# DEFINING THE CONSTRUCT OF MALINGERED PTSD IN CIVIL LITIGATION: A CONFIRMATORY FACTOR ANALYSIS

by

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**ABSTRACT**

The possibility of feigned or malingered psychological symptoms is a crucial concern in personal injury litigation and mental health professionals are often faced with the task of identifying falsified or exaggerated presentations. Current recommendations in malingering assessment encourage the use of multiple methods, including both symptom-validity and performance-validity based tests. Supporting these recommendations, findings from neuropsychological research with compensation-seeking patients with neurocognitive conditions suggests the underlying structure of malingering consists of both performance-based and symptom-based latent factors. The present study aimed to extend these findings to a simulated personal injury paradigm, in which PTSD is alleged without concurrent physical injury (e.g., traumatic brain injury). As a part of larger research initiative, 411 undergraduate students were randomly assigned to one of four conditions, which outlined a simulated motor vehicle accident and subsequent psychological and cognitive symptoms. Experimental conditions varied on the degree of suggestion to malinger symptoms and the presence of litigation. Participants completed four widely-used measures for the purpose of detecting malingering (the SIMS, M-FAST, TSI-2 ATR and TOMM). Utilizing confirmatory factor analyses, the present study aimed to delineate the underlying factor structure of malingered PTSD by comparing measures of goodness-of-fit across three hypothesized latent factor models. Hypothesized models included (1) a single, “general badness” factor, (2) cognitive and psychiatric-based factors, and (3) SVT and PVT-based factors. Consistent with prior research, it was found that the two-factor, SVT and PVT-based model demonstrated best fit with the data. These results suggest that practitioners should utilize a variety of methods when PTSD is alleged in personal injury settings, including both PVT and SVT approaches, even in the absence of physical injuries.

*Keywords:* malingering, psychological injury, symptom validity testing, performance validity testing, posttraumatic stress disorder

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# Defining the Construct of Malingered PTSD in Civil Litigation: A Confirmatory Factor Analysis

In most United States jurisdictions, monetary damages can be awarded to plaintiffs in personal injury cases for emotional distress or psychological injury, even in the absence of physical harm (Foote & Lareau, 2013). Psychological injury can be alleged following a variety of experiences, including motor vehicle accidents, industrial disasters, workplace discrimination and harassment, and physical and sexual assaults (Taylor, Frueh, & Asmundson, 2007), and damages sought can include remuneration for psychological pain and suffering, past and future economic losses, and medical or psychiatric expenses. In personal injury cases, the plaintiff must demonstrate a causal connection between the experience of an event (such as a motor vehicle accident), and subsequent psychological or emotional sequalae that impair functioning or create distress (Melton, Petrila, Poythress, & Slobogin, 2007; Cohen & Smith, 2004; Young, Kane, & Nicholson, 2007). Actions or negligence on the part of the defendant need only to play an initiating, perpetuating, or exacerbating role in the injuries incurred in order to qualify as sufficient grounds for a personal injury claim (Ackerman & Kane, 1998). As such, mental health practitioners, who can speak to the development, perpetuation, and worsening of psychological conditions as a result of a traumatic experience, lend significant credibility to the claim of psychological injury (Melton et al., 2007; Foote & Lareau, 2013). As it is estimated that approximately 50% of all civil injury awards involve the experience of psychological pain and suffering (Vallano, 2013), mental health practitioners stand to have a substantial impact on the civil court system.

Due to the possibility of receiving monetary compensation for psychological injuries as a result of a tortious act, the extent to which plaintiffs may falsify or exaggerate psychiatric illness is deemed a “legitimate concern” in civil litigation (Peace & Masliuk, 2011, para. 4). There is substantial incentive for individuals to malinger, or fake, symptoms of mental injury in order to

receive greater damages. As the law requires objective indicia of mental injury, typically in the form of a formal diagnosis or professional opinion, mental health professionals are placed at the forefront of mental injury cases in order to substantiate the validity of symptoms (Melton et al., 2007). As such, it is necessary for mental health practitioners operating in this context to have access to reliable and valid methods of diagnosing conditions of mental injury, in addition to assessing for the possibility of malingered or feigned presentations, acknowledging that traditional forms of clinical assessment such as self-report of symptoms, are subject to response bias and deception.

**Malingering and Response Style**

Malingering, as defined by the *Diagnostic and Statistical Manual of Mental Disorders – 5th Edition* (DSM-5; American Psychiatric Association, 2013), is the "deliberate fabrication or gross exaggeration of psychological or physical symptoms for the fulfillment of an external goal." Due to possibility of receiving financial, legal, or personal incentives through litigation, malingering is presumed to be highly prevalent, and thus a source of significant concern, in personal injury cases (Peace & Masliuk, 2011; Melton et al., 2007). Based on survey research of forensic practitioners, malingering is estimated to occur in 15-17% of forensic cases (Rogers & Bender, 2013). In civil litigation specifically, it is estimated that 40% of cases involving neuropsychological testing suggest malingering has occurred (Larrabee, 2003; Young et al., 2007). Despite its presumed prevalence, the detection of malingered or falsified symptom presentations is considered one of the most challenging tasks for mental health practitioners (Resnick, West, & Payne, 2008).

Estimates of the prevalence of malingering are believed to be further obscured by individual differences in how persons may feign or exaggerate symptoms. In particular, it is noted that persons may vary in the degree to which they exaggerate or fabricate symptoms throughout the process of assessment, including across various time points (Berry & Nelson, 2010). Further, persons may be inconsistent in their false or exaggerated responding across

various measures and in response to measures that tap differing symptom clusters, including psychiatric/emotional, physical/somatic, or cognitive/neuropsychological (Berry & Nelson, 2010; Boone, 2009). Even with known feigners, it cannot be assumed that persons will exaggerate or falsify symptoms in all situations, or that persons who falsify one type of symptom will also falsify others (Rogers, 2008; Boone, 2009).

In the context of personal injury, one of the most frequently claimed conditions is posttraumatic stress disorder (PTSD), as it inherently requires the experience of a precipitating event (Hall & Hall, 2007). The nature of PTSD contributes to the difficulty in determining the validity of a clinical presentation, due to the subjectivity and heterogeneity of symptoms and the frequency of comorbid conditions (Purtle, Lynn, & Malik, 2016; Wisdom et al., 2014; Zoellner, Pruitt, Farach, & Jun, 2014). Using typical methods of self-report questionnaires and interviews, the symptoms of PTSD can be feigned believeably, despite the lack of advanced psychological knowledge, coaching, or practice. Arce, Farina, and Buela (2008) demonstrated that a sample of naïve participants was successfully capable of feigning PTSD as a psychological injury. Similarly, Lees-Haley and Dunn (1994) demonstrated that naïve subjects could produce believable PTSD symptom profiles, to the extent that 98.9% of subjects would have met criteria for PTSD on self-report questionnaires. Additionally, genuine sufferers of PTSD may present with severe and/or chaotic symptoms or persistent or recurrent dissociative symptoms, which further obscures attempts to detect malingered profiles (APA, 2013).

**Malingering Detection Strategies**

Due to the high degree of variability in individual approaches to response distortion, it has been argued malingering should not be conceptualized as a “monolithic” or stable construct (Rogers, 2008), but rather a construct comprised of numerous facets. With respect to this conceptualization, practitioners have long been advised to incorporate a variety of assessment methods and sources of information when malingering is suspected.

Researchers have attempted to identify common methods by which individuals attempt to malinger in order to develop effective detection strategies (Rogers & Bender, 2013; Berry & Nelson, 2010; Thomas & Fremouw, 2009; Arce et al., 2008; Peace & Masliuk, 2011). Rogers and Bender (2013) empirically identified two main approaches to malingering: unlikely presentations or amplified/improbable presentations. The goal of detection strategies geared toward unlikely presentations is to identify symptom endorsements or clusters that are improbable or rare, including presentations that are unlikely to occur naturally or in genuinely impaired patients. Thus, in this detection strategy, the presence or endorsement of specific symptoms can be a primary indicator of distortion. Within the improbable or amplified detection strategies, the severity of reported symptoms or proposed deficits is the focus of clinical attention. As such, this detection strategy focuses on the magnitude of symptom endorsements or clinical presentations as the primary indicator of feigning. In theory, it is presumed that those who are inclined to malinger will have insufficient knowledge of a clinical disorder or prominent methods of assessment in order to accurately portray symptoms. As a result, those who intend to distort or dishonestly report symptoms for the purposes of external gain will likely endorse highly unusual, potentially impossible symptoms or symptom combinations, or will exaggerate the severity of symptoms and deficits beyond that of a true clinical population.

Consistent with these two primary strategies of detection, several measures of malingering have been developed, most prominently symptom validity tests (SVTs) and performance validity tests (PVTs). It is noted that across the forensic and neuropsychological literature, the definitions for SVTs and PVTs vary. Following Larrabee's recommendations (2012; Egeland, Anderson, Sundseth, & Schanke, 2015), for the proposed study, the following definitions were applied:

**Symptom Validity Tests**

Symptom validity tests (SVTs) are measures that assess the accuracy of self-reported symptoms. SVTs can use a variety of the above detection strategies, often querying with

respect to infrequent or unusually severe symptom endorsements (Rogers, 2008). Additionally, SVTs may capitalize on atypical combinations of symptoms, by evaluating a variety of symptoms and experiences. Within the realm of SVTs, two main approaches have emerged: large, multidimensional inventories and brief, domain-specific measures (Guy, Kwartner, & Miller, 2006; Rogers & Bender, 2013).

Large, multidimensional inventories typically include validity and response style scales that are embedded in self-report measures of personality and psychopathology. The most commonly used and well-recognized measures of this type are the Minnesota Multiphasic Personality Inventory – 2 (MMPI-2; Butcher, Dahlstrom, Graham, Tellegen, & Kreammer, 1989) and the Personality Assessment Inventory (PAI; Morey, 2007; Boccacini & Brodsky, 1999). In each, examinees are asked to respond to a series of questions about symptom presentation, which subsequently capture a broad array of psychiatric experiences. In addition to mapping on to traditional clinical scales, item endorsements also map on to validity scales, which assess for inconsistent or defensive responding, exaggeration of symptoms, and biases of acquiescence/non-acquiescence (a tendency to agree or disagree with item content, regardless of the veracity of symptoms).

In addition to large, multidimensional inventories, domain-specific measures such as the Trauma Symptom Inventory – 2 (TSI-2; Briere, 2011) are commonly used in forensic evaluations of emotional injury. Unlike the broader inventories that cut across various clinical conditions, the TSI-2 assesses a narrower focus of symptoms and experiences consistent with traumatic stress. Like the larger, multidimensional inventories, the TSI incorporates embedded validity scales, such as the Atypical Responding Scale (ATR). Using familiar detection strategies, the TSI-2 ATR subscale addresses bizarre and unusual experiences, which are perceived to be atypical in genuine patient populations who experience PTSD (Elhai et al., 2005).

Contrasted with validity indices embedded in large, multidimensional and domain specific clinical inventories, dedicated malingering measures attempt to assess symptom exaggeration by focusing exclusively on endorsement of atypical, unusually severe, or highly unlikely symptoms by querying such symptoms directly (Parks, 2015). Examples of these malingering-specific measures include: the Structured Interview of Reported Symptoms (SIRS-2 Rogers, Bagby, & Dickens, 1992; Rogers, Sewell, & Gillard, 2010), the Miller Forensic Assessment of Symptoms Test (M-FAST; Miller, 2001), and the Structured Inventory of Malingered Symptomatology (SIMS; Widows & Smith, 2005). Dedicated measures of malingering are used frequently in forensic practice, as they are direct, brief, and empirically supported for the detection of feigned psychosis, epilepsy, trauma, and amnesia (Guy et al., 2006; Rogers & Bender, 2013; Parks, 2015).

While key advantages of SVTs include the breadth or specificity of information gathered, and the relative ease with which this information can be collected, disadvantages include the reliance on self-reports and thus susceptibility to coaching and falsification (Guy et al., 2006; Thomas & Fremouw, 2009). Another key disadvantage is the extent to which measures focus on specific domains of psychopathology, such as psychosis or memory and cognitive impairment. For example, the M-FAST (Miller, 2001) was originally designed to assess for feigned psychosis. Consistent with this design, the M-FAST features a predominance of items related to atypical or extreme symptoms of psychosis (Guy et al., 2006), with a smaller number of items associated with other conditions, such as depression. Authors have thus questioned the effectiveness of the M-FAST in detecting malingering across a larger spectrum of potential disorders (Vitacco, Rogers, Gabel, & Munizza, 2007; Christiansen & Vincent, 2012; Alwes et al., 2008; Guy et al., 2006).

Similar criticisms have been made regarding the SIRS, which was also designed to evaluate the veracity of reported psychotic symptoms (Melton et al., 2007). Survey research found that 26% of examiners conducting emotional injury evaluations have used the SIRS,

despite the recognition that in forensic settings, the feigned disorder is often a function of context. Thus, individuals are more likely to feign psychosis in criminal litigation settings, while PTSD and other affective conditions are more likely to be feigned in civil litigation settings (Boccaccini & Brodsky, 1999; Melton et al., 2007; Guy et al., 2006).

Lastly, issues have been raised as to whether some measures of malingering are suitable for populations with a history of trauma. While Christiansen and Vincent (2012) noted the effectiveness of the M-FAST in detecting malingering PTSD, other research has demonstrated that severely traumatized individuals rarely endorse items associated with unusual combinations of or "absurd" symptoms on measures such as the SIRS/SIRS-2 (Brand, McNary, Loewenstein, Kolos, & Barr, 2006; Rogers, Payne, Correa, Gillard, & Ross, 2009), suggesting malingering measures that utilize these detection strategies may be of limited value in personal injury settings when trauma is alleged. Notably, the SIRS-2 (Rogers et al., 2010) now includes a Trauma Index, designed to account for presentations including severe trauma history or dissociative symptoms (Brand, Tursich, Tzall, & Lowenstein, 2014). Despite this, evidence suggests the SIRS-2 continues to overclassify those with complex trauma histories.

