PTSD in Court III: Malingering, assessment, and the law

Gerald Young *

Glendon Campus, York University, Canada

ABSTRACT

This journal's third article on *PTSD in Court* focuses especially on the topic's "court" component. It first considers the topic of malingering, including in terms of its definition, certainties, and uncertainties. As with other areas of the study of psychological injury and law, generally, and PTSD (posttraumatic stress disorder), specifically, malingering is a contentious area not only definitionally but also empirically, in terms of establishing its base rate in the index populations assessed in the field. Both current research and re-analysis of past research indicates that the malingering prevalence rate at issue is more like $15 \pm 15\%$ as opposed to $40 \pm 10\%$. As for psychological tests used to assess PTSD, some of the better ones include the TSI-2 (Trauma Symptom Inventory, Second Edition; Briere, 2011), the MMPI-2-RF (Minnesota Multiphasic Personality Inventory, Second Edition, Restructured Form; Ben-Porath & Tellegen, 2008/2011), and the CAPS-5 (The Clinician-Administered PTSD Scale for DSM-5; Weathers, Blake, Schnurr, Kaloupek, Marx, & Keane, 2013b). Assessors need to know their own possible biases, the applicable laws (e.g., the *Daubert* trilogy), and how to write court-admissible reports. Overall conclusions reflect a moderate approach that navigates the territory between the extreme plaintiff or defense allegiances one frequently encounters in this area of forensic practice.

Crown Copyright © 2017 Published by Elsevier Ltd. All rights reserved.

Contents

* Department of Psychology, Glendon College, York University, 2275 Bayview Ave., Toronto, Ontario M4N 3M6, Canada.
  E-mail address: gyoung@glendon.yorku.ca.

1. Précis of the third article of the three on *PTSD in Court*

The third article of the three in the journal for court purposes on PTSD (posttraumatic stress disorder) deals with legal aspects and court, in particular (for the first two articles in the series, refer to Young, 2016a, 2017). It starts with a comprehensive review of malingering, by considering the different approaches to its definition and the different rates attributed to its prevalence. Some of the complications in determining the base rate of malingering concern differing definitions, but there are other factors at play, such as: which tests are used in the research; what are their cut-offs; which groups given that it is impossible to create groups of known malingerers; what degree of false positives and false negatives is acceptable given the imprecision in defining malingering, testing it, the cut scores used, etc.; and so on. That being said, disability claims in the area has been referred to as an epidemic, so that tests with good psychometric properties for the type of population involved need to be used. For example, PTSD has changed its entry criterion A to the point that the lowered bar to its diagnosis has been called "bracket creep." Nevertheless, it would be premature to utilize unconditionally malingering detection instruments, such as SVTs (symptom validity tests) and PVTs (performance validity tests), because they pose unresolved questions. Moreover, attributing malingering requires meeting critical testing thresholds (e.g., indicative of purposefully failing effort tests) when there is no other incontrovertible evidence to indicate it. Forensic assessors always need to use PVTs and SVTs in this context (Bush, Heilbronner, & Ruff, 2014) and need to consider the whole file involved for reliable data, such as finding in data other than from test inconsistencies that are "compelling." Otherwise, when the data indicates the presence of some form of problematic presentation and performance, terms such as poor effort and feigning should be used instead of the M word.

A section of this article reviews the literature on the estimates of malingering in the forensic disability and related evaluation context for court and similar purposes. The conclusion here is that the estimate of 40 ± 10%, as given by Larrabee, Millis, and Meyers (2009) and Larrabee (2012a) is grossly exaggerated, notwithstanding that problematic presentations and performances (not malingering, per se) legitimately fall in this range, especially for PPCS (persistent postconcussive syndrome) after mTBI (mild traumatic brain injury; Institute of Medicine (IOM), 2015; Young, 2015a). Some of the tests with validity scales that can be used in PTSD assessments include the CAPS (The Clinician-Administered PTSD Scale; Blake et al., 1995), the TSI-2 (Trauma Symptom Inventory, Second Edition; Briere, 2011), the MMPI-2-RF (Minnesota Multiphasic Personality Inventory, Second Edition, Restructured Form; Ben-Porath & Tellegen, 2008/2011), the PAI

(Personality Assessment Inventory; Morey, 1991), and the SIRS-2 (Structured Interview of Reported Symptoms, Second Edition; Rogers, Sewell, & Gillard, 2010), although I have advised using the MMPI-2-RF, in particular (Young, 2014a). In the Law section of this article, which is its last part overall, the area of practice in psychological/psychiatric injury and law functions in the adversarial divide, and there are much influences and biases to consider (e.g., hindsight bias, adversarial allegiance).

The diagnosis of PTSD needs continued research. The DSM-5 (Diagnostic and Statistical Manual of Mental Disorders, 5th Edition; American Psychiatric Association, 2013) might have to reduce its set of 20 symptoms to core ones, perhaps as is found in the proposed ICD-11 (International Classification of Diseases, 11th Edition; World Health Organization, 2018). Or, it could use the newer dimensional models of how the 20 symptoms arrange, and find the core symptom in each one, like I have proposed.

At the same time, the proviso that continued research is needed on PTSD, malingering detection, and so forth, does not imply that the field has yet to reach adequate scientific standards. However tentative and in need of improvement, there would appear to be enough reliable and valid evidence both for the diagnosis of PTSD as presently constituted in the DSM-5 and the best tests that can be used to diagnose it (or its malingering). With sufficient care, current approaches to PTSD and its assessment methods should stand up to admissibility challenges in court. Admissibility to court is predicated on meeting the criteria of good science compared to poor or junk science, as per the *Daubert* trilogy. Forensic mental health assessors need to function ethically and conduct comprehensive, impartial, and scientifically-informed assessment for court to ensure meeting this bar.

2. Malingering

2.1. Introduction

The DSM-5 (APA; American Psychiatric Association, 2013; pp. 726–727) lists the "essential feature" of malingering as the "intentional production" of "grossly exaggerated" or "false" "psychological" or "physical" symptoms due to "motivation by external incentives," for example, to obtain financial compensation. Kane and Dvoskin (2011) supported the separation of mild exaggeration from malingering, but many others do not agree (e.g., Mittenberg, Patton, Canyock, & Condit, 2002). Young (2014a) suggested that an improved definition of malingering would involve use of the term "presentation" instead of "production." Miller (2015) adopted a very similar position; e.g., PTSD symptoms could be "extensions" of recovered/improved symptoms,

with examinees maintaining falsely that they are still present. Similarly, the 2015 Institute of Medicine (IOM, 2015) defined malingering as the intentional presentation of false or exaggerated symptoms, or intentionally poor performance, or both, for purposes of external incentives. For Miller (2015), clinically, cases of malingered PTSD might present with dramatic flashbacks, atypical nightmares (e.g., stereotypic), and exaggerations/contradictions, among other signs.

2.2. Malingering certainties

PTSD is part of a "disability epidemic" (Bass & Halligan, 2014; Hall & Hall, 2012). Better detection of malingering and related negative response biases and symptom overreporting needs to be put in place in order to gain control of forensic and related disability assessments.

Rosen and Taylor (2007), as referred to in Ford, Grasso, Elhai, and Courtois (2015a), who raised the issue of malingering in PTSD claims after an event at issue, which need to be taken into account in assessments. In addition, the role of the traumatic stressor is crucial, given that in individuals expressing PTSD-like symptoms, they are not as severe as when there is no traumatic stressor (Poulos et al., 2014). Also, pre-existing psychiatric problems complicate PTSD presentation (more severe, worse impairments), even if relatively mild (e.g., Sandwiess et al., 2011) and even if present only in prior generations (Inslicht et al., 2010). Ford et al. (2015a) also criticized the tools used to assess it (e.g., the SCID (Structured Clinical Interview for DSM)), which can lead to over-reporting PTSD.

Andrikopoulos and Greiffenstein (2012) and Rosen and Grunert (2012) agreed that the major controversy about PTSD concerns criterion A, because it provides for a specific etiology related to events, such as negligent MVAs for claimed PTSD. However, Rosen and Grunert (2012) further asked why non-traumatic events leading to endorsements of PTSD symptomatology do so at a rate that is at least as high, if not higher, compared to traumatic ones (Gold, Marx, Soler-Baillo, & Sloan, 2005; Mol et al., 2005). Other research has found that non-event factors contribute more variance to clinical outcome than event factors (e.g., Bowman & Yehuda, 2004). In the civil arena, a Dutch study (Kunst & Winkel, 2015) found that compensated victims of violent crime who qualified as probable malingerers reported higher PTSD symptom levels compared to nonrecipients, and those not so qualified did not expressed this higher symptom level.

Rosen and Grunert (2012) noted a criterion "bracket creep" issue in PTSD (McNally, 2003), with PTSD being diagnosed increasingly for even frivolous events. Wakefield and Horwitz (2010) queried whether PTSD, as presently used, confounds normal and disordered reactions in response to adversity.

Rosen and Grunert (2012) also queried the value of diagnosing PTSD as subsyndromal, subthreshold or partial. [That said, Young (2014a) noted that subsyndromal PTSD can be as equally difficult and disabling to deal with as full-blown PTSD (according to O'Donnell et al., 2009).]

2.3. "Malingering doubts"

Lilienfeld, Thames, and Watts (2013) provided a cogent review of unresolved questions relating to symptom validity testing, including PVTs. The basic premise is that PVTs can help detect malingering and other negative response biases. However, McGrath, Mitchell, Kim, and Hough (2010; McGrath, Kim, & Hough, 2011) maintained that such tests have not demonstrated clinical utility.

Rohling et al. (2011) responded that the inclusion criteria in the McGrath et al. research review were limited. Further, Young (2014a) reviewed research demonstrating the validity underlying symptom validity testing. These types of tests are considered important in any type of forensic disability and related assessment (Bush et al., 2014; Young, 2014b).

Lilienfeld et al. (2013) continued that the research designs on whether malingering can be detected include simulation designs. Of

course, it is extremely difficult to obtain "known" groups of malingering for research purposes. Absent highly valid research designs (and the various T-score distributions and recommended cut scores for malingering attribution) in determining instrument cut scores and the like, there are both false negative and false positive errors that could result from using malingering detection instruments.

Lilienfeld et al. (2013) further maintained that the research on malingering treats it as a taxon (malingering vs. non-malingering). However, in the assessment context, malingering and related negative response biases can be placed on a continuum of dimensionality, from unconscious-based somatic complaints to outright conscious malingering. Further, the suboptimal effort denoted on malingering detection instruments might reflect psychopathology and not malingering. Finally, given the problems for any one malingering detection instrument, protocols that combine them toward attributing malingering could lack validity. That said, subject clinical judgment about malingering also could lack validity.

Brady, Bujarski, Feldner, and Pyne (2017) conducted a study that indicated difficulty in describing and identifying emotions affected the relationship between PTSD symptom severity and overreporting of symptoms as per scores on the M-FAST (Miller Forensic Assessment of Symptoms Test; Miller, 2001). Specifically, they examined 75 military veterans who had been diagnosed with PTSD using the CAPS keyed to the DSM-IV (Blake et al., 1995). PTSD symptom severity was evaluated with the PCL keyed to the DSM-IV (PTSD Checklist — DSM-IV; Weathers, Litz, Herman, Huska, & Keane, 1993). Alexithymia involves difficulties generally in identifying and in labeling feelings (Taylor, Bagby, & Parker, 1997) and is measured by TAS-20 (Toronto Alexithymia Scale; Bagby, Parker, & Taylor, 1994). Using the hierarchical linear regression analysis, Brady et al. (2017) showed that PTSD symptom severity and symptom overreporting were related, but only in the presence of elevated scores on the subscale of difficulty describing emotions on the TAS. The authors concluded that alexithymia might be a mechanism that contributes to symptom overreporting in PTSD, and independently of any factors related to secondary gain.

2.4. Malingering prevalence indeterminacies

Ford, Grasso, Elhai, and Courtois (2015b) reviewed the literature on malingered PTSD. For present purposes, their review underscored that it is relatively easy to feign (Resnick, West, & Payne, 2008). In the military, Elhai and Frueh (2001) and Elhai et al. (2004), while administering the MMPI-2 (Minnesota Multiphasic Personality Inventory, Second Edition; Butcher, Dahlstrom, Graham, Tellegen, & Kaemmer, 1989; Butcher et al., 2001), found extreme scores on validity scales. Frueh et al. (2005) estimated the rate of malingered cases as over 40% in the military. Dube and Sadoff (2015) argued that it would be easy for a veteran to seek out and then report PTSD symptoms when assessed.

Howe (2012) indicated that only 9 to 12% of MVA survivors develop PTSD (Breslau, Davis, Andreski, & Peterson, 1991; Kessler, Sonnega, Bromet, Hughes, & Nelson, 1995). Schnyder, Moergeli, Trentz, Klaghofer, and Buddeberg (2001) reported an incidence of PTSD of 1.9% at one year. Wrenger, Lange, Langer, Heuft, and Burgmer (2008) reported an incidence of 2.5% for PTSD. These estimates of PTSD due to MVAs contrast to other estimates of a higher prevalence rate (e.g., Blanchard & Hickling, 2004).

Demakis and Elhai (2011) estimated a base rate of malingering of around 50% in PTSD determinations (Demakis, Gervais, & Rohling, 2008; Elhai, Gold, Sellers, & Dorfman, 2001; Merten, Thies, Schneider, & Stevens, 2009). As for malingering of psychological symptoms after MVAs, for Howe (2012), the estimated range is from 1% to over 50% (Hickling, Taylor, Blanchard, & Deviveni, 1999; Resnick, 1997). Suhr (2015) referred to at least 20% of PTSD claimants exhibiting noncredible responding (citing Elhai et al., 2004; Frueh et al., 2005).

Kilpatrick and McFarlane (2014) took issue with the assertion that PTSD can easily be malingered (e.g., McNally & Frueh, 2012). They

referred to the Institute of Medicine report (IOM, 2007) that research on malingered PTSD is "poor" in quality, for example, lacking ecological validity. Specifically, they contested both the quality of research on malingering and the "rigor" of its methodology (IOM, 2007). Furthermore, compensation availability does not lead to increases in PTSD-related disability claims (O'Donnell, Creamer, McFarlane, Silove, & Bryant, 2010). Moreover, Suhr (2015) noted that research shows that receiving compensation in claims is not associated with the diminution of PTSD-related physical symptoms and disability (also citing O'Donnell et al., 2010).

2.5. Why prevalence rates matter

As one reviewer noted, not knowing the true prevalence of malingered PTSD has real world implications for how we use symptom validity testing to determine whether an evaluee is malingering (e.g., How do we know what cutoff to use when we do not know the precise prevalence of malingered PTSD? What are the ethical and professional implications of misidentifying someone as malingering PTSD when, in fact, they are not? How much and what type of evidence is needed to safely assume PTSD malingering?).

As a prelude to a response to these concerns, various statistical terms relevant to the question are introduced (taken from Young, 2014a). Larrabee (2012a) described these statistical issues. Psychometric tests attempt to maximize the statistics of (a) *sensitivity* and (b) *specificity* (which are defined, respectively, as (a) the proportion of true presence of response bias [or true positives / (true positives + false negatives)] and the proportion in the population of concern for which there has been accurate detection of an absence of response bias [or true negatives / (true negatives + false positives)]). The higher the sensitivity found for a test cut score, the more likely a negative test result rules out the diagnosis at issue. In contrast, the higher the specificity for a test cut score, the more likely a positive test result rules in that diagnosis. The *hit rate* provides the proportion of cases that are accurately classified using a particular metric [(true positives + true negatives) / N number of cases]. *Positive predictive power* (PPP) refers to the ratio of true positive to total positive scores [true positives / (true positives and false positives)]. *Negative predictive power* (NPP) is the ratio of true negative to total negative scores [true negatives / (true negatives + false negatives)]. The critical issue for ruling in or out malingering is the following: if it has a low prevalence or base rate, a negative test result compared to a positive one is more likely to be true. In contrast, if it has a high prevalence/base rate, a positive rather than a negative test result is more likely to be true.

The *likelihood ratio* (LR) is defined as sensitivity / (1 − specificity), and it concerns the probability of having a particular diagnosis for an individual, which compares to the *odds ratio* (OR), which is best for group comparisons. ROC (receiving operating characteristic) graphs can be calculated by plotting true and false positive rates for all possible cut scores for a test. The magnitude of ROC *area under curve* (AUC) can provide the overall diagnostic efficiency of a test.

If the base rate for malingering is established as high, such as 50% in the civil forensic disability and related context (and keep in mind that Larrabee et al. (2009) estimate that the rate of malingering in the civil arena is at 40 ± 10%), for a test that presumably detects malingering with an accuracy of 90%, this could lead to incorrect identification of 50 individuals with genuine disorder out of every 1000, and attributing to them instead malingering when it is unwarranted. That is, with these psychometric properties, the test would classify as malingerers 500 of each 1000 patients, but would be inaccurate for 50 of the 500 so classified. If the said base rate for malingering is established as low, for example, 10% and not 50%, then for each 1000 examinees, the test being used in this example would accurately identify as malingerers 90% (90) of the 100 genuine malingerers but also inaccurately identify as malingerers 10% (90) of the 900 genuine patients with disorders. Therefore, the result of having administered the test for malingering detection with

this level of accuracy for this number of patients would be that, for the test, exactly half of the total examinees identified as malingerers would be false positives, or in error. Should the base rate of malingering turn out to be even lower than 10% for this example, given the instrument accuracy detection rate of 90% for malingering, more than half of the examinees evaluated with the test would be incorrectly classified as malingerers.

2.6. A better prevalence estimate

Recent research gives a quantitative estimate of negative response bias prevalence in PTSD assessments. Wrocklage et al. (2016) studied veterans with PTSD for neuropsychological function, after screening for PVT performance. The veterans were recruited from the Connecticut VA Healthcare System through a network of "National Center for PTSD Studies." The PTSD group was assessed using CAPS keyed to the DSM-IV, and the final sample consisted of 40 veterans in this group. The trauma comparison group also consisted of 40 veterans. The PTSD group had comorbid mTBI (52.5%) and life time AUD (Alcohol Use Disorder; 55%). The corresponding percentages for the trauma group were 43.2% and 25.0%, respectively. The former group was less employed (45.0% vs. 67.5%).

The neuropsychological battery included three PVTs: the TOMM (Test of Memory Malingering; Tombaugh, 1996), DMT (Digit Memory Test; Hiscock & Hiscock, 1989; Woods, Conover, Weinborn, Rippeth, Brill, Heaton, Grant, & HIV Neurobehavioral Research Center (HNRC) Group, 2003), and CVLT FC (California Verbal Learning Test Forced Choice; Delis, Kramer, Kaplan, & Ober, 2000) with the latter the only one embedded. According to these three instruments, only four veterans in the PTSD group were classified as demonstrating inadequate effort. The criterion used was performing below established cut scores for even one of the three PVTs. It is interesting to note that the percentage of one or more PVT failures in the PTSD group was 10% (4/40). As for the trauma group, there were no PVT failures. Thus, in a total sample of neuropsychologically-assessed military veterans with combat exposure, only 4/80, or 5%, failed one or more PVTs among the three ones administered.

Nelson et al. (2010) found similar results to those of Wrocklage et al. (2016; 4 of 44 PVT failures on military disability exams for three or more tests, or 9.1%). These results speak to possibly more valid estimates of quite problematic presentations and performances in forensic and related disability assessments for court and related purposes. The estimates do not go beyond 10%. Moreover, they do not concern malingering, per se, but very poor effort generally. Only examination of the full file, and reliable data/information gathered in it, both quantitative and clinical, can determine whether malingering should be attributed, especially when there is minimal evidence of suboptimal effort. Moreover, only consideration of the whole file at hand can determine at what level malingering should be attributed (e.g., definite, probable, possible), if at all. Moreover, the evaluator might decide to attribute just feigning generally at these levels because of a lack of sufficient knowledge on intent.

Note that I undertook myself these calculations of rate of PVT failure in this sample in Wrocklage et al. (2016). It was not aimed directly at determining the prevalence of malingering. The same strategy of seeking the percentage of conceivable malingerers according to studies not aimed directly at ascertaining the value was applied in several other publications (Young, 2014a, 2015b), and the result is consistently the same — the rate of conceivable malingering in disability and related forensic assessment contexts hovers around 15 ± 15%, with many results below 10% (see below). This belies the widespread claim that the value is toward 40 ± 10%, at least for mTBI/PPCS claims (e.g., Larrabee, 2012b; Larrabee et al., 2009). That being the case, there is little doubt that the rate of problematic presentations/feigning, in general, approaches the latter range for cases of mTBI/PPCS.

As for the specific neuropsychological deficits exhibited by the veterans in the study by Wrocklage et al. (2016), the PTSD group

performed significantly worse in the areas of information processing speed and executive functioning, in particular, relative to the control group. The authors implicated dysfunctional fronto-limbic circuitry, and deficient inhibitory control.

