poor effort and for attorney referral, for example. Rogers and Bender (2003) also criticize the *DSM-IV* for its lack of accurate criteria for the classification of malingering.

Iverson (2005) discusses the detection of malingering in civil forensic neuropsychological evaluations. According to Iverson, the *DSM-IV* defines malingering in an unsatisfactory way compared to the proposal in his chapter, first presented in Slick, Sherman, and Iverson (1999). Criteria are proposed for definite, probable, and possible malingering of cognitive dysfunction, and assessment methods are reviewed. Iverson notes that there is no one test that can assess malingering well, and, therefore, when malingering is diagnosed, it is a diagnosis of exclusion [See the section by Nicholson and Martelli for a critique of Iverson’s approach to diagnosing malingering].

McLearn et al. (2004) cite evidence that in civil litigation involving neuropsychological-related assessment, the base rate of malingering may be as high as 40% (Larrabee, 2003). Malingering levels in neuropsychological assessment have been estimated to range from 2% to as high as 64%. Unfortunately, with different definitions of malingering, different samples studied, and different objectives of the research, comparing rates of malingering across studies is difficult.

Rogers and Bender (2003) consider that a defensive attitude brings denial or symptom minimization, which stands at the opposite end of the spectrum of malingering. Other response styles concern irrelevant responding, suboptimal effort, feigning, and dissimulation. The authors dispel the myth that malingering is common, yet at the same time suggest that it is not rare, with prevalence estimates around 15%, in general, but with variation across settings.

Malingering assessment strategies include detection of purported rare symptoms, improbable symptoms, rare symptom combinations, or too many severe symptoms, and also indiscriminant symptom endorsement, overendorsement of obvious symptoms of mental disorder, the display of erroneous stereotypes of mental disorder, and discrepancies between verbally reported and clinically observed symptoms. Measures of malingering may be embedded in larger psychometric instruments such as the MMPI-2 (Minnesota Multiphasic Personality Inventory, Second Edition; Butcher, Dahlstrom, Graham, Tellegen, & Kaemmer, 1989), or may stand alone, such as with the SIRS (Structured Interview of Reported Symptoms; Rogers, Bagby, & Dickens, 1992), which uses items related to all the above detection strategies, except for the one regarding erroneous stereotypes. Bryant (2003) concludes after his review of malingering in PTSD in personal injury that there is “little” empirical support for the many guidelines and techniques available. However, the standard of practice for forensic evaluators is to include at least one instrument to address both response style and the possibility of malingering, and many evaluators utilize more than one. The validity scales of the MMPI-2 are probably the most-utilized scales for this purpose.

Bush et al. (2005) presented the National Academy of Neuropsychology’s position paper on symptom validity assessment, which includes malingering detection. According to them, symptom exaggeration or symptom fabrication takes place in a “sizeable minority” of neuropsychological assessments, with “greater” prevalence in forensic evaluations and, therefore, they must be adequately addressed. (a) “Symptom validity” refers to accuracy or truthfulness, (b) “response bias” to “attempt to mislead,” (c) effort to “investment in performing,” (d) malingering to “volitional production of false or exaggerated symptoms,” and (e) dissimulation to “intentional misrepresentation or falsification of symptoms.” The authors maintain that neuropsychological assessments in the forensic context performed without careful consideration of “motivation” are incomplete. [See the discussion of malingering in Nicholson and Martelli’s, Section III, and Kane’s chapters, Section II, in this book. The chapter by Iverson and Lange (2006) in Koch et al. (2006) is another useful source.]

Litigation

Call (2003) discusses the stressful nature of the legal process on personal injury claims. Kennedy (1946, p. 20) had written that “compensation neurosis is a state of mind, born out of fear, kept alive by avarice, stimulated by lawyers, and cured by verdict” (as cited in Call, 2003, p. 53). However, the bulk of the evidence disputes the claim that psychiatric symptoms improve after completion of the litigation process. Bryant and Harvey (2003) found that litigation status has little effect on the maintenance of PTSD, return to work, and so on. Nevertheless, Frueh et al. (2003) found that compensation-seeking veterans overreport or exaggerate their symptoms. Call (2003) argues that litigation does contribute to and maintain emotional trauma; it is “jurisogenic” or “critogenic,” a term akin to “iatrogenic,” which refers to harm caused by the medical process. We add that the whole insurance process, from starting a claim and treatment to going to multiple medical and other assessments to

passing through tort action to potentially going to court, could be considered both a cardinal risk for symptom exacerbation due to stress and an additional traumatizing factor. (See the discussion of litigations factors in Sections II and III, this volume.)

Impairments and Disability

In this section, we address the crux of causality determination. The forensic assessor is confronted with the need to consider the impact of psychological effects of index events on the individual's functional roles, for example, in terms of work.

Psychological Injury

Schultz (2003a) calls the area of psychological injury a confused minefield or quagmire, with no clear guidelines, with myths, misconceptions, second-guessing, speculation, arbitrariness, tradition, and with an absence of scientific substantiation. For example, according to Schultz, the most widely used forensic definitions of impairment and disability are presented in the *Guidelines to the Evaluation of Permanent Impairment of the American Medical Association* (Fourth Edition; Cocchiarella, 1993; Fifth Edition; Cocchiarella & Andersson, 2001), but they "have not been specifically designed to describe the sequelae of psychological injury" (Schultz, 2003a, p. 66). Typically, then, psychological impairment is considered a "loss of, loss of use of or disturbance of psychological function." A disability concerns a present or future "alteration of an individual's capacity to meet personal, social, or occupational demands or statutory or regulatory requirements because of an impairment" (Cocchiarella & Andersson, 2001, p. 8). (Note. The terms "handicap" and "disability" had been used interchangeably, but the former term is being replaced by the latter.) Schultz (2005) describes that the AMA Guides' approach to disability relates it to the environment or context in which it is functionally expressed.

Peterson (2005) described the WHO's (2001) initiative of developing an *International Classification of Functioning, Disability, and Health (ICF)*, which attempts to clarify the meaning of the terms impairment, disability, and functioning. Impairment "represents a deviation from certain generally accepted population standards" of functioning (WHO, p. 12). Notice that this definition, as presented in the article, appears to refer to a comparison of the individual to population parameters, whereas the AMA approach implies a pre-post comparison in establishing the presence of impairment. In the forensic context, the AMA approach appears more appropriate, although, most probably, the two approaches should be blended in future approaches to definition and to research. Similarly, the WHO approach to the definition of disability may be too broad for the forensic context. "*Disability*, then, refers to any impairments, activity limitations, or participation restrictions or to 'the outcome or result of a complex relationship between an individual's health condition and personal factors, and of the external factors that represent the circumstances in which the individual lives' (WHO, p. 17)" (Peterson,

p. 106). Although the latter part of the definition is excellent, notice the difficulty of having included impairment as an example of a disability. Peterson (2005) describes that different degrees of activity limitations and participation restrictions are possible (mild, moderate, severe, complete, or 5–24, 25–49, 50–94, 95–100%, respectively). However, he does not specify which ones constitute critical alterations, because lower levels do not necessarily constitute disabilities. To conclude, Peterson contends that diagnostic information is of limited value in specifying functional outcome. Scherer and Glueckauf (2005) describe well the comprehensive nature of functional outcome that should be evaluated, including contextual, environmental, and personal factors as they interact with one's activities and participations. At the same time, Schultz (2005) offers the opinion that without a substantial body of research evidence, relevant definitions and methodologies in disability determinations of persons claiming disabilities will lack sufficient "relevance, reliability, and validity," thereby affecting "fairness."