**Performance Validity Tests**

Performance validity tests (PVTs), sometimes referred to as effort-based measures, are designed to assess the veracity of symptom presentation based on an examinee's actual performance on a given task. Typically used in neuropsychological contexts, these tasks are neurocognitive in nature, such as measures of memory, attention, and executive function. Similar to SVTs, PVTs exist as both standalone measures and embedded indicators within a larger battery. PVTs also use a variety of detection methods, including identifying unlikely, uncommon, or suboptimal performances, particularly when compared to genuinely impaired and normative samples. Several performance-based validity tasks capitalize on the floor effect, which operates under the principle that those attempting to feign or exaggerate symptoms will perform significantly worse than those with documented and genuine impairment (Rogers,

2008). Among neuropsychologists, the most frequently employed PVT measure that uses this strategy is the Test of Memory Malingering (TOMM; Tombaugh, 1996; Sharland & Gfeller, 2007). Of a sample of 145 patients with confirmed neurological impairments (including cognitive impairment, aphasia, traumatic brain injury, and dementia), all diagnostic groups averaged above the recommended cut-score (Tombaugh, 2006). Thus, poor performances on the TOMM, as indicated by a score below the cut-off, are suggestive of feigned impairment.

In the vein of performance validity tests, some have attempted to apply principles of emotional and cognitive processing to the detection of malingered PTSD. PTSD is associated with hypervigilance to threat, attempts to avoid stimuli associated with the index event, and alterations in memory, attention and concentration, and processing speed (APA, 2013; Merten, Thies, Schneider, & Stevens, 2009). In particular, those with PTSD are presumed to have difficulty diverting attention away from potentially threatening stimuli and have greater recall of words or images associated with their trauma. Capitalizing on these features of PTSD, researchers had hoped the development of assessments that capture the cognitive processing deficits of PTSD would allow for more accurate malingering detection strategies, as it stands to reason that cognitive measures are less subject to response bias and intentional deception. For example, Thomas and Fremouw (2009) demonstrated that a modified Stroop task and a free recall task involving words associated with trauma were capable of differentiating between genuine PTSD patients and feigners; however, these authors note a significant variability in PTSD presentations which weakens the diagnostic utility of this task.

Another promising PVT is the Morel Emotional Numbing Test (MENT; Morel, 1998) which is specifically designed to assess feigning of posttraumatic stress disorder by means of an emotional Stroop paradigm. Messer and Fremouw (2007) demonstrated this measure as effective in distinguishing between honest responders with PTSD and coached malingerers, noting that malingerers exhibited over five times as many errors as genuine patients. While a promising PVT, more research is needed to support its utility across populations and general

applicability, as it is noted the instructions of the task may induce exaggerated performances (Messer & Fremouw, 2007; Pederson, Schwent Shultz, Roper, Crucian, & Crouse, 2014). Across these types of measures, the heterogeneity of PTSD and the potential for distinct, yet genuine subgroups of PTSD patients suggest the development of gold standard assessments based on cognitive processing principles will be difficult. Thomas and Fremouw (2009) remark that, currently, no single tool possesses the ability to accurately and consistently detect feigned PTSD.

**Assessment of Malingering**

In the general assessment of malingering in civil cases, mental health practitioners are encouraged to employ a combination of tests and sources of information, including broadband inventories with embedded validity scales, domain-specific measures, assessments of cognitive and neuropsychological functioning, behavioral observations, interviews, and collateral information through record-review and third-person reports (Resnick et al., 2008; Vincent, Stewart, Hays, & Garner, 2016). Clinically significant scores on discrete malingering indicators, in addition to inconsistencies and inaccuracies across sources of information, are deemed suggestive of a falsified or exaggerated presentation (Slick, Tan, Strauss, & Hultsch, 2004).

When it comes to malingered PTSD, however, there is no “gold standard” for assessment (Gray, Elhai, & Briere, 2010; Neal & Grisso, 2014), and typical methods appear most suited to distinguish between genuine and feigned psychiatric *distress*, rather than PTSD in particular. Some scholars have suggested that specific measures of malingering may capture a general, “badness” factor, as indicated by exaggerated distress disambiguated from any particular condition. In this conceptualization, exaggerated distress, more broadly, is deemed reflective of general dishonesty of a presentation, regardless of the specific symptoms endorsed (Rogers, 2008; Egeland et al., 2015). Congruent with this approach, it has been demonstrated that certain measures of malingering perform poorly when implemented to detect the falsification or exaggeration of a specific disorder (Gray et al., 2010; Taylor et al., 2007). Rather,

it is argued these measures are more effective at detecting the falsified presentation of general psychopathology, as opposed to the falsification of any particular condition (Guy et al., 2006).

In the context of PTSD, there are unique challenges with the general "badness" approach to malingering detection. Evidence suggests that existing measures are limited in the degree to which they can distinguish between malingered PTSD and severe, yet genuine, distress associated with PTSD (Hall & Hall, 2007). Klotz-Flitter, Elhai, and Gold (2003) found, in a sample of victims of adult sexual abuse, 20 percent of respondents on the MMPI-2 Infrequency (F) validity scale had a T-score greater than 100, approximately 5 standard deviations above the mean. Thus, these authors assert that significant elevations on validity scales (e.g., the F scale on the MMPI-2), which may be interpreted as indicative of dishonesty, may actually be reflective of severe, genuine pathology or distress for trauma victims (Klotz-Flitter, Elhai, & Gold, 2003). Elevations such as these may stem from a "cry for help," either consciously or unconsciously, or may result from the presence of dissociative episodes, which are not uncommon in PTSD (Carlson, Dalenberg, & McCade-Montez, 2012; Lanius, Vermetten, Loewenstein, Brand, Schmahl, Bremner, & Spiegel, 2010; APA, 2013). In addition to typical PTSD symptomatology, extreme distress or dissociation may lead to "chaotic" or atypical, but genuine, profiles. On domain-specific measures of malingering, this effect is also true, as the SIRS/SIRS-2 has been found to over-classify individuals with a history of trauma (Brand, Tursich, Tzall, & Lowenstein, 2014). Thus, it is clear that SVTs currently possess limitations when it comes to the assessment of PTSD specifically. In light of these limitations, many authors stress the importance of being cognizant of the characteristics of a test prior to use, and to being aware of the extent to which measures are appropriate for the given situation, presentation, and individual (Berry & Nelson, 2010; Rogers & Bender, 2013).

PVTs also pose unique challenges when used in the assessment of PTSD. As outlined by Wisdom and colleagues (2014), few studies have specifically addressed the use of PVTs in the assessment of cognitive functioning associated with PTSD. Despite an abundance of

studies demonstrating a relationship between PTSD and cognitive sequalae in domains such as memory, attention, and executive function (Brandes, Ben-Schachar, Gilboa, Bonne, Freedman, & Shalev, 2002), few studies have accounted for the possible effects of response bias (Wisdom et al., 2014; Demakis, Gervais, & Rohling, 2008). Wisdom and colleagues (2014) showed that, when taking into consideration performance on the Word Memory Test (a memory-based PVT; Green, 2003), there were no significant differences between military veterans, all of whom had a history of traumatic brain injury (TBI), with and without PTSD on measures of cognitive functioning. These findings highlight the need for assessment of performance validity when PTSD is alleged, particularly in settings where possible secondary gain is present (e.g., worker's compensation, civil litigation). Curiously, the actual use of PVTs in personal injury cases, particularly when concurrent head injury is not sustained, is less prevalent. Based on a survey of 80 emotional injury evaluators, no PVT was listed as a top-ten most frequently used measure (Boccaccini & Brodsky, 1999).

Consensus from neuropsychologists encourages using both SVTs and PVTs when malingering is suspected or possible, given the presence of secondary gain (Egeland et al., 2015; Heilbronner, Sweet, Morgan, Larrabee, & Millis, 2009). This recommendation derives from several studies that demonstrate the divergence between PVTs and SVTs, specifically when evaluating for malingering in the context of cognitive impairment.

Greiffenstein and colleagues (1995) found that PVT and SVT scores were not significantly associated in a sample of patients with brain injury who had been referred for evaluation in the context of personal injury litigation. In this study, a subsequent factor analysis did not support a unitary conceptualization of malingering, in which there is a single, general factor. Rather, these findings suggest malingering is best conceptualized as consisting of two unique factors, reflective of performance validity and symptom validity.

Using a sample of individuals presenting with PTSD in a medico-legal context, Demakis, Gervais, and Rohling (2008) found elevated endorsements of psychological symptoms (as

measured by the MMPI-2) were not significantly associated with failure on a PVT. Likewise, they found that poorer performances on tests of neuropsychological functioning, including the TOMM, were not reliably related to “failure” on SVTs, as indicated by invalidated profiles.

Ruocco and colleagues demonstrated that of a sample of 105 patients referred for neuropsychological assessment, of whom 94% had experienced a TBI, those who feigned impairment on PVTs rarely also exaggerated or falsified endorsements on measures of psychological distress (2008). Using factor analysis, Ruocco and colleagues found a two-factor solution best accounted for the variance in the data, with one factor representing exaggerated neuropsychological function and another representing exaggerated psychiatric symptoms. These findings support recommendations to use a variety of malingering measures, which tap different constructs via different methods. This recommendation has been extended to include possible feigned PTSD, particularly in cases in which cognitive symptoms are alleged (Wisdom et al., 2014; Demakis & Elhai, 2011).

In addition to using both PVTs and SVTs, recommendations from neuropsychology suggest that validity should be tested across symptom domains, including cognitive functioning, somatic or physical symptom complaints, and psychological distress. This recommendation is particularly relevant in the context of PTSD, which is a condition comprised of physiological, cognitive, and affective symptoms (APA, 2013). However, as noted above, PTSD poses challenges for malingered cognitive assessment. For example, Alwes, Clark, Berry and Grancher (2008) found that the SIMS, while sensitive to feigned psychological distress, was less sensitive to feigned neurocognitive impairment, when using a sample of compensation seekers, some with concurrent head injury. Consistent with this finding, van Impelen and colleagues (2014) remark that the SIMS “cannot be relied upon” when attempting to detect feigned cognitive impairment, thus calling into question its utility as a measure of general dishonesty in PTSD cases where cognitive symptoms are also alleged. Currently, there are few standalone

measures of malingering that capture cognitive and physical symptom validity (Egeland et al., 2015).

Authors Egeland and colleagues articulate that the *modes* by which information is collected have, at times, been erroneously assumed as tapping into different *types* of symptoms (2015). In essence, the authors highlight the difference between method of assessment and domain of symptom assessed. With a sample of patients presenting with either verified or unverified brain injury, Egeland and colleagues (2015) demonstrated the difference between domain and method through a series of confirmatory factor analyses, which tested the fit between four hypothesized models of factor structure, including (1) one general malingering factor, (2) cognitive malingering and psychological malingering, (3) amnesia and psychological exaggeration, and (4) SVT and PVT factors. In contrast to a "general badness" factor or unitary conceptualization of malingering, results indicated that a two-factor model, comprised of SVT and PVT indicators, best fit the data (Egeland et al., 2015). It is noted that in this study, all participants had varying degrees of incentives to feign or exaggerate symptoms, with only 54% engaged in active litigation, and all alleged some form of neurocognitive impairment as a result of brain injury.

**Construct Validity and CFA**

Improved malingering detection requires a deeper understanding of the underlying construct of malingering, such that more comprehensive and refined methods can be developed. Unlike some variables, like height, malingering cannot be directly observed or tested. As such, researchers and clinicians must rely on indicators as a means of gaining information about unobservable variables, termed latent variables or factors (Schreiber, Nora, Stage, Barlow, & King, 2006). Observed variables or indicators can include the responses to self-report symptom items or performances on PVTs. Confirmatory factor analysis (CFA) is a theory-driven, statistical technique which allows one to test hypothesized relationships between observed and unobserved variables. As a confirmatory technique, the researcher begins with a

theorized model that estimates the population covariance matrix. Then, through a planned analysis, the theoretical model is compared to the observed covariance matrix. Ideally, there would be minimal discrepancy between the theorized and the observed matrices, which lends support to the validity of the theory. Discrepancies between theorized models and observed data are evaluated through the use of goodness-of-fit indices, which quantify the degree of model fit.

**Summary and Present Study**

The research review described above emphasizes two key points. First, assessment of malingering, particularly in the context of PTSD, is challenging. Part of this challenge stems from variation in how individuals malinger and the methods by which measures of malingering attempt to capture falsification or exaggeration (Berry & Nelson, 2010; Rogers, 2008). Secondly, researchers have emphasized the need to conceptualize malingering as a non-unitary construct, that is composed of either method-based or symptom domain-based facets (Greiffenstein, Gola, & Baker, 1995; Egeland et al., 2015; Ruocco et al., 2008; Demakis et al., 2008). These facets, when assessed in combination, theoretically tap into the latent variable of "malingering."

While a body of research has explored the relationship between PVTs and SVTs in compensation-seeking individuals with a history of traumatic brain injury, little has explored the isolated effect of psychological impairment without co-occurring brain injury. As PTSD is a condition comprising both emotional, physical, and cognitive symptoms, further investigation is warranted to determine if a similar factor structure exists within the construct of malingered PTSD. Due to the prevalence of personal injury cases in which PTSD is alleged (Stone, 1993), there is substantial need for valid measures of malingering that adequately assess the larger construct of malingered PTSD.

