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A COMPARISON OF DISSOCIATIVE PATIENTS TO SIMULATORS

ON THE TRAUMA SYMPTOM INVENTORY-2

By

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Inventory-2

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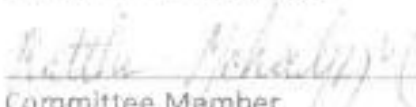(for example, Master of Science)

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Abstract

A COMPARISON OF DISSOCIATIVE PATIENTS TO SIMULATORS

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Cori Palermo

Dissociative identity disorder (DID) patients report experiencing chronic trauma in childhood which contributes to severe symptomatology in adulthood. These traumatic reactions are associated with validity and clinical scale elevations on a variety of psychological assessments. The Trauma Symptom Inventory-2 (TSI-2) measures posttraumatic stress symptoms, and has yet to be studied with a complex dissociative disorders (CDD) population. This study compared a group of CDD patients to coached DID simulators on the TSI-2. The CDD group had clinically significant elevations on a majority of the TSI-2 clinical scales and factors. Profile analysis revealed significant differences between CDD and coached simulator TSI-2 profiles. The TSI-2 ATR correctly classified 60 – 73% of participants, and specificity scores were unacceptably low. These results suggest that the TSI-2 may not be adequate at distinguishing feigned CDD from CDD.

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The dissociative disorders (DD) are characterized by disruptions in consciousness, memory, identity, and/or perception. They include dissociative amnesia, dissociative fugue, dissociative identity disorder, depersonalization disorder, and dissociative disorder not otherwise specified (American Psychiatric Association, 2000).

The most severe of the DDs includes dissociative identity disorder (DID), which was previously classified as multiple personality disorder in DSM-III-R. DID is a mental disorder characterized by two or more distinct personality states or identities that take control of behavior, as well as recurrent gaps in memory (American Psychiatric Association, 2000). Diagnostic criteria for the DDs have changed since the introduction of the DSM 5 (American Psychiatric Association, 2013). DSM-IV criteria and diagnoses will be utilized in this study, as the DD patient data was collected prior to the introduction of the DSM 5. Dissociative disorder not otherwise specified (DDNOS) is characterized by severe dissociative symptoms, and its diagnosis is appropriate for those who do not meet the diagnostic criteria of any of the specific DDs yet suffer from disabling dissociative symptoms (American Psychiatric Association, 2000; Mueller-Pfeiffer et al., 2012). Individuals with DDNOS can be similar to and as severe as cases of DID, and both DID and DDNOS display greater symptomatology and impairment than the other DDs (American Psychiatric Association, 2000; Mueller-Pfeiffer et al., 2012; Rodewald, Wilhelm-Göβling, Emrich, Reddemann, & Gast, 2011). As such, the DD group included in this study will include DID and DDNOS patients and, following other researchers' terminology (e.g., Jepsen, 2013), will be referred to as "complex dissociative disorders" (CDD) due to the range of dissociative symptoms experienced by patients with these diagnoses. The coached simulators were asked to simulate DID, were provided with information about DID, and were tested on their

knowledge of DID in this study. It was more feasible for the coached simulators to focus on

simulating DID rather than DID and DDNOS because it seemed unlikely that the public would

have any knowledge about DDNOS, and would be unlikely to feign it in clinical or forensic

contexts.

       Community-based studies have estimated that DID has a prevalence of one percent, and

is higher among patients receiving mental health care, ranging from 0 – 12% (Foote, 2013). The

prevalence of DDs has been described as 5 – 20.7% among psychiatric inpatients (Friedl &

Draijer, 2000; Gast, Rodewald, Nickel, & Emrich, 2001; Ross, Anderson, Fleisher, & Norton,

1991; Tutkun et al., 1998), 12 – 38% among outpatients (Foote, Smolin, Kaplan, Legatt, &

Lipschitz, 2006; Garcia, Rico, & Agráz, 2006; Sar et al., 2003; Sar, Tutkun, Alyanak, Bakim, &

Baral, 2000), and as high as 34.9% among patients presenting to a psychiatric emergency room

(Sar et al., 2007). Foote and colleagues (2006) reported higher DD prevalence rates in their

outpatient sample than had previously been reported with inpatient samples, which is likely

because their sample consisted of a largely Hispanic inner-city population with severe childhood

physical and sexual abuse that were interviewed at a hospital-based outpatient psychiatric clinic.

Prevalence rates with DDs have varied across studies due to differences in samples, screening

and diagnostic instruments, and cultural differences (for a review, see Friedl & Draijer, 2000;

Sar, 2011).

       Many individuals with DID or other DDs report multiple types of interpersonal

maltreatment and overwhelming early life events (Brand et al., 2009; Foote et al., 2006; Marmer

& Fink, 1994; Pearson, 1997; Ross et al., 1990). Research suggests that severe abuse,

particularly when experienced chronically in childhood, can contribute to the development of

DID as well as other trauma- or stressor-related disorders, such as posttraumatic stress disorder

(PTSD; Dalenberg et al., 2012; Foote, 2013). An epidemiological study of DDs reported that dissociative outpatients had elevated rates of sexual, physical, and emotional abuse and neglect, with even higher elevations of sexual and physical abuse among inpatients (Sar, 2011; Sar et al., 2000; Tutkun et al., 1998). Almost half of incarcerated women with a history of childhood sexual abuse reported clinically significant levels of dissociative symptoms (Roe-Sepowitz, Bedard, & Pate, 2007). This sample reported higher rates of sexual, emotional, and physical abuse, as well as higher risk-taking behavior and substance abuse, than did women not experiencing symptoms of dissociation.

There is a significant positive relationship between childhood trauma and symptom complexity (Briere, 2006; Briere, Kaltman, & Green, 2008; Merrill, 2001; Runtz & Roche, 1999). This relationship makes it important to assess DD and PTSD patients with clinical measures that examine a range of symptoms associated with trauma. Dissociative and traumatized samples typically report a wide range of symptoms and comorbid psychiatric conditions including mood, anxiety, eating, and personality disorders, substance abuse, difficulties with emotion regulation, somatization, identity disturbance, and interpersonal difficulties (Brand et al., 2013; Brand & Stadnik, 2013; Brand et al., 2009; Briere, 2010; Rodewald et al., 2011). Dissociative individuals also have high rates of self-injury and suicide attempts (Foote et al., 2008; Saxe, Chawla, & van der Kolk, 2002; van der Kolk, Perry, & Herman, 1991). On average, DD patients suffer with five comorbid disorders (Rodewald et al., 2011). In one study, 82% of DID patients displayed at least 1 comorbid axis-I disorder, with a mean of 7.3 comorbid disorders (Ellason, Ross, & Fuchs, 1996).

The most common psychiatric condition that is comorbid with DID is PTSD; 89 – 97.7% of DID patients have also been diagnosed with PTSD (Brand et al., 2009; Rodewald et al., 2011).

In PTSD, the individual experiences intrusion symptoms, avoidance of traumatic associations, negative trauma-related cognitions, and hyperarousal associated with the traumatic event (American Psychiatric Association, 2013). While the majority of DID patients also experience PTSD, it is likely that patients who do not meet full criteria for a PTSD diagnosis experience many of these posttraumatic symptoms.

Due to their complex symptomatology, it is important yet can be challenging to accurately diagnose highly dissociative and traumatized clinical samples. An interview shown to be useful in discriminating genuine from feigned DID and other psychiatric disorders is the Structured Clinical Interview for DSM-IV Dissociative Disorders-Revised (SCID-D-R; Steinberg, 1994) (Boon & Draijer, 1993; Welburn et al., 2003). The SCID-D-R has good-to-excellent reliability and validity (Steinberg, 2000).

Malingering is the intentional exaggeration of symptoms that is motivated by external incentives (American Psychiatric Association, 2000). The rationale for malingering varies, but individuals who malinger may wish to obtain compensation or psychiatric services, or desire to avoid work, military service, or criminal prosecution (Brennan & Gouvier, 2006; Demakis & Elhai, 2011; Singh, Avasthi, & Grover, 2007). The prevalence of malingering has been estimated to range from $1 - 61\%$ in personal injury cases (Hall & Hall, 2007; McDermott, Dualan, & Scott, 2013; Mittenberg, Patton, Canyock, & Condit, 2002; Singh et al., 2007), 30% of disability cases (Mittenberg et al., 2002), 20% of emergency psychiatric referrals from inmates (McDermott et al., 2013), $8 - 17.4\%$ in incompetence to stand trial evaluations (McDermott et al., 2013), 16% of forensic patients (McDermott et al., 2013; Rogers & Cruise, 1998; Rogers, Sewell, & Goldstein, 1994), 8% of medical cases (Mittenberg et al., 2002), 7% of non-forensic cases (McDermott et al., 2013; Rogers et al., 1994), 5% of those in military contexts (Singh et al., 2007), and 1% of

clinical practice patients (Singh et al., 2007). It is difficult to conduct research distinguishing between malingerers and genuine patients, as it is uncertain whether an individual is malingering or not. Therefore, researchers frequently study imitated malingering by utilizing simulation designs. Simulation research requires nonclinical participants to feign a psychological disorder or condition on psychological assessments, and compares the results of simulators to those of patients (Brennan & Gouvier, 2006; Rogers & Cruise, 1998; Singh et al., 2007).

Malingering may be more difficult to detect with severely traumatized patients due to their complex presentations that may appear to be exaggerated, as well as the subjective nature of reported psychological symptoms (Demakis & Elhai, 2011). DID and PTSD patients have high elevations on some feigning indicator validity scales, including on the Minnesota Multiphasic Personality Inventory-2 (MMPI-2; Butcher, Dahlstrom, Graham, Tellegen, & Kaemmer, 1989) (e.g., Brand & Chasson, 2014) and the Structured Interview of Reported Symptoms (SIRS; Rogers, Bagby, & Dickens, 1992) (e.g., Brand, McNary, Loewenstein, Kolos, & Barr, 2006). However, traumatized and dissociative patients do not score in the elevated range on all validity scales measuring exaggeration or malingering. Rather, these elevations tend to occur on validity scales that include items related to dissociation or other types of trauma-based symptoms and behaviors (Brand et al., 2006; Brand & Chasson, 2014; Brand et al., submitted). Thus, these individuals' testing profiles may be misinterpreted as invalid, when, in fact, they may not be malingering or exaggerating.

The ability to distinguish traumatized and dissociative individuals from malingerers is essential. The damage and stigma that could ensue from being classified as exaggerating or malingering could have enduring negative consequences. Individuals may malinger DID or PTSD in order to receive unwarranted disability payments or to avoid legal persecution (Rogers,

Salekin, Sewell, Goldstein, & Leonard, 1998; Taylor, Frueh, & Asmundson, 2007). Additionally, individuals who malinger could use valuable treatment resources (Taylor et al., 2007). These cases are an unnecessary cost to society and may prevent others who are actually suffering from receiving treatment, especially if they utilize the limited resources available for trauma-specific treatment. Therefore, conducting research to distinguish traumatized and dissociative individuals from simulators or malingerers is both relevant and valuable.

Many studies have examined feigning PTSD using a variety of measures (e.g., Carmody & Crossman, 2005; Elhai et al., 2005). However, only six studies have examined simulated DDs on psychological assessments to date (Brand & Chasson, 2014; Brand et al., 2006; Brand, Tursich, Tzall, & Loewenstein, 2014; Brand et al., submitted; Labott & Wallach, 2002; Welburn et al., 2003). First, Labott and Wallach (2002) examined DID malingerers on the Dissociative Experiences Scale (DES; Bernstein & Putnam, 1986) and the Rorschach Inkblot Test (Rorschach, 1921). Individuals simulating DID obtained significantly higher DES scores than the honest group, with the former having scores well above the clinical cutoff of 30 (Labott & Wallach, 2002). However, the DES was created as a screen for possible dissociative symptoms, rather than to detect feigning of dissociation, and it does not have any validity scales. The simulators were unable to produce responses indicative of DID on the Rorschach, as the number of DID diagnoses was not significantly different between the malingering and control groups and only one malingering participant obtained a DID diagnosis. The authors suggested the possibility that the malingering group did not produce DID diagnoses because their malingering style was not indicative of DID, likely due to the lack of a comprehensive assessment system for DID on the Rorschach (Labott & Wallach, 2002). The authors recommended that the DES only be used

in conjunction with other assessments in order to permit a more sensitive evaluation of potential DID (Labott & Wallach, 2002).

In a pilot study (Welburn et al., 2003), comparisons were made between 10 hospital staff who completed measures honestly, 10 hospital staff who feigned DID, 12 DID patients, and 9 schizophrenic patients. Participants were assessed utilizing the SCID-D-R, the DES, the Somatoform Dissociation Questionnaire (SDQ-5; Nijenhuis, Spinhoven, Van Dyck, Van der Hart, & Vanderlinden, 1997), the MMPI-2, the Millon Clinical Multiaxial Inventory-III (MCMI-III; Millon, 1996), as well as Spiegel and Spiegel's Eye-Roll Sign (Spiegel & Spiegel, 1978). The SCID-D-R was the most efficacious at discriminating DID patients from the schizophrenic patients and feigners. The DES-taxon and SDQ-5 were able to distinguish DID patients from schizophrenic patients, but were less adequate at detecting feigning. The MMPI-2 scales did not detect feigned dissociation. Finally, the Eye-Roll Sign discriminated feigners from the DID patients (Welburn et al., 2003). Unfortunately, the study's small sample limits its power and interpretation of its findings.

Another study compared 53 DID patients, 77 coached simulators, and 67 uncoached simulators on the MMPI-2 (Brand & Chasson, 2014). Simulators were distinguished from genuine patients on the F, F_B, and F_p scales. Neither the coached nor uncoached simulators were able to accurately feign DID (Brand & Chasson, 2014). However, 15% of DID patients scored high enough on the F and F_B scales that they may have been classified as exaggerating or malingering. A follow-up study was completed utilizing this sample, and examined endorsement patterns on the MMPI-2 F, F_B, F_p, Sc, and D scales (Brand et al., submitted). The researchers found that uncoached simulators often endorsed Hollywood stereotypes of DID, in that they endorsed items suggesting they believed DID patients would be violent, unlawful, and

delusional. The DID simulators failed to endorse some of the most basic psychological

symptoms for this population, including dissociation and depression (Brand et al., submitted). It

has yet to be examined whether individuals who have had more media exposure about DID

simulate DID differently than those who have had exposure to factual information about DID.

Finally, the SIRS and SIRS-2 were used to distinguish DID simulators from DID patients

(Brand et al., 2006; Brand et al., 2014). On the SIRS, both simulators and DID patients endorsed

a high number of symptoms such that one-third of the DID group would have been interpreted as

feigning (Brand et al., 2006). The mean scores of the simulators were significantly higher than

those of DID patients on only four of the thirteen scales on the SIRS (Brand et al., 2006). The

authors concluded that the SIRS should not be used to distinguish DID patients from feigners, as

it classified many DID patients as feigners. A replication of this study using the first and second

edition of the SIRS concluded that a newly created Trauma Index is valid with DID patients and

can distinguish them from DID simulators (Brand et al., 2014). The Trauma Index consists of

subscales that highly traumatized samples do not elevate on because they do not include

symptoms or symptom combinations characteristic of traumatized individuals (Rogers, Payne,

Correa, Gillard, & Ross, 2009).

The studies described above indicate that many psychological tests are not useful in

distinguishing DID from feigned DID. However, some validity scales that have been developed

for use with severely symptomatic patients and/or traumatized individuals show promise as

potentially useful scales for this group.

The Trauma Symptom Inventory (TSI) is a 100-item test that measures the complex

symptoms associated with trauma exposure including, but not limited to, posttraumatic stress

symptoms (Briere, 1995). The test was created to address the lack of valid standardized tests that

measure PTSD-specific symptomatology, while incorporating assessment of a wide range of

difficulties associated with trauma exposure. The TSI manual suggests that clinicians should

examine general factor elevations on trauma symptoms and self-dysfunction (Briere, 1995). The

TSI contains ten clinical scales and three validity scales, including Atypical Response (ATR).

These validity scales were developed to allow the detection of those who deny commonly

endorsed symptoms, those who report unlikely or bizarre responses, and those who respond

inconsistently.

Research indicated that the TSI validity scales were not useful in detecting feigned PTSD

(reviewed below). This led to the development of the Trauma Symptom Inventory-2 (TSI-2;

Briere, 2010). Overall, sixty-four percent of the 136 TSI-2 items were revised or added to reflect

recent trauma research, to measure symptom clusters not included in the TSI, and to address

feedback from clinicians and researchers on the strengths and limitations of the TSI. The TSI-2

examines symptomatology related to trauma, including the effects of sexual and physical assault,

intimate partner violence, torture, witnessing violence, and childhood abuse or neglect. The test

contains twelve clinical scales, twelve clinical subscales, four factors, and two validity scales.

The revision includes the removal of one TSI validity scale and the addition of the three clinical

scales, twelve clinical subscales, and four factors. In addition, the TSI-2 ATR scale was

redesigned to better evaluate potential misrepresentation of PTSD. The author of the TSI-2

anticipates that the revised edition will provide assessment of a wider range of symptoms and

allow clinicians to evaluate significant or meaningful treatment outcomes or symptomatology

over time (Briere, 2010).

The ATR is one of the two validity scales included on the TSI-2. Elevations on ATR

could indicate that the individual generally over-endorsed items, malingered PTSD, randomly

responded, attempted to present oneself as needing assistance (a "cry for help"), or experienced

very high levels of genuine distress (Briere, 2010). As previously mentioned, the ATR was

redesigned for the TSI-2 to improve its performance in distinguishing PTSD from feigned PTSD.

According to initial validations studies, this new ATR is unlikely to be endorsed by individuals

who are experiencing posttraumatic stress, and is expected to be elevated due to extreme

responses or individuals who attempt to feign PTSD yet poorly imitate its symptoms (Gray,

Elhai, & Briere, 2010).

Research has yet to be completed examining a CDD sample using the TSI or TSI-2. Due

to the similar symptomatology and etiology of the disorders, we believe that many of the results

that have been attained with a PTSD sample will be replicated with a CDD sample. It is likely

that a CDD sample will exhibit elevations on a majority of the clinical scales on the TSI-2, and

these elevations are hypothesized to be higher than those of the previous PTSD samples.

Therefore, we will review the prior research involving PTSD patients and PTSD simulators on

the TSI and TSI-2.

Women with PTSD score higher on Depression, Anxious Arousal, Intrusive Experiences,

Defensive Avoidance, Dissociation, and Impaired Self-Reference compared to those without

PTSD (Arbisi, Erbes, Polusny, & Nelson, 2010; McDevitt-Murphy, Weathers, & Adkins, 2005).

The strongest clinical predictors of traumatic stress included Intrusive Experiences, Defensive

Avoidance, and Tension Reduction Behaviors (e.g., self-mutilation, angry outbursts, or suicide

threats; Gorde, Helfrich, & Finlayson, 2004; Peace, Porter, & Cook, 2010), as well as Anxious

Arousal (Peace et al., 2010). Adult sexual assault victims were more symptomatic than non-

assaulted peers on all scales of the TSI, despite over a decade having passed since the assault

(Elliott, Mok, & Briere, 2004). It is expected that the frequency and severity of these complex

symptoms could be higher among individuals who experienced severe and complex trauma from an early age, such as physical abuse, sexual abuse, and neglect, although research is lacking with these groups on the TSI.

Some individuals with child abuse or trauma histories have elevated scores on feigning indicators which have been shown to be related to their extensive symptomatology, including dissociation (Briere, 2010; Briere & Elliott, 1997; Klotz Flitter, Elhai, & Gold, 2003). The TSI-2 manual recommends using a cutoff raw score of 15 in clinical or forensic contexts, and a cutoff raw score of 8 in non-clinical populations to indicate invalidity. However, the manual refers to excessive symptom endorsement, and is not intended to support specific conclusions about the cause of over-endorsement (Briere, 2010). That is, assessors may not be able to conclude whether an invalid score indicates malingering, a cry for help, or very high distress.

Previous research has examined the use of the ATR from the TSI (first version) in feigning psychological disorders. First, a study compared TSI scores completed by a group of students first in an "honest condition", in which they completed the TSI honestly, and then in a "deception" condition, in which they attempted to feign PTSD symptoms (Carmody & Crossman, 2005). To be considered a successful PTSD feigner, the participant must not have shown elevations on the Posttraumatic Stress factor or validity scales during the honest condition, and they must have had an elevation on the Posttraumatic Stress factor without elevations on the validity scales (i.e., ATR, Inconsistent Response, or Response Level) during the deceptive condition. Out of an initial 150 participants, 44 participants were removed from the study, as they had elevations on either the Posttraumatic Stress factor or a validity scale in the honest condition. Twenty participants were not elevated on the Posttraumatic Stress factor, and thirty-nine of the participants who had been elevated on Posttraumatic Stress did not pass the

validity scales. Forty-seven of the participants were considered successful feigners. Therefore, the results show an overall success rate of 31% whom were able to simulate PTSD without detection.

In a study comparing the TSI profiles of 88 PTSD simulators to 48 clinical PTSD outpatients who had experienced sexual or physical victimization, 75% of the PTSD patients and 48% of the simulators were correctly classified using a discriminant function analysis (Elhai et al., 2005). The authors recommend that the optimal cutoff score on the TSI ATR should be 61T, as it correctly classified 65% of simulators and 55% of PTSD patients. The simulators scored significantly higher on the TSI ATR, Dysfunctional Sexual Behavior, and Tension Reduction Behavior scales compared to the PTSD outpatients, whereas the PTSD outpatients scored higher on the Anxiety and Sexual Concerns scales. This study also compared the groups on MMPI-2 scores, and found that the MMPI-2's F and F_p scales were more successful at distinguishing simulators and patients than the ATR scale. The authors concluded that the TSI's ATR should not be used when evaluating the possibility of feigned PTSD (Elhai et al., 2005).

Another study compared the performance of the TSI ATR to the MMPI-2 validity scales, including F, F_B, F_p, and FBS, using 84 workplace injury PTSD claimants and 60 trauma victims, whose PTSD had been in remission for at least 6 months (Efendov, Sellbom, & Bagby, 2008). The remitted PTSD trauma group completed the measures in both honest and deceptive conditions, whereas the PTSD claimants completed the measures in only an honest condition. The remitted group completed the TSI and MMPI-2 honestly, and then completed the measures as if they were feigning PTSD in order to receive disability benefits. The remitted PTSD group was split into two groups in this re-administration: the validity scale coached group received written information about the operating characteristics of the ATR and F scales, and the

noncoached group received no additional information. Sensitivity rates improved when using a

cutoff of 61T on the TSI ATR rather than the TSI Manual's suggested cutoff of 90T (55% vs.

16%). Higher scores on the ATR and FBS distinguished the noncoached participants from the

claimants, while higher scores on F, Fb, and F_p distinguished the coached and noncoached

participants from the claimants. These findings suggest that the first version of the TSI does not

add incremental validity over the MMPI-2 in terms of detecting feigned PTSD (Efendov et al.,

2008).

Edens and colleagues (1998) examined the TSI ATR scale with a college student

population instructed to feign compensation-seeking alcohol abuse accident-related and sexual

assault trauma. The participants were provided with a description of DSM-IV PTSD-related

symptomatology, and were able to refer to the description while completing the TSI. Despite this

coaching, the majority of participants were detected by the ATR scale when using a cutoff of

61T. If the researchers used the recommended cutoff of 90T, only 27% of malingerers would

have been correctly classified (Edens, Otto, & Dwyer, 1998). This suggests that knowledge of

trauma symptom patterns does not necessarily improve the ability to malinger PTSD successfully

(Edens et al., 1998). The researchers collected information on the participants' traumatic

histories, including death of a family member, significant illness, experiencing a natural disaster,

physical assault, or sexual assault. Participants who reported a history of traumatic experiences

were no more able to successfully feign trauma symptoms than participants who had not

experienced trauma (Edens et al., 1998).

Guriel-Tennant & Fremouw (2006) examined undergraduates with and without traumatic

histories who feigned PTSD symptoms on the TSI, Personality Assessment Inventory (PAI;

Morey, 1991), and the Miller Forensic Assessment of Symptoms Test (M-FAST; Miller, 2001).

The undergraduates were divided into a naïve and coached condition, where the coached group was provided with information regarding PTSD symptoms and strategies to avoid detection as a malingerer. The study considered criteria involving all three tests to determine if someone was successfully feigning PTSD, defined as no elevations on any of the validity scales across any measure while displaying elevations on a variety of clinical scales. Coached simulators had lower mean validity scores and fewer were above clinical cutoffs compared to the uncoached simulators on several validity scales (i.e., TSI's ATR, PAI's Negative Impression Management scale and Malingering Index, and M-FAST total scale). Thus, there was a significant difference in simulation ability between coached and naïve simulators, as 77% of coached simulators and 95% of naïve simulators were correctly classified as feigning when using an ATR cutoff of 61T. Overall, there was a total successful classification of 97% of simulators. Furthermore, the researchers used the Posttraumatic Stress Diagnostic Scale (PDS; Foa, 1995) to screen for potential PTSD diagnoses. Results indicate that individuals with a history of having experienced a traumatic event were no more successful than those without a traumatic history in avoiding detection. These findings suggest that using a multi-method assessment approach when conducting forensic PTSD evaluations may provide improved predictive power (Guriel-Tennant & Fremouw, 2006). This research team reached similar conclusions in an earlier study, in which only two-thirds of simulators were detected when using the TSI's ATR alone, compared to nearly 90% when the TSI scores were combined with the M-FAST (Guriel et al., 2004).

The research reviewed above examining feigning PTSD on the TSI has had varied results. The performance of the ATR cutoff has not been consistent, as some studies utilized the TSI manual 90T suggested cutoff (Carmody & Crossman, 2005), whereas others utilized a cutoff of 61T (Edens et al., 1998; Efendov et al., 2008; Elhai et al., 2005; Guriel-Tennant & Fremouw,

2006). While reducing the ATR cutoff to $61T$ improves the likelihood of detecting simulators, it increases the chance of misclassifying PTSD patients. In addition, some studies have combined multiple measures in their report utility rates so it is not possible to know the specificity and sensitivity of the ATR individually (Edens et al., 2001; Guriel-Tennant & Fremouw, 2006). The successful classification of feigning PTSD across previous research on the TSI has ranged from 11 – 97%. As previous research led to the ATR's redesign, it is necessary to examine if classification rates have improved on the ATR with the introduction of the TSI-2.

Due to the recent development of the TSI-2, only one study has examined feigning PTSD using this new test (Gray et al., 2010). The study compared two groups: undergraduates coached on PTSD symptoms who did not report a history of trauma or PTSD symptoms, and undergraduates with genuine PTSD symptoms according to the PTSD Checklist (PCL; Weathers, Litz, Herman, Huska, & Keane, 1994) and a prior PTSD traumatic experience on the Life Events Checklist (LEC; Gray, Litz, Hsu, & Lombardo, 2004). The groups were compared on the TSI-2, and the PAI. The simulators over-endorsed PTSD symptoms (i.e., Intrusive Experiences, Defensive Avoidance, and Anxious Arousal scales). Other clinical scales on the TSI-2 were not examined, as they were still being refined and validated (Gray et al., 2010). The TSI-2 ATR performed better than the TSI ATR in detecting simulated PTSD. The authors recommended an ATR cutoff score of 7, as it correctly classified 77% of genuine PTSD symptoms and 74% of simulators. This is a significant improvement over the TSI ATR, as only 59% of simulators and PTSD outpatients were correctly classified on the TSI's ATR in a study with similar methodology (Elhai et al., 2005).

Researchers have not examined the profiles of CDD patients on the TSI or TSI-2, nor either test's ability to detect feigned DID. Although results have varied in the TSI ATR's ability

to distinguish PTSD patients from feigners, classification rates improved in the only study that utilized the TSI-2's ATR (Gray et al., 2010). The utility of three ATR cutoff scores will be examined. First, a cutoff ATR raw score of 7 will be examined, as it was described as the optimal cutoff in the only study examining the TSI-2 to date (Gray et al., 2010). Second, a cutoff ATR raw score of 8 will be examined, as it was Briere's (2010) recommended cutoff in the TSI-2 Manual for general or university student populations. Finally, a cutoff ATR raw score of 15 will be observed, as it was the recommended cutoff for clinical or forensic contexts (Briere, 2010).

As reviewed above, previous research has found that exposure to traumatic events does not improve feigners' ability to simulate PTSD (Edens et al., 1998; Guriel-Tennant & Fremouw, 2006). However, research has not been examined whether feigning CDD is improved if simulators have experienced childhood trauma. The impact of a childhood trauma history on feigning ability should be examined in those who attempt to simulate DID.

Previous research has demonstrated that coaching an individual about a disorder's symptomatology and etiology improves their ability to simulate a disorder (Brand & Chasson, 2014; Brand et al., submitted). As reviewed above, uncoached DID simulators endorse Hollywood stereotypes of DID (Brand et al., submitted). Media representations of those with mental illness help to shape stigmatization in the public (Klin & Lemish, 2008; Nawka, Rukavina, Nawková, Jovanović, Brborović, & Raboch, 2012). Hollywood portrayals often suggest that those with mental illness are aggressive, unpredictable, and unlawful, and this has been especially prominent in depictions of DID (Benbow, 2007; Klin & Lemish, 2008; Nairn, 2007; Nawka et al., 2012; Pirkis, Blood, Francis, & McCallum, 2006; Poseck, 2006; Sieff,

2003). Prior research has not examined if simulators who have been exposed to media depictions of DID differed from those who have been exposed to factual sources.

The aim of this thesis is to contribute to the growing body of research on the accurate detection of CDD and simulated CDD. First, the study will characterize the TSI-2 profile of CDD patients. Second, the study will compare coached DID simulators to CDD profiles on the TSI-2's clinical and validity scales. Third, this project will examine the utility rates of the ATR scale in distinguishing feigned DID from CDD. Fourth, this research will explore if college students with a history of childhood trauma are more accurate at simulating DID than those who have not experienced childhood trauma. Finally, this study will observe whether simulators who have had prior access to accurate, factual information about DID will be better able to feign DID than will simulators who have only had access to information about DID via the media prior to participation in the study.

The first hypothesis is that the CDD patients will score in the clinically elevated range on all clinical scales except Anger and Somatic Preoccupations, consistent with research showing that traumatized individuals experience severe symptomatology in these areas (Brand et al., 2013; Brand & Stadnik, 2013; Foote, Smolin, Neft, & Lipschitz, 2008; Rodewald et al., 2011; Saxe, Chawla, & van der Kolk, 2002; van der Kolk, Perry, & Herman, 1991). The second hypothesis is that the coached simulators will display a significantly different pattern of endorsement on TSI-2 clinical scales compared to the CDD patients. More specifically, it is hypothesized that the simulators will display higher elevations than the CDD patients on the Anger, Tension Reduction Behavior, and the Dysfunctional Sexual Behavior scales, consistent with prior research with similar scales on the TSI and MMPI-2 (Brand et al., submitted; Elhai et al., 2005). In addition, it is hypothesized that the simulators will have lower mean scores on

scales measuring symptoms that are not portrayed as prominently in the media, such as the

Anxious Arousal, Depression, and Somatic Preoccupations scales. The third hypothesis is that

the CDD patients and coached simulators will have ATR mean scores in the invalid range and

that the simulators will have significantly higher ATR scores than will CDD patients. Sensitivity,

specificity, positive predictive power, negative predictive power, and overall diagnostic power

with the ATR will be examined in both groups using raw score cutoffs of 7, 8, and 15. Finally,

the fourth hypothesis is that simulators with a history of childhood trauma will not significantly

differ on the TSI-2 clinical scales or ATR compared to those without childhood trauma histories.

As no prior research has examined the types of exposure to information about DID, no

hypothesis will be provided. Prior exposure to information about DID will be examined as an

exploratory analysis.

Methods

Participants

Dissociative disorders sample. The dissociative sample included 20 DID and 19

DDNOS patients (total $n = 39$) who were recruited by their therapists from an inpatient

psychiatric unit that treats severely traumatized patients. Clinical diagnoses were made after 2

weeks of inpatient observations and an examination of routine assessments that were completed,

including the TSI-2, the PAI, the Multiscale Dissociation Inventory (MDI; Briere, 2002), the

Multidimensional Inventory of Dissociation (MID; Dell, 2006), and the DES. The current

study's sample examined completed TSI-2 and DES assessments that were a part of this routine

assessment of all patients on the inpatient trauma unit.

Most of the CDD patients were female ($n = 33$; 84.6%) and ranged in age from $20 - 56$

($M = 36.9$). In regards to marital status, 46.2% were single ($n = 18$), 30.8% were married ($n =$

12), 17.9% were divorced ($n = 7$), and 5.1% did not report their marital status ($n = 2$). The CDD patients were 87.2% Caucasian ($n = 34$), 2.6% Latino/a ($n = 1$), 2.6% Bi-racial ($n = 1$), 0% African American, 0% Asian, 5.1% reported "Other" ($n = 2$), and 2.6% did not report their ethnicity ($n = 1$).

The CDD patients reported a range of an additional $0 - 3$ comorbid conditions ($M = 1.59$). The current sample were diagnosed by their therapists as meeting criteria for comorbid PTSD ($n = 28$; 71.8%), major depressive disorder ($n = 24$; 61.5%), somatization disorder ($n = 4$; 10.3%), personality disorder ($n = 3$; 7.7%), and psychotic disorder ($n = 2$; 5.1%). The current study reported somewhat lower comorbidity than previous research, which described an average of 5 or 7 comorbid conditions in DD patients (Ellason et al., 1996; Rodewald et al., 2011). This discrepancy may be explained by the nature of the diagnostic information provided for this sample. Therapists reported on comorbidity by marking additional conditions as present or absent, including PTSD, major depressive disorder, psychotic disorder, personality disorder, factitious/malingering, and somatization disorder. Due to the nature of our study, the CDD sample did not include any participants who had a diagnosis of factitious disorder or malingering. Therefore, the therapists could only report a maximum of five comorbid conditions; patients may have had additional comorbid conditions that were not included in the survey. It is likely that comorbidity rates would be higher if diagnostic information was provided for additional conditions that are common with DD populations, such as agoraphobia, obsessive-compulsive disorder, eating disorders, and substance abuse.

Coached simulators. The coached simulators were undergraduate students who were recruited from a psychology research pool and undergraduate advanced-level psychology classes (i.e., Abnormal Psychology; Psychology of Learning; Tests and Measures) at a Mid-Atlantic

university ($n = 59$). Students with an average score of 20 or above on the DES-taxon items (see below) were removed to ensure they did not have a DD ($n = 8$). The coached simulators read factual information provided to them about DID and were administered a knowledge test on which a score of at least 70% had to be obtained in order to confirm that individuals could correctly identify DID symptoms; every participant passed the knowledge test. The information provided was taken from the online encyclopedia Wikipedia (Dissociative identity disorder, 2014). Previous research has found that individuals are influenced by the order of a hyperlink's displayed position on Google more than the relevance of the abstracts provided (Pan, Hembrooke, Joachims, Lorigo, Gay, & Granka, 2007). The Wikipedia information on DID was the second hyperlink provided on Google and the first hyperlink on Bing and Yahoo! search. Therefore, we felt that many individuals attempting to feign DID would likely use a web search to learn about DID and would select the Wikipedia article as their primary source of information. The Wikipedia article included information on the definition of DID, its symptoms and comorbid conditions, etiology, diagnosis, pathophysiology, treatment, prognosis, epidemiology, and history of DID; this information was summarized for the study. Information on the diagnosis, pathophysiology, treatment, and history of DID was not included, as it was irrelevant to the focus of the study (see Appendix B for the information provided to the simulators). The final sample consisted of 51 coached simulators.

The majority of the coached simulators were female ($n = 40$; 78.4%) and ranged in age from 18 – 47 ($M = 21.29$), and 96.1% were single ($n = 49$), 2% were married ($n = 1$), 2% were divorced ($n = 1$), and 0% were widowed. The coached simulators were 58.8% Caucasian ($n = 30$), 19.6% African American ($n = 10$), 9.8% Biracial ($n = 5$), 5.9% Asian American ($n = 3$), and

5.9% Hispanic/Latino ($n = 3$). The average years of higher education completed were 2.25,

ranging from 0 – 4 or more.

Procedures

This study had received IRB approval through Towson University and Sheppard Pratt

Health System.

Dissociative disorders sample. The CDD patients completed the TSI-2 as a part of a

standard battery of instruments routinely given to inpatients for diagnosis and treatment

planning. This present study was part of a larger investigation examining the simulation of DID

on a variety of psychological assessments.

Coached simulator sample. In the informed consent, the participants were told that the

best DID simulator would receive a $50 gift card. This was done to motivate the participants to

best feign DID. In the interest of preserving anonymity and confidentiality, identification

numbers were pre-labeled on all study materials and were not connected to the students' names.

Thus, the $50 cash incentive was given out randomly and not related to simulation performance,

and this deception was revealed during debriefing.

The simulator data was collected in groups of one to four students during 90-minute

sessions. First, the simulators were given informed consent, which reviewed that they would

receive extra credit in their psychology classes for participating, and would have a chance to win

a $50 gift-card if they were the best at faking DID that semester. Next, the simulators reported

their experiences on the Demographic Questionnaire, the DES, and the Childhood Trauma

Questionnaire (CTQ; Bernstein & Fink, 1998). Next, the simulators were provided with

information about DID from Wikipedia, and then completed the Sources of Knowledge survey

and the Knowledge Test. The simulators were instructed that they should begin to simulate DID,

"answering as though they had DID to the best of their ability", and were provided with the TSI-2. After they completed all the measures, the simulators were debriefed, and were told that the $50 incentive would be given out randomly in order to ensure the anonymity of their DES and CTQ responses. In order to select the winner of the $50 incentive, the primary researcher would randomly pick one of the Informed Consent forms and contact the winner from their provided e-mail address. In addition, the students were provided with information about the university counseling center and were encouraged to utilize those services if their participation in the study had resulted in any distress.

 Measures

   Trauma Symptom Inventory-2 (TSI-2; Briere, 2010). The TSI-2 is a revised version of the Trauma Symptom Inventory (TSI; Briere, 1995). As reviewed above, the TSI-2 measures trauma and PTSD symptoms, including the effects of child abuse or neglect, assault, and witnessing or being involved in violence, as well as other traumas (Briere, 2010). The measure consists of 136 items, 2 validity scales (Response Level and Atypical Response), 12 clinical scales (Anxious Arousal, Depression, Anger, Intrusive Experiences, Defensive Avoidance, Dissociation, Somatic Preoccupations, Sexual Disturbance, Suicidality, Insecure Attachment, Impaired Self-Reference, and Tension Reduction Behavior), 12 clinical subscales (Anxious Arousal-Anxiety, Anxious Arousal-Hyperarousal, Somatic Preoccupations-Pain , Somatic Preoccupations-General, Sexual Disturbance-Sexual Concerns , Sexual Disturbance-Dysfunctional Sexual Behavior, Suicidality-Ideation, Suicidality-Behavior, Insecure Attachment-Relational Avoidance, Insecure Attachment-Rejection Sensitivity, Impaired Self-Reference-Reduced Self-Awareness, and Impaired Self-Reference-Other-Directedness, and 4 factors (Self-Disturbance, Posttraumatic Stress, Externalization, and Somatization) according to the test

manual (Briere, 2010). The TSI-2 has shown high test-retest reliability and internal consistency, as well as evidence for its concurrent, discriminant, construct, criterion, and factorial validity (Briere, 2010).

Dissociative Experiences Scale (DES; Bernstein & Putnam, 1986). The DES is a self-report measure of dissociative symptoms that includes 28 items. It has good reliability and validity (Carlson & Putnam, 1993). It was used in this study as a screening instrument for dissociation. The simulators gave accurate answers on the DES. Individuals with DES-taxon scores above 20 were removed to ensure that they did not have a DD (Bernstein & Putnam, 1986). The DES-taxon average score is the average of 8 items on the DES. The following items are included on the DES-taxon: (#3) "Some people have the experience of finding themselves in a place and having no idea how they got there," (#5) "Some people have the experience of finding new things among their belongings that they do not remember buying," (#7) "Some people sometimes have the experience of feeling as though they are standing next to themselves or watching themselves do something and they actually see themselves as if they were looking at another person," (#8) "Some people are told that they sometimes do not recognize friends or family members," (#12) "Some people have the experience of feeling that other people, objects, and the world around them are not real," (#13) "Some people have the experience of feeling that their body does not seem to belong to them," (#22) "Some people find that in one situation they may act so differently compared with another situation that they feel almost as if they were two different people," and (#27) "Some people sometimes find that they hear voices inside their head that tell them to do things or comment on things that they are doing."

Childhood Trauma Questionnaire (CTQ; Bernstein & Fink, 1998). The CTQ is a self-report inventory that screens for exposure to childhood abuse and neglect within one's family.

The CTQ measures five areas of adverse childhood events: sexual abuse, physical abuse, emotional abuse, physical neglect, and emotional neglect. The inventory contains 28 items, which are rated on a 5-point Likert Scale, ranging from "never true" to "very often true". Internal consistency, test-retest reliability, and validity are all satisfactory to excellent (Bernstein & Fink, 1998). The simulators were given the CTQ in order to examine whether or not they could feign DID more successfully if they had experienced childhood trauma. The simulators were classified as "traumatized" or "non-traumatized" according to their scores on each of the five subscales. To be classified as "traumatized", the participant had to have met CTQ classification of having experienced moderate or severe abuse in any of the five subscales. The scores to be considered in the moderate to severe range for each scale include: (a) ≥ 13 on Emotional Abuse, (b) ≥ 10 on Physical Abuse, (c) ≥ 8 on Sexual Abuse, (d) ≥ 15 on Emotional Neglect, and (e) ≥ 10 on Physical Neglect. To be classified as "non-traumatized", the participant had to have scored lower than the moderate or severe range in every subscale.

Sources of Knowledge. The simulators were asked to indicate which sources of information they had been exposed to about DID, including movies, books, chapters in psychology textbooks, the internet, and "other" (see Appendix C). The participants were grouped into media-exposed or factual-exposed, or were not considered in the analysis. In order to be included in the media-exposed group, the participant needed to have selected at least two media sources, including: (a) "I have watched the movie *Sybil*"; (b) "I have read the book *Sybil*"; (c) I have seen a movie(s) other than *Sybil* that is/are about Dissociative Identity Disorder"; (d) I have read a book(s) other than *Sybil* that is/are about Dissociative Identity Disorder"; (e) "I have read information on the Internet about Dissociative Identity Disorder"; and/or (f) provided a media-related response to the prompt "Please list the other way(s) you have learned about this

disorder". To be included in the factual-exposed group, the participant needed to have selected at

least two factual sources, including: (a) "I have taken Abnormal Psychology"; (b) "I have read a

book(s) other than Sybil that is/are about Dissociative Identity Disorder"; and/or (c) provided a

fact-related response to the prompt "Please list the other way(s) you have learned about this

disorder". Participants were only included in the factual-exposed group if they had only been

exposed to 0 or 1 media-related sources, and were only included in the media-exposed group if

they had only been exposed to 0 or 1 factual-related sources. Examples of the media-exposed and

factual-exposed responses to the "other" prompt are displayed in Table 1.

Knowledge Test. The simulators were given a 10-item true/false quiz that required that

they correctly identify the symptoms associated with DID rather than symptoms of other

psychological disorders (see Appendix A). If the coached simulators did not receive a score of at

least 70% on the knowledge test, they were removed from the sample. This score cutoff has been

used in similar prior research that utilized knowledge tests (Elhai et al., 2005; Gray et al., 2010).

As a manipulation check, to examine whether the information provided to the simulators

helped to improve the participants' knowledge of DID, 16 participants were given the

Knowledge Test twice; first before receiving the Wikipedia information about DID, and again

after coaching. Their first score was used as a baseline test of their pre-existing knowledge about

DID, and was compared to their second score after coaching.

Demographic Questionnaire. The simulators were asked to report their age, gender,

ethnicity, education level, and marital status (see Appendix D).

Data analysis

There were no significant differences between the groups in terms of gender, $t(88) =$ .737, $p > .05$ or race, $t(87) = -1.513$, $p > .05$. There was a significant difference in age between the two groups, $t(85) = 9.89$, $p < .001$. Therefore, age was included as a covariate in the analyses.

In order to examine if differences were significant between the CDD patients and the DID simulators, a repeated-measures ANCOVA was completed to examine TSI-2 scales by group while controlling for age. The ANCOVA included all the TSI-2 scales, subscales, and factors, with the exception of the scales that had subscales, as the subscales were combined to determine the total scale score.

A profile analysis was completed to compare the CDD group and the coached simulators on the TSI-2 scales and factors. The interaction between group (CDD vs. coached) and TSI-2 scale (24 levels for all TSI-2 scales with exception of Anxious Arousal, Somatic Preoccupations, Sexual Disturbance, Suicidality, Insecure Attachment, and Impaired Self-Reference) was examined to observe profiles across groups. Post-hoc one-way ANCOVAs examined significant differences on TSI-2 scales according to group status, while controlling for age. Additionally, profile analyses were conducted to compare the traumatized and non-traumatized groups, as well as the media-exposed and factual-exposed groups. An α correction was set at $p < .0021$ to protect against Type I error (i.e., α = .05 was divided by 24 tests).

Results

All descriptive data, profile analyses, and group comparisons were examined using IBM SPSS Statistics Version 22.

Missing data

No participants were missing entire tests, although there were some missing items on the TSI-2. According to the TSI-2 manual, scale scores cannot be calculated if there are more than two missing responses within any scale, and subscale scores cannot be calculated if there is more than one missing response within a subscale (Briere, 2010). Two of the CDD participants had enough missing responses that their Sexual Disturbance scale and Externalization factor could not be calculated. None of the coached participants had enough missing responses to prevent calculating their scale scores. Therefore, 2 of the CDD participants were not included in the Sexual Disturbance and Externalization analyses, resulting in a total CDD sample size of 37 for those scales.

Dissociation Scores

Descriptive data for DES average and DES-taxon scores are provided in Table 2. Descriptive data for the individuals who were excluded from the coached sample because their DES-taxon scores were elevated are provided in Table 2 and Table 3.

Coaching Manipulation Check

As a manipulation check, one-third of the coached participants ($n = 16$) were given the Knowledge Test twice. This sample was given the Knowledge Test first before receiving the Wikipedia information about DID, and again after coaching. This revealed that 31.3% of the participants' Knowledge Test scores improved after coaching ($n = 5$). About half of the participants' Knowledge Test scores remained the same after coaching ($n = 9$; 56.3%), and 12.5% of the participants' Knowledge Test scores decreased by 10 points after coaching ($n = 2$) (i.e., 1 additional item was incorrect). Results of a repeated-measures t-test indicated that coaching did not result in a significant change in knowledge of DID, $t(15) = -1.15$, $p = .27$.

These preliminary results show that the coaching employed in the current study was ineffective, as it did not offer an advantage over the prior knowledge of DID the participants had before beginning the study.

TSI-2 Profiles

Table 4 displays descriptive data and a profile analysis for the dissociative group and the coached simulators on the TSI-2 scales, subscales, and factors.

A repeated-measures ANCOVA was conducted to examine a profile analysis with the dissociative group and coached simulators. TSI-2 scales were included as dependent variables, with group status as the between-groups predictor (i.e., CDD, Coached), a within-subject TSI-2 scale (24 levels signifying the 24 predictor variables), and age as a covariate. The assumption of sphericity was violated, as Mauchly's test was significant ($p < .001$). Therefore, degrees of freedom were corrected using the Greenhouse-Geisser corrected test, as Greenhouse-Geisser ε = .37 (Field, 2009). Assumptions of homogeneity of variance were met, as measured by Levene's Test of Equality of Error Variances. The within-subjects effect for TSI-2 Scale was significant, $F(8.39, 688.20) = 4.40$, $p < .001$, indicating that the participants' T-scores were significantly different across scales. The between-subjects effect for group status was non-significant, $F(1,82) = 3.01$, $p = .086$. The age covariate was non-significant, $F(1,82) = 1.84$, $p = .18$. The interaction between TSI-2 Scale and group status was significant, $F(8.39, 688.20) = 8.84$, $p < .001$, indicating significantly different TSI-2 profiles between the CDD patients and coached simulators. Figure 1 illustrates the TSI-2 profiles of the CDD group and the coached simulators.

Group differences in TSI-2 scales were explored because the repeated-measures ANCOVA indicated that TSI-2 profiles significantly differed between the CDD patients and coached simulators. These group differences were measured using one-way ANCOVAs with

group status as a fixed factor and the individual TSI-2 *T*-score as a dependent variable, while controlling for age. Significant differences are displayed in Figure 1 and described in Table 4.

Efficiency of the ATR

The efficiency of the suggested ATR raw score cutoffs of 7, 8, and 15 were examined. ATR efficiency calculations are presented in Table 5.

Using the raw score cutoff of 7 on the ATR as suggested for malingering detection by Gray et al. (2010), 92.2% of the coached simulators (*n* = 47) and 48.7% of CDD patients (*n* = 19) were correctly classified. The overall diagnostic power of the ATR with a raw score cutoff of 7 was 73.3%.

As recommended for general or university populations, a raw score cutoff of 8 on the ATR (Briere, 2010) correctly classified 86.3% of the coached simulators (*n* = 44) and 51.3% of CDD patients (*n* = 20). The overall diagnostic power of the ATR with a raw score cutoff of 7 was 71.1%.

Briere (2010) recommended using an ATR raw score cutoff of 15 with forensic or clinical populations, which resulted in a correct classification of 47.1% of the coached simulators (*n* = 24) and 76.9% of CDD patients (*n* = 30). The overall diagnostic power of the ATR with a raw score cutoff of 15 was 60%.

Impact of Childhood Trauma Exposure on Simulation

Of the 51 coached simulators, 17 participants (33.3%) reported moderate to severe trauma in at least one area of childhood abuse or neglect. Specifically, 12 participants reported emotional abuse, 6 reported physical abuse, 6 reported sexual abuse, 6 reported emotional neglect, 6 reported physical neglect, and 10 reported more than one type of childhood trauma.

Table 2 displays descriptive data for the traumatized and non-traumatized groups on the TSI-2 scales and subscales, CTQ, and DES.

A repeated-measures ANCOVA was conducted to examine a profile analysis with the traumatized and non-traumatized simulator groups. TSI-2 scales were included as dependent variables, with abuse history as the between-groups predictor (i.e., traumatized, non-traumatized), a within-subject TSI-2 scale (24 levels signifying the 24 predictor variables), and age as a covariate. The assumption of sphericity was violated, as Mauchly's test was significant ($p < .001$). Therefore, degrees of freedom were corrected using the Greenhouse-Geisser corrected test, as Greenhouse-Geisser $\varepsilon = .312$ (Field, 2009). Assumptions of homogeneity of variance were met, as measured by Levene's Test of Equality of Error Variances. The within-subjects effect for TSI-2 Scale was significant, $F(7.17, 322.57) = 5.35$, $p < .001$, indicating that the participants' T-scores varied across TSI-2 scales. The between-subjects effect for abuse history was non-significant, $F(1,45) = 1.02$, $p = .32$, as was the age covariate, $F(1,45) = 1.66$, $p = .20$, and the interaction between TSI-2 Scale and abuse history, $F(7.17, 322.57) = .63$, $p = .73$. This indicates that trauma status did not result in differences on the TSI-2 profiles. Therefore, group differences according to TSI-2 scales were not explored. Figure 2 illustrates the TSI-2 profiles of these groups.

Sources of Knowledge

Table 4 displays descriptive data for the media-exposed and factual-exposed groups on the TSI-2 scales and subscales, Knowledge Test, Sources of Knowledge survey, and DES.

A repeated-measures ANCOVA was conducted to examine a profile analysis with the media-exposed and factual-exposed groups. TSI-2 scales were included as dependent variables, with exposure status as the between-groups predictor (i.e., media-exposed, factual-exposed), a

within-subject TSI-2 scale (24 levels signifying the 24 predictor variables), and age as a

covariate. The within-subjects effect for TSI-2 Scale was significant, $F(23,414) = 5.717$, $p < .001$

indicating that the participants' *T*-scores were significantly different across the TSI-2 scales. The

between-subjects effect for exposure status was non-significant, $F(1,18) = .79$, $p = .39$, as was

the age covariate, $F(1,18) = .001$, $p = .97$, and the interaction between TSI-2 Scale and exposure

status , $F(23,414) = .98$, $p = .49$. This indicates that the simulators' TSI-2 profiles were not

significantly different according to source of information about DID exposure. Therefore, group

differences according to TSI-2 scale were not explored. Figure 3 illustrates the TSI-2 profiles of

these groups.

Discussion

Traumatized and dissociative patients display elevations on feigning indicator validity

scales that sometimes include trauma-related items. These elevations may be due to their

complex, trauma-related symptomatology and comorbidity. These elevations make it challenging

to distinguish CDD patients from malingerers, and may lead to unnecessary costs to society and

potentially harm to patients who are misclassified. The current study examined TSI-2 profiles of

CDD patients and coached DID simulators in order to determine the TSI-2's classification

accuracy with this population.

The first hypothesis predicted that the CDD patients would score in the clinically

elevated range on all clinical scales except Anger and Somatic Preoccupations, due to research

showing that traumatized individuals experience severe symptomatology in these areas (Brand et

al., 2013; Brand & Stadnik, 2013; Foote et al., 2008; Rodewald et al., 2011; Saxe et al., 2002;

van der Kolk et al., 1991). This hypothesis was supported, with the exception of the Sexual

Disturbance scale, which fell in the problematic rather than the clinically elevated range (see

Table 4 and Figure 1). The CDD group reported non-clinical levels of Anger, Somatic

Preoccupations-Pain, and Sexual Disturbance-Dysfunctional Sexual Behavior. These results

support previous research that CDD patients experience a range of intense symptoms, including

depression, anxiety, posttraumatic stress, dissociation, suicidality, identity disturbance, and

difficulties with attachment (Brand et al., 2013; Brand & Stadnik, 2013; Brand et al., 2009; Foote

et al., 2008; Rodewald et al., 2011; Saxe et al., 2002; van der Kolk et al., 1991). Individuals with

CDD do not endorse symptoms of excessive anger and sexual dysfunction. This is consistent

with research showing CDD patients tend to be passive and often avoidant of externalization of

anger and sexuality (Stadnik, Brand, & Savoca, 2013). Sexual aversion combined with anxious

preoccupation with sexuality is associated with childhood sexual abuse (Noll, Trickett, &

Putnam, 2003).

As can be seen in Table 4 and Figure 1, the coached simulators reported clinical

elevations on scales measuring dissociation, hyperarousal, anger, posttraumatic stress symptoms,

sexual difficulties, suicidality, and identity disturbance. This pattern of extremely high

endorsements across a range of symptoms is consistent with the pattern of high elevations found

in simulation research (e.g., Brand & Chasson, 2014; Brand et al., submitted). However, the

simulators did not simply endorse all symptoms at a high level, suggesting a likely effort on their

part not to overstate all psychiatric impairments. The simulators did not identify clinical

impairment in scales measuring anxiety, depression, somatization, or interpersonal difficulties.

Although CDD patients often suffer from severe levels of these symptoms, previous research has

shown that simulators tend to not endorse these common psychological symptoms when

attempting to simulate CDD (Brand et al., submitted).

The second hypothesis was that the coached simulators would display a significantly different pattern of endorsement on TSI-2 clinical scales compared to the CDD patients. This hypothesis was supported, as displayed in Table 4 and Figure 1. Specifically, as hypothesized, the simulators displayed higher elevations than the CDD patients on the Anger and Tension Reduction Behavior scales, and the Dysfunctional Sexual Behavior subscale, consistent with prior research using the MMPI-2 and the TSI with PTSD outpatients and PTSD feigners (Brand et al., submitted; Elhai et al., 2005). These results are likely reflective of the Hollywood portrayals of individuals with mental illness, including those with CDDs, that suggest this population is dangerous and unpredictable (Benbow, 2007; Klin & Lemish, 2008; Nairn, 2007; Nawka et al., 2012; Pirkis, Blood, Francis, & McCallum, 2006; Poseck, 2006; Sieff, 2003). Also, the second hypothesis posited that the simulators would have lower mean scores on scales measuring symptoms that may not be portrayed in the media as associated with CDD including Anxious Arousal, Depression and Somatic Preoccupations (Brand et al., submitted). This hypothesis was partially supported, with the CDD group scoring significantly higher on the Anxiety subscale and Depression scale. Future research should expand upon these findings to investigate item endorsement patterns on Depression, Dissociation, Sexual Disturbance-Dysfunctional Sexual Behavior, Suicidality-Ideation, Anxious Arousal-Anxiety, and the ATR in order to determine if there are patterns of different content themes among the groups.

The hypothesis that the CDD group and coached simulators would display elevations in ATR, and that the simulators would have significantly higher ATR scores than the CDD group was supported. Gray and colleagues (2010) recommended utilizing a cutoff of 7. While this cutoff was accurate in 73.3% of all cases and accurately classified 92.2% of the coached simulators as feigners, it misclassified 51% of CDD patients as feigners. The overall diagnostic

power decreased if the cutoff was increased to 8, as did sensitivity without adequately improving specificity. As stated in the TSI-2 Manual, the cutoff of 8 is not recommended for use with clinical or forensic populations (Briere, 2010). Over half of the CDD patients were misclassified as invalid using this cutoff.

The recommended ATR cutoff is 15 for use in clinical or forensic contexts (Briere, 2010). This cutoff successfully classified only 47.1% of the coached simulators, and 76.9% of the CDD patients, achieving an overall diagnostic power of 60%. For most purposes, a false positive rate of 25% is unacceptably high. However, these utility scores for the ATR are higher than what was obtained using the TSI's ATR with PTSD samples (e.g., Elhai et al., 2005) suggesting the efficiency of the TSI-2 ATR is better than the TSI ATR when attempting to assess traumatized patients, particularly if there is a possibility of malingering. However, while this cutoff obtained a high sensitivity rate, Negative Predictive Power and Overall Diagnostic Power were unacceptably low. The overall diagnostic power of 60% with the TSI-2 ATR cutoff of 15 does not compare well to previous research with F_p of the MMPI-2 (83%; Brand & Chasson, 2014) or the Trauma Index of the SIRS-2 (83.3%; Brand et al., 2014). This study should be replicated in future research to determine if the ATR's utility rates remain low with other CDD samples. If so, this test is not adequate to accurately classify feigning of DID.

Although it appears that the TSI-2 ATR has better utility scores than does the TSI ATR with traumatized populations, the ATR should only be used if combined with other measures when attempting to determine if a patient is presenting with a CDD or PTSD, or if they are feigning or exaggerating trauma disorders. The current study's results recommend that the TSI-2 should be used in conjunction with other scales such as the SIRS-2 Trauma Index and the MMPI-2's F, F_B, and F_p scales with this population, as adequately-powered prior research has

found these scales have been successful in distinguishing CDD patients and simulators (Brand &

Chasson, 2014; Brand et al., 2014; Brand et al., submitted). Using multiple tests to assess in

PTSD simulation studies with the TSI has proven beneficial (Edens et al., 2001; Efendov et al.,

2008; Elhai et al., 2005; Guriel-Tennant & Fremouw, 2006). Future research could examine

endorsement patterns with CDD and coached simulator groups in order to examine content

themes present and absent in both groups for traumatic symptomatology. The examination of

content themes would allow clinicians to better assess for CDDs and detect feigning.

Individuals with traumatic histories but without elevated dissociation are no more

successful than their non-traumatized counterparts at simulating PTSD (Edens et al., 1998;

Guriel-Tennant & Fremouw, 2006). However, prior research has not examined if simulators who

have been abused in childhood are more successful at simulating than those who have not

experienced childhood trauma. This study measured childhood abuse with the CTQ, and

hypothesized that simulators with a history of childhood trauma would not significantly differ on

the TSI-2 compared to non-traumatized individuals. One-third of the coached simulators reported

at least one area of childhood maltreatment, with the majority reporting emotional abuse and/or

having experienced more than one type of childhood trauma. This hypothesis was supported, as

traumatized individuals without elevated dissociation did not significantly differ from their non-

traumatized and non-dissociative peers in the ability to simulate DID on the TSI-2. Dissimilar

abuse histories (i.e., sexual abuse, physical abuse) were not examined, as the sample sizes within

types of abuse were small. Future research using adequately powered samples should compare

whether individuals who have experienced different types of maltreatment in childhood differ on

their ability to simulate DID.

Prior research has found that uncoached individuals often endorse Hollywood stereotypes of DID, which suggest that CDD patients are unlawful or violent (Brand et al., submitted; Pirkis et al., 2006; Poseck, 2006). It has yet to be examined whether simulators who have been exposed to media portrayals of DID would differ from those who have been exposed to factual sources of information about DID. This was examined in the current study, and it was found that TSI-2 profiles did not significantly differ between simulators according to the type of prior exposure about DID. Future research should attempt to examine prior exposure to DID more in-depth by examining which specific sources the simulators have been exposed to (e.g., movies and television shows such as *Psycho*, *Bates Motel*, and *Fight Club* versus journal articles about DID). Future simulation designs could attempt to examine this by splitting the coached participants into two groups. In the first group, the researchers could expose the simulators only to media sources (e.g., having the simulators watch an episode of The United States of Tara and read an inaccurate article from the internet). In the second group, the researchers could expose the simulators only to factually accurate sources (e.g., watching a documentary on DID and reading a book chapter written by a DID expert). Research designs have yet to examine varying coaching exposure, and it is uncertain if similar manipulation designs would produce group differences in simulation ability.

It is noteworthy that a portion ($n = 8$) of the coached simulators were excluded due to their elevations on the DES-taxon. The use of the DES has been validated with college student populations (Gleaves, Williams, Harrison, & Cororve, 2000), and the DES-taxon is recommended over the DES average score (Barker-Collo & Moskowitz, 2005). The DES-taxon elevations in the current study were surprising, as previous research reported that fewer of the participants had met this exclusionary criterion (Brand et al., 2006; Brand & Chasson, 2014;

Brand et al., submitted). It is uncertain what caused these elevations because this study followed

the same methodology used in Brand and colleagues' earlier feigning DID study. One possible

explanation is that some students may have been confused by the directions, such that they

feigned DID on the DES rather than truthfully responding. However, instruction to complete the

DES "honestly according to their own experience" was provided both written and verbally. The

excluded students appear to have experienced more childhood trauma than the other coached

participants on average. This may explain the DES-taxon elevations, as increased levels of

dissociation have been reported in college students with a history of childhood trauma (e.g.,

Aydin, Altindag, & Ozkan, 2009). It appears that there may be differences in simulation patterns

between those simulators with elevated dissociation and the non-dissociative simulators. The

DES-elevated group reported lower levels of dissociation and tension reduction behaviors than

the non-dissociative simulators, as well as higher levels of somatization and Response Level.

This exploratory finding suggests that dissociation in simulator populations should continue to be

examined, and those with elevated dissociation or a possible DD should be excluded from DID

simulator samples.

Future Research and Limitations

A limitation of the current study is that the coaching provided to the simulator group has

limited impact on simulation ability. A manipulation check revealed that the majority of

participants had the same knowledge about DID before and after coaching, and a few of the

participants' Knowledge Test scores worsened after coaching. Only one third of the participants

improved on the Knowledge Test after coaching. This manipulation check showed that coaching

did not change a participant's knowledge of DID. However, this manipulation check was not

completed with the entire coached simulator sample, and these findings should be viewed as

preliminary. Additionally, the entire coached simulator sample obtained high enough scores on the Knowledge Test to be included in the sample. It is uncertain whether individuals with little prior knowledge of DID would improve after coaching. These preliminary results may have been influenced by the recruitment methods employed in the study. The coached simulators were recruited from an undergraduate psychology research pool and from advanced-level psychology classes. Research has shown that psychology majors have similar MMPI-2 profiles to other college majors, and that research samples that are disproportionately composed of psychology majors generalize to broader undergraduate students (McCray, Bailly, & King, 2005). However, research has yet to be completed examining if undergraduate students majoring in psychology would significantly outperform students in other majors on tasks that involve knowledge of psychological symptoms and disorders. Therefore, it is possible that these individuals already have strong enough preexisting knowledge of DID to be able to pass the Knowledge Test without coaching. This suggests that the Knowledge Test should be difficult enough that the majority of uncoached individuals would not pass the Knowledge Test. Future research should include more difficult questions, and should pilot the test with a general population before using it in a simulation study. Additionally, future pilot research should alter the coaching provided in this study, and should examine the change in knowledge after coaching. As simulation studies are prominent with dissociative and traumatized samples, it is important to ensure that coaching techniques are adequately teaching participants about a disorder and its symptoms in order to strengthen the validity of such research.

Another limitation of the current study is that it did not examine if the type of abuse history has an effect on simulation ability. Previous research has shown that more severe outcomes result from sexual abuse or numerous forms of traumatic exposure (Green et al., 2005;

Fitzpatrick et al., 2010; Zelikovsky & Lynn, 2002). Future DID and PTSD simulation studies should examine how differing forms of childhood abuse or traumatic histories effect simulation ability.

Our dissociative disorders sample is representative of the CDD population found in research studies, as the majority of CDD patients were female, Caucasian, and hospitalized. However, some research has shown that courses of treatment and ethnicities of CDD patients vary (e.g., Boon & Draijer, 1993; Foote et al., 2006, 2008; Friedl & Draijer, 2000; Garcia et al., 2006), so this sample may not generalize to dissimilar CDD populations (such as outpatients, males or more racially or culturally diverse CDD individuals).There were not significant differences in race or gender between the patient and simulator groups, so the heterogeneity among the demographic variables may have provided control over these variables. In addition, the sample size of the CDD population was small, as only 20 DID patients and 19 DDNOS patients were included in the current study. Future research should include a larger and more diverse CDD population to determine if the utility statistics found in the current study are representative of CDD patient and CDD simulator populations, in order to clarify if the ATR is adequate at detecting CDDs from feigned CDD.

A final limitation is that the current study did not utilize actual DID malingerers; rather, it used a DID simulation design, which is a threat to external validity (for a review, see Rogers & Cruise, 1998). Therefore, future research should attempt to include DID malingerers rather than a college student population attempting to feign DID.

Conclusions

This study compared the TSI-2 profiles of hospitalized CDD patients to those of coached CDD simulators. Patients showed elevations in almost all clinical scales and factors on the TSI-2, with the exception of Anger, Somatic Preoccupations, Sexual Disturbance, and Somatization. Results showed TSI-2 profiles are significantly different between a CDD group and coached DID simulators, especially on the Depression, Dissociation, Sexual Disturbance-Dysfunctional Sexual Behavior, Suicidality-Ideation, Anxious Arousal-Anxiety, and ATR scales. The TSI-2's ATR may not be adequate to classify CDD simulators and CDD patients. Caution is warranted when using the TSI-2 to determine feigning of CDD. Neither childhood abuse histories nor types of sources of prior exposure to information about DID improved simulation ability. Overall, these results indicate that the TSI-2 may not be an adequate test to determine feigning of CDD. If future research replicates these results, other tests such as the SIRS-2 and MMPI-2 should be employed to distinguish CDD from feigned CDD in forensic or clinical contexts.

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Table 1

Sample Responses for the Media-Exposed and Factual-Exposed Groups

Media-Exposed Group	Factual-Exposed Group
• Showtime show, "United States of Tara"	• Wrote a paper about it including research articles
• Media, but was very over exaggerated	• Lectures from other psych classes
• YouTube videos	• A presenter with DID came to my class to talk about her experience with the disorder

Note. These responses were provided on the Sources of Knowledge survey under the prompt, "Please list the other way(s) you have learned about this disorder:"

Table 2

Descriptive Data for DES Scores

	CDD (*N* = 39)		Coached (*N* = 51)		Simulators Removed from Analyses (*N* = 8)	
	M (*SD*)	Min. – Max.	*M* (*SD*)	Min. – Max.	*M* (*SD*)	Min. – Max.
DES average	43.61 (20.24)	12.14 – 86.79	12.93 (8.40)	1.07 – 33.93	36.25 (9.57)	20.71 – 53.93
DES-taxon	39.39 (21.05)	6.25 – 86.25	5.69 (4.84)	.00 – 16.25	40.00 (10.65)	25.00 – 56.25

Note: The 8 participants who were removed from the analyses were excluded because their scores were 20 or above on the DES-taxon average score.

Table 3

Descriptive Data for CTQ and TSI-2 T-scores with Elevated DES-taxon Simulators and Non-

DES Elevated Simulators

Scale	DES-taxon Elevated Simulators (*N* = 8)		Coached Simulators (*N* = 51)	
	M (*SD*)	Min. – Max.	*M* (*SD*)	Min. – Max.
CTQ M/D	.38 (1.06)	0 – 3	.84 (1.07)	0 – 3
CTQ EA	13.25 (6.71)	6 – 24	8.51 (4.56)	5 – 22
CTQ PA	8.13 (2.64)	5 – 12	6.61 (2.35)	5 – 14
CTQ SA	6.75 (3.88)	5 – 16	5.94 (2.98)	5 – 24
CTQ EN	9.14 (5.84)	6 – 21	8.20 (3.69)	5 – 19
CTQ PN	8.38 (3.02)	5 – 13	6.29 (2.21)	5 – 14
CTQ Total	45.57 (18.45)	27 – 75	35.55 (12.37)	25 – 80
RL	53.88 (12.86)	44 – 79	47.61 (4.24)	44 – 67
ATR	86.63 (21.39)	48 – ≥100	93.14 (10.74)	62 – ≥100
SELF	66.25 (10.40)	43 – 75	66.47 (6.53)	54 – 83
TRAUMA	70.00 (10.39)	47 – 81	73.04 (6.69)	59 – 89
EXT	76.63 (12.34)	56 – 98	77.75 (12.41)	54 – ≥100
SOMA	64.00 (12.78)	47 – 82	58.63 (10.36)	34 – 82
AA	64.13 (9.78)	45 – 77	64.33 (6.76)	47 – 78
AA-A	62.13 (11.26)	39 – 74	61.76 (7.27)	46 – 75
AA-H	65.13 (7.79)	52 – 76	65.86 (7.03)	49 – 79
D	62.50 (8.21)	45 – 72	62.06 (7.71)	47 – 78

ANG	66.63 (9.02)	49 – 76	65.12 (8.52)	46 – 82
IE	73.25 (8.52)	59 – 84	71.67 (8.56)	54 – 89
DA	62.00 (8.86)	43 – 71	65.82 (6.57)	41 – 81
DIS	75.88 (15.20)	43 – 90	85.75 (8.43)	68 – 96
SOM	64.00 (12.78)	47 – 82	58.65 (10.40)	34 – 83
SOM-P	55.00 (13.84)	38 – 75	50.69 (10.85)	31 – 76
SOM-G	69.63 (10.93)	52 – 85	64.12 (10.16)	36 – 88
SXD	73.63 (7.98)	63 – 87	72.94 (12.80)	42 – 96
SXD-SC	65.63 (10.30)	47 – 76	65.35 (11.37)	41 – 86
SXD-DSB	75.50 (10.43)	63 – 94	75.31 (14.06)	45 – $\geq$100
SUI	75.38 (16.32)	51 – $\geq$100	78.31 (16.89)	49 – $\geq$100
SUI-I	68.38 (15.40)	44 – 87	71.80 (13.77)	47 – $\geq$100
SUI-B	80.50 (16.54)	52 – $\geq$100	81.78 (19.64)	47 – $\geq$100
IA	63.38 (7.96)	45 – 70	63.25 (6.19)	49 – 75
IA-RA	62.38 (8.25)	46 – 73	61.84 (6.43)	46 – 73
IA-RS	62.13 (7.20)	45 – 67	62.45 (7.06)	48 – 77
ISR	71.00 (14.18)	41 – 84	71.90 (7.62)	56 – 88
ISR-RSA	68.63 (11.44)	45 – 78	69.73 (8.67)	49 – 83
ISR-OD	69.75 (16.21)	38 – 87	70.37 (7.25)	58 – 88
TRB	75.63 (12.55)	59 – 99	80.57 (11.97)	57 – $\geq$100

Note. CTQ M/D = Minimization/Denial Scale Total; CTQ EA=Emotional Abuse Total; CTQ PA=Physical Abuse Total; CTQ SA=Sexual Abuse Total; CTQ EN=Emotional Neglect Total; CTQ PN=Physical Neglect Total; RL=Response Level; ATR=Atypical Response; SELF=Self-Disturbance; TRAUMA=Posttraumatic Stress; EXT=Externalization; SOMA=Somatization; AA=Anxious Arousal; AA-A=Anxiety; AA-H=Hyperarousal; D=Depression; ANG=Anger; IE=Intrusive Experiences; DA=Defensive Avoidance; DIS=Dissociation; SOM=Somatic Preoccupations; SOM-P=Pain; SOM-

G=General; SXD=Sexual Disturbance; SXD-SC=Sexual Concerns; SXD-DSB=Dysfunctional Sexual Behavior; SUI=Suicidality; SUI-I=Ideation; SUI-B=Behavior; IA=Insecure Attachment; IA-RA=Relational Avoidance; IA-RS=Rejection Sensitivity; ISR=Impaired Self-Reference; ISR-RSA=Reduced Self-Awareness; ISR-OD=Other-Directedness; TRB=Tension Reduction Behavior

Table 4

Descriptive Data for TSI-2 T-Scores with Complex Dissociative Disorder and Coached Groups

Scale	CDD Group ($N = 39$)		Coached Group ($N = 51$)			
	M (*SD*)	Min. – Max.	*M* (*SD*)	Min. – Max.	*F*(*df*)	*p*-values
RL	47.64 (5.865)	43 – 74	47.61 (4.24)	44 – 67	.08 (2,86)	.93
ATR	76.28 (19.73)	44 – ≥100	93.14 (10.74)	62 – ≥100	16.53 (2,86)	< .001*
SELF	70.46 (6.65)	44 – 82	66.47 (6.53)	54 – 83	4.41 (2,86)	.02
TRAUMA	72.26 (8.22)	45 – 88	73.04 (6.69)	59 – 89	.44 (2,86)	.65
EXT	71.92 (11.90)	49 – ≥100	77.75 (12.41)	54 – ≥100	3.53 (2,84)	.03
SOMA	60.21 (10.58)	34 – 78	58.63 (10.36)	34 – 82	1.99 (2,86)	.14
AA	69.44 (6.24)	48 – 77	64.33 (6.76)	47 – 78	-----	-----
AA-A	67.31 (6.58)	45 – 75	61.76 (7.27)	46 – 75	6.77 (2,86)	.002*
AA-H	70.03 (6.11)	52 – 77	65.86 (7.03)	49 – 79	4.55 (2,86)	.01
D	68.87 (5.07)	47 – 78	62.06 (7.71)	47 – 78	12.21 (2,86)	< .001*
ANG	59.41 (9.67)	44 – 79	65.12 (8.52)	46 – 82	4.64 (2,86)	.01
IE	70.85 (10.10)	45 – 93	71.67 (8.56)	54 – 89	1.01 (2,86)	.37
DA	65.85 (8.22)	43 – 77	65.82 (6.57)	41 – 81	.30 (2,86)	.75
DIS	76.31 (11.54)	46 – ≥100	85.75 (8.43)	68 – 96	11.07 (2,86)	< .001*
SOM	60.21 (10.58)	34 – 78	58.65 (10.40)	34 – 83	-----	-----
SOM-P	55.10 (11.06)	35 – 75	50.69 (10.85)	31 – 76	4.46 (2,86)	.01
SOM-G	62.95 (11.50)	36 – 85	64.12 (10.16)	36 – 88	.78 (2,86)	.46

SXD	63.32 (15.86)	42 – 96	72.94 (12.80)	42 – 96	-----	-----
SXD-SC	65.49 (14.54)	41 – 86	65.35 (11.37)	41 – 86	.21 (2,84)	.81
SXD-DSB	55.27 (16.12)	45 – 98	75.31 (14.06)	45 – $\geq$100	17.86 (2,84)	< .001*
SUI	82.18 (14.50)	49 – $\geq$100	78.31 (16.89)	49 – $\geq$100	-----	-----
SUI-I	82.26 (11.82)	50 – $\geq$100	71.80 (13.77)	47 – $\geq$100	7.87 (2,86)	.001*
SUI-B	72.95 (19.91)	47 – $\geq$100	81.78 (19.64)	47 – $\geq$100	3.36 (2,86)	.04
IA	66.18 (6.92)	42 – 76	63.25 (6.19)	49 – 75	-----	-----
IA-RA	65.95 (7.63)	44 – 83	61.84 (6.43)	46 – 73	5.13 (2,86)	.008
IA-RS	63.69 (7.67)	42 – 74	62.45 (7.06)	48 – 77	.51 (2,86)	.60
ISR	72.79 (9.46)	43 – 85	71.90 (7.62)	56 – 88	-----	-----
ISR-RSA	71.03 (9.03)	45 – 82	69.73 (8.67)	49 – 83	.26 (2,86)	.77
ISR-OD	70.59 (10.99)	38 – 87	70.37 (7.25)	58 – 88	.33 (2,86)	.72
TRB	73.85 (14.66)	45 – $\geq$100	80.57 (11.97)	57 – $\geq$100	4.01 (2,86)	.02

Note. RL=Response Level; ATR=Atypical Response; SELF=Self-Disturbance; TRAUMA=Posttraumatic Stress; EXT=Externalization; SOMA=Somatization; AA=Anxious Arousal; AA-A=Anxiety; AA-H=Hyperarousal; D=Depression; ANG=Anger; IE=Intrusive Experiences; DA=Defensive Avoidance; DIS=Dissociation; SOM=Somatic Preoccupations; SOM-P=Pain; SOM-G=General; SXD=Sexual Disturbance; SXD-SC=Sexual Concerns; SXD-DSB=Dysfunctional Sexual Behavior; SUI=Suicidality; SUI-I=Ideation; SUI-B=Behavior; IA=Insecure Attachment; IA-RA=Relational Avoidance; IA-RS=Rejection Sensitivity; ISR=Impaired Self-Reference; ISR-RSA=Reduced Self-Awareness; ISR-OD=Other-Directedness; TRB=Tension Reduction Behavior
* $p < .002$

Table 5

ATR Classification Accuracy in Detecting Complex Dissociative Disorder Patients and Coached

Simulators

	Cutoff = 7	Cutoff = 8	Cutoff = 15
	(Gray et al.)	(Manual – Non-Clinical)	(Manual – Clinical)
Sensitivity	0.92	0.86	0.47
Specificity	0.49	0.51	0.77
Positive Predictive Power	0.70	0.70	0.73
Negative Predictive Power	0.83	0.74	0.53
Overall Diagnostic Power	0.73	0.71	0.60

Note.   CDD $N = 39$; Coached $N = 51$; for all cutoffs examined, Base Rate $= 0.57$

Table 6

Descriptive Data for Traumatized and Non-traumatized Simulators

Scale	Traumatized Group ($n = 17$)		Non-traumatized Group ($n = 34$)	
	M (*SD*)	Min. – Max.	*M* (*SD*)	Min. – Max.
DES average	17.63 (7.08)	5.71 – 27.50	10.58 (8.10)	1.07 – 33.93
DES-taxon	8.09 (4.68)	1.25 – 16.25	4.49 (4.52)	.00 – 13.75
CTQ M/D	0.29 (0.85)	0 – 3	1.12 (1.07)	0 – 3
CTQ EA	13.29 (4.83)	5 – 22	6.12 (1.57)	5 – 11
CTQ PA	8.53 (3.00)	5 – 14	5.65 (1.07)	5 – 9
CTQ SA	7.71 (4.75)	5 – 24	5.06 (0.34)	5 – 7
CTQ EN	11.53 (4.14)	5 – 19	6.53 (1.93)	5 – 12
CTQ PN	8.00 (2.92)	5 – 14	5.44 (1.02)	5 – 9
CTQ Total	49.06 (12.53)	29 – 80	28.79 (3.86)	25 – 40
RL	48.06 (3.88)	44 – 56	47.38 (4.45)	44 – 67
ATR	92.35 (10.98)	70 – ≥100	93.53 (10.77)	62 – ≥100
SELF	65.53 (7.56)	54 – 78	66.94 (6.02)	54 – 83
TRAUMA	71.88 (6.30)	62 – 81	73.62 (6.89)	59 – 89
EXT	76.18 (14.81)	54 – ≥100	78.53 (11.19)	57 – ≥100
SOMA	58.71 (11.85)	34 – 82	58.59 (9.72)	36 – 81
AA	64.94 (6.85)	53 – 77	64.03 (6.79)	47 – 78
AA-A	63.00 (6.95)	48 – 75	61.15 (7.46)	46 – 74
AA-H	65.76 (8.08)	52 – 77	65.91 (6.57)	49 – 79

D	61.71 (8.12)	48 – 72	62.24 (7.62)	47 – 78
ANG	63.29 (10.73)	46 – 79	66.03 (7.19)	50 – 82
IE	68.41 (7.63)	55 – 79	73.29 (8.64)	54 – 89
DA	65.76 (4.41)	55 – 72	65.85 (7.48)	41 – 81
DIS	84.06 (8.83)	69 – 96	86.59 (8.22)	68 – 96
SOM	58.76 (11.97)	34 – 83	58.59 (9.72)	36 – 81
SOM-P	51.06 (12.47)	35 – 75	50.50 (10.15)	31 – 76
SOM-G	63.76 (10.95)	36 – 82	64.29 (9.91)	42 – 88
SXD	71.06 (13.13)	46 – 96	73.88 (12.72)	42 – 96
SXD-SC	64.06 (12.76)	41 – 86	66.00 (10.75)	42 – 86
SXD-DSB	73.59 (13.97)	49 – ≥100	76.18 (14.23)	45 – 98
SUI	77.18 (20.05)	51 – ≥100	78.88 (15.36)	49 – ≥100
SUI-I	71.88 (16.78)	47 – 95	71.76 (12.27)	50 – ≥100
SUI-B	78.94 (21.67)	47 – ≥100	83.21 (18.72)	47 – ≥100
IA	62.35 (7.45)	49 – 74	63.71 (5.53)	53 – 75
IA-RA	61.35 (6.74)	51 – 73	62.09 (6.36)	46 – 72
IA-RS	61.29 (8.03)	48 – 74	63.03 (6.58)	48 – 77
ISR	70.47 (7.94)	56 – 85	72.62 (7.47)	58 – 88
ISR-RSA	67.59 (8.82)	52 – 78	70.79 (8.52)	49 – 83
ISR-OD	70.12 (7.23)	61 – 87	70.50 (7.36)	58 – 88
TRB	79.29 (12.35)	57 – 99	81.21 (11.90)	62 – ≥100

Note. CTQ M/D=Minimization/Denial Total; CTQ EA=Emotional Abuse Total; CTQ PA=Physical Abuse Total; CTQ SA=Sexual Abuse Total; CTQ EN=Emotional Neglect Total; CTQ PN=Physical Neglect Total; RL=Response Level; ATR=Atypical Response; SELF=Self-Disturbance; TRAUMA=Posttraumatic Stress; EXT=Externalization; SOMA=Somatization; AA=Anxious Arousal;

AA-A=Anxiety; AA-H=Hyperarousal; D=Depression; ANG=Anger; IE=Intrusive Experiences; DA=Defensive Avoidance; DIS=Dissociation; SOM=Somatic Preoccupations; SOM-P=Pain; SOM-G=General; SXD=Sexual Disturbance; SXD-SC=Sexual Concerns; SXD-DSB=Dysfunctional Sexual Behavior; SUI=Suicidality; SUI-I=Ideation; SUI-B=Behavior; IA=Insecure Attachment; IA-RA=Relational Avoidance; IA-RS=Rejection Sensitivity; ISR=Impaired Self-Reference; ISR-RSA=Reduced Self-Awareness; ISR-OD=Other-Directedness; TRB=Tension Reduction Behavior
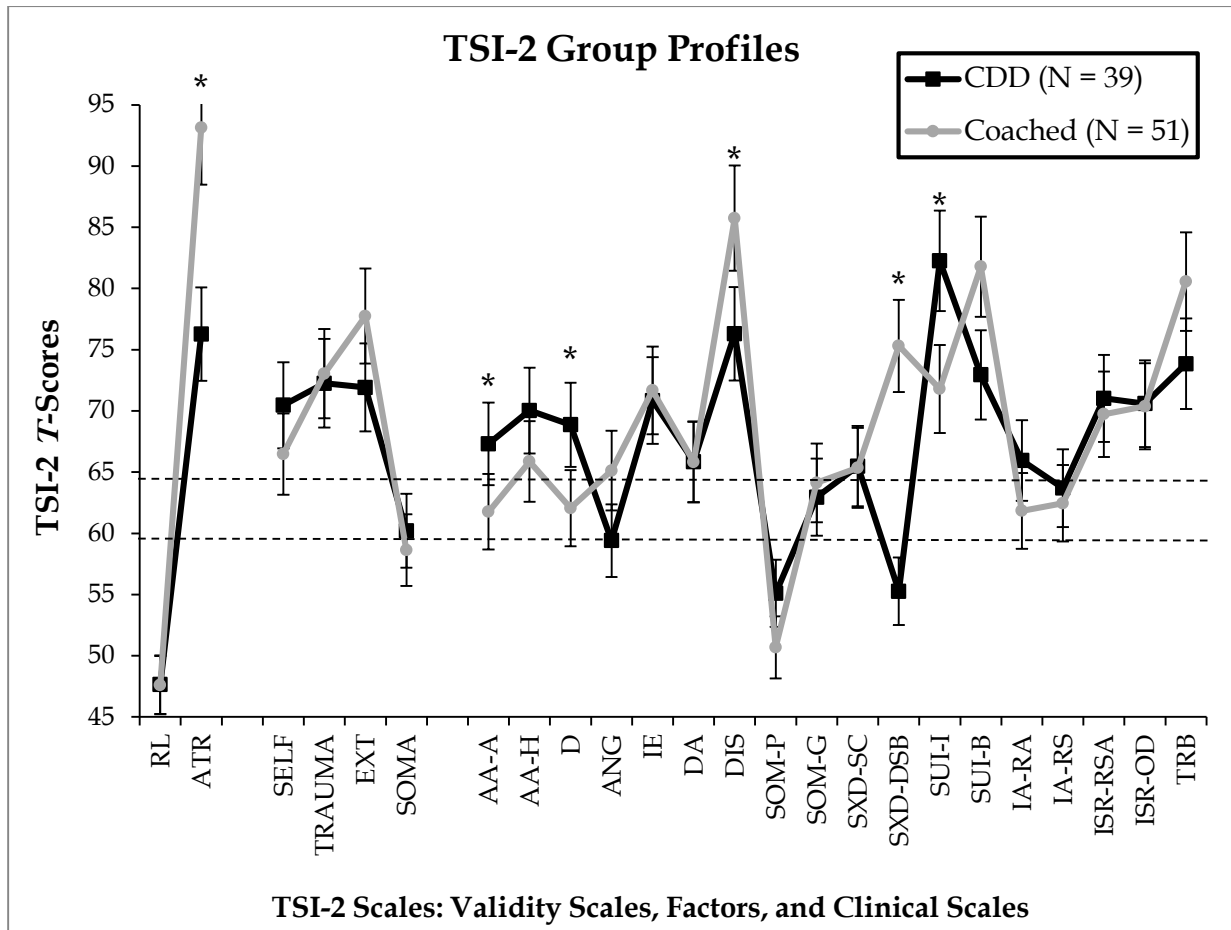
Table 7

Descriptive Data for Types of DID Exposure Groups: Media-Exposed and Factual-Exposed

Simulators

Scale	Media-Exposed ($n = 10$)		Factual-Exposed ($n = 14$)	
	M (*SD*)	Min. – Max.	*M* (*SD*)	Min. – Max.
Knowledge Test Score	89.00 (5.68)	80 – 100	88.57 (7.70)	80 – 100
Sources Total	3.30 (0.95)	2 – 5	2.79 (0.58)	2 – 4
Media Sources	2.40 (0.70)	2 – 4	0.57 (0.51)	0 – 1
Factual Sources	0.70 (0.48)	0 – 1	2.14 (0.36)	2 – 3
RL	47.40 (2.55)	45 – 50	47.21 (3.53)	44 – 56
ATR	94.60 (8.83)	75 – $\geq$100	96.71 (7.00)	74 – $\geq$100
SELF	67.00 (6.91)	57 – 78	66.86 (4.88)	58 – 74
TRAUMA	74.00 (5.96)	65 – 83	74.14 (5.80)	59 – 81
EXT	81.90 (12.53)	61 – $\geq$100	80.07 (9.89)	62 – 93
SOMA	64.60 (16.38)	34 – 99	60.36 (6.59)	51 – 71
AA	65.40 (6.15)	57 – 77	65.00 (4.59)	57 – 71
AA-A	64.10 (7.65)	51 – 75	62.29 (5.44)	51 – 69
AA-H	65.60 (6.19)	58 – 77	66.57 (4.99)	58 – 74
D	63.90 (7.87)	55 – 78	62.57 (6.48)	50 – 74
ANG	66.40 (9.29)	53 – 79	65.86 (7.38)	53 – 79
IE	72.30 (9.20)	55 – 87	73.86 (7.64)	54 – 85
DA	66.60 (3.98)	62 – 75	65.43 (8.36)	41 – 73

DIS	86.80 (8.48)	70 – 96	87.07 (6.56)	75 – 96
SOM	64.70 (16.50)	34 – 83	60.36 (6.59)	51 – 71
SOM-P	59.30 (16.74)	35 – 76	52.93 (7.26)	38 – 64
SOM-G	66.90 (14.31)	36 – 82	65.07 (8.12)	49 – 76
SXD	79.00 (13.93)	46 – 96	76.71 (8.60)	63 – 89
SXD-SC	69.20 (10.91)	45 – 83	67.36 (9.15)	47 – 79
SXD-DSB	82.00 (14.67)	49 – $\geq$100	80.50 (10.234)	54 – 94
SUI	83.40 (15.97)	51 – $\geq$100	83.14 (16.09)	58 – $\geq$100
SUI-I	76.00 (13.73)	50 – 99	74.00 (12.02)	53 – 95
SUI-B	87.40 (19.48)	52 – $\geq$100	87.36 (18.44)	47 – $\geq$100
IA	63.50 (6.38)	54 – 74	64.00 (5.67)	51 – 71
IA-RA	63.70 (6.31)	53 – 73	62.21 (5.09)	53 – 70
IA-RS	61.00 (6.65)	48 – 72	63.36 (7.86)	48 – 74
ISR	71.10 (8.65)	56 – 85	71.57 (7.47)	60 – 82
ISR-RSA	69.00 (9.50)	52 – 83	70.43 (8.01)	57 – 83
ISR-OD	69.80 (8.09)	61 – 87	68.93 (6.55)	58 – 80
TRB	83.50 (10.70)	68 – 99	79.00 (11.79)	62 – $\geq$100

Note. Sources Total=total number of sources exposed to; Media Sources=number of media sources exposed to; Factual Sources=number of factual sources exposed to; RL=Response Level; ATR=Atypical Response; SELF=Self-Disturbance; TRAUMA=Posttraumatic Stress; EXT=Externalization; SOMA=Somatization; AA=Anxious Arousal; AA-A=Anxiety; AA-H=Hyperarousal; D=Depression; ANG=Anger; IE=Intrusive Experiences; DA=Defensive Avoidance; DIS=Dissociation; SOM=Somatic Preoccupations; SOM-P=Pain; SOM-G=General; SXD=Sexual Disturbance; SXD-SC=Sexual Concerns; SXD-DSB=Dysfunctional Sexual Behavior; SUI=Suicidality; SUI-I=Ideation; SUI-B=Behavior; IA=Insecure Attachment; IA-RA=Relational Avoidance; IA-RS=Rejection Sensitivity; ISR=Impaired Self-Reference; ISR-RSA=Reduced Self-Awareness; ISR-OD=Other-Directedness; TRB=Tension Reduction Behavior

Figure 1. Complex Dissociative Disorder and Coached Simulators' Mean TSI-2 Profiles

Note: * *p* < .002

Figure 2. Traumatized and Non-traumatized Simulators' Mean TSI-2 Profiles
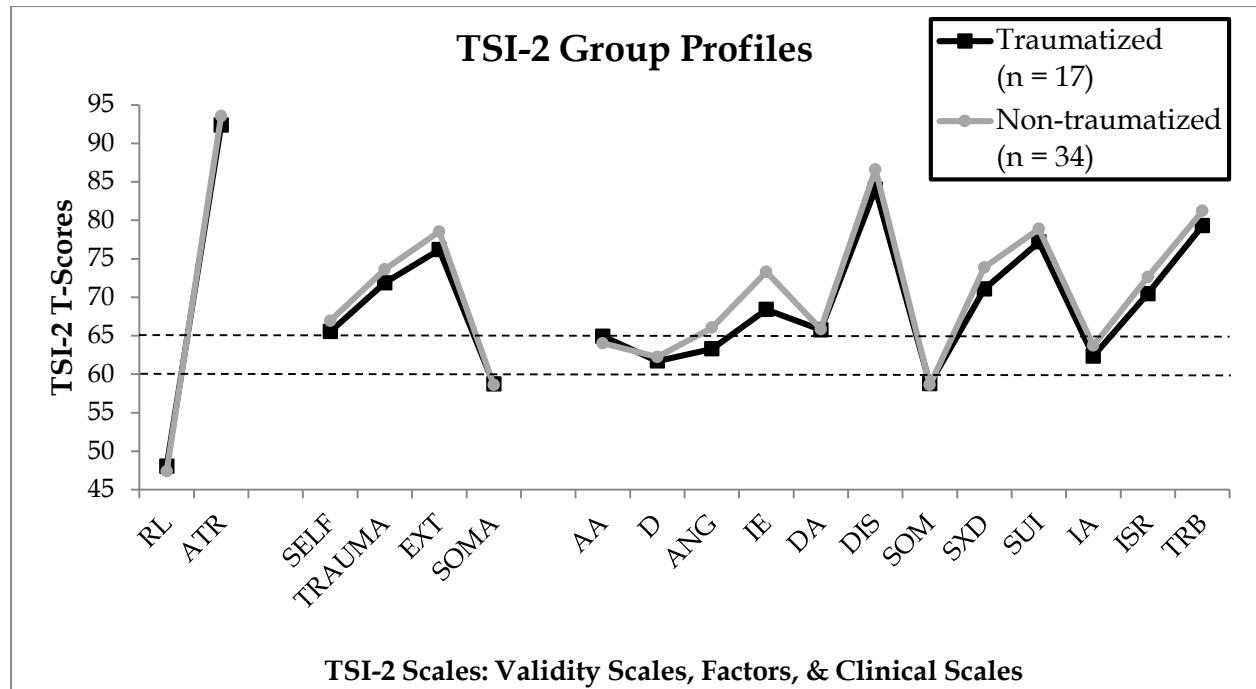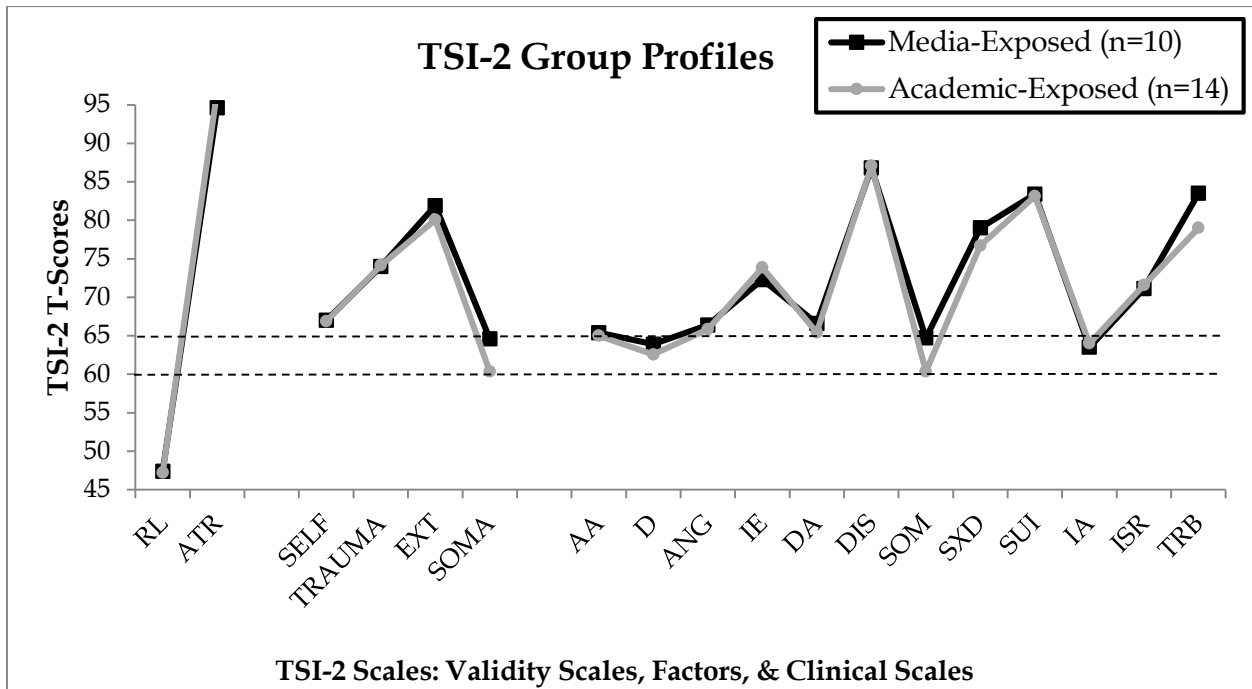
Figure 3. Media-Exposed and Factual-Exposed Simulators' Mean TSI-2 Profiles

Appendices

Appendix A: Knowledge Test

Circle "T" for True or "F" for False for each item.

1. **T** F   People are thought to develop Dissociative Identity Disorder (DID, formerly known as Multiple Personality Disorder) due to severe childhood abuse.

2. **T** F   People with Dissociative Identity Disorder often "space out" or go into trances.

3. T **F**   People with Dissociative Identity Disorder typically do not feel guilty if their actions cause others to suffer.

4. **T** F   People with Dissociative Identity Disorder often also suffer from posttraumatic stress disorder.

5. **T** F   One of the symptoms of Dissociative Identity Disorder is amnesia, or the inability to recall personal information that is too extensive to be ordinary forgetfulness.

6. **T** F   People with Dissociative Identity Disorder have at least two personalities that control their behavior.

7. **T** F   People with Dissociative Identity Disorder often report that they hear voices.

8. **T** F   People with Dissociative Identity Disorder may act very differently in different situations.

9. T **F**   People with Dissociative Identity Disorder wash their hands compulsively for an hour or more each day because they fear germs.

10. **T** F   People with Dissociative Identity Disorder may refer to themselves by different names at different times.

Appendix B: Coached Information

INFORMATION ABOUT DISSOCIATIVE IDENTITY DISORDER

AND SIMULATING ON PSYCHOLOGICAL ASSESSMENTS

DID, formerly referred to as "multiple personality disorder", is a mental disorder characterized by at least two identity or personality states (known as "alters") that control the individual's behavior. The disorder is accompanied by memory impairment that is not explained by typical forgetting. The disorder is rare, and is not caused by substance abuse, seizures or other medical conditions, or imaginative play. As the majority of DID patients report early childhood physical/sexual abuse or neglect, it is suggested that a complex trauma history may lead to the development of DID.

Many people have experienced ordinary symptoms of dissociation, including daydreaming or being easily distracted. On the other hand, dissociative disorders involve much more unusual symptoms. These severe dissociative symptoms include amnesia, dissociative fugue (i.e., wandering aimlessly and forgetting how one arrived in a strange place), depersonalization (i.e., an out-of-body experience), and derealization (i.e., feeling as though one's surroundings are not real). DID is often accompanied with many other symptoms and comorbid mental disorders. Most commonly, DID patients also report depression, anxiety, posttraumatic stress disorder (PTSD), substance abuse, self-harm and suicidality, eating disorders, and personality disorders (such as borderline personality disorder). Symptoms of DID vary with time, increasing and decreasing in severity. However, the symptoms rarely disappear completely, even after years of treatment.

You will be asked to simulate (i.e., fake or imitate) DID on a variety of psychological assessments. You should answer the questions as if you had DID to the best of your ability. However, please realize that if you present too dramatically, it will look fake, and you will not be believed to have DID. Use caution to maintain a realistic profile of a DID patient.

Appendix C: Sources of Knowledge Survey

Please check off which of the following is true for you.

Leave items blank that are not true for you.

_____ I have taken Abnormal Psychology.

_____ I have watched the movie Sybil.

_____ I have read the book Sybil.

_____ I have read a chapter out of an Abnormal Psychology book that covered Dissociative Identity Disorder.

_____ I have read information on the Internet about Dissociative Identity Disorder.

_____ I have read a book(s) other than Sybil that is/are about Dissociative Identity Disorder.

_____ I have seen a movie(s) other than Sybil that is/are about Dissociative Identity Disorder.

_____ I have learned about Dissociative Identity Disorder in other ways.

Please list the other way(s) you have learned about this disorder:

Appendix D: Demographic Questionnaire

ID #: _____   Age: _____

 Directions: For each statement, please <u>circle</u> the appropriate response that applies to you.

1. **Sex**:

     Male
     Female
     Transgender
     Other: _____

2. **Race**:

     Caucasian
     African American
     Asian American
     Hispanic/Latino
     Biracial
     Other: _____

3. **Education Level:**

     Less than 1 year of college
     1 year of college
     2 years of college
     3 years of college
     4 years of college or more

4. **Marital Status:**

     Single (never married)
     Married
     Divorced
     Widowed

Appendix E: IRB Approval Form

TOWSON
UNIVERSITY

Date: Thursday, November 07, 2013

NOTICE OF APPROVAL

TO: Cori Palermo **DEPT:** PSYC

PROJECT TITLE: *Distinguishing simulators using the trauma symptom inventory*
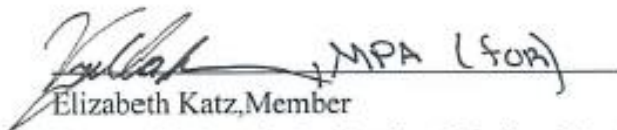
SPONSORING AGENCY:

APPROVAL NUMBER: 14-A040

The Institutional Review Board for the Protection of Human Participants has approved the project described above. Approval was based on the descriptive material and procedures you submitted for review. Should any changes be made in your procedures, or if you should encounter any new risks, reactions, injuries, or deaths of persons as participants, you must notify the Board.

A consent form: [✓] is [ ] is not required of each participant

Assent: [ ] is [✓] is not required of each participant

This protocol was first approved on: 2013-11-07
This research will be reviewed every year from the date of first approval.

, MPA (for)

Elizabeth Katz, Member
Towson University Institutional Review Board

Curriculum Vita

NAME: Cori Palermo

████████████████████████████████████

PROGRAM OF STUDY: Clinical Psychology

DEGREE AND DATE TO BE CONFERRED: Master of Arts, 2014

Secondary education: Saugus High School, Saugus, MA, May 2008

<u>Collegiate institutions attended</u>	<u>Dates</u>	<u>Degree</u>	<u>Date of Degree</u>
Sacred Heart University **Major:** Psychology	2008-2012	B.S.	May 2012
Towson University **Program:** Clinical Psychology	2012-2014	M.A.	May 2014

<u>Professional positions held:</u>

Intern/Psychiatry Trainee- Johns Hopkins Hospital   Baltimore, MD
- Assisted Dr. Marco Grados in the Department of Child and Adolescent Psychiatry
- Observed children and adolescents with variety of psychiatric disorders during outpatient sessions and completed intake notes
- Recorded staff interactions with patients on inpatient unit
- Contributed to poster presentations and manuscripts
- Attended Research Conferences on variety of topics in psychiatry

Graduate Assistant/Assistant Coordinator- Towson University   Towson, MD
- Assisted Residence Life Coordinator in managing residence hall of 400 residents and supervising 11 Resident Assistants
- Directly supervised 11 Community Center staff members, including hiring, training, scheduling shifts, conducting meetings, and providing evaluations
- Administrative duties included taking minutes at staff meetings, placing requests for keys, and submitting damage billing
- Advised Tower C Building Council

TSI-2 PROFILE COMPARISONS