Young, Roper, and Arentsen (2016) surveyed neuropsychologists' estimates in the VA on symptom/performance validity testing failure rate. The most commonly used tests by the neuropsychologists in the Young et al. (2016) survey were the TOMM, the CVLT-II FC (California Verbal Learning Test — Second Edition, Forced Choice Recognition; Delis et al., 2000), and the MMPI-2's FBS. The estimate for failing three or more such tests was 13.1%. The rate, in general (failing one or more tests), for the types of evaluations critical to the present discussion (disability and PTSD) was 39% (specifically, 39.4% and 39.3%, respectively), but the values for failing three or more such tests in these two types of evaluations were not specified. In general, for the neuropsychological evaluations, test failure was characterized as malingering 8.3% of the time.

These results in Young et al. (2016) are consistent with the estimate of Young (2015a) already reported for malingering and other problematic presentations/performances in disability and related forensic evaluations (15 ± 15%). Other recent results in the literature also are similar to these estimates, as reported next, and they include those reported in Van Dyke, Millis, Axelrod, and Hanks (2013) with a nonlitigating sample — 8% failure rate on two or more of three PVTs used, with a 3% failure rate on all three PVTs (MSVT (Medical Symptom Validity Test; Green, 2004), TOMM, RDS (Reliable Digit Span; Greiffenstein, Baker, & Gola, 1994)) and a 24% failure rate on two or more of the three SVTs uses, with a 13% failure rate on all three SVTs (FBS (Fake Bad Scale), RBS (Response Bias Scale; Gervais, Ben-Porath, Wygant, & Green, 2007), PCSQ; (The Postconcussion Syndrome Questionnaire; Lees-Haley, 1992).

Further, in a study pertinent to the question at hand, Ruff, Klopfer, and Blank (2016) found that, in the civil arena, in neuropsychological examinations of litigants, 2% failed three PVTs or failed at a below chance level for one of them. The percentage in this regard for cases of mTBI was 3.4%, and with the total being 10.1% for failing either two or three out of three effort tests. There was no difference in rate for plaintiff and defense referrals. The most commonly used PVTs were the TOMM, DCT (Dot Counting Test; Boone, Lu, & Herzberg, 2002), and Rey 15-Item Test (Rey, 1964).

Once more, even if not for PTSD itself, the percentage of 10% stands out as an estimate of malingering or related problematic attributions. Finally, about the 10% estimate in these regards, it is the level estimated by the IOM (2015) for cases that would not reach acceptable standards if appropriate symptom validity test use took place in SSA evaluations of general disability claims.

2.7. Commentary and analysis

2.7.1. Reanalyzing the literature on malingering prevalence

In the following, I examine in more depth my literature reviews on malingering prevalence generally in disability and related forensic assessments. They relate to those in prior publications and also in the present article, giving a total of 21 studies analyzed with well over 4,000 participants involved.

Tables 1 and 2 give the results of the literature reviews on malingering and related negative response bias prevalence, as originally reported in Young (2015a) and Young (2014a), respectively. Some changes were made to the results reported in the equivalent tables in Young, for example, getting totals over two separate groups. These studies that were reviewed in my prior publications on the question at hand do not concern PTSD, per se, but they relate to disability and related assessments generally for which trauma exposure and PTSD might be one aspect.

Specifically, Table 1 is a slightly reduced and re-organized version of Table 1 in Young (2015a). It gives the details of the 13 studies on the topic of malingering, poor effort, and other negative response biases as

found in studies that did not aim originally at calculating the rate of these confounds. The studies cited in the table all concern disability and related forensic assessments. As mentioned, they might not have covered PTSD itself, but there is no reason to suspect that the percentages found would be different relative to other types of psychological disability claims. [That said, as Young (2014a, 2015a) noted, it is well known that the rates of malingering and related negative response biases are higher for PPCS after mTBI.]

Table 2 is based on the six studies described in Young (2014a) that were used to show that the prevalence rate of malingering and related negative response biases with respect to disability and related forensic assessments in the literature also is not as high as some maintain (e.g., Larrabee et al., 2009), especially as applied to non TBI cases. This table was constructed to be equivalent in form to Table 1. Note that I found results in the discussion in Grote et al. (2000), or otherwise (in terms of the results presented in Young, 2014a), it would not have met the threshold for inclusion in the new calculations undertaken in the present cumulative calculation over studies on malingering and related biases in forensic disability and related assessments as found in the recent literature.

It is instructive to look at the results of the two tables (Tables 1 and 2) together that are shown on the prevalence rate of malingering and related negative response biases in disability and related forensic assessments that involve either failure on two or more examinee validity tests administered or failure below chance on one of them, or both criteria. The two tables include a total of 19 studies of relevance to the question at hand, but one of them in Table 2 did not meet the cut-off for inclusion (Green, Rohling, Lees-Haley, & Allen, 2001), leaving a total of 18 studies that were examined in the following.

Also, it is instructive to look at Table 3, which summarizes three other studies (that are reviewed in the present article and not in Tables 1 and 2) on the rate of malingering and related negative response biases in the forensic disability and related contexts. Two of these three studies meet the criterion of having the participants checked whether they fail two or more validity tests in their assessments, in particular (Nelson et al., 2010; Ruff et al., 2016; the actual failure rate in these studies was failing three out of three tests, or significantly below chance for one of them in the latter study). The third one (Wrocklage et al., 2016) used the criterion of failing one or more validity tests, and despite the use of this liberal threshold the failure rate was around 5%. Therefore, had they used the criterion of just failing two or more of the validity tests, presumably, the percentage would have, been less than 5%. Nevertheless, in this regard, in the following analysis, I used the latter percentage of 5%, while realizing that it should be less.

To conclude, in the following, I consider these three extra studies that are in Table 3, in addition to the 19 mentioned in Tables 1 and 2. Therefore, this gives a total of 21 studies that I analyzed for failure on two or more validity tests, in particular, toward estimating the extent of malingering and related biases in forensic disability and related assessments. Note that in order to arrive at these estimates of malingering and related biases the total number of participants (N) over the 21 studies involved is 4214; and the number of malingered and related negative response biases related to this N over the 21 studies arrives at 477.

Together, over the 21 studies on forensic disability and related assessments analyzed in this way, the average rate for this prevalence rate of malingering (and related negative response biases, or problematic presentations and performances) is 11% (11.3%). Note that, in Young (2015a), I did not provide this latter percentage, having calculated a higher one using fewer studies. Also, in that calculation, I averaged the averages over the studies involved while, in the present article, instead, I worked with the total Ns for participants over the 21 studies and the N for those reaching the criterion for validity test failure. The advantage of using this present approach to the calculations of malingering and related biases is that studies with small Ns are given less weight compared to their prior weight using the prior approach. The disadvantage of this procedure is that those studies with larger Ns are

Table 1
Details of 2014 and 2015 studies on prevalence of malingering or related biases.
Adapted from Young (2015a).

Study	Sample	Malingering-related groups	Malingering-related tests	Malingering or related detection decision/system	% of each group
Axelrod, Meyers, and Davis (2014)	$N = 264$ VA (veterans) neuropsychological assessments; 80 independent medical examinations (IME) Total $N = 344$	Fail: VA IME Total	AVLT-R, CVLT-2-FC, MSVT, RDS, RMT (Faces, Words), TMT-A, TOMM, WCST-FMS	Failure on 2 or more PVTs	9% (for $N = 25$), 25 (for $N = 20$) 13 ($N = 45$)
Bianchini et al. (2014)	$N = 305$ clinical pain patients with incentive [and controls; stimulator]	Definite malingering	CVLT (I, II), MMPI-2, PDRT, TOMM, WMT	MPRD	5 (15)
Buddin et al. (2014)	$N = 59$ forensic outpatients (neuropsychological)	Definite malingering	RDS, FTT, VPA-II Recog, VR-II Recog, WMT (no/GMIP), FBS, FBS-r	MND modified (need to fail 2 PVTs)	3 (2)
Crighton, Wygant, Applegate, Umlauf, and Granacher (2014)	$N = 133$ forensic disability cases [and pain patients]	Probable/definite malingering	MMPI-2-RF, TOMM, LMT, VSVT, SIRS-2	MPRD	24 (32)
Guise, Thompson, Greve, Bianchini, and West (2014)	$N = 126$ (77 mTBI cases and 49 moderate–severe (mod–sev) cases) [also 75 mixed diagnosis cases]	mTBI/MND	TOMM, PDRT, RDS, Mittenberg formula (WAIS), CVLT (Millis formula), WCST (Suhr formula), WCST unique responses, MMPI-2 (F tests, FBS, Ds-r, F-K, OS, ES, Meyers Index)	MND (Probable/definite)	27 (34)
Henry, Heilbronner, Mittenberg, Hellemann, and Myers (2014)	$N = 100$ consecutive adult cases (currently involved in personal injury litigation or applying for (or receiving) disability payments; 50 non-incentive controls [50 FPV group; 50 PPV group; also 50-non-incentive] [I query whether the N was capped at 50 for the groups instead of having 100 consecutive evaluations divided equally as Pass/Fail for the first 2 groups.]	Fail PVT	WMT, TOMM, VSVT (with multiple measures used in the WMT)	Scoring below empirically-derived cut offs on ≥2 forced choice PVT measures (also described as >2)	50 (50)
Kulas, Axelrod, and Rinaldi (2014)	$N = 126$ military (US) veterans (outpatient, neuropsychology)	Suboptimal effort	RDS, CVLT-FC, WMT	Failure on 2–3 of the measures (suboptimal effort)	10 (12)
Larrabee (2014)	$N = 41$ "malingering" (mTBI sample) [and $N = 54$ clinical subjects, nonlitigation]	Definite malingering	BVFD, FTT, RDS, CVMT, CRM, WCST, FBS (note, raw score ≥ 21)	MND	59 (24)
Lindley, Carlson, and Hill (2014)	$N = 30$ male Vietnam combat veterans with severe and chronic PTSD, with the PCL-C as the measure used	Definite malingering (SIRS), Fail: 2 Rey's measures	M-FAST, SIRS, Rey's DCT, Rey's 15-IMT	Failure of 2 Rey's	3 (1), 7(2)
Nguyen, Green, and Barr (2015)	$N = 189$ (independent neuropsychological evaluations)	Failed total	WAIS-III and WAIS-IV (Digit Span, Vocabulary-Digit Span), CVLT-II, WCST, TOMM, DCT	MND	32 (61)
Proto et al. (2014)	$N = 178$ veterans (outpatient, neuropsychological)	3	WMT, RDS, CVLT-II FC, WCST-FTMS, Rey MFIT, TOMM	Noted 1, 2, 3 PVT failures	16 (29)
Whiteside et al. (2015)	$N = 251$ mTBI cases [also compared to mod-sev TBI cases who passed all PVTs]	Failed ≥ 2 PVTS	TOMM, WMT, BTA, TMT-B, JLO, BFR, Rey Copy, WCST (LOS), RDS (ASS), FTT (dominant hand)	≥2 PVT failures	23 (57)
Whitney and Davis (2015)	$N = 175$ veterans (US) neuropsychological evaluees	Failed both PVTs	TOMM, MSVT	MND (definite/probable) [also failed ≥ 1 of the PVTs]	21 (37)

Note. These studies were analyzed in Young (2015a) for estimates of prevalence of malingering rated attributions.

given more weight for their prevalence rates at issue, even if their estimates for the index rate are low (e.g., Lee, Graham, Sellbom, & Gervais, 2012).

Further, another new calculation in this regard of the estimate of malingering and related biases in forensic disability and related assessments concerns the median percentage over the 21 studies, which is 10% (10.4%). As for the mode, another measure of central tendency, over the 21 studies, the percentage of malingering and related biases hovers at 10%, too, with a second at 5%.

This percentage (10 to 11%) over the 21 studies of malingering and other problematic presentations and performances in the prior research on disability and related forensic evaluations is highly consistent with my prior estimate of 15 ± 15%, as described in Young (2014a, 2015a). Whether using that estimate or the one in the present article (10–11%), the percentage estimated for malingering and related biases is much less than other estimates in the literature (e.g., 40% ± 10%, as in Larrabee et al., 2009).

As for the interpretation of these new percentages on malingering and related negative response biases that is evident in 21 recent studies in the literature, it is important to note that the criteria over the various studies varied, with some being more conservative and others more liberal, with some using systems and others using test failures such as even just two of them, and some not even separating definite malingering from less problematic presentations. In short, the percentages provided in these various calculations for malingering and related negative response biases, as found in the recent literature that were reported in Young (2014a, 2015a, and that are further evaluated in the present article) concerning disability and related forensic assessments, consist of lower percentages than had been reported in the literature previously (e.g., Larrabee et al., 2009) and, moreover, they do not concern malingering alone but problematic presentations and performances of one kind or the other, in general. These types of calculations for the studies undertaken in the literature, and the types of criteria that they include, are the reasons that my own estimate of 15% ± 15% for malingering and

Table 2
Details of 2000 to 2012 studies reviewed by Young (2014a) on prevalence of malingering or related biases.
Adapted from Young (2014a).

Study	Sample	Malingering-related groups	Malingering-related tests	Malingering or related detection decision/system	% of each group
Chafetz (2011)	N = 161 social security disability claimants	Definite malingering	RDS, TOMM, MSVT	Below chance on one test	15% (N = 24)
Green et al. (2001)	N = 904 neurological patients with mTBI, and a miscellaneous group	WMT	CVLT, CARB	WMT failure	23 to 35%
Greve, Heinly, Bianchini, and Love (2009)	N = 508 compensation-seeking chronic pain patients	Definite malingering	MMPI-2, TOMM, WMT, PDRT, CARB, RDS, CVLT	MND or MPRD	10.4% (N = 53)
Grote et al. (2000)	N = 53 [mTBI and 53 non-compensation seeking (intractable seizures)]	VSVT	VSVT	VSVT failure significantly below chance	5.7% (N = 3)
Lee et al. (2012)	N = 1209 non-neurological medico-legal disability assessments	Definite malingering	MMPI-2, FBS, WMT, TOMM, MND, and CARB	Below chance on one test	1.5% (N = 18)
Wygant et al. (2011)	N = 251 compensation-seeking evaluees (pain impairment, head injury) [Majority of the assessment was conducted for the defense (57%), with 40% for plaintiff, and 3% unknown]	Definite malingering	MMPI-2-RF F tests (F-r, Fp-r, FBS-r), RDS, SIMS, M-FAST, SIRS, TOMM, VSVT, LMT	MND and MPRD	8% (N = 20)

Note. These studies were analyzed in Young (2014a) for estimates of prevalence attribution of malingering-related.

related problematic presentations and performances in forensic disability and related assessments does not refer to malingering only.

Even though malingering in forensic and related disability assessments might not take place at the rate of 40 ± 10% (Larrabee et al., 2009), but only toward 15 ± 15% (Young, 2015a), any presentations and performances that are problematic should not be dismissed if not at the level of malingering, per se. Without using the term of malingering, there are other ways of suggesting poor evaluee effort or credibility for "problematic" presentations. That is, *the "M" word should be used only in cases when there is incontrovertible evidence for it*; but, that being said, its lack of use in problematic cases should not imply a blank slate for receiving any and all disability and related claims.

2.7.2. The murky, mysterious estimate of 40 ± 10% for malingering

If there is still doubt about the contention by Larrabee et al. (2009) and Larrabee (2012a) of the prevalence rate for malingering or related attributions at a level of 40 ± 10%, and of those who cite this prevalence rate as supported in the literature, consider the following analysis of the studies cited by Larrabee toward establishing this prevalence rate. Note that I conducted this analysis of the research cited by Larrabee by referring to the original sources that he cited, and was surprised at the degree of uncertainty about the 40 ± 10% prevalence rate described. It is not "magical," as he maintained, but murky, if not mysterious.

In the following, I review the original source material used by Larrabee (2003) and Larrabee et al. (2009) in support of their estimate of the base rate/prevalence of "invalid" neuropsychological data/probable malingering in assessments undertaken with external incentives involved. It will be shown that the estimated "new" magical number of 40 ± 10% does not fit the data in these original sources.

Larrabee et al. (2009) cited five new source materials. According to them, Carroll, Abrahamse, and Vaiana (1995) found 35 to 42% of submitted medical costs were excessive. Upon review of this source, I note that it included medical costs, in general, and not those related to invalid/inappropriate neuropsychological assessments. Furthermore, the source is a non-peer reviewed literature review rather than an empirical study. Two further sources cited by Larrabee were presentations that were not available publicly (nor peer-reviewed as articles). The rate of concerning assessments in Chafetz and Abrahams (2005) was 13.8% for SSD (social security disability) applicants (worse than chance test performance). For Miller, Boyd, Cohn, Wilson, and McFarland (2006), the percentage was 54% for SSD applicants, but the criterion was failing either one of two tests (WMT (Word Memory Test; Green, Allen, & Astner, 1996), CARB (Computerized Assessment of Response Bias Test; Allen, Conder, Green, & Cox, 1997)).

As for published, peer-reviewed empirical research cited by Larrabee et al. (2009), Greve et al. (2006) evaluated claimants for cognitive deficits after exposure to environmental and industrial toxins. Of the 72 evaluees evaluated, 5 met the criteria for MND (malingered neurocognitive dysfunction; Slick, Sherman, & Iverson, 1999), or 6.9% (not the 6.7% reported by Larrabee et al., 2009). van Hout, Schmand,

Table 3
Details of 2010 and 2016 studies on prevalence of malingering or related biases.

Study	Sample	Malingering-related groups	Malingering-related tests	Malingering or related detection decision/system	% of each group
Nelson et al. (2010)	N = 119 U.S. veterans (N = 24 for OEF/OIF forensic concussion; N = 20 for non-OEF/OIF forensic concussion; N = 38 for OEF/OIF research concussion; N = 37 for OEF/OIF research without concussion). For the first two group, N = 44	Insufficient effort	VSVT, Rey-15 Item and Recognition Test, WAIS-III Digit-Span Subtest, CVCLT-II Forced-Choice Recognition Trial	Frequency of insufficient effort indicators in forensic sample: Three indicators	9.1% (N = 4)
Ruff et al. (2016)	N = 150 legal cases evaluated in neuropsychological examination	Failing all three or below chance for one of them, and failing either two or three out of the three	TOMM, DCT, Rey 15-item test	Failing all three or below chance for one of them, and failing three out of three (highly likely malingering)	2% (N = 3), with no difference between defense and plaintiff referral sources. For mTBI cases, the rate was 3.4%
Wrocklage et al. (2016)	N = 80 veterans with PTSD for neuropsychological functions (40 veterans in PTSD group, and 40 veterans in trauma comparison group). Total N = 80	Failing one or more of the three	TOMM, DMT, CVLT FC	Performing below established cut scores for even one of the three	5% (N = 4)

Wekking, and Deelman (2006) also examined claimants with occupational exposure to organic solvents. Using the criteria of failing two or three of three effort indices (TOMM, ASTM (Amsterdam Short Term Memory Test; Schmand, de Sterke, & Lindeboom, 1999), RMT (Recognition Memory Test for Faces; Warrington, 1984)); 27.4% (84/306) reached the criterion of "insufficient effort" (not the 27% reported).

Turning to the 11 studies cited in Larrabee (2003) as giving evidence in support of his 40% estimate of "malingering," I found the same methodological and interpretative inconsistencies in Larrabee's approach to them as found in how he presented the literature in Larrabee et al. (2009). That is, the criterion used in most of the research cited involved just one test, which cannot determine much about malingering per se.

Examination of these 11 studies cited in Larrabee shows that Binder and Kelly (1996) evaluated patients without financial incentives, such that this particular study should not have been incorporated in the analysis undertaken by the research. Frederick, Sarfaty, Johnston, and Powel (1994) used only one test, the FCTNV (forced-choice test of nonverbal ability), and gave a percentage of about 25% as an estimate of "biased responders," which is consistent with similar estimates by Binder (1993a) for mTBI (33%) and by Lezak (1983) for non-clinical neuropsychology evaluees (about 26%).

Greiffenstein et al. (1994) examined neuropsychological performance in post-concussive patients with reported amnesia. Their criteria for malingering involved only one concerned directly with psychometric testing, yet examinees could be labeled as "overt malingerers" if they failed two of the four criteria involved (i.e., even if the testing one was not a problem). The other three criteria concerned: being disabled; showing contradictions: or having improbable remote memory loss. Of the 106 examinees, 43 were considered malingerers (40.4%).

Grote et al. (2000) had been summarized in Young (2015b). For this work, I examined it in more depth. Of compensation-seeking examinees with mTBI (*N* = 53), only 3 examinees scored significantly below chance on the VSVT (Victoria Symptom Validity Test; Slick, Hopp, Strauss, & Spellacy, 1996; Slick, Hopp, Strauss, & Thompson, 1997; which yields a percentage of 5.7%). This stands in contrast to the percentage emphasized in the abstract of 41.5% for not scoring in the "valid" range for the test.