The present study aimed to expand upon previous research by evaluating the underlying factor structure of malingered PTSD using a simulated personal injury paradigm. Using a

confirmatory factor analytic approach, we evaluated the degree of fit between observed data and theorized relationships of SVT and PVT-based methods of malingering assessment. The current study served as a replication and extension of work conducted by Egeland and colleagues (2015). The present study aimed to replicate this work by testing the degree of fit between three hypothesized models of malingering, and to extend this work by using a sample of simulated personal injury litigants in which physical injury, such as traumatic brain injury, was not alleged.

As sustained head injury is not a necessary condition for the development of PTSD, and not all individuals who experience a trauma experience concurrent physical injury (e.g. sexual harassment), there was a question as to whether either two-factor model of SVT and PVT, or cognitive malingering and psychological malingering, would fit the data in a malingered PTSD paradigm. Rather, it was considered possible that a single-factor model, reflecting a general "badness" conceptualization, would best fit the data. Alternatively, as PTSD is a condition for which cognitive and physical symptoms are prominent (e.g., amnesia for the event, concentration difficulties), thus, it could also be hypothesized that there would be a dissociation between specific symptom domains and method of assessment. In the present study, all three models were tested.

The following hypotheses are proposed:

H1: First, it was expected that a one-factor solution, consistent with a general "badness" model, would not adequately fit the data.

H2: Secondly, it was expected that a two-factor solution, reflective of malingered psychiatric symptoms and malingered cognitive symptoms, would demonstrate better fit to the data than the single-factor model.

H3: Lastly, it was hypothesized that a two-factor solution, reflective of performance validity and symptom validity tests, would demonstrate the best fit to the data, over and above that of the domain-based model.

## Method

### Participants

Participants were recruited as a part of a larger research initiative investigating the effect of suggestion to malinger and the utility of measures of malingering in a simulated, civil litigation paradigm. All participants were recruited from a large, public, Southwestern university through the university's online recruitment pool. Participants were compensated for their participation in the form of extra credit hours to be applied to undergraduate courses.

#### *Eligibility Criteria*

Participants were screened for initial eligibility through the online recruitment pool. Potential participants were eligible for the study if: they were 18 years of age, enrolled in an undergraduate or post-baccalaureate program, and sufficiently proficient in English. English proficiency was necessary to complete measures administered in English.

### Design and Procedure

Participants completed the research protocol in a lab space on the university campus. All self-report measures, in addition to pre- and post-questionnaires, were administered via an online survey platform. In-person assessments (i.e., the TOMM and M-FAST) were administered in a private office space by trained undergraduate and graduate research assistants. Following informed consent, participants completed the pre-questionnaire and self-report measures of prior trauma exposure and emotional distress. Participants were then instructed to read one of four experimental conditions (detailed in Appendix B), which were randomly assigned via the online survey platform. All researchers were blinded to the instructional conditions of the participants. Participants were instructed to respond to the administered measures as if they were the person in the vignette. Per standard administration, the M-FAST and TOMM were presented in person by trained research assistants. The SIMS and TSI-2 were administered via computer, along with pre- and post-questionnaires. All post-manipulation measures were presented in a random order, to account for possible ordering

effects. After completion of all assessment measures, participants completed the post-questionnaire, were debriefed as to the nature of the study, and excused. The total protocol took approximately 3 hours of in-person assessment time.

**Measures**

**Pre-Questionnaire.** Participants were first presented with a 52-item questionnaire developed for the current study (Appendix A). The pre-questionnaire collected demographic and background information about the participants, including age, gender, marital status, ethnic identification, education level and college major, occupational status, voter registration status, and history of military involvement. This questionnaire also included information about past motor vehicle accident and litigation involvement. Additionally, participants were asked to answer questions about their past experience with the mental health profession, including diagnoses, evaluations, and treatments.

**Trauma Symptom Inventory – 2 – Alternative**, **Atypical Responding Scale** (TSI-2-A ATR; Briere, 2011; Briere, 1995). The TSI-2-A is a 126-item, broadband self-report rating scale of trauma-related symptomatology and experiences. TSI-2-A is an alternative form of the longer TSI-2 that does not include scales assessing symptoms common in victims of sexual assault. Subscales address a variety of affective, cognitive, behavioral, and physiological experiences commonly associated with traumatic reactions. Items are rated on a 4-point rating scale in which participants indicate how frequently an experience has occurred, ranging from 0 (“has not happened at all”) to 3 (“has happened often in the last 6 months”). In addition to clinical scales and subscales, the TSI-2-A yields two validity indices, the Response Level and Atypical Responding scales (RL and ATR). The TSI-2 RL scale captures indiscriminate responding by utilizing 8 items that are unlikely to receive a 0 response in normative populations. The RL scale addresses the extent to which respondents deny experiences that others would most likely endorse (e.g., “making a mistake”), and as such is not incorporated in the current analyses related to symptom exaggeration or over-endorsement. The TSI-2 ATR scale consists of 8 items

and addresses a respondent's tendency to over-endorse trauma symptoms even compared to genuine patients with severe pathology. A high score on the TSI-2 ATR scale may be reflective of generalized over-endorsement on all items, specific over-endorsement on items associated with PTSD, random responding, or extreme levels of distress. Internal consistency estimates for the ATR is acceptable at .72. Discriminant Function Analysis has indicated that the TSI-2 ATR had good predictive validity (sensitivity = .75 and specificity = .74) for detecting malingered PTSD (Gray et al., 2010).

**Test of Memory Malingering** (TOMM; Tombaugh, 1996). The TOMM is a three-part, performance-based measure consisting of three trials of 50 items each. It is designed to assess exaggeration of memory impairment and is frequently used as a proxy for testing effort and engagement in neuropsychological evaluations. In the first trial, subjects are presented with a series of 50-line drawings and asked to commit the presented drawings to memory. Then subjects are asked to identify which drawings they saw earlier, among a set of two items (in which one was presented prior and one was not). This process is repeated for Trial 2. Depending on the individual's score on Trial 2, he or she may be presented with the third part, a Retention trial. The TOMM has demonstrated utility with many populations, including true and feigning brain injury litigants, patients with genuine neurological conditions, and elderly patients. Scores less than the designated cut-off for Trial 2 call into question the validity of the test-taker's performance, as the TOMM operates by means of the floor effect. Individuals attempting to feign impairment often perform more poorly than individuals with genuine impairment. Individual item scores on the TOMM Trial 2 are dichotomously scored as either 0 = "incorrect" and 1 = "correct." A high score is interpreted as a more genuine performance.

**Structured Inventory of Malingered Symptomatology** (SIMS; Widows & Smith, 2005; Smith & Burger, 1997). The SIMS is a 75-item self-report, screening instrument designed to detect exaggerated or feigned psychopathology and cognitive dysfunction. The SIMS yields a total score that reflects generally feigned presentations, as well as five non-overlapping 15-item

subscales including: psychosis (P), neurologic impairment (NI), amnestic disorders (AM), low intelligence (LI), and affective disorders (AF; Widows & Smith, 2005). The SIMS has been validated on a wide range of clinical, forensic, and community samples. Using the total score, the SIMS has a sensitivity of 95% and a specificity of 88%. Individual items are scored dichotomously as either 1 = “true” or 0 = “false.” Higher total scores are more suggestive of feigned or exaggerated psychological symptoms or cognitive impairment.

**Miller Forensic Assessment of Symptoms Test** (M-FAST; Miller, 2001). The M-FAST is a 25-item structured interview designed as a screening measure of malingered psychopathology. The M-FAST is a widely used forensic assessment measure of response style. It consists of seven subscales which are based on empirically derived strategies of feigning. The subscales measure: discrepancies between observed and reported symptoms (RO), extreme symptomatology (ES), rare combinations of symptoms (RC), unusual hallucinations (UH), unusual symptom course (USC), overly negative self-image (NI), and suggestibility (S). For some scales, scoring depends on the observations of the examiner, as a discrepancy or change between examinee endorsement and physical behavior is indicative of dishonest responding (e.g., RO and S). Items are dichotomously scored, in which *endorsement of the item* or *discrepancy between report and behavior* = 1 and *denial* or *absence of discrepancy on the item* = 0. Total scores higher than the recommended cut-off are suggestive of a feigned or exaggerated presentation. While the total score is the most frequently used, four subscales (UH, RC, RO, and ES) have demonstrated ability to discriminate between honest responders, known malingerers, and those instructed to malinger. The M-FAST was validated using known-groups clinical samples and simulation non-clinical samples. Inter-rater reliability is reported as exceeding 99% (Miller, 2001). Reliability estimates for the total score include .93 for clinical samples and .92 for non-clinical samples. Analyses of criterion, convergent and discriminant validity have been conducted using the SIRS and MMPI-2 and were found to be

acceptable. It is noted some scales are made up of a single item (i.e., USC, NI, and S). As such, these scales were not incorporated into the models of the present study.

**Post-Questionnaire.** After completing the primary measures of the study, participants completed a 15-item post-questionnaire designed to evaluate perceptions of the study and the extent to which participants felt they faithfully responded to the measures (Appendix C).

**Instructional Conditions**

As a part of a larger research initiative investigating the role of litigation and suggestion to malinger in a personal injury paradigm, participants were randomly assigned to one of four instructional conditions. All instructional conditions are detailed in a written vignette, which describes a fictional scenario in which the participant had recently been involved in a motor vehicle accident. As approximately 57 percent of all tort claims in the United States are automobile accidents (Langton & Cohen, 2008), the choice of an accident of this type is appropriate to simulate a common personal injury paradigm. Per the vignette, following the accident, the participant continues to experience psychological and cognitive symptoms. Symptoms included: jumpiness/nervousness while driving, avoidance of the accident site and talking about the accident, bad dreams about the accident, fogginess, exaggerated startle response, and difficulty concentrating and remembering things. All participants were informed that they did not sustain long-term physical injuries as a result of the fictional accident, nor were they experiencing physical pain. It is noted that simulation designs are common in malingering assessment literature (see van Impelen et al. 2014). Limitations to simulation designs have been detailed in Rogers (2008). Contrasting these limitations, however, benefits of a simulation design include the possibility that undergraduate participants are more informed about conditions such as PTSD through their coursework, and thus might operate as more sophisticated malingerers than samples derived from the community (Gray et al., 2010).

Vignettes varied in terms of litigation involvement and the presence of the suggestion to feign (Christiansen & Vincent, 2012; Burris-Garner, 2017). Participants were informed that they

were either: (1) asked to complete an evaluation at the request of a physician following the conclusion of a lawsuit (Condition 1: post-litigation, no suggestion), (2) asked to complete an evaluation at the request of a physician (Condition 2: no litigation and no suggestion), (3) asked to complete an evaluation at the request of his or her attorney for the purposes of an ongoing case (Condition 3: active litigation, no suggestion); or (4) asked to complete an evaluation at the request of his or her attorney for the purposes of an ongoing case, with the suggestion, by the attorney, that greater impairment would lead to a larger monetary award (Condition 4: active litigation and suggestion).

**Data Analysis Plan**

Before addressing the specific aims of the present study, descriptive analyses were conducted regarding demographic information, litigation history and mental health history. Additionally, descriptive testing data were generated for sample means, standard deviations, and failure rates across the total sample and instructional conditions. Chi-square difference tests and ANOVAs were conducted to determine equivalence across groups and to identify potential covariates. Correlations were produced using a pooled-within groups correlation matrix, which assumes invariance across instructional conditions, in order to account for potential significant differences across groups.

As detailed above, a confirmatory factor analysis (CFA) is a theory-driven, methodological approach to statistically evaluating the relationships of a multi-trait multi-method matrix (MTMM; Campbell & Fiske, 1959). A CFA allows for a comparison of a hypothesized model to the observed covariance matrices. In a CFA, the intention is to minimize discrepancies between the hypothesized, estimated covariance matrices and the observed data. Model fit is evaluated by means of goodness-of-fit indices. Goodness-of-fit analyses were interpreted for three proposed models:

- Model 1: *A general "badness" factor.* There is a single, general malingering factor that underlies all measures.

- Model 2: *Cognitive and psychiatric factors.* There are two underlying factors, one which is composed of subscales addressing cognitive symptoms (i.e., TOMM Trials 1 and 2 and the SIMS NI, AM, and LI subscales). The other underlying factor is composed of measures of psychological or psychiatric exaggeration (i.e., M-FAST, TSI-2-A ATR, and SIMS P and AF subscales).
    - It is noted this reflects a minor deviation from Egeland et al. (2015), who included the SIMS LI subscale among psychiatric factors. As the LI subscale aims to measure exaggerations in intellectual functioning, it was deemed a measure of cognitive feigning.
- Model 3: *SVT and PVT factors.* There are two underlying factors, one which is composed of performance-based measures (i.e., TOMM) and another which consists of symptom-validity subscales (i.e., M-FAST, SIMS, TSI-2-ATR).

Analyses for the present study were conducted using both the Statistical Package for the Social Sciences Version 25 (SPSS; IBM Corp, 2017) and Mplus Version 8.2 (Muthen & Muthen, 1998-2018). First, correlations were produced across all bivariate combinations of subscales for the four measures. To account for expected skewness (e.g., from the TOMM), all scores were standardized through mean centering. Consistent with assumptions of the MTMM, it was expected that participant scores would correlate according to measurement of underlying traits and methods. Convergent validity would be demonstrated through significant bivariate correlations between measures of psychological symptom endorsement (i.e., M-FAST, TSI-2-A ATR, and SIMS subscales). Divergent validity would be expected and demonstrated through weaker correlations between measures of performance validity (i.e., TOMM Trials 1 and 2) and symptom validity (i.e., M-FAST, TSI-2-A ATR, and SIMS subscales). In terms of psychiatric versus cognitive symptom endorsement, it was predicted that measures associated with cognitive symptoms (TOMM; SIMS NI and AM) would correlate more highly than with measures of affective experience.

