Published in final edited form as:

Psychol Bull. 2010 January ; 136(1): 1–11. doi:10.1037/a0018021.

Cognitive Processes in Dissociation: Comment on Giesbrecht et al. (2008)

J. Douglas Bremner

Departments of Psychiatry and Behavioral Sciences and Radiology, Emory University School of Medicine and the Atlanta VAMC, Atlanta GA

Abstract

In “Cognitive Processes in Dissociation: An Analysis of Core Theoretical Assumptions,” published in *Psychological Bulletin*, Giesbrecht, Lynn, Lilienfeld, and Merckelbach (2008) have challenged the widely accepted trauma theory of dissociation, which holds that dissociative symptoms are caused by traumatic stress. In doing so the authors outline a series of links between various constructs, such as fantasy proneness, cognitive failures, absorption, suggestibility, altered information-processing, dissociation, and amnesia, claiming that these linkages lead to the false conclusion that trauma causes dissociation. A review of the literature, however, shows that these are not necessarily related constructs. Careful examination of their arguments reveals no basis for the conclusion that there is no association between trauma and dissociation. The current comment offers a critical review and rebuttal of the argument of Giesbrecht et al. that there is no relationship between trauma and dissociation.

Keywords

trauma; PTSD; dissociative disorders; dissociation; memory; absorption

In their recent review “Cognitive Processes in Dissociation: An Analysis of Core Theoretical Assumptions,” Giesbrecht, Lynn, Lilienfeld, and Merckelbach (2008) have proposed a significant challenge to the widely accepted trauma theory of dissociation, which holds that dissociative symptoms are caused by traumatic stress. Instead, the authors postulate that trauma memories are the result rather than the cause of dissociation. Giesbrecht et al. (2008) proposed to offer evidence in support of this statement by putting together a series of links between various constructs, such as fantasy proneness, cognitive failures, absorption, suggestibility, altered information-processing, dissociation, and amnesia. Careful examination of their arguments, however, shows no basis for the conclusion that there is no relationship between trauma and dissociation.

This paper offers a critical review and rebuttal of the argument of Giesbrecht et al. (2008) that there is no relationship between trauma and dissociation. First, their assertion that dissociation can be explained as being related to fantasy proneness is carefully reviewed and found to be not supported by the literature. Second, their lack of clarity in defining dissociation, dissociative

Address reprint requests to: J Douglas Bremner, MD, Emory University, 1256 Briarcliff Rd. Rm 308e, Mailstop 1256/001/AT, Atlanta, GA 30306, (404) 712-9569, jdbremn@emory.edu.

Publisher's Disclaimer: The following manuscript is the final accepted manuscript. It has not been subjected to the final copyediting, fact-checking, and proofreading required for formal publication. It is not the definitive, publisher-authenticated version. The American Psychological Association and its Council of Editors disclaim any responsibility or liabilities for errors or omissions of this manuscript version, any version derived from this manuscript by NIH, or other third parties. The published version is available at www.apa.org/pubs/journals/bul

disorders, and measurement of dissociation led, in my view, to a misinterpretation of the phenomenon of dissociation and of research in this area. Indeed, a large literature demonstrating a link between trauma and dissociation, including symptoms of amnesia, is overlooked by the authors. Finally, their suggestion that hypnotizability, suggestibility, and susceptibility to cognitive distortion in dissociative patients lead to a false link between trauma and dissociation is not found to be supported by the evidence. These points are reviewed in greater detail below.

Fantasy Proneness and Dissociation

Giesbrecht et al. (2008) claim that increases in fantasy proneness may explain the increase in dissociative symptoms in traumatized individuals, in turn leading to the creation of trauma memories. For evidence regarding this claim they cite work performed with the Creative Experiences Questionnaire (CEQ) (Merckelbach, Horselenberg, & Muris, 2001), a measure developed by one of the authors of the review article in question. The CEQ is purported to measure fantasy proneness. In the original paper, however, Merckelbach et al. (2001) note that there is overlap in the CEQ and Dissociative Experiences scale (DES): “Two CEQ items (i.e., ‘I often confuse fantasies with real memories’ and ‘I sometimes feel that I have an out of body experience’) clearly overlap with some DES items (e.g., ‘not sure whether one has done something or only thought about it’ and ‘feeling as though one’s body is not one’s own.’ respectively”; p. 989). In fact, out-of-body experiences represent depersonalization, a symptom that is clearly dissociative. The item overlap helps to explain the modest correlations between these two measures in some studies. Merckelbach et al. (2001) further concede there are different paths to fantasy proneness, including coping with childhood adversity. For example they state that “a profound fantasy life may have become a means to cope with or escape from negative experiences” (p. 988). In short, one of the authors of Giesbrecht et al. has effectively conceded in an earlier paper that common adverse experiences of childhood could have led to both dissociation and fantasy proneness, although this issue is side-stepped in the Giesbrecht et al. review.

In concluding from their literature review that elevated fantasy proneness is correlated with dissociation, Giesbrecht et al. (2008) make several important omissions. First of all, they neglect to cite a finding from one of their own articles (Cima, Merckelbach, Klein, Shellbach-Matties, & Kremer, 2001) showing no significant correlation between fantasy proneness and dissociation in a study of 30 highly dissociative inmates at a psychiatric prison (Cima et al., 2001). In fact, Cima et al. (2001) concluded that “no evidence was found to suggest that fantasy proneness contributes to dissociative symptoms or trauma self-reports” (p. 189).

Giesbrecht et al. (2008) also state that Levin, Sirof, Simeon, and Guralnik (2004) found elevated levels of fantasy proneness in patients with Depersonalization Disorder (DPD) compared with non-symptomatic controls. However, in the cited article, Levin et al. wrote the following: “It should be noted that the total scores for the DPD group were well below threshold for this dimension (fantasy proneness), with scores falling at the lowest end of the criterion for medium fantasy proneness (a score between 14 and 36). Contrary to our prediction, depersonalized subjects did not report significantly higher absorption levels on TAS than controls.”

Similarly, Giesbrecht and colleagues cite Huntjens et al. (Huntjens, Postma, Woertman, Van der Hart, & Peters, 2005) as finding that Dissociative Identity Disorder (DID) patients score high on fantasy proneness. However, in this article, Huntjens et al. found that DID patients had a mean score of 10 whereas control subjects showed a mean score of 7 on the CEQ. Three points is not a substantial difference, and both scores are below reported means for groups of fantasy prone individuals (actors and re-enactors) (Merckelbach et al., 2001).

In spite of this meager evidence for a relationship between dissociation and fantasy proneness, Giesbrecht et al. (2008) state the following:

The fact that individuals who dissociate frequently engage in fantasizing may have profound consequences for understanding the origins of dissociative experiences. Notably, imaginative tendencies may compromise the validity of self-report questionnaires that measure trauma on a retrospective basis. Fantasy proneness could affect responses to such questionnaires in two ways. First, fantasizers may confuse imagined events with factual autobiographical memories. The failure to differentiate imagined from real memories is termed a reality monitoring error... Second, fantasy-prone individuals may adopt a more liberal response criterion for reporting an experience as genuine (i.e., a “real” memory), thus exhibiting a positive response bias, or in more extreme cases, a tendency to confabulate...” (p. 621)

In fact, however, there are not adequate data based on the current status of the literature to form conclusions that a proneness to fantasy is responsible for (by implication) false recall of traumatic material.

Defining Dissociation

In making the argument that dissociation is not a valid construct that is related to trauma, Giesbrecht et al. (2008) confuse the terminology related to dissociation. In describing the construct of dissociation, Schmahl and Bohus (2007) have differentiated dissociative *traits* (e.g., those related to DPD or DID) from dissociative *states* (e.g., states that last only minutes and can be seen in borderline personality disorder and in stress-induced transient analgesia). In addition, dissociative *disorders* need to be differentiated from dissociative *symptoms*. Not all individuals who experience dissociative symptoms have dissociative disorders. Giesbrecht et al. (2008) often confuse these classifications of dissociation in their review, apparently believing that research conducted with non-pathological samples such as healthy college students generalize to dissociative disorder patients. They also mistakenly imply that research conducted with patients with DPD (a mild form of dissociative disorder), often excluding patients with a history of trauma, will apply to the most severe dissociative disorder, DID.

Measurement of Dissociation

As part of their review, Giesbrecht et al. (2008) critique the published literature on measurement of dissociation. For example, the authors appropriately point out that although the DES, a measure of general dissociation (Bernstein & Putnam, 1986) is a useful screening measure, it is not a valid instrument for the diagnosis of specific dissociative disorders. One of the criticisms of the DES is that some of the items measure absorption, which is not necessarily related to psychopathology.

The relationship between dissociation and absorption is complex. Although high levels of absorption can be seen in individuals without psychopathology, groups of individuals with psychopathology like dissociative disorders tend to have particularly high scores on measures of absorption, although the clinical significance of such scores is not always clear. For example, Levin et al (2004) did not find statistically significant elevations on the Tellegen Absorption Scale (TAS) in a sample of patients with depersonalization disorder. Correlations between the DES-Taxon (DES-T, which includes only the dissociation-specific items of the DES) and measures of absorption in their paper were $r = .10-.31$, although interestingly the correlation between the DES-T and DES-A (absorption) was .8, suggesting that the DES-A was not measuring “pure” absorption items.

Still, the DES is not used for clinical diagnosis. Clinical studies use expert diagnosis or rely on instruments designed for differential diagnosis (e.g., the Structured Clinical Interview for

the Dissociative Disorders (SCID-D) (Steinberg, Rounsaville, & Cicchetti, 1990). It is also accepted that the DES yields skewed results in nonclinical populations and that the taxon probability score would have limited reliability in a college sample with low base rate inclusion of dissociative disorder patients. The problem of false positives and false negatives in clinical diagnosis has been addressed by use of the SCID-D and other instruments designed specifically for clinical use (Briere, Weathers, & Runtz, 2005).

Giesbrecht et al. (2008) ignore a large literature showing a clear association between trauma and dissociation (Bremner et al., 1992; Briere & Runtz, 1988; Briere & Runtz, 1989; Cardena & Spiegel, 1993; Chu & Dill., 1990; DiTomasso & Routh, 1993; Goff et al., 1991; Koopman et al., 1994; Marmar et al., 1994; Nash et al., 1993; Putnam et al., 1995; Sandberg & Lynn, 1992; Sanders & Golias, 1991; Warshaw et al., 1993). They support their thesis that trauma and dissociation are not related by citing opinion-style articles of which they are the authors. In the only article written independently, they cite Kihlstrom, Glisky, and Anguilo (1994), examination of which shows nothing more than criticisms of the DES as having absorption items, as well as a dismissal of the Clinician Administered Dissociative States Scale (CADSS) (Bremner et al., 1998) as not including amnesia items that are “core” to dissociation. I point out that the CADSS does include two amnesia items and that there is not a logical basis to posit that amnesia is “core” to dissociation.

Trauma, Dissociation and Amnesia

Giesbrecht et al. (2008) state that “research based on objective indices of trauma also has failed to substantiate a direct and robust association between trauma and dissociation (p. 632)”. To make this claim, they rely on only two studies: Cima et al. (2001), a study of 30 inmates in a psychiatric prison, and Sanders and Giolas (1991), an analysis of 47 hospitalized adolescents. Giesbrecht et al. state that “In both studies, this analysis yielded a non-significant and, more important, slightly negative correlation between ratings of traumatic experiences based on hospital records and dissociation (Sanders & Giolas, 1991, $r = -.21$; Cima et al., 2001, $r = -.13$)” (p. 632). However in both studies these correlations are not statistically significant and represent in fact a lack of correlation, so the use of the term “slightly negative” is misleading. Additionally, both studies involved small sample sizes of populations that are not necessarily generalizable to the general population. For instance, Cima et al involved a prison population, the majority of whom were diagnosed with “sexual disorder,” who evidenced a high degree of frontal lobe pathology. It is conceivable that frontal lobe dysfunction in this specialized population contributed to dissociative symptoms, thus disrupting the magnitude of a correlation between trauma and dissociation.

The authors also failed to report that Sanders and Giolas (1991) reported a positive and statistically significant correlation of $r = 0.44$ between trauma based on self report and dissociation measured with the DES. It is not logical, therefore, for Giesbrecht et al. to claim that there is not a connection between trauma and dissociation. Furthermore, they have in fact overlooked some of their own recent research and conclusions. For example, Merckelbach and Jelicic (2004) ((not in Reference section)) found that the DES-taxon correlated significantly with a well validated measure of trauma exposure ($r = .54, p < .05$), which led them to conclude in that earlier paper that “The current results replicate the well-documented link between dissociative experiences and self-reported trauma (p. 73).”

Giesbrecht et al. (2008) also fail to review a large literature demonstrating a link between trauma and dissociation at the time of the trauma. For example, immediate peritraumatic dissociative responses have been noted in police and emergency personnel attending to catastrophes (Marmar, Weiss, Metzler, & Delucchi, 1996), as well as fire victims (Koopman, Classen, & Spiegel, 1994), victims of earthquakes (Cardena & Spiegel, 1993), and combat

soldiers (Bremner et al., 1992; C.R. Marmar et al., 1994). Dissociative responses to trauma have also been correlated with increased dissociative response to reminders of trauma (Bremner et al., 1998), increased dissociative responses to subsequent traumas and stressors, and long-term PTSD and dissociative pathology (Bremner & Brett, 1997). Prospective studies in healthy military personnel have also revealed that severe stress leads to heightened dissociation (Morgan et al., 2001).

As Giesbrecht et al. (2008) appropriately point out (p. 632), the optimal way to assess the association between trauma and dissociation is to study pathological dissociation symptoms and PTSD symptoms prospectively in a sample not yet exposed to trauma that is representative of the general population. In fact, prospective longitudinal studies have shown that trauma leads to heightened dissociation in children (Noll, Trickett, & Putnam, 2003; Putnam, Helmers, Horowitz, & Trickett, 1995; Trickett, Noll, Reiffman, & Putnam, 2001). Cross-sectional studies have also consistently show a heightened level of dissociation in children whose trauma histories have been objectively confirmed compared to non-traumatized children (Kaplow, Hall, Koenen, Dodge, & Amaya-Jackson, 2008; Macfie & Toth, 2001; Nilsson, Wadsby, & Svedin, 2008; (Noll et al., 2003; Reyes-Pérez, Martinez-Taboas, & Ledesma-Amador, 2005; Valentino, Cicchetti, Rogosch, & Toth, 2008; Zoroglu, Tuzun, Ozturk, & Sar, 2002).

Next, Giesbrecht and colleagues (2008) state the following: “The literature on cognitive processes involved in dissociation has provided scant evidence for deficits in autobiographical memory (e.g., compartmentalization, psychogenic amnesia... that would be expected to enable trauma victims to alleviate the impact of (recurrent) traumatic events.” (p. 632) This conclusion is inconsistent with studies documenting an increase in the symptom of amnesia in traumatized populations. For example, Vietnam combat veterans with PTSD ($N = 40$) scored significantly higher on all five aspects of dissociation as measured by the clinician administered SCID-D (Steinberg et al., 1990) compared to Vietnam veterans without PTSD ($N = 15$; 3.68 vs. 1.06 respectively, $p < .0001$ (Bremner, Steinberg, Southwick, Johnson, & Charney, 1993). In fact, amnesia was the symptom with the greatest difference between the PTSD and non-PTSD patients. Furthermore, prospective, longitudinal research showed that, among individuals presenting to emergency rooms related to acute assaults, those with acute stress disorder retrieved fewer specific autobiographical memories than those without acute stress disorder at two weeks post-assault (Kleim & Ehlers, 2008). Furthermore, reduced memory specificity at two weeks predicted PTSD at six months over and above what could be predicted by initial diagnoses and symptom severity.

Giesbrecht et al. (2008) go on to state that “few investigations have controlled for general distress and psychopathology, or for scores on the personality dimension of openness to experience, which is moderately associated with both dissociative tendencies (Kihlstrom, Glisky, & Angiulo, 1994) and with crystallized intelligence.” (p. 625). A perusal of the Kihlstrom et al. paper, however, reveals no mention of an association between dissociation and openness to experience, because quite frankly, there is none. In fact Kihlstrom et al write: “Many, if not most, fantasy-prone individuals are very well adjusted... There appears to be no study testing the hypothesis that fantasizers are specifically at risk for dissociative psychopathology.” (page number)

Suggestibility and Hypnotizability

Giesbrecht et al, (2008) suggest that individuals who are prone to fantasy and by implication are easily hypnotizable will also be more suggestible—and by implication more likely to invent childhood trauma memories and symptoms of dissociation. A number of studies have shown that individuals diagnosed with dissociative disorders, posttraumatic stress disorder, and acute stress disorder manifest elevated levels of hypnotizability (Spiegel, Hunt, & Dondershine,

1988; Stutman & Bliss, 1985). A longitudinal study suggested that the high hypnotizability of traumatized individuals may change and be a function of their avoidance (Bryant, Guthrie, & Moulds, 2001). This finding suggests that hypnotizability may provide a protective function in the face of trauma. However, not all highly hypnotizable people are dissociative, and not all patients with dissociative disorders are highly hypnotizable, and the correlation between hypnotizability and dissociation is modest at best (Barber, 1999; Kirsch & Council, 1992; Putnam & Carlson, 1998).

The assertion of Giesbrecht et al. (2008) that suggestibility is connected to fantasy proneness—and hence to dissociation and the creation of trauma memories—is also not justified. Studies using the Gudjonsson assessment of suggestibility do not show an association with dissociation (Polczyk, 2005). The authors also fail to review a literature showing no association between false memory, as measured with paradigms like the Deese paradigm, and dissociation in populations of patients with a history of childhood sexual abuse (Bremner, Shobe, & Kihlstrom, 2000).

Cognitive Failures and Dissociation

Giesbrecht et al. (2008) go on to argue that the trauma-dissociation linkage may be driven by cognitive failures in highly dissociative people. They make the claim that trauma memories are the *result* rather than *cause* of dissociation, writing that "...individuals who report many cognitive failures are probably more prone to mistrust their memories..." (p. 622), which theoretically would heighten the amplification or creation of trauma memories when retrospectively reported. In their attempt to support this theory, they note the relationship between DES scores and scores on the Cognitive Failures Questionnaire (CFQ) (Broadbent, Cooper, Fitzgerald, & Parkes, 1982), an association claimed to have been replicated in non-clinical studies (Giesbrecht, Merckelbach, Kater, & Sluis, 2007). They go on to write: "a combination of fantasy proneness, interrogative suggestibility, and the susceptibility to cognitive failures may undermine the accuracy of retrospective reports of traumatic experiences, resulting in overestimates of childhood trauma rates (i.e., false positives)." (p. 622)

Traumatized individuals do in fact have difficulty registering traumatic memories, leading to a failure to fully process the traumatic experience that then contributes to negative rumination about oneself rather than the event (Klein & Ehlers, 2008). Trauma induces dissociation, which leads to frustrated retrieval efforts later on (Kleim & Ehlers, 2008). However, the scale for the measurement of cognitive failures includes several items that are in fact dissociative. (e.g. "Do you find you forget why you went from one part of the house to the other?"). And contrary to the notion that patients with dissociative disorders are cognitively deficient, investigations have shown that they may have an advantage on dividing attention, working memory maintenance and updating, and set switching under negative emotion conditions (Chiu, Yeh, Huang, Wu, & Chiu, 2009). For instance, Wright and Osborne (2005) found a correlation of $r = .61$ between a version of the DES (DES-C) and the CFQ. Although dissociation and cognitive failure may represent overlapping constructs, Wright and Osborne's findings also indicate that dissociation and cognitive failures are different, with cognitive failures continuing to show a significant association with interference scores on a marker of working memory (Visual Pattern Test), after the shared variance with dissociation was removed.

Giesbrecht et al. (2008) rely upon a single cross-sectional study of 109 university students (Merckelbach, Horselenberg, & Schmidt, 2002) to argue that dissociation, via the mechanism of cognitive failures (in addition to fantasy proneness), leads to retrospective trauma reporting. They favoured this model over one supported equally by statistical analysis. Note their earlier language, however: "...it may well be the case that a longitudinal study based on objective

records of childhood traumas and a mixed sample would favour an entirely different model, for example a model in which objective reports of trauma do serve as a primary cause of dissociation and its correlates” (Merckelbach et al., 2002, p. 702).

Dissociation, Information Processing, and Memory

Giesbrecht et al. (2008) review the literature on the directed forgetting (DF) effect in an attempt to demonstrate that highly dissociative persons are actually drawn toward and show heightened recall for threat words, rather than avoiding and forgetting them. The DF paradigm requires participants to learn a list of words with an instruction to either ‘forget’ or ‘remember’ given after each word presentation. Participants are then given a memory test for all words displayed regardless of the instruction to ‘remember’ or ‘forget.’ The majority of studies in clinical and non-clinical samples have found that highly dissociative persons do not normally show poor recall for negative stimuli (Elzinga, De Beurs, Sergeant, Van Dyck, & Phaf, 2000; Elzinga, Phaf, Ardon, & van Dyck, 2003; McNally, Metzger, Lasko, Clancy, & Pitman, 1998). Findings for recall under divided attention showing mixed results, with some studies showing less retrieval of threat words by highly dissociative persons (DePrince & Freyd, 2004) and others not (Deville et al., 2007; McNally, Ristuccia, & Perlman, 2005). The applicability of these findings obtained in laboratory settings to the actual experiences of childhood abuse, however, is limited.

Giesbrecht et al. (2008) go beyond the findings from the DF paradigm literature when they conclude “studies using DF in dissociation have failed to provide compelling evidence for one of the core assumptions of the traditional view of dissociation, namely that patients with dissociative disorders or individuals who report many dissociative symptoms should display gaps in memory for emotional material (i.e., dissociative amnesia)” (p. 627). Yet it is unlikely that this paradigm represents an adequate model for dissociative amnesia in abuse survivors. Additionally, because forgetting has been demonstrated to be a long-term process (A. K. Anderson, Christoff, Panitz, De Rosa, & Gabrieli, 2003; M. C. Anderson & Green, 2001), it is unlikely that an immediate forgetting effect would be able to be displayed.

Conclusion

The argument of Giesbrecht et al. (2008)—that there is not a relationship between trauma and dissociation—is not correct. There is an ample literature reviewed here that shows a relationship between trauma and dissociation. Counter-arguments that fantasy proneness, suggestibility, cognitive failures and associated dissociative tendencies lead to a spurious relationship with childhood trauma are not supported by a careful review of the literature. The thesis that trauma leads to dissociation is strongly supported by the literature and in fact is stronger than ever.

Acknowledgments

The author is supported by NIH research grants R01 HL088726, K24 MH076955, T32 MH067547-01, and R01 MH56120 and VA Merit and DOD CDMRP funding. The author has received financial compensation for work as an expert witness in litigation related to PTSD, head injury, and drug safety, working for both plaintiffs and defendants.

References

- Anderson AK, Christoff K, Panitz D, De Rosa E, Gabrieli JD. Neural correlates of the automatic processing of threat facial signals. *Journal of Neuroscience* 2003;23(13):5627–5633. [PubMed: 12843265]
- Anderson MC, Green C. Suppressing unwanted memories by executive control. *Nature* 2001;410:366–369. [PubMed: 11268212]

- Barber, TX. A comprehensive three-dimensional theory of hypnosis. In: Kirsch, I.; Capafons, A.; Cardena-Buelna, E.; Amigó, S., editors. *Clinical Hypnosis and Self-regulation: Cognitive-behavioral Perspectives*. Washington, DC: American Psychological Association Press; 1999. p. 21-48.
- Bohus M, Schmahl C. Psychopathology and treatment of borderline personality disorder. *Nervenarzt : Monatsschrift Für Alle Gebiete Nervenärztlicher Forchung Und Praxis* 2007;78(9):1069.
- Bernstein E, Putnam T. Development, reliability, and validity of a dissociation scale. *Journal of Nervous and Mental Disease* 1986;174:727–735. [PubMed: 3783140]
- Bremner JD, Brett E. Trauma-related dissociative states and long-term psychopathology in posttraumatic stress disorder. *Journal of Traumatic Stress* 1997;10:37–50. [PubMed: 9018676]
- Bremner JD, Krystal JH, Putnam FW, Southwick SM, Marmar C, Charney DS, et al. Measurement of dissociative states with the clinician-administered dissociative states scale (CADSS). *Journal of Traumatic Stress* 1998;11(1):125–136. [PubMed: 9479681]
- Bremner JD, Shobe KK, Kihlstrom JF. False memories in women with self-reported childhood sexual abuse: An empirical study. *Psychological Sciences* 2000;11:333–337.
- Bremner JD, Southwick SM, Brett E, Fontana A, Rosenheck A, Charney DS. Dissociation and posttraumatic stress disorder in Vietnam combat veterans. *American Journal of Psychiatry* 1992;149:328–332. [PubMed: 1536269]
- Bremner JD, Steinberg M, Southwick SM, Johnson DR, Charney DS. Use of the Structured Clinical Interview for DSM-IV-Dissociative Disorders for systematic assessment of dissociative symptoms in posttraumatic stress disorder. *American Journal of Psychiatry* 1993;150:1011–1014. [PubMed: 8317568]
- Briere J, Runtz M. Symptomatology associated with childhood sexual victimization in a nonclinical adult sample. *Child Abuse and Neglect: The International Journal* 1988;12(1):51–59.
- Briere J, Weathers FW, Runtz M. Is dissociation a multidimensional construct? Data from the Multiscale Dissociation Inventory. *Journal of Traumatic Stress* 2005;18:221–231. [PubMed: 16281216]
- Broadbent DE, Cooper PF, Fitzgerald P, Parkes KR. The Cognitive Failures Questionnaire (CFQ) and its correlates. *British Journal of Clinical Psychology* 1982;21:1–16. [PubMed: 7126941]
- Bryant RA, Guthrie RM, Moulds ML. Hypnotizability in acute stress disorder. *American Journal of Psychiatry* 2001;158:600–604. [PubMed: 11282695]
- Cardena E, Spiegel D. Dissociative reactions to the San Francisco Bay area earthquake of 1989. *American Journal of Psychiatry* 1993;150:474–478. [PubMed: 8434665]
- Chiu C-D, Yeh Y-Y, Huang Y-M, Wu Y-C, Chiu YC. The set switching function of nonclinical dissociators under negative emotion. *Journal of Abnormal Psychology* 2009;118(1):214–222. [PubMed: 19222327]
- Chu JA, Dill DL. Dissociative symptoms in relation to childhood physical and sexual abuse. *The American Journal of Psychiatry* 1990;147(7):887–892. [PubMed: 2104510]
- Cima M, Merckelbach H, Klein B, Shellbach-Matties R, Kremer K. Frontal lobe dysfunctions, dissociation, and trauma self-reports in forensic psychiatric patients. *Journal of Nervous and Mental Disease* 2001;189(3):188–190. [PubMed: 11277356]
- DePrince AP, Freyd JJ. Forgetting trauma stimuli. *Psychological Science* 2004;15:488–492. [PubMed: 15200634]
- Devilly GJ, Ciorciari J, Piesse A, Sherwell S, Zammit S, Cook F, et al. Dissociative tendencies and memory performance on directed-forgetting tasks. *Psychological Science* 2007;18:212–217. [PubMed: 17444913]
- DiTomasso MJ, Routh DK. Recall of abuse in childhood and three measures of dissociation. *Child Abuse and Neglect* 1993;17(4):477. [PubMed: 8402250]
- Elzinga BM, De Beurs E, Sergeant JA, Van Dyck R, Phaf RH. Dissociative style and directed forgetting. *Cognitive Therapy and Research* 2000;24:279–295.
- Elzinga BM, Phaf RH, Ardon AM, van Dyck R. Directed forgetting between, but not within, dissociative personality states. *Journal of Abnormal Psychology* 2003;112:237–243. [PubMed: 12784833]
- Giesbrecht, Timo; Lynn, Steven Jay; Lilienfeld, Scott O.; Merckelbach, Harald. Cognitive processes in dissociation: An analysis of core theoretical assumptions. *Psychological Bulletin* 2008 Sep;Vol 134 (5):617–647. [PubMed: 18729565]

- Giesbrecht T, Merckelbach H, Kater M, Sluis AF. Why dissociation and schizotypy overlap: the joint influence of fantasy proneness, cognitive failures, and childhood trauma. *J Nerv Ment Dis* 2007;195(10):812–818. [PubMed: 18043521]
- Goff DC, Brotman AW, Kindlon D, Waites M, Amico E. Self-reports of childhood abuse in chronically psychotic patients. *Psychiatry Research* 1991;37(1):73–80. [PubMed: 1862163]
- Huntjens RJC, Postma A, Woertman L, Van der Hart O, Peters ML. Procedural memory in dissociative identity disorder: When can inter-identity amnesia be truly established? *Consciousness and Cognition* 2005;14:377–389. [PubMed: 15950888]
- Kaplow JB, Hall E, Koenen KC, Dodge KA, Amaya-Jackson L. Dissociation predicts later attention problems in sexually abused children. *Child Abuse & Neglect* 2008;32:261–275. [PubMed: 18308391]
- Kihlstrom JF, Glisky ML, Angiulo MJ. Dissociative tendencies and dissociative disorders. *Journal of Abnormal Psychology* 1994;103(1):117–124. [PubMed: 8040473]
- Kirsch, I.; Council, JR. Situational and personality correlates of hypnotic responsiveness. In: Fromm, E.; Nash, MR., editors. *Contemporary Hypnosis Research*. New York: Guilford; 1992. p. 267-291.
- Klein B, Ehlers A. Reduced autobiographical memory specificity predicts depression and posttraumatic stress disorder after recent trauma. *Journal of Consulting & Clinical Psychology* 2008;76:231–242. [PubMed: 18377120]
- Koopman C, Classen C, Spiegel D. Predictors of posttraumatic stress symptoms among survivors of the Oakland/Berkeley, Calif., firestorm. *American Journal of Psychiatry* 1994;151:888–894. [PubMed: 8184999]
- Levin R, Siraf B, Simeon D, Guralnick O. Role of fantasy proneness, imaginative involvement, and psychological absorption in depersonalization disorder. *Journal of Nervous and Mental Disease* 2004;192(1):69. [PubMed: 14718779]
- Macfie JCD, Toth SL. Dissociation in maltreated versus nonmaltreated preschool-aged children. *Child Abuse & Neglect* 2001;25:1253–1267. [PubMed: 11700697]
- Marmar CR, Weiss DS, Metzler TJ, Delucchi K. Characteristics of emergency services personnel related to peritraumatic dissociation during critical incident exposure. *Am J Psychiatry* 1996;153(7 Suppl): 94–102. [PubMed: 8659646]
- Marmar CR, Weiss DS, Schlenger DS, Fairbank JA, Jordan BK, Kulka RA, et al. Peritraumatic dissociation and posttraumatic stress in male Vietnam theater veterans. *American Journal of Psychiatry* 1994;151:902–907. [PubMed: 8185001]
- McNally RJ, Metzger LJ, Lasko NB, Clancy SA, Pitman RK. Directed forgetting of trauma cues in adult survivors of childhood sexual abuse with and without posttraumatic stress disorder. *Journal of Abnormal Psychology* 1998;107(4):596–601. [PubMed: 9830247]
- McNally RJ, Ristuccia CS, Perlman CA. Forgetting trauma cues in adults reporting continuous and recovered memories of childhood sexual abuse. *Psychological Science* 2005;2005:336–340. [PubMed: 15828982]
- Merckelbach H, Horselenberg R, Muris P. The Creative Experiences Questionnaire (CEQ): a brief self-report measure of fantasy proneness. *Personality and Individual Differences* 2001;31(6):987–995.
- Merckelbach H, Horselenberg R, Schmidt H. Modeling the connection between self-reported trauma and dissociation in a student sample. *Personality and Individual Differences* 2002;32:695–705.
- Merckelbach H, Jelicic M. Dissociative symptoms are related to endorsement of vague trauma items. *Comprehensive Psychiatry* 2004;45(1):70. [PubMed: 14671740]
- Morgan CA, Hazlett G, Wang S, Richardson EG, Schnurr P, Southwick SM. Symptoms of dissociation in humans experiencing acute, uncontrollable stress: A prospective investigation. *American Journal of Psychiatry* 2001;158:1239–1247. [PubMed: 11481157]
- Nash MR, Hulsey TL, Sexton MC, Harralson TL, Lambert W. Long-term sequelae of childhood sexual abuse: Perceived family environment, psychopathology, and dissociation. *Journal of Consulting and Clinical Psychology* 1993;61(2):276–283. [PubMed: 8473581]
- Nilsson D, Wadsby M, Svedin CG. The psychometric properties of the Trauma Symptom Checklist for Children in a sample of Swedish children. *Child Abuse & Neglect* 2008;32:627–636. [PubMed: 18584867]

- Noll JG, Trickett PK, Putnam FW. A prospective investigation of the impact of childhood sexual abuse on the development of sexuality. *Journal of Consulting & Clinical Psychology* 2003;71:575–586. [PubMed: 12795580]
- Polczyk R. Interrogative suggestibility: cross-cultural stability of psychometric and correlational properties of the Gudjonsson Suggestibility Scales. *Personality and Individual Differences* 2005;38(1):177–186.
- Putnam, FW.; Carlson, EV. Hypnosis, dissociation and trauma: Myths, metaphors, and mechanisms. In: Bremner, JD.; Marmar, CR., editors. *Trauma, Memory and Dissociation*. Washington: American Psychiatric Press; 1998. p. 27-55.
- Putnam FW, Helmers K, Horowitz LA, Trickett PK. Hypnotizability and dissociativity in sexually abused girls. *Child Abuse & Neglect* 1995;19:1–11. [PubMed: 7895139]
- Reyes-Pérez C, Martínez-Taboas A, Ledesma-Amador D. Dissociative experiences in children with abuse histories: A replication from Puerto Rico. *Journal of Trauma and Dissociation* 2005;6(1):99–112. [PubMed: 16150687]
- Sanders B, Giolas MH. Dissociation and childhood trauma in psychologically disturbed adolescents. *American Journal of Psychiatry* 1991;148:50–54. [PubMed: 1984706]
- Spiegel D, Hunt T, Dondershine HE. Dissociation and hypnotizability in posttraumatic stress disorder. *American Journal of Psychiatry* 1988;145(3):301–305. [PubMed: 3344845]
- Steinberg MJ, Rounsaville B, Cicchetti DV. The structured clinical interview for DSM-III-R dissociative disorders: Preliminary report on a new diagnostic instrument. *American Journal of Psychiatry* 1990;147:76–82. [PubMed: 2293792]
- Stutman RK, Bliss EL. Posttraumatic stress disorder, hypnotizability, and imagery. *American Journal of Psychiatry* 1985;142(6):741–743. [PubMed: 4003596]
- Trickett PK, Noll JG, Reiffman A, Putnam FW. Variants of intrafamilial sexual abuse experience: Implications for short- and long-term development. *Development and Psychopathology* 2001;13:1001–1019. [PubMed: 11771904]
- Valentino K, Cicchetti D, Rogosch FA, Toth SL. True and false recall and dissociation among maltreated children: The role of self-schema. *Development and Psychopathology* 2008;20:213–232. [PubMed: 18211735]
- Warshaw MG, Fierman E, Pratt L, Hunt M, Yonkers KA, Massion AO, et al. Quality of life and dissociation in anxiety disorder patients with histories of trauma or PTSD. *The American Journal of Psychiatry* 1993;150(10):1512–1516. [PubMed: 8379556]
- Wright DB, Osborne JE. Dissociation, cognitive failures, and working memory. *The American Journal of Psychology* 2005;118(1):103. [PubMed: 15822612]
- Zoroglu SS, Tuzun U, Ozturk M, Sar V. Reliability and validity of the Turkish version of the Child Dissociative Checklist. *Journal of Trauma and Dissociation* 2002;3(1):37–49.