Work Disability and Impairment

Schultz (2003a, 2003b) further addressed the relationship among psychological impairment, occupational disability, and causality determination. Schultz (2003a) remarked that psychological distress or cognitive disturbance, even if accompanied by a diagnostic clinical label, does not in and of itself specify impairment. "For an impairment to be identified, it must be behaviorally described in terms of dysfunction" (Schultz, 2003a, p. 67). When an impairment or behavioral dysfunction translates into functional limitations at work, an individual is disabled from the work to the extent that the limitation prescribes. One could be clinically depressed, for example, and still be able to discharge work performance responsibilities, so that there is no disability. Yet one could have a relatively minor psychological impairment, such as phobia of heights, which is not relevant to most vocational contexts, but for some others would be disabling (e.g., for a construction worker).

Perusal of the 2001 AMA Guides (Cocchiarella & Andersson, 2001) indicates that the mediating variable that translates an impairment into a disability is the degree to which the impairment induces functional limitations. We conclude that all sources ask the psychological assessor to clearly specify the functional limitations that obtain as a result of psychological symptoms, impairments, disorders, and so on, and clarify the reasons why the limitations constitute a disability, should that be the opinion offered. However, the task is fraught with complexity and difficulty, requiring the utmost prudence in disability assessment, along with sound knowledge of the scientific literature to buttress all arguments made in the formulation.

The 2001 AMA Guides (Cocchiarella & Andersson, 2001) speak to the issue of evaluating permanent psychological impairment. Four areas of functioning need to be assessed: activities of daily living, social functioning, concentration/persistence/pace, and deterioration/decompensation, or repeated failure to adapt to stressful work or work-like settings. Each of the areas needs to be evaluated for independence, appropriateness, and effectiveness. Psychological impairments are evaluated

for severity, from mild to extreme. “Extreme” impairments (class 5) “preclude” useful function, and at the next level “marked” ones (class 4) “significantly impede” them. Schultz (2003b) suggests that the AMA should construct one rating system of psychological impairment for both psychological and neuropsychological conditions, because at present there are different (although very similar) systems in these two areas (We address this suggestion below).

Schultz (2005) adds that, because the AMA has blurred the distinction between impairment and disability, and the four areas of possible disability functioning are “not sufficiently defined,” the reliable and valid assessment of possible disability is jeopardized. She argues that the practice of using ratings of disability impairment to estimate degree of disability is inappropriate. Rather, in evaluating work disability, one needs to consider preexisting and residual work capacity, coping skills, work motivation, work place characteristics and demands, possible need for work modification, accommodation, and change, and the predicted long-term capacity to persist in a return to work. We would add that the difficulty in obtaining work at a new company or in a new field, if this is necessary, would be especially difficult for an injured or once-disabled worker, in part because there may be implicit or even explicit employer prejudice against injured and once-disabled workers.

Catastrophic Impairment

The AMA Guides define a permanent physical impairment as one reaching “maximum medical improvement” “where it is well stabilized and unlikely to change substantially in the next year with or without medical treatment” (Cocchiarella & Andersson, 2001, p. 2). In the Guides, the criterion for permanent impairment is that the individual should have suffered a whole body impairment of 55% or a higher percentage. Specific criteria are provided for losses of physical function for each body part or system. Note that the definitions of physical impairments are not adjusted for psychological impairment. However, the Guides address evaluation of pain-related impairment. When the diagnosis is uncertain, pain-related impairment should not be rated. Otherwise, where the individual appears credible pain-related impairment can add up to 3% to the physically derived total body impairment.

A recent Ontario Superior Court decision has addressed the lack of specific guidelines in the AMA Guides for determining permanent psychological impairment, or a contribution of psychological impairment to permanent whole-body impairment (*Desbiens v. Mordini*, 2004, CanLII 41166 (ON S.C.)). The overview of the decision begins with the statement that the “gods of good fortune” had not been “kind” to the complainant. Desbiens had already been paraplegic before the MVA in question due to a spinal cord injury sustained in a fall from a roof. In his unfortunate MVA, while in his wheel-chair on the sidewalk, he was struck by a car that led to the wheel-chair being thrown 10 feet. Desbiens sustained a fractured right femur and other right-side injuries. The effects of the accident had deprived him of his relatively independent lifestyle. The plaintiff’s position held that he was “catastrophically” impaired because (a) there had been an impairment of “55% or

more,” when the “whole body” is considered, as per the 1993 version of the AMA Guides, or (b) there had been a marked or extreme (class 4 or 5) “mental or physical disability.” (The 55% level, and the definition of the classes are the same in the 1993 and 2001 editions of the Guides.) The justice noted that the Guides do not address quandaries presented by superimposition of acquired injuries on pre-existing injuries, yet allow discretion in arriving at impairment percentages that “accurately reflect” real functional impairments.

In the case of the complainant, Mr. Desbiens, his whole-person percentage impairment was judged to have been 40% at the musculoskeletal level; however, the justice considered his preexisting paraplegia in determining that the superimposition of 40% had “grave” consequences for his real functional impairments, so that when considering the full picture, the catastrophic threshold of 55% was attained. Although the court had not addressed whether preexisting *psychological* impairments can be superimposed on preexisting ones, we suggest that the same logic should apply. This conclusion is strengthened by examination of the following analysis of the appropriate percentages for degrees of psychological impairment.

The fourth and fifth editions of the Guides do not ascribe percentages for degree of psychological impairment. However, in *Desbiens*, Allan Finlayson, a neuropsychologist, noted that the 1984 second edition of the Guides had provided estimates of ranges for degrees of psychological impairments: mild = 10–20%; moderate 25–50%; moderately severe 55–75%; and severe 75% or more. A related range is given in the fourth edition for emotional and behavioral disturbance due to dysfunction of the brain or central nervous system (CNS): mild = 0–14%; moderate 15–29%; severe 30–49%; and severe for all daily functions 50–70%. Finlayson had argued that, first, the qualification of the degrees of mental and behavioral disorders without CNS involvement uses similar adjectives (mild, moderate, marked, extreme; See above), and that, second, the psychological effects of brain and CNS dysfunctions refer to mental and behavior disorders. Therefore, the percentages applicable to the brain/CNS categories (0+, 15+, 30+, 50+ percent) should apply to the mental/behavioral ones. The justice accepted this logic, determining that Mr. Desbien’s psychological impairments, which had been evaluated as moderate, had contributed another 25% to the whole-body impairment evaluation. That is, whole-body impairment should consider combined physical and psychological consequences, and the latter can be estimated.

