



## Full Length Article

# Leave everything to the imagination: Cognitive functioning of individuals high in dissociative absorption and imaginative involvement

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## ABSTRACT

Dissociative “absorption and imaginative involvement” is a tendency to become immersed in a stimulus while neglecting one’s surroundings, engage in vivid imagination, confuse fantasy with reality, and act automatically. We aimed to identify the specific impairments and benefits in cognitive functioning which may characterize dissociative absorption. We hypothesized that absorbers will demonstrate impaired inhibition and working memory alongside superior imagination abilities. Healthy young Israeli soldiers ( $N = 160$ ) performed a battery of cognitive tasks. As hypothesized, absorbers were substantially faster in a mental rotation task, and demonstrated impaired accuracy in cognitive tasks demanding high capacity of working memory, inhibition and sustained attention, stemming mostly from commission, rather than omission, errors. Our findings objectively validate the self-reported heightened imaginative abilities characterizing dissociative absorption.

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## 1. Introduction

Dissociation is defined as a disruption or discontinuity in the normal integration of psychological functions (American Psychiatric Association, 2013). Dissociative characteristics fall along a spectrum and can manifest in major and minor forms (Putnam, Helmers & Trickett, 1993). The present study focuses on the latter and aims to investigate the behavior, and in particular, the cognitive functioning (CF), of healthy individuals who experience mild, “every-day” dissociation.

There are several schools of thought regarding the CF of dissociators. The betrayal trauma theory (BTT) views dissociation as a coping mechanism in response to severe childhood trauma (Freyd, Martorello, Alvarado, Hayes, & Christman, 1998). BTT theoreticians assume that dissociators’ CF is oriented towards preventing overwhelming memories from invading awareness. According to this approach, dissociators develop a cognitive tendency to

divide their attention, along with an impaired ability to focus it. They are also presumed to inhibit emotional content and suffer from memory failures of the omission kind. These patterns were demonstrated in several studies by DePrince, Freyd and their colleagues (DePrince & Freyd, 1999, 2001, 2004; DePrince, Freyd, & Malle, 2007; Freyd et al., 1998). However, although the BTT would expect dissociators to demonstrate enhanced inhibition in an emotional context, an investigation of cognitive inhibition among participants with dissociative identity disorder (DID) found degraded inhibition in the presence of emotional stimuli (Dorahy, McCusker, Loewenstein, Colbert, & Mulholland, 2006; Dorahy, Middleton, & Irwin, 2005). Inhibition failures were also associated with dissociative experiences in non-clinical samples (Giesbrecht, Merckelbach, & Smeets, 2006; Giesbrecht, Merckelbach, Geraerts, & Smeets, 2004). These studies indicate that clinical and non-clinical dissociators demonstrate poor, rather than superior, inhibition under stress conditions. Moreover, several groups of researchers were unable to replicate the findings presented by the BTT theoreticians (Deville et al., 2007; Giesbrecht & Merckelbach, 2009; Giesbrecht et al., 2004; Giesbrecht, Geraerts, & Merckelbach, 2007; Giesbrecht, Lynn, Lilienfeld, & Merckelbach, 2008; McNally, Ristuccia, & Perlman, 2005). For example, in a recent study on non-clinical participants, those high in dissociative tendencies did not seem to have superior divided attention abilities, but rather, the other way around (Weiss & Low, 2017).

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Many of the studies that challenge the BTI represent an alternative theory regarding the CF of dissociators. This school draws its roots from the socio-cognitive model for dissociation (Spanos, 1994), that questions the existence of trauma as an etiological factor in extreme dissociative phenomena, specifically, DID. The socio-cognitive model suggested that the construal of the self is affected by norms and social interactions, and these factors may cause a person to report identifying with multiple selves. Spanos (1994) noted that the concept of DID gained popularity in north America in the second half of the 20th century, both by therapists and the media, and asserted that social influences (e.g., suggestion by therapists) played a role in the rise in prevalence of this diagnosis. Later critics of the BTI expanded their ideas beyond DID, to more common dissociative phenomena, and suggested that dissociation represents tendencies for fantasy proneness and cognitive lapses, which do not necessarily indicate high levels of psychopathology (Merckelbach, Muris & Rassin, 1999). Merckelbach et al. (1999) assessed these characteristics with self-report questionnaires and found that both fantasy proneness and cognitive failures predicted the tendency for dissociative experiences (total score as well as specific subscales), with a unique contribution for each predictor. Later works defined the CF of dissociators by: (1) poor inhibition, mainly under conditions of emotional arousal (Giesbrecht et al., 2004, 2008, Giesbrecht & Merckelbach, 2009; for a similar approach see Dorahy et al., 2005, 2006); and (2) commission rather than omission errors. Commission errors, also known as false positives, refer to the recall of information that did not occur, whereas omission errors stand for a failure to recall events that did happen (Devilley et al., 2007; Giesbrecht et al., 2007, 2008).

Another line of research regarding the CF of dissociators focuses on their working memory (WM). Giesbrecht et al. (2007) hypothesized that dissociators' WM capacity is decreased and therefore they tend to confabulate and produce commission errors, but their hypothesis was not supported. On the contrary, de Ruiter and colleagues have shown that dissociators have a somewhat increased WM capacity and claimed that this characteristic enables them to function well while their mind is wandering (de Ruiter, Phaf, Elzinga, & van Dyck, 2004). They explain this finding by yet another theory, labeled the construction hypothesis (de Ruiter, Elzinga, & Phaf, 2006), according to which, enhanced attentional and WM abilities in dissociators bring about intensified formation of new associations during encoding, as well as reconstructive retrieval. This theory suggests that these reconstructive processes are accompanied by cognitive failures and incorrect memories (i.e., commission errors). In addition to its focus on memory processes, this theory also highlights the importance of motivation in task performance of dissociators: according to this view, if a task is sufficiently interesting and challenging, dissociators may perform well; but if not, they may divert into more fulfilling activities, such as daydreaming. Perhaps the motivational dependency of dissociators may explain why in one study, there were no objective differences in dissociators' CF compared to non-dissociators, but there were differences in their subjective sense of difficulty (Bruce, Ray, Bruce, Arnett, & Carlson, 2007). However, the aforementioned study was based on a small student sample. To conclude, most of the research summarized above describes certain cognitive malfunctions in dissociative individuals, as well as a few hypothesized advantages, but there are different points of view regarding their specific characteristics and the mechanisms explaining them.

Evaluation of CF in dissociative individuals should aim to target specific dissociative aspects, as these may rely on different mechanisms (Soffer-Dudek, 2014), and hence lead to specific theoretical predictions. Assessment of dissociation is most commonly conducted with the Dissociative Experiences Scale (DES; Bernstein & Putnam, 1986; Carlson & Putnam, 1993), which usually engenders

three factors: dissociative amnesia, depersonalization-derealization, and "absorption and imaginative involvement" (Armour, Contractor, Palmieri, & Elhai, 2014; Carlson & Putnam, 1993; Soffer-Dudek, Lassri, Soffer-Dudek, & Shahar, 2015; Stockdale, Gridley, Balogh, & Holtgraves, 2002).

The latter, dissociative absorption, refers to a tendency to be immersed in an external stimulus (e.g., a movie or a book), or in internal experience, to the point where one is oblivious to one's surroundings (Soffer-Dudek et al., 2015). Absorbed individuals report that they tend to engage in vivid fantasy, imagination or daydreaming. Because they experience their imagination as vivid and immersive, they also report that at times they may be unsure if something really happened or whether they had merely imagined it. Furthermore, they describe their performance as if they are acting on "auto-pilot", with awareness focused elsewhere (e.g., driving without awareness to the road). These features correspond to the automatic features of clinical-level dissociation, which were first studied during the end of the 19th century, prominently by Pierre Janet (Hilgard, 1986; Janet & Prince, 1907; Van der Hart & Horst, 1989). Janet noticed that hysterical dissociative patients were able to separate complex processes, such as writing, from their stream of consciousness (Janet & Prince, 1907). According to Janet, a normal person holds a repertoire of automatic processes, which are bound together into one stream of consciousness. However, in dissociated states, one or more of these automatisms are split from this stream, and thus manifested outside of awareness or without voluntary control. In more modern literature, Hilgard (1986) described automatic processes in dissociated states, and Kihlstrom, Tataryn, and Hoyt (1993) suggested that the automatic functioning that characterizes dissociative disorders stems from a disrupted link between the self and mental representations of action or experience.

In non-clinical samples, absorption is the factor which carries most of the variance of the DES (Soffer-Dudek et al., 2015; Stockdale et al., 2002), and many researchers refer to it as "normative" dissociation, a personality trait not necessarily indicative of psychopathology (e.g., Kihlstrom, 2005). In fact, whereas the total DES score and the "pathological" subscales—when administered to non-clinical samples—are usually highly skewed, with large floor effects (Wright & Loftus, 1999), it seems that dissociative absorption items tend to distribute rather normally among participants (e.g., Carleton, Abrams, & Asmundson, 2010; Goldberg, 1999). However, absorption is relevant to clinical states; Absorption may lie on a continuum, ranging from mild to pathological manifestations. Although absorption does not seem to be an unequivocal indicator of psychopathology (Butler, 2006; Kihlstrom, 2005), high levels of dissociative absorption (as measured with the DES) are related to general psychopathological distress, depression, anxiety, and psychoticism (Levin & Spei, 2004; Soffer-Dudek et al., 2015), post-traumatic stress (Armour et al., 2014), and obsessive-compulsive symptoms (Soffer-Dudek, 2017, 2018; Soffer-Dudek et al., 2015). Moreover, several studies assessing absorption with the Tellegen Absorption Scale (Tellegen, & Atkinson, 1974) found it to be related to high levels of the Openness to Experiences domain of the Five-Factor Model, as well as to cognitive distortions and psychosis proneness (DeYoung, Grazioplene & Peterson, 2012; Moorman & Samuel, 2018; Piedmont, Sherman, & Sherman, 2012). Some studies suggested that absorption, although closely-related to Openness, may be more relevant than Openness for the assessment of schizotypy and psychoticism (Chmielewski, Bagby, Markon, Ring and Ryder, 2014; van Kampen, 2009).

In the present study we chose to focus on dissociative absorption as a dissociative personality disposition, which is prevalent in the general population yet may contribute to the prediction of pathological symptoms, both in normative and pathological

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