Analyses to examine the underlying factor structure of the malingering construct were conducted on raw scores for each of the three models using Mplus Version 8.2 (Muthen & Muthen, 1998-2018). Confirmatory factor analysis tested the three hypothesized models to explain the covariance between variables. For the first model, all subscale scores were used to form the latent variable of malingering (Figure 1). For the second model, subscale scores for the TOMM (Trials 1 and 2) and the SIMS (NI, AM, and LI) were used to form the latent variable of cognitive symptom malingering. Subscale scores for the M-FAST, the TSI-2-A (ATR), and the SIMS (P and AF) were used to form the latent variable of psychiatric symptom malingering (Figure 2). For the third model, subscale scores for the TOMM were used to form the PVT latent variable, and all other subscales (i.e., from the M-FAST, SIMS, and TSI-2-A ATR) were used to form the SVT latent variable (Figure 3).

Following recommendations by Hu and Bentler's "two-index presentation strategy" (1999), goodness-of-fit was evaluated using both absolute and relative indices of model fit. Egeland and colleagues (2015) utilized goodness-of-fit measures afforded by the LISREL 8.3 program (Jöreskog & Sörbom, 1993). Mplus Version 8.2 (Muthen & Muthen, 2018) does not allow for the estimation of the same indicators of fit. As such, goodness-of-fit measures, consistent with but not identical to those chosen by Egeland and colleagues (2015), were interpreted as follows:

*Chi-square (χ2)/degrees of freedom ratio.* The chi-square statistic is a form of absolute fit index which tests the null hypothesis or that there is no statistically significant difference between the theorized covariance matrix and the observed data. For this reason, the chi-square statistic has been deemed the "lack of index fit" (Muliak, James, van Alstie, Bennet, Lind, & Stilwell, 1989; Stapleton, 1997), as a significant result would result in a rejection of the model. When using the chi-square criterion, it is best to have a ratio of χ2 to degrees of freedom that is less than two or three. The chi-square test is sensitive to sample size; thus, caution must be

used when interpreting a chi-square statistic in smaller samples (Gatignon, 2010). A low value is indicative of a good fitting model.

*Root mean square error of approximation (RMSEA).* The RMSEA is an additional measure of model fit. When using the RMSEA, smaller values are indicative of a better fit, with values less than .06 suggesting a "good" fit and values less than .08 suggesting an "adequate" fit. The RMSEA is less sensitive to issues of sample size (Hooper, Coughlan, & Mullen, 2008; Brown, 2015).

*Standardized Root Mean Square Residual (SRMR).* The SRMR is a measure of absolute fit, reflecting the square root of the mean of the squared discrepancies between the theorized and observed covariance matrices. The SRMR ranges from 0 to 1, with values less than .08 indicating a good fit to the data (Hu & Bentler, 1999; Kelloway, 2015).

*Comparative Fit Index (CFI).* The CFI is a form of relative fit index, which allows for comparison between the present model to a baseline or alternative model, while also accounting for the sample size limitations of the chi-square statistic (Gatignon, 2010). For the CFI, values range from 0 to 1 and values of .95 or greater are suggestive of an acceptable fit (Hu & Bentler, 1999; Schreiber et al., 2006).

*Tucker-Lewis Index (TLI).* The TLI, or normed-fit index, is a form of incremental or relative fit. The TLI strives to estimate the percentage of improvement yielded by the hypothesized model over a null model, and adjusts this estimation for the number of parameters in the hypothesized model. Per Kelloway (2015), the TLI "penalizes" complex models. The TLI presumably ranges from 0 to 1, with a value of .95 serving as a cut-off for good fit.

**Sample Size**

In a confirmatory factor analysis, sample size is associated with the stability of the results (Schreiber et al., 2006). Ideally, samples would be large enough such that the models could be estimated twice; however, often this is not possible. For a one-sample analysis, there is an accepted rule-of-thumb that articulates there should be ten participants per estimated

parameter. Parameters are components of the model that are estimated or constrained within the model. Using Bollen's "t rule" (Bollen, 1989), in which *k* = the number of indicators, the number of unique variances and covariances in the matrix is equal to (k*(k-1))/2. For this study, twelve indicators were used, resulting in 66 total parameters. With a sample size of 411, there was a ratio of approximately 6:1, participants to total indicators. According to Benter and Chou (1987), a ratio between 5:1 and 10:1 sample size to number of estimated parameters should allow for a satisfactory identification of a model.

## Results

The initial sample consisted of 458 completed protocols, of which 34 cases were excluded due to failure to meet eligibility criteria (e.g., not holding a valid driver's license). As such, the final analytic sample consisted of 411 undergraduate participants.

### Sample Characteristics

A majority of the sample (68.9%; *n* = 283) self-identified as female, and 128 participants identified themselves as male (31.1%). Participant age ranged from 18 to 58 (M = 23; SD = 5.59). The analytic sample was racially and ethnically diverse, with 28% of participants self-identifying as Hispanic, 23.1% as Asian-American, 22.9% as Caucasian, 16.1% as African American, and 10% as Other or Multi-Racial. A majority of participants indicated Junior status or higher, academically. A summary of descriptive demographic statistics is presented in Table 1. There were no significant differences across conditions based on participant age [$F$ (3,407) = 1.501, $p$ = .212], gender [$X_2$(3) = 2.97, $p$ = .397], race/ethnicity [$X_2$ (12) = 12.69, $p$ = .392], or academic standing [$X_2$ (12) = 8.59, $p$ = .737].

In terms of past motor vehicle and litigation experiences, a third (33.3%) of the total sample indicated prior personal involvement in a motor vehicle accident which was not their fault, but which resulted in physical or psychological injuries. Less than 10% of the total sample indicated prior personal involvement in a motor vehicle accident in which the participant was at fault, and resulted in the infliction of physical or psychological injuries to the other

driver/passenger. Eighteen percent of the total sample indicated prior or familial involvement in either criminal or civil litigation. There were no significant differences across conditions based on prior MVA involvement, no fault [$X_2(3) = 0.59$, $p = .897$]; prior MVA involvement, at fault [$X_2(3) = 2.59$, $p = .465$]; or prior litigation involvement [$X_2(3) = 1.41$, $p = .703$].

In terms of prior mental health (MH) history, two-thirds of the total sample indicated never having undergone a MH evaluation. Approximately 15% indicated having undergone a prior MH evaluation for personal purposes, and 18% indicated having undergone a prior MH evaluation for research purposes. Roughly 30% of the total sample indicated having received a prior MH diagnosis; however, only 17% of the total sample indicated having received prior MH treatment. Most commonly reported diagnoses were: depression (39 participants), anxiety (19 participants), and attention-deficit/hyperactivity disorder (13 participants). There were no significant differences across conditions based on prior MH evaluation [$X_2(6) = 6.72$, $p = .347$]; prior MH diagnosis [$X_2(3) = 3.89$, $p = .274$]; or prior MH treatment [$X_2(3) = 1.37$, $p = .712$]. A summary of prior experience statistics by condition is presented in Table 2.

**Test Characteristics**

Descriptive test statistics, including means, standard deviations, and failure rates for the TSI-2 ATR, SIMS, M-FAST, and TOMM Trial 2, across the full sample and by condition are presented in Table 3. Notably, over 70% of the full sample evidenced failure on the SIMS, having scored a total of 15 points or higher. Based on failure rates, a sizeable proportion of the total sample would be recommended for further evaluation of malingering based on either the SIMS or the M-FAST. Failure rates trended in the expected direction, based on instructional condition, with larger failure rates typically found in Conditions 3 and 4.

**Preliminary Analyses**

Chi-square difference tests and ANOVAs were conducted to determine equivalence across groups and to identify potential covariates. Analysis of covariance by condition in terms of continuous outcome scores is presented in Table 4. Significant differences were found for the

TSI-2 ATR and the SIMS ($p < .001$ and $p < .05$, respectively), but not for the M-FAST or TOMM Trial 2. Post-hoc comparisons using Tukey HSD revealed significant differences between Condition 4 and Conditions 1 and 2 for TSI-2 ATR total scores and between Condition 4 and Condition 1 for SIMS total score. Table 5 presents Chi-square difference tests across conditions in terms of the proportion of participants exceeding recommended clinical cut-offs for each measure (i.e., fail rates). Significant differences were found for the TSI-2-ATR and TOMM Trial 2 ($p = .010$ and .026, respectively).

**Correlation Analyses**

Recognizing the potential for group-wise differences in primary analyses, total score and subscale-level correlations were computed using a pooled-within groups correlation matrix, which assumes invariance across instructional conditions. Results of total score correlations are presented in Table 6. Absolute values of correlations ranged from .14 to .65. At the total test level, evidence of convergent validity between symptom-based measures was exhibited through moderate correlations between the SIMS, M-FAST, and TSI-2 ATR. Within symptom-based measures, the correlation between the TSI-2 ATR and the M-FAST ($r = .51$, $p < .01$, two-tailed) was weaker than correlations between the TSI-2 ATR and the SIMS, or the SIMS and the M-FAST. This divergence may suggest that these two measures capture differing subdomains of the malingering construct. As predicted, correlations between the TOMM and the symptom-based measures were consistently weak (ranging from -.14 to -.28, $p < .01$, two-tailed).

Subscale-level bivariate correlations are presented in Table 7. All scores were standardized using mean-centering to account for expected skewness (e.g., TOMM). For ease of interpretation, bivariate correlations are presented using the following color-code: red = absolute values between 0.0 and .29 indicative of a weak relationship; blue = absolute values between .30 and .69 indicative of a moderate relationship; green = absolute values between .70 and 1.0 indicative of a strong relationship.

Consistent with assumptions of the MTMM, evidence of convergent validity was found with moderate, positive bivariate correlations between most M-FAST, TSI-2-A ATR, and SIMS subscales (i.e., reflective of psychological symptom endorsement). Certain subscales consistent with psychological symptom endorsement yielded weaker relationships (e.g., reported versus observed symptoms, M-FAST; absolute values ranging from $r$ = 0.11 to 0.29).

Divergent validity was expected and largely demonstrated through weaker, negative correlations between measures of performance validity (i.e., TOMM Trials 1 and 2) and symptom validity (i.e., M-FAST, TSI-2-A ATR, and SIMS subscales). As predicted, measures associated with cognitive symptoms (TOMM; SIMS NI and AM) demonstrated stronger correlations with each other, compared to the TOMM with subscales more theoretically associated with affective experience, (SIMS NI and SIMS AM $r$ = .76; TOMM T1 and T2 with SIMS NI, AM, and LI ranging from $r$ = -.21 to -.30). Notably, the TSI-2-A ATR additionally demonstrated stronger associated with the TOMM T1 and T2 ($r$ = -0.28 and -0.27, respectively).

**Confirmatory Factor Analysis**

All model tests were based on the correlation matrix and used maximum likelihood estimators (ML) as implemented in Mplus 8.2 (Muthen & Muthen, 1998-2018).

Fit indices for the proposed models are provided in Table 8. As shown, neither the one-factor model nor either of the two factor models satisfied $X_2$, RMSEA, CFI, or TLI criteria for an adequate or good fit between the proposed model and the observed results. However, in contrast to Models 1 and 2, Model 3 demonstrated satisfactory SRMR. While no model consistently met or exceeded criteria of adequate fit, it is notable that the two-factor model consisting of SVT and PVT-based factors provides a better fit to the data than either the single-factor, “general badness” model or the two-factor model consisting of cognitive and psychiatric-based factors. Compared to the single-factor model, the two-factor SVT vs. PVT model provides a significantly better fit to the data, $X_2$ difference 2(1) = 265.72, $p$ < .001.

Results reflecting the estimated Model 3 is presented in Figure 4. Regression weights for each subscale are presented along the arrows, reflecting the association between latent factors and subscales. For clarity of interpretation, “completely” standardized parameter estimates or coefficients are reported (Kelloway, 2015). Standardized coefficients represent the amount of change in an outcome variable (e.g., subscale score) per standard deviation unit of the predictor, or latent variable (University of Texas at Austin, Division of Statistics and Scientific Computation, 2012). As illustrated, the M-FAST RO and SIMS LI subscales yielded the weakest, or smallest, coefficients compared to all other subscales on the SVT factor. As demonstrated by the arched, double-arrow, the SVT and PVT latent factors were estimated to be moderately correlated ($r$ = .30, absolute value; $p$ < 0.001), suggesting discriminant validity (Kline, 2016).

Standardized parameter estimates and $R_2$ values for Model 3 are presented in Table 9. As shown, model parameters were all significant ($p$ < .001) and $R_2$ values ranged from .16 to .78. $R_2$ values reflect the proportion of variance in the observed variable that is explained by the respective latent factor. Notably, the SVT factor failed to explain the majority (i.e., >50%) of variance for seven out of the 10 SVT indicators (Kline, 2016). The latent SVT variable was particularly weak at explaining variance for the M-FAST RO and SIMS LI indicators.

## Discussion

The present study aimed to extend previous research regarding the underlying factor structure of malingered PTSD in the context of personal injury litigation. As detailed above, the incentive for individuals to falsify the existence, or exaggerate the severity of psychological injuries, for the purposes of civil litigation is substantial, and extant methods for comprehensively and accurately identifying these misrepresentations hold notable limitations, specifically in relation to PTSD. Despite recommendations to employ more than one method of malingering detection, many existing malingering measures are proffered to capture globally exaggerated distress or a general dishonesty to a presentation. Thus, these methods serve as

indictors of a single, overall “badness” factor, which supposedly taps the construct of malingering, regardless of domain of symptom or method of assessment. The existence of general “badness” approaches opens up opportunity for misuse, in that a single method could be used to suggest dishonesty or deceit. In an opposing perspective, however, others argue that malingering, as a construct, should not be conceptualized as a single entity, but rather one that is comprised of facets, each of which can, and should, be distinctly measured. Currently a body of literature exists supporting the distinction between PVT and SVT-based methods of malingering detection in personal injury or civil litigation contexts, however such empirical support derives from samples of potential litigants with either genuine or feigned neurocognitive injuries. The present study aimed to extend this line of research by utilizing a personal injury paradigm in which physical or neurocognitive injury was not alleged.