Desbiens is an important court decision, because it more clearly specifies what is catastrophic impairment, what are degrees of psychological impairment, and what are their associated percentages of impairment. Further, it confirms that estimates of physical and psychological impairment percentages can be added together to arrive at evaluations of percentage of whole body impairment, and that preexisting factors need to be considered in arriving at estimates of whole-body impairment percentage.

Note that in *Desbiens* no estimate of the psychological contribution to functional limitations is offered for the mild, moderate, marked (severe), or extreme levels. Therefore, we propose on the basis of this that the percentages of impairment for brain/CNS dysfunction can function as appropriate anchor points not only in

determining degree of psychological impairments in causality evaluations but, also, of psychologically-based functional limitations. Therefore, conservative estimates would be that in terms of estimated percentages of psychological impairments, the mild level can be as low as 0%, the marked level can never be at 55% or higher, the threshold level, and the extreme level may be lower than 55%, depending on its degree. That is, when psychological impairments alone are responsible for real functional limitations, the burden of proof on the plaintiff should be to demonstrate that more than a minimal degree of extreme impairment is evident. Finally, by evaluating the degree of psychological impairment that may have been present before the event in question, the evaluating psychologist can determine the manner in which postevent impairments have been superimposed on any preexisting ones, and whether the final combined state of preexisting and postevent impairments reach the grave, catastrophic threshold. A factor to consider is that, for any one plaintiff, the preexisting degree of psychological impairment may have been so high that any added postevent impairments needed to exceed the 55% level is minimal, reducing damages greatly, and perhaps to zero after consideration of contingencies or deductibles in the legislation involved.

Despite our suggested percentages of psychological impairment and psychological functional limitations for the mild to extreme levels, the critical question remains whether psychologists can effectively evaluate degree of psychological impairments/limitations and moreover, can they specify an exact percent in these regards. Also, can they arrive at these determinations with a degree of certainty sufficient for court purposes. To solidify the use of these percentages in court, it is recommended that guidelines be written demonstrating their reliability and validity, which will require an active research program.

Disability

In their evaluations, psychologists have difficulties with the accurate prediction of future strengths and weaknesses in abilities and behavior. "Thus, clinicians are faced with the issue of how to measure the degree or permanence of a mental disability, and this can be very difficult to quantify" (McLearn et al., 2004, p. 275). This difficulty is especially important for evaluation of future work capacity.

Occupational disability does not have one commonly accepted definition; it has been linked to inability to return to preevent employment, impaired work performance, duration absent from work, lack of employability, loss of earning capacity, and so on, as well as consideration of need for work-site corrections, modifications, or accommodations such as flexible hours (Schultz, 2003b). Occupational disability evaluation needs to include information about the individual's education, training, work history, transferable skills, adaptability, coping, motivation, job satisfaction, work-place factors, work demands, personal requirements, work modifications, and so forth.

Bryant (2003) added that even if an individual does not meet criteria for a psychological disorder, she or he might still be evaluated as impaired in functioning in any of a range of domains. Conversely, an individual evaluated as having a psychological disorder might still be able to function quite ably. Thus, as indicated

throughout this book, it is the individual in context that must be evaluated, and recommendations must be based on that individual and her or his context.

Returning to Schultz (2003a), psychological tests generally have not been constructed with ecological validity, or applicability of findings for individuals to their particular real-life work sites (Sbordone, 2000). Positive motivation is difficult to measure, is especially context-dependent, and cannot be easily operationalized; moreover, the measures of its inverse, suboptimal effort, “often are incorrectly equated to detection of malingering” (Schultz, 2003a, p. 79). Overall, psychologists do not yet have precise disability assessment instruments. There are no commonly accepted measures of psychological work dysfunction. Also, it is difficult to tease out occupational disability due to pain vs. mental-based injury, depression, and related factors, which is problematic in jurisdictions and legal contexts that do not recognize the former as a basis for compensation in full or in part.

In terms of research on the relationship between mental disorder and occupational performance, there is a clear absence of well-designed scientific research (Schultz, 2003a). The forensic assessor has to extrapolate from this limited research base and hypothesize about the individual being assessed, thus potentially being at a “disadvantage in the context of the *Daubert* standard of admissibility of scientific evidence” (Schultz, 2003a, p. 74). Depending on the task undertaken by a forensic psychologist, she or he may need to coordinate with vocational experts and/or forensic economists.

We suggest that if the forensic psychologist undertakes a comprehensive, impartial assessment, can identify pre- and postfunctioning levels with respect to vocation, and can attribute the current, decreased, level to the incident or accident in question, not only may causal statements be presented but, also, reasoned predictions about future work capacity may be formulated. However, the psychologist needs to remain within the bounds of scientific knowledge after ascertaining that the individual being assessed has valid psychological dysfunctions.

In adducing evidence of disability from the research in the field, it is a truism that population-level investigations never capture the idiosyncratic intricacies of the individual case, including at the level of specific mechanism. More important, there are large gaps in the research that has been published in terms of what is needed for court purposes. This especially applies to insufficient prospective, well-controlled research of a long-term nature on functional impairment and outcome. The informed assessor will proceed cautiously at all these levels in determining disability. Koch et al. (2006) note that the assessor must logically demonstrate or trace a causal link or pathway between a deficit and the focus of the case, whether occupational, educational, social, or recreational functioning.

Dillman (2003) suggested that in cases of personal injury, occupational functioning might be affected in the domains of memory, concentration, social interaction, and adaptation to change (as summarized by Koch et al., 2006). Koch et al. (2006) add the domains of motivation/energy, decreased stress tolerance, and phobic avoidance (e.g., driving to work) to this list of what to consider in mediators of occupational functioning. We would add that where psychological injuries include Pain Disorder pain conditions, physical limits become involved. Also, where job loss

has taken place or vocation has to be changed, the psychological assessor needs to consider the capacity for retraining, succeeding at interviews once trained, keeping a job once hired, adjusting to less income (should that apply), and dealing with possible employer prejudice against injured or once-disabled workers.

Conclusions

Law and Psychology. In terms of causality assessment, the law and psychology exist in a collaborative but potentially tense relationship due to their differing training, regulations, ethics, and professional guidelines. Attorneys function in an adversarial system with the obligation to present the best case possible for their clients, whereas psychologists function in terms of adequately finding and describing the most parsimonious explanation of an individual's symptoms, irrespective of the side that has retained them in a legal dispute. Inevitably, the psychologist is exposed to biases, and the best manner in dealing with them is to conduct an impartial, comprehensive assessment in which she or he evaluates all reasonably likely factors that can influence conclusions offered to the court.

Haney and Smith (2003) differentiate between law and psychology. For example, law is authoritarian and conservative, but psychology is creative and empirical (data-driven). In seeking facts/truths, the methodology of psychology is scientific, but for the law it is adversarial. Psychologists are trained to be objective, but lawyers, in their adversarial stance, function from a built-in biased perspective. Law emphasizes certainty, predictability, and finality; psychology deals in probability, and attaching qualifiers and conditionals to statements. To better deal with legal matters, psychologists need to adhere to the standards and norms of their discipline, "not the dictates of the court" (Haney & Smith, 2003, p. 198). Miller (2003) concurs that psychologists may be subject to the biases of the side that retains their services.

