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Article in *Psychological Bulletin* · January 2010

DOI: 10.1037/a0018068

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Cognitive Processes, Trauma, and Dissociation—Misconceptions and Misrepresentations: Reply to Bremner (2010)

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In a recent review (Giesbrecht, Lynn, Lilienfeld, & Merckelbach, 2008), we critically evaluated the research literature on cognitive processes in dissociation. In a comment, Bremner (2010) has voiced reservations about our contention that evidence for the causal role of trauma in dissociation is limited. In this reply, we argue that Bremner's arguments are unconvincing and that a closer examination of the dissociation literature only strengthens the basis for our conclusions. Specifically, we show that dissociation exhibits a robust association with fantasy proneness and that Bremner's criticisms regarding our operationalization of dissociation are unfounded. Moreover, we demonstrate that heightened levels of fantasy proneness, suggestibility, and cognitive failures are related to the propensity to develop pseudomemories, which in turn may account for why dissociation is related to self-reported, but not objective, trauma. We conclude that there is little evidence for the gross cognitive deficits (e.g., interidentity amnesia, memory fragmentation) that many scholars have claimed accompany dissociative symptoms.

Keywords: dissociation, cognition, fantasy proneness, memory, trauma

The “trauma-centric” view—the position that childhood trauma is the most crucial contributor to a host of psychopathological phenomena, including dissociation and dissociative disorders—is among the most firmly entrenched assumptions in many sectors of the clinical community (McHugh, 2008). For example, Ross and Pam (2005) asserted that “serious chronic childhood trauma is the overwhelming major driver of psychopathology in Western civilization” (p. 122). The authors of one chapter (Bremner, Vermetten, Southwick, Krystal, & Charney, 1998) constructed a diagram (p. 369) depicting trauma at the nexus, with 16 arrows linked to diverse psychopathological phenomena, including dissociative symptoms, that emanate from it.

Although there is little question that early trauma is sometimes part of the complex dynamics that precede certain forms of psychopathology, we (Giesbrecht, Lynn, Lilienfeld, & Merckelbach, 2008) recently raised questions concerning the overriding causal role of trauma in enduring dissociative symptoms. In particular, we argued that contrary to a widespread assumption in the clinical literature, dissociation is not related to avoidant information processing but, rather, is associated with a propensity toward

pseudomemories, possibly mediated by heightened levels of interrogative suggestibility, fantasy proneness, and cognitive failures. Moreover, we concluded that evidence for a link between dissociation and either memory fragmentation or early trauma based on objective measures is conspicuously lacking.

In a recent comment, Bremner (2010) has taken issue with our central conclusions, especially those regarding the weak evidentiary base linking dissociation to objective trauma. In this reply, we respond to Bremner's (2010) critique. We show that Bremner misrepresented and oversimplified our position concerning the link between trauma and dissociation and failed to address our contention that there is scant evidence for the gross cognitive deficits in dissociative disorders commonly claimed in the literature.

Fantasy Proneness and Dissociation

Bremner (2010) asserted that there is “meager evidence for a relationship between dissociation and fantasy proneness” (p. 2). In arriving at this conclusion, he ignores a sizable and consistent body of at least 10 studies from diverse laboratories confirming a link between dissociation and fantasy proneness (see Giesbrecht, Merckelbach, Kater, & Sluis, 2007) and makes unsubstantiated claims on the basis of the few contrary studies he does cite. For example, Bremner contended that item overlap between the Creative Experiences Questionnaire (CEQ; Merckelbach, Horselenberg, & Muris, 2001) and the Dissociative Experiences Scale (DES; Bernstein & Putnam, 1986) can help to “explain the modest correlations between these two measures” (p. 1). However, as we pointed out in our original article, even when item overlap is eliminated, the

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robust associations between CEQ, DES, and the DES subscales still hold (e.g., Giesbrecht, Merckelbach, & Geraerts, 2007; Giesbrecht, Merckelbach, Kater, & Sluis, 2007). Indeed, in one of the studies we cited (Giesbrecht, Merckelbach, Kater, & Sluis, 2007), when item overlap was eliminated, the strength of association between the DES and the CEQ was comparable to that found in prior studies ($r = .52$), clearly refuting Bremner's conjecture.

According to Bremner (2010), we neglected to note that Cima, Merckelbach, Klein, Schellbach-Matties, and Kremer (2001) found a nonsignificant correlation between dissociation and fantasy proneness ($r = -.07$). Yet, this null finding—a clear outlier in the literature—must be interpreted in the context of its small ($N = 30$) and atypical sample (inmates of a forensic psychiatric hospital).

Bremner (2010) maintains that findings from patients with dissociative disorders provide only weak support for the linkage between dissociation and fantasy proneness. He noted that Levin, Sirof, Simeon, and Guralnick (2004) reported that patients with depersonalization disorder scored below the threshold for high levels of fantasy proneness. However, scoring below a specific threshold in no way discounts the relation between dissociation and fantasy proneness because means are, in principle, independent of correlations. Moreover, the difference in fantasy proneness between patients with depersonalization disorder and comparison participants was large in magnitude (Cohen's $d = 0.86$; Cohen, 1992). In addition, in the patient group, DES total scores were significantly associated with scores on the Tellegen Absorption Scale (TAS; $r = .48$) and the Inventory of Childhood Memories and Imaginings ($r = .63$), a measure of fantasy proneness. Also, in a more recent study, using a substantially larger sample (depersonalization disorder; $n = 46$; controls: $n = 36$), significantly increased TAS scores were found in patients with depersonalization disorder (Simeon, Giesbrecht, Knutelska, Smith, & Smith, 2009).

Relatedly, Bremner (2010) contends that the effect size of the fantasy proneness–dissociation link in the Huntjens, Postma, et al. (2005) study was small. However, Huntjens, Postma, et al. (2005) did not administer the CEQ to their dissociative patients. Because—contrary to Bremner's suggestion—one cannot judge the magnitude of an effect using only mean values, we calculated effect sizes for the two studies that administered the CEQ to patients with dissociative identity disorder and healthy controls (Huntjens, Peters, et al., 2005; Huntjens et al., 2006). Both effect sizes were large, with Cohen's $d_s = 0.94$ (Huntjens et al., 2006) and 0.82 (Huntjens, Peters, et al., 2005), respectively.

Again, contrary to Bremner's (2010) suggestion, several studies showed that heightened levels of fantasy proneness are associated with false recall of aversive memory material (Giesbrecht, Geraerts, & Merckelbach, 2007). Thus, the relation between dissociation and fantasy proneness may explain why individuals with high levels of dissociation are more prone than other individuals to develop false memories of emotional childhood events (e.g., a severe animal attack; Porter, Birt, Yuille, & Lehman, 2000). In summary, Bremner's reservations concerning evidence for (a) the link between dissociation and fantasy proneness and (b) implications of fantasy proneness for false memories of traumatic experiences are unsubstantiated.

Conceptualization of Dissociation

Bremner (2010) advanced interpretations of our review article that even a cursory reading of our article would prove to be unfounded. For example, Bremner's assertion notwithstanding, we did not confuse dissociative traits with states. We first noted that our analysis was "limited to chronic dissociative symptoms and excludes acute dissociative symptoms during traumatic experiences (i.e., peri-traumatic dissociation)" (Giesbrecht et al., 2008, p. 623). Second, we excluded research on acute dissociative symptoms given the unclear relation between peritraumatic and chronic dissociation (Sterlini & Bryant, 2002) and because research on peritraumatic dissociation and posttraumatic stress disorder constitutes a large domain of its own.

Bremner's (2010) claim that we were insensitive to potential differences between clinical and nonclinical samples is contradicted by the fact that we explicitly distinguished studies of patients with diagnosed dissociative disorders from those in nonclinical analogue studies. Moreover, nowhere did we maintain that research conducted on patients with depersonalization disorder necessarily generalizes to patients with dissociative identity disorder. Still, even if one relied only on research conducted with patients diagnosed with dissociative disorders, our overall conclusions would remain intact. None of the studies on patients with diagnosed dissociative disorders supported—and many contradicted—the presumed cognitive concomitants of dissociation (e.g., interidentity amnesia, avoidant information processing, and amnesia for emotional stimuli). Indeed, the substantial body of convergent evidence from analogue studies and patient samples strengthens our conclusion that such concomitants are absent. Finally, contrary to Bremner's suggestion, none of the reviewed studies on depersonalization disorder excluded patients with a history of trauma.

Bremner (2010) suggested that we denied the existence of an association between trauma and dissociation. This assertion is incorrect: We clearly stated that dissociation is related to self-reported trauma but that there is a dearth of studies of (verified) trauma and dissociation involving participants reasonably representative of the general population (e.g., Giesbrecht et al., 2008, p. 632). To support his claim that we neglected literature demonstrating a link between trauma and dissociation, Bremner cited an array of studies (e.g., Nash, Hulsey, Sexton, Harralson, & Lambert, 1993; Sandberg & Lynn, 1992; Sanders & Giolas, 1991) that, ironically, only illustrate our point that "advocates of this defensive function of dissociative experiences frequently cite positive correlations between measures of dissociation and retrospective self-reports of traumatic events as evidence for a direct causal link between trauma and dissociation" (Giesbrecht et al., 2008, p. 632).

Bremner (2010) criticized us for relying on only two studies to conclude that the evidence for the association between actual trauma and dissociation is weak. Yet, these are the only two studies we identified that used objective indices of trauma in adults, and Bremner does not present any contrary evidence. The Sanders and Giolas (1991) study, which Bremner cited as supporting the relation between trauma and dissociation, highlights why relying on self-report measures of trauma is problematic. Sanders and Giolas (1991) found a correlation of $r = .44$ between the DES and scores on a child abuse questionnaire. However, when a psychiatrist (unaware of the dissociative status of participants)

provided more objective ratings of trauma based on hospital records, the authors found a nonsignificant correlation between ratings of traumatic experiences and dissociation ($r = -.21$). Notably, this correlation is in the opposite direction of that predicted by proponents of the trauma-centric view. Contrary to Bremner's contention, this fact is relevant, as it renders low statistical power an unlikely explanation for this negative finding.

Prospective studies help to circumvent the pitfalls of retrospective self-report of traumatic events. Macfie, Cicchetti, and Toth (2001) examined dissociation prospectively in maltreated and non-maltreated children (ages 3–4 years). During preschool, observer ratings yielded higher levels of dissociation in the group of maltreated children. In another prospective study, Ogawa, Sroufe, Weinfield, Carlson, and Egeland (1997) followed "high-risk" children from impoverished backgrounds for 19 years and documented modest positive correlations between dissociation and trauma of a similar magnitude to studies based on retrospective self-report of trauma. However, child sexual abuse did not predict dissociation at the final stage of the study, when participants were 19 years old. Similarly, in their sample of sexually abused and nonabused comparison women, Noll, Trickett, and Putnam (2003) found that abuse status predicted observer-rated dissociation measures in children, but not dissociation, 7 years later on the Adolescent Dissociation Checklist (A-DES; Armstrong, Putnam, Carlson, Libero, & Smith, 1997), when tested in a model that included depression and anxiety (for a similar prospective study, which found no relationship between sexual abuse and trauma, see Dutra, Bureau, Holmes, Lyubchik, & Lyons-Ruth, 2009). Interestingly, the final measurement of dissociation in the Ogawa et al. (1997) study was not significantly related to any of the earlier observer-rated measures of dissociation, whereas Noll et al. (2003) found only a modest correlation of $r = .28$ between observer-rated measures and self-report measures of dissociation in abused women and an opposite correlation of $r = -.28$ in the comparison group. Moreover, Macfie et al. (2001) and Ogawa et al. (1997) examined samples that were not representative of the general population and (like most investigators of dissociation and trauma), they did not control for potentially comorbid psychopathological symptoms known to be related to dissociation (e.g., anxiety, eating disorders, impulsivity, schizotypal traits). In sum, the extant literature does not justify the widely cited claim of a causal link between trauma and dissociation.

Suggestibility and Hypnotizability

Bremner (2010) suggested that we misused Kihlstrom, Glisky, and Angiulo's (1994) article to argue that dissociation is related to openness to experience. According to Bremner, this article contains no mention of this association. Bremner's claim is puzzling, because an inspection of Kihlstrom et al. (1994) reveals that it contains a section entitled, "Dissociation, Absorption, Fantasy, and Openness [to Experiences]" (pp. 120–121), which reviews empirical support for a positive correlation between dissociation and openness to experience.

Bremner's (2010) argument that "not all highly hypnotizable people are dissociative, and not all patients with dissociative disorders are highly hypnotizable" (p. 4) is a non sequitur, as we did not imply that dissociation and hypnotizability are synonymous. We agree with Bremner that the correlation between hyp-

notizability and dissociation is modest at best. However, individuals with dissociative identity disorder are more hypnotizable than people in the general population (Frischholz, Lipman, Braun, & Sachs, 1992). This finding is important insofar as hypnotic suggestibility is associated with an increased risk for false memories in both hypnotic and nonhypnotic contexts (Lynn, Myers, & Malinoski, 1997).

To further challenge our position, Bremner (2010) maintains that studies using the Gudjonsson Suggestibility Scale (GSS; Gudjonsson, 1984) found no link with dissociation. He cites Polczyk (2005) in this context, yet neglects to mention a crucial point: This study relied on a nonstandard version of the DES that requires participants to rate how often they experience each dissociative symptom, compared with other people. Not surprisingly, the author found an extremely low mean DES score ($M = 4.0$; $SD = 1.31$). Bremner also failed to cite other studies that found an association between dissociation and the GSS (Merckelbach, Muris, Rassin, & Horselenberg, 2000; Wolfradt & Meyer, 1998). Bremner accurately noted that we neglected to mention his study (Bremner, Shobe, & Kihlstrom, 2000) showing no significant correlation between the DES and false memories on the Deese-Roediger-McDermott (DRM) paradigm. This finding is, however, in line with other findings using the DRM task (e.g., Platt, Lacey, Lobst, & Finkelman, 1998; Wright, Startup, & Mathews, 2005). Thus, our conclusion holds: "The most notable exception to this pattern [i.e., the link between dissociation and commission errors] comes from studies using the DRM paradigm." (p. 631).

Autobiographical Memory Specificity and Dissociation

Bremner (2010) disputed our conclusion that "literature on cognitive processes involved in dissociation provides scant evidence for deficits in autobiographical memory (e.g., compartmentalization, psychogenic amnesia) or avoidant information processing that would be expected to enable trauma victims to alleviate the impact of (recurrent) traumatic events" (p. 632). To this end, he refers to a study of Vietnam combat veterans (Bremner, Steinberg, Southwick, Johnson, & Charney, 1993), which showed that veterans with PTSD scored higher on an amnesia scale than those without PTSD. However, this study does not convincingly challenge our position given that self-reported amnesia is not a valid indicator of actual amnesia. For example, although patients with DID often claimed amnesia between so-called alter personalities, researchers have found little or no evidence for interidentity amnesia using objective measures (i.e., behavioral tasks or event related potentials) of memory (e.g., Allen & Movius, 2000; Huntjens et al., 2006; Huntjens, Peters, Woertman, van der Hart, & Postma, 2007).

Bremner's (2010) suggestion that "overgeneral" autobiographical memories are related to amnesia is intriguing. He referred to a study by Kleim and Ehlers (2008), which appeared after our review was published, which showed that overgeneral autobiographical memories are related to PTSD. However, the researchers objectively measured overgeneral autobiographical memories only after trauma exposure. This limitation is important given that overgeneral autobiographical memories could represent a risk factor for PTSD and predate rather than result from PTSD (see Hauer, Wessel, Engelhard, Peeters, & Dalgleish, 2009; Moore & Zoellner, 2007). Even if trauma does engender overgeneral autobiographical

memories, this effect could be related to mechanisms other than dissociation, such as intrusions and rumination interfering with memory retrieval (e.g., Moore & Zoellner, 2007). Interestingly, Kleim and Ehlers (2008) found no significant association between childhood trauma and overgeneral autobiographical memories, a null finding that is problematic for those who interpret overgeneral autobiographical memories in terms of the dissociative sequelae of trauma.

Cognitive Failures and Dissociation

Bremner's (2010) implication to the contrary, a consistent body of evidence supports the association between dissociation and cognitive failures (Giesbrecht, Merckelbach, Kater, & Sluis, 2007; Merckelbach, Muris, & Rassin, 1999; Wright & Osborne, 2005). Indeed, in a recent study, Simeon et al (2009) replicated this relationship in patients with depersonalization disorder and post-traumatic stress disorder. This link does not imply that high dissociators are at a cognitive disadvantage on all tasks. Indeed, patients with dissociative identity disorder displayed better memory for to-be-forgotten sexual words (Elzinga, de Beurs, Sergeant, Van Dyck, & Phaf, 2000), a finding at odds with the assumed defensive function of dissociation.

Dissociation, Information Processing, and Memory

Bremner (2010) stated that it is unlikely that the directed forgetting (MacLeod, 1998) paradigm "represents an adequate model for dissociative amnesia in abuse survivors" in that "forgetting has been demonstrated to be a long-term process" (p. 15). However, most scholars would not equate dissociation with normal forgetting and would argue that the ability to compartmentalize information linked to negative emotions is a core characteristic of highly dissociative individuals (van der Hart, Nijenhuis, Steele, & Brown, 2004). These scholars assume that emotional stimuli are inhibited immediately (Ladwig et al., 2002) or kept from awareness (DePrince & Freyd, 2004). Our review did not support this assumption. Rather, studies using the directed forgetting paradigm link dissociation to an inability to forget or ignore stimulus words, especially those that are emotional. We agree with Bremner that normal forgetting, rather than a special dissociative mechanism, could underlie memory gaps following trauma exposure. However, apparent gaps in memory could also result from intentional failures to report (McNally, 2003; Pope, Barry, Bodkin, & Hudson, 2006), which underlie inter-identity amnesia in patients with dissociative identity disorder (Huntjens et al., 2006).

Concluding Comments

We have reviewed a substantial body of evidence that dissociation exhibits a robust association with fantasy proneness and have demonstrated that Bremner's (2010) criticisms of our operationalization of dissociation are unfounded. Moreover, we showed that heightened levels of fantasy proneness, suggestibility, and hypnotizability are related to pseudomemories, which in turn may account for why dissociation is related to self-reported but not objective trauma. In sum, there remains little evidence for the gross cognitive deficits (e.g., interidentity amnesia, memory frag-

mentation) that many scholars claim accompany dissociative symptoms.

Bremner's (2010) criticisms, we have shown, often oversimplify and caricature our position and do not withstand close scrutiny. These criticisms stem largely from the widely held trauma-centric assumption that trauma is the etiological core of dissociation and from a tendency to selectively seek isolated and unreplicated confirming evidence for this position while disregarding clear-cut disconfirming evidence. As we argued in our initial review, this is the very epistemic approach that has hampered progress in the field of dissociation since Janet coined the term "désagrégation" more than a century ago. The field of dissociation is sorely in need of a paradigm shift, and we hope that the current comment and reply offer a modest step in that direction.

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Received October 6, 2009

Revision received October 12, 2009

Accepted October 19, 2009 ■