In this study, we used confirmatory factor analysis to evaluate the degree of fit between observed data and three hypothesized models. Each model characterized a different relationship between testing data acquired through various malingering measures (i.e., manifest indicators) and the underlying structure of malingering, as a latent construct. Three hypotheses were proposed, each suggesting iteratively improved fit across the three theorized models, with Model 3 being hypothesized to have the best fit overall. Consistent with previous findings (Greiffenstein et al., 1995; Demakis et al., 2008; Ruocco et al., 2008; Egeland et al., 2015), and in support of this study’s hypotheses, the two factor model involving PVT and SVT-based methods yielded the best overall fit to the data, and demonstrated significantly better fit than the one factor model. While no models demonstrated satisfactory fit on all indicators, this finding mirrors that of Egeland and colleagues (2015), thus providing support for the distinction between PVT and SVTs for malingering assessment in a personal injury paradigm. Moreover, this finding contradicts the utility of a general “badness” factor, in which any measure can suffice as a means to tap into a single malingering construct.

In terms of cognitive versus psychiatric symptoms, we had predicted that measures associated with cognitive symptoms (TOMM; SIMS NI and AM) would correlate more highly than with measures of affective experience. This prediction lacked substantial support, as the TOMM trials did not yield particularly strong correlations to the SIMS NI or AM subscales. This lack of convergence is consistent with previous findings of a dissociation between reported symptoms and observed performance (Egeland et al., 2015; Demakis et al., 2008) and further demonstrates the distinction between SVT and PVT based approaches. In essence, those who report cognitive symptoms do not necessarily feign cognitive impairment, and vice versa, and thus clinicians are advised to use methods spanning not only symptom domains, but also methods of assessment.

Despite demonstrating better fit than the one factor or two factor, cognitive versus psychiatric model, the SVT and PVT-based model did not yield satisfactory fit across all indices. This suggests that while Model 3 better conceptualizes the underlying factor structure of malingering, this reigning model does not fully capture the underlying construct. One possibility is that our current study could not incorporate all possible facets of the construct, and thus crucial components were omitted. Future research considering alternative components would thus be necessary. In our study, however, there are several factors which might have impacted overall model fit, including the psychometric qualities of measures used, the potential impact of shared method variance, limited inclusion of additional PVT methods, and the use of a simulated personal injury paradigm. Each is discussed in detail below.

A logical explanation for less-than-ideal fit stems from unexpected or weaker correlational relationships between overall scores and across subscales. At the overall total score level, evidence of construct validity was demonstrated through convergent and divergent relationships between the PVT and SVTs. As expected, on the whole, measures of symptom validity were more strongly associated with other measures of symptom validity, while demonstrating weaker relationships with measures of performance validity. Of the SVTs, the M-

FAST yielded the weakest relationship to the other tasks, suggesting that these measures are only marginally related when it comes to malingered PTSD. This is consistent with prior findings that M-FAST total scores did not differ significantly across instructional conditions (see Tables 4 and 5; Fox & Vincent, 2019), potentially suggesting that when met with this measure, participants did not view it as relevant to the task of portraying symptoms of PTSD in the experimental paradigm. Thus, the M-FAST may have limited applicability in this context, a finding that is consistent with arguments that the M-FAST focuses too heavily on symptoms associated with psychosis (Guy et al., 2006; Christiansen & Vincent, 2012).

Diving deeper, analysis revealed unexpected relationships at the subscale level, which may have contributed to poorer overall fit. Convergent validity was expected across subscales corresponding to measures of psychological symptom endorsement (i.e., M-FAST, TSI-2-A ATR, and SIMS subscales). Expected relationships were demonstrated for most, but not all subscales. Specifically, the M-FAST RO (i.e., Reported vs. Observed) and SIMS LI (i.e., Low Intelligence) subscales did not converge as expected, yielding weak relationships to many other SVT subscales. This weak relationship is further demonstrated through small standardized coefficients in Model 3, identifying that the latent SVT variable explained little of the variance for these subscale scores. Understanding why these two subscales did not perform as expected requires taking a closer look at each scale.

As noted above, the M-FAST was designed as a brief screen of malingering, which uses items rationally devised according to well-known detection strategies (Rogers 2008). One of these strategies is identifying spurious presentations, consisting of either unusual or incongruous symptoms. Reflecting the latter, the M-FAST RO subscale was designed to capture a mismatch or discrepancy between what the individual reports and what the interviewer observes. The M-FAST pulls for incongruity by querying about a specific behavior (e.g., being unable to sit down without looking under the chair), and then coding for whether the behavior occurred as reported during the interview. Thus, this subscale operates on the assumption that

malingerers endorse symptoms that do not correspond with actual behavior. In effect, the M-FAST RO subscale acts as an amalgamation of SVT and PVT approaches, combining both symptom report and observed performance. Thus, it is possible that it fails to map on to either approach in a meaningful way, resulting in a weak relationship with our SVT latent factor.

Supporting this possibility, the RO subscale has also demonstrated questionable utility as an SVT indicator. While Miller (2001) found that RO differentiated between malingerers and honest responders, Clark (2006) noted that all other M-FAST subscales, *except for* RO, significantly differentiated between overall honest responding and malingering groups. Additionally, Clark (2006) found that the RO subscale did not significantly differ between feigned neurologic or feigned neurocognitive groups and respective honest responders. Further, Guy and colleagues (2006) found that the RO scale yielded weak reliability (alpha = .32; mean inter-item correlation = .15), and, in their study comparing the discriminant validity of M-FAST scale scores relative to specific diagnostic conditions, they found that the RO scale accounted for only 1% of total variance in both simulated and genuine PTSD groups. This may be due, in part, to the fact that RO consists of only 3 items, the least of all M-FAST subscales included in this study, thus making it more prone to psychometric error.

In a similar vein, the SIMS LI subscale has also garnered criticism for having low utility. Designed to target feigned intellectual impairment, the SIMS LI subscale consists of items that tap a “general fund of knowledge” using true/false questions of geography, history, and math, along with endorsements of difficulty thinking or concentrating (Widows & Smith, 2005). Using a cut-score of greater than two incorrect answers, an elevated LI score reportedly suggests a strong suspicion of feigned intellectual impairment (Widows & Smith, 2005). Despite this intention, Clegg and colleagues (2009) demonstrated that the LI subscale is unsuccessful in detecting feigned intellectual disability (see also Parks, Emmert, & Gfeller, 2016). In their study, all SIMS scales, *except for* LI, were significantly different across malingering and honest responding groups among a sample of disability seekers. Further, Merkelbach and Smith (2003)

found that estimates of internal consistency for the SIMS LI was weak (alpha = .24), even when undergraduate respondents were asked to approach the measure honestly (van Impelen et al., 2014). Lastly, our finding that the SIMS LI subscale was only weakly influenced by the SVT latent factor is consistent with Egeland et al. (2015), in which they found that the LI subscale yielded the weakest relationship to the self-rating factor. Further, they found that the SIMS LI was not associated to lower scores on estimated intellectual ability. In their conclusion, Egeland and colleagues state the SIMS LI subscale "merely contributes with unsystematic noise." Notably, in our sample of 411 undergraduate students, we found that over 98% of participants failed the SIMS LI subscale by incorrectly answering or endorsing greater than 2 items, further questioning the generalizability and utility of the scale. In sum, it is possible that psychometric considerations for the SIMS LI and M-FAST RO subscales resulted in weaker overall fit for the two-factor model, as neither scale appears to yield widespread utility nor fit with the traditional definition of an SVT.

**Limitations and Future Research**

In addition to questionable psychometrics of individual scales, there are also larger considerations which may have influenced model fit, and thus present opportunities for future research.

The current study aimed to evaluate the relative influence of the method of assessment compared to the domain of symptom assessed. Statistically, an ideal method of accomplishing this goal would be to utilize confirmatory factor analysis to extract method-based variance from variance influenced by symptom-domain or mode of assessment. Ideally, it would have been possible to construct a model in which variance due to specific method (i.e., subscales as a part of the same overall test) could be partitioned out, thus exposing further the degree to which SVT vs. PVT, or cognitive vs. psychiatric, played a role. Unfortunately, due to limitations in the number of measures included, this approach was not possible (Kenny, 2012). Further due to the inclusion of only one PVT-based measure, it was not possible to further explore PVT and SVT

relationships beyond the TOMM. In particular, since the TOMM consists of only two subtests (not including the optional retention trial), the PVT factor consisted of only two indicators. Kline (2016) notes that models consisting of fewer than three indicators per factor risks nonconvergence or estimation issues. While our models converged normally, future research using a larger variety of PVT and SVT measures could further elucidate the construct of malingering as made up of component parts. In particular, it might be valuable to include measures such as the MENT (Morel, 1998), as it was designed specifically as a PVT for PTSD.

As noted in Merten and colleagues (2009), correlational analyses are impacted by relative specificities and sensitivities of the measures included. Because measures are designed for different purposes (e.g., screening vs. diagnostic), each measure yields unique specificity and sensitivity estimates. Cut-scores are selected in order to maximize these estimates for the intended purpose of the measure. A mismatch between intended purposes, and thus a mismatch in the psychometric properties of the measures, may yield weaker correlations between similar types of tests, despite logical construct validity.

It is further noted that weaker relationships between similar methods may be associated with different strategies individuals use in order to accomplish the goal of feigning (Merten et al., 2009). It is well known that there are a variety of strategies individuals may use to exaggerate or falsify psychiatric illness (Rogers & Bender, 2013; Arce et al., 2008; Peace & Masliuk, 2011), and these strategies are likely associated with diagnosis and psycho-legal context. Alwes and colleagues (2008) reported that psychiatric feigners may utilize a “broad brush” approach, endorsing symptoms across a variety of domains including neurocognitive, while those intending to feign neurocognitive impairment may limit their endorsements to only specific symptoms. As articulated by van Impelen and colleagues (2014), “over-reporters underperform more often than underperformers over-report.” Notably, the Awles study distinguished from probable psychiatric and probable neurocognitive feigners, but did not identify which types of psychiatric conditions were alleged. While the sample consisted of individuals who had filed a

personal injury or worker's compensation claim, it is unclear if any individuals were seeking compensation for PTSD-related symptoms. In the context of PTSD, in which both psychiatric and cognitive symptoms are present, it is possible that participants employed a mix of strategies.

More generally, this study employed a simulated personal injury paradigm, using an undergraduate sample, which poses several potential limitations to generalizability and interpretation. First, exploration of qualitative feedback from study participants suggests that individuals varied in their level of motivation and persistence in approaching each measure of the research protocol according to instructions. In this study, individuals were not incentivized by means of monetary rewards for their abilities to faithfully approach each task as instructed. The lack of monetary compensation deviates from true civil litigation contexts, in which a malingering individual is motivated by the prospect of financial damages if their presentation is deemed believable. Secondly, evidence gleaned from debriefing sessions and manipulation checks suggest that a portion of the sample may have experienced difficulty in retaining and applying information from case vignettes for the duration of the study. This would likely not be the case in a true litigation situation. These factors may have served to dampen or cloud responses to the measures provided, thus weakening expected associations between measures.

**Implications**

Current results corroborate calls to assess validity broadly, acknowledging that individuals may falsify or exaggerate symptoms across symptom domains (Egeland et al., 2015; Heilbronner et al., 2009; Larrabee, 2012), and may perform variably across types of measures and over time (Berry & Nelson, 2010). Consistent with previous findings, the present study supports the dichotomy between SVT and PVT methods and opposes the "general badness" conceptualization of malingering. By using a paradigm in which concurrent physical injury (e.g. TBI) was not alleged, the present findings support a continued dissociation between performance and symptom validity indicators outside the context of neurocognitive injury.

Clinically, these findings are consistent with current guidance to administer a variety of measures, reflective of perfomance and symptom validity across domains, when conducting an assessment of malingering. This recommendation appears to hold true, regardless of the allegation of physical injury in concurrence with PTSD symptoms in personal injury cases.

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## Tables and Figures

Table 1. *Descriptive Statistics by Full Sample and Condition, Demographics*

| | Full Sample | Condition | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | | | |
| | *M* (SD) or *n* (%) | *M* (SD) or *n* (%) | *M* (SD) or *n* (%) | *M* (SD) or *n* (%) | *M* (SD) or *n* (%) | *F* or $X_2$ | *(df)* | *p* |
| Total Participants | 411 | 105 | 104 | 106 | 96 | | | |
| Age | 23.0 (5.59) | 22.4 (4.59) | 23.1 (5.77) | 23.9 (6.91) | 22.65 (4.62) | 1.51 | (3, 407) | 0.212 |
| Gender | | | | | | 2.97 | (3) | 0.397 |
| Female | 283 (68.9) | 75 (71.4) | 73 (70.2) | 66 (62.3) | 69 (71.9) | | | |
| Male | 128 (31.1) | 30 (28.6) | 31 (29.8) | 40 (37.7) | 27 (28.1) | | | |
| Race/Ethnicity | | | | | | 12.69 | (12) | 0.392 |
| African-American | 66 (16.1) | 20 (19.0) | 16 (15.4) | 14 (13.2) | 16 (16.7) | | | |
| Asian-American | 95 (23.1) | 21 (20.0) | 31 (29.8) | 27 (25.5) | 16 (16.7) | | | |
| Caucasian | 94 (22.9) | 19 (18.1) | 22 (21.2) | 27 (25.5) | 26 (27.1) | | | |
| Hispanic | 115 (28.0) | 36 (34.3) | 28 (26.9) | 26 (24.5) | 25 (26.0) | | | |
| Other/Multiracial | 41 (10.0) | 9 (8.6) | 7 (6.7) | 12 (11.3) | 13 (13.5) | | | |
| Academic Standing | | | | | | 8.59 | (12) | 0.737 |
| Freshman | 43 (10.5) | 12 (11.4) | 12 (11.5) | 9 (9.5) | 10 (10.4) | | | |
| Sophomore | 81 (19.7) | 20 (19.0) | 22 (21.2) | 24 (22.6) | 15 (15.6) | | | |
| Junior | 173 (42.1) | 44 (41.9) | 41 (39.4) | 48 (45.3) | 40 (41.7) | | | |
| Senior | 102 (24.8) | 23 (21.9) | 26 (25.0) | 24 (22.6) | 29 (30.2) | | | |
| Post-baccalaureate | 12 (2.9) | 6 (5.7) | 3 (2.9) | 1 (0.9) | 2 (2.1) | | | |

** indicates p-value significant at the .01 level. * indicates p-value significant at the .05 level.

Table 2. *Descriptive Statistics by Full Sample and Condition, Past Experiences*

| | Full Sample | Condition | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | | | |
| | *M* (SD) or *n* (%) | *M* (SD) or *n* (%) | *M* (SD) or *n* (%) | *M* (SD) or *n* (%) | *M* (SD) or *n* (%) | $X_2$ | *(df)* | *p* |
| Total Participants | 411 | 105 | 104 | 106 | 96 | | | |
| Prior MVA Involvement, no fault [a] | | | | | | 0.59 | (3) | 0.897 |
| Yes | 137 (33.3) | 33 (31.4) | 33 (31.7) | 37 (34.9) | 34 (35.4) | | | |
| No | 274 (66.7) | 72 (68.9) | 71 (68.3) | 69 (65.1) | 62 (64.6) | | | |
| Prior MVA Involvement, at fault [a] | | | | | | 2.59 | (3) | 0.465 |
| Yes | 33 (8.0) | 10 (9.5) | 11 (10.6) | 7 (6.6) | 5 (5.2) | | | |
| No | 378 (92.0) | 95 (90.5) | 93 (89.4) | 99 (93.4) | 91 (94.8) | | | |
| Prior Litigation, criminal or civil [b] | | | | | | 1.41 | (3) | .703 |
| Yes | 74 (18.0) | 15 (14.3) | 21 (20.2) | 20 (18.9) | 18 (18.8) | | | |
| No | 337 (82.0) | 90 (85.7) | (83 (79.8) | 86 (81.1) | 78 (81.3) | | | |
| Prior MH Evaluation [c] | | | | | | 6.72 | (6) | .347 |
| Yes, personal | 62 (15.1) | 16 (15.2) | 15 (14.4) | 20 (18.9) | 11 (11.5) | | | |
| Yes, for research | 74 (18.0) | 20 (19.0) | 12 (11.5) | 22 (20.8) | 20 (20.8) | | | |
| No | 275 (66.9) | 69 (65.7) | 77 (74.0) | 64 (60.4) | (65 (67.7) | | | |
| Prior MH Diagnosis [c] | | | | | | 3.89 | (3) | .274 |
| Yes | 124 (30.2) | 18 (17.1) | 12 (11.5) | 23 (21.7) | 17 (17.1) | | | |
| No | 287 (69.8) | 87 (82.9) | 92 (88.5) | 83 (78.3) | 79 (82.3) | | | |
| Prior MH Treatment [c] | | | | | | 1.37 | (3) | .712 |
| Yes | 70 (17.0) | 32 (30.5) | 28 (26.9) | 31 (29.2) | 33 (34.4) | | | |
| No | 341 (83.0) | 73 (69.5) | 76 (73.1) | 75 (70.8) | 63 (65.6) | | | |

** indicates p-value significant at the .01 level. * indicates p-value significant at the .05 level. [a] reflects participants who indicated past involvement in a motor vehicle accident (MVA) in which someone sustained psychological or physical injuries. [b] reflects participants who indicated either personal or familial involvement in either civil or criminal litigation [c] reflects participants who indicated having participated in a mental health (MH) evaluation in which they were administered psychological tests, having received a MH diagnosis, or participated in some form of MH treatment.

Table 3. *Testing Statistics by Full Sample and Condition*

| | | Condition | | | |
|---|---|---|---|---|---|
| *Measure* | Full Sample | 1 | 2 | 3 | 4 |
| TSI-2 ATR | | | | | |
| Mean (SD) | 5.75 (6.19) | 4.89 (5.60) | 4.31 (5.11) | 6.00 (6.45) | 7.98 (6.97) |
| Minimum | 0 | 0 | 0 | 0 | 0 |
| Maximum | 24 | 22 | 19 | 24 | 24 |
| Failure Rate[a] (Cut-off: ≥15) | 10.7% | 6.7% | 4.8% | 15.1% | 16.7% |
| SIMS | | | | | |
| Mean (SD) | 23.47(12.68) | 21.10 (11.55) | 22.29 (10.88) | 24.53 (14.07) | 26.17 (13.59) |
| Minimum | 2 | 2 | 2 | 2 | 4 |
| Maximum | 69 | 53 | 48 | 69 | 61 |
| Failure Rate (Cut-off: >14) | 71.0% | 61.9% | 72.1% | 72.6% | 78.1% |
| M-FAST | | | | | |
| Mean (SD) | 5.31 (4.79) | 4.61 (4.64) | 5.12 (4.35) | 5.71 (5.20) | 5.86 (4.87) |
| Minimum | 0 | 0 | 0 | 0 | 0 |
| Maximum | 24 | 21 | 19 | 24 | 19 |
| Failure Rate (Cut-off: ≥6) | 39.7% | 32.4% | 38.5% | 43.4% | 44.8% |
| TOMM T2 | | | | | |
| Mean (SD) | 48.25 (5.82) | 48.79 (5.19) | 48.18 (6.50) | 48.84 (4.29) | 47.09 (6.97) |
| Minimum | 11 | 11 | 13 | 27 | 16 |
| Maximum | 50 | 50 | 50 | 50 | 50 |
| Failure Rate (Cut-off: <45) | 8.5% | 4.8% | 8.7% | 5.7% | 15.6% |

[a] Failure rates reflect the proportion of participants in the sample scoring higher or lower than the measures recommended cut-off. TSI-2 ATR = Trauma Symptom Inventory – Second Edition, Alternative Version, Atypical Responding Scale; SIMS = Structured Inventory of Malingered Symptomatology; M-FAST = Miller Forensic Assessment of Symptoms Test; TOMM = Test of Memory Malingering, Trial 2.

Table 4. *Analysis of Variance, Continuous Outcome Scores by Condition*

| *Measure* | Condition 1 | 2 | 3 | 4 | | | |
|---|---|---|---|---|---|---|---|
| | *M* (SD) | *M* (SD) | *M* (SD) | *M* (SD) | *F* | *(df)* | *p* |
| TSI-2 ATR | 4.90 (5.61) | 4.31 (5.11) | 6.00 (6.45) | 7.98 (6.97) | 7.05 | 3 | 0.000** |
| SIMS | 21.10 (11.55) | 22.29 (10.88) | 24.53 (14.07) | 26.17 (13.60) | 3.26 | 3 | 0.021* |
| M-FAST | 4.61 (4.64) | 5.12 (4.35) | 5.71 (5.20) | 5.86 (4.87) | 1.49 | 3 | 0.218 |
| TOMM T2 | 48.79 (5.19) | 48.18 (6.50) | 48.84 (4.29) | 47.09 (6.97) | 1.94 | 3 | 0.122 |

** indicates p-value significant at the .01 level. * indicates p-value significant at the .05 level. TSI-2 ATR = Trauma Symptom Inventory – Second Edition, Alternative Version, Atypical Responding Scale; SIMS = Structured Inventory of Malingered Symptomatology; M-FAST = Miller Forensic Assessment of Symptoms Test; TOMM = Test of Memory Malingering, Trial 2.

Table 5. *Chi-Square Test of Difference, Percentage of Failures by Measure by Condition*

| *Measure* | Full Sample | Condition | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | | | |
| | | *n* (%) | *n* (%) | *n* (%) | *n* (%) | $X_2$ | *(df)* | *p* |
| TSI-2 ATR; (Cut-off: ≥15) | 44 (10.7) | 7 (6.7) | 5 (4.8) | 16 (15.1) | 16 (16.7) | 11.28 | 3 | 0.010** |
| SIMS; (Cut-off: >14) | 292 (71.0) | 65 (61.9) | 75 (72.1) | 77 (72.6) | 75 (71.0) | 6.79 | 3 | 0.079 |
| M-FAST; (Cut-off: ≥6) | 163 (36.7) | 34 (32.4) | 40 (38.5) | 46 (43.4) | 43 (44.8) | 4.06 | 3 | 0.255 |
| TOMM T2; (Cut-off: <45) | 35 (8.5) | 5 (4.8) | 9 (8.7) | 6 (5.7) | 15 (15.6) | 9.24 | 3 | 0.026* |

** indicates p-value significant at the .01 level. * indicates p-value significant at the .05 level. TSI-2 ATR = Trauma Symptom Inventory – Second Edition, Alternative Version, Atypical Responding Scale; SIMS = Structured Inventory of Malingered Symptomatology; M-FAST = Miller Forensic Assessment of Symptoms Test; TOMM = Test of Memory Malingering, Trial 2.

Table 6. *Bivariate, Pooled-Within Groups Correlations between SVT and PVT Total Scores, Total Sample (N = 411)*

| | | Measure | | | |
|---|---|---|---|---|---|
| | | TSI-2 ATR | SIMS | M-FAST | TOMM T2 |
| SVTs | TSI-2 ATR | - | | | |
| | SIMS | .65 | - | | |
| | M-FAST | .51 | .61 | - | |
| PVT | TOMM T2[a] | -.28 | -.26 | -.14 | - |

[a] Lower scores on the TOMM are indicative of malingering, as opposed to SVT measures, where higher scores are more indicative of malingered responding. TSI-2 ATR = Trauma Symptom Inventory – Second Edition, Alternative Version, Atypical Responding Scale; SIMS = Structured Inventory of Malingered Symptomatology; M-FAST = Miller Forensic Assessment of Symptoms Test; TOMM = Test of Memory Malingering, Trial 2. SVT = Symptom Validity Test; PVT = Performance Validity Test.

Table 7. *Bivariate, Pooled-Within Groups Correlations between all Subscale Scores, Total Sample (N = 411)*

| | Measure | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | TSI2 ATR | M-FAST RO | M-FAST ES | M-FAST RC | M-FAST UH | SIMS AF | SIMS P | SIMS NI | SIMS AM | SIMS LI | TOMM T1 | TOMM T2 |
| TSI2 - ATR | - | | | | | | | | | | | |
| M-FAST - RO | .27[b] | - | | | | | | | | | | |
| M-FAST - ES | .36 | .27 | - | | | | | | | | | |
| M-FAST - RC | .51 | .48 | .60 | - | | | | | | | | |
| M-FAST - UH | .39 | .39 | .56 | .63 | - | | | | | | | |
| SIMS - AF | .51 | .27 | .33 | .45 | .37 | - | | | | | | |
| SIMS - P | .53 | .26 | .52 | .54 | .56 | .44 | - | | | | | |
| SIMS - NI | .60 | .29 | .43 | .54 | .53 | .64 | .69 | - | | | | |
| SIMS - AM | .55 | .29 | .34 | .43 | .39 | .58 | .57 | .76 | - | | | |
| SIMS - LI | .33 | .11 | .15 | .20 | .20 | .39 | .35 | .46 | .47 | - | | |
| TOMM - T1 [a] | -.28 | -.07 | -.02 | -.10 | -.09 | -.15 | -.17 | -.23 | -.27 | -.22 | - | |
| TOMM - T2 | -.27 | -.08 | -.09 | -.13 | -.11 | -.14 | -.17 | -.21 | -.30 | -.21 | .71 | - |

[a] Lower scores on the TOMM are indicative of malingering, as opposed to SVT measures, where higher scores are more indicative of malingered responding. [b] For ease of interpretation, bivariate correlations are presented using the following color-code: red = absolute values between 0.0 and .29 indicative of a weak relationship; blue = absolute values between .30 and .69 indicative of a moderate relationship; green = absolute values between .70 and 1.0 indicative of a strong relationship.

TSI-2 ATR = Trauma Symptom Inventory – Second Edition, Alternative Version, Atypical Responding Scale; SIMS = Structured Inventory of Malingered Symptomatology [psychosis (P), neurologic impairment (NI), amnestic disorders (AM), low intelligence (LI), and affective disorders (AF)]; M-FAST = Miller Forensic Assessment of Symptoms Test [reported v. observed symptoms (RO), extreme symptomatology (ES), rare combinations of symptoms (RC), unusual hallucinations (UH)]; TOMM = Test of Memory Malingering, Trials 1 and 2.

Table 8. *Goodness-of Fit Indices for Three Hypothesized Models (N = 411).*

| | Index | | | | | |
|---|---|---|---|---|---|---|
| *Model* | *$X_2$ (df)* | *$X_2$ / df* | *RMSEA* | *CFI* | *TLI* | *SRMR* |
| 1. A general “badness” factor. | 643.75 (54) | 11.92 | .16 | .75 | .69 | .10 |
| 2. Cognitive and psychiatric factors. | 563.71 (53) | 10.64 | .15 | .78 | .73 | .10 |
| 3. SVT and PVT factors. | 378.03 (53) | 7.13 | .12 | .86 | .83 | .08 |

For all models, latent variable variances were fixed at 1, allowing for all other parameter estimates to be freely estimated. SVT = symptom validity test; PVT = performance validity test; RMSEA = root mean square error of approximation; CFI =comparative fit index; TLI = Tucker-Lewis index; SRMR = standardized root mean square residual.