Rogers and Shuman (2005) noted that the law assumes that people should be held accountable when they do not exercise sufficient control over their behavior as it relates to moral and legal thresholds. In contrast, psychology's theory of behavior is more "deterministic," "multi-determined," and geared to individual differences, which is a major theme of this book.

Other important differences between law and psychology relate to statistics and statistical concepts such as reliability and validity. (See below and Kane's discussion of these factors in Section II.) In psychology, reliability has a very specific meaning, relating to the degree of consistency of measurement by psychometric instruments (Groth-Marnat, 2003). For example, does an individual obtain similar scores on separate administrations of a test, or do two scorers arrive at similar results when scoring an individual's answers to a test. In contrast, for the law, reliability is akin to psychology's concept of validity. For example, in *Daubert*, reliability is defined as "trustworthiness" (See Chapter 10 by Kane, this volume). For psychology, validity refers to whether a psychometric instrument is accurate, measuring what it is intended to measure (Groth-Marnat, 2003). Other examples of differing conceptions for the same term in

law and psychology indicate that we need to be alert to exact definitions of terms in the two professions, and care is needed in using them, especially when communicating across the professions (See Chapter 4 for presentation of an extensive dictionary of terms in the two professions, and suggestions for dealing with them).

Statistics are used in different ways in the two professions. Scientific experiments never *prove* a hypothesis; they can only support it or not support it. In a research study in science, if there are significant results in the empirical data, the “experimental” hypothesis that there is a significant difference across different conditions, groups, levels, and so on, is not directly accepted. Rather, the “null” hypothesis, that there is no difference across different conditions, groups, levels, and so on, is considered inapplicable, that is, it is rejected. Moreover, there is always an element of doubt or uncertainty about any significant result in the statistics presented in a scientific study. This relates to the “alpha level,” or significance level, characterizing the results of a statistical test applied to the data to test the acceptability of a null hypothesis. Normally, psychologists choose an alpha level of .05, which specifies that for results found significant by application of statistical tests there is only a 5% or lower probability that the results obtained are due to chance rather than due to any direct effect in the study. That is, to simplify, in psychology a significant statistical result deriving from a study appears on the surface to have a 95% degree of certainty. When greater certainty is warranted, psychologists may consider that a result is significant only if it is likely to have been obtained by chance at a 1% level or less. This indicates that the convention of what should be considered significant according to statistics in a scientific study varies with the needs, that the alpha level chosen is not purely a mathematical decision.

In contrast, Greenberg (2003), Goldstein (2003), and Weissman and DeBow (2003) address the level of certainty that a *forensic* psychologist should consider in assessments of individuals, especially for personal injury cases, as opposed to evaluation of statistics applied to data gathered on a sample of subjects in a research study. They argue that, in arriving at conclusions about an individual in a psychological assessment, the preponderance of the evidence should support the conclusions offered; this is called “the more likely than not” standard, and the percentage of certainty that reflects it is anything greater than 50%. This is a far cry from the typical alpha levels of statistical significance in a scientific study (e.g., .05), but, nevertheless, the 50+% “more likely than not” level is the standard for personal injury cases in the legal system.

Overall Conclusions. Law and psychology form a system in which change in one profession affects the other. Psychologists improve their science and develop a stable fund of knowledge as they continue to expand it. The law expects that psychologists accrue ever-increasing knowledge through their population-level research but, at the same time, asks psychologists to apply this ever-changing fund of knowledge to arrive at definitive judgments in assessments of individuals,

in terms of their impairments, disabilities, diagnoses, and so on. The law seeks to identify one proximate cause, or its absence, among the multifactorial determinants of behavior, whereas psychologists undertake multifactorial comprehensive assessments of all the behavior and test results needed to understand the individuals being assessed in effort to answer a referral question, and often they arrive at complex judgments of causality.

Psychologists become part of an adversarial legal system, offering evidence for or against the argument that an alleged event had fully or partly caused a psychological injury. They need to attempt to remain impartial, evidence-based, and scientific in their reasoning and methodology, despite the pushes and pulls from attorneys and a host of other biasing factors. Moreover, the law is not static, and psychologists need to keep abreast of its developments. For example, evidence law changed with *Daubert* (in 1993) and its progeny and consequent amendments to Federal Rules of Evidence. Psychologists should continue to provide input into the legal system in order to promote a better understanding of science and human nature and in order to assist triers of fact in their deliberations.

The following chapters of this section of the book explore the concepts of causality, causation, and related terms pertaining to psychological injury after exposure to a stressor or potentially traumatic event, and some recent research on the psychological knowledge that has accrued in the three areas crucial to forensic psychological assessments, those of PTSD/distress, chronic pain, and mTBI. Psychologists need to be familiar with both (a) the psychological literature in these areas and their legal implications, and (b) how to properly evaluate individuals reporting these types of psychological injury.

Appendix 1

Reliability and Validity in Assessment

Reliability. Groth-Marnat (2003) described the full range of reliability and validity concepts and indicators that are used in psychological instrument construction, and we present a brief overview. Psychological instruments vary from self-report questionnaires, to administered tests, such as for intellectual evaluation, to batteries comprised of many tests, such as used in neuropsychological assessment. In general, psychological instruments, tests, and self-report questionnaires that are standardized are first given to a normative, large, or relatively large sample that is representative of the population to which the instrument/test/self-report questionnaires are meant to be applied. The reliability of an instrument, test, or questionnaire refers its degree of stability, consistency, predictability, and accuracy. That is, will a score obtained by a person on a particular test be the same when it is readministered, or can two scorers agree on the score that should be assigned to a respondent's answers? There is a range of error, error of measurement, or range of random fluctuation, that can underlie a score on any test. There may be

a certain degree of error or “noise” due to factors such as errors in reading, deviations from standardized administration, or respondent variation in mood, motivation, and so on. If the degree of measurement error is reduced, any difference in respondent scores on successive administration of an instrument will better reflect a “true difference.” However, for tests that address emotions such as anxiety, respondents are more prone to variation across successive administrations. Moreover, psychological tests attempt to measure concepts that are often hard to operationalize. Therefore, some testing error is inevitable, but the goal is to minimize it.

Test reliability is indicated by correlational statistics, such as the Pearson product-moment correlation coefficient [r], which can range in value from -1 to $+1$ (e.g., an r of 1 indicates a perfect, positive correlation). Urbina (2004) indicates that estimates of reliability below 0.7 are considered “low” and, normally, in its construction with a standardized population, a test needs to have scores with a reliability correlation of 0.8 or more to be considered “trustworthy.” Urbina indicates that “a reliability coefficient might be described as the correlation of the test with itself ... such as two administrations of the same test, two versions of the same test, inter-item correlations, and so on—that *ought to be* highly consistent” (p. 137, italics in original). According to Groth-Marnat (2003), there are four primary ways of obtaining reliability estimates of a test—(a) test-retest: ascertains whether individuals obtain consistent results on successive administrations; (b) alternate forms: do individuals obtain similar results on different but comparable, parallel versions of the same test; (c) split half: are results internally consistent when the test is divided, for example, as in odd vs. even items; and (d) interscorer reliability: can scorers agree on which scores to assign to an individual’s responses.