Heaton, Smith, Lehman and Vogt (1978) examined 42 head-injury patients who had reason to exaggerate pathology, and 64.3% were classified as malingering by one or both formulas used (step-wise discriminant function). No statistics are provided about failing both the statistics used.

Meyers and Volbrecht (1998) studied litigating examinees, and 48.9% were classified as malingerers according to one test (RDS). Millis (1992) used the RMT with mTBI and moderate–severe TBI patients. The former scored much worse on the RMT (50%, 25/50 falling below the 50% accuracy level of the Words subtest).

Millis, Putnam, Adams, and Ricker (1995) examined CVLT (California Verbal Learning Test) performance with litigating mTBI claimants. Of 92 examinees, 25% (23) reached the criterion of incomplete effort. Rohling, Green, Allen, and Iverson (2002) found that 41.6% of outpatients with heterogeneous diagnoses failed either the CARB or the WMT.

Trueblood and Schmidt (1993) assessed 106 examinees and found an incidence of malingering of 7.5% (*N* = 8) on a symptom validity test modeled after the one in Hiscock and Hiscock (1989). Youngjohn, Burrows, and Erdal (1995) examined PPCS patients using the PDRT (Portland Digit Recognition Test; Binder, 1993b) and DCT (*N* = 54), and 48% failed one or both measures.

To conclude, of the 11 studies cited by Larrabee et al. (2009) in support of the claim that the rate of malingering is 40 ± 10%, the first did not involve financial incentives (Binder & Kelly, 1996); the second used a criterion involving one test (Frederick et al., 1994); the third used a criteria that could have involved no testing (Greiffenstein et al., 1994); the fourth found a rate of significantly below chance performance on a PVT of 5.7% (Grote et al., 2000); the fifth used a criterion according to one statistical formula or the other (Heaton, Smith, Lehman,

& Vogt, 1978); the sixth used one test (Meyers & Volbrecht, 1998); the seventh used one test (Millis, 1992); the eighth used one test (Millis et al., 1995); the ninth used failure on or the other of two tests (Rohling et al., 2002); the tenth used one test (Trueblood & Schmidt, 1993); and the eleventh used one test (Youngjohn et al., 1995). Overall, little credence can be given to these estimates in studies cited by Larrabee et al. (2009) of malingering base rate, except perhaps the one that involved significant below chance performance, and the percentage there was well below 10%.

Note that criticizing the research on the estimate of its base rate does not deny the need to screen for malingering by. On the contrary, I have been involved in encouraging the society that I founded (ASAPIL) to create a statement on the need for the appropriate testing in this regard, not only for neuropsychological evaluations, but also for any other disability and related forensic investigation.

2.7.3. The necessity of malingering screening

Statements by major psychological societies have elaborated on the need to test for negative response bias in disability and related forensic assessments, including of malingering (Bush et al., 2005, 2014; Heilbronner et al., 2009; also see Young, 2014c for resources related to the question). Comprehensive reviews have been conducted on the nature of symptom validity and performance validity testing in this regard (e.g., Carone & Bush, 2013; Young, 2014a, 2014c, 2015b), but no one standard battery or gold standard test has emerged for this type of evaluation, including for PTSD. That being the case, in this regard, a few tests stand out.

The following section of the article investigates the best tests for use in evaluating both PTSD and malingered PTSD. By themselves, tests cannot provide definitive data on diagnosis and the probability of malingering by themselves. However, they stand as critical sources of information that distinguishes psychologists from other mental health professionals in evaluations for disability and related claims in court and related venues (Young, 2014a, 2015a).

3. Assessment

3.1. Existing tools

Frueh, Elhai, Grubaugh, and Ford (2012) have noted the value of structured interviews in firmly establishing the diagnosis of PTSD. Structured interviews are preferred because they allow for more detailed inquiry and clarification than self-report instruments. An example of a structured interview for PTSD is the PTSD module of the SCID.

As for other interview approaches, there are ones that also have adequate psychometric properties relative to the DSM-5 PTSD symptoms. The PCL-5 (Weathers et al., 2013a) is a revision of the PCL for keying to the DSM-5. It assesses the 20 DSM-5 PTSD symptoms by asking respondents to describe how frequently the symptoms have been expressed in the prior month.

The 30-item CAPS-5 (Weathers et al., 2013b) is a comprehensive PTSD interview. It includes a LEC (Life Event Checklist; Gray, Litz, Wang, & Lombardo, 2004) that helps establish which traumatic stressor is involved in the exposure. It focuses on both the frequency and intensity of each symptom of PTSD, and some workers consider it gold standard. The CAPS has been described as having the most precise, specific descriptions of each rating category for each PTSD symptom (Weathers, Keane, & Davidson, 2001).

The CAPS-5 can be used to make current (past month) or lifetime diagnosis; and also assess past week PTSD symptoms. Its question extends beyond assessing the 20 DSM-5 PTSD symptoms, in that includes questions on onset and duration of symptoms, subjective distress, effects on social/occupational functioning, any change in symptoms since a previous CAPS administration, general response validity, PTSD severity, and symptoms on the dissociative subtype.

3.2. New tools

Recent work on PTSD assessment includes the following. New tests keep appearing, but they need to be verified for their applicability to the forensic disability and related contexts.

Foa and colleagues have developed a DSM-5 PTSD instrument, the PDS-5 (Posttraumatic Diagnostic Scale for DSM-5; Foa, McLean, Zang, Zhong, Powers, et al., 2016). Also, she developed with colleagues an interview version, the PSSI-5 (Posttraumatic Stress Disorder Symptom Scale Interview for DSM-5; Foa, McLean, Zang, Zhong, Rauch, et al., 2016).

Stewart, Metzger, Davidson, Tuerk, and Young (2016) developed a truncated interview-based version of the CAPS, using the decision-tree approach. Monson, Lonergan, Caron, and Brunet (2016) showed that, in interview, a list of possible trauma exposures compared to one open-ended question elicited more trauma experience responses.

McCaslin et al. (2016) developed a tool to assess functioning post-trauma, the PRFI (Posttraumatic Stress Related Functioning Inventory). Other research should develop tools related to post-trauma disabilities in the forensic and related context.

3.3. Forensic tools

3.3.1. Questionnaires

The TSI-2 (Briere, 2011) is used to test for trauma-related symptoms and behaviors. It contains 136 items that were normed and standardized on a representative sample of the general American population. It consists of 12 clinical scales, 12 subscales, four other scales, and two validity scales. The RL scale (Response Level) concerns defensiveness. The symptom validity overreporting scale is referred to as the Atypical Response Scale (ATR). It was designed to assess both general overreporting and that related to PTSD. There are four factor scores, which are referred to as self-disturbance, posttraumatic stress, externalization, and somatization. As for the clinical subscales and scales, they are too numerous to describe. Gray, Elhai, and Briere (2010) found that the ATR helped differentiate undergraduate students with genuine PTSD symptoms and those simulating PTSD. Weiss and Rosenfeld (2016) found that the ATR could help distinguish African immigrants with and without PTSD, and participants asked to feign distress related symptoms. The TOMM also proved helpful in this regard. The authors cautioned the use of these tests, nevertheless until classificatory accuracy is improved.

The DAPS (Detailed Assessment of Posttraumatic Stress; Briere, 2001) is a self-report instrument for PTSD that has evaluee validity scales, including the NBS (Negative Bias Scale). However, for Andrikopoulos and Greiffenstein (2012), the item content of the NBS scale suggests that it is insensitive to malingering. Demakis et al. (2008) conducted a comparative study of the DAPS and three cognitive/psychological symptom validity instruments (CARB, WMT, and TOMM). According to Andrikopoulos and Greiffenstein (2012), although the DAPS appeared to perform well relative to the other tests in Demakis et al. (2008), the study had methodological inconsistencies.

3.3.2. Forced choice

The MENT (Morel Emotional Numbing Test; Morel, 1995, 1998a) is a 60-item, two-alternative, forced-choice test aimed at detecting negative response bias. The items concern facial expressions, and the instructions given to examinees state that the items may be difficult for individuals who are manifesting PTSD, although this is not the case. However, the rationale for why PTSD patients should fail to recognize emotional expressions is not clear (according to Andrikopoulos & Greiffenstein, 2012).

3.3.3. Interviews

As mentioned, evaluators in this field consider the CAPS-5 (Weathers et al., 2013b) the "gold standard" in interview-based PTSD assessments. The evaluator using the CAPS (or its prior version keyed to the DSM-IV; Blake et al., 1995; Weathers et al., 2001) needs to estimate the overall validity of the interview conducted. However, for the CAPS, I had noted that the manual provides no direction how this can be accomplished in an objective manner (Young, 2014a). Each item of the CAPS can be judged for "questionable" validity (significant concern about accuracy/veracity). Global validity is determined post-interview by examining the number of questionable items and also other factors (e.g., compliance with interview procedure, mental status problems, symptom minimization/exaggeration). Global respondent validity is rated up to four (invalid). However, the scale items include: 1 — might be adverse validity; 2 — definite reduced validity; 3 — substantially reduced validity; and 4 — invalid responses, e.g., possible deliberate "faking bad." There has not been any research on the global validity scale.

For the CAPS-5, the approach to evaluating global validity is much the same as found for the CAPS-IV. Once more, there has not been any research validity the global validity scale.

3.3.4. Personality inventories

On the MMPI-2, the Fptsd (Infrequency-Posttraumatic Stress Disorder; Elhai et al., 2002) was developed to identify possible malingered PTSD. The PK scale was developed to identify PTSD (Keane, Malloy, & Fairbank, 1984; Lyons & Keane, 1992). According to Andrikopoulos and Greiffenstein (2012), the psychometric properties of these two-scales do not meet necessary court standards. Lareau (2011) noted that the MMPI-2 contains, as well, the PS scale (Schlenger PTSD Scale; Schlenger & Kulka, 1989), and maintained that the PS scale is even less accurate than the PK scale.

There are other personality inventories to consider, such as the NEO-PI-R (NEO Personality Inventory — Revised; Costa & McCrae, 1992). But they do not contain respondent validity indicators. Other personality tests are in revision, with manuals describing their psychometric properties, as well. The new edition of the MCMI-IV (Millon Clinical Multiaxial Inventory-IV; Millon, Grossman, & Millon, 2015) is an example. However, any new version of a test needs independent supportive forensic-related research before assessors contemplate using it instead of its predecessor.

The MMPI-2-RF is a reduced, 338-item, version of the MMPI-2. The items are answered on a true-false basis, taking 35–50 min to complete. It is designed for individuals who are 18 years or older. The reading level of the test sits at an average of grade 4-5.

Its normative sample consisted of 2276 American men and women between the ages of 18 and 80. Its T scores are non-gendered (and non-K-corrected). Greene (2011) described that the MMPI-2-RF is really a new test.

The MMPI-2-RF includes nine validity indicators (over- or under-reporting indicators, as well as inconsistency indicators), three higher-order scales, nine restructured clinical (RC) scales, 23 specific problems scales, two interest scales, and five revised Personality Psychopathology scales. The three higher-order scales are named: Emotional/Internalizing Dysfunction, Thought Dysfunction, and Behavioural/Externalizing Dysfunction; the nine restructured clinical scales are labeled: Demoralization, Somatic Complaints, Low Positive Emotions, Cynicism, Antisocial Behaviour, Ideas of Persecution, Dysfunctional Negative Emotions, Aberrant Experiences, and Hypomanic Activation.

The MMPI-2-RF has five standard over-reporting scales. The Infrequent Responses (F-r) scale is a 32-item scale on general over-reporting. It includes items rarely endorsed in the MMPI-2-RF normative sample. The Infrequent Psychopathology Responses (Fp-r) scale contains 21 items that assess over-reported symptoms of severe psychopathology. The Infrequent Somatic Responses (Fs) scale was added to the MMPI-2-RF to measure over-reported somatic complaints. It contains 16 items with somatic content that were rarely endorsed in large archival medical and chronic pain samples. Finally, a revised version of the Symptom Validity (FBS-r) and the Response Bias Scale (RBS) scales

were included in the MMPI-2-RF. The FBS-r is similar to its MMPI-2 counter-part, which was developed specifically as a validity scale in personal injury settings (Lees-Haley, English, & Glenn, 1991). The FBS-r, it is meant to detect cognitive performance exaggerations. Although the three infrequency scales have no item overlap, FBS-r shares three items with Fs and one other with Fp-r. The RBS is a 30-item scale that assesses non-credible somatic and neurocognitive complaints.

Studies on the MMPI-2-RF validity scales have been promising (e.g., Gervais, Ben-Porath, Wygant, & Sellbom, 2010; Sellbom & Bagby, 2010; Sellbom, Toomey, Wygant, Kucharski, & Duncan, 2010; Wygant, Anderson, Sellbom, Rapier, Allgeier, & Granacher, 2011; Wygant, Ben-Porath, Arbisi, Berry, Freeman, & Heilbronner, 2009; Wygant, Sellbom, Gervais, Ben-Porath, Stafford, Freeman, & Heilbronner, 2010). Goodwin, Sellbom, and Arbisi (2013) researched disability-seeking veterans. They found that Fp-r (Toomey, Sellbom, & Wygant, 2009) and F-r (Ben-Porath & Tellegen, 2008/2011) were quite useful in these regards. Marion, Sellbom, and Bagby (2011) found that the Fp-r was the most useful scale in differentiating the groups studied (in particular, those with PTSD in remission, PTSD patients). Marion et al. (2011) found that the optimal Fp-r cut score was consistent with the MMPI-2-RF manual, but it was lower in Goodwin et al. (2013). Wolf and Miller (2014) found similar results in another study that they reported. Arbisi, Polusny, Erbes, Thuras, and Reddy (2011) noted that the Fp-r had moderate scale elevation compared to the F-r among individuals with PTSD. Mason et al. (2013) reported similar findings across students who were asked to feign PTSD symptoms relative to controls.

Schroeder et al. (2012) studied optimal cut-scores on MMPI-2-RF validity indicators in neuropsychological samples, including those who failed the MND criteria. The authors established cut scores in these real-world populations that differed somewhat compared to those in the MMPI-2-RF manual. The results were consistent with similar values found in Wygant et al. (2009) in civil forensic settings.

The PAI is a self-report personality inventory containing 344 items, with response options given on a 4-point Likert type scale instead of the one of true or false. It contains 22 scales, which were constructed to be nonoverlapping, unlike the case for the MMPI-2. There are four validity scales, 11 clinical scales, five treatment scales, and two interpersonal scales. The validity scales include ones for infrequency (extremely high or low endorsement rates) and negative impression management (NIM).

According to Lareau (2011), the NIM has been found to misclassify genuine PTSD patients 65% of the time (Calhoun, Earnst, Tucker, Kirby, & Beckham, 2000). Wooley and Rogers (2015) found the PAI more effective than the DAPS in distinguishing genuine and feigned PTSD in patients.

Thomas, Hopwood, Orlando, Weathers, and McDevitt-Murphy (2012) developed a new PAI validity indicator — the Negative Distortion Scale (NDS). They found that the NDS was just as effective as the NIM in detecting feigned (simulated) PTSD, but the other PAI validity indicators that could be used, the MAL (Malingering) and RDF (Rogers Discriminant Function), were effective, although less so.

The RNBI (Ruff Neurobehavioral Inventory; Ruff & Hibbard, 2003) includes scales related to possible symptom overreport after an event at issue and symptom underreport beforehand. Young, Merali, and Ruff (2009) evaluated MVA survivors and found that the latter premorbid positive impression management scale (PB) correlated with the former postmorbid negative impression management scale (NB). These data suggest that scales related to premorbid symptom minimization could be as useful as ones on postmorbid symptom exaggeration for forensic and disability evaluations involving possible malingered PTSD.

3.3.5. Feigned psychopathology

The SIRS-2 is a structured interview administered to evaluees in order to ascertain the presence of overly stated psychopathological symptoms, indicative of negative response bias. It consists of eight primary scales, including on rare and improbable symptoms and on blatant and subtle symptoms. There are four supplementary scales and two summary scores (modified total, supplementary). The total score of the original SIRS (Rogers, Kropp, Bagby & Dickens, 1992) has been dropped in the SIRS-2.

To norm the SIRS-2, Rogers et al. (2010) tested 206 additional genuine clinical evaluees from a mental health system (Timberlawn; Rubenzer, 2010). The original normative sample involved 403 subjects in four criterion groups — 100 honest clinical; 97 honest-nonclinical; 36 suspected malingerers; and 170 simulators (DeClue, 2011). The "honest" clinical group involved individuals who were "multiply traumatized," and about half had been diagnosed with Dissociative Identity Disorder (DID). DeClue (2011) queried whether that the specificity of 0.80 was more akin to 49%. Rubenzer (2010) queried whether the data showed a malingering base rate of 74% rather than the indicated 31.8%.

Rogers and Bender (2012) defended the SIRS-2, and it does have positive elements. However, more research is needed to determine its relative efficacy in the forensic and disability context, especially for cases of PTSD.

The M-FAST is also a structured interview instrument serving to help detect the probability of malingered "psychiatric illness." It consists of 25 items. Its seven scales reflect the work of response style by Rogers (1990, 1997). With respect to trauma, two analog studies found that its sensitivity was elevated (Guriel et al., 2004; Messer & Fremouw, 2007). Nevertheless, for Howe (2012), the M-FAST is not an effective measure in screening for valid cases of PTSD.

Widows and Smith (2005) developed another interview schedule that can be used to detect malingering, the SIMS (Structured Inventory of Malingered Symptomology). However, there are queries about its appropriate cut score (van Impelen, Merckelbach, Jelicic, & Merten, 2014), rendering it less useful than other such tests.

Despite its shortcomings, some research supports the original SIRS in PTSD evaluations. In this regard, Freeman, Powell, and Kimbrell (2008) found that, in military veterans seeking treatment, total SIRS scores correlated positively with CAPS-assessed (Blake et al., 1995) PTSD symptom severity. Also, for detection of feigned dissociative disorder, Brand, Webermann, and Frankel (2016) suggested using the SIRS (as opposed to the SIRS-2) and the MMPI-2 (as opposed to MMPI-2-RF). That said, Wolf and Miller (2014) indicated that the MMPI-2-RF constitutes the useful test for identification of comorbid personality-based psychopathology.

3.3.6. Effort tests

Clark, Amick, Fortier, Milberg, and McGlinchey (2014) found helpful results with tests of effort. In veterans assessed for PTSD using the PCL (PTSD Checklist; Blanchard, Jones-Alexander, Buckley, & Forneris, 1996), elevated WMT results were associated with worse cognitive test results (Wisdom et al., 2014).

3.4. Reviews

Reviews have been conducted on the tests to use for evaluating malingered PTSD. Ali, Jabeen, and Alam (2015) referred to tests that could help in detecting malingering, but listed only a few of them (SIRS; Rogers, Bagby, & Dickens, 1992; MMPI-2; Butcher et al., 1989, 2001; M-FAST; Miller, 2001). As mentioned, more recent versions of the first two of these tests exist (i.e., SIRS-2; MMPI-2-RF). Also, others could help (e.g., PAI; Morey, 2007; TSI-2; Briere, 2011).

Kleinman and Martell (2015) listed the SIRS, TSI (Briere, 1995), MMPI-2, and the PAI as pertinent tests for PTSD malingering detection, but added the TOMM (Tombaugh, 1996), WMT (Green, 2005), MENT (Morel, 1998a, 1998b), and DAPS (Briere, 2001). Torres, Skidmore, and Gross (2012) found that, in the detection of malingering in PTSD, practitioners used the following tests most frequently: MMPI-2; TSI; TOMM; SIRS; CAPS; and M-FAST.

Young (2014a, 2014c) conducted an overview of various surveys of instruments that have been recommended for PTSD evaluation, and found that they did not give the same recommendations. Not one instrument was recommended across the board. The SIMS (Widows & Smith, 2005) generally was not recommended. Young (2014a) concluded that the MMPI-2-RF was a most useful tool in evaluating possible malingered PTSD. Similarly, Suhr (2015) emphasized using the MMPI-2-RF (and the PAI), in particular, in assessing PTSD credibility. For a complete list of possible test to use in this regard, refer to Young (2014a, 2014c) and to the Institute of Medicine report (IOM, 2015), with a good portion of the tests reviewed in Young (2015b) listed in Table 4. For a good instrument about DSM-5 PTSD Criterion A traumas, consult Weathers et al. (2013b) on the Life Events Checklist for DSM-5.

3.5. Comment

In order to be effective, PTSD and malingering assessment needs to be comprehensive, multimodal, scientifically-informed, and impartial, including in test and cut-score choice and application. Also, the assessments involved need to consider Type 1 error in multiple symptom validity and performance validity testing (Young, 2014a, 2015c). An approach such as this constitutes the best way to arrive at valid conclusions about impairments, functionality, diagnosis, and disability, including for PTSD. Suhr (2015) adopted essentially the same perspective by arguing that assessment involves a scientific approach to informed decision-making. She championed a biopsychosocial approach to assessment, and, as well, gave importance to the forensic task of assessing for noncredible responding.