Table 9. *Standardized Parameter Estimates for Model 3. SVT and PVT factors.*

| | Latent Variable | | |
|---|---|---|---|
| *Subscale* | SVT | PVT | $R_2$ |
| TSI2 - ATR | .69 | | .48 |
| MFAST - RO | .40 | | .16 |
| MFAST - ES | .56 | | .32 |
| MFAST - RC | .68 | | .46 |
| MFAST - UH | .64 | | .41 |
| SIMS - AF | .69 | | .47 |
| SIMS - P | .77 | | .59 |
| SIMS - NI | .88 | | .78 |
| SIMS - AM | .78 | | .61 |
| SIMS - LI | .48 | | .23 |
| TOMM - T1 | | .84 | .70 |
| TOMM - T2 | | .85 | .73 |

For all values, $p$ <.001. Values reported reflect the completely standardized solution. $R_2$ values reported reflect the percentage of subscale variance explained by the hypothesized model.

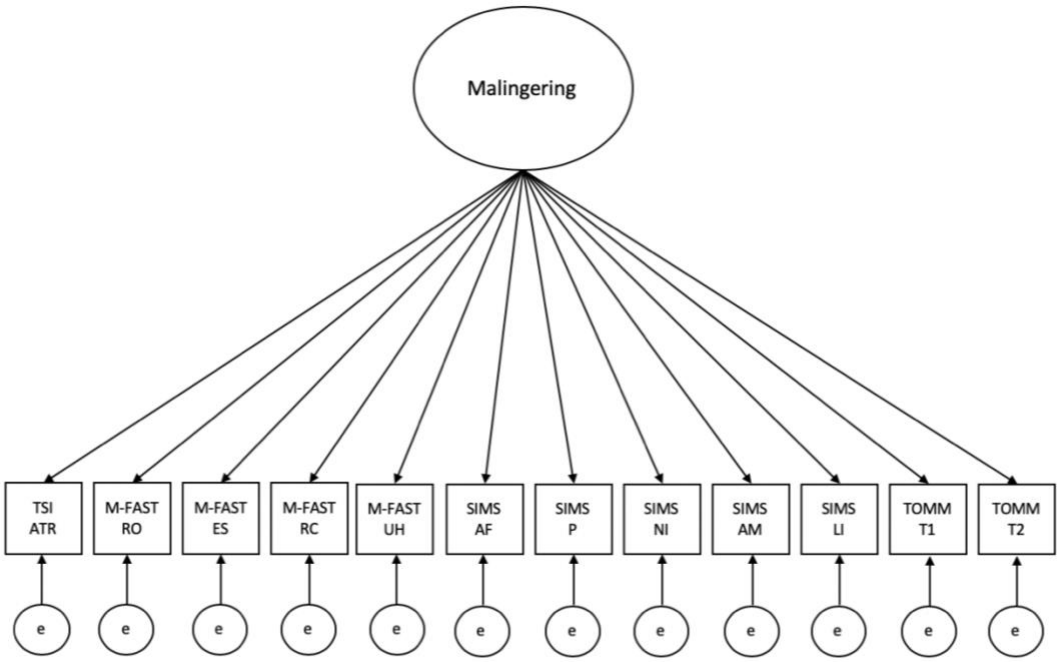


**Figure 1.**

Hypothesized Model 1: *A general "badness" factor.*

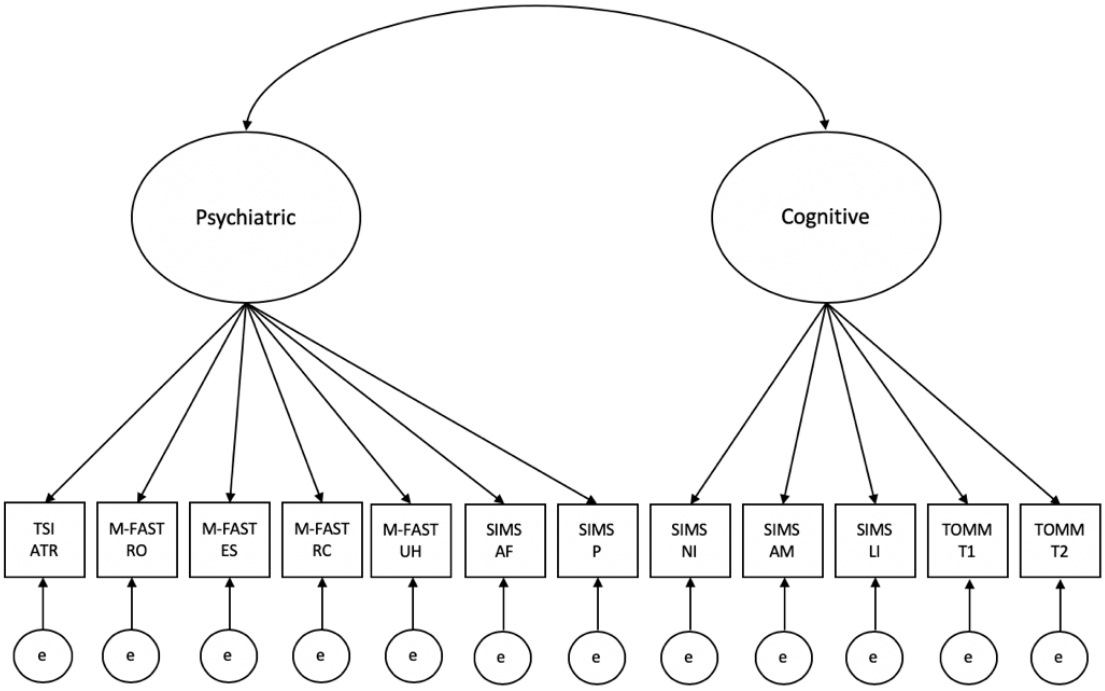


**Figure 2.**

Hypothesized Model 2: *Cognitive and psychiatric factors.*

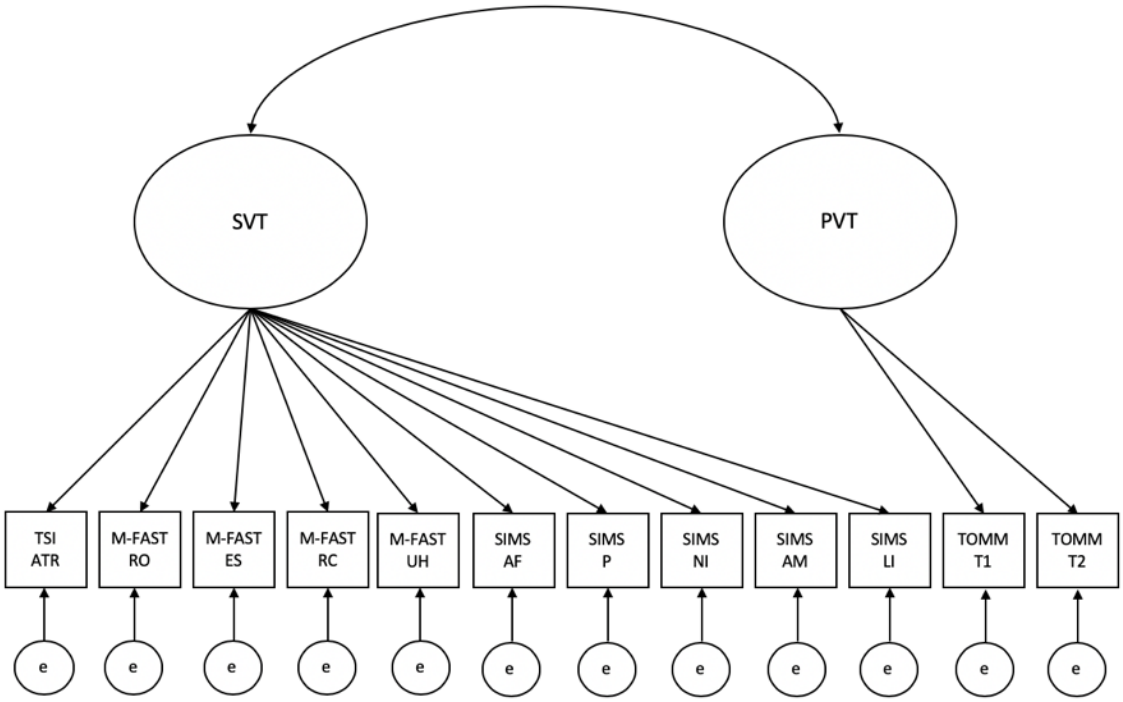


**Figure 3.**

Hypothesized Model 3: *SVT and PVT factors.*

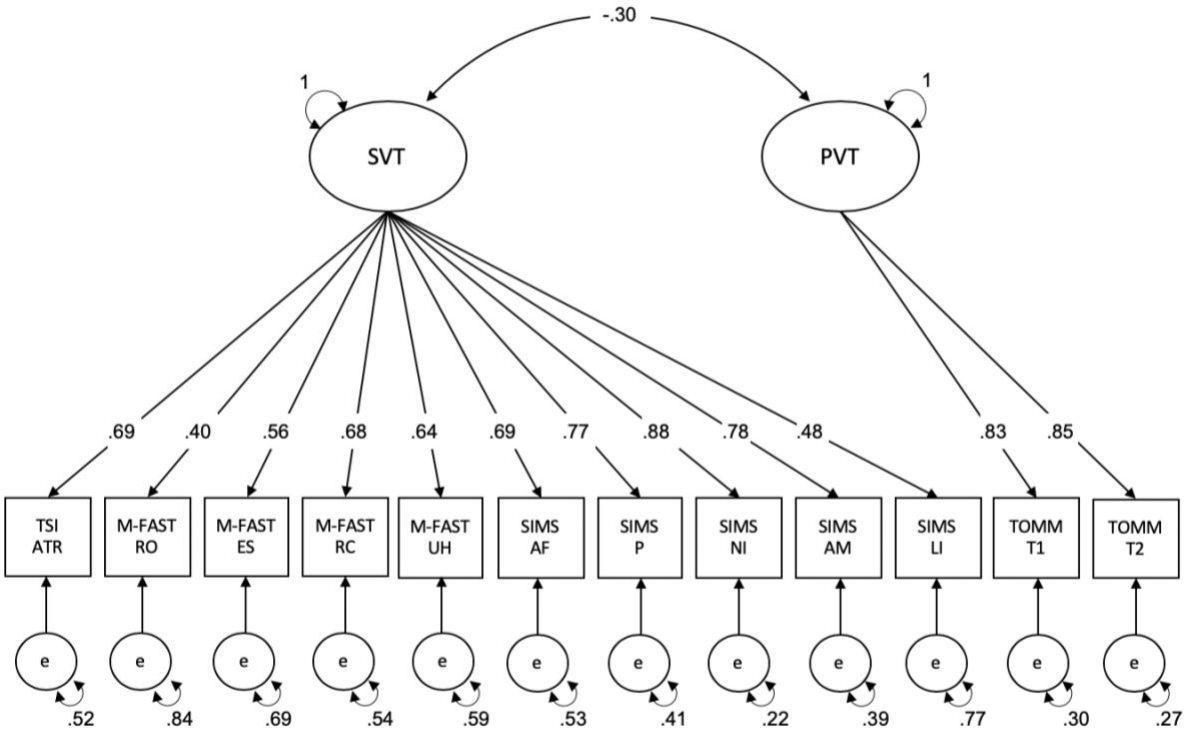


**Figure 4.**

Estimated Model 3: *Two-factor model with best fit to the data, consistent with SVT and PVT factors.*

# Appendices

## Appendix A: Pre-Questionnaire

1) Please enter your age (in years).
   a. What is your gender?
   b. Male (0)
   c. Female (1)
   d. Transgender (2)

2) What is your ethnicity/race?
   a. African-American (1)
   b. Hispanic (2)
   c. Caucasian (3)
   d. Asian-American (4)
   e. Other/Multiracial (5) _____

3) Do you have a valid driver's license from any state?
   a. Yes (1)
   b. No (2)

4) Are you a registered voter?
   a. Yes (1)
   b. No (2)

5) What is your marital status?
   a. Single but never married (1)
   b. Single but married in the past (2)
   c. Single but living with non-marital partner (3)
   d. Currently married (4)
   e. Widowed (5)

6) Do you have any children?
   a. Yes (1)
   b. No (2)

7) What is your academic year?
   a. Freshman (1)
   b. Sophomore (2)
   c. Junior (3)
   d. Senior (4)
   e. Post-Baccalaureate (Graduated) (5)

8) What is your college major?

9) What is your college grade point average? Please be as specific as possible.

10) In addition to your enrollment, are you currently employed?
   a. No, and I'm not looking (3)
   b. No, but I am looking (4)
   c. Yes, I am employed part-time (2)
   d. Yes, I am employed full-time (1)
   e. Retired (5)

11) If you are employed, what is your current occupation?

12) What are your plans after you receive your degree? (Select which best represents your current plan.)
   a. Pursue additional education (1)
   b. Pursue a new job directly related to my major (2)
   c. Pursue a new job that requires a degree (not related to major area) (3)
   d. Stay with current employer related to my major (6)
   e. Stay with current employer (not related to major area) (4)
   f. Completely undecided (5)

13) What type of career are you planning to pursue once you complete your education?

14) Have you ever served in the military, including the National Guard?
   a. Yes (1)
   b. No (2)

15) Which branch?

16) How long did you serve?

17) Have you ever been involved in active combat?
   a. Yes (1)
   b. No (2)

18) Have you ever been deployed in a war zone?
   a. Yes (1)
   b. No (2)

19) Have you or a family member ever been involved in a lawsuit, either civil or criminal?
   a. Yes (1)
   b. No (2)

20) Who was involved in the lawsuit?

21) How many different lawsuits?

22) What types of lawsuits?

23) What were the outcomes of the case(s)?