The amount of error associated with a test is estimated by a statistic called the “standard error of measurement” (*SEM*). Test scores consist of true and error components. The *SEM* estimates the range of the error. The higher a test’s reliability, the less is its range of error. Theoretically, the *SEM* is a statistical index of the likely distribution of repeated scores of a test, were an individual to undertake such repeated administrations. It provides a range of scores, indicating the percent of times that an individual’s obtained score has a chance of being lower or higher by the *SEM* value from the estimated true score. The error band is also called the “confidence interval.”

Validity. Validity refers to whether a test measures what it is intended to measure, is accurate, and produces “useful” information. In developing a test, it must have a sound theoretical base, and its items must represent well the constructs to which they are aimed. For example, does a measure of intelligence quotient (IQ) correlate with school performance and, if so, does this permit us to say that IQ represents intelligence? There are three major methods of establishing validity.

(a) In *content* validity, the test constructor attempts to ensure the “representativeness and relevance” of the instrument with respect to the underlying construct. Items are selected by experts in a way that all major aspects of the needed content areas are covered, while respecting the different proportions of the areas. (b) *Criterion*

validity concerns comparing test scores with a relevant “outside” measure. In the type of criterion validity termed *concurrent* validity, the outside measure is given at about the same time as the test of interest. In *predictive* validity, the outside measure is given at a time clearly after the test of interest. For example, with an intelligence test, an academic achievement test can be given at the same time or at the end of the year, depending on which type of validity is being measured. (c) In *construct* validity, the degree to which a test measures its underlying theoretical construct or trait is evaluated. For example, a test of anxiety should give results that correlate highly with behavior in an anxiety-provoking situation but not with behavior in a situation unrelated to anxiety. Or it should correlate with a similar test of anxiety (Note that this example does not refer to criterion validity, which concerns measures more removed than another measure of the same construct).

Factor analysis is a statistic used to assess construct validity, for it serves to find statistical groupings of items based on positive correlations of similar items, or to find items that clearly do not belong to specified groups, showing negative correlations with them. If the factors make sense, for example, a researcher finds that factors of anxiety and depression seem to emerge from a factor analysis of a test of psychopathology, the test is considered to possess *factorial* validity. Another method of establishing validity is to correlate subtest scores of a test with total scores, seeking “internal consistency.” (In *face* validity, the items that had been selected by experts appear valid in the judgment of test users.)

Finally, by using *convergent* and *discriminant* validity checks, the test constructor establishes to what degree a test correlates positively with similar measures and poorly or negatively with dissimilar measures; for example, a test of reading comprehension should strongly correlate with a test of vocabulary but not a test of mathematics. Related to convergent and discriminant validity are the concepts of *specificity* and *sensitivity*. Test constructors address to what degree a test genuinely detects “true negatives” and “true positives,” respectively. There is no simple formula for establishing a test’s validity, but a variety of methodological and empirical steps need to be taken before it obtains results that can be respected as valid. Other validity techniques include discriminant analysis, and other validity types include *ecological* validity, where the degree of correlation with everyday, real-world function is established. For a more detailed analysis of psychological testing, the reader is referred to Anastasi and Urbina (1997), Groth-Marnat (2003), and Urbina (2004).

Instruments. To conclude, we mention several common psychological instruments. The first three relate to self-report questionnaires of common clinical symptoms encountered in this book, that of depression (Beck Depression Inventory, BDI-II; Beck, Steer, & Brown, 1996), posttraumatic stress (Detailed Assessment of Posttraumatic Stress, DAPS; Briere, 2001), and pain (Multidimensional Pain Inventory, MPI; Kerns, Turk, & Rudy, 1985). The next two concern the two most commonly used personality inventories, the MMPI-2 (Minnesota Multiphasic Personality Inventory, Second Edition; Butcher et al., 1989) and the MCMI-III (Millon Clinical Multiaxial Inventory-III; Millon et al.,

1994). (See discussion of these two tests by Kane, Chapter 10, this volume). Finally, two most common cognitive tests are the Wechsler intelligence and memory tests (the WAIS-III and the WMS-III; Wechsler Adult Intelligence Scale, Third Edition, Wechsler, 1997a; and the Wechsler Memory Scale, Third Edition, Wechsler, 1997b, respectively). The assessor should be on constant vigil about the reliability and validity of all such instruments; for example, for the WMS-III, according to the test manual, reliability and validity are considered adequate; however, results with closed head injury patients have shown unexpected memory patterns with lower visual memory indices than auditory ones (Wechsler, 1997c, p. 156). In Section II of this book, Kane further explores these issues.

References

- Ackerman, M. J., & Kane, A. W. (1998). *Psychological experts in personal injury actions* (3rd ed.). New York: Aspen Law and Business.
- American Psychiatric Association. (1994). *Diagnostic and statistical manual of mental disorders* (4th ed.). Washington, DC: Author.
- American Psychiatric Association. (2000). *Diagnostic and statistical manual of mental disorders: Text revision* (4th ed.). Washington, DC: Author.
- Anastasi, A., & Urbina, S. (1997). *Psychological testing* (7th ed.). Upper Saddle River, NJ: Prentice-Hall.
- Aylward, M. (2003). Origins, practice, and limitations of disability assessment medicine. In P. W. Halligan, C. Bass, & D. A. Oakley (Eds.), *Malingering and illness deception* (pp. 287–300). New York: Oxford University Press.
- Barth, J., Ruff, R., & Espe-Pfeifer, P. (2006). Mild traumatic brain injury: Definitions. In G. Young, A. W. Kane, & K. Nicholson (Eds.), *Psychological knowledge in court: PTSD, pain, and TBI* (pp. 271–278). New York: Springer Science+Business Media.
- Beck, A. T., Steer, R. A., & Brown, G. K. (1996). *Beck Depression Inventory: Manual* (2nd ed.). San Antonio, TX: Harcourt Brace.
- Bigler, E. D. (2003a). Neuroimaging in forensic neuropsychology. In A. M. Horton Jr. & L. C. Hartlage (Eds.), *Handbook of forensic neuropsychology* (pp. 195–213). New York: Springer Science+Business Media.
- Bigler, E. D. (2003b). Neurobiology and neuropathology underlie the neuropsychological deficits associated with traumatic brain injury. *Archives of Clinical Neuropsychology*, *18*, 595–621.
- Bordini, E. J., Chaknis, M. M., Ekman-Turner, R. M., & Perna, R. B. (2002). Advances and issues in the diagnostic differential of malingering vs. brain injury. *NeuroRehabilitation*, *17*, 93–104.
- Briere, J. (2001). *Detailed Assessment of Posttraumatic Stress: Professional manual*. Odessa, FL: Psychological Assessment Resources.
- Brodsky, S. L., Caputo, A. A., & Domino, M. L. (2002). The mental health professional in court: Legal issues, research foundations, and effective testimony. In B. Van Dorsten (Ed.), *Forensic psychology: From classroom to courtroom* (pp. 17–33). New York: Kluwer Academic/Plenum.
- Bryant, R. A. (2003). Assessing individuals for compensation. In D. Carson & R. Bull (Eds.), *Handbook of psychology in legal contexts* (pp. 89–107). Chichester, UK: Wiley.
- Bryant, R. A., & Harvey, A. G. (2003). The influence of litigation on maintenance of Post-traumatic Stress Disorder. *The Journal of Nervous and Mental Disease*, *191*, 191–193.

- Bush, S. S., Ruff, R. M., Tröster, A. I., Barth, J. T., Koffler, S. P., Pliskin, N. H., Reynolds, C. R., & Silver, C. H. (2005). Symptom validity assessment: Practice issues and medical necessity. *Archives of Clinical Neuropsychology*, *20*, 419–426.
- Butcher, J. N. (2002). Assessment in forensic practice: An objective approach. In B. Van Dorsten (Ed.), *Forensic psychology: From classroom to courtroom* (pp. 65–81). New York: Kluwer Academic/Plenum.
- Butcher, J. N., Dahlstrom, W. G., Graham, J. R., Tellegen, A., & Kaemmer, B. (1989). *Minnesota Multiphasic Personality Inventory-2 (MMPI-2): Manual for administration and scoring*. Minneapolis, MN: University of Minnesota Press.
- Call, J. A. (2003). Liability for psychological injury: History of the concept. In I. Z. Schultz & D. O. Brady (Eds.), *Psychological injuries at trial* (pp. 40–64). Chicago, IL: American Bar Association.
- Campbell, D. S., & Montigny, C. (2004). Psychological harm and tort law: Reassessing the legal test for liability. In T. Archibald & M. Cochrane (Eds.), *Annual review of civil litigation: 2003* (pp. 133–155). Toronto, ON: Thomson/Carswell.
- Cassidy, J. D., Carroll, L. J., Côté, P., Lemstra, M., Berglund, A., & Nygren, A. (2000). Effect of eliminating compensation for pain and suffering on the outcome of insurance claims for whiplash injury. *New England Journal of Medicine*, *342*, 1179–1186.
- Cocchiarella, L. (Ed.) (1993). *Guides to the evaluation of permanent impairment* (4th ed.). Chicago, IL: American Medical Association.
- Cocchiarella, L., & Andersson, G. B. J. (Eds.). (2001). *Guides to the evaluation of permanent impairment* (5th ed.). Chicago, IL: American Medical Association.
- Craig, K. D., & Hadjistavropoulos, T. (2004). Psychological perspective on pain: Controversies. In T. Hadjistavropoulos & K. D. Craig (Eds.), *Pain: Psychological perspectives* (pp. 303–326). Mahwah, NJ: Erlbaum.
- Craig, R. J. (2005). *Personality-guided forensic psychology*. Washington, DC: American Psychological Association.
- Daller, M. F. (2000). *Tort law desk reference: A fifty state compendium*. New York: Aspen Law and Business.
- Daubert v. Merrell Dow Pharmaceuticals, Inc.* 509 U.S. 579, 113 S.Ct. 2786, 125 L.Ed. 2d 469 (1993).
- Desbiens v. Mordini*, 2004 CanLII 41166 (ON S.C.).
- Dillman, E. G. (2003). Impairment to earning capacity based on psychological findings. In I. Z. Schultz & D. O. Brady (Eds.), *Psychological injuries at trial* (pp. 342–356). Washington, DC: American Bar Association.
- Dillon v. Legg*, 441 P.2d 912 (Cal. 1968).
- Faigman, D. L. (2003). Expert evidence: The rules and the rationality the law applies (or should apply) to psychological expertise. In D. Carson & R. Bull (Eds.), *Handbook of psychology in legal contexts* (pp. 367–400). Chichester, UK: Wiley.
- Faust, D. (2003). Alternatives to four clinical and research traditions in malingering detection. In P. W. Halligan, C. Bass, & D. A. Oakley (Eds.), *Malingering and illness deception* (pp. 107–121). New York: Oxford University Press.
- Faust, D., & Heard, K. V. (2003a). Objectifying subjective injury claims. In I. Z. Schultz & D. O. Brady (Eds.), *Psychological injuries at trial* (pp. 1686–1705). Chicago, IL: American Bar Association.
- Faust, D., & Heard, K. V. (2003b). Biased experts: Some practical suggestions for identifying and demonstrating unfair practices. In I. Z. Schultz & D. O. Brady (Eds.), *Psychological injuries at trial* (pp. 1706–1739). Chicago, IL: American Bar Association.

- Federal Rules of Evidence*. (2004). Washington, DC: U.S. Government Printing Office. Retrieved January 18, 2005, from <http://www.house.gov/judiciary/evid2004.pdf>.
- Ferguson, K. E. (2004). Detecting malingering in forensic neuropsychological evaluations in litigants with mild traumatic brain injury. In W. T. O. Donohue & E. R. Levensky (Eds.), *Handbook of forensic psychology* (pp. 301–314). Amsterdam: Elsevier.
- Frueh, B. C., Elhai, J. D., Gold, P. B., Monnier, J., Magruder, K. M., Keane, T. M., & Arana, A. (2003). Disability compensation seeking among veterans evaluated for Posttraumatic Stress Disorder. *Psychiatric Services, 54*, 84–91.
- Frye v. United States*, 293 F. 1013, 34 ALR 145 (D. C. Cir. 1923).
- Gabbay, V., & Alonso, C.M. (2004). Legal aspects related to PTSD in children and adolescents. In R. R. Silva (Ed.), *Posttraumatic Stress Disorder in children and adolescents: Handbook* (pp. 60–82). New York: Norton.
- General Electric Co. v. Joiner*, 522 U.S. 136, 118 S.Ct. 512 (1997).
- Gold, A. D. (2003). *Expert evidence in criminal law: The scientific approach*. Toronto, ON: Irwin Law.
- Goldstein, A. M. (2003). Overview of forensic psychology. In I. B. Weiner (Series Ed.) & A. M. Goldstein (Vol. Ed.), *Handbook of psychology: Vol. 11, Forensic psychology* (pp. 3–20). Hoboken, NJ: Wiley.
- Goodyear, B., & Umetsu, D. (2002). Selected issues in forensic neuropsychology. In B. Van Dorsten (Ed.), *Forensic psychology: From classroom to courtroom* (pp. 283–313). New York: Kluwer Academic/Plenum.
- Greenberg, S. A. (2003). Personal injury examinations in torts for emotional distress. In I. B. Weiner (Series Ed.) & A. M. Goldstein (Vol. Ed.), *Handbook of psychology: Vol. 11, Forensic psychology* (pp. 233–257). Hoboken, NJ: Wiley.
- Groth-Marnat, G. (2003). *Handbook of psychological assessment* (4th ed.). Hoboken, NJ: Wiley.
- Halligan, P. W., Bass, C., & Oakley, D. A. (Eds.). (2003a). *Malingering and illness deception*. New York: Oxford University Press.
- Halligan, P. W., Bass, C., & Oakley, D. A. (2003b). Willful deception as illness behaviour. In P. W. Halligan, C. Bass, & D. A. Oakley (Eds.), *Malingering and illness deception* (pp. 3–28). New York: Oxford University Press.
- Haney, C., & Smith, A. (2003). Science, law, and psychological injury: The *Daubert* standards and beyond. In I. Z. Schultz & D. O. Brady (Eds.), *Psychological injuries at trial* (pp. 184–210). Chicago, IL: American Bar Association.
- Hartlage, L. C., & Patch, P. C. (2003). Epidemiology of traumatic brain injury. In A. M. Horton Jr. & L. C. Hartlage (Eds.), *Handbook of forensic neuropsychology* (pp. 181–193). New York: Springer Science+Business Media.
- Haynes, S. N. (1992). *Models of causality in psychopathology: Toward dynamic, synthetic and nonlinear models of behavior disorders*. New York: Macmillan.
- Heilbrun, K. (2001). *Principles of forensic mental health assessment*. New York: Kluwer Academic/Plenum.
- Heilbrun, K., Marczyk, G. R., & DeMatteo, D. (Eds.). (2002). *Forensic mental health assessment: A casebook*. New York: Oxford University Press.
- Heilbrun, K., Marczyk, G. R., DeMatteo, D., Zillmer, E. A., Harris, J., & Jennings, T. (2003). Principles of forensic mental health assessment: Implications for neuropsychological assessment in forensic contexts. *Assessment, 10*, 329–343.
- Iverson, G. L. (2005). Outcome from mild traumatic brain injury. *Journal of Neuropsychiatry, 18*, 301–317.

- Iverson, G. L., & Lange, R. T. (2006). Detecting exaggeration and malingering in psychological injury claims. In W. J. Koch, K. S. Douglas, T. L. Nicholls, & M. L. O'Neill (Eds.), *Psychological injuries: Forensic assessment, treatment, and law* (pp. 76–112). Oxford, UK: Oxford University Press.
- Jenkins v. United States*, 307 F.2d 637 (D.C. Cir. 1962).
- Kennedy, F. (1946). The mind of the injured worker: Its effects on disability periods. *Compensation Medicine*, 1, 19.
- Kerns, R. D., Turk, D. C., & Rudy, T. E. (1985). The Westhaven-Yale Multidimensional Pain Inventory (WHYMPI). *Pain*, 23, 345–356.
- Koch, W. J. (2003). Posttraumatic Stress Disorder following motor vehicle accidents: Clinical forensic guidelines. In I. Z. Schultz & D. O. Brady (Eds.), *Psychological injuries at trial* (pp. 794–819). Chicago, IL: American Bar Association.
- Koch, W. J., Douglas, K. S., Nicholls, T. L., & O'Neill, M. L. (2006). *Psychological injuries: Forensic assessment, treatment, and law*. Oxford, UK: Oxford University Press.
- Kumho Tire Co. v. Carmichael*, 526 U.S. 137, 119 S.Ct. 1167 (1999).
- Larrabee, G. J. (2003). Detection of malingering using neuropsychologically atypical performance patterns on standard neuropsychological tests. *Clinical Neuropsychologist*, 17(3), 410–425.
- Main, C. J. (2003). The nature of chronic pain: A clinical and legal challenge. In P. W. Halligan, C. Bass, & D. A. Oakley (Eds.), *Malingering and illness deception* (pp. 171–183). New York: Oxford University Press.
- McLearn, A. M., Pietz, C. A., & Denney, R. L. (2004). Evaluation of psychological damages. In W. T. O'Donohue & E. R. Levensky (Eds.), *Handbook of forensic psychology: Resource for mental health and legal professionals* (pp. 267–299). New York: Elsevier.
- Melton, G. B., Petrilla, J., Poythress, N. G., & Slobogin, C. (1997). Law and the mental health professions: An uneasy alliance. *Psychological evaluations for the courts*. New York: Guilford.
- Melzack, R., & Katz, J. (2004). The gate control theory: Reaching for the brain. In T. Hadjistavropoulos & K. D. Craig (Eds.), *Pain: Psychological perspectives* (pp. 13–34). Mahwah, NJ: Erlbaum.
- Melzack, R., & Wall, P. D. (1965). Pain mechanisms: A new theory. *Science*, 150, 971–979.
- Merskey, H. (2003). Research paradigms in psychosomatic medicine with special emphasis on whiplash-Cervical Hyperextension Flexion Injury (CHF). *Pain Research & Management*, 8, 13–18.
- Miller, M. W. (2003). Personality and the etiology and expression of PTSD: A three-factor model perspective. *Clinical Psychology: Science and Practice*, 10, 373–393.
- Millon, T., Millon, C., & Davis, R. (1994). *Millon Clinical Multiaxial Inventory-III: Manual*. Minneapolis, MN: National Computer Systems.
- Nicholson, K., & Martelli, M. F. (2006). The confounding effects of pain, psychoemotional problems or psychiatric disorder, premorbid ability structure, and motivational or other factor on neuropsychological test performance. In G. Young, A. W. Kane, & K. Nicholson (Eds.), *Psychological knowledge in court: PTSD, pain, and TBI* (pp. 335–351). New York: Springer Science+Business Media.
- Peterson, D. B. (2005). International classification of functioning, disability, and health: An introduction for rehabilitation psychologists. *Rehabilitation Psychology*, 50, 105–112.
- Rogers, R., Bagby, R. M., & Dickens, S. E. (1992). *Structured Interview of Reported Symptoms: Professional manual*. Lutz, FL: Psychological Assessment Resources.

- Rogers, R., & Bender, S. D. (2003). Evaluation of malingering and deception. In I. B. Weiner (Series Ed.) & A. M. Goldstein (Vol. Ed.), *Handbook of psychology: Vol. 11, Forensic psychology* (pp. 109–129). Hoboken, NJ: Wiley.
- Rogers, R., & Neumann, C. S. (2003). Conceptual issues and explanatory models of malingering. In P. W. Halligan, C. Bass, & D. A. Oakley (Eds.), *Malingering and illness deception* (pp. 71–82). New York: Oxford University Press.
- Rogers, R., & Shuman, D. W. (2005). *Fundamentals of forensic practice: Mental health and criminal law*. New York: Springer Science+Business Media.
- R. v J-L.J.* [2000] 2 S.C.R. 600, 2000 SCC 51 (CanLII).
- R. v. Mohan* [1994] 2 S.C.R. 9, 1994 CanLII 80 (S.C.C.).
- Saxe, L., & Ben-Shakhar, G. (1999). Admissibility of polygraph tests: The application of scientific standards post-*Daubert*. *Psychology, Public Policy, and Law*, 5, 203–223.
- Sbordone, R. J. (2000). The executive functions of the brain. In G. Groth-Marnat (Ed.), *Neuropsychological assessment in clinical practice: A practice guide to test interpretation and integration* (pp. 437–456). New York: Wiley.
- Scherer, M. J., & Glueckauf, R. (2005). Assessing the benefits of assistive technologies for activities and participation. *Rehabilitation Psychology*, 50, 132–141.
- Schultz, I. Z. (2003a). The relationship between psychological impairment and occupational disability. In I. Z. Schultz & D. O. Brady (Eds.), *Psychological injuries at trial* (pp. 65–101). Chicago, IL: American Bar Association.
- Schultz, I. Z. (2003b). Psychological causality determination in personal injury and workers' compensation contexts. In I. Z. Schultz & D. O. Brady (Eds.), *Psychological injuries at trial* (pp. 102–125). Chicago, IL: American Bar Association.
- Schultz, I. Z. (2005). Impairment of occupational disability in research and practice. In I. Z. Schultz & R. J. Gatchel (Eds.), *Handbook of complex occupational disability claims: Early risk identification, intervention, and prevention* (pp. 25–41). New York: Springer Science+Business Media.
- Schultz, I. Z., & Brady, D. O. (Eds.). (2003a). *Psychological injuries at trial*. Chicago, IL: American Bar Association.
- Schultz, I. Z., & Brady, D. O. (2003b). Preface: Definition and introduction to psychological injuries. In I. Z. Schultz & D. O. Brady (Eds.), *Psychological injuries at trial* (pp. 13–17). Chicago, IL: American Bar Association.
- Schultz, I. Z., & Gatchel, R. J. (Eds.). (2005a). *Handbook of complex occupational disability claims: Early risk identification, intervention, and prevention*. New York: Springer Science+Business Media.
- Schultz, I. Z., & Gatchel, R. J. (2005b). Introduction. In I. Z. Schultz & R. J. Gatchel (Eds.), *Handbook of complex occupational disability claims: Early risk identification, intervention, and prevention* (pp. 1–3). New York: Springer Science+Business Media.
- Schultz, I. Z., & Gatchel, R. J. (2005c). Research and practice directions in risk for disability prediction and early intervention. In I. Z. Schultz & R. J. Gatchel (Eds.), *Handbook of complex occupational disability claims: Early risk identification, intervention, and prevention* (pp. 523–539). New York: Springer Science+Business Media.
- Schultz, I. Z., Joy, P. W., Crook, J., & Fraser, K. (2005). Models of diagnosis and rehabilitation in musculoskeletal pain-related occupational disability. In I. Z. Schultz & R. J. Gatchel (Eds.), *Handbook of complex occupational disability claims: Early risk identification, intervention, and prevention* (pp. 43–65). New York: Springer Science+Business Media.

- Sharpe, M. (2003). Distinguishing malingering from psychiatric disorders. In P. W. Halligan, C. Bass, & D. A. Oakley (Eds.), *Malingering and illness deception* (pp. 156–170). New York: Oxford University Press.
- Shuman, D. W. (2002). Retrospective assessment of mental states and the law. In R. I. Simon & D. W. Shuman (Eds.), *Retrospective assessment of mental states in litigation: Predicting the past* (pp. 21–45). Washington, DC: American Psychiatric Association.
- Shuman, D. W. (2003a). Persistent re-experiences in psychiatry and law: Current and future trends for the role of PTSD in litigation. In R. I. Simon (Ed.), *Posttraumatic Stress Disorder in litigation* (2nd ed., pp. 1–18). Washington, DC: American Psychiatric Publishing.
- Shuman, D. W. (1994, 2003 supplement (2003b)). *Psychiatric and psychological evidence* (2nd ed.). New York: Thomson West.
- Shuman, D. W., & Sales, B. D. (2003). The impact of *Daubert* and its progeny on the admissibility of behavioral and social science evidence. In I. Z. Schultz & D. O. Brady (Eds.), *Psychological injuries at trial* (pp. 168–183). Chicago, IL: American Bar Association.
- Slick, D. J., Sherman, E. M. S., & Iverson, G. L. (1999). Diagnostic criteria for malingering neurocognitive dysfunction: Proposed standards for clinical practice and research. *Clinical Neuropsychologist*, *13*, 545–561.
- Slovenko, R. (2002a). *Psychiatry in law/law in psychiatry: Law in psychiatry*. New York: Brunner-Routledge.
- Slovenko, R. (2002b). *Psychiatry in law/law in psychiatry: Psychiatry in law*. New York: Brunner-Routledge.
- Slovenko, R. (2002c). Causation in law and psychiatry. In I. Freckelton & D. Mendelson (Eds.), *Causation in law and medicine* (pp. 357–378). Burlington, VT: Ashgate/Dartmouth.
- Slovenko, R. (2003). Introduction. In R. I. Simon (Ed.), *Posttraumatic Stress Disorder in litigation: Guidelines for forensic assessment* (2nd ed., pp. ix–xxiv). Washington, DC: American Psychiatric Publishing.
- Trimble, M. (2004). *Somatoform disorders: A medicolegal guide*. New York: Cambridge University Press.
- Urbina, S. (2004). *Essentials of psychological testing*. Hoboken, NJ: Wiley.
- Van Dorsten, B. (2002). Forensic psychology: Decades of progress and controversy. In B. Van Dorsten (Ed.), *Forensic psychology: From classroom to courtroom* (pp. 1–16). New York: Kluwer Academic/Plenum.
- Van Dorsten, B., & James, L. B. (2002). Forensic medical psychology: Personal injury litigation. In B. Van Dorsten (Ed.), *Forensic psychology: From classroom to courtroom* (pp. 247–282). New York: Kluwer Academic/Plenum.
- Wechsler, D. (1997a). *Wechsler Adult Intelligence Scale-III: Administration and scoring manual*. San Antonio, TX: The Psychological Corporation.
- Wechsler, D. (1997b). *Wechsler Memory Scale—Third Edition: Administration and scoring manual*. San Antonio, TX: The Psychological Corporation.
- Wechsler, D. (1997c). *Wechsler Adult Intelligence Scale-III, Wechsler Memory Scale: Technical manual*. San Antonio, TX: The Psychological Corporation.
- Weissman, H. N., & DeBow, D. M. (2003). Ethical principles and professional competencies. In I. B. Weiner (Series Ed.) & A. M. Goldstein (Vol. Ed.), *Handbook of psychology: Vol. 11, Forensic psychology* (pp. 33–53). Hoboken, NJ: Wiley.
- Williams, A. D. (2003). Diagnostic decision making in neuropsychology. In A. M. Horton Jr. & L. C. Hartlage (Eds.), *Handbook of forensic neuropsychology* (pp. 113–136). New York: Springer Science+Business Media.

- Woolf, Rt Hon. Lord (1996). *Access to justice: Final report*. London: HMSO.
- World Health Organization. (1992). *International classification of diseases. Mental and behavioral disorders (including disorders of psychological development)*, clinical descriptions and diagnostic guidelines (10th rev.). Geneva, Switzerland: Author.
- World Health Organization. (2001). *International classification of functioning, disability, and health (ICF)*. Geneva, Switzerland: Author.
- Zasler, N. D., & Martelli, M. F. (2003). Mild traumatic brain injury: Impairment and disability assessment caveats. *Neuropsychological Rehabilitation*, 13, 31–41.