Both Foote (2017) and Wygant (2017) indicated that elevated scores on tests that measure possible exaggeration cannot be used to give a definitive attribution of malingering because a comprehensive evaluation needs to be conducted. Even conclusions on possible exaggeration or response bias, in general, cannot be made without considering record review, clinical interview, all self-report testing and other testing, and collateral information. Moreover, even if the exaggeration is confirmed, alternate hypotheses other than any related to feigning must be ruled out prior to any determination made. For example, what does the empirical research for the tests indicate? What are the rival hypotheses, such as genuine emotional disorder or stress from litigation driving up scores on the scales related to negative response bias and the like? In this regard, Wygant (2017) underscored that PTSD is one diagnosis that is "often associated with elevations on [respondent] validity scales" (p. 222). In the end, the evaluator needs to be ethical, thorough, and well-reasoned.

3.6. Bias

The article now turns to the other side of the coin in noncredible behavior. Specifically, forensic evaluations might also behave without credibility. Young (2016b) reviewed the biases/attitudes that might affect assessments in the forensic context. He noted that, for Neal and Brodsky (2016), forensic psychologists might have a bias "blind spot." Similarly, Murrie and colleagues (Murrie & Boccaccini, 2015; Murrie, Boccaccini, Guarnera, & Rufino, 2013) referred to opinions drifting unconsciously toward the presumed expectations of the retaining party, in a process termed adversarial allegiance. Murrie and Boccaccini (2015) identified unconscious heuristics of an "our-side" mentality.

Table 4
Types of negative response bias psychological tests and the specific test and scales for each type.
Adapted from Young (2014a).

Response bias test type	Tests/scales
Sample stand-alone	Amsterdam Short Term Memory Test (ASTM; Jelicic, Merckelbach, Candel, & Geraets, 2007); Digit Memory Test (DMT; Hiscock & Hiscock, 1989); Hiscock Digit Memory Test (HDMT; Hiscock & Hiscock, 1989); Malingering Probability Scale (MPS; Silverton, 1999); Medical Symptom Validity Test (MSVT; Green, 2004); Nonverbal Medical Symptom Validity Test (NV-MSVT; Green, 2008); Portland Digit Recognition Test (PDRT; Binder, 1993b; Binder & Willis, 1991); Paulhus Deception Scales (PDS; Paulhus, 1998); Test of Memory Malingering (TOMM; Tombaugh, 1996); Validity Indicator Profile (VIP; Frederick, 1997); Victoria Symptom Validity Test (VSVT; Slick et al., 1997); Word Memory Test (WMT; Green, 2005).
Sample embedded cognitive	Advanced Clinical Solutions (ACS; Holdnack & Drozdick, 2009); Rey Auditory Verbal Learning Test Recognition Memory Test (AVLT RMT; Binder, Villanueva, Howieson, & Moore, 1993); California Verbal Learning Test, Second Edition (CVLT-II; Delis et al., 2000); Finger Tapping Test (FTT; Heaton, Grant, & Matthews, 1991); Rey Auditory Verbal Learning Test (RAVLT; Schmidt, 1996); Repeatable Battery for Assessment of Neuropsychological Status (RBANS; Randolph, 1998); Reliable Digit Span (RDS; Greiffenstein et al., 1994); Rey 15-Item Memory Test (RMFIT; Rey, 1941); Recognition Memory Test (RMT; Warrington, 1984); Rey-Osterreith Complex Figure Test (ROCFT; Lu, Boone, Cozolino, & Mitchell, 2003); Rey Word Recognition Test (RWRT; Rey, 1964); Wisconsin Card Sorting Test, Failure-to-Maintain Set Score (WCST-FMS; Suhr & Boyer, 1999); Wechsler Memory Scale, Third Edition, Verbal Paired Assocoiates-2 Scale Score (WMS-III-VPA; Wechsler, 1997).
Sample pain (related)	Brief Battery for Health Improvement, Second Edition: Defensiveness Scale (BBHI-2; Disorbio & Bruns, 2002); Battery for Health Improvement, Second Edition: Defensiveness Scale (BHI-2; Bruns & Disorbio, 2003).
Posttraumatic stress disorders (PTSD)	Clinician-Administered PTSD Scale (CAPS; Blake, Weathers, Nagy, Kaloupak, Gusman, Charney, & Keane, 1995); Detailed Assessment of Posttraumatic Stress (DAPS; Briere, 2001): Negative Bias (NB); Morel Emotional Numbing Test (MENT; Morel, 1995, 1998b); Morel Emotional Numbing Test − Revised (MENT-R; Messer & Fremouw, 2007); Trauma Symptom Inventory (TSI; Briere, 1995); Trauma Symptom Inventory-2 (TSI-2; Briere, 2011): Atypical Response (ATR).
Structured interviews (psychopathology)	Miller Forensic Assessment of Symptoms Test (M-FAST; Miller, 2001): Reported vs. Observed (RO); Extreme Symptomatology (ES); Rare Combinations (RC); Unusual Hallucination (UH); Unusual Symptom Course (USC); Negative Image (NI); Suggestibility (S); Total (Tot); Structured Inventory of Malingered Symptomatology (SIMS; Widows & Smith, 2005): Low Intelligence (LI); Affective Disorders (AF); Neurologic Impairment (N); Psychosis (P); Amnestic Disorders (AM); Total (Tot); Structured Interview of Reported Symptoms (SIRS; Rogers, Bagby & Dickens, 1992): Rare Symptoms (RS); Symptom Combinations (SC); Improbable or Absurd Symptoms (IA); Blatant Symptoms (BL); Subtle Symptoms (SU); Selectivity of Symptoms (SEL); Severity of Symptoms (SEV); Reported vs. Observed Symptoms (RO); Direct Appraisal of Honesty (DA); Defensive Symptoms (DS); Inconsistency of Symptoms (INC); Symptom Onset and Resolution (SO); Structured Interview of Reported Symptoms, Second Edition (SIRS-2; Rogers et al., 2010): RS, SC, IA, BL, SU, SEL, SEV, RO, Modified Total (MT) Index; RS-Total; Improbable Failure (IF); Supplementary Scale (SS) Index.
Personality and related inventories	Millon Clinical Multiaxial Inventory, Fourth Edition (MCMI-IV; Millon et al., 2015); Minnesota Multiphasic Personality Inventory, Second Edition (MMPI-2; Butcher et al., 1989; Butcher et al., 2001): Infrequency Scale (F); Infrequent Responses, back (Fb); Infrequent Psychopathology Responses (Fp); Response Bias Scale (RBS); Fake Bad Scale (FBS); Henry-Heilbronner Index (HHI; Henry, Heilbronner, Mittenberg, & Enders, 2006); Malingering Mood Disorder Scale (MMDS; Henry, Heilbronner, Mittenberg, Enders, & Roberts, 2008); Minnesota Multiphasic Personality Inventory, Second Edition Restructured Form (MMPI-2-RF; Ben-Porath & Tellegen, 2008/2011): Infrequent Response (F-r); Infrequent Psychopathology Responses (Fp-r); Infrequent Somatic Responses (Fs); Symptom Validity Scale, Revised (FBS-r); RBS (Gervais et al., 2007); Henry-Heilbronner Index-r (HHI-r; Henry, Heilbronner, Algina, & Kaya, 2012); Personality Assessment Inventory (PAI; Morey, 1991, 2007): Negative Impression Management (NIM); Malingering Index (MAL); Rogers Discriminant Function (RDF); PDS; Ruff Neurobehavioral Inventory (RNBI; Ruff & Hibbard, 2003): Negative Impression Management Scale (NB).

Neal and Grisso (2014) referred to the biases that might affect forensic experts as: representative, availability, and anchoring biases. The first includes base rate neglect, the second confirmation bias, and the third framing by first information/context.

Drogin, Hagan, Guilmette, and Piechowski (2015) reported that there are numerous published court cases in which mental health experts were accused of showing bias (Edens et al., 2012). These observations are consistent with Young (2010), who described the multiple sources of bias operating in tort and related legal contexts.

Richards, Geiger, and Tussey (2015) indicated the "dirty dozen" sources of bias in forensic neuropsychology that could undermine testimony. For example, the neuropsychologist succumbs to retaining attorney pressure; or the assessor under-utilizes base rates or ignores normal variance in test scores.

Other biases include the well-known confirmation bias and overconfidence bias. The former refers to suppressing evidence that does not fit prior diagnoses and the latter to the evaluee's tendency to minimize pre-event negatives in symptoms or functioning. Richards et al. (2015) even noted that one's personal life histories, political tendencies, and the like can influence one's role as an assessor. Richards et al. (2015) described the appropriate checks in these regards.

In the next section of the article, I examine legal considerations, including related to admissibility of evidence to court, whether anything about PTSD has been specifically excluded, and the multiple systemic influences in the legal and related systems. No doubt, these include the role of the adversarial divide, but it also involves litigation distress and other factors biases.

4. Law

4.1. Admissibility

Admissibility to court and related venues is informed by cases that have specified the parameters of good science compared to poor or junk science. The decision of the Supreme Court of the United States in *Daubert* (*Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 1993), in particular, serves that function in forensic cases. It specifies, among other things, that admissibility of evidence to court shall be evaluated by triers of fact (judges, juries) according to the criteria of falsifiability, peer review, general acceptance, and known error rate.

Saks and Spellman (2016) described the principal rules of admissibility of scientific evidence in the American federal system. The rules apply to most states in one form or another (as well as to the Canadian federal system, Young, 2016b). According to Saks and Spellman, the FREs (Federal Rule of Evidences) have been determined by a trilogy of American Supreme Court cases (*Daubert,* 1993; and also *General Electric v. Joiner*, 1997; referred to as *Joiner*, 1997; and *Kumho Tire Ltd. v. Carmichael,* 1999; referred to as *Kumho*, 1999).

For Saks and Spellman, the principal admissibility rules concern the following: (a) qualifications of the expert/the validity of the expert's area; (b) the validity of the evidence (by the bar of preponderance); (c) that both new and familiar expert evidence can be judged this way; (d) both scientific and non-scientific expert evidence are subject to admissibility this way; (e) general acceptance (*Frye*, 1923) is insufficient as a criterion for admissibility; (f) the trial court can reach decisions to admit the preferred evidence, exclude it, or admit it with limitations; (g) if admitted, the evidence could be followed by cross-examination on weight of the evidence and its credibility; and (h) the standard for appeal review is "abuse of discretion" only.

As far as is known, for the case of PTSD and the tests used in its assessment and in the detection of malingering, there has been no blanket refusal to admit them. Further, the diagnosis of PTSD itself has not been qualified as inadmissible itself in court. This comports with the typical evidence law at play (e.g., in the *Daubert* trilogy), in that it especially concerns the methods used or theories behind them, and not to the outcomes or conclusions of their application, per se (Young, 2016b).

Nevertheless, Smith (2011) described legal barriers to compensation for PTSD in terms of the physical manifestation/impact and zone of danger rules. Smith (2011) maintained that, at the legal level, the A entry criterion allows mental health professionals to determine causation in tort and related cases, a task that is usually the province of the fact finder. The case of *Alvarado v. Shipley Donut Flour, and Supply Co., Inc.* (2007) illustrates the dangers of allowing experts to determine causation. The psychologist involved in the case diagnosed PTSD for each of the 15 plaintiffs of an incident at issue, which is highly improbable ("highly suspect").

In this regard, on the one hand, some court gates keep opening wide for PTSD claims, and the result has been called an epidemic in disability claims (Young, 2015b). Yet, on the other hand, some gates are closed for PTSD claims to start with. In this regard, PTSD is not judged as compensable in some jurisdictions because it is considered a "mental–mental" injury without physical causes or sequelae. However, Freckelton (2015) cited an Australian case in which this limitation no longer applies (*Casey v. Pel-Air Aviation Pty Ltd; Helm v. Pel-Air Aviation Pty Ltd.,* 2015). Similarly, Robbennolt and Hans (2016) suggested that emotional harms submitted as claims in court are increasingly demonstrating physical consequences, thereby facilitating their consideration in court.

4.2. Systems

Berenson (2015) documented the fraud scams that were endemic to the SSD compensation system. In these fraud scams, many ("a larger number") of claimants alleged PTSD and other mental health problems as their reason for their claims. He advocated for a transformation of the system.

A study undertaken by Holowka et al. (2014) illustrates difficulties in diagnosing PTSD in the VA system. When results of diagnostic interviews of veterans ($N = 1649$) were compared to the less precise clinician-conducted or otherwise obtained diagnostics in the electronic record, there was disagreement in about 25% of cases (27.7% for current PTSD and 20.6% for lifetime PTSD). The interviews were conducted with the PTSD module of the SCID keyed to the DSM-IV. The disagreements between the sources studied included both false negatives and positives. The authors noted that the reasons for the differences in assessment conclusions included the following in the procedures as per the electronic records: insufficient documentation practices; incentives for billing/reimbursement; patient self-report biases; and use of unreliable, invalid, and/or incomplete assessment methods by clinicians.

Part of the difficulty in assessing malingering is political; in this regard, of note, there are lax assessment procedures for such detection in the American VA and SSA systems (Social Security Administration; IOM, 2015; Young, 2015b).

Young (2015b), citing IOM (2015) and other sources, showed that the SSA is subject to invalid claims toward 10 to 15%. These claims might not involve evidence of outright malingering but, nevertheless, demonstrate problematic presentations and feigning.

In addition, fraud in compensation regimes does not constitute the only systemic biasing factor to consider. Litigation distress, there are valid as opposed to fraudulent negative effects of seeking compensation. In this regard, in a 6-year study, O'Donnell et al. (2015) found that early PTSD symptoms increase the perception of stress associated with the later claims process, which in turn leads to higher levels of long-term disability. PTSD was assessed using the CAPS. Similar results were found for early depression but not anxiety. The authors concluded that the results show that the compensation process "contributes" an additional and independent risk for increased disability "in cases of initial serious injury."

4.3. Comment

Mental health experts routinely have their reports or other forms of testimony admitted to court and related venues. However, the

challenge to their evidence might take place in cross-examination, in which its weight and credibility are contested. This type of confrontation might be difficult for the assessment of PTSD for disability and related forensic functions because the diagnosis of PTSD is contentious, its malingering rate is indeterminate and difficult to establish, its relevant tests are not necessarily normed on populations relevant to the task at hand, and so on. Moreover, the system has its pushes and pulls, both for assessors and their evaluees. Psychologists need to follow their practice guidelines, ethical codes, and recommended assessment protocols, all within a comprehensive scientific knowledge base, and the present work on PTSD in these matters will help. That said, just as this work indicates the extent of the rapidly evolving field of PTSD, there is no reason to suspect that it will not continue to increase exponentially. That is, each PTSD assessor proceeding to court needs to have a state-of-the-art knowledge of the current literature at the time that their assessments are undertaken, and conduct their assessments accordingly, assuming that they are aiming to meet any admissibility challenge in court, and not fall victim to either the stresses in the system on themselves or on their evaluees, and conduct themselves and their assessments impartially and fairly. For further work on PTSD in Court, refer to Jovanović, Dunkić, and Milovanović (2016) and Day and Hall (2016).

4.4. Putting it all together in reports

Young (2016c) described the procedures and principles in psychiatric/psychological forensic report writing, basing his integration on Heilbrun, Grisso, and Goldstein (2009), in particular. Table 5 constitutes a resource in this regard that will help provide testimony and reports to court in cases of claimed PTSD or related claims disorders. At the same time, the table offers a revised way of presenting and understanding the principles of forensic mental health assessment (FMHA).

Young's (2016c) approach to forensic report writing is consistent with the series of articles on empirically supported assessment edited by Arbisi and Beck (2016). In this series of articles, Archer, Wheeler, and Vauter (2016) reviewed the psychological and legal parameters that relate to forensic assessment while emphasizing five "pillars" in empirically-supported forensic tests in this regard. In particular, they emphasized the value of several personality and intelligence tests in forensic assessment (e.g., the MMPIs, the Wechslers). Sellbom and Hopwood (2016) concurred on the value of these tests in the forensic setting. As with these ones, other tests need to meet the bar of acceptable standardization, use of norms based on forensic populations, etc. Reynolds (2016) indicated that advanced understanding of psychometrics qualifies that tests need to be psychometrically sound for the forensic question at hand and that reliability and validity are about test scores rather than the tests themselves. Note that this series of articles did not treat tests related to psychological injury or to PTSD itself. Nevertheless, the principles in forensic assessment that they underscore are well worth noting for testing purposes related to PTSD in Court.

5. Conclusions to the article

An interim summary on this third article in the series of three in the journal on the topic of PTSD in Court, which is on malingering, assessment and testing, and the law, includes the following. Malingering is a pervasive concern in forensic disability and related assessments for court and other similar venues. Partly depending on which side of the so-called "adversarial divide" one works, it is the backdrop that might be considered in most every case either as quite possible or quite

Table 5

Principles and standards in forensic mental health assessment and in forensic report writing according to the overarching principle of integrity in ethics, law, and science.
Adopted from Young (2016c).

Principle (subcomponent)	Examples
Competence and communication	
Competence	Obtain appropriate education, training, experience; have adequate knowledge of forensic mental health assessment; assure not practicing outside of competence fields.
Communication	Be accurate, economical, effective; use plain language; use minimally technical jargon/language; use definitions as required; use headings in reports; control the message.
Procedure and protection	
Procedure	Apply correct forensic mental health procedures; assess in the appropriate context, e.g., private; select of the best tools for the legal question at hand, e.g., in terms of reliability and validity, having appropriate norms; aim for meeting admissibility standards to court according to applicable laws in the case at hand for methods (e.g., the *Daubert* trilogy); i.e., assure proper tools and data/fact/information gathering.
Protection	Obtain appropriate authorization from all parties involved; proceed on the basis of having obtained voluntary informed consent, unless contraindicated by court order or otherwise not required.
Dignity and divide	
Dignity	Main proper respect of the evaluee and of the standards of forensic mental health assessment; conduct oneself with honesty and objectivity; consider that bias works both ways, with evaluees possibly engaging in negative response bias, feigning, gross exaggeration, malingering, and the like; do not attribute malingering or use any related term just based on test results but after considering the whole file; for example, include using third party information to check consistency with self-reported information (preferring the former when inconsistency is found).
Divide	Avoid the pull of biases in the adversarial divide; be impartial and unbiased and check for same throughout; watch for confirmation bias and others that might apply.
Data collection and determination	
Data collection	Be careful, comprehensive, and thorough; use the most appropriate model to guide data gathering, interpretation, and communication; use multiple source of information for each area assessed (e.g., self-report, psychological test data, collateral interviews and records), with all tools and methods being both reliable and valid; address functional issues related to the legal question(s) at hand, or other behaviors related to the question(s); diagnoses constitute supplementary information, unless otherwise required; clinical characteristics are related to the purposes at hand, and evaluated through all sources of information.
Determination	Separate data/information/facts from inferences/hypotheses/interpretations/opinions/conclusions and their justifications; use scientific reasoning and procedures throughout (e.g., considering all options and gathering information that fits each one, logically selecting the best one after using this logical procedure, or, using scientific findings to choose the best tools and tests for the task at hand and using the most recent reliable and relevant research and conceptualization in science in interpreting the full set of reliable and relevant data that had been gathered in the assessment); use case-specific (idiographic) evidence in assessing/describing current clinical condition/functional abilities in relation to history of any symptoms and demonstrated capacities [before the event or moment in time at issue] in order to address causal connection and legal issues; use nomothetic evidence the same way, i.e., describe psychological test results, structured instrument results, and results of any other specialized tools that apply to the question at hand. The reports should relate clearly information/data/facts to the sources used in the assessment; address ultimate legal questions as allowed, appropriate, and required, e.g., on disability, on forensic capacities.

impossible. This opposition holds true especially for contentious diagnoses, such as PTSD, and also particularly because there is no uniform understanding of what malingering is and how to best test for it.

Therefore, right from the beginning of an assessment, the evaluator faces implicit if not explicit biases both (a) within the system and the court and related venues, and (b) within the evaluee and the referral source for the evaluation. Many cases fall in the gray zone in multiple ways, from whether PTSD can be genuinely diagnosed or not, to whether, in contrast, malingering can be genuinely attributed or not, and to whether the evidence involved can be successfully argued in court either way and meet all admissibility challenges and cross examinations. Therefore, the best way to approach forensic PTSD assessments is by being comprehensive, impartial, and scientific in all phases of the task involved, from the evaluee interview, to the review of relevant records and consultation of collateral sources, to the administration of psychometrically acceptable assessment instruments, and to the scientific reasoning in arriving at the most appropriate conclusions in the case for court.

5.1. Looking back

Before moving to the overall conclusions on the three articles in the journal related to PTSD in Court summaries of its first two parts are provided to give context. The first article had presented the approach of the DSM-5, in particular, to PTSD. The research reviewed considered its dimensional structure, in particular. The history of the construct of PTSD, as well as research on prevalence (traumatic exposure, PTSD itself), provided foreground and complications related to PTSD while certain forensic implications provided background. The second article reviewed the research on risk factors in PTSD, endophenotypes, possible biomarkers, and the biocentric approach, in particular. Cautions were given about the need to avoid bioexuberance and to consider, instead, a biopsychosocial model. The causality of PTSD, in general, was discussed, including at the legal level in terms of their material contributions test.

Note that the research on these various topics mentioned in the above has continued after publication of the first two articles of the present series of three articles on PTSD in Court. The most recent research is consistent with the conclusions in the two articles preceding this one in the series of three articles under discussion. For example, Ogle, Rubin, and Siegler (2016, 2017) have shown that factors that follow a traumatic event at issue account better for the variance of severity in PTSD symptoms compared to aspects ("characteristics") of the person involved or the person's particular life history prior to the event at issue. The authors concluded that PTSD is influenced by memory factors related to the event at issue and cannot be explained away by pre-event variables. This is consistent with the meta-analyses by Brewin, Andrews, and Valentine (2000), Orth and Wieland (2006), and Ozer, Best, Lipsey, and Weiss (2003). van der Velden and van der Knaap (2017) criticized the methodology used by Ogle et al. (2016), but Ogle et al. (2017) appears to have effectively criticized the commentary by van der Velden and van der Knaap (2017) such that we can still argue that PTSD symptoms severity is better accounted for by trauma and post-trauma factors rather than pre-trauma factors. However, I do note that the samples in Ogle et al. (2016)'s longitudinal study averaged 63-years-old, which limits generalizability.

As for current research on CPTSD (complex posttraumatic stress disorder), Hyland et al. (2017) used CFA (confirmatory factor analysis) to show that the ICD-11 model of three clusters of symptoms added for CPTSD beyond the three clusters for PTSD is a valid one. They tested their model in a sample of female survivors of CSA (childhood sexual abuse). The survivors were Danish, Caucasian, mostly women, and about 36 of age ($N = 453$). CPTSD was evaluated using the HTQ-4 (Harvard Trauma Questionnaire Part 4; Mollica et al., 1992) and the TSC (Trauma Symptom Checklist; Briere & Runtz, 1989). The MCMI-III (Millon Clinical Multiaxial Inventory-III (Millon, Millon, Davis, &

Grossman, 2009) was used to assess anxiety and dysthymia. The result showed that 42.8% of the participants met the criteria for CPTSD, while only 7.8% met the criteria for PTSD. Finally, the validity of the need to have separate diagnosis for CPTSD and PTSD was shown by anxiety being more strongly associated with PTSD and dysthymia with CPTSD. The authors concluded that PTSD is fear-related, while CPTSD involves a "diminished sense of self" and effects on sustained interpersonal relationship.

6. Overall conclusions

6.1. Summary

The present series of three articles on PTSD in Court is divided into three major parts: (a) an introduction, including on PTSD in the DSM-5 (e.g., entry trauma criterion, symptoms, clusters, limitations); (b) a description on biological contributions and causality related to PTSD, with cautions about bio-exuberance in court and reaching the material contributions test; and (c) forensic and legal considerations, especially on its testing, malingering, and biases. Mainly, this series of three articles on *PTSD in Court* provides a comprehensive, recent review of the literature, with much commentary.

Specifically, the first article of the three in the series reviewed the history of the construct of PTSD and its present iteration in the DSM-5. The revised DSM-5 PTSD symptom content and structure might be still wanting, and future iterations of the DSM undoubtedly will see them change. Further, the DSM-5 project itself has been subject to criticism.

Empirically, the DSM-5 dimensions comprise a four-cluster model, but other four-factor models have been found that fit the data even better than that of the DSM-5. Moreover, there is a five-factor dysphoria model that has been supported. Two six-factor models, though, recently have been found to fit the data on the DSM-5 PTSD symptoms. Finally, a hybrid seven-factor model based on them has been tested for fit to the data, and increasingly the research is providing support for it. I have posited an eighth factor on dissociation that is applicable to the minority of people who express the dissociative subtype.

Epidemiologically, trauma exposure takes place about 70% over the lifetime. Also, these traumatic events lead to traumatic reactions in about 10% of cases, with PTSD being a primary diagnosis in this regard. Once initiated, PTSD might be prolonged, in about 10% of cases. Polytrauma and comorbidities complicate these statistics. Moreover, the possibility of malingered PTSD confounds them further. That being said, the estimate for malingered PTSD varies from 1 to 50%, which reflects the need for further research because of the imprecision. The first article ends with discussion of complications related to comorbidities and heterogeneities, in particular. My own work has shown that PTSD and its comorbidities can be expressed in over one quintillion ways, which speaks to the complexity of its current structure, aside from the individual differences apparently involved in its expression (Young, Lareau, & Pierre, 2014).

The second article concerns risk factors, endophenotypes, and biological underpinnings in PTSD. Risk factors help potentiate it and endophenotypes help trace it from any genetic basis that might be involved. In this article, causality is addressed generally as well as in relation to PTSD. For PTSD, I propose a causal model that is multifactorial and biopsychosocial. Further, it reflects the dynamics of a multilevel system, with a top-down construct level, a bottom-up symptom connective one, and an intermediate one involving symptom appraisals, in particular.

The major focus of the second article addresses PTSD's genetic underpinnings and its brain-based associations. The areas of the brain involved in PTSD reflect dynamic inter-area cortical activation networks (ICNs) with structural and functional connections of areas across the brain. The ones that have been found related to PTSD include the major ICN systems (the default mode one, the salience one, and the

central executive one). The classic brain areas associated with PTSD include the amygdala, hippocampus, and prefrontal cortex, with other areas like the insula and ACC are also involved.

The genes involved in PTSD are mostly related to neurotransmitters, in particular, e.g., serotonin (the *5-HTTLPR* (serotonin-transporter linked polymorphic region) gene; a risk polymorphism in *5-HTTLPR* is the *s* (short) allele, compared to the *l* (long) one), but also other functions, including in immune function. Other genes in PTSD development include *FKBP5* (FK506-binding protein 5 gene), *COMT* (catechol-*O*-methyl-transferase), and *BDNF* (brain-derived neurotrophic factor), with *FKBP5* likely to affect frontal-hippocampal connectivity. Aside from genetic influences directly on PTSD, the research indicates that there are gene x environment interactions and also epigenetic effects on genes (genes silencing due to the environment, e.g., stressors). The research implicates that genetic and epigenetic factors account for up to 70% of individual differences in PTSD development, with PTSD heritability estimated at 30%. Guardado et al. (2016) found 203 differentially expressed PTSD genes. Sadeh et al. (2016) computed a polygenic risk score for PTSD involving 480,856 SNPs (single nucleotide peptides) being genotyped.

In court and related venues, causality refers to whether an event at issue has induced an injury such that the event is at least a material contributor to the elicited disorder claimed, including of PTSD, notwithstanding the multifactorial impacts in the causation involved, including pre-existing ones. This threshold reflects the civil arena in which tort and related claims are made, for which the legal bar is set as a balance of probabilities.

The third article of the series of articles in the present work addresses the topics of malingering, assessment, and the law. Many cases that are assessed fall in the gray zone in which PTSD is possible yet malingering is possible, too. Therefore, in assessing PTSD, we need to be comprehensive, impartial, and scientific in all phases of the work involved so that we arrive at the most defensible conclusions for court.

The major conclusion deriving from the present conceptualization and review is that PTSD remains a controversial disorder for court, especially given its problems in the DSM-5. Moreover, it is difficult to diagnose with sufficient confidence, especially given the possibilities of malingering and other negative response biases. Yet, even as presently constituted in the DSM-5, the research increasingly is leading to its better understanding, differentiation, and usefulness in court.

6.2. Limitations and future directions

This review does not deal with PTSD in children (for a review, see Connor, Ford, Arnsten, & Greene, 2015); nor does it address special populations and other groups (e.g., sex) for differences (but see Atwoli, Stein, Koenen, and McLaughlin (2015) on PTSD and culture). It does not deal with acute stress disorder (see Bryant et al., 2015, for a review).

Parts of the present work focus on my own publications, but that fits their applicability to the topic. It does not cover much of the literature prior to 2014, but its focus especially on the recent research might be one of the strengths of the work. Finally, it will satisfy neither defense nor plaintiff experts who hold to older and preconceived ideas, but that might be an advantage more than a limitation.

The present work is replete with suggestions for future research and conceptualization, including my own models on the dimensions of PTSD and a causal model of PTSD involving multiple dynamical system levels. The empirical research that is described on PTSD rarely addresses forensic issues directly, rarely screens for malingering among the participants used, and so on. This lack needs to be addressed in future research, for example, in order to get exact estimates of its prevalence and to understand better its symptom and cluster constitution, as well as its causes, correlates and consequences. Longitudinal research would help in understanding the relationship among environment, risk factors, onset of PTSD, its maintenance or remission, and the factors involved, such as genetics or therapy. These foci of research depend on the validity of the diagnostic system for PTSD that is used and also the validity of the assessment procedures and tests used in assessments. In all these regards, the area is still concerned with fundamental questions that bedevil it and complicate research on it. Therefore, the field needs both exploratory, fundamental as well as applied, forensic research on PTSD, and, as this research proceeds, it might take into account the present work on the cautions needed and the rigor required.

6.3. Litigation science

Litigation science proceeds from the perspective that a fact, theory, or opinion conducive to court purposes needs evidence in support of its views, while evidence counter to its views needs to be discredited (Young, 2010). In these terms, it approximates the approach of standard science. However, litigation science might also include disregard of reliable and valid counter evidence, exclusion of such evidence in favor of its narrative, repetition of its narrative until it becomes deeply ingrained as received truth (or the hope of such), and so on. In inappropriate litigation science, with respect to any research undertaken for the area at issue, the scientific rationale and methods used are slanted toward the preconceived, desired outcome, the methods might be unreliable and invalid to begin with, and the results improperly reported or interpreted. Alternative explanations are given short shift or too readily dismissed.

That being the case, nonlitigation science can suffer from all these shortcomings, and more. Replication is one cornerstone of effective and valid science, but in many areas of science, in general, and psychology, in particular, let alone contentious fields such as psychological/psychiatric injury and law, attempts at replication fail.

Psychological injuries concern the contentious diagnoses of PTSD, chronic pain, and mTBI, in particular, as well as associated disorders, such as depression- and anxiety-related ones. Psychological injuries lead to tort and related court action toward acquiring rehabilitative services and also monetary and other compensation for damages. Moreover, because psychological injuries often occur in tandem, including for PTSD, with polytrauma or comorbidities complicating their presentation, the forensic assessor in PTSD cases faces numerous challenges.

For these and many other reasons presented in this present work, both the court and forensic assessors need to learn the nature of the recent scientific literature on PTSD, its assessment and on the other psychological injuries, as well as the influences on them (e.g., litigation science, litigation distress, malingering). The present work has undertaken a comprehensive conceptual and research review in these regards. The goal was to clarify the science of PTSD, especially given misconceptions circulating about it, including in litigation science.

The adversarial divide is one aspect of influences deriving from court. In the following, I present extreme narratives reflective of both sides of the divide with respect to PTSD in court (which could apply generally to other psychological injuries). That is, I summarize the extreme narratives that appear to guide typical plaintiff and defense approaches on the topic of PTSD in court.

(a) The plaintiff perspective on PTSD in court stems from a conviction that trauma suffered due to negligence induces much pain and suffering that requires monetary and other compensation even after attempted rehabilitation, and many people will develop effects such as PTSD once a trauma is experienced, as resilience is rare. PTSD leaves biological effects on the body; it is not just mental; biomarkers for it can be found. It is very hard to treat and lasts a lifetime. The traumatic event at issue is the primary if not sole cause of the psychological consequences. Moreover, because the latter typically includes PTSD, this could constitute proof of the origins of the said consequences, given that PTSD's A criterion concerns an external event at issue that has precipitated the consequences. Malingering is rare in these cases, and tests aimed at its detection create too many false

positives anyway, or incorrect designations of malingering.

(b) The defense point of view of PTSD in court is more skeptical about the validity of PTSD in individual cases and even about the validity of the disorder to being with (e.g., in the DSM-5). The number of symptoms in the disorder and their clusters change from one version of the DSM to the next. The ICD has a totally different approach to its diagnosis, showing it is not found in nature. PTSD is a disorder that has been socially constructed; it is a category without ecological validity, or existence in the real world. It is not a genuine categorical disorder, such as a typical medical illness, but so individualized and so dimensional that it is not possible to say that an incident caused it the same way for everybody, as the label implies. Its putative precipitation can be explained better by pre-existing psychological vulnerabilities, such as negative affect, rather than the effect of any traumatic stressor. PTSD development to trauma exposure is rare, anyway, as most people are resilient. Moreover, in a process called bracket creep, these latter stressors have been diluted in court to the point that even nontraumatic events qualify as PTSD elicitors. Further, its symptoms are so heterogeneous that no one presentation is the same, casting doubt about it. In addition, for any one symptom to be valid, it must be clearly tied to the event at issue, which is difficult, given all the factors in causality, the least of which might be the index event. Many of its symptoms are part of other conditions, so there is much overlap to the point that PTSD should not even be diagnosed. Other disorders together, such as depression and phobia, can account for its symptoms.

Also consider that: PTSD is frequently comorbid with other conditions so does not present cleanly; often, it is expressed subsyndromally or partially, assuming it is found; even if presented as full-blown, it can remit spontaneously so that its persistence is problematic; supposedly, it can manifest months after the incident at issue, which should raise red flags; it presents the same way as symptoms that are associated with claims of alien abduction, which is more likely due to effects of early trauma (sexual abuse). There are no biomarkers for it. Even though it is infrequently elicited by any trauma, as most people are resilient, legal claims can be found in which, improbably, every one subjected to the stressor or the disaster at issue ended up developing PTSD. Indeed, attorney websites give information on what it is, so complainants are coached. This can even happen once the complainant enters the office of the attorney. The symptoms of PTSD are easy to understand and describe. It can be easily malingered. The malingering rate for PTSD is high. Tests are good at picking this up. People respond well to standard treatment approaches, even if it is found. Overall, there is little justification for either diagnosing it or considering it compensable.

The present work has demonstrated that contemporary science does not comport with either of these extreme perspectives. On the one hand, the plaintiff extreme narrative sets the bar too low. This narrative is consistent with the PTSD disability epidemic and also its extreme presence in court and related venues. In contrast, on the other hand, the defense extreme narrative is too conservative, and its influence on the system and assessment process ends up harming innocent victims.

Some points are valid in each of these extreme narratives, but contemporary science points to a new one. In this regard, a more moderate version of PTSD in court follows, one that is middle of the road compared to the other two, as per the following.

(c) PTSD is a diagnosis that changes and is thus inconsistent from one diagnostic system to the next, but its symptoms reflect plausible trauma reactions. Careful assessment can ascertain which of its symptoms are validly present in each case, and the effects that they have, aside from their causes, and whether the diagnostic label applies. Assessors can qualify how they arrived at their conclusions about whether PTSD is present in any one case by using scientific reasoning based on knowledge of the current literature. This includes about which tests to use both to help diagnose the PTSD and whether malingered PTSD is the correct attribution instead, along with determining other negative response biases. The assessor working from a comprehensive, impartial, and scientific perspective will avoid the influence of the adversarial divide and other biases, such as the hindsight one. The assessor functioning this way will not assume that PTSD is (a) impossible or always malingered, nor that (b) it is frequent and rarely malingered, if at all. Also, causality will be understood as multifactorial, and will be possible to determine whether the index event contributes to the PTSD at a material level at the bar of the balance of probabilities. The assessor will be aware of the effects of PTSD on the body, but not assume that the science is advanced enough to determine the biomarkers of PTSD for any one individual. Further, the assessor will investigate the effects of the symptoms expressed in relation to their functional consequences, e.g., at work, thereby reducing the importance given to the label of PTSD in these regards. The individual differences in symptom expression in PTSD are minimized as a negative issue with such an approach; to the contrary, they become a focus in assessment.

When confounds arise in the assessment, they are treated ethically. For example, if pre-existing factors can explain fully the apparent PTSD presentation instead of the alleged negligent incident, this is explained and an incident-related PTSD is denied in the conclusions to the assessment. When malingering is present, the reasons for arriving at this attribution also are explained carefully. Other interpretations, such a cry for help or that the exaggerations involved are due to psychopathology, are ruled out with the appropriate evidence. The base rate of malingering is never the deciding factor in ruling in or out malingering, nor could be any result from one test. Each evaluee is examined comprehensively for the symptoms claimed, and fair decisions are arrived at for the person idiographically based on a science-first approach.

6.4. Implications

PTSD was first placed in the DSM in 1980, but trauma reactions to events such as war have been the subject of writing for millennia. The DSM approach to PTSD includes description of the nature of the trauma experienced (criterion A) and, if this bar is passed, it concerns establishing which symptoms in its clusters or dimensions of symptoms are present polythetically toward determining if thresholds for diagnosis are reached. The DSM-5 organizes 20 PTSD symptoms into four clusters. However, the research suggests alternate models that might even include eight clusters once the dissociative subtype is included. The research on PTSD prevalence varies in estimates, and part of the problem is that PTSD is claimed in disability assessments toward getting benefits so that malingering might be an issue. Other complications relate to comorbidities and the heterogeneous nature of PTSD, which are worsened when it is considered in conjunction with its comorbidities. Risk factors for PTSD include pre-event and event-related factors, such as early adversity/abuse and peritraumatic dissociation/overmodulation, respectively. Although progress is being made in specifying its biological roots and toward establishing the endophenotypic pathway in its development, including at the genetic level, this research is nomothetic and cannot be used in individual cases idiographically. The causality of PTSD is multifactorial, with biological, psychological, and social and contextual factors involved.

Treatment can be effective, but when it is not given, there might be long term consequences. Even those in remission due to psychotherapy

might suffer long term consequences of their PTSD. I have suggested that therapy focus on balancing overmodulation and undermodulation not only in responses associated with PTSD but also in stimulus/stressor appraisals and their processing.

In forensic assessments, causality refers to whether the event at issue has materially contributed to the consequent condition, even if pre-existing and other factors are involved. Forensically, we are ethically obligated to use appropriate tests in its assessment and diagnosis, including as applied to malingering detection, and the present work reviews these tests. Further research is required to ascertain the best tests to use in PTSD assessments, and to establish the optimal cut scores for populations at hand (and the same applies for tests to detect PTSD malingering).

However, the wide variation in estimates of the prevalence of malingered PTSD complicates determination of the sensitivity and specificity of tests, and thus their usefulness in PTSD evaluations. Further, given the general absence of overt admission by PTSD malingerers, it is difficult to conduct research using known-group designs toward determining the efficacy of any malingering test.

Note that forensic assessments related to trauma exposure due to negligence should not necessarily focus on PTSD. First, it does have its limits and is contested. Second, other disorders might be expressed due to trauma exposure, such as specific phobia, depression, or adjustment disorder. Third, diagnoses themselves do not provide the bases for answers to the typical referral question in tort and related court venues. That is, functionality and disability usually are the focus in forensic assessments in this context. Fourth, this means that a comprehensive analysis must be undertaken of the array of symptoms being expressed by the evaluee, their severity and consequences, and their relationship to the traumatic stressor at issue, if any. Nevertheless, providing a diagnosis such as PTSD can help summarize the symptoms being expressed for the trier of fact, and it does have some currency in the literature.

In this regard, the present work has provided sufficient information to suggest that, despite the controversies associated with PTSD, it is a valid clinical phenomenon and the research is increasingly specifying its symptoms and clusters. The approach taken to PTSD in the DSM-5 is adequate for current use in court and related venues, as long as the forensic assessor proceeds cautiously and scientifically, while being comprehensive and impartial. There is much work to do forensically to improve PTSD assessment and diagnostic procedures, including for malingering attribution and related negative impression management or feigning, but care in using the diagnostic manuals and the tests to validate PTSD or, in contrast, to deny claims because of malingering, will allow for successful proffer of evidence to court, whether in terms of report writing or testimony, so that the expert can face any admissibility challenge or cross examination in court and related venues. PTSD should not be subject to blanket exclusion in court and related venues (Bailey, 2015) because, to the contrary, there are sufficient psychological and legal bases to consider it as valid and actionable. All that said, the research on PTSD will continue to grow exponentially, and the court (and each forensic assessor) needs to be appraised of developments in the field. This present work is dedicated to this proposition.

As a general principle to working in the area of PTSD in Court, professionals need to adhere to the strictest standards in their work, both ethically in terms of codes and professionally in terms of their licensing guidelines. Young and Brodsky (2016) have elaborated a set of four principles for working effectively in the field of psychiatric/psychological injury and law, referred to as the 4 Ds. They involve: (a) Maintaining Dignity (Decorum, Decency); (b) Keeping Distance (either fall into the adversarial Divide or Conquer it by keeping a healthy distance from it); (c) Data (and Evidence). Deal with the full set of scientifically reliable and valid data gathered; and (d) Determine Judiciously (Debate, Decide, Defend). Choose the conclusion that best fits the data, while presenting the counter-evidence that fits other interpretations. Use scientific reasoning at all points. Working these 4D principles are

consistent with the proposed revision of the APA ethics code to include as additional principles those of law, science, assessment (including in evaluating negative response bias), and ethics as a dynamic system (Young, 2016d) with PSTD for court requires nothing less.

6.5. PTSD not in court

The present work has focused on dealing with PTSD in court and related venues. It assumes that mental–mental conditions, such as PTSD, are not automatically excluded from consideration as potentially compensable in court. However, on the one hand, tort reform in the U.S. is moving toward capping claims for non-economic damages. On the other hand, mental–mental conditions, including of PTSD, are still highly contentious in court, such that bars are still being raised toward excluding them from actionable claims.

6.5.1. Tort reform

Tort reform is taking place because of "empty suit" litigation (Billauer, 2016), the "concussion epidemic" (Grey & Marchant, 2016), et cetera. However, the solutions to the crisis in exponentially increasing disability claims are diverse with no clear pathway provided. Billauer (2016) suggested that government agencies/regulators have the "tools" to be more "efficient/effective" than courts to the "threats" involved in litigation bracket creep. In contrast, Logan (2015) argued that the judiciary is in the "best position" to "shape" the civil justice system involved. And, in a different vein, Grey (2015) maintained that the "validity evidence" for claims of emotional harm should be "entrusted" to "juries." All these proposals assume that tort reform is an absolute necessity. However, DeVito and Jurs (2015) found the evidence in favor of tort reform is not reliable anyway, i.e., the rate of filings has dropped even in non-capped states, too.

6.5.2. Neuroscience/biology in court

The law journals reviewed support the notion that neuroscience is not ready for provision of reliable evidence to court in individual cases. Beecher-Monas and Garcia-Rill (2015) found that fMRI-based (functional magnetic resonance imaging) lie detection methods are not reliable enough for court. Taylor (2015) stated that these methods could one day provide individually valid lie detection evidence. Also, these methods "probably" will be admitted regularly as evidence toward "confirming" subjective report of pain, showing white matter damage in mTBI, and providing "physical bases" for emotional distress [and PTSD]. But PTSD is a "mental–mental" injury and many American states continue to deny coverage for such injuries in the worker compensation system (Bailey, 2015). Persad (2016) noted that emotional injuries are not as distinct from physical injuries; the system needs a more "nuanced" approach. In this regard, the emphasis in the present work on the biological bases in PTSD is of note.

6.6. Final word on PTSD in Court

The comprehensive literature review undertaken of PTSD in Court is state-of-the-art, lets the science speak for itself so that the review is impartial, and addresses all critical questions related to the matter. The biological influences in PTSD indicate its validity as a diagnostic entity, despite lack of full consensus on its exact symptomatic structure in the DSM-5. That said, in any one individual case, the validity of the presentation involved needs to be carefully evaluated for exaggeration, feigning, and malingering, and so on. Psychologists conduct comprehensive, impartial, and scientifically-informed assessments in these regards, much as the present series on three articles on PTSD in court that has been published has done.

References

Ali, S., Jabeen, S., & Alam, F. (2015). Multimodal approach to identifying malingered post-traumatic stress disorder: A review. *Innovations in Clinical Neuroscience*, 12, 12–20.

Allen, L. M., III, Conder, R. L., Green, P., & Cox, D. R. (1997). *CARB '97: manual for the Computerized Assessment of Response Bias.* Durham, NC: CogniSyst.

Alvarado v. Shipley Donut Flour & Supply Co., Inc. (2007). (S.D.Tex. Dec. 18, 2007).

American Psychiatric Association (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). Washington, DC: American Psychiatric Association.

Andrikopoulos, J., & Greiffenstein, M. F. (2012). Something to talk about? The status of post-traumatic stress disorder in clinical neuropsychology. In G. J. Larrabee (Ed.), *Forensic neuropsychology: A scientific approach* (pp. 365–400) (2nd ed.). New York: Oxford University Press.

Arbisi, P. A., & Beck, J. G. (2016). Introduction to the special series "Empirically supported assessment.". *Clinical Psychology: Science and Practice*, 23, 323–326.

Arbisi, P. A., Polusny, M. A., Erbes, C. R., Thuras, P. R., & Reddy, M. (2011). The Minnesota Multiphasic Personality Inventory-2 Restructured Form in National Guard soldiers screening positive for posttraumatic stress disorder and mild traumatic brain injury. *Psychological Assessment*, 23, 203–214.

Archer, R. P., Wheeler, E. M. A., & Vauter, R. A. (2016). Empirically supported forensic assessment. *Clinical Psychology: Science and Practice*, 23, 348–364.

Atwoli, L., Stein, D. J., Koenen, K. C., & McLaughlin, K. A. (2015). Epidemiology of posttraumatic stress disorder: Prevalence, correlates and consequences. *Current Opinion in Psychiatry*, 28, 307–311.

Axelrod, B. N., Meyers, J. E., & Davis, J. J. (2014). Finger Tapping Test performance as a measure of performance validity. *The Clinical Neuropsychologist*, 28, 876–888.

Bagby, R. M., Parker, J. D. A., & Taylor, G. J. (1994). The twenty-item Toronto Alexithymia Scale — I. Item selection and cross-validation of the factor structure. *Journal of Psychosomatic Research*, 38, 23–32.

Bailey, A. R. (2015). Stress is (not) part of the job: Finding the appropriate balance between fairness and efficiency to compensate posttraumatic stress disorder under workers' compensation statues. *Wisconsin Law Review*, 3, 507–536.

Bass, C., & Halligan, P. (2014). Factitious disorders and malingering: Challenges for clinical assessment and management. *The Lancet*, 383, 1422–1432.

Beecher-Monas, E., & Garcia-Rill, E. (2015). Overselling images: FMRI and the search for truth. *John Marshall Law Review*, 48, 651–692.

Ben-Porath, Y. S., & Tellegen, A. (2008/2011). *MMPI-2-RF: Manual for administration, scoring, and interpretation.* Minneapolis, MN: University of Minnesota Press.

Berenson, S. K. (2015). The real social security disability fraud(s). *DePaul Journal for Social Justice*, 8, 93–135.

Bianchini, K. J., Aguerrevere, L. E., Guise, B. J., Ord, J. S., Etherton, J. L., Meyers, J. E., ... Bui, J. (2014). Accuracy of the modified somatic perception questionnaire and pain disability index in the detection of malingered pain-related disability in chronic pain. *The Clinical Neuropsychologist*, 28, 1376–1394.

Billauer, B. P. (2016). Admissibility of scientific evidence under Daubert: The fatal flaws of "falsifiability" and "falsification". *Boston University Journal of Science & Technology Law*, 22, 21–87.

Binder, L. M. (1993a). Assessment of malingering after mild head trauma with the Portland Digit Recognition Test. *Journal of Clinical and Experimental Neuropsychology*, 15, 170–182.

Binder, L. M. (1993b). *Portland Digit Recognition Test manual* (2nd ed.). Portland, OR: Author.

Binder, L. M., & Kelly, M. P. (1996). Portland Digit Recognition Test performance by brain dysfunction patients without financial incentives. *Assessment*, 3, 403–409.

Binder, L. M., Villanueva, M. R., Howieson, D., & Moore, R. T. (1993). The Rey AVLT recognition memory task measures motivational impairment after mild head trauma. *Archives of Clinical Neuropsychology*, 8, 137–147.

Binder, L. M., & Willis, S. C. (1991). Assessment of motivation after financially compensable minor head trauma. *Psychology Assessment: A Journal of Consulting and Clinical Psychology*, 3, 175–181.

Blake, D., Weathers, F., Nagy, L., Kaloupek, D., Gusman, F., Charney, D. S., & Keane, T. (1995). Development of a Clinician-Administered PTSD Scale. *Journal of Traumatic Stress*, 8, 75–90.

Blanchard, E. B., & Hickling, E. J. (2004). *After the crash: Assessment and treatment of motor vehicle accident survivors* (2nd ed.). Washington, DC: American Psychological Association.

Blanchard, E. B., Jones-Alexander, J., Buckley, T. C., & Forneris, C. A. (1996). Psychometric properties of the PTSD Checklist (PCL). *Behaviour Research and Therapy*, 34, 669–673.

Boone, K. B., Lu, P. H., & Herzberg, D. (2002). *Rey Dot Counting Test.* Los Angeles: Western Psychological Services.

Bowman, M. L., & Yehuda, R. (2004). Risk factors and the adversity-stress model. In G. M. Rosen (Ed.), *Posttraumatic stress disorder: Issues and controversies* (pp. 15–38). Chichester, UK: Wiley.

Brady, R. E., Bujarski, S. J., Feldner, M. T., & Pyne, J. M. (2017). Examining the effects of alexithymia on the relation between posttraumatic stress disorder and over-reporting. *Psychological Trauma: Theory, Research, Practice, and Policy*, 9, 80–87.

Brand, B. L., Webermann, A. R., & Frankel, A. S. (2016). Assessment of complex dissociative disorder patients and simulated dissociation in forensic contexts. *International Journal of Psychiatry*, 49, 197–204.

Breslau, N., Davis, G. C., Andreski, P., & Peterson, E. L. (1991). Traumatic events and post-traumatic stress disorder in an urban population of young adults. *Archives of General Psychiatry*, 48, 216–222.

Brewin, C. R., Andrews, B., & Valentine, J. D. (2000). Meta-analysis of risk factors for post-traumatic stress disorder in trauma-exposed adults. *Journal of Consulting and Clinical Psychology*, 68, 748–766.

Briere, J. (1995). *Trauma Symptom Inventory professional manual.* Odessa, FL: Psychological Assessment Resources.

Briere, J. (2001). *Detailed Assessment of Posttraumatic Stress professional manual.* Lutz, FL: Psychological Assessment Resources.

Briere, J. (2011). *Trauma Symptom Inventory (TSI-2) professional manual* (2nd ed.). Odessa, FL: Psychological Assessment Resources.

Briere, J., & Runtz, M. (1989). The Trauma Symptom Checklist (TSC-33): Early data on a new scale. *Journal of Interpersonal Violence*, 4, 151–163.

Bruns, D., & Disorbio, J. M. (2003). *Battery for Health Improvement 2 manual.* Minneapolis, MN: Pearson Assessment Systems.

Bryant, R. A., Creamer, M., O'Donnell, M., Silove, D., McFarlane, A. C., & Forbes, D. (2015). A comparison of the capacity of DSM-IV and DSM-5 acute stress disorder definitions to predict posttraumatic stress disorder and related disorders. *Journal of Clinical Psychiatry*, 76, 391–397.

Buddin, W. H., Jr., Schroeder, R. W., Hargrave, D. D., Von Dran, E. J., Campbell, E. B., Brockman, C. J., ... Baade, L. E. (2014). An examination of the frequency of invalid forgetting on the test of memory malingering. *The Clinical Neuropsychologist*, 28, 525–542.

Bush, S. S., Heilbronner, R. L., & Ruff, R. M. (2014). Psychological assessment of symptom and performance validity, response bias, and malingering: Official position of the Association for Scientific Advancement in Psychological Injury and Law. *Psychological Injury and Law*, 7, 197–205.

Bush, S. S., Ruff, R. M., Troster, A. I., Barth, J. T., Koffler, S. P., Pliskin, N. H., ... Silver, C. H. (2005). Symptom validity assessment: Practice issues and medical necessity. *Archives of Clinical Neuropsychology*, 20, 419–426.

Butcher, J. N., Dahlstrom, W. G., Graham, J. R., Tellegen, A., & Kaemmer, B. (1989). *Manual for the restandardized Minnesota Multiphasic Personality Inventory: MMPI-2. An interpretive guide.* Minneapolis, MN: University of Minnesota Press.

Butcher, J. N., Graham, J. R., Ben-Porath, Y. S., Tellegen, A., Dahlstrom, W. G., & Kaemmer, G. (2001). *Minnesota Multiphasic Personality Inventory-2: Manual for administration and scoring* (2nd ed.). Minneapolis, MN: University of Minnesota Press.

Calhoun, P. S., Earnst, K. S., Tucker, D. D., Kirby, A. C., & Beckham, J. C. (2000). Feigning combat-related posttraumatic stress disorder on the Personality Assessment Inventory. *Journal of Personality Assessment*, 75, 338–350.

Carone, A. C., & Bush, S. S. (2013). *Mild traumatic brain injury: Symptom validity assessment and malingering.* New York: Springer.

Carroll, S., Abrahamse, A., & Vaiana, M. (1995). *The costs of excess medical claims for automobile personal injuries.* Santa Monica, CA: Rand.

Casey v. Pel-Air Aviation Pty Ltd; Helm v. Pel-Air Aviation Pty Ltd. (2015). *NSWSC 566 per Schmidt J.*

Chafetz, M. D. (2011). Reducing the probability of false positives in malingering detection of social security disability claimants. *The Clinical Neuropsychologist*, 25, 1239–1252.

Chafetz, M., & Abrahams, J. (2005, October). *Green's MACT helps identify internal predictors of effort in the Social Security disability exam. Paper presented at the annual meeting of the National Academy of Neuropsychology, Tampa, FL.*

Clark, A. L., Amick, M. M., Fortier, C., Milberg, W. P., & McGlinchey, R. E. (2014). Poor performance validity predicts clinical characteristics and cognitive test performance of OEF/OIF/OND veterans in a research setting. *The Clinical Neuropsychologist*, 28, 802–825.

Connor, D. F., Ford, J. D., Arnsten, A. F. T., & Greene, C. A. (2015). An update on posttraumatic stress disorder in children and adolescents. *Clinical Pediatrics*, 54, 517–528.

Costa, P. T., Jr., & McCrae, R. R. (1992). *NEO-PI-R professional manual.* Odessa, FL: Psychological Assessment Resources, Inc.

Crighton, A. H., Wygant, D. B., Applegate, K. C., Umlauf, R. L., & Granacher, R. (2014). Can brief measure effectively screen for pain and somatic malingering? Examination of the modified somatic perception questionnaire and pain disability index. *The Spine Journal*, 14, 2042–2050.

Daubert v. Merrell Dow Pharmaceuticals, Inc., 509 U.S. 579, 113 S. Ct. 2786 (1993).

Day, T. R., & Hall, R. C. W. (2016). PTSD and tort law. In C. R. Martin, V. R. Preedy, & V. B. Patel (Eds.), *Comprehensive guide to post-traumatic stress disorder* (pp. 231–244). Switzerland: Springer International Publishing.

DeClue, G. (2011). Harry Potter and the Structured Interview of Reported Symptoms? *Open Access Journal of Forensic Psychology*, 3, 1–18.

Delis, D. C., Kramer, J. H., Kaplan, E., & Ober, B. A. (2000). *California Verbal Learning Test — Second edition: CVLT-II.* San Antonio, TX: Pearson.

Demakis, G. J., & Elhai, J. D. (2011). Neuropsychological and psychological aspects of malingered posttraumatic stress disorder. *Psychological Injury and Law*, 4, 24–31.

Demakis, G. J., Gervais, R. O., & Rohling, M. L. (2008). The effect of failure on cognitive and psychological symptom validity tests in litigants with symptoms of post-traumatic stress disorder. *The Clinical Neuropsychologist*, 22, 879–895.

DeVito, S., & Jurs, A. (2015). An overreaction to a nonexistent problem: Empirical analysis of tort reform from the 1980s to 2000s. *Stanford Journal of Complex Litigation*, 3, 62–115.

Disorbio, J. M., & Bruns, D. (2002). *Brief Battery for Health Improvement 2 manual.* Minneapolis, MN: Pearson Assessment Systems.

Drogin, E. Y., Hagan, L. D., Guilmette, T. J., & Piechowski, L. D. (2015). Personal injury and other tort matters. In B. L. Cutler, & P. A. Zapf (Eds.), *APA handbook of forensic psychology: Individual and situational influences in criminal and civil contexts. 1.* (pp. 471–509). Washington, DC: American Psychological Association.

Dube, A. R., & Sadoff, R. L. (2015). Veterans affairs entitlement for service-connected disability caused by posttraumatic stress disorder. *The Journal of the American Academy of Psychiatry and the Law*, 43, 239–240.

Edens, J. F., Smith, S. T., Magyar, M. S., Mullen, K., Pitta, A., & Petrila, J. (2012). "Hired guns," "charlatans," and their "voodoo psychobabble": Case law references to various forms of perceived bias among mental health expert witnesses. *Psychological Services*, 9, 259–271.

Elhai, J. D., & Frueh, B. C. (2001). Subtypes of clinical presentations in malingerers of post-traumatic stress disorder: An MMPI-2 cluster analysis. *Assessment*, *8*, 75–84.

Elhai, J., Gold, S., Sellers, A., & Dorfman, W. (2001). The detection of malingered posttraumatic stress disorder with MMPI-2 fake bad indices. *Assessment*, *8*, 221–236.

Elhai, J. D., Naifeh, J. A., Zucker, I. S., Gold, S. N., Deitsch, S. E., & Frueh, B. C. (2004). Discriminating malingered from genuine civilian posttraumatic stress disorder: A validation of three MMPI-2 Infrequency scale (F, Fp, and Fptsd). *Assessment*, *11*, 139–144.

Elhai, J. D., Ruggiero, K. J., Frueh, B. C., Beckham, J. C., Gold, P. B., & Feldman, M. E. (2002). The Infrequency-Posttraumatic Stress Disorder scale (Fptsd) for the MMPI-2: Development and initial validation with veterans presenting with combat-related PTSD. *Journal of Personality Assessment*, *9*, 531–549.

Foa, E. B., McLean, C. P., Zang, Y., Zhong, J., Powers, M. B., Kauffman, B., ... Knowles, K. (2016a). Psychometric properties of the Posttraumatic Diagnostic Scale for DSM-5 (PDS-5). *Psychological Assessment*, *28*, 1166–1171.

Foa, E. B., McLean, C. P., Zang, Y., Zhong, J., Rauch, S., Porter, K., ... Kauffman, B. Y. (2016b). Psychometric properties of the Posttraumatic Stress Disorder Symptom Scale Interview for DSM-5 (PSSI-5). *Psychological Assessment*, *28*, 1159–1165.

Foote, W. E. (2017). Expert response #1. In G. Pirelli, R. A. Beattey, & P. A. Zapf (Eds.), *The ethical practice of forensic psychology: A casebook* (pp. 220–222). New York: Oxford University Press.

Ford, J. D., Grasso, D. A., Elhai, J. D., & Courtois, C. A. (2015a). Etiology of PTSD: What cases PTSD? In J. D. Ford, D. A. Grasso, J. D. Elhai, & C. A. Courtois (Eds.), *Posttraumatic stress disorder: Scientific and professional dimensions* (pp. 81–132) (2nd ed.). San Diego, CA: Academic Press.

Ford, J. D., Grasso, D. A., Elhai, J. D., & Courtois, C. A. (2015b). Forensic issues in the traumatic stress field. In J. D. Ford, D. A. Grasso, J. D. Elhai, & C. A. Courtois (Eds.), *Posttraumatic stress disorder: Scientific and professional dimensions* (pp. 459–502) (2nd ed.). San Diego, CA: Academic Press.

Freckelton, I. (2015). Compensability for PTSD under the Montreal convention: Psychiatric injury as a bodily injury. *Psychiatry, Psychology and Law*, *22*, 639–648.

Frederick, R. I. (1997). *Validity Indicator Profile manual.* Minnetonka, MN: NCS Assessments.

Frederick, R. I., Sarfaty, S. D., Johnston, D., & Powel, J. (1994). Validation of a detector of response bias on forced-choice test of nonverbal ability. *Neuropsychology*, *8*, 118–125.

Freeman, T., Powell, M., & Kimbrell, T. (2008). Measuring symptom exaggeration in veterans with chronic posttraumatic stress disorder. *Psychiatric Research*, *158*, 374–380.

Frueh, B. C., Elhai, J. D., Grubaugh, A., & Ford, J. D. (2012). *Assessment and treatment planning for PTSD.* Hoboken, NJ: John Wiley & Sons.

Frueh, B. C., Elhai, J. D., Grubaugh, A. L., Monnier, J., Kashdan, T. B., Sauvageot, J. A., ... Arana, G. W. (2005). Documented combat exposure of US veterans seeking treatment for combat-related post-traumatic stress disorder. *British Journal of Psychiatry*, *186*, 467–472.

Frye v. United States, 293 F. 1013, 34 ALR 145 (D. C. Cir. 1923).

General Electric v. Joiner, 522 U.S. 136 (1997).

Gervais, R. O., Ben-Porath, Y. S., Wygant, D. B., & Green, P. (2007). Development and validation of a Response Bias Scale (RBS) for the MMPI-2. *Assessment*, *14*, 196–208.

Gervais, R. O., Ben-Porath, Y. S., Wygant, D. B., & Sellbom, M. (2010). Incremental validity of the MMPI-2-RF over-reporting scales and RBS in assessing the veracity of memory complaints. *Archives of Clinical Neuropsychology*, *25*, 274–284.

Gold, S. D., Marx, B. P., Soler-Baillo, J. M., & Sloan, D. M. (2005). Is life stress more traumatic than traumatic stress? *Journal of Anxiety Disorders*, *19*, 687–698.

Goodwin, B. E., Sellbom, M., & Arbisi, P. A. (2013). Posttraumatic stress disorder in veterans: The utility of the MMPI-2-RF validity scales in detecting overreporting symptoms. *Psychological Assessment*, *25*, 671–678.

Gray, M. J., Elhai, J. D., & Briere, J. (2010). Evaluation of the atypical response scale of the Trauma Symptom Inventory-2 in detecting simulated posttraumatic stress disorder. *Journal of Anxiety Disorders*, *24*, 447–451.

Gray, M. J., Litz, B. T., Wang, J., & Lombardo, T. W. (2004). Psychometric properties of the Life Events Check List. *Assessment*, *11*, 330–341.

Green, P. (2004). *Manual for Medical Symptom Validity Test (MSVT) user's manual and program.* Edmonton: Green's.

Green, P. (2005). *Green's Word Memory Test for Window's: User's manual.* Edmonton, AB: Green's.

Green, P. (2008). *Manual for Nonverbal Medical Symptom Validity Test.* Edmonton, AB: Green's Publishing.

Green, P., Allen, L. M., & Astner, K. (1996). *The Word Memory Test [manual].* Durham, NC: Cognisyst.

Green, P., Rohling, M. L., Lees-Haley, P. R., & Allen, L. M., III (2001). Effort has a greater effect on test scores than severe brain injury in compensation claimants. *Brain Injury*, *15*, 1045–1060.

Greene, R. L. (2011). *The MMPI-2/MMPI-2-RF: An interpretive manual* (3rd ed.). New York: Allyn & Bacon.

Greiffenstein, M. F., Baker, W. J., & Gola, T. (1994). Validation of malingered amnesia measures with a large clinical sample. *Psychological Assessment*, *6*, 218–224.

Greve, K. W., Bianchini, K. J., Black, F. W., Heinly, M. T., Love, J. M., Swift, D. A., & Ciota, M. (2006). Classification accuracy of the Test of Memory Malingering in persons reporting exposure to environmental and industrial toxins: Results of a known-groups analysis. *Archives of Clinical Neuropsychology*, *21*, 439–448.

Greve, K. W., Heinly, M. T., Bianchini, K. J., & Love, J. M. (2009). Malingering detection with the Wisconsin Card Sorting Test in mild traumatic brain injury. *The Clinical Neuropsychologist*, *23*, 343–362.

Grey, B. J. (2015). The future of emotional harm. *Fordham Law Review*, *83*, 2605–2653.

Grey, B. J., & Marchant, G. E. (2016). Biomarkers, concussions, and the duty of care. *Michigan State Law Review*, *1911*, 1911–1981.

Grote, C. L., Kooker, E. K., Garron, D. C., Nyenhuis, D. L., Smith, C. A., & Mattingly, M. L. (2000). Performance of compensation seeking and non-compensation seeking samples of the Victoria Symptom Validity Test: Cross-validation and extension of a standardization study. *Journal of Clinical and Experimental Neuropsychology*, *22*, 709–719.

Guardado, P., Olivera, A., Rusch, H. L., Roy, M., Martin, C., Lejbman, N., ... Gill, J. M. (2016). Altered gene expression of the innate immune, neuroendocrine, and nuclear factor-kappa B (NF-κB) systems is associated with posttraumatic stress disorder in military personnel. *Journal of Anxiety Disorders*, *38*, 9–20.

Guise, B. J., Thompson, M. D., Greve, K. W., Bianchini, K. J., & West, L. (2014). Assessment of performance validity in the Stroop Color and Word Test in mild traumatic brain injury patients: A criterion-groups validation design. *Journal of Neuropsychology*, *8*, 20–33.

Guriel, J., Yanez, T., Fremouw, W., Shreve-Neiger, A., Ware, L., Filcheck, H., & Farr, C. (2004). Impact of coaching on malingered posttraumatic stress symptoms on the M-FAST and the TSI. *Journal of Forensic Psychology Practice*, *4*, 37–56.

Hall, R., & Hall, R. (2012). Compensation neurosis: A too quickly forgotten concept? *Journal of the American Academy of Psychiatry and the Law*, *40*, 390–398.

Heaton, R. K., Grant, I., & Matthews, C. G. (1991). *Comprehensive norms for an expanded Halstead-Reitan Battery: Demographic corrections, research findings, and clinical applications.* Odessa, FL: Psychological Assessment Resources, Inc.

Heaton, R. K., Smith, H. H., Jr., Lehman, R. A. W., & Vogt, A. T. (1978). Prospects for faking believable deficits on neuropsychological testing. *Journal of Consulting and Clinical Psychology*, *46*, 892–900.

Heilbronner, R. L., Sweet, J. J., Morgan, J. E., Larrabee, G. J., Millis, S. R., & Conference Participants (2009). American Academy of Clinical Neuropsychology Consensus Conference Statement on the neuropsychological assessment of effort, response bias, and malingering. *The Clinical Neuropsychologist*, *23*, 1093–1129.

Heilbrun, K., Grisso, T., & Goldstein, A. M. (2009). *Foundations of forensic mental health assessment.* New York: Oxford University Press.

Henry, G. K., Heilbronner, R. L., Algina, J., & Kaya, Y. (2012). Derivation of the MMPI-2-RF Henry-Heilbronner Index-r (HHI-r) scale. *The Clinical Neuropsychologist*, *27*, 509–515.

Henry, G. K., Heilbronner, R. L., Mittenberg, W., & Enders, C. (2006). The Henry-Heilbronner Index: A 15-item empirically derived MMPI-2 subscale for identifying probable malingering in personal injury litigants and disability claimants. *The Clinical Neuropsychologist*, *20*, 786–797.

Henry, G. K., Heilbronner, R. L., Mittenberg, W., Enders, C., & Roberts, D. M. (2008). Empirical derivation of a new MMPI-2 scale for identifying probable malingering in personal injury litigants and disability claimants: The 15-item Malingered Mood Disorder Scale (MMDS). *The Clinical Neuropsychologist*, *22*, 158–168.

Henry, G. K., Heilbronner, R. L., Mittenberg, W., Hellemann, G., & Myers, A. (2014). Development of the MMPI-2 cognitive complaints scale as an embedded measure of symptom validity. *Brain Injury*, *28*, 357–363.

Hickling, E. J., Taylor, A. E., Blanchard, E. B., & Devineni, T. (1999). Simulation of motor vehicle accident related PTSD: Effects of coaching with DSM-IV criteria. In E. J. Hickling, & E. B. Blanchard (Eds.), *The international handbook of road traffic accidents and psychological trauma: Current understanding, treatment, and law* (pp. 305–320). New York: Elsevier.

Hiscock, M., & Hiscock, C. K. (1989). Refining the forced-choice method for the detection of malingering. *Journal of Clinical and Experimental Neuropsychology*, *11*, 967–974.

Holdnack, J. A., & Drozdick, L. W. (2009). *Advanced clinical solutions for WAIS-IV and WMS-IV: Clinical and interpretive manual.* San Antonio, TX: Pearson.

Holowka, D. W., Marx, B. P., Gates, M. A., Litman, H. J., Ranganathan, G., Rosen, R. C., & Keane, T. M. (2014). PTSD diagnostic validity in veterans affairs electronic records of Iraq and Afghanistan veterans. *Journal of Consulting and Clinical Psychology*, *82*, 569–579.

Howe, L. L. S. (2012). Distinguishing genuine from malingered posttraumatic stress disorder in head injury litigation. In C. R. Reynolds, & A. M. HortonJr. (Eds.), *Detecting malingering during head injury litigation* (pp. 301–331) (2nd ed.). New York: Springer Science + Business Media.

Hyland, P., Shevlin, M., Elklit, A., Murphy, J., Vallière, F., & Garvert, D. W. (2017). An assessment of the construct validity of the ICD-11 proposal for complex posttraumatic stress disorder. *Psychological Trauma: Theory, Research, Practice, and Policy*, *9*, 1–9.

Inslicht, S. S., McCaslin, S. E., Metzler, T. J., Henn-Haase, C., Hart, S. L., Maguen, S., ... Marmar, C. R. (2010). Family psychiatric history, peritraumatic reactivity, and posttraumatic stress symptoms: A prospective study of police. *Journal of Psychiatric Research*, *44*, 22–31.

Institute of Medicine (2007). *PTSD compensation and military service.* Washington, DC: National Academic Press.

Institute of Medicine (2015). *Psychological testing in the service of disability determination.* Washington, DC: National Academic Press.

Jelicic, M., Merckelbach, H., Candel, I., & Geraets, E. (2007). Detection of feigned cognitive dysfunction using special malinger tests: A simulation study in naïve and coached malingerers. *The International Journal of Neuroscience*, *117*, 1185–1192.

Jovanović, A. A., Dunkić, B. D., & Milovanović, S. D. (2016). In C. R. Martin, V. R. Preedy, & V. B. Patel (Eds.), *Comprehensive guide to post-traumatic stress disorder* (pp. 77–96). Switzerland: Springer International Publishing.

Kane, A. W., & Dvoskin, J. A. (2011). *Evaluation for personal injury claims.* New York: Oxford University Press.

Keane, T. M., Malloy, P. F., & Fairbank, J. A. (1984). Empirical development of an MMPI subscale for the assessment of combat-related posttraumatic stress disorder. *Journal of Consulting and Clinical Psychology*, *52*, 888–891.

Kessler, R. C., Sonnega, A., Bromet, E., Hughes, M., & Nelson, C. B. (1995). Posttraumatic stress disorder in the National Comorbidity Survey. *Archives of General Psychiatry*, *52*, 1048–1060.

Kilpatrick, D. G., & McFarlane, A. C. (2014). Posttraumatic stress disorder and the law: Forensic consideration. In M. J. Friedman, T. M. Keane, & P. A. Resick (Eds.), *Handbook of PTSD: Science and practice* (pp. 540–554) (2nd ed.). New York: Guilford Press.

Kleinman, S. B., & Martell, D. (2015). Failings of trauma-specific and related psychological tests in detecting post-traumatic stress disorder in forensic settings. *Journal of Forensic Sciences, 60*, 76–83.

Kulas, J. F., Axelrod, B. N., & Rinaldi, A. R. (2014). Cross-validation of supplemental test of memory malingering scores as performance validity measures. *Psychological Injury and Law, 7*, 236–244.

Kumho Tire Ltd. v. Carmichael, 526 U.S. 137 (1999).

Kunst, M. J. J., & Winkel, F. W. (2015). PTSD symptom reporting and persistent malingering in recipients of state compensation for violent crime victimization: An exploratory study. *The Journal of Forensic Psychiatry & Psychology, 26*, 309–324.

Lareau, C. R. (2011). Posttraumatic stress disorder and acute stress disorder. In D. Faust (Ed.), *Coping with psychiatric and psychological testimony* (pp. 610–635) (6th ed.). New York: Oxford University Press.

Larrabee, G. J. (2003). Detection of malingering using atypical performance patterns on standard neuropsychological tests. *The Clinical Neuropsychologist, 17*, 410–425.

Larrabee, G. J. (2012a). A scientific approach to forensic neuropsychology. In G. J. Larrabee (Ed.), *Forensic neuropsychology: A scientific approach* (pp. 3–22) (2nd ed.). New York: Oxford University Press.

Larrabee, G. J. (2012b). Assessment of malingering. In G. J. Larrabee (Ed.), *Forensic neuropsychology: A scientific approach* (pp. 116–159) (2nd ed.). New York: Oxford University Press.

Larrabee, G. J. (2014). False-positive rates associated with the use of multiple performance and symptom validity tests. *Archives of Clinical Neuropsychology, 29*, 364–373.

Larrabee, G. J., Millis, S. R., & Meyers, J. E. (2009). 40 plus or minus 10, a new magical number: Reply to Russell. *The Clinical Neuropsychologist, 23*, 841–849.

Lee, T. T. C., Graham, J. R., Sellbom, M., & Gervais, R. O. (2012). Examining the potential for gender bias in the prediction of symptom validity test failure by MMPI-2 Symptom Validity Scale scores. *Psychological Assessment, 24*, 618–627.

Lees-Haley, P. R. (1992). Neuropsychological complaint base rates on personal injury claimants. *Forensic Reports, 5*, 385–391.

Lees-Haley, P. R., English, L. T., & Glenn, W. J. (1991). A Fake Bad Scale for the MMPI-2 for personal injury claimants. *Psychological Reports, 68*, 203–210.

Lezak, M. D. (1983). *Neuropsychological assessment* (2nd ed.). New York: Oxford University Press.

Lilienfeld, S. O., Thames, A. D., & Watts, A. L. (2013). Symptom validity testing: Unresolved questions, future directions. *Journal of Experimental Psychopathology, 4*, 78–87.

Lindley, S. E., Carlson, E. B., & Hill, K. R. (2014). Psychotic-like experiences, symptom expression, and cognitive performance in combat veterans with posttraumatic stress disorder. *The Journal of Nervous and Mental Disease, 202*, 91–96.

Logan, D. A. (2015). Juries, judges, and the politics of tort reform. *University of Cincinnati Law Review, 83*, 903–947.

Lu, P. H., Boone, K. B., Cozolino, L., & Mitchell, C. (2003). Effectiveness of the Rey Osterrieth Complex Figure Test and the Meyers and Meyers Recognition Trial in the detection of suspect effort. *The Clinical Neuropsychologist, 17*, 426–440.

Lyons, J. A., & Keane, T. M. (1992). Keane PTSD scale: MMPI and MMPI-2 update. *Journal of Traumatic Stress, 5*, 111–117.

Marion, B. E., Sellbom, M., & Bagby, R. M. (2011). The detection of feigned psychiatric disorders using the MMPI-2-RF overreporting validity scales: An analog investigation. *Psychological Injury and Law, 4*, 1–12.

Mason, L. H., Shandera-Ochsner, A. L., Williamson, K. D., Harp, J. P., Edmundson, M., Berry, D. T., & High, W. M. (2013). Accuracy of MMPI-2-RF validity scales for identifying feigned PTSD symptoms, random responding, and genuine PTSD. *Journal of Personality Assessment, 95*, 585–593.

McCaslin, S. E., Maguen, S., Metzler, T., Bosch, J., Neylan, T. C., & Marmar, C. R. (2016). Assessing posttraumatic stress related impairment and well-being: The Posttraumatic Stress Related Functioning Inventory (PRFI). *Journal of Psychiatric Research, 72*, 104–111.

McGrath, R. E., Kim, B. H., & Hough, L. (2011). Our main conclusion stands: Reply to Rohling et al. *Psychological Bulletin, 137*, 713–715.

McGrath, R. E., Mitchell, M., Kim, B. H., & Hough, L. (2010). Evidence for response bias as a source of error variance applied assessment. *Psychological Bulletin, 136*, 450–470.

McNally, R. J. (2003). Progress and controversy in the study of posttraumatic stress disorder. *Annual Review of Psychology, 54*, 229–252.

McNally, R. J., & Frueh, B. C. (2012). Why we should worry about malingering in the VA system: Comment on Jackson et al. *Journal of Traumatic Stress, 25*, 454–456.

Merten, T., Thies, E., Schneider, K., & Stevens, A. (2009). Symptom validity testing in claimants with alleged posttraumatic stress disorder: Comparing the Morel Emotional Numbering Test, the Structured Inventory of Malingered Symptomatology, and the Word Memory Test. *Psychological Injury and Law, 2*, 284–293.

Messer, J. M., & Fremouw, W. J. (2007). Detecting malingered posttraumatic stress disorder using the Morel Emotional Numbing Test-Revised (MENT-R) and the Miller Forensic Assessment of Symptoms Test (M-FAST). *Journal of Forensic Psychology Practice, 7*, 33–57.

Meyers, J. E., & Volbrecht, M. (1998). Validation of reliable digits for detection of malingering. *Assessment, 5*, 303–307.

Miller, H. A. (2001). *M-FAST: Miller-Forensic Assessment of Symptoms Test professional manual.* Odessa, FL: Psychological Assessment Resources.

Miller, L. (2015). *PTSD and forensic psychology: Applications to civil and criminal law.* Cham, Switzerland: Springer International Publishing.

Miller, L. S., Boyd, M. C., Cohn, A., Wilson, J. S., & McFarland, M. (2006, February). Prevalence of sub-optimal effort in disability applicants. *Paper presented at the annual meeting of the International Neuropsychological Society, Boston, MA.*

Millis, S. R. (1992). The recognition memory test in the detection of malingered and exaggerated memory deficits. *The Clinical Neuropsychologist, 6*, 406–414.

Millis, S. R., Putnam, S. H., Adams, K. M., & Ricker, J. H. (1995). The California Verbal Learning Test in the detection of incomplete effort in neuropsychological evaluation. *Psychological Assessment, 7*, 463–471.

Millon, T., Grossman, S., & Millon, C. (2015). *The Million Clinical Multiaxial Inventory-IV (MCMI-IV).* Minneapolis, MN: National Computer Systems.

Millon, T., Millon, C., Davis, R., & Grossman, S. (2009). *MCMI-III manual* (4th ed.). Minneapolis, MN: Pearson Education.

Mittenberg, W., Patton, C., Canyock, E. M., & Condit, D. C. (2002). Base rates of malingering and symptom exaggeration. *Journal of Clinical and Experimental Neuropsychology, 24*, 1094–1102.

Mol, S. S., Arntz, A., Metsemakers, J. F., Dinant, G. J., Vilters-van Montfort, P. A., & Knottnerus, J. A. (2005). Symptoms of post-traumatic stress disorder after non-traumatic events: Evidence from an open population study. *British Journal of Psychiatry, 186*, 494–499.

Mollica, R. F., Caspi-Yavin, Y., Bollini, P., Truong, T., Tor, S., & Lavelle, J. (1992). The Harvard Trauma Questionnaire. Validating a cross-cultural instrument for measuring torture, trauma, and posttraumatic stress disorder in Indochinese refugees. *Journal of Nervous and Mental Disease, 180*, 111–116.

Monson, E., Lonergan, M., Caron, J., & Brunet, A. (2016). Assessing trauma and posttraumatic stress disorder: Single, open-ended question versus list-based inventory. *Psychological Assessment, 28*, 1001–1008.

Morel, K. R. (1995). Use of the binomial theorem in detecting fictitious posttraumatic stress disorder. *Anxiety Disorders Practice Journal, 2*, 55–62.

Morel, K. R. (1998a). *Morel Emotional Numbing Test for Posttraumatic Stress Disorder: Manual.* Cantonment, FL: Author.

Morel, K. R. (1998b). Development and preliminary validation of a forced-choice test of response bias for posttraumatic stress disorder. *Journal of Personality Assessment, 70*, 299–314.

Morey, L. (1991). *Personality Assessment Inventory and professional manual.* Odessa, FL: Psychological Assessment Resources.

Morey, L. (2007). *Personality Assessment Inventory and professional manual* (2nd ed.). Lutz, FL: Psychological Assessment Resources.

Murrie, D. C., & Boccaccini, M. T. (2015). Adversarial allegiance among expert witnesses. *Annual Review of Law and Social Science, 11*, 37–55.

Murrie, D. C., Boccaccini, M. T., Guarnera, L. A., & Rufino, K. A. (2013). Are forensic experts biased by the side that retained them? *Psychological Science, 2*, 1889–1897.

Neal, T. M. S., & Brodsky, S. L. (2016). Forensic psychologists' perceptions of bias and potential correction strategies in forensic mental health evaluations. *Psychology, Public Policy, and Law, 22*, 58–76.

Neal, T. M. S., & Grisso, T. (2014). The cognitive underpinnings of bias in forensic mental health evaluations. *Psychology, Public Policy, and Law, 20*, 200–211.

Nelson, N. W., Hoelzle, J. B., McGuire, K. A., Ferrier-Auerbach, A. G., Charlesworth, M. J., & Sponheim, S. R. (2010). Evaluation context impacts neuropsychological performance of OEF/OIF veterans with reported combat-related concussion. *Archives of Clinical Neuropsychology, 25*, 713–723.

Nguyen, C. T., Green, D., & Barr, W. B. (2015). Evaluation of the MMPI-2-RF for detecting over-reported symptoms in a civil forensic and disability setting. *The Clinical Neuropsychologist, 29*, 255–271.

O'Donnell, M. L., Creamer, M. C., McFarlane, A. C., Silove, D., & Bryant, R. A. (2010). Does access to compensation have an impact on recovery outcomes after injury? *Medical Journal of Australia, 192*, 328–333.

O'Donnell, M. L., Grant, G., Alkemade, N., Spittal, M., Creamer, M., Silove, D., ... Studdert, D. M. (2015). Compensation seeking and disability after injury: The role of compensation-related stress and mental health. *Journal of Clinical Psychiatry, 76*, e1000–e1005.

O'Donnell, M. L., Holmes, A. C., Creamer, M. C., Ellen, S., Judson, R., McFarlane, A. C., ... Bryant, R. A. (2009). The role of post-traumatic stress disorder and depression in predicting disability after injury. *The Medical Journal of Australia, 190*, S71–S74.

Ogle, C. M., Rubin, D. C., & Siegler, I. C. (2016). Accounting for posttraumatic stress disorder symptom severity with pre-and posttrauma measures: A longitudinal study of older adults. *Clinical Psychological Science, 4*, 272–286.

Ogle, C. M., Rubin, D. C., & Siegler, I. C. (2017). Commentary — Pre- and posttrauma predictors of posttraumatic stress disorder symptom severity: Reply to van der Velden and van der Knaap (2017). *Clinical Psychological Science, 5*, 146–149.

Orth, U., & Wieland, E. (2006). Anger, hostility, and posttraumatic stress disorder in trauma-exposed adults: A meta-analysis. *Journal of Consulting and Clinical Psychology, 74*, 698–706.

Ozer, E. J., Best, S. R., Lipsey, T. L., & Weiss, D. S. (2003). Predictors of posttraumatic stress disorder and symptoms in adults: A meta-analysis. *Psychological Bulletin, 129*, 52–73.

Paulhus, D. L. (1998). *Paulhus Deception Scales (PDS).* Toronto, ON: Multi-Health Systems.

Persad, G. (2016). Law, science, and the injured mind. *Alabama Law Review, 67*, 1179–1216.

Poulos, A. M., Reger, M., Mehta, N., Zhuravka, I., Sterlace, S. S., Gannam, C., ... Fanselow, M. S. (2014). Amnesia for early life stress does not preclude the adult development of posttraumatic stress disorder symptoms in rats. *Biological Psychiatry, 76*, 306–314.

Proto, D. A., Pastorek, N. J., Miller, B. I., Romesser, J. M., Sim, A. H., & Kinck, J. F. (2014). The dangers of failing one or more performance validity tests in individuals claiming mild traumatic brain injury-related postconcussive symptoms. *Archives of Clinical Neuropsychology, 29*, 614–624.

Randolph, C. (1998). *Repeatable Battery for the Assessment of Neuropsychological Status (RBANS).* San Antonio, TX: Psychological Corporation.

Resnick, P. J. (1997). Malingering of posttraumatic disorders. In R. Rogers (Ed.), *Clinical assessment of malingering and deception* (pp. 130–152) (2nd ed.). New York: Guilford Press.

Resnick, P. J., West, S., & Payne, J. W. (2008). Malingering of posttraumatic disorders. In R. Rogers (Ed.), *Clinical assessment of malingering and deception* (pp. 109–127) (3rd ed.). New York: Guilford Press.

Rey, A. (1941). L'Examen psychologie dans les cas d'encephalopathie traumatique [Psychological examination in the case of traumatic encephalopathy]. *Archives de Psychologie, 23*, 286–340.

Rey, A. (1964). *L'examen clinique en psychologie.* Paris: Presses Universitaires de France.

Reynolds, C. R. (2016). Contextualized evidence and empirically based testing and assessment. *Clinical Psychology: Science and Practice, 23*, 410–416.

Richards, P. M., Geiger, J. A., & Tussey, C. M. (2015). The dirty dozen: 12 sources of bias in forensic neuropsychology with ways to mitigate. *Psychological Injury and Law, 8*, 265–280.

Robbennolt, J. K., & Hans, V. P. (2016). *The psychology of tort law.* New York: New York University Press.

Rogers, R. (1990). Development of a new classificatory model of malingering. *Bulletin of the American Academy of Psychiatry and the Law, 18*, 323–333.

Rogers, R. (1997). *Clinical assessment of malingering and deception* (2nd ed.). New York: Guilford Press.

Rogers, R., Bagby, R. M., & Dickens, S. E. (1992a). *Structured Interview of Reported Symptoms.* Odessa, FL: Psychological Assessment Resources.

Rogers, R., & Bender, S. D. (2012). Evaluation of malingering and related response styles. In R. K. Otto, & I. B. Weiner (Eds.), (2nd ed.). *Handbook of psychology: Forensic psychology, Vol. 11*. (pp. 517–540). New York: Wiley.

Rogers, R., Kropp, P. R., Bagby, R. M., & Dickens, S. E. (1992b). Faking specified disorders: A study of the Structured Interview of Reported Symptoms (SIRS). *Journal of Clinical Psychology, 48*, 643–648.

Rogers, R., Sewell, K. W., & Gillard, N. D. (2010). *Structure Interview of Reported Symptoms: Professional manual* (2nd ed.). Lutz, FL: Psychological Assessment Resources.

Rohling, M. L., Green, P., Allen, L. M., III, & Iverson, G. L. (2002). Depressive symptoms and neurocognitive test scores in patients passing symptom validity tests. *Archives of Clinical Neuropsychology, 17*, 205–222.

Rohling, M. L., Larrabee, G. J., Greiffenstein, M. F., Ben-Porath, T. S., Lees-Haley, P., Green, P., & Greve, K. W. (2011). A misleading review of response bias: Comment on McGrath, Mitchell, Kim, and Hough. *Psychological Bulletin, 137*, 708–712.

Rosen, G. M., & Grunert, B. K. (2012). Posttraumatic stress disorder in the workplace. In S. S. Bush, & G. L. Iverson (Eds.), *Neuropsychological assessment of work-related injuries* (pp. 163–186). New York: Guilford Press.

Rosen, G. M., & Taylor, S. (2007). Pseudo-PTSD. *Journal of Anxiety Disorders, 21*, 201–210.

Rubenzer, S. (2010). Review of the Structured Inventory of Reported Symptoms-2 (SIRS-2). *Journal of Forensic Psychology, 2*, 273–286.

Ruff, R. M., & Hibbard, K. M. (2003). *Ruff Neurobehavioral Inventory.* Lutz, FL: Psychological Assessment Resources.

Ruff, R. M., Klopfer, J., & Blank, J. (2016). Homogenous base rates for malingering in neuropsychological examination of litigants. *Psychological Injury and Law, 9*, 143–153.

Sadeh, N., Wolf, E. J., Logue, M. W., Lusk, J., Hayes, J. P., McGlinchey, R. E., ... Miller, M. W. (2016). Polygenic risk for externalizing psychopathology and executive dysfunction in trauma-exposed veterans. *Clinical Psychological Science, 4*, 545–558.

Saks, M. J., & Spellman, B. A. (2016). *The psychological foundations of evidence law.* New York: New York University Press.

Sandweiss, D. A., Slymen, D. J., Leardmann, C. A., Smith, B., White, M. R., Boyko, E. J., & Millennium Cohort Study Team (2011). Preinjury psychiatric status, injury severity, and postdeployment posttraumatic stress disorder. *Archives of General Psychiatry, 68*, 496–504.

Schlenger, W., & Kulka, R. A. (1989). *PTSD scale development for the MMPI-2.* Research Triangle Park, NC: Research Triangle Park Institute.

Schmand, B., de Sterke, S., & Lindeboom, J. (1999). *The Amsterdam Short-Term Memory test: Manual.* Lisse, Netherlands: Swets and Zeitlinger.

Schmidt, M. (1996). *Rey Auditory Verbal Learning Test: RAVLT: A handbook.* Los Angeles, CA: Western Psychological Services.

Schnyder, U., Moergeli, H., Trentz, O., Klaghofer, R., & Buddeberg, C. (2001). Prediction of psychiatric morbidity in severely injured accident victims at one-year follow-up. *American Journal of Respiratory and Critical Care Medicine, 164*, 653–656.

Schroeder, R. W., Baade, L. E., Peck, C. P., VonDran, E. J., Brockman, C. J., Webster, B. K., & Heinrichs, R. J. (2012). Validation of MMPI-2-RF validity scales in criterion group neuropsychological samples. *The Clinical Neuropsychologist, 26*, 129–146.

Sellbom, M., & Bagby, R. M. (2010). Detection of overreported psychopathology with the MMPI-2-RF validity scales. *Psychological Assessment, 22*, 757–767.

Sellbom, M., & Hopwood, C. J. (2016). Evidence-based assessment in the 21st century: Comments on the special series papers. *Clinical Psychology: Science and Practice, 23*, 403–409.

Sellbom, M., Toomey, J., Wygant, D., Kucharski, L., & Duncan, S. (2010). Utility of the MMPI-2-RF (restructured form) validity scales in detecting malingering in a criminal forensic setting: A known-groups design. *Psychological Assessment, 22*, 22–31.

Silverton, L. (1999). *Malingering Probability Scale (MPS) manual.* Los Angeles, CA: Western Psychological Services.

Slick, D. J., Hopp, G., Strauss, E., & Spellacy, F. J. (1996). Victoria Symptom Validity Test: Efficiency for detecting feigned memory impairment and relationship to neuropsychological tests and MMPI-2 validity scales. *Journal of Clinical and Experimental Neuropsychology, 18*, 911–922.

Slick, D. J., Hopp, G., Strauss, E., & Thompson, G. B. (1997). *Victoria Symptom Validity Test. Professional manual.* Odessa, FL: Psychological Assessment Resources.

Slick, D. J., Sherman, E. M. S., & Iverson, G. L. (1999). Diagnostic criteria for malingered neurocognitive dysfunction: Proposed standards for clinical practice and research. *The Clinical Neuropsychologist, 13*, 545–561.

Smith, D. M. (2011). Diagnostic liability: The legal history of posttraumatic stress disorder. *Temple Law Review, 84*, 1–65.

Stewart, R. W., Metzger, I. W., Davidson, T. M., Tuerk, P. W., & Young, J. (2016). A decision-tree approach to the assessment of posttraumatic stress disorder: Engineering

empirically rigorous and ecologically valid assessment measures. *Psychological Services, 13*, 1–9.

Suhr, J. A. (2015). *Psychological assessment: A problem-solving approach.* New York: Guilford Press.

Suhr, J. A., & Boyer, D. (1999). Use of the Wisconsin Card Sorting Test in the detection of malingering in student simulator and patient samples. *Journal of Clinical and Experimental Neuropsychology, 21*, 701–708.

Taylor, J. S. (2015). Neurolaw and traumatic brain injury: Principles for trial lawyers. *UMKC Law Review, 84*, 397–409.

Taylor, G. J., Bagby, R. M., & Parker, J. D. A. (1997). *Disorders of affect regulation: Alexithymia in medical and psychiatric illness.* New York: Cambridge University Press.

Thomas, K. M., Hopwood, C. J., Orlando, M. J., Weathers, F. W., & McDevitt-Murphy, M. E. (2012). Detecting feigned PTSD using the Personality Assessment Inventory. *Psychological Injury and Law, 5*, 192–201.

Tombaugh, T. N. (1996). *TOMM: The Test of Memory Malingering manual.* North Tonawanda, NY: Multi-Health Systems.

Toomey, J., Sellbom, M., & Wygant, D. (2009). The utility of MMPI-2-RF validity scales (Fr and Fp-r) in identifying criminal defendants who feign psychopathology on the SIRS. In R. Frederick (Ed.), *Validating tests without criterion groups. Symposium conducted at the American Psychological Law Society meeting. San Antonio, TX.*

Torres, L., Skidmore, S., & Gross, N. (2012). Assessment of post-traumatic stress disorder: Differences in standards and practice between licensed and board-certified psychologists. *Psychological Injury and Law, 5*, 1–11.

Trueblood, W., & Schmidt, M. (1993). Malingering and other validity considerations in the neuropsychological evaluation of mild head injury. *Journal of Clinical and Experimental Neuropsychology, 15*, 578–590.

van der Velden, P. G., & van der Knaap, L. M. (2017). Do measures of posttrauma factors better explain PTSD severity than pretrauma factors? An empirical reply to Ogle et al. (2016). *Clinical Psychological Science, 5*, 141–145.

Van Dyke, S. A., Millis, S. R., Axelrod, B. N., & Hanks, R. A. (2013). Assessing effort: Differentiating performance and symptom validity. *The Clinical Neuropsychologist, 27*, 1234–1246.

van Hout, M. S. E., Schmand, B., Wekking, E. M., & Deelman, B. G. (2006). Cognitive functioning in patients with suspected chronic toxic encephalopathy: Evidence for neuropsychological disturbances after controlling for insufficient effort. *Journal of Neurology, Neurosurgery, and Psychiatry, 77*, 296–303.

van Impelen, A., Merckelbach, H., Jelicic, M., & Merten, T. (2014). The Structured Inventory of Malingering Symptomatology (SIMS): A systematic review and meta-analysis. *The Clinical Neuropsychologist, 28*, 1336–1365.

Wakefield, J. D., & Horwitz, A. V. (2010). Normal reactions to adversity or symptoms of disorder? In G. M. Rosen, & B. C. Frueh (Eds.), *Clinician's guide to posttraumatic stress disorder.* Hoboken, NJ: Wiley.

Warrington, E. K. (1984). *Recognition Memory Test: Manual.* Windsor, Berkshire: NFER-Nelson.

Weathers, F. W., Blake, D. D., Schnurr, P. P., Kaloupek, D. G., Marx, B. P., & Keane, T. M. (2013b). *The Life Events Checklist for DSM-5 (LEC-5).* The National Center for PTSD at www.ptsd.va.gov.

Weathers, F. W., Keane, T. M., & Davidson, J. R. (2001). Clinician-Administered PTSD Scale: A review of the first ten years of research. *Depression and Anxiety, 13*, 132–156.

Weathers, F. W., Litz, B. T., Herman, D., Huska, J., & Keane, T. (1993, October). The PTSD Checklist (PCL): Reliability, validity, and diagnostic utility. *Paper presented at the Annual Convention of the International Society for Traumatic Stress Studies, San Antonio, TX.*

Weathers, F. W., Litz, B. T., Keane, T. M., Palmieri, P. A., Marx, B. P., & Schnurr, P. P. (2013a). *The PTSD Checklist for DSM-5 (PCL-5).* The National Center for PTSD at www.ptsd.va.gov.

Wechsler, D. (1997). *Wechsler Adult Intelligence Scale — Third edition.* San Antonio, TX: The Psychological Corporation.

Weiss, R. A., & Rosenfeld, B. (2016). Identifying feigning in trauma-exposed African immigrants. *Psychological Assessment.* http://dx.doi.org/10.1037/pas0000381.

Whiteside, D. M., Kogan, J., Wardin, L., Phillips, D., Franzwa, M. G., Rice, L., ... Roper, B. (2015). Language-based embedded performance validity measures in traumatic brain injury. *Journal of Clinical and Experimental Neuropsychology, 37*, 220–227.

Whitney, K. A., & Davis, J. J. (2015). The non-credible score of the Rey Auditory Verbal Learning Test: Is it better at predicting non-credible neuropsychological test performance than the RAVLT recognition score? *Archives of Clinical Neuropsychology, 30*, 130–138.

Widows, M., & Smith, G. P. (2005). *Structured Inventory of Malingered Symptomology (SIMS) and professional manual.* Odessa, FL: Psychological Assessment Resources.

Wisdom, N. M., Pastorek, N. J., Miller, B. I., Booth, J. E., Romesser, J. M., Linck, J. F., & Sim, A. H. (2014). PTSD and cognitive functioning: Importance of including performance validity testing. *The Clinical Neuropsychologist, 28*, 128–145.

Wolf, E. J., & Miller, M. W. (2014). The Minnesota Multiphasic Personality Inventory-2 Restructured Form and posttraumatic stress disorder: Forensic applications and considerations. *Psychological Injury and Law, 7*, 143–152.

Woods, S. P., Conover, E., Weinborn, M., Rippeth, J. D., Brill, R. M., Heaton, R. K., ... HIV Neurobehavioral Research Center (HNRC) Group (2003). Base rate of Hiscock Digit Memory Test failure in HIV-associated neurocognitive disorders. *The Clinical Neuropsychologist, 17*, 383–389.

Wooley, C. N., & Rogers, R. (2015). The effectiveness of the Personality Assessment Inventory with feigned PTSD: An initial investigation of Resnick's model of malingering. *Assessment, 22*, 449–458.

World Health Organization (2018). The International Classification of Diseases 11th Revision. Retrieved from http://www.who.int/classifications/icd/revision/en/.

Wrenger, M., Lange, C., Langer, M., Heuft, G., & Burgmer, M. (2008). Psychiatric disorders after an accident: Predictors and the influence of the psychiatric condition prior to an

accident. *European Psychiatry: The Journal of the Association of European Psychiatrists, 23,* 434–440.

Wrocklage, K. M., Schweinsburg, B. C., Krystal, J. H., Trejo, M., Roy, A., Weisser, V., ... Scott, J. C. (2016). Neuropsychological functioning in veterans with posttraumatic stress disorder: Associations with performance validity, comorbidities, and functional outcomes. *Journal of the International Neuropsychological Society, 22,* 1–13.

Wygant, D. B. (2017). Expert response #2. In G. Pirelli, R. A. Beattey, & P. A. Zapf (Eds.), *The ethical practice of forensic psychology: A casebook* (pp. 222–223). New York: Oxford University Press.

Wygant, D. B., Anderson, J. L., Sellbom, M., Rapier, J. L., Allgeier, L. M., & Granacher, R. P. (2011). Association of the MMPI-2 restructured form (MMPI-2-RF) validity scales with structured malingering criteria. *Psychological Injury and Law, 4,* 13–23.

Wygant, D. B., Ben-Porath, Y. S., Arbisi, P. A., Berry, D. T., Freeman, D. B., & Heilbronner, R. L. (2009). Examination of the MMPI-2 Restructured Form (MMPI-2-RF) validity scales in civil forensic settings: Findings from simulation and known group samples. *Archives of Clinical Neuropsychology, 24,* 671–680.

Wygant, D. B., Sellbom, M., Gervais, R. O., Ben-Porath, Y. S., Stafford, K. P., Freeman, D. B., & Heilbronner, R. L. (2010). Further validation of the MMPI-2 and MMPI-2-RF response bias findings from disability and criminal forensic settings. *Psychological Assessment, 22,* 745–756.

Young, G. (2010). Causes in the construction of causal law: A psycho-ecological model. *International Journal of Law and Psychiatry, 32,* 73–83.

Young, G. (2014a). *Malingering, feigning, and response bias in psychiatric/psychological injury: Implications for practice and court.* Dordrecht, Netherlands: Springer Science + Business Media.

Young, G. (2014b). Resource material for ethical psychological assessment of symptom and performance validity, including malingering. *Psychological Injury and Law, 7,* 206–235.

Young, G. (2014c). PTSD, endophenotypes, the RDoC, and the DSM-5. *Psychological Injury and Law, 7,* 75–91.

Young, G. (2015a). Malingering in forensic disability-related assessments: Prevalence 15 +/− 15%. *Psychological Injury and Law, 8,* 188–199.

Young, G. (2015b). Towards balanced VA and SSA policies in psychological injury disability assessment. *Psychological Injury and Law, 8,* 200–218.

Young, G. (2015c). Detection system for malingered PTSD and related response biases. *Psychological Injury and Law, 8,* 169–183.

Young, G. (2016a). PTSD in court I: Introducing PTSD for court. *International Journal of Law and Psychiatry, 49,* 238–258.

Young, G. (2016b). Admissibility of neuropsychological evidence. In S. S. Bush, G. J. Demakis, & M. L. Rohling (Eds.), *American Psychological Association Handbook of Forensic Neuropsychology.* Washington, DC: American Psychological Association.

Young, G. (2016c). Psychiatric/psychological forensic report writing. *International Journal of Law and Psychiatry, 49,* 214–220.

Young, G. (2016d). A broad ethics model for mental health. *Ethics, Medicine, and Public Health, 2,* 220–237.

Young, G. (2017). PTSD in court. Part II. Risk factors, endophenotypes, and biological underpinnings. *International Journal of Law and Psychiatry, 51,* 1–21.

Young, G., & Brodsky, S. L. (2016). The 4 Ds in working effectively in psychological injury and law. *Psychological Injury and Law, 9,* 278–281.

Young, G., Lareau, C., & Pierre, B. (2014). One quintillion ways to have PTSD comorbidity: Recommendations for the disordered DSM-5. *Psychological Injury and Law, 7,* 61–74.

Young, G., Merali, N. L., & Ruff, R. M. (2009). The Ruff Neurobehavioral Inventory: Validity indicators and validity. *Psychological Injury and Law, 2,* 53–60.

Young, J. C., Roper, B. L., & Arentsen, T. J. (2016). Validity testing and neuropsychology practice in the VA healthcare system: Results from recent practitioner survey. *The Clinical Neuropsychologist, 30,* 497–514.

Youngjohn, J. R., Burrows, L., & Erdal, K. (1995). Brain damage or compensation neurosis? The controversial post-concussion syndrome. *The Clinical Neuropsychologist, 9,* 112–123.