24) If you or anyone close to you has ever made any type of claim for monetary damages for emotional or psychological injuries, please provide additional information here:

25) Do you have any beliefs against awarding damages for emotional or psychological injuries in a lawsuit?
   a. Yes (1)
   b. No (2)

26) Please explain your beliefs in regards to awarding damages for emotional or psychological injuries in a lawsuit.

27) Have you ever been involved in a motor vehicle accident that was not your fault in which you sustained physical or psychological injuries?
   a. Yes (1)
   b. No (2)

28) What was the outcome of your experience?
   a. Settled with the other driver (1)
   b. Settled with the other driver's insurance company (2)
   c. Filed a lawsuit and received compensation (3)
   d. Filed a lawsuit and did not receive compensation (6)
   e. Pursued compensation (but no lawsuit) and did not receive it (4)
   f. Did not seek or receive compensation (5)

29) If you filed a lawsuit, what was the outcome of the lawsuit?

30) Have you ever been involved in a motor vehicle accident that was your fault in which you inflicted physical or psychological injuries to the other driver or his/her passenger?
   a. Yes (1)
   b. No (2)

31) What was the outcome of this experience?
   a. Settled with the other driver (1)
   b. The other driver settled with your insurance company (2)
   c. The other driver filed a lawsuit and received compensation (3)
   d. The other driver filed a lawsuit and did not received compensation (6)
   e. The other driver pursued compensation (but no lawsuit) and did not receive it (4)
   f. Did not seek or receive compensation (5)

32) Please explain the outcome of the lawsuit here:

33) Has anyone close to you ever experienced a motor vehicle accident that was not their fault in which they sustained physical or psychological injuries?
   a. Yes (1)
   b. No (2)

34) What was the outcome of this experience?
   a. Settled with the other driver (1)
   b. Settled with the driver's insurance company (2)
   c. Filed a lawsuit and received compensation (3)
   d. Filed a lawsuit and received no compensation (4)
   e. Pursued compensation (but no lawsuit) and did not receive it (6)
   f. Did not seek or receive compensation (5)

35) Please explain the outcome of the lawsuit here:

36) Have you ever received mental health treatment services (i.e., psychiatric hospitalization, therapy, counseling, psychiatric medications)?
   a. Yes (1)
   b. No (2)

37) Please check which mental health treatment services you have received:
   a. Counseling (1)
   b. Therapy (2)
   c. Psychiatric Hospitalization (3)
   d. Psychiatric Medications (4)
   e. Other (5) _____

38) Please describe the reasons you received these services.

39) Have you ever participated in a mental health evaluation where you were administered psychological tests?
   a. Yes, for my evaluation (1)
   b. Yes, as a research volunteer (3)
   c. No (2)

40) Please explain why psychological tests were administered. (If you don't know the names, please describe them briefly.)

41) Please list the tests you were administered. (If you don't know the names, please describe them briefly.)

42) Have you ever received a psychiatric/psychological diagnosis?
   a. Yes (1)
   b. No (2)

43) Please list all psychiatric/psychological diagnoses.

44) Do you experience or have you been diagnosed with any medical/health problems?
   a. Yes (1)
   b. No (2)

45) Please describe your medical/health problems here:

46) Have you ever worked in the mental health services area?
   a. Yes (1)
   b. No (2)

47) Please list your past or current mental health services employment:

48) Has anyone close to you ever worked in the mental health services area?
   a. Yes (1)
   b. No (2)

49) Who worked in the mental health services area?

50) Please list the type of mental health services employment someone close to you was engaged in.

51) Have you or anyone close to you ever worked in the legal field?
   a. Yes (1)
   b. No (2)

52) Who worked in the legal field and what type of employment did you/they have?

**Appendix B: Instructional Conditions/ Case Scenarios**

Condition 1 (Post-litigation, no suggestion)

Imagine you were the plaintiff in a civil lawsuit against a major wholesaler. You sued for damages related to a car accident you were in. On the day of the accident you were driving home from school, when you were involved in a collision with a major wholesaler's delivery truck. The driver of the truck had run a red light, and was clearly liable. The truck hit the rear side of your car causing you to be thrown against your seatbelt with great force. Your car was totaled. You sustained scrapes, bruises, and a bruised rib. You were taken by ambulance to the hospital, observed, and released later the same day. The company acknowledged liability, replaced your vehicle and paid for any miscellaneous costs you incurred. In addition, as a result of your civil suit you were awarded monetary damages that you felt were satisfactory.

After the accident you initially experienced a great deal of discomfort and pain due to the bruised rib, but the pain went away within a couple of weeks. You did miss a couple days of work, but have been compensated for those. However, you are still experiencing emotional difficulties including jumpiness/nervousness while driving, avoidance of the location of the accident (even though it is the quickest way for you to get home), avoiding conversations about the accident, having bad dreams about the accident, and you have an exaggerated startle response. You are also experiencing difficulty with concentration, trouble remembering things, and you feel "foggy." You spoke about these symptoms to your physician, who requested that you complete the following assessments in order to determine your level of impairment.

Now you will complete an evaluation with a member of the research staff. Please respond to the following questions as if you are the person in this situation.

Condition 2 (No litigation, no suggestion)

Imagine you were in a motor vehicle accident. On the day of the accident you were driving home from school, when you were involved in a collision with a major wholesaler's delivery truck. The driver of the truck had run a red light, and was clearly liable. The truck hit the rear side of your car causing you to be thrown against your seatbelt with great force. Your car was totaled. You sustained scrapes, bruises, and a bruised rib. You were taken by ambulance to the hospital, observed, and released later the same day. The company has acknowledged liability, has replaced your vehicle and paid for any miscellaneous costs you incurred.

After the accident you initially experienced a great deal of discomfort and pain due to the bruised rib, but the pain went away within a couple of weeks. You did miss a couple days of work, but have been compensated for those. However, you are still experiencing emotional difficulties including jumpiness/nervousness while driving, avoidance of the location of the accident (even though it is the quickest way for you to get home), avoiding conversations about the accident, having bad dreams about the accident, and you have an exaggerated startle response. You are also experiencing difficulty with concentration, trouble remembering things, and you feel "foggy." You spoke about these symptoms to your physician, who requested that you complete the following assessments in order to determine your level of impairment.

Now you will complete an evaluation with a member of the research staff. Please respond to the following questions as if you are the person in this situation.

Condition 3 (Active litigation, no suggestion)

Imagine you are the plaintiff in a civil lawsuit against a major wholesaler. You are suing for damages related to a car accident you were in recently. On the day of the accident you were driving home from school, when you were involved in a collision with a major wholesaler's delivery truck. The driver of the truck had run a red light, and was clearly liable. The truck hit the rear side of your car causing you to be thrown against your seatbelt with great force. Your car was totaled. You sustained scrapes, bruises, and a bruised rib. You were taken by ambulance to the hospital, observed, and released later the same day. The company has acknowledged liability, has replaced your vehicle and paid for any miscellaneous costs you incurred.

After the accident you initially experienced a great deal of discomfort and pain due to the bruised rib, but the pain went away within a couple of weeks. You did miss a couple days of work, but have been compensated for those. However, you are still experiencing emotional difficulties including jumpiness/nervousness while driving, avoidance of the location of the accident (even though it is the quickest way for you to get home), avoiding conversations about the accident, having bad dreams about the accident, and you have an exaggerated startle response. You are also experiencing difficulty with concentration, trouble remembering things, and you feel "foggy." You spoke about these symptoms to your physician, who suggested you contact a lawyer. You decided to contact a well-known injury lawyer, and together, decided to proceed with litigation alleging sustained emotional difficulties and post traumatic stress disorder from the motor vehicle accident. Your lawyer explains to you that the wholesaler's legal team is requesting that you complete a number of assessments to determine your level of impairment.

Now you will complete an evaluation with a member of the research staff. Please respond to the following questions as if you are the person in this situation.

Condition 4 (Active litigation, suggestion)

Imagine you are the plaintiff in a civil lawsuit against a major wholesaler. You are suing for damages related to a car accident you were in recently. On the day of the accident you were driving home from school, when you were involved in a collision with a major wholesaler's delivery truck. The driver of the truck had run a red light, and was clearly liable. The truck hit the rear side of your car causing you to be thrown against your seatbelt with great force. Your car was totaled. You sustained scrapes, bruises, and a bruised rib. You were taken by ambulance to the hospital, observed, and released later the same day. The company has acknowledged liability, replaced your vehicle and paid for any miscellaneous costs you incurred.

After the accident you initially experienced a great deal of discomfort and pain due to the bruised rib, but the pain went away within a couple of weeks. You did miss a couple days of work, but have been compensated for those. However, you are still experiencing emotional difficulties including jumpiness/nervousness while driving, avoidance of the location of the accident (even though it is the quickest way for you to get home), avoiding conversations about the accident, having bad dreams about the accident, and you have an exaggerated startle response. You are also experiencing difficulty with concentration, trouble remembering things, and you feel "foggy." You spoke about these symptoms to your physician, who suggested you contact a lawyer. You decided to contact a well-known injury lawyer, and together, decided to proceed with litigation alleging sustained emotional difficulties and post traumatic stress disorder from the motor vehicle accident. Your lawyer explains to you that the wholesaler's legal team is requesting that you complete a number of assessments to determine your level of impairment. Your lawyer also tells you that the more impaired you appear on the following assessments, the higher amount of monetary damages you will be awarded.

Now you will complete an evaluation with a member of the research staff. Please respond to the following questions as if you are the person in this situation.

**Appendix C: Post-Questionnaire**

In civil litigation, damages are often awarded to return the injured person to his or her level of functioning prior to the incident (e.g., car accident). The law allows an injured party to seek both pecuniary and non-pecuniary damages to redress for injuries sustained. Pecuniary damages provide compensation for direct financial loss sustained from the injury, such as lost days at work, damage to a vehicle, or costs incurred. Non-pecuniary damages compensate the injured party for non-tangible losses such as pain and suffering or emotional damages. In the present case, the major wholesaler has already paid for your pecuniary damages (i.e., lost days at work, damage to your vehicle, costs incurred). The company has not paid for your pecuniary damages (i.e., pain and suffering or emotional damages).

1) Which of the following will pecuniary damages compensate a litigant for?
    a. Lost days at work (1)
    b. Pain and suffering (2)
    c. Emotional Damages (3)

2) Which of the following will non-pecuniary NOT damages compensate a litigant for?
    a. Pain and suffering (1)
    b. Lost days at work (2)
    c. Emotional Damages (3)

3) Which type of damages has the company already paid you for in this scenario?
    a. Pecuniary (e.g., lost days at work, damage to your vehicle, costs you incurred) (1)
    b. Non-pecuniary (e.g., pain and suffering and emotional damages) (2)

4) What sum of money, if any, would fairly and reasonably compensate you for your emotional damages (i.e., non-pecuniary damages) that resulted from the accident portrayed in the scenario? Do *not* include compensation for pecuniary damages (e.g., lost days at work, damage to your vehicle, costs you incurred).

5) Please detail what percentage you considered each item, if at all, in response to questions you were asked about the scenario. (The total of all items cannot be more than 100%.)
    a. _____ Emotional Symptoms (1)
    b. _____ Medical Costs (includes costs for outpatient therapy and medication) (2)
    c. _____ Cognitive Symptoms (3)
    d. _____ Loss of Future Earnings (4)
    e. _____ Defendant's Behavior (Major Wholesaler) (5)
    f. _____ Loss of Pleasure from Life (6)
    g. _____ Other (7)
    h. _____ Other (8)

6) To what extent do you believe that the accident was a relevant factor in creating the emotional difficulties you are hypothetically experiencing?
    a. Most relevant factor (1)
    b. Very relevant, but not the most relevant factor (2)
    c. Somewhat relevant (3)
    d. Not at all relevant (4)

7) Please rate the severity of your hypothetical injuries on a scale of 1 (no distress/disability) to 10 (severe distress/disability):

| | No distress/ disability (1) | (2) | (3) | (4) | Moderate Distress/ Disability (5) | (6) | (7) | (8) | (9) | Severe distress/ disability (10) |
|---|---|---|---|---|---|---|---|---|---|---|
| Cognitive Functioning (1) | | | | | | | | | | |
| Social Functioning (2) | | | | | | | | | | |
| Psychological Functioning (3) | | | | | | | | | | |
| Occupational/ Academic Functioning (4) | | | | | | | | | | |
| Emotional Functioning (5) | | | | | | | | | | |

8) How much did you exaggerate the symptoms you were experiencing in the forensic portion of the assessment, if at all?
   a. Not at all (1)
   b. A Little Bit (2)
   c. Moderately (3)
   d. Quite a Bit (4)
   e. Extremely (5)

9) How well do you think you exaggerated the following types of symptoms in the forensic portion of the assessment?

| | Not at all | A Little Bit | Moderately | Quite a bit | Extremely |
|---|---|---|---|---|---|
| Cognitive Functioning (1) | | | | | |
| Social Functioning (2) | | | | | |
| Psychological Functioning (3) | | | | | |
| Occupational/Academic Functioning (4) | | | | | |
| Emotional Functioning (5) | | | | | |

10) In the scenario, did anyone suggest that you would receive more compensation if your injuries were greater?
   a. Yes (1)
   b. No (2)

11) In the scenario, what was the purpose for which you completed the evaluation?
   a. Physician's request (1)
   b. Litigation purposes (2)

12) Did you believe you would receive more compensation if your injuries were greater?
    a. Yes (1)
    b. No (2)

13) Throughout the evaluation, how consistently do you believe you followed the instructions given in your scenario (0 equals 0 percent of the time and 100 equals 100 percent of the time)? [Slide bar to indicate how consistently you followed instructions during the evaluation.]

14) Are there ways for assessment measures to detect if people are exaggerating their symptoms?
    a. Yes (1)
    b. No (2)

15) Briefly describe your impressions of the purpose or